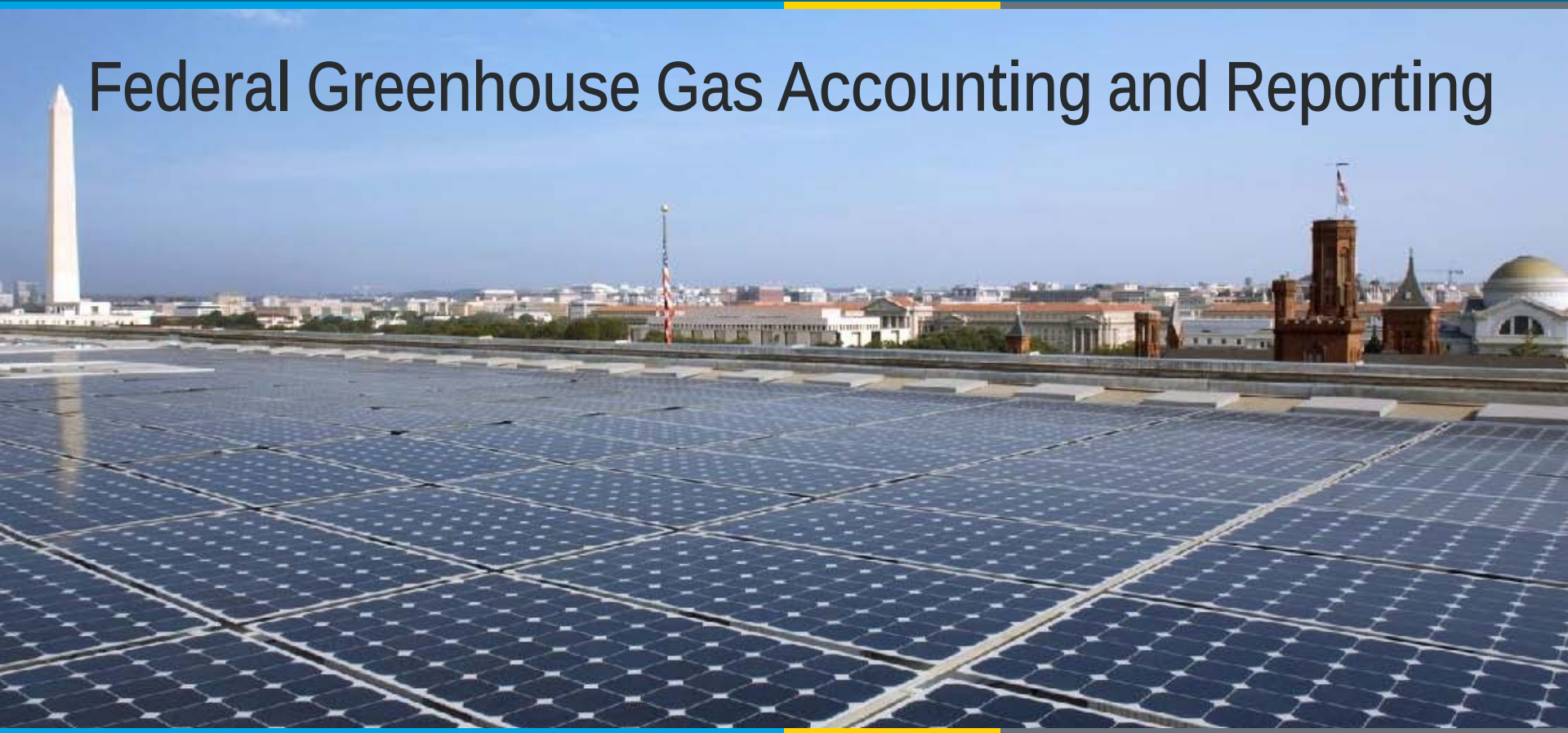
U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Federal Greenhouse Gas Accounting and Reporting



Executive Order 13514, Section 9 Recommendations

Matt Gray

DOE FEMP

FUPWG, April 14, 2010

President Obama Signing EO 13514

On October 5, 2009, President Obama Signed Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance.*

On January 29, 2010, President Obama announced that the Federal Government will reduce its greenhouse gas (GHG) pollution by 28 percent by 2020.

Bottom Line Up Front

- Executive Order (EO) 13514, Section 9 Guidance Recommendations establish standardized procedures for reporting GHG emissions across the Federal Government.
- Section 9 Recommendations submitted to the Council on Environmental Quality (CEQ). **CEQ to issue final guidance**.
- FEMP worked with GSA, DOI, USDA, DOD, EPA, and all major agencies to help formulate Section 9 Guidance Recommendations.
- This Guidance is NOT designed for quantifying the reductions from individual GHG mitigation projects, nor does it include strategies for reducing emissions.
- By September 2010 FEMP will make available FREE web-based training on Federal GHG accounting and reporting.
- January 2011 – Agencies submit comprehensive GHG inventories into the GHG Reporting Portal.

Federal GHG Accounting and Reporting

Executive Summary

FEMP and Agency GHG Requirements Milestones

11/5/09
- ✓ Prepare GHG Target tool
- ✓ Designate Senior Sustainability Officer

1/4/10
- ✓ Complete top down agency-wide GHG inventory
- ✓ Submit Scope 1 & 2 target goals for 2020

4/5/10
- ✓ Submit to CEQ/OMB recommended GHG reporting guidance
- ✓ Issue guidance on Federal fleet management
- ✓ GSA submits recommendations on vendor and contractor GHG emissions and Federal local transportation logistics

6/2/10
- Submit Strategic Sustainability Performance Plan, in concert with 2012 budget submission
- Submit Scope 3 target goals for 2020

10/5/10
- Provide electronic GHG reporting capability (i.e. portal)
- Submit to CEQ input on agency adaptation actions

1/3/11
- Submit comprehensive FY 2008 and FY 2010 GHG inventory

Green: FEMP-Specific Tasks Black: Agency Requirements

GHG Accounting Hierarchy

Key Agencies:

CEQ, OMB

EPA, all agencies

CEQ, DOE, DOD, DOI, EPA, GSA, DOC

All agencies

All agencies

EO 13514 Section 9 Directive

Section 9 of EO 13514 tasks DOE FEMP with leading development of recommendations for GHG accounting and reporting.

Within 180 Days (04/05/10)

FEMP, in coordination with EPA, DOD, GSA, DOI, DOC, and other agencies, provide CEQ Chair recommended Federal greenhouse gas reporting and accounting procedures enabling agencies to….

i. **accurately and consistently quantify and account for GHG emissions from Scope 1, 2 and 3 sources**, and identify opportunities to revise fiscal year 2008 baseline….

ii. **Consider past Federal agency efforts to reduce GHG emissions**

iii. **Consider and account for sequestration and emissions of GHGs resulting from Federal land management practices**

9(c): Update every 3 years, and as otherwise necessary

Within 1 Year (10/05/10)

FEMP to provide electronic accounting and reporting capability for the Federal GHG reporting procedures developed in subsection above. To the greatest extent practicable, ensure compatibility between this capability and existing Federal reporting systems.

The ABCs of GHGs

Rising levels of greenhouse gases (GHGs) in the atmosphere contribute to climate change, which contributes to major environmental and human health issues.

GHGs allow sunlight to enter the atmosphere freely. GHGs absorb and re-radiate some of the heat that would otherwise return to space. The primary GHGs include:

Greenhouse Gas	Common Sources/Uses	GWP*
Carbon dioxide (CO_2)	Mobile and stationary combustion	1
Methane (CH_4)	Coal mining, fuel combustion	21
Nitrous oxide (N_2O)	Fuel combustion, fertilizers	310
Hydrofluorocarbon group of gases (HFCs)	Refrigerants, fire suppressants, various manufacturing processes	140–11,700†
Perfluorocarbon group of gases (PFCs)	Electrical equipment, various manufacturing processes, refrigerants, medicine	6,500–17,700†
Sulfur hexafluoride (SF_6)	Electrical equipment, various manufacturing processes, tracer in air modeling, medicine	23,900

* 100-year Global Warming Potential. Source: EPA MRR [74 Federal Registry (FR) 56260]. See the TSD for additional information.

† Many different individual gases constitute HFCs and PFCs, so there is a range of GWP values associated with each.

Additional information:

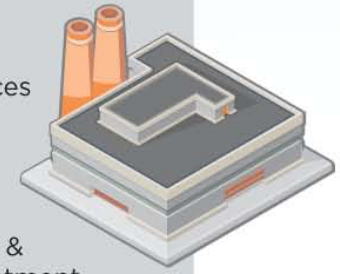
- FEMP GHG website (http://www1.eere.energy.gov/femp/program/greenhousegases_basics.html)
- Pew Center on Climate Change (http://www.pewclimate.org/global-warming-basics/facts_and_figures)

Common Sources of Federal Greenhouse Gas Emissions

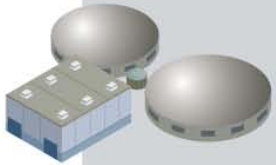
1

Vehicles and Equipment

Stationary Sources



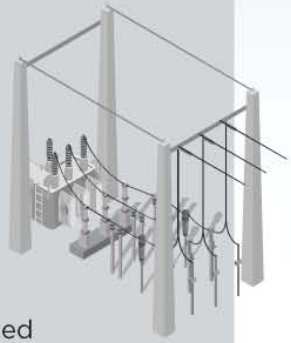
On-site Landfills & Wastewater Treatment



Fugitive Emissions

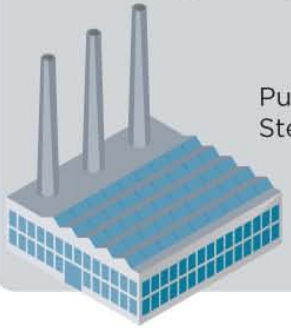
2

Purchased Electricity



Purchased Heating/Cooling

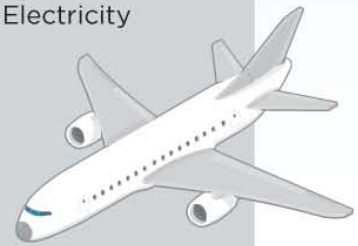
Purchased Steam



3

Transmission and Distribution Losses from Purchased Electricity

Business Travel



Employee Commuting

Contracted Solid Waste Disposal

Contracted Wastewater Treatment

SCOPE 1:

Greenhouse gas emissions from sources that are owned or controlled by a Federal agency.

SCOPE 2:

Greenhouse gas emissions resulting from the generation of electricity, heat, or steam purchased by a Federal agency.

SCOPE 3:

Greenhouse gas emissions from sources not owned or directly controlled by a Federal agency but related to agency activities.

Users of the Guidance

The Recommendations have been designed to be implemented at both the headquarters and facility levels.

- Federal agencies may adopt a “top-down” or “bottom-up” approach to developing GHG inventories. **The recommendations are applicable to either approach.**
- Individual facilities and/or subordinate organizations may either calculate their facility-level GHG emissions (using the methodologies presented in the Recommendations) to roll up into the agency wide inventory, or they may submit their facility level data to headquarters, which calculates the agency-wide inventory.
- Final GHG inventories must represent agency-level emissions.

Purpose of Section 9 Recommendations

The **Guidance recommendations** provide information on:

- Emissions sources to include in the comprehensive GHG inventory
- Treatment of sequestration and emissions from land use, agriculture and biogenic sources
- Use of renewable energy purchases, including RECs, and carbon offsets
- Reporting process, including procedure for inventory recalculations
- Validation and verification of emissions inventory

The **Technical Support Document** provides information on:

- Reporting content, including minimum data required for input into the *GHG Reporting Portal*
- Methodologies and emission factors used to calculate Scope 1/2/3 and other emissions

This Guidance is NOT designed for quantifying the reductions from individual GHG mitigation projects, nor does it include strategies for reducing emissions.

Contents of Section 9 Guidance Recommendations

- Introduction and Background
- Setting Organizational and Operational Accounting Boundaries
- Sequestration and Emissions from Land Use, Agriculture, and Biogenic Sources
- Renewable Energy and Carbon Offsets
- Reporting GHG Emissions
- Verification and Validation of GHG Emissions
- Definitions

Introduction: Relationship to EO and other GHG reporting requirements

Section 9 relates to other sections of EO 13514 and other GHG regulations and programs that impact Federal agencies.

- **EO 13514 Sections**: e.g. Section 13, which requires GSA to provide recommendations… in tracking and reducing scope 3 GHG emissions related to the supply of products and services to the Government
- **Federal Statutory and Executive Order Requirements**: For list of previous EO and legislative requirements related to GHGs, visit: www.eere.energy.gov/femp/regulations/regulations.html. Many agency facilities will also need to report under EPA's Mandatory Reporting of Greenhouse Gases Rule.
- **State and Regional Programs**: some agency facilities are subject to state-level GHG emissions reporting or reduction requirements (e.g. Wisconsin), which are then used for regional programs (e.g. RGGI)
- **International Reporting**: some agencies provide GHG information that is incorporated into the U.S. Climate Action Report

Introduction: The Public Sector Standard

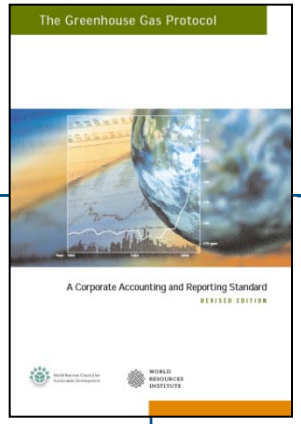
The Public Sector Standard (PSS) for GHG Accounting and Reporting applies principles of the Corporate Standard to local, state, and Federal agencies and serves as background information for Section 9 Guidance.

- Drafted jointly by WRI and partner Logistics Management Institute (LMI) with input from EPA Climate Leaders Program, DOE FEMP, and other federal agencies.
- Motivation for PSS developed as a result of local and state government initiatives to create community- and state-wide inventory of GHG emissions.
- PSS was designed to perform “entity-level” accounting of emissions.
- PSS was “Road tested” by most Federal agencies
- Information is available at: www.ghgprotocol.org/psp

GHG Inventory Protocols / Guidance

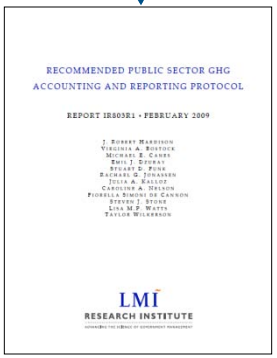
The Public Sector Standard (PSS) was based on the WRI Corporate Standard.

WBCSD/WRI GHG Protocol

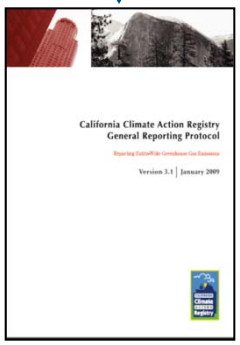


EPA Climate Leaders Guidance

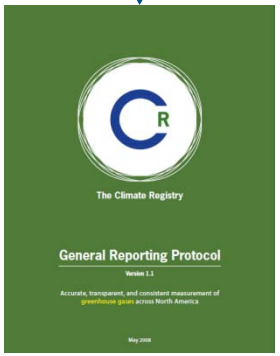
ISO 14064 Standards



Public Sector Standard



CCAR Reporting Protocol



The Climate Registry Protocol

Introduction: GHG Accounting and Reporting Principles

Federal GHG accounting and reporting are based on the following principles:

- **Completeness**: Account for and report all GHG emission sources and activities within the agency's inventory boundary; disclose and justify all emission sources and activities not reported.
- **Consistency**: Use consistent methodologies to allow for meaningful comparisons of emissions over time.
- **Transparency**: Address all relevant issues in a factual and coherent manner; disclose all relevant assumptions and make appropriate references...
- **Accuracy**: Achieve sufficient accuracy to enable users to make decisions with reasonable assurance as to the integrity of the reported information…
- **Relevance**: Ensure the GHG inventory appropriately reflects the GHG emissions of the agency and serves the decision-making needs of users—both internal and external to the agency.

Organizational Boundaries

Energy Bills	The **activities related to the operation of facilities for which they directly pay utility bills**. The energy-related activity data required to calculate these emissions are currently reported in the Annual FEMP energy report.
Purchased Fuel	The **operation of mobile sources for which the agency purchases fuel**. The activity data needed to calculate these emissions are reported in the **FAST** (Federal Automotive Statistical Tool) database and the Annual FEMP energy report.
Other Activities	All **other scope 1 and 2 activities over which the agency has operational control**. These include **fugitive, process, and specified scope 3 emissions** in an agency's organizational boundary, where the agency does not have full operational control.

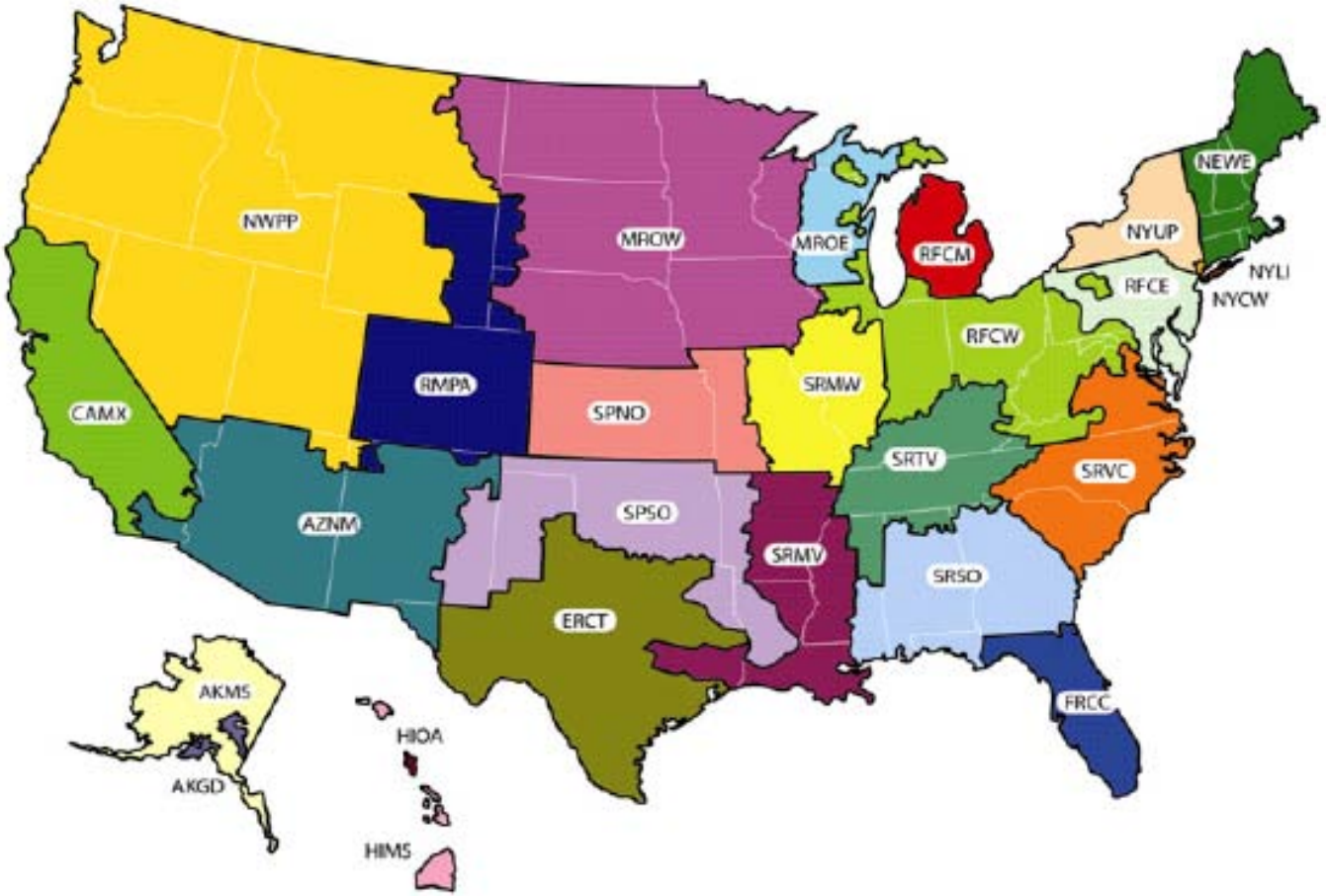
Operational Boundaries: Direct Emissions (Scope 1)

Scope 1 Source	Description
Generation of electricity, heat, cooling, or steam	Emissions **from combustion of fuels in stationary sources** (e.g., boilers, furnaces, turbines, and emergency generators). This includes CH_4 and N_2O emissions from biomass combusted for production of electricity, heat, cooling, or steam.
Mobile Sources	Emissions from the **combustion of fuels in agency controlled mobile combustion sources** (e.g., automobiles, ships, and aircraft), including leased fleet vehicles. This includes CH_4 and N_2O emissions from biofuel combustion.
Fugitive Emissions	Emissions **from intentional or unintentional releases of GHGs from within the agency's organizational boundary** (e.g., equipment leaks from joints, seals, packing, and gaskets; HFC emissions from the use of refrigeration and air conditioning equipment; SF_6 emissions from leaking electrical equipment).
Process Emissions	Emissions from the **manufacture or processing of chemicals and materials**, and include on-site landfills, wastewater treatment plants, waste incinerators, and laboratory activities.

Operational Boundaries: Indirect Emissions (Scope 2)

Scope 2 indirect emissions associated with consumption of purchased or acquired electricity, steam, heating, or cooling.

The EPA eGRID database divides the electric grid into 26 subregions with unique emission factors based on the regional electricity generation mix.



Operational Boundaries: Indirect Emissions (Scope 3)

Because efforts to account for scope 3 emissions are only recently emerging, a phased approach to developing scope 3 inventories is recommended.

- Transmission and distribution losses related to purchased electricity
- Business air travel
- Contracted solid waste
- Contracted wastewater treatment
- Employee commuting (e.g. employees commuting to and from work; teleworking)
- Ground travel portion of employee business travel (train, bus, rental car)
- Tenant emissions from private sector and GSA leases *(GHG Workgroup to develop methodology)*
- Oil and gas leasing activities
- Visitor emissions (e.g., to National Parks)
- Enteric fermentation, where releases occur on Federal land from non-Fed animals
- Manure management systems operated by non-Feds, but take place on Federal land
- Others?

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Renewable Energy and Carbon Offsets

Renewable energy is defined as energy derived from resources that can be renewed indefinitely, including solar, wind, biomass, landfill gas, ocean (including tidal, wave, current and thermal), geothermal, municipal solid waste, or new hydroelectric generation capacity. (*EPACT/EO13423 Definition*)

- Allowable use of RECs and carbon offsets
- Renewable Energy Purchases and RECs
  - Existing renewable guidance from EPACT/EO 13423 to work from
  - Limit to emissions from purchased electricity
  - Avoid risk of double counting
  - Use of eGRID non-baseload factors
  - Treatment of RECs in the base year
  - Ownership of RECs from On-site Renewable Electricity Generation
  - RECs from Biomass Combustion, Conversion of Landfill Gas, and Municipal Solid Waste Combustion

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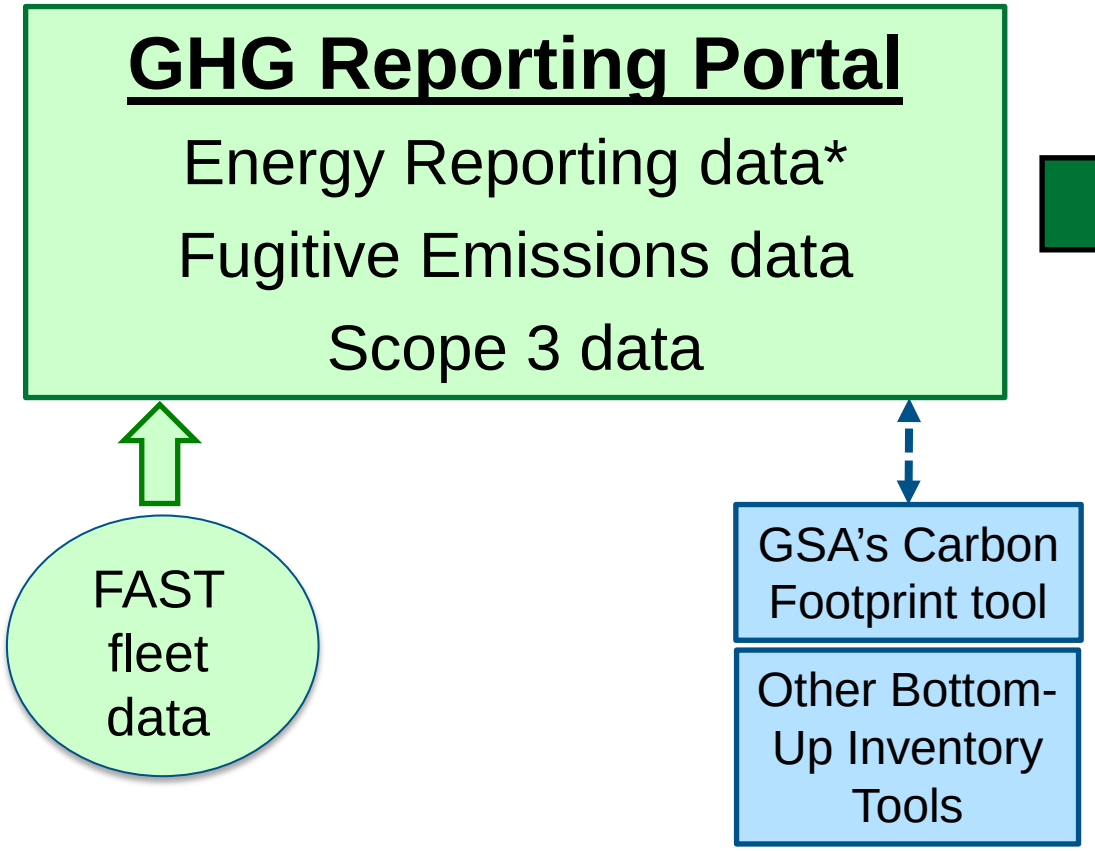
FEMP GHG Reporting Portal - DRAFT

The FEMP electronic GHG reporting portal will provide calculation functionality for minimum required data entered by agencies. Agencies are responsible for "rolling up" activity level data to HQ.



*Need to know electricity by eGrid region for scope 2 emissions

GHG Inventory by:

Scope 1
- Stationary combustion
- Fleet vehicles
- Process emissions
- Fugitive emissions

Scope 2
- Purchased electricity
- Purchased steam
- Purchased hot water
- Purchased chilled water
- RECs

Scope 3
- Business air travel
- T&D losses from electricity
- Contracted Solid Waste
- Others

Other non-scope
- Biogenic CO2 emissions
- Non-EO GHGs

Verification and Validation of GHG Emissions

The purpose of GHG accounting verification is to provide confidence that reports of GHG emissions are complete, accurate, consistent, transparent, and without significant errors.

- **Second-Party Verification**: Verification that is performed by an entity within the agency, but are independent of those responsible for reporting the GHG emissions inventory.
- **Third-Party Verification**: Verification that is performed by an entity external to the agency.
- **Inventory Management Plan**: This plan describes the agency's process for verifying the reliability of the inventory, and its plan to improve data quality over time.
- Entities performing the verification process for an agency may refer to the principles and requirements of ISO 14064-3:2006 for additional guidance.

Section 9 Technical Support Document Topics

Introduction

Reporting GHG Emissions

- Reporting Process
- Reporting Qualitative Content
- Quantitative Inventory Data Requirements
- Emission and Conversion Factors

Calculating Scope 1 Emissions

Calculating Scope 2 Emissions

Calculating Scope 3 Emissions

Emission and Conversion Factors

The GHG Workgroup would:

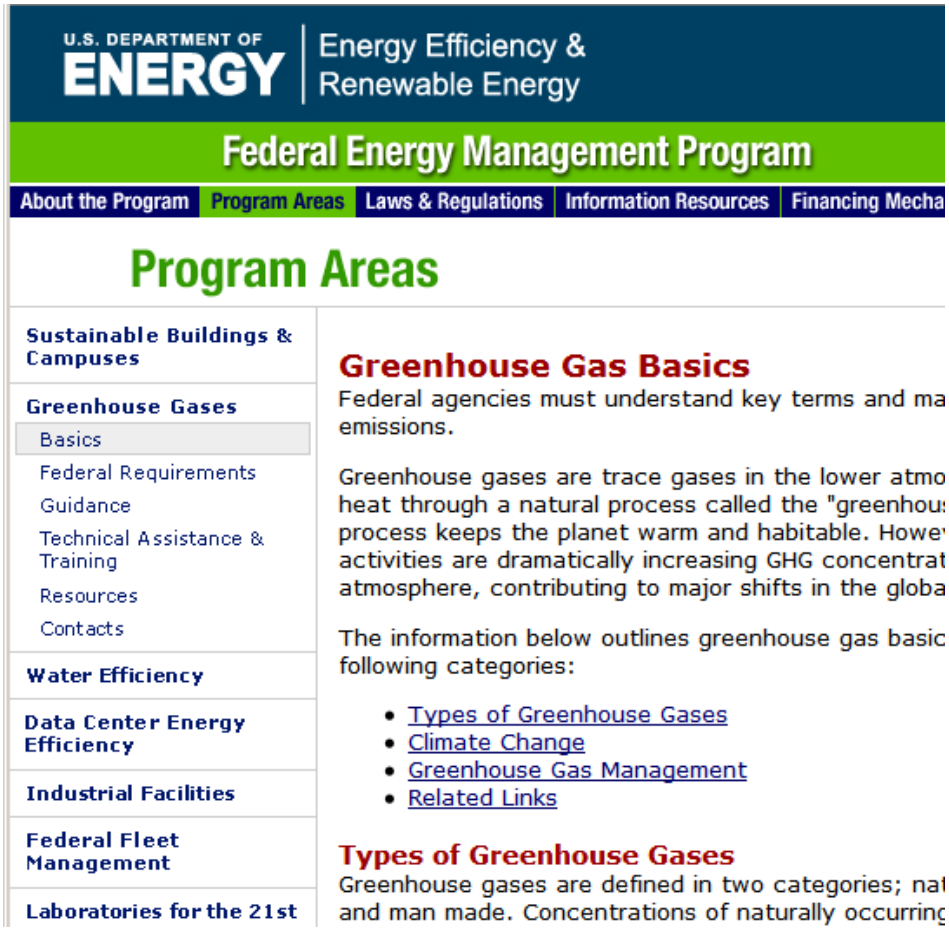
- Serve as a forum for information exchange
- Develop GHG accounting and reporting guidance recommendations
- Develop technical guidance and tools to support implementation
- Address inconsistencies between current data collection processes and those needed to support GHG accounting best practices.

The Workgroup would form subcommittees as necessary, examples of which may include:

- Reporting
- Scope 3 data collection
- Renewable energy
- Vendor and contractor emissions
- Organizational boundaries (including leased assets)
- Emissions and biological sequestration from land management techniques

Available FEMP Support to Agencies

- Briefings and General information:
  - Section 9 Recommendations
  - Public Sector Standard
  - Case studies
  - Strategies for GHG reduction
- 1-1 technical assistance
- Training
  - Conferences (e.g. GovEnergy)
  - **Web-based GHG inventory**
  - GHG Reporting Portal
- Coordination through emails, meetings, and:
  - FedCenter (*www.fedcenter.gov/ghgwg*) – *Feds and support contractors only*
  - FEMP GHGs (*www.eere.energy.gov/femp/program/greenhousegases.html*)



Thank You!

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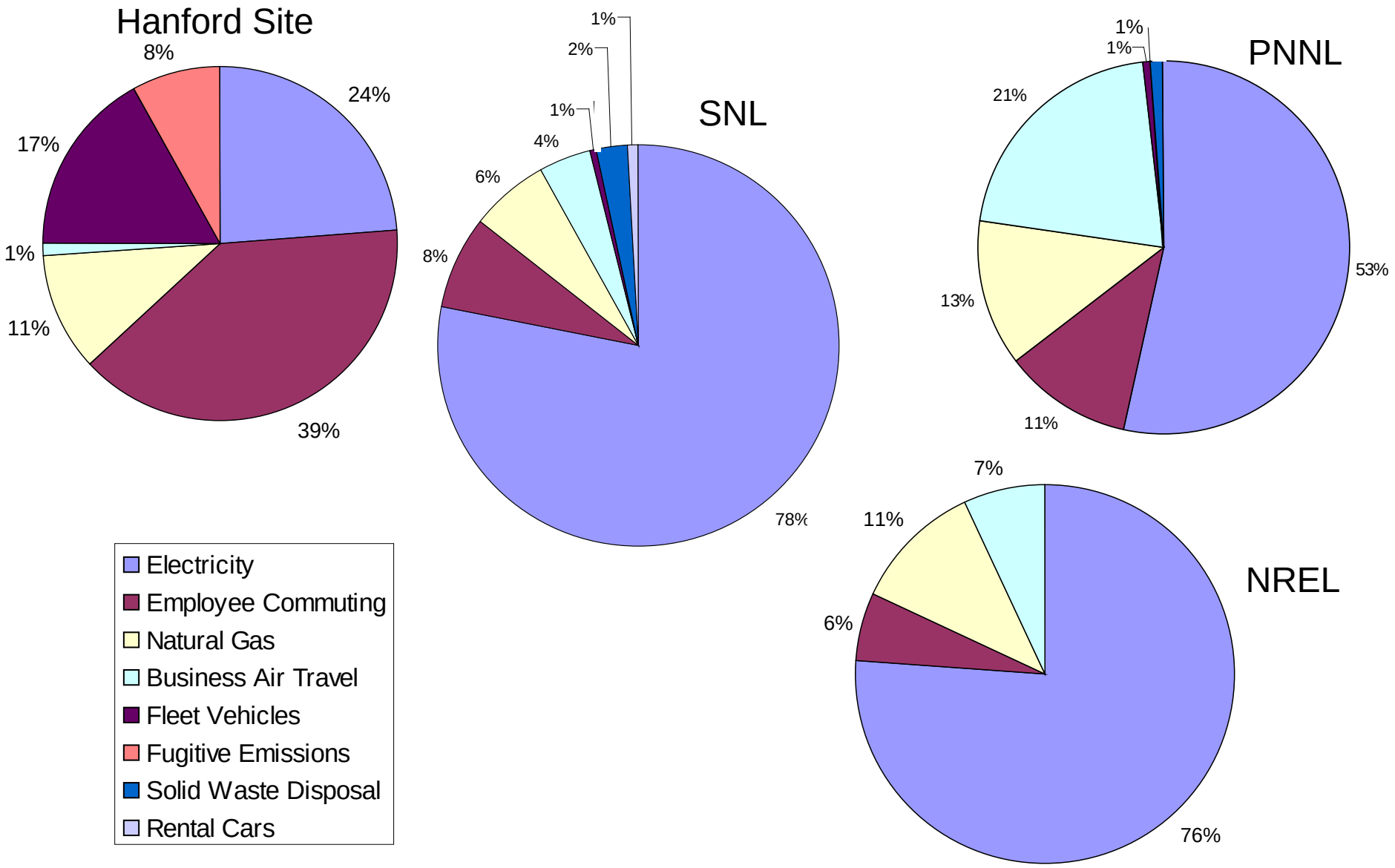
www.eere.energy.gov/femp/program/greenhousegases.html

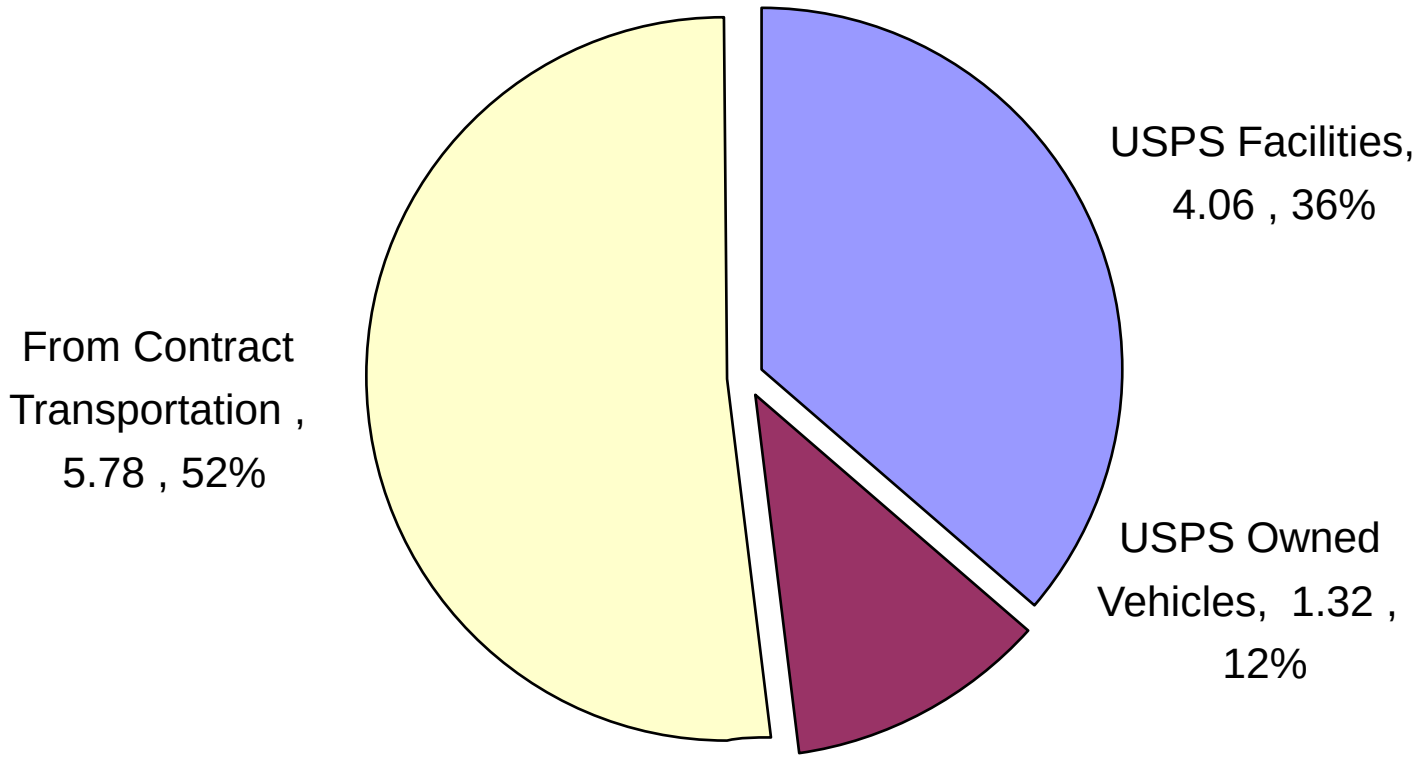
www.fedcenter.gov/programs/greenhouse/

Bottom Up GHG Inventories at Select DOE Sites



USPS FY07 GHG Inventory

CY2007 GHG emissions from facilities, owned vehicles and contract transport (11.2 M MTons CO2 eqs)



GHG Accounting at the National Parks

An average CFP Park's total (Scope 1, 2, and select Scope 3) GHG emissions equal about 21,000 MTCO2E