

COMPLIANCE WITH GREENHOUSE GAS MANDATORY REPORTING RULE AND EXECUTIVE ORDER 13514

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INTRODUCTION

This course will provide students an overview of the Greenhouse Gas (GHG) Mandatory Reporting Rule (MRR) that was finalized by the U.S. Environmental Protection Agency (EPA) in October 2009. In addition, this course will also provide an overview of the GHG related requirements of Executive Order (EO) 13514 (Federal Leadership in Environmental, Energy, and Economic Performance) signed by President Obama on 8 October 2009. While both the MRR and EO address GHGs, each has different requirements and applicability which will be discussed.

GREENHOUSE GAS MANDATORY REPORTING RULE

MRR Overview

The U.S. Congress in the 2008 Appropriations Act directed EPA to develop a GHG reporting regulation. On 30 October 2009, EPA published in the Federal Register 40 CFR Part 98, the GHG Mandatory Reporting Rule. On 12 July 2010, EPA added additional source categories which are to be reported starting in 2011.

The MRR requires reporting of the following GHGs:

- Carbon dioxide (CO₂)
- Methane (CH₄)
- Nitrous oxide (N₂O)
- Fluorinated GHGs
 - Hydrofluorocarbons (HFCs)
 - Perfluorocarbons (PFCs)
 - Sulfur hexafluoride (SF₆)
 - Other fluorinated gases

The MRR requires reporting of GHG emission from all sectors of the economy in the United States. Federal and other government agencies, including DoD are subject to the requirements of the MRR. The purpose of the rule is collect accurate and timely data to inform future climate change policies and programs. The MRR *does not* require the control of GHG emissions.

The key elements of the rule include:

- Annual reporting of GHGs by:

- 29 source categories. Limited to stationary sources at USAF installations, primarily combustion sources such as boilers and heat plants. Emergency generators are excluded.
- 5 types of suppliers of fuel and industrial GHGs
- Motor vehicle and engine suppliers (except light duty sector).

What is the reporting threshold?

- 25,000 metric tons of carbon dioxide-equivalent (CO₂e) per year reporting threshold for most sources.
- EPA has an applicability tool available to help facilities assess whether they will have to report, available at: <http://www.epa.gov/climatechange/emissions/GHG-calculator/index.html>.

What is CO₂e?

CO₂e is based on the Global Warming Potential (GWP) values that represent the heat-trapping ability of each GHG relative to CO₂. For example, on a unit mass basis, CH₄ has approximately 21 times more ability to trap heat in the atmosphere than CO₂. Hence, the GWP of CH₄ is 21. Halogenated compounds such as the HFCs and PFCs are much more potent GHGs, primarily due to their long atmospheric lifetime, and thus have very high GWPs.

The MRR specifies use of GWP estimates from the Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report (SAR), as detailed below. Some reporting programs may use more recent values; for example the IPCC Fourth Assessment Report (AR4) lists GWPs of 25 for CH₄ and 298 for N₂O.

Before GHG emissions are reported, tons of each gas (all non-CO₂ gases) must be converted to CO₂-e using the 100-year GWP values. CO₂-e represents the universal unit for comparing emissions of the various GHGs to one unit of CO₂ based on their GWP value. The GWP values for GHGs that may be applicable to USAF installations are summarized in the following table.

In addition, mass (pounds, kilograms, etc.) rates of emissions generated are converted to metric tons, or “tonnes” for consistency in reporting.

Greenhouse Gas Global Warming Potentials*

Name	CAS Number	Chemical Formula	100-Year GWP
Carbon Dioxide	124-38-9	CO ₂	1
Methane	74-82-8	CH ₄	21
Nitrous Oxide	10024-97-2	N ₂ O	310
Sulfur Hexafluoride	2551-62-4	SF ₆	23,900
PFC-14 (Perfluoromethane)	75-73-0	CF ₄	6,500
PFC-116 (Perfluoroethane)	76-16-4	C ₂ F ₆	9,200

PFC-218 (Perfluoropropane)	76-19-7	C3F8	7,000
Perfluorocyclopropane	931-91-9	C-C3F6	17,340
PFC-3-1-10 (Perfluorobutane)	355-25-9	C4F10	7,000
Perfluorocyclobutane	115-25-3	C-C4F8	8,700
PFC-4-1-12 (Perfluoropentane)	678-26-2	C5F12	7,500
PFC-5-1-14 (Perfluorohexane)	355-42-0	C6F14	7,400
PFC-9-1-18	306-94-5	C10F18	7,500

NOTE:

*For those GHGs that are emitted from sources potentially applicable to USAF installations.
Reference: Table A-1 of 40 CFR 98 Subpart A

A Monitoring Plan Required for Each Installation that will have to report GHG emissions.

Monitoring is based on calendar year (January-December) and begins on 1 January 2010. EPA recently extended the compliance deadline and the first reports are due to EPA on 30 September 2011.

Monitoring plans are required and should have been in place on 1 April 2010. Monitoring plan elements include:

- Identification of positions of responsibility (i.e., job titles) for collection of the data.
- Explanation of the methods used to collect the data for the GHG calculations.
- Description of the methods that are used for quality assurance, maintenance, and repair of all instrumentation used to provide data for the GHGs reported under this rule.
- The GHG Monitoring Plan may rely on references to existing installation documents (e.g., standard operating procedures, quality assurance programs under Appendix F in 40 CFR Part 60 or Appendix B in 40 CFR Part 75, and other documents).
- Should be updated to include new sources, mission changes, etc. that result in GHG emissions covered by the MRR.

Roles and Responsibilities for GHG Inventory and Reporting

The GHG inventory is compiled from multiple information sources. The installation personnel consulted in preparing the inventories are identified below by job title. EPA uses the term Designated Representative (DR) as the Official for Primary Responsibility (OPR). EPA allows for the identification of Alternate Designated Representative (ADR) and Agents. Registration of the DR, ADR, and Agent(s) must be completed using EPA's electronic greenhouse gas reporting tool (e-GGRT) along with a signature page authorization (in paper copy). E-GGRT may be accessed at <http://www.epa.gov/climatechange/emissions/data-reporting-system.html>.

Role	Job Title	Responsibilities
Inventory Report Preparation	Environmental, technical manager	Lead for developing the GHG inventory, including the following: <ol style="list-style-type: none"> 1. Collect data from the respective personnel and develop the inventory 2. Oversee inventory QA and QC measures

Activity Data Providers	Base energy managers, boiler operators	Responsible for providing activity data, at least annually, to the Inventory Report Preparation DR. Those responsible for providing activity data should perform a QC of their data at least quarterly.
Management Approval	Installation commander, Air base wing commander, DR (person typically responsible for signing off on air quality documents)	Sign-off on the GHG inventory before submittal to USEPA. Certify, review and sign the Certificate of Representation as well as any other electronic submittals (including the inventory) to USEPA (this shall be done by the DR or alternate DR).

These are suggested roles and example job titles of installation personnel that may fill the various roles. Each installation should customize these for their installation personnel and actual titles. Additional personnel, roles, and responsibilities may be identified as the emissions inventory is continually improved and developed in subsequent years. As roles, responsibilities, and personnel change, inventory data needs will be communicated to the person filling the respective position. Inventory data may be collected in the AF Air Program Information Management System (APIMS) which is being updated with the necessary data fields to support MRR inventories.

How is Reporting Accomplished?

Reporting must be accomplished using EPA’s e-GGRT. Only the DR or ADR can submit the GHG emission report. An Agent(s) may have access to the installation’s e-GGRT information for the purpose of populating the inventory report. EPA verifies emission data. No third party verification is required.

USAF AND EXECUTIVE ORDER 13514 (FEDERAL LEADERSHIP IN ENVIRONMENTAL, ENERGY, AND ECONOMIC PERFORMANCE)

EO 13514 establishes an integrated strategy towards sustainability in the Federal Government and makes reduction of greenhouse gas (GHG) emissions a priority for agencies.

All Federal agencies including DoD must comply with EO 13514 and are required to set year 2020 GHG reduction targets. Unlike the EPA MRR regulation, EO 13514 requires the inventory of GHG emitted from all sources including Scope 1 (direct emission sources), Scope 2 (indirect GHG emission sources including purchased electricity), and Scope 3 (indirect GHG emissions including personnel business travel, personnel commuting, supply chain, and others).

The Office of the Secretary of Defense (OSD) has set aggressive reduction targets for **non-tactical** sources. The 2020 goal for Scope 1 and 2 GHG emission reduction is 34.5 percent based on a FY2008 baseline. A reduction target of 13.5 percent based on a FY2008 baseline for Scope 3 GHG emissions has been established.

FY10 DoD Reporting Strategy

- Develop FY08 baseline and FY10 inventories
 - Combined energy and GHG reporting
 - Service/Agency inventories due to OSD NLT 1/7/11
 - OSD consolidated into DoD-wide inventories and submitted to CEQ

- Prepare inventories at Service HQ level, per DOD EO13514 reporting guidance
 - Minimize GHG data calls to facilities
 - Use centralized data already reported
 - Annual Energy Management Report, Federal Automotive Statistical Tool (FAST), DEPARC, US Census/DoT commuter surveys, etc.
 - Document assumptions and data gaps to improve quality of future reports
 - Report all emissions, including tactical vehicles and overseas facilities
 - Exempt tactical vehicles, related equipment, and some overseas activities from the reduction targets.

Reporting Challenges

- Retroactive reporting of FY08 baseline data
- Late issuance of reporting guidance and spreadsheets to agencies
 - Final CEQ guidance issued 10/6/10
 - Numerous errors in reporting spreadsheet versions
 - Final FEMP reporting spreadsheet (5th revision) issued 12/8/10
 - Final OSD reporting guidance issued 12/23/10
- OSD annual energy management report template inconsistent with FEMP reporting spreadsheets
- DTMO provision of employee air and ground travel information
- Clear delineation of tactical vs. non-tactical fuel consumption data

Major Assumptions

- Types of fuel and energy
 - Fuel oil reported as distillate fuel oil #2
 - Coal reported as bituminous
 - LPG/Propane reported as LPG
 - AVGAS, kerosene-based fuels for fly, non-fly aviation
 - Steam/Hot Water reported as steam produced from natural gas-fired boiler
- Municipal Solid Waste
 - Subset of MSW disposed on-site – 3 active Air Force landfills (Nellis, Vandenberg, Edwards)
 - Balance of waste disposed off-site at local MSW landfills
 - Pre-2003 waste incrementally derived using EPA national MSW data
 - OCONUS not reported

Major Assumptions

- Commuting
 - Using DoT and U.S. Census national surveys and Defense Manpower Personnel Center data
 - Deployed military personnel excluded from commuting totals
 - Considering employee survey for FY11 reporting
- Flight simulators as tactical system
 - Energy use reported for inventory purposes but excluded from GHG reduction target

Data Gaps

- Estimated to comprise less than 1% of total GHG inventory
 - Full accounting of expeditionary fuel use
 - Fluorinated gas procurement from GSA, credit cards, and service contractors
 - Solid waste disposal from facilities generating less than 1 ton per day
 - Refrigerant/solvent use in tactical vs. non-tactical applications
- Employee business travel (air and ground)
 - DTMO provided 12/30/10

FY10 Preliminary Results

- FY20 Scope 1 & 2 emissions (34% reduction target)
 - 5,749,773.1 MT CO₂e target
 - Reduce 2,962,004.3 MT CO₂e (over 12 years)
 - 246,833.7 MT CO₂e per year
 - - 2.83% per year (over 12 years)
 - FY08-FY10: - 6.4% per year
- FY20 Scope 3 emissions (13.5% reduction target)
 - 1,470,863.8 MT CO₂e target
 - Reduce 229,566.8 MT CO₂e (over 12 years)
 - 19,129.7 MT CO₂e per year
 - - 1.13% per year (over 12 years)
 - FY08-FY10: -5.7% per year

Collaboration in Development of GHG Inventory

- Significant collaboration was required to develop FY08 baseline and FY10 annual inventories
- Many organizations played critical roles in the collection and validation of underlying activity data, including:
 - SAF/IEE/IEN
 - AF/A7CAE/A7CAN
 - AF/A4LE
 - AFCESA/CENE/CENR
 - AFELM/VEMSO
 - AFCEE/TDNC/TDNQ
 - SAF/FMC

Next Steps

- Set up a series of meetings with stakeholders
 - Review process and procedures employed in inventory development
 - Validate/update data inputs and inventory assumptions
 - Identify and address data gaps
 - Project target performance given existing/planned actions
 - Document process, procedures and lessons learned in Air Force guidance
- Continued SAF/IEE participation with OSD in EO 13514 Section 9 Workgroup, DoD GHG Working Group

CONCLUSION

In October 2009, two new significant U.S. government initiatives were launched for the management of GHGs from major sources. These initiatives, the MRR regulation and EO13514

have significantly different requirements, but both aim at beginning the systematic management of the U.S. carbon footprint.

The MRR requires the annual reporting of GHG emissions from specific stationary sources. Annual reporting is required only of installations (facilities) that have GHG emissions greater than 25,000 metric tons of CO₂e. Reporting under MRR is based on calendar years with the first report due to EPA on 31 March 2011 for CY2010 emissions. The purpose of the MRR is to obtain GHG emission data from large sources to support future climate change policies.

EO 13514 requires all Federal agencies to report GHG emissions starting in FY2010. All GHG emissions categorized as Scope 1, 2, and 3 are to be calculated. This is contrasted with the MRR regulation as discussed in the preceding paragraph, which includes public and private sector facilities but is more limited in the scope of emissions reported. All Federal agencies were required to estimate FY2008 GHG emissions which represent the baseline year. In addition to preparing a GHG emission inventory, EO 13514 also requires all Federal agencies to establish GHG emission reduction targets to be achieved by FY2020. The EO 13514 drives reduction of GHG emissions by U.S. federal agencies which in turn will result in reductions in energy usage.

REFERENCES

40 Code of Federal Regulations (CFR) Part 98. Published in Federal Register on 30 October 2009.

www.epa.gov/climatechange/emissions/ghgrulemaking.html

Email: GHGMRR@epa.gov

Executive Order 13514. Federal Register, Vol. 74, No. 194. Pages 52117-52127. 8 October 2009.

DISCLAIMER

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