

EPA Climate Leaders Workshop

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GHG Reporting: Getting Started

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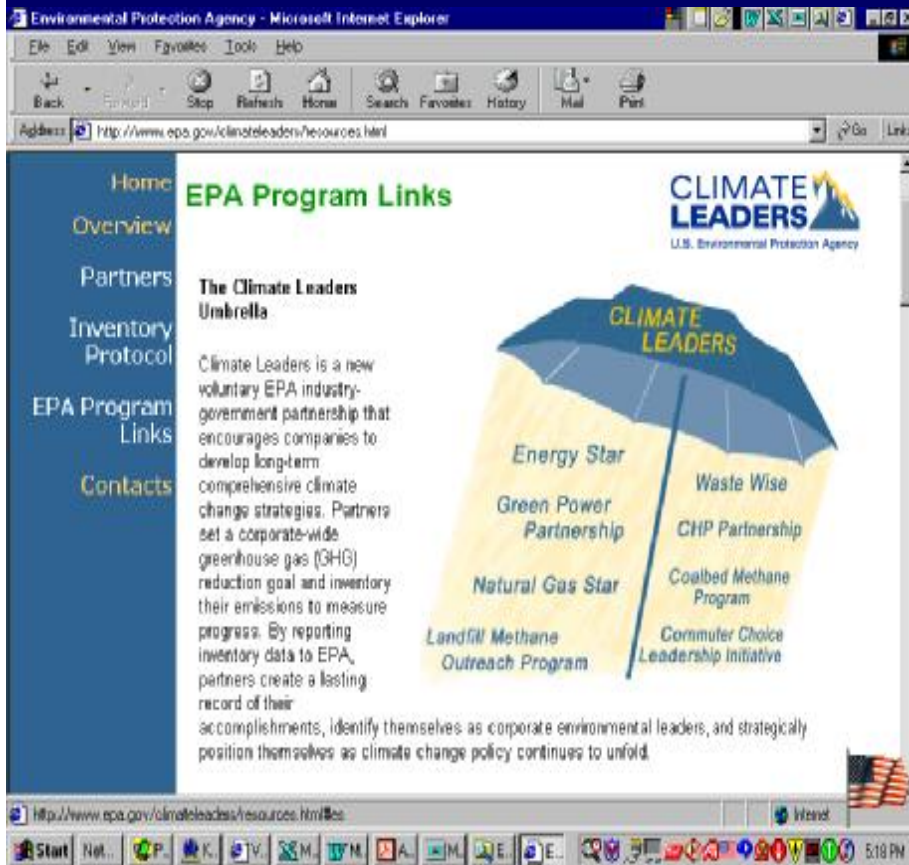
Outline

- ✓ Approach to Voluntary GHG Reductions
 - ✓ Member Examples
- ✓ Approach to Voluntary GHG Reporting

Approach to Voluntary GHG Reductions

Federal Voluntary Program Examples

EPA



Environmental Protection Agency - Microsoft Internet Explorer


Address: <http://www.epa.gov/climateleaders/resources.html>

EPA Program Links

CLIMATE LEADERS
U.S. Environmental Protection Agency

The Climate Leaders Umbrella

Climate Leaders is a new voluntary EPA industry-government partnership that encourages companies to develop long-term comprehensive climate change strategies. Partners set a corporate-wide greenhouse gas (GHG) reduction goal and inventory their emissions to measure progress. By reporting inventory data to EPA, partners create a lasting record of their accomplishments, identify themselves as corporate environmental leaders, and strategically position themselves as climate change policy continues to unfold.



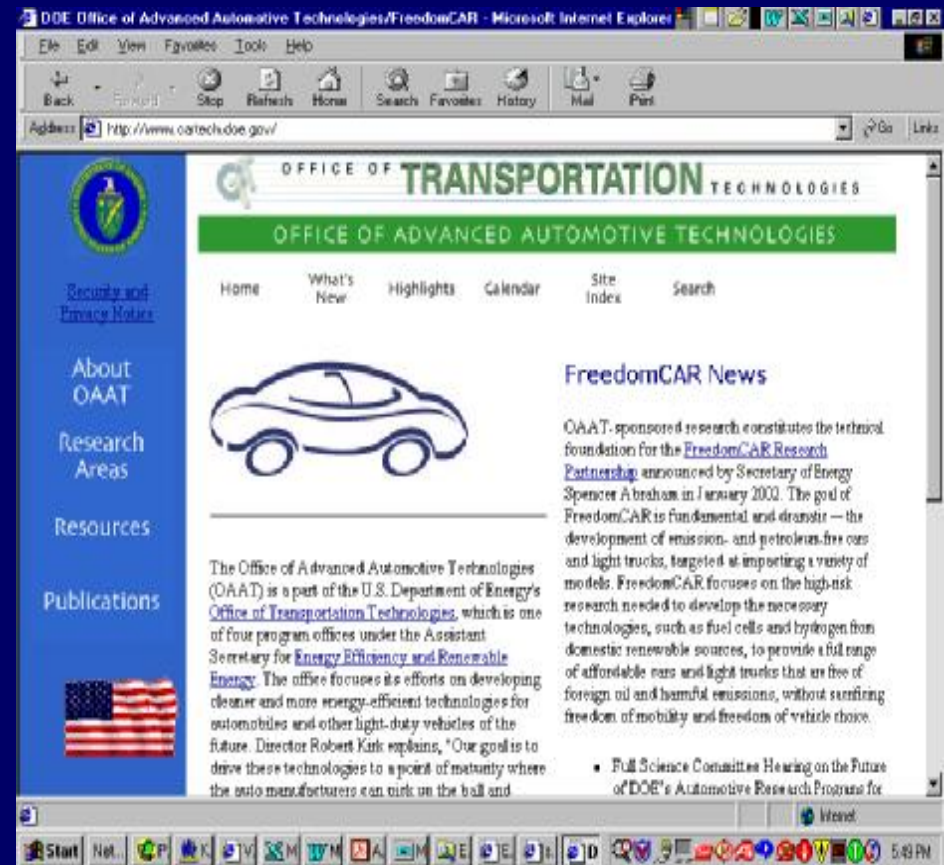
The diagram shows a blue umbrella with 'CLIMATE LEADERS' written on it. Inside the umbrella, the following programs are listed:

- Energy Star
- Green Power Partnership
- Natural Gas Star
- Landfill Methane Outreach Program
- Waste Wise
- CHP Partnership
- Coalbed Methane Program
- Commuter Choice Leadership Initiative

Navigation menu: Home, Overview, Partners, Inventory Protocol, EPA Program Links, Contacts

Taskbar: Start, Net., P, K, TV, M, WM, A, M, E, E, 5:18 PM

DOE




DOE Office of Advanced Automotive Technologies/FreedomCAR - Microsoft Internet Explorer

Address: <http://www.oattech.doe.gov/>

OFFICE OF TRANSPORTATION TECHNOLOGIES
OFFICE OF ADVANCED AUTOMOTIVE TECHNOLOGIES

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FreedomCAR News

OAAAT sponsors research that constitutes the technical foundation for the [FreedomCAR Research Partnership](#) announced by Secretary of Energy Spencer Abraham in January 2002. The goal of FreedomCAR is fundamental and dramatic — the development of emission- and petroleum-free cars and light trucks, targeted at importing a variety of models. FreedomCAR focuses on the high-risk research needed to develop the necessary technologies, such as fuel cells and hydrogen from domestic renewable sources, to provide a full range of affordable cars and light trucks that are free of foreign oil and harmful emissions, without sacrificing freedom of mobility and freedom of vehicle choice.

The Office of Advanced Automotive Technologies (OAAAT) is a part of the U.S. Department of Energy's [Office of Transportation Technologies](#), which is one of four program offices under the Assistant Secretary for [Energy Efficiency and Renewable Energy](#). The office focuses its efforts on developing cleaner and more energy-efficient technologies for automobiles and other light-duty vehicles of the future. Director Robert Kirk explains, "Our goal is to drive these technologies to a point of maturity where the auto manufacturers can pick up the ball and..."

Navigation menu: Home, What's New, Highlights, Calendar, Site Index, Search

Left sidebar: Security and Privacy Notice, About OAAAT, Research Areas, Resources, Publications

Taskbar: Start, Net., P, K, TV, M, WM, A, M, E, E, 5:48 PM

Examples of Voluntary GHG Reduction Programs that 'Work'

Example: (EPA LMOP)

GM is using methane gas at its Fort Wayne Assembly Plant collected from decaying garbage at Serv-All's landfill. Toro Energy installed the collection system and over eight miles of piping required to transport the gas to the plant's boilers.

The savings amounted to \$140 million in 2001 compared to 1995 levels and contributed directly to GM's bottom line.



Car Assembly Orion

- Orion Landfill Gas Project reduces coal use by 65% and produces 553,000 mmBtu's (27% of it's energy needs at the facility)
- Orion recycles approximately 50 percent of all the waste it generates.

Examples: (EPA Energy Star)



New Computerized Energy Management Systems Installed in eleven GM Facilities have achieved **more than \$3.6 million in annual savings.**

GM has also implemented a program called the **Energy Efficiency Initiative** taking responsibility directly to the plant floor which, in its first three years, has saved a total of **1.9 TWh of electricity and 2.8 TBTU of fuel.**

GM's Powertrain Metal Castings Operation has reduced Energy Usage by over **21 million kWh/year** by reducing **compressed air leakages.**

Examples: (EPA GreenLights)

Conversion from T-12 to T-8 Fluorescent lighting in GM North American Facilities typically saves 10 million kWh/year (5% of a plants energy usage.)

Up-front costs are returned in energy savings within 2 years.

Performance Contracting through a 3rd party can return a portion of the savings back to project immediately



Example: (EPA Waste Wise)

**GM has reduced non-recycled non-product
Output (waste) by 54% across
North America over the past
five years (1997-2001)**

**CO₂e reduced in 2001 due to GM's
Waste Reduction/ Recycling and reuse program
Totalled approximately 5.5 million
Metric tons CO₂e Reduced**

Approach to Voluntary GHG Reporting

- ✓ Key Aspects of Getting Started
- ✓ GHG Reporting Protocol
 - ✓ What data should you track?
 - ✓ How should you track your data?
 - ✓ Where to report?
- ✓ Specific Reporting Issues

Key Aspects of Getting Started:

- ✓ Why are we doing this? (Policy Toward Practice)

Energy Reduction = CO2 Reduction = Cost Reduction

- ✓ **TEAMWORK: Policy, Facilities Management, Employees**
 - Site Utility Managers and Engineers (meter readings)
 - Employee Awareness and Action (energy and waste)
- ✓ How to Reduce Energy Consumption?
 - First determine how much energy is being consumed monthly/annually.
 - Manufacturing Facilities and Office Buildings should collect energy bills, water usage bills, and purchased electricity bills

What to Track

Total Energy Usage For U.S. Operations				
(in trillions of BTUs - 10¹²)				
Fuel			2000	2001
NATURAL GAS			44.34	40.37
LANDFILL GAS			0.64	0.64
LPG			0.06	0.02
COAL			6.36	4.36
PURCH STEAM			0.42	1.27
COKE			3.33	2.79
DISTILLATE OIL			1.01	1.12
SOLID WASTE			0.09	0.07
LIQUID WASTE			0.04	0.03
ELECTRICITY			30.03	28.47
Total 10¹² BTU			86.38	79.18
Emissions - CO2 million metric tons				
Indirect (from electricity)			6.731	6.395
Direct			3.404	3.126
Total			10.135	9.521
% Indirect			66.4%	67.2%
			62.2%	63.0%
Emissions per vehicle				
Vehicles produced			4,260,181	3722906
CO2 metric tons/veh			2.379	2.557
CO2 m-tons per			0.1173	0.1203
MMBTU			0.1171	0.1173
Updated: 05/30/2002				

From BTU to CO2

Emission Factors			Metric-Ton CO2	
Fuel	# CO2/UNIT	Metric	per unit	Metric
NATURAL GAS	120,593	million cubic feet	0.0547	MCF
LANDFILL GAS	115.258	million BTU	0.05228	million BTU
PROPANE	12,669	thousand gallons	0.00575	gallon
COAL	4,931.3	short-ton	2.237	short-ton
PURCH STEAM	205.3	million BTU	0.09312	million BTU
COKE	4,931.3	short-ton	2.237	short-ton
DISTILLATE OIL	22,384	thousand gallons	0.01015	gallon
SOLID WASTE	221.943	million BTU	0.1007	million BTU
LIQUID WASTE	221.943	million BTU	0.1007	million BTU
ELECTRICITY*	0.731	metric-ton /megawatt-hour	0.731	metric-ton /megawatt-hour
2000 Updated	0.765	metric-ton /megawatt-hour	0.765	metric-ton /megawatt-hour
2000 CANADA	0.19	metric-ton /megawatt-hour	0.19	metric-ton /megawatt-hour
2000 MEXICO	0.765	metric-ton /megawatt-hour	0.765	metric-ton /megawatt-hour
The above emission factors, except electricity, are from Appendix B, Form EIA-1605 Instructions - 2000.				
* The electricity emission factor of 0.765 metric tons of CO2 per megawatt-hour is based on a weighted average of GM's 2000 electricity usage for individual states and the state's electricity emission factor listed in Appendix C, Form EIA-1605 Instructions - 2000.				
INDUSTRIAL METHANE IS NEGLIGIBLE COMPARED TO RESIDENTIAL WOOD BURNING				
INDUSTRIAL N2O IS NEGLIGIBLE				
Note: GM's Calculation of Landfill Gas CO2 does not include any potential offsets at the landfill.				
Note: Factors for Purchased Steam, Solid Waste, Liquid Waste must be multiplied by the BTU column to calculate CO2. The other fuels multiple the units column to calculate CO2				

Web-Based Data Collection: GM Example

The screenshot shows a Microsoft Internet Explorer browser window with the title "GM 2100 - Microsoft Internet Explorer". The address bar contains the URL "https://www.gm2100.com/system/GM_LogOn.asp". The main content area features the GM 2100 logo at the top, followed by the text "Welcome to GM2100 Global Utilities Information System". Below this, it prompts the user to "Enter your User ID and Password to login". There are two input fields: "User ID:" and "Password:", with a "Login" button to the right of the password field. A link is provided for users without a User ID: "No User ID? [Click here](#) to request one." At the bottom of the page, there is a note: "Best Viewed in 1024 x 768 using Microsoft IE5 or Netscape Navigator 4.7" and "Copyright EnTech Utility Service Bureau Inc.2002". A troubleshooting section asks "Problems logging on?" and provides contact information: "Call 1-866-GMH-2100 (1-866-464-2100) from the USA or +44 20 7427 2714 from other countries". The browser's taskbar at the bottom shows the Start button and several open applications, including "Palm...", "Mail...", "Mic...", "GM...", "ET 1...", "Boar...", and "GM ...". The system clock shows "1:10 PM".

*Data Input and GHG
Calculation Spreadsheets*

Backup Slides

Specific Reporting Issues:

National Reporting System

1. A coordinated voluntary National Reporting System avoids the following:
 - ✓ multiple state-level reports (e.g. GM would be required to file 30 reports annually vs. one report)
 - ✓ potential proliferation of non-uniform reporting approaches
 - ✓ revealing competitive information, especially in those states with only one facility

Specific Reporting Issues: (continued)

State-Level Initiatives

2. Industry should participate in voluntary programs sponsored by the DOE, EPA and others, which share 'best practices' that translate into energy and CO₂ reductions backed by a strong business case. States should also support joint research programs between Industry and the federal government on technologies to reduce ghg emissions.

CO₂ Regulation in the States

There are several major trends among states to encourage carbon dioxide emission reduction. These trends include:

- ✓ **Action Plans: 19 states (AL, CA, CO, DE, HI, IL, IA, KY, ME, MT, NH, NJ, NC, OR, PA, RI, TN, UT, VT, WA, WI)**
- ✓ **Emissions Inventories: 37 states**
- ✓ **Emissions Registries: 8 states (CA, IL, ME, NH, NJ, TX, WI, VT)**
- ✓ **International Agreements: 7 states (CT, ME, MA, NH, RI, VT, and NJ)**
- ✓ **Mobile Emissions: 1 state (CA)...NY??**
- ✓ **RPS: 11 states (AL, AZ, CA, CT, ME, MA, MN, NV, NJ, TX, VT)**
- ✓ **Emissions Portfolios: 2 states (AZ, MA)**
- ✓ **Source Labeling and Disclosure: 8 states (CA, IL, ME, MA, NV, NH, NJ, PA)**
- ✓ **Direct Limits on CO₂ Emissions: 4 states (CA-mobile, OR-new plants, MA-old plants, NH-old plants), 1 county (Suffolk County NY-old plants)**

Specific Reporting Issues: (continued)

Verification and Certification

3. Internal verification and certification of data by a registered Professional Engineer (P.E.), a Ph.D. or an officer of the company should be permitted.
 - ✓ 3rd Party Certification should not be required at the time of reporting

Specific Reporting Issues: (continued)

Management Control

4. 100% of GHG emissions should be reported for those facilities under management control rather than reporting a portion of emissions based on equity share. *Management Control means at least 50% equity position, at least 50% representation on the Board and/or management of the operation:*
 - ✓ Full Ownership Implies Management Control: Report all Emissions
 - ✓ Joint Ownership: Report if under Management Control. Partners should determine, up-front, who will be reporting to avoid double counting.
 - ✓ Leased: Report if greater than 0.1% of annual facility total CO₂ emissions (or more than 30,000 metric tons CO₂ per year)

Specific Reporting Issues: (continued)

Mobile Source GHG Emissions

5. Mobile Source GHG Emissions for Company Operations (e.g. Categories I-IV shown in the following example) should be reported only if the Operation is under management control and, Accurate, Verifiable Data are both available and proven to be above 5% of the baseline.

A GHG registry must maintain high data integrity standards and minimum thresholds. GM has conducted an analysis on categories I-IV and has determined all but category II data are too inaccurate to report. Category II data are de minimus (less than 1% of baseline).

Analysis of GHG Emissions Reporting: GM - U.S. Example

A GHG Analysis was Conducted to Evaluate the Contribution of CO2 Emissions from the Following Categories of Mobile Source Emissions for U.S. Operations:

- I. **Employee Business Travel: (No accurate data available)**
Rental Vehicle Mileage, Airline Travel Mileage
- II. **Company Owned Vehicles:**
(Calculations based on annual fuel usage. Annual totals are de minimis)
- III. **Freight Transport: Delivery of Parts to Assembly Facilities**
(No accurate data available)
Rail Mileage, Transport Mileage
- IV. **Freight Transport: Delivery of Vehicles to Dealerships**
(No accurate data available)
Rail Mileage, Vehicle Carrier Mileage

Limitations of Reporting the Information Above:

- Limited Availability of U.S. Data [global data will be even more difficult to acquire]
- Low level of Accuracy of U.S. Data [global data will be even less accurate]
- Time and Costs Associated with Collection and Reporting of this Type of Data
- Lack of Ownership of Transportation Modes for Items I, III, IV

Specific Reporting Issues: (continued)

Indirect Electricity Emissions

6. Report Indirect Electricity Emissions based on a weighted average of state electricity usage and state electricity emission factors for a designated year. The weighted average emissions factor for electricity should be held constant over all reporting years to eliminate a variable outside of the control of the reporting entity unless a 'recordable' shift in electricity mix has occurred by the reporting entity.

Specific Reporting Issues: (continued)

EIA emission factors

7. Use EIA emission factors for all fuels used in the U.S. except landfill gas and renewable electricity.
 - ✓ Use an emissions factor of zero for landfill gas and other renewable energy sources to reflect the effect of offsetting emissions from conventional energy sources.

Refrigerant Usage

8. Report all annual purchases of refrigerants for facility and factory fill applications (i.e. CFC's, HFC's, HCFCs).

Specific Reporting Issues: (continued)

Absolute vs. Normalized Data

9. The national registry should be flexible to allow a reporting company to submit either absolute or normalized data.

Reductions and Carbon Sequestration from Projects

10. The national registry should comprehend all national and international projects achieving emission reductions and carbon sequestration.

Specific Reporting Issues: (continued)

Goals for Reporting

11. Transparency, Accuracy, Verifiability, Baseline Protection, and the Ability to Audit and Track Energy Usage and Emissions Reductions.

GHG Reporting Policy Statement

**MONITOR AND REPORT
GHG EMISSIONS
THAT CAN BE RELIABLY USED TO MANAGE
BUSINESS OPERATIONS**

How to Help Local Companies Achieve Meaningful Reductions in GHG Emissions and Prepare for the Future

- ✓ Support Existing Voluntary Initiatives at the Local or Industry Level
- ✓ Support Trade Organizations that are taking the Charge to help Industry "Get Started" (i.e. BRT, USCPA)
- ✓ Support Voluntary Reporting of GHG Emissions Programs sponsored by the DOE, EPA and others, which share 'best practices' that translate into energy and CO₂ reductions backed by a strong business case. States should also support joint research programs between Industry and the federal government on technologies to reduce ghg emissions.