

# Simplified Emissions Inventory Tool (SEIT) Calculation Workbook

**Version 1.0 (July 2006) - DRAFT**  
**Voluntary Reporting of Greenhouse Gases Program**  
**Energy Information Administration**  
**U.S. Department of Energy**

## Instructions

**Small Emitter Determination.** This sheet is intended to help you quickly determine your entity's eligibility to report and or register as a "small emitter" under the 1605(b) Program. Small emitters are defined as those entities that emit less than 10,000 metric tons of carbon dioxide equivalent (CO<sub>2</sub>e) per year.

To determine if you are a Small Emitter, enter activity data in the empty unshaded (white) cells below, and, when applicable, also choose your activity data units. Total emissions will be calculated and automatically summed at the bottom. A message will indicate whether you are eligible to report as a Small Emitter, or required to report as a Large Emitter.

*Note that the following Entity types automatically qualify as a Small Emitter and need not complete this workbook:*

- Residential - Households with fewer than 10 persons, 5 light-duty vehicles, less than 20,000 sq.ft. or 100 acres.
- Commercial Office Space - less than 100,000 square feet of total space, with no manufacturing, energy distribution, or materials processing and less than 1,000 acres of land
- Single Activity Farms:
 

Dairy operations (< 2,500 head)	Other livestock operations [TBD]
Beef operations (< 5,000 head)	Crop Production [TBD]
Rice production (< 3,300 acres)	Forest activities [TBD]

**De Minimis Emissions.** You may also use this workbook to identify de minimis emissions. The workbook will automatically calculate each sources' percentage of total emissions in the column T. Any that meet the de minimis requirement of 3% or less will be highlighted in red.

Click to jump to a specific section in this workbook:

- [Indirect Purchased Electricity](#)
- [Indirect Purchased Heat](#)
- [Stationary Fuel Combustion](#)
- [Mobile Fuel Combustion](#)
- [Industrial Processes](#)
- [Process Emissions \(Coal Mining\)](#)
- [Process Emissions \(Oil and Gas\)](#)
- [Process Emissions \(Waste & Wastewater\)](#)
- [Process Emissions \(High GWP Gases\)](#)
- [Agriculture](#)
- [Deforestation](#)

## Data Inputs, Subtotals, and Totals

### INDIRECT EMISSIONS: Purchased Electricity

	Enter Activity Data	Unit of Measure	Emission Factors	Emissions (MT CO <sub>2</sub> e)	% of Total Emissions
Electricity (Total Purchases)		MWh	0.654 MT CO <sub>2</sub> e per MWh	0.0	

### INDIRECT EMISSIONS: Purchased Heat, Steam, and Chilled Water

	Enter Activity Data	Select Unit of Measure	Emission Factors	Emissions (MT CO <sub>2</sub> e)	% of Total Emissions
Steam		<input type="radio"/> MMBtu	0.606	0.0	
Hot water		<input type="radio"/> MWh	0.606 MT CO <sub>2</sub> e per Unit	0.0	
Chilled water			0.606	0.0	

### DIRECT EMISSIONS: Stationary Fuel Combustion:

Petroleum Products	Enter Activity Data	Select Unit of Measure	Emission Factors	Emissions (MT CO <sub>2</sub> e)	% of Total Emissions
Distillate Fuel (No.1, No. 2, No. 4 Fuel Oil), home heating Oil & Diesel Fuel				0.0	
Heavy Fuel Oil (No. 5 and No. 6 Fuel Oil), bunker fuel				0.0	
Kerosene				0.0	
LPG				0.0	

Jet Fuel (Jet A, JP-8)		Units: <input type="text"/>		kg CO2 per Unit	0.0	
Propane					0.0	
Ethane					0.0	
Isobutane					0.0	
n-Butane					0.0	

Natural Gas	Enter Activity Data	Select Unit of Measure	Emission Factors	Emissions (MT CO2e)	% of Total Emissions
975-1000 HHV (Btu/scf)		Units: <input type="text"/>	kg CO2 per Unit	0.0	
1000-1025 HHV (Btu/scf)				0.0	
1025-1050 HHV (Btu/scf)				0.0	
1050-1075 HHV (Btu/scf)				0.0	
1075-1100 HHV (Btu/scf)				0.0	

Coal (Enter activity data either by Coal Type or by Sector)	Enter Activity Data	Select Unit of Measure	Emission Factors	Emissions (MT CO2e)	% of Total Emissions
Coal Type - Bituminous		Units: <input type="text"/>	kg CO2 per Unit	0.0	
Coal Type - Anthracite				0.0	
Coal Type - Sub-Bituminous				0.0	
Coal Type - Lignite				0.0	
Sector (Electric Power)				0.0	
Sector (Industrial Coking)				0.0	
Sector (Other Industrial)				0.0	
Sector (Residential/Commercial)		0.0			

Other Fuels	Enter Activity Data	Select Unit of Measure	Emission Factors	Emissions (MT CO2e)	% of Total Emissions
Tires		Units: <input type="text"/>	kg CO2 per Unit	0.0	
MSW				0.0	
Other (Insert Here)				0.0	

Wood	Enter Activity Data	Unit of Measure	Emission Factors	Emissions (MT CO2e)	% of Total Emissions
Wood Residue (industrial)		MMBtu	2,191.9 kg CO2e per MMBtu	0.0	
Conventional Wood Stove (non-catalytic)		Units: <input type="text"/>	kg CO2e per Unit	0.0	
Wood Stove (non-catalytic)				0.0	
Wood Stove (catalytic)				0.0	
Residential Fireplace				0.0	
Charcoal Manufacture				0.0	

**DIRECT EMISSIONS: Mobile Fuel Combustion - Use either the Distance Traveled method or the Fuel Consumption method.**

**Mobile Fuel Combustion - Distance Traveled Method**

Gasoline Vehicles	Enter Activity Data	Select Unit of Measure	Emission Factors	Emissions (MT CO2e)	% of Total Emissions
<b>Passenger Cars</b>		Distance Traveled <input type="radio"/> Miles <input type="radio"/> Kilometers	kg CO2e per Unit		
Model Years 1984-1993				0.465	0.0
Model Year 1994				0.447	0.0
Model Year 1995				0.442	0.0
Model Year 1996				0.440	0.0
Model Year 1997				0.427	0.0
Model Year 1998				0.407	0.0
Model Year 1999				0.406	0.0
Model Year 2000				0.404	0.0
Model Years 2001-Current Year				0.384	0.0
<b>Light-Duty Trucks</b>					
Model Years 1987-1993		0.583	0.0		
Model Year 1994		0.560	0.0		
Model Year 1995		0.554	0.0		
Model Year 1996		0.551	0.0		

Model Year 1997		<input type="radio"/> Kilomete	0.534		0.0	
Model Year 1998			0.532		0.0	
Model Year 1999			0.531		0.0	
Model Year 2000			0.531		0.0	
Model Year 2001 - Current Year			0.527		0.0	
<b>Heavy-Duty Vehicles</b>						
Model Years 1985-1986			1.494		0.0	
Model Year 1987			1.502		0.0	
Model Year 1988-1989			1.505		0.0	
Model Year 1990-1995			1.510		0.0	
Model Year 1996			1.521		0.0	
Model Year 1997			1.522		0.0	
Model Year 1998			1.521		0.0	
Model Year 1999			1.520		0.0	
Model Year 2000			1.518		0.0	
Model Year 2001 - Current Year			1.519		0.0	
<b>Diesel Vehicles</b>						
<b>Passenger Cars</b>						
Model Years 1966 - Current Year			0.386		0.0	
<b>Light-Duty Trucks</b>						
Model Years 1966 - Current Year			0.620		0.0	
<b>Heavy-Duty Vehicles</b>						
Model Years 1966-1982		<input type="radio"/> Miles	1.324	kg CO2e per Unit	0.0	
Model Years 1983-1995		<input type="radio"/> Kilometers	1.323		0.0	
Model Years 1996 - Current Year			1.323		0.0	
<b>U.S. Motorcycles</b>						
Model Years 1966-1995			0.160		0.0	
Model Years 1996 - Current Year			0.155		0.0	
<b>Methanol Vehicles (M85)</b>						
	<b>Enter Activity Data</b>	<b>Select Unit of Measure</b>	<b>Emission Factors</b>		<b>Emissions (MT CO2e)</b>	<b>% of Total Emissions</b>
Light Duty			0.298		0.0	
Heavy Duty			2.054		0.0	
Buses			0.593		0.0	
<b>Ethanol Vehicles (E85)</b>						
Light Duty			0.014		0.0	
Heavy Duty			2.568		0.0	
Buses			3.199		0.0	
<b>CNG Vehicles</b>						
Light Duty		<input type="radio"/> kilomete	0.650	kg CO2e per Unit	0.0	
Heavy Duty		<input type="radio"/> miles	13.012		0.0	
Buses			8.537		0.0	
<b>LNG Vehicles</b>						
Heavy Duty			12.792		0.0	
<b>LPG Vehicles</b>						
Light Duty			0.663		0.0	
Heavy Duty			1.187		0.0	
<b>Non-Highway Vehicles</b>						
	<b>Enter Activity Data</b>	<b>Select Unit of Measure</b>	<b>Emission Factors</b>		<b>Emissions (MT CO2e)</b>	<b>% of Total Emissions</b>
U.S. Ocean-Going Ships			5.330		0.0	
U.S. Boats		<b>Distance Traveled</b>	5.332		0.0	
U.S. Locomotives		<input type="radio"/> kilomete	5.350	kg CO2e per Unit	0.0	
U.S. Farm Equipment		<input type="radio"/> miles	5.525		0.0	
U.S. Construction and Industrial Equipment			5.288		0.0	
U.S. Jet and Turboprop Aircraft			5.068		0.0	
U.S. Gasoline Aircraft			6.262		0.0	

**Mobile Fuel Combustion - Fuel Consumption Method**

Transportation Fuel	Enter Activity Data	Select Unit of Measure	Emission Factors	Emissions (MT CO2e)	% of Total Emissions
Aviation Gasoline			8.2	0.0	
Biodiesel/Biodiesel Blends					
- B100			0.0	0.0	
- B20			8.0	0.0	
- B10			9.0	0.0	
- B5			9.5	0.0	
- B2			9.8	0.0	
Diesel Fuel (No.1 and No. 2)			10.0	0.0	
Ethanol/Ethanol Blends					
- E100			0.0	0.0	
- E85			1.3	0.0	
- E10 (Gasohol)			7.9	0.0	
Motor Gasoline			8.8	0.0	
Jet Fuel, Kerosene			9.5	0.0	
Natural Gas				0.0	
Propane			5.7	0.0	
Residual Fuel (No. 5 and No. 6 Fuel Oil)			11.7	0.0	

- Select Units
- Gallons
  - Barrels
  - MMBtu
  - Mcf (thousand Cu
  - Liters

kg CO2 per Unit

**PROCESS EMISSIONS: Industrial Processes**

Aluminum Production	Enter Activity Data	Emission Factors	Emissions (MT CO2e)	% of Total Emissions
CO2 and PFC Emissions	MT product	14.65 MT CO2e per MT product	0.0	
SF6 Emissions	kg SF6 purchased	22.200 Kg CO2e per Kg SF6	0.0	
<b>Lime Production</b>				
High Calcium Lime		0.75	0.0	
Dolomitic Lime	MT product	0.86 MT CO2e per MT product	0.0	
Hydraulic Lime		0.59	0.0	
<b>Limestone Use</b>				
Limestone	MT consumed	0.477 MT CO2e per MT product consumed	0.0	
Dolomite		0.440	0.0	
<b>Semiconductor Manufacture</b>				
CF4 Use		4,560	0.0	
C2F6 Use		9,163	0.0	
HFC-23 (CHF3) Use	MT consumed	3,600 MT CO2e per MT product consumed	0.0	
C3F8 Use		4,128	0.0	
c-C4F8 Use		3,000	0.0	
SF6 Use		11,000	0.0	
<b>Other Processes</b>				
Adipic Acid Production		24.86	0.0	
Ammonia Production		1.26	0.0	
Cement Production		0.50	0.0	
Hydrogen Production	Seeking more detailed method		0.0	
Iron and Steel Production	MT product	1.75 MT CO2e per MT product	0.0	
Methanol Production		0.05	0.0	
Nitric Acid Production (With NSCR*)		0.59	0.0	
Nitric Acid Production (Without NSCR*)		2.81	0.0	
Soda Ash Production		0.097	0.0	
Soda Ash Use	MT consumed	0.415 MT CO2e per MT product consumed	0.0	
Magnesium Production	kg SF6 purchased	22,200 MT CO2e per MT SF6	0.0	
Other (Insert Here)	MT product		0.0	
Carbon Black Production		253.00	0.0	

Ethylene Production		MT product	23.00	Kg CO2e per MT product	0.0
Ethylene Dichloride Production			9.20		0.0
Styrene Production			92.00		0.0

\*NSCR - Non-Selective Catalytic Reduction Controls

**PROCESS EMISSIONS: Coal Mine Methane - Underground Mines**

Enter Activity Data		Emission Factors		Emissions (MT CO2e)	% of Total Emissions
Direct Measurement - Mines with Detectable Emissions		MT CH4 emitted	23	MT CO2e per MT CH4	0.0
Underground Mines without Detectable Emissions		cubic feet CH4 ventilated per minute	114.60	annual MT CO2e per cubic feet CH4 ventilated per minute (average)	0.0
Degasification Emissions		MT CH4 ventilated from degasification	38.333	MT CO2e emitted per MT CH4 ventilated from degasification	0.0

**PROCESS EMISSIONS: Coal Mine Methane - Surface Mines and Post-Mining Operations**

Select Region	Select Coal Category	Enter Activity Data	Emission Factors	Emissions (MT CO2e)	% of Total Emissions
			#N/A	0.0	
			#N/A	0.0	
			#N/A	0.0	
			#N/A	0.0	
			#N/A	0.0	
			#N/A	0.0	
			#N/A	0.0	
			#N/A	0.0	
			#N/A	0.0	

**PROCESS EMISSIONS: Oil and Gas Industries**

Wells	Enter Activity Data	Unit of Measure	Emission Factors	Emissions (MT CO2e)	% of Total Emissions
Drilling		No. of wells drilled	0.01	MT CO2e per no. of wells drilled	0.0
Testing			11.93		0.0
Servicing		No. producing and capable wells	1.47	MT CO2e per no. producing and capable wells	0.0

**Gas Production**

Gas Production	Fugitives	Million cubic meters gas produced	63.35	MT CO2e per million m3 gas production	0.0
Gas Production	Flaring		2.06		0.0

**Gas Processing**

Sweet Gas Plants	Fugitives	Million cubic meters gas receipts	20.27	MT CO2e per million m3 gas receipts	0.0
	Flaring		2.41		0.0
Sour Gas Plants	Fugitives		4.88		0.0
	Flaring		5.28		0.0
Sour Gas Plants - Raw CO2 Venting			71.00		0.0
Deep-Cut Extraction Plants	Fugitives		0.23		0.0
	Flaring		1.12		0.0

**Gas Transmission and Storage**

Transmission	Fugitives	km of transmission pipeline	57.52	MT CO2e per km of transmission pipeline	0.0
	Venting		23.01		0.0
Storage		Million cubic meters gas withdrawals	53.25	MT CO2e per million m3 gas withdrawals	0.0

**Gas Distribution**

Gas Distribution		km of distribution mains	14.15	MT CO2e per km of distribution mains	0.0
<b>Natural Gas Liquids Transport</b>					
Condensate and Pentanes Plus		Thousand cubic meters	2.54	MT CO2e per thousand m3 condensate and pentanes	0.0
Liquefied Petroleum Gas			0.43	MT CO2e per thousand m3 lpg	0.0
<b>Oil Production</b>					
Conventional Oil	Fugitives	Thousand cubic meters	33.62	MT CO2e per thousand cubic meters produced	0.0
	Venting		31.78		0.0
	Flaring		70.35		0.0
Heavy Oil	Fugitives		81.72		0.0
	Venting		552.05		0.0
	Flaring		52.01		0.0
Crude Bitumen	Fugitives		2.42		0.0
	Venting		23.12		0.0
	Flaring		24.10		0.0
Synthetic Crude (from Oilsands)		52.90		0.0	
<b>Oil Transportation</b>					
Pipelines		Thousand cubic meters	0.12	MT CO2e per thousand m3 oil transported by pipeline	0.0
Tanker Trucks and Rail Cars	Venting		0.58	MT CO2e per thousand m3 oil transported by tanker	0.0

**PROCESS EMISSIONS: Waste and Wastewater**

Domestic Wastewater		Enter Activity Data	Emission Factors	Emissions (MT CO2e)	% of Total Emissions
Domestic Wastewater		No. of people generating waste (population)	0.073	MT CO2e per person in population area	0.0
<b>Industrial Wastewater</b>					
Pulp and Paper		MT product	782.00	MT CO2e per MT product consumed	0.0
Meat and Poultry			1,225.90		0.0
Fruits and Juices			644.00		0.0
Vegetable Oil			11.04		0.0
Other			2,833.60		0.0
<b>Landfill Methane</b>					
Landfill Methane		MT municipal solid waste (MSW) in landfill	678.99	MT CO2e per total MT MSW in landfill	0.0

**PROCESS EMISSIONS: HCFC-22 Production**

HFC-23 emissions from HCFC-22 Production		Enter Activity Data	Emission Factors	Emissions (MT CO2e)	% of Total Emissions
HFC-23 emissions from HCFC-22 Production		MT HCFC-22 produced	480.00	MT CO2e per MT HCFC-22 produced	0.0

**PROCESS EMISSIONS: Other Industrial Use of Hydrofluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride**

HFCs		Enter Activity Data	Emission factors	Emissions (MT CO2e)	% of Total Emissions
HFC-23 (trifluoromethane)		MT product consumed (and not recovered)	12,000	MT CO2e per MT product consumed	0.0
HFC-125 (pentafluoroethane)			3,400		0.0
HFC-134 (1,1,2,2-tetrafluoroethane)			1,100		0.0
HFC-134a (1,1,1,2-tetrafluoroethane)			1,300		0.0
HFC-143 (1,1,2-trifluoroethane)			330		0.0
HFC-143a (1,1,1-trifluoroethane)			4,300		0.0
HFC-152 (1,2-difluoroethane)			43		0.0
HFC-152a (1,1-difluoroethane)			120		0.0
HFC-161 (ethyl fluoride)			12		0.0
HFC-227ea (heptafluoropropane)			3,500		0.0
HFC-236cb (1,1,1,2,2,3-hexafluoropropane)			1,300		0.0
HFC-236ea (1,1,1,2,3,3-hexafluoropropane)			1,200		0.0
HFC-245fa (1,1,1,3,3-pentafluoropropane)			9,400		0.0

HFC-365mfc (pentafluorobutane)			890		0.0
HFC-45-10mee (decafluoropentane)			1,500		0.0
<b>PFCs</b>					
Perfluoromethane			5,700		0.0
Perfluoroethane			11,900		0.0
Perfluorocyclobutane			10,000		0.0
Perfluoropentane			8,900		0.0
<b>SF6 (Sulfur hexafluoride)</b>					
SF6 (Sulfur hexafluoride)			22,200		0.0

**AGRICULTURAL EMISSIONS**

Livestock		Enter Activity Data	Emission factors	Emissions (MT CO2e)	% of Total Emissions
Dairy cattle		No. of head	4.0	MT CO2e per head	0.0
Beef cattle			2.0		0.0
Swine			0.5		0.0
Poultry			0.0		0.0
Goats			0.5		0.0
Horses			1.0		0.0
Sheep			0.5		0.0
Other (Insert Here)					0.0

Crop Production		Enter Activity Data	Select Unit of Measure	Emissions (MT CO2e)	% of Total Emissions	
Corn			<input type="radio"/> Acres	0.2	MT CO2e per unit	0.0
Cotton			<input type="radio"/> Hectares	0.1		0.0
Wheat				0.1		0.0
Soybeans				0.4		0.0
Potatoes				0.3		0.0
Rice				3.0		0.0
Other (Insert Here)						0.0

Soil Management		Enter Activity Data	Select Unit of Measure	Emissions (MT CO2e)	% of Total Emissions	
Cultivated organic soils			<input type="radio"/> Acres	22.0	MT CO2e per unit	0.0
Conventional tillage	TBD		<input type="radio"/> Hect:			0.0
Conservation tillage (1)				-0.1		0.0
Application of limestone and dolomite		No. of tons		0.4	MT CO2e per ton applied	0.0

(1) CO2 sequestration from implementing conservation tillage. Will remove if this tool doesn't include offsets from sequestration

**Total Metric Tons CO2 Equivalent** 0.0

**DEFORESTATION EMISSIONS: Benchmarks for Small Emitters**

If your entity harvests forest land and converts it to a non-forest use, your entity qualifies as a Small Emitter only if it meets the following requirements:

1. the area harvested must be less than the maximum area in the table below; and
2. the area must be no younger than the minimum age at the time of harvest listed in the table below.

Region	Forest Type	Maximum Area Harvested		Minimum Age of Forest at Time of Harvest (yrs)
		acres	ha.	
Southeast	Planted Pine, medium site, higher management	80	32	25
	Upland Hardwoods	95	38	40
South Central	Planted Pine, medium site, higher management	90	36	20

	Lowland Hardwoods	90	36	40
Northeast	Maple, Beech, Birch	60	24	55
	Oak and Hickory	55	22	65
Northern Lake States	Aspen and Birch	55	22	65
	Red Pine	40	16	75
Northern Prairie States	Lowland Hardwood	65	26	75
Pacific Southwest	Mixed Conifer	55	22	45
Rocky Mountain, North	North, Douglas Fir	60	24	55
	North, Ponderosa Pine	100	40	65
Rocky Mountain, South	South, Fir and Spruce	85	34	55
	South, Ponderosa Pine	130	53	65
Pacific Northwest, Eastside	Eastside, Ponderosa Pine	100	40	55
Pacific Northwest, Westside	Westside, Douglas-fir, Medium sites, higher management	45	18	45
	Westside, Red Alder, Medium sites	50	20	65
	Westside, Western Hemlock, Medium sites	35	14	45



<b>Emission Source Category</b>
Indirect Emissions: Purchased Electricity
Indirect Emissions: Purchased Heat, Steam, and Chilled Water
Stationary Combustion
Mobile Fuel Combustion - Miles Travelled Method
Mobile Fuel Combustion - Fuel Consumptions Method
Aluminum Production
Lime Production
Limestone Use
Semiconductor Manufacture
Adipic Acid Production
Ammonia Production
Cement Production
Hydrogen Production
Iron and Steel Production
Methanol Production
Nitric Acid Production
Soda Ash Production
Soda Ash Use
Magnesium Production
Other (Insert Here)
Carbon Black Production
Ethylene Production
Ethylene Dichloride Production
Styrene Production
Coal Mine Methane - Underground Mines
Coal Mine Methane - Surface Mines and Post-Mining Operations
Oil and Gas Industries
Waste and Wastewater
HCFC-22 Production
Other Industrial Use of Hydrofluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride
Agricultural Emissions

<b>Emission Factor Origin / Explanation</b>
EIA / Emission Factor of .606 MT CO2/MWh is the national average electricity emission factor for CO2
EIA / Emission Factor of .606 MT/ MWh is the national average electricity emission factor for CO2, 0.178 MT/MMBTU is calculated from .606 based on 3413 BTU = 1 KWh taken from EIA 1605(b) Instructions for Form EIA-1605
All Factors for all fuels are taken from the Technical Guidelines.
Derived From EPA estimates
1605(b) Technical Guidelines
IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories
Technical Guidelines
Technical Guidelines
IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories
Technical Guidelines
Technical Guidelines
Technical Guidelines
No Factor provide at this time
Technical Guidelines
Technical Guidelines
Technical Guidelines
Technical Guidelines
Technical Guidelines
The factor is the GWP for SF6 as the emissions are equal to the amount of SF6 consumed (Tech. Guidelines)
User will input their own factor
Technical Guidelines
Technical Guidelines
Technical Guidelines
Technical Guidelines
? (Most likely the IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories)
Technical Guidelines
IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories
IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories
Technical Guidelines
Factors are based on Consumption of Gases, so the factors are GWP values taken from IPPC Third Editions
Provided by USDA.