

Counting Greenhouse Gas Emissions

Choices and Questions for Local Government
Greenhouse Gas Inventories and
Climate Change Action Plans

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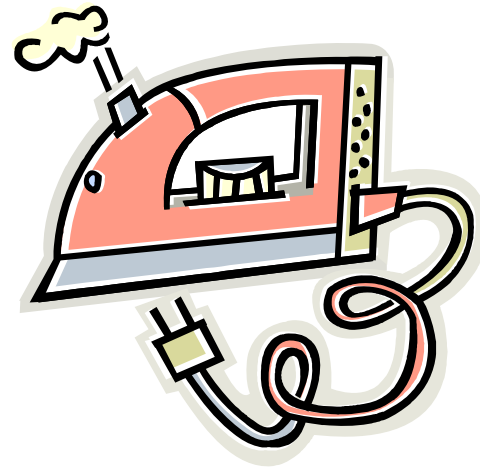
Why do a GHG emissions inventory?

- Baseline for future comparison
- Get ahead of potential future state or federal regulations
- Know where to focus to reduce emissions
 - Identify largest emissions sectors
 - Identify largest emissions sources
 - Quantify by levels of control (scopes)



Typical Community Sectors

- Residential Stationary
- Non-residential Stationary
- Transportation
- Waste
- Other



Typical Government Sectors

- Stationary Sources
 - Buildings
 - Streetlights
 - Traffic Signals
- Mobile Sources
 - Vehicle Fleet
 - Gasoline & Diesel
 - Refrigerants
 - Employee Commute
- Gov Generated Waste
- Utilities
 - Wastewater Treatment
 - Electricity Generation



Ways of understanding emissions

- Sector
- Source
 - Natural Gas
 - Electricity
 - Gasoline
 - Diesel
 - Fuel Oil
- Scope
 - Scope 1: Direct control, local emissions
 - Examples: natural gas, vehicle gasoline
 - Scope 2: Direct control, emissions occur elsewhere
 - Example: electricity
 - Scope 3: Not direct control
 - Example: employee commute, transmission loss

Top Emissions Records from Nether Providence Township Community Inventory, 2005

Record Size Rank	Sector	Record	Source	Scope	MTCO ₂ E	% of NP
1	Transportation	VMT	Gasoline	1	45,140	33.7%
2	Residential	Electricity	Electricity	2	31,704	23.7%
3	Residential	Natural Gas	Natural Gas	1	15,218	11.4%
4	Residential	Heating Oil	Fuel Oil #2	1	13,027	9.7%
Total					105,089	78.5%

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4	Residential	Heating Oil	Fuel Oil #2	1	13,027	9.7%
5	Transportation	VMT	Diesel	1	5,997	4.5%
6	Commercial	Electricity	Electricity	2	5,728	4.3%
7	Other	Refrigerants and Fire Suppressants	CFCs, HFCs, etc.	1	5,094	3.8%
8	Industrial	Electricity	Electricity	2	2,924	2.2%
9	Commercial	Heating Oil	Fuel Oil #2	1	2,378	1.8%
10	Commercial	Natural Gas	Natural Gas	1	2,190	1.6%
		TOTAL			129,399	96.6%



So how do you get to the point of measuring and understanding these emissions?

Inventory Resources

- Finances
- Personnel
 - Contractor
 - Intern
 - Staff
 - Volunteers



Inventory range and depth choices

- Range
 - Government
 - Community (entire municipality)
 - Institution
 - Other
- Year(s)
- Level of detail

Community Inventory Priorities

	Record	Size	Effort required	Confidence
1	Stationary electricity	Very large	Small	High
2	Vehicle Gasoline	Very large	Small	High
3	Natural gas	Large	Small	High
4	Heating oil	Large	Medium	Medium
5	Vehicle Diesel	Medium	Small	High
6	Solid Waste	Small	Varies	Varies
7	Refrigerants	Medium	Medium	Low
8	Fugitive Methane	Small	Small	Low
9	Electricity Transmission (SF ₆)	Very small	Small	Low
10	Transmission Loss	Small	Small	Low
11	Equipment gasoline and diesel	Small	Large	Low
12	Air travel	Medium	Large	Low
13	Wastewater Emissions (CH ₄ , N ₂ O)	Very small	Large	Medium
14	Product life-cycle emissions (including food)	Medium	Large	Low
15	Fire suppressants	Very small	Large	Medium
16	Coal	Very small	Large	Low
17	Biofuels	Very small	Large	Low

Government Inventory Priorities

	Record	Size	Effort required	Confidence
1	Vehicle Gasoline	Very large	Small	High
2	Street Lights	Very large	Medium	High
3	Building Electricity	Large	Medium	High
4	Building Natural Gas	Large	Medium	High
5	Traffic Signals	Medium	Small	High
6	Equipment gasoline and diesel	Small	Small	High
7	Fuel Oil	Small	Medium	High
8	Business travel	Small	Small	High
9	Employee commute	Small	Medium	Medium
10	Fugitive Methane	Small	Small	Low
11	Transmission Loss	Small	Small	Low
12	Electricity Transmission (SF ₆)	Very small	Small	Low
13	Solid waste	Very small	Varies	Varies
14	Fire suppressants	Very small	Large	Medium
15	Product life-cycle emissions (including food)	Medium	Large	Low

Steps of a Greenhouse Gas Inventory

- Determine goals
- Determine resources
- Determine range of inventory
- Determine depth of inventory
- Collect data
- Analyze data
- Report emissions
- Develop Climate Change Action Plan



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