CO_{2e} Emissions

These carbon dioxide equivalent metrics are used to assess your city's operation greenhouse gas emissions. These are the metrics in blue boxes on the worksheet and highlighted in blue on the reporting tool. Data entered into these boxes are automatically filled in the last tab of the Step 4&5 Worksheet. The "Total City Operations" number is used for metric 17.5.

METRICS

- **Buildings and Lighting**
  A. Electricity consumption for all buildings
  B. Natural gas consumption for all buildings
  C. Electricity consumption for streetlights and traffic signals

- **Transportation**
  D. Gallons of diesel consumed
  E. Gallons of gasoline consumed
  F. Gallons of e85 consumed

- **Environmental Management**
  G. Annual electricity used to treat and distribute water
  H. Annual natural gas used to treat and distribute water
  I. Annual electricity used to treat water
  J. Annual natural gas used to treat water
  K. City operations landfilled each year
  L. City operations incinerated each year

- **Economic and Community Development**
  M. Annual production at city-owned renewable energy generated sites

METRIC DEFINITION

- **CO_{2e} (carbon dioxide equivalent)** is a metric to measure the emissions from various greenhouse gases by converting known sources from one unit into metric tons of CO_2. Good news – we do it for you!

- **City operations** includes anything for which the city manages and operates. This should be for city buildings and facilities, parks and trails, city vehicle fleets, streets and sidewalks, etc.

- **Electricity consumption** includes all electric sources, excluding natural gas. (Metric A)

- **All buildings** includes all city buildings or facilities in which you have B3 data (or other means) data for. (Metric A, B)

- **Cities that do not own and operate water treatment facilities and/or WWTP** should report only energy (electricity and natural gas) data related only to the part of infrastructure that the city operates (i.e. city-owned wells, pumps, lift stations). (Metrics G-J)

- **Renewable energy** includes power from wind (turbines) and water (hydroelectric), from the sun (powering photovoltaic panels, hot-air and hot-water panels), from biofuels, from biomass (burning wood, and biogas produced by anaerobic digestion of organic matter such as at a waste water plant), and from trash incineration and landfill gas. (Metric M)

- **City sites** include renewable energy generation sites inside and outside city limits, such as at a waste water treatment plant, owned or leased by city government. Include sites owned by a municipal utility. (Metric M)

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DATA SOURCES

- City and local utility records for city buildings, facilities, and operations (Metrics A-M)
- City purchasing data (Metrics A-L)
- **B3 Benchmarking** program data at https://mn.b3benchmarking.com (Metrics A, B, C)
  - o Note: Energy bill data through December 31st for all buildings must be put into the B3 system before the system can accurately calculate the GreenStep measures.
- City vehicle maintenance and management tracking systems (Metrics D, E, F)
- Wastewater and water treatment management tracking systems (Metrics G-J)
- Waste hauler invoices or city contract (Metrics K-L)
- Utility data, invoices, or city contract (Metric M)

METRIC CALCULATION AND PUBLIC REPORTING

- **Annual measurement and reporting** for these metrics is for the calendar year before the reporting year. (Metrics A-M)

- **City Operations GHG Assessment Tool** – this tool, located on the last tab of the Step 4&5 Worksheet, will automatically calculate the metric ton equivalent to use for metric 17.5. Use the number highlighted in Cell R9.

METRIC RATIONALE

Greenhouse gas inventories offer a valuable way to view and compare over time the effectiveness of multiple energy and sustainability best practice actions. Greenhouse gas emissions (and energy) data gauge changes in the use of electricity, natural gas, liquid fuels, solid fuels (wood and coal), and (to a small extent) solid waste management methods.

The calculation of an annual city operations GHG number is as fundamental to the environmental management and health of a city as its annual budget is to its financial management and health. Like an annual community (city-wide) GHG calculation, the data-gathering and calculation process for a city operations GHG metric brings disparate city staff together and has value in interdepartmental data sharing and discussion. Data elements that a city must use for a city operations calculation are now collected under other GreenStep metrics: Buildings, Transportation, Drinking Water, Waste Water, Solid Waste, and Renewable Energy. A separate data visualization web page will grab data reported under these data elements and do the calculations to report one city operations GHG number.

STEP 5 METRIC TARGETS

Individual cities are best equipped to set realistic goals for metric improvement, and any improvement of this metric is good. That said, the State of Minnesota, as part of the Next Generation Energy Act, set targets for greenhouse gas emission reductions of 30% by 2025 and 80% by 2050, below 2005 levels (M.S. § 216H.02)

NEED HELP? CONTACT

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