ICLEI
Local Governments for Sustainability

Littleton
Colorado

Greenhouse Gas (GHG) Inventory

Overview & Results

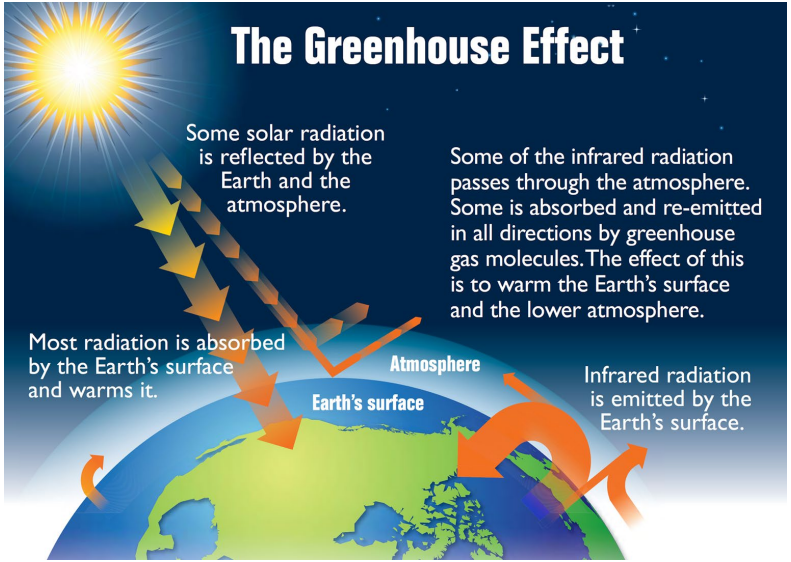
GHG Inventory

Agenda

1. Greenhouse Gas and Inventory 101
2. Inventory and Forecasting Importance
3. Inventory Results
4. Inventory Comparison
5. Local Government Operations Inventory
6. Key Takeaways & Principles

What is a greenhouse gas?

- "GHG" for short
- Gases that act like the glass in a greenhouse, trapping the sun's heat near the earth's surface
- GHG emissions from human activities are largely responsible for our changing climate



Primary types of GHGs

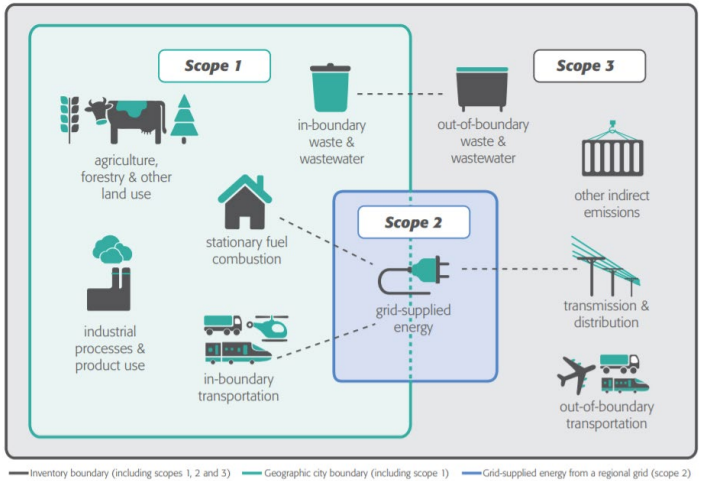
GHG	Global Warming Potential (GWP)*
Carbon Dioxide (CO2)	1
Methane (CH4)	29.8
Nitrous Oxide (N2O)	273

GHG Emissions are typically reported as Carbon Dioxide-Equivalent (CO2e)

*From the Intergovernmental Panel on Climate Change (IPCC) 6th Assessment Report, 2023

GHG Inventory Scopes

- **Scope 1:** Direct emissions
- **Scope 2:** Indirect emissions from electricity consumption
- **Scope 3:** All other indirect emissions (exported waste, out-of-boundary transportation, etc.)



Information-only / optional items:

- biofuels, ozone depleting substances, carbon offsets, RECs

What is a community-wide GHG Inventory?

Although communitywide GHG inventories do not necessarily include all of these activities, these are a majority of the emissions-generating activities that might be included:

- Stationary energy use (e.g. buildings)
  - Electricity
  - Natural Gas
  - Other fuels (propane, kerosene, etc)
- Mobile fuel use (gas and diesel)
  - Vehicles
  - Off-road equipment
- Solid waste decomposition/combustion
- Wastewater treatment (such as digester gas combustion or nitrogen discharge)
- Fugitive Emissions

Why is a GHG Inventory Important?

- This is a foundational element of resilience and adaptation planning
- Your GHG inventory is a baseline that will allow your community to:
  - Forecast business-as-usual emissions
  - Create emissions reduction targets
  - Model potential reduction scenarios
  - Monitor emissions reduction progress
  - Make informed decisions on mitigation
  - Demonstrate accountability and leadership
  - Motivate community action
  - Recognize GHG emissions performance relative to similar communities

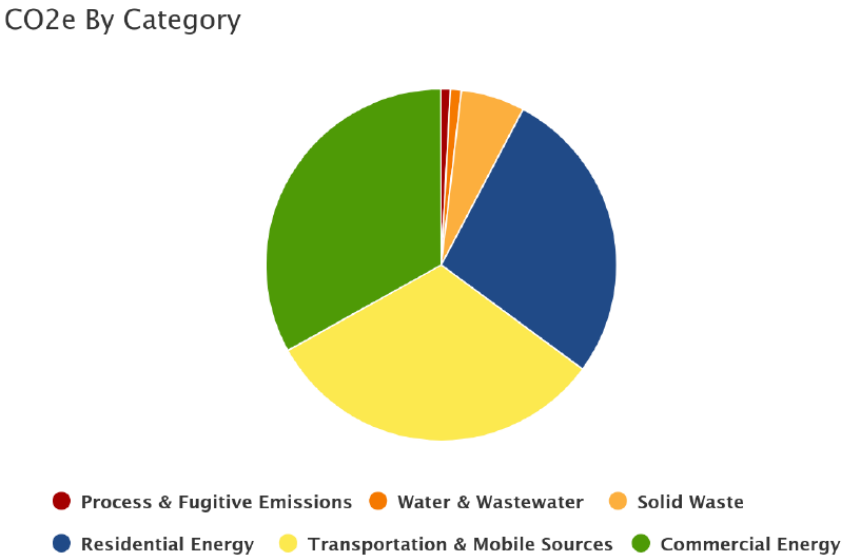
ICLEI Five Milestones for Climate Mitigation

Why is a GHG Forecast Important?

- Another foundational element of a resilience and adaptation plan
- Projects future emissions based on a Business-as-Usual Scenario
    - BAU= "on the books" expected emissions reductions/growth before reduction strategies put in place
    - Examples: fuel efficiency standards for on-road vehicles, Xcel grid decarbonization, household/population growth
- GHG reduction strategies (e.g., energy efficiency) are then applied to forecasted emissions
- Working with ICLEI to model this next part

ICLEI Five Milestones for Climate Mitigation

Littleton Community-wide Inventory



- Commercial energy is the largest (33.05%) source of emissions (in green)
- Transportation and mobile sources is the second largest (31.84%) source of emissions (in yellow)
- Residential energy is the third largest (27.35%) source of emissions (in blue)

Inventory Comparison

Emissions/Stationary Energy Activity Per Capita

	Littleton	Englewood	Lakewood
Population	44,755	33,642	156,868
Total Emissions Per Capita (MT CO2e/person*)	10.38	13.08	13.26
Residential Electricity Usage Per Capita (kWh/person)	3,185.49	3,256.10	3,109.93
Comm. Electricity Usage Per Capita (kWh/person)	2.02	6,315.11**	1.87

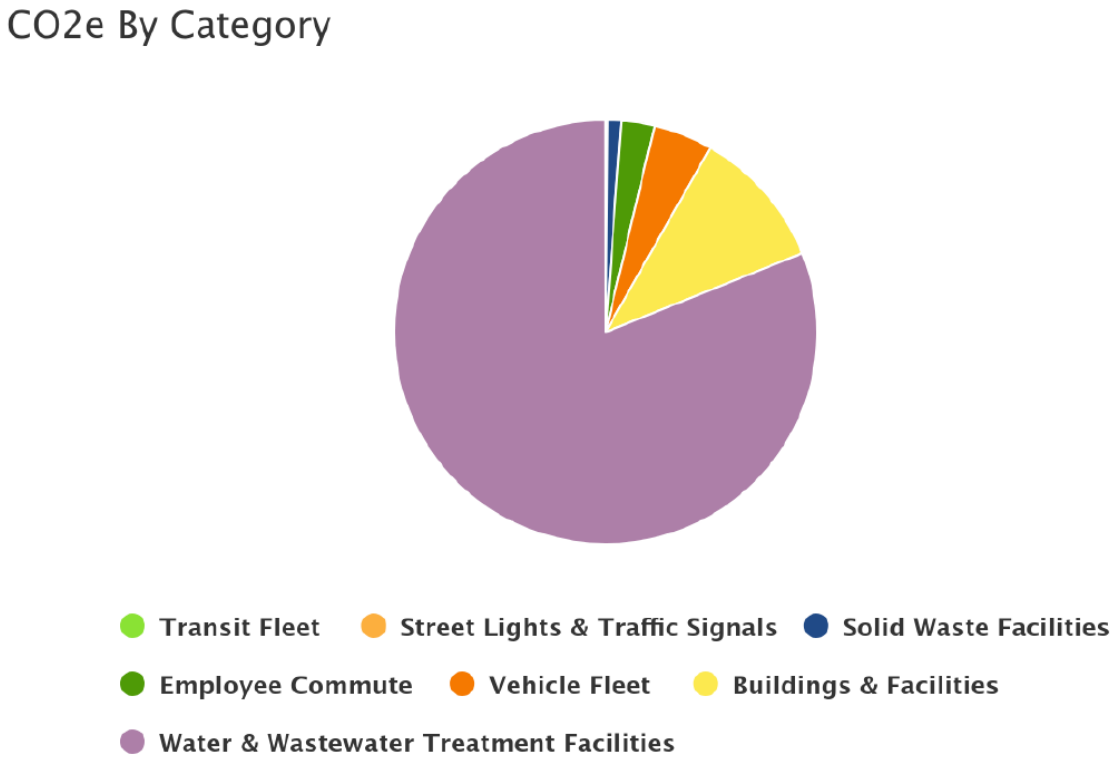
*MT CO2e = metric tons of carbon dioxide-equivalent

**number inflated because South Platte Renew is located within Englewood's physical jurisdictional boundary and those emissions have to be accounted for by the city itself, even though not all are produced by Englewood residents.

How do Local Government Operations fit into these findings?

- A subset of the community inventory
- For example, data on commercial energy use by the community includes energy consumed by municipal buildings
- Pulling out this data paints a clearer picture of how the city can adjust our operations to reduce emissions

Littleton Government Operations Inventory



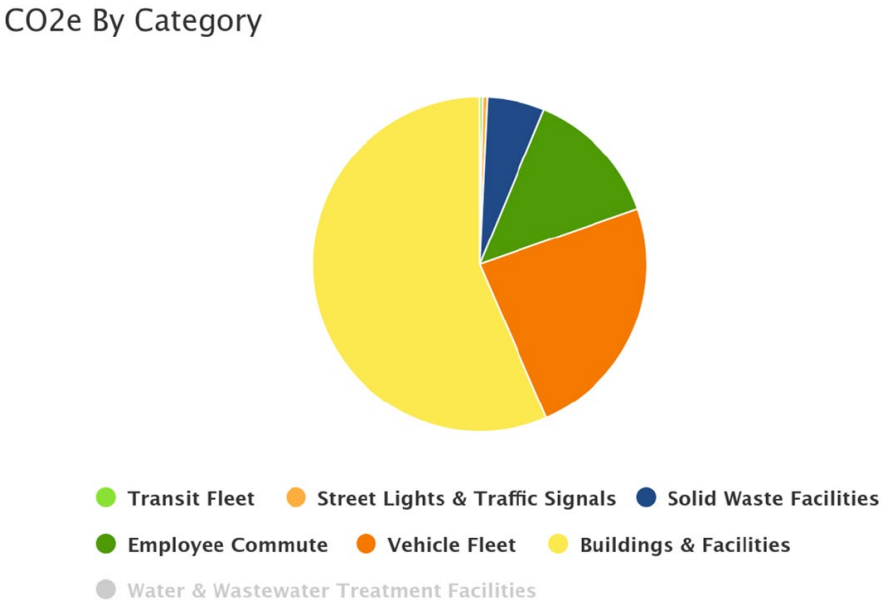
Why does the Water and Wastewater sector appear so high?

- Littleton owns and operates South Platte Renew (SPR), which is a joint venture with Englewood

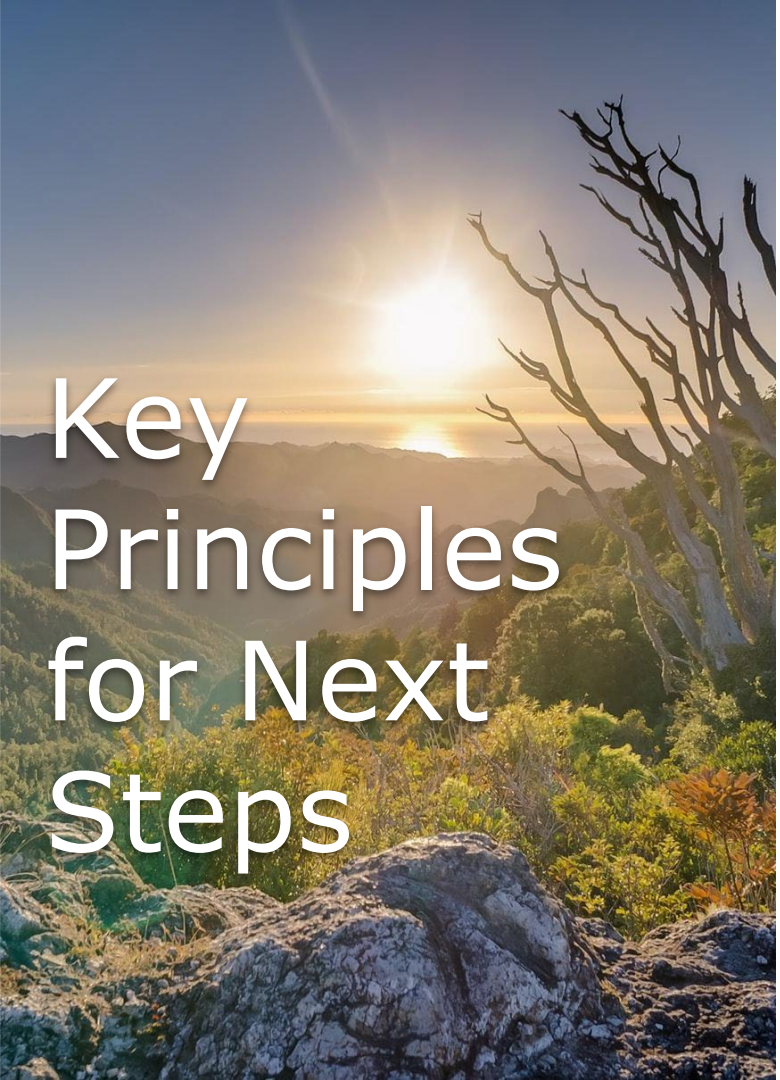
- SPR serves a population of 300,000 in the south metro area, and the facility is located within Englewood's city boundaries. For the community-wide inventory, that is considered Scope 3 (outside of our jurisdictional bounds)

- Since Littleton has 50% operational and financial control over SPR, it is considered Scope 1 emissions for Government Operations; however, let's look at it if we omit water and wastewater

Littleton Government Operations Inventory



- Buildings & Facilities is the largest (56.5%) source of emissions (in yellow)
- Vehicle Fleet is the second largest (23.9%) source of emissions (in orange)
- Employee commute is the third largest (13.3%) source of emissions (in green)



Key Principles for Next Steps

1. Planning should incorporate rapidly **changing trends**
2. Programs should take a **holistic approach,** including health, resilience, and equity
3. Local government can’t do it alone. **Collaboration with state and utilities** is essential
4. Inventories provide the foundation for **informed decisions and transparency**

Outlined Next Steps for Littleton

Phased Approach:

1. Greenhouse Gas Inventory and Climate Modeling
2. Climate Risk and Vulnerability Assessment
3. Resilience and Adaptation Plan