

2016 **Municipal** Carbon Inventory Report



Climate Action PLAN

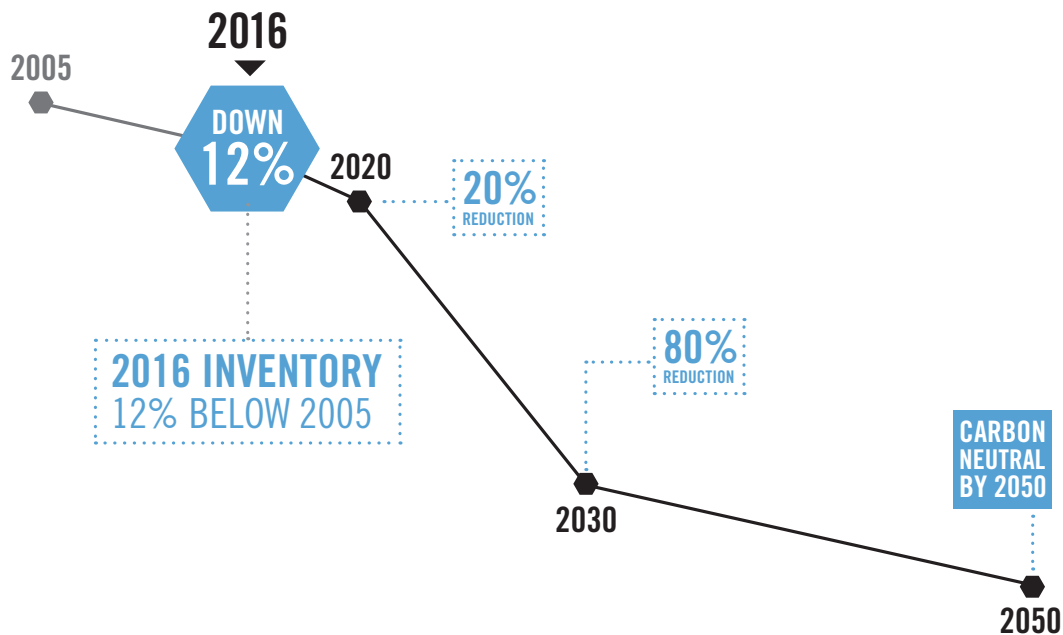


The municipal government has achieved a 12% reduction in carbon emissions while adding square footage and staff. The reductions are an indication that we are “Leading By Example” by providing reliable energy, transit, and water services while also lowering our impact on the climate.

“The municipal organization is dedicated to leading by example as part of assisting the community in meeting greenhouse gas reduction goals. Our mission to provide exceptional service to an exceptional community includes a commitment to innovating how we provide City services and making the most efficient, sustainable choices possible.”

– City Manager Darin Atteberry

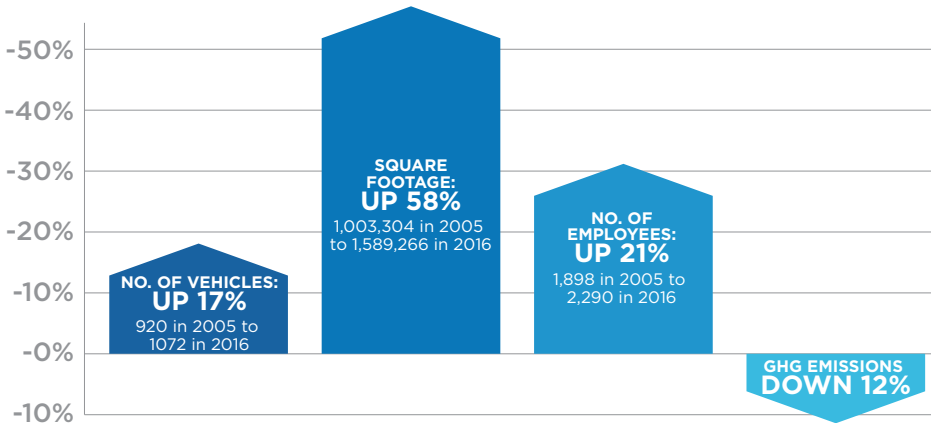
Municipal GHG Inventory and Goals



What does a 12% reduction really mean?

Carbon reductions are best understood in context. The City's municipal operations have grown in square footage, employees, and vehicles since 2005 while carbon emissions have decreased by 12%.

GROWING ORGANIZATION, DECLINING EMISSIONS



Municipal government carbon emissions have dropped by 7,354 MTCO₂e since 2005 or 12% of total emissions.

THAT'S THE EQUIVALENT OF:



7,847,417 pounds of coal burned



777 homes' energy for one year



1,553 passenger cars driven for one year



Leading by Example: 222 Laporte

In 2006, the City established a standard that all new municipal construction and remodels over 5,000 sq. ft. shall achieve LEED Gold or higher.

222 LAPORTE AVE is the first LEED v4 Platinum new construction building in Colorado, the third in the country, and the fourth in the world. The new building is one of the most energy efficient buildings in the state. The building features:

- The lowest EUI (energy use intensity) in the City
- Water efficient fixtures on all floors, including WaterSense® toilets and showerheads, which reduce water consumption by 43%.
- Daylight and views for 90% of occupied spaces
- Monitors providing real-time information on both energy and water consumption
- 104 kW photovoltaic system and all LED lighting
- 30,000 re-used bricks from the creamery and regional beetle-kill wood
- 25 indoor storage spaces for personal and fleet bikes
- Innovation Feature: Leveraging the City's Innovation Fund, the first perennial living wall in Colorado was constructed to support pollinators and increase aesthetics

2016 Progress

Electricity (51% of inventory)

EMISSIONS HAVE DECREASED 24% SINCE 2005.

HIGHLIGHTS:

- Facilities electricity use per employee has decreased by 26% from 2005.
- Municipal photovoltaic systems grew by 70% in 2016, helping solar production to reach an estimated 196 MWh, offsetting 132 MTC02e, and providing ~1% of the City's electricity needs.
- Over \$400,000 in energy efficiency upgrades were installed in 2016 with projected annual dollar (\$60,000), energy (400 MWh), and carbon (267 MTC02e) savings.

Solid Waste (23% of inventory)

EMISSIONS HAVE INCREASED 3% SINCE 2005.

The municipal organization generates three waste streams: (1) material discarded by the public on city-owned properties, (2) industrial byproducts from capital projects like the repair and maintenance of water and sewer pipes; and (3) discarded "office" material from administrative buildings, shops, warehouses, and utility plants.

HIGHLIGHTS:

- 2016 industrial diversion totaled 72%; office diversion rates reached 26%.
- 95% of the construction waste from 222 Laporte was diverted from the landfill, resulting in 1,174 MTC02e of avoided emissions. These materials would have had increased our inventory by 2% had they not been diverted!
- Fort Collins Parks doubled the number of recycling bins at their facility, with the result that recycling is easier than ever as every trash bin is now paired with a recycling bin.



Industrial waste emissions data will be improved for 2017, increasing the accuracy of this section.



Natural Gas (11% of inventory)

**EMISSIONS HAVE INCREASED
2% SINCE 2005.**

Natural gas emissions fluctuate from year to year due to weather conditions, new buildings coming online and technology upgrades. While up from the 2005 baseline, natural gas emissions were down 12% from 2015.



Ground Travel (15% of inventory)

**EMISSIONS HAVE INCREASED
18% SINCE 2005.**

Compressed natural gas (CNG) makes up 28% of fleet emissions. CNG is a cleaner burning fuel than diesel, which is why much of the City's fleet of buses has been transitioned to the gas. Diesel emissions from buses have declined by 37% since 2005 in large part due to the transition away from the fuel.

HIGHLIGHTS:

- In 2016, the City purchased:
 - 7 CNG vehicles
 - 18 hybrid vehicles
 - 3 electric vehicles
 - 4 electric utility vehicles
- Almost 20% of City staff was trained through the FCMoves Bicycle Friendly Driver program.
- The City has the 16th greenest fleet in the United States



Water Related (De minimis of inventory*)

**WATER EMISSIONS ARE
DE MINIMIS**

Electricity and natural gas emissions from treating water and wastewater are included in the electricity and natural gas emission categories. This category accounts solely for any process emissions arising from wastewater treatment. Using less water lowers all emissions associated with the treatment of water.

HIGHLIGHTS:

- In 2016, the City remodeled the Edora Pool Ice Center (EPIC) and will use 620,000 fewer gallons of water as a result – or almost 20% less water use every year!
- The City also retrofitted showerheads and toilets at the Senior Center and all new facilities that came online like the Foothills Activity Center and 222 Laporte have WaterSense, high-efficiency fixtures.

*'De minimis' means emissions so small that they can be considered negligible.



LEADING BY EXAMPLE: Building Energy Scoring and the Parks Shop

- The City leads by example, illustrating how knowing your energy score can influence how we operate and maintain our buildings.
- In 2012, the City's Parks, Forestry and Cemeteries Shop received an ENERGY STAR score of 61 out of 100. After upgrading its hot water system and automating more building controls, the facility received an ENERGY STAR score of 80 in 2016, with a reduction of more than \$16,000 in annual utility costs.
- Learn more about the City's Building Energy Scoring efforts at www.fcgov.com/bes

INVESTMENTS IN ENERGY EFFICIENCY AND RENEWABLES

DOLLARS INVESTED FROM
THE ENERGY EFFICIENCY
FUND IN 2016*:

\$118,442



PAYBACK PERIOD:

2 YEARS

* This represents only a portion of the overall municipal investments in energy efficiency

SAVINGS OVER
20 YEARS



RESULTING
CARBON
REDUCTION
IN 2016

632 MTCO₂e

Did you know?

Photovoltaics on seven City facilities have produced 840,020 kWh of energy since the first installation in 2011. Additionally, the solar installation at the Water Treatment Plant has produced 673,949 kWh of clean renewable energy. Together, this is equivalent to the greenhouse gas emissions from 2,657,878 miles driven or 234 passenger vehicles driven for one year.

Looking Ahead

- Pilot the use of low-emission lawn and garden equipment to both test the effectiveness of these newer technologies and reduce ozone-contributing emissions. The low-emission equipment will have the same total cost of ownership as traditional equipment and reduce equipment-related carbon emissions by almost 60%.
- Complete a mechanical upgrade at 700 Wood Street in 2017, integrating the first heat pump system in Colorado to use only one pipe to cool and heat a facility using a lake. In addition, total energy efficiency upgrades to the building's systems will reduce energy use by 58%.
- Deploy behavior change campaigns to reduce up to 4% energy use by employees, which could save almost \$50,000 in energy bills per year!
- Create the first Municipal Adaptation and Resiliency Plan in 2018 and update the City's overall municipal sustainability plan.

Leading by Example: Parking Pilots Electric Vehicles

In 2014, the City began piloting electric vehicles (EVs) for its parking enforcement staff.

“Our fleet is a great candidate for EVs, because we’re idling about 85% of time when we’re operating,” shares Craig Dubin, Transport’s Communications and Administration Manager. The Parking Department now has three EVs that travel between 25,000-30,000 miles a year – saving up to 28 MTCO_{2e}/year and eliminating harmful pollutants emitted when idling.

The City has learned some lessons that we would share with other communities considering a similar transition:

1. Ensure you have charging stations in secure places where your vehicles are stored;
2. Provide rapid charging stations at the hub where employees are during the day, so they can recharge during breaks; and
3. Work ahead of time with the dealer to ensure the battery capacity can handle the electrical load of equipment employed in parking enforcement.

To address some of these lessons, the City has recently purchased technology to better understand charging patterns and has received a \$13,000 grant as part of the Charge Ahead Program – a joint program between the Regional Air Quality Council and the Colorado Energy Office - for a fast charger that will be installed in the parking lot of 215 N Mason (the hub for parking employees).

City Contacts

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