

2011

Municipal Operations Annual Sustainability Report



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The third City of Fort Collins Annual Municipal Sustainability Report documents efforts to protect and enhance the resources managed by staff. Going beyond preservation, the City leadership lays the foundation for economic health, resource conservation, and social well-being. Data driven practices and community capacity building are the cornerstone of municipal operations that allow for continual improvement and progress toward our internal and community goals (see pages 6-18).

Sustainability Services

In 2012, the City will introduce an organizational transformation through integration of existing departments, Environmental Services and Economic Health, with a new department, Social Sustainability, to form the Sustainability Services Area. The new office will act as a resource to assist other departments in supporting the municipality's sustainability goals, co-creating a culture of sustainability, and collaborating with the community. For progress on the Municipal Sustainability Goals (Implementation Plan) for 2012-2013, visit fcgov/sustainability.

Key accomplishments of 2011:

- The City met its carbon reduction target for 2011. Carbon emission reductions are 7.4% below 2005 levels.¹
- The leading cost-saving projects include the completion of the Civic Center Parking Light Retrofit (\$18,705), Collindale Golf Lighting Project (\$9,462), and the EPIC Solar Thermal Project (\$8,500).
- Projects with the highest environmental benefits include the Water Treatment Plant's Solar Purchase Agreement, which yields 90 metric tons (MT) of carbon dioxide equivalent (CO₂e) emission reductions; the Collindale Golf Course Light Project (84 MT CO₂e reduction); and the photovoltaic (PV) solar installation at the Science Discovery Museum (32 MT CO₂e reduction).
- The City's energy efficiency annual project savings totalled approximately \$41,000.
- By the end of 2011, four photovoltaic systems with a total capacity of 194 kW had been installed.
- Staff conducted several challenges with City employees, residents, and select ClimateWise partners, including: Transportation Challenge; FortZED; Give a Watt: Pedal it Forward; Bike-to-Work Day(s); and the Ground Work Challenge. Cumulative projected savings among the 1,169 participants translated into 59 MT CO₂e of reductions and \$59,000 saved.
- The City joined the Social Responsibility Pilot Program through ClimateWise.
- More non-carbon and low-carbon power generation was brought on-line through the projects described above and the Drake Waste Water Reclamation Plant's Geothermal Project.
- The City reduced traditional fuel consumed from 2005 by 2%.

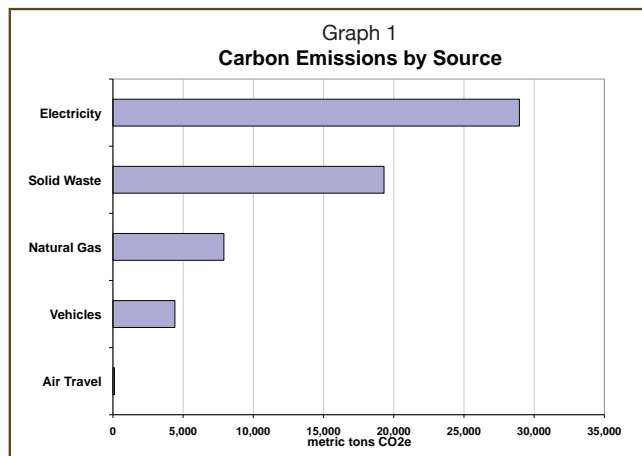
Challenges persist despite many accomplishments. However, the City organization is retooling its efforts to effectively and strategically fund projects that have low costs and high impacts (especially as stimulus funding is depleted), while increasing transparency and verifying data sources. Staff is committed to continuing to work towards a sustainable future. In 2012, key projects under way include:

- Researching solar purchase agreements to control budgets by guaranteeing predictable energy prices.
- Leveraging grant funds to enhance the sustainability curriculum for Poudre School District, continuing the partnership with CSU School of Global Sustainability (SoGES) in hosting Mindful Movies, and the Corporate Training educational series.

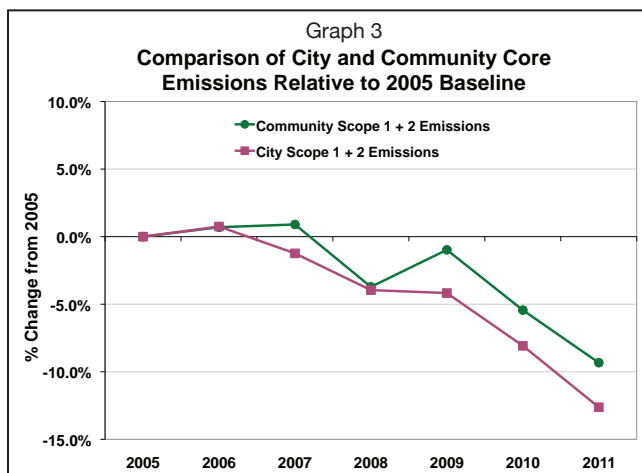
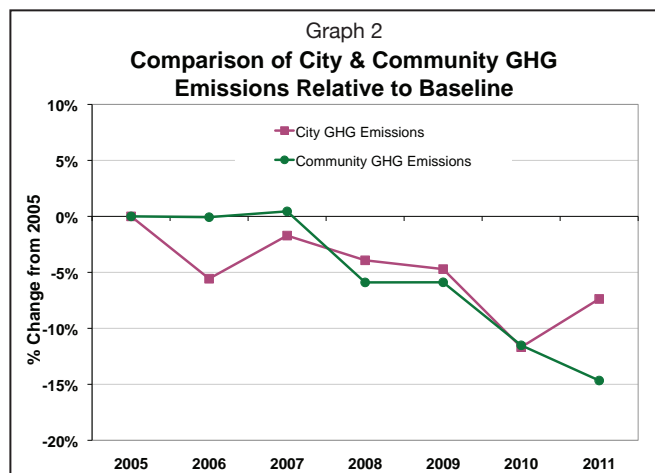
The organization adopted nine core sustainability goals in 2004. In 2009, 10 goals with numerical targets were approved. The over-arching sustainability goal is to reduce municipal carbon emissions 20% by 2020 from 2005 baseline levels. The carbon goal is strongly related to other environmental goals, and, therefore, progress on environmental initiatives often contributes to the over arching carbon target objectives. Thus the City's carbon reduction of 7.4% from the baseline year represents advancement in a variety of areas ranging from building efficiencies to solid waste management.

Carbon reductions from our baseline year are equivalent to: ²

- Annual CO₂e emissions from 1,344 passenger vehicles
- CO₂e emissions from the energy used by 595 homes in one year
- Carbon sequestered by 17,5410 tree seedlings grown for 10 years
- Carbon emissions avoided by recycling over 2,443 tons of material each year (equal to the weight of 25 gorillas!)
- CO₂e emissions from 15,909 barrels of oil consumed



In the past few years, the community and municipality carbon reductions have been similar with the exception of 2011. In 2011, the methodology for tracking solid waste was changed to include industrial waste. Waste data from 2005-2011 is now part of the data tracked. In the past, industrial waste was not included because EPA does not consider industrial waste as part of the municipal waste definition, nor did the ClimateWise tracking tool.



Carbon emissions are tracked in three categories: Scope 1 (direct emissions such as vehicle fuel use and natural gas consumption); Scope 2 (electrical indirect emissions); and Scope 3 (other indirect emissions). Multiyear comparisons are provided in Appendix A. Scope 1 emissions are 14,611 metric tons, Scope 2 are 28,948 metric tons, and Scope 3 are 19,467 metric tons.

Game-Changing Projects

The following projects had the most significant environmental and/or economic returns. These types of projects result in long-term, fiscally sustainable progress and should be replicated and scaled-up throughout the organization. A comprehensive carbon analysis has been conducted for several projects. For example, the asphalt recycling has .8/year payback and the metal recycling has .0002/year payback. The outreach campaigns and the numerous employee and community challenges required relatively low investments. Compressed natural gas (CNG) and alternative fuels require much higher initial investments (see Table 3 on page 6 for additional analysis).

Table 1: 2011 Projects Annual Environmental Benefits Ranking

Project	Estimated Environmental Benefit/Year
Asphalt, Concrete, Toilet Recycling	4,239 MT CO ₂ e reductions
Metal Recycling	1,629 MT CO ₂ e reductions
2011 City Fleet Alternative Fuel Use Compared to Traditional Fuel	160 MT CO ₂ e reductions
Water Treatment Plant — Solar Power Purchase Agreement	90 metric tons (MT) of carbon reduction equivalent (CO ₂ e)
Collindale — Outdoor Lighting, Insulation, and Display Lighting	60,133 kWh, 5,535 therms, 84 MT CO ₂ e reductions
35.87 kilowatt (kW) Photovoltaic Solar Collection at Science Discovery Museum	32 MT CO ₂ e reductions
Neighborhood Energy Outreach Campaign	32,775 kWh reduction, 29 MT CO ₂ e reductions
Expansion of the Affordable Housing Community Gardens	25 MT CO ₂ e reductions per month, Healthier air, water, and soils
Northside Atzlan — 53 kW Photovoltaic System	20 MT CO ₂ e reductions
Civic Center Parking Lighting Retrofit	23,381 kWh savings, 19 MT CO ₂ e reductions
EPIC Solar Tube Thermal Expansion	2,389 therms avoided, 14.3 MT CO ₂ e reductions
Transportation Challenge	12 MT CO ₂ e reductions
Streets Outdoor Lighting Replacements	13,440 kWh, 11.4 MT CO ₂ e reductions
Senior Center Lighting Upgrades (parking lot and wall)	12,530 kWh/yr avoided, 10.1 MT CO ₂ e reductions
Evacuated Solar Tube Thermal System Installed at EPIC	10,625 kWh savings, 9 MT CO ₂ e reductions
Give a Watt: Pedal it Forward	5 MT CO ₂ e reductions
215 North Mason Photovoltaic System	1.8 MT CO ₂ e reductions
Recreation Eliminated Paper Schedules	1.4 MT CO ₂ e reductions
Streets Wall Pack Replacement Lighting	1,620 kWh, 1.4 MT CO ₂ e reductions

**Total Estimated Savings:
6,200 MT CO₂e**

Table 2: 2011 Projects Economic Annual Savings Ranking

Project	Estimated Economic Benefit (\$/year)
Asphalt, Concrete, Toilet Recycling	\$265,370
Metal Recycling	\$58,223
Civic Center Parking Lighting Retrofit	\$18,705
Collindale — Outdoor Lighting, Insulation, and Display Lighting	\$9,462
Installed Evacuated Solar Tube Thermal System at EPIC	\$8,500
Northside Atzlan — 53 kW Photovoltaic System	\$5,654
Water Treatment Plant — Solar Power Purchase Agreement	\$5,000
Recreation Eliminated Paper Schedules	\$4,350
Transportation Challenge	\$4,008
35.87 kW Photovoltaic Solar Collection on Science Discovery Museum	\$3,840
Neighborhood Energy Outreach Campaign (community savings)	\$3,420
Bike-to-Work Day	\$2,700
Senior Center Lighting Upgrades (parking lot and wall)	\$2,093
Expansion of the Affordable Housing Community Gardens	\$1,920
EPIC Solar Thermal Expansion	\$1,800
Give a Watt: Pedal it Forward Challenge (monthly)	\$1,440
Streets Outdoor Lighting Replacements	\$1,060
215 North Mason 5 kW Photovoltaic System	\$700
Streets Wall Pack Replacement Lighting	\$136
Poudre Fire Authority Warehouse — Staff assisted PFA in re-purposing equipment, office material and fire training suits	Not available
Environmental Management Systems — Drake Water Treatment Plant, Water Treatment Plant, and Streets	Not available

Total Estimated Savings Per Year: \$398,381

The following section outlines trend and indicator data related to the City's core goals as well as staff's involvement in various projects.

Goal #1 Carbon



Goal

Reduce carbon emissions (carbon dioxide and methane) from municipal operations at least 2% per year, from 2005, starting in 2009, in order to achieve a reduction of 20% below 2005 levels by Dec. 31, 2020; and ultimately to achieve carbon neutrality for the municipal organization. This represents a total reduction of 13,609 tons (based on baseline emissions of 68,045 tons in 2005); yearly reductions will equate to 1,237 tons per year of carbon emissions without any projected growth factored in.

Goal Progress

The City organization is in alignment with its reduction target. The overall emission totals are listed below.

Despite increases in number of employees and square footage of buildings during the 2005–2011 period, carbon dioxide equivalent emissions (CO₂e) dropped. The City reached the 2% annual reduction target. From 2005-2011, carbon emissions dropped by 7.4% or 5,071 tons.³

Opportunities/Recommendations

Opportunity: Numerous projects and purchases can reduce our carbon footprint.

Recommendation: Based on staff analysis, the City needs to strategically select the most cost effective projects, while factoring in additional considerations such as the value of piloting projects and providing leadership (see Table 3).

Part of the purpose of tracking projects is to understand the cost-benefit ratio associated

with different carbon reduction strategies. For example, below is a simple analysis of select investments and an estimate of the initial return on investment (ROI) in terms of carbon costs. Although some projects have a high investment premium, they serve citizens by pioneering new operational processes and products.

Opportunity: Some cities have set much more aggressive carbon emission reductions. For example, Austin: 100% by 2020; Melbourne: 100% by 2020; Copenhagen: 20% by 2015; and New York: 30% by 2017.

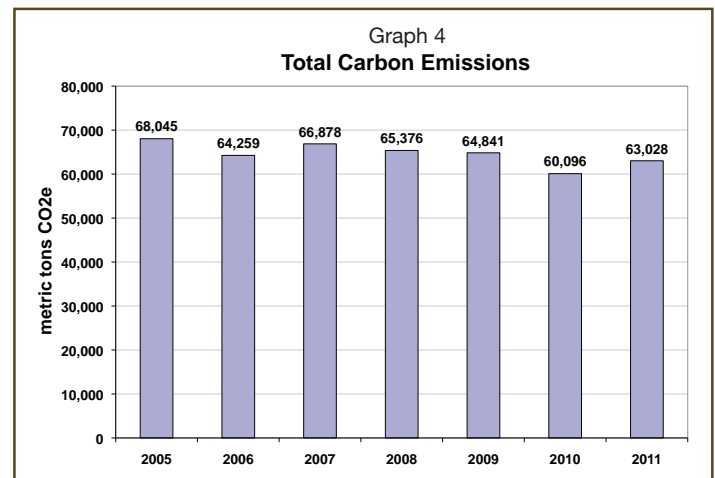
Recommendation: Consider raising the City's reduction goal from 20% by 2020 to 35%.

Recent City and Community Activities

- Staff completed its first Quality Management Plan for the municipal carbon emissions inventory.
- Sustainability indicators were developed for Plan Fort Collins.
- An Air Quality and Solid Waste Survey was distributed to 1,525 randomly selected citizens. The response rate was 30%. The survey addressed air quality, climate change, and recycling beliefs and actions. Results generally indicate strong support for environmental programs and show improved awareness/participation in several programs above the 2007 survey results.
- Provided technical expertise at the Second Annual Colorado Climate Network Conference for various municipalities. Fort Collins' involvement included planning and presentations.

Table 3: Carbon Costs

Purchase/Project	Initial Investment	CO ₂ e MT Avoided	Carbon Cost/Ton	Funding Sources
High Pressure Sodium Lights	\$11,729	237	\$49	Utility
Server Virtualization	\$185,000	1,600	\$116	EECBG
Load Management	\$35,000	60	\$583	EECBG
Boiler Replacements	\$140,000	208	\$673	EECBG
CNG Buses	\$240,000	70	\$3,429	Federal Grant
Earth Vessel	\$11,000	.23	\$47,826	Federal Grant



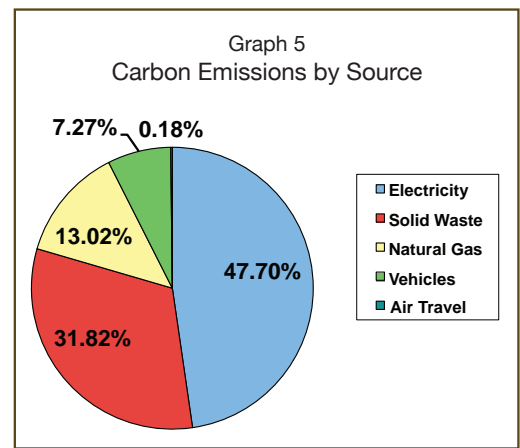
- Climate Wise partners, City staff, and Larimer and Adams County employees attended the Carbon Management interactive training and inaugural Innovative Sustainability, Green Brick Bike Tour. The tour showcases projects that helped the municipality reduce its carbon emissions (see fcgov.com/sustainability to download the guide). The tour offers a self-guided brochure and includes small educational placards along the route.

- Carbon emission reduction of 3% has been achieved between 2009-2011.

Community Web Links

Community Sustainability — fcgov.com/green

Climate Action Plan — fcgov.com/climateprotection



Data Analysis

- In 2011 municipal operations accounted for 63,028 metric tons — approximately 2.8% of the community's total.

Goal

Reduce City energy consumption by 20% of the 2005 baseline by 2020, and reduce peak demand use by 15% by 2020.

Goal Progress

The City organization did not reach a 2% per annum energy use reduction, but it is using less carbon-intensive fuel for electricity. The carbon emissions associated with energy decreased by 14% from 2005.

Opportunities/Recommendations

Opportunity: The C-40 Report shows in priority order the following types of projects as strongest in terms of ROI: retrofitting existing buildings, renewable energy projects, and street lighting projects. C-40 cities have agreed to voluntarily report emissions.⁴

Recommendation: Increase efforts to retrofit and recommission buildings, implement enhanced renewable energy procurement programs, and research integrating two emerging technologies — LED street lights and adaptive control systems to improve the quality of the light, reduce consumption, and protect dark skies.

Recommendation: The City needs to dedicate staff and resources to deep retrofits of existing buildings.

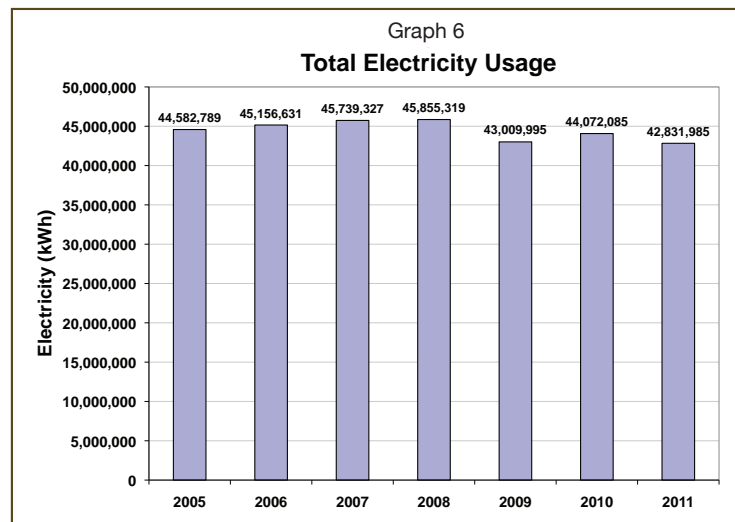
Recent City and Community Activities

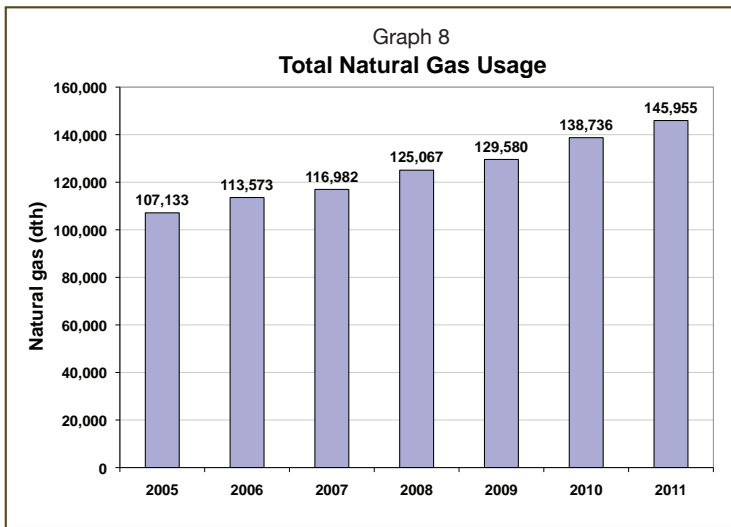
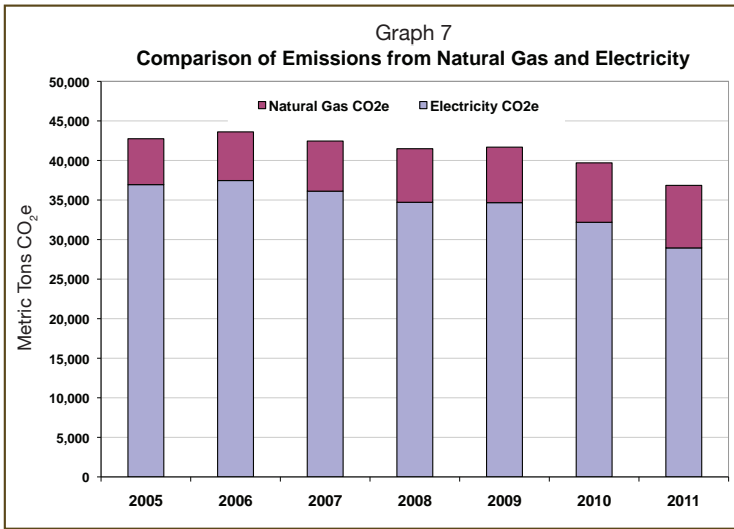
- Six Green Building training sessions were provided by Utilities staff to contractors in the areas of: Residential Building Envelopes; Residential Mechanical Systems Design; Commercial Building Commissioning;

Residential Mechanical Systems Testing; Commercial Building Envelope; and Fenestration Installation.

- Operation Services completed a solar thermal project at EPIC (2,389 therm reduction).
- Operation Services replaced outdoor lighting at Streets that yielded a 13,440 kWh reduction.
- Neighborhood Services and the Environmental Services Department assisted Groundwork Colorado with a Community Energy Outreach event: 376 residents received energy and sustainability information; 160 volunteers worked; and 475 CFL bulbs were exchanged.
- An analysis was conducted to determine City employee participation in the FortZED Community Energy Challenge. The initial rate as of September 2011 was 3%. The rate rose to 6% of City employees following 2012 events.
- Operation Services and Utilities staff completed an air leakage reduction project at 215 N. Mason and installed high performance windows at City Hall.

Goal #2 Electricity and Natural Gas





Data Analysis

- Energy use accounts for 61% of the City's carbon emissions. The data indicates total electricity usage is down by 3.9%, but natural gas has increased by 36% from 2005. Traffic signal upgrades yielded 6% of the energy reductions.
- Natural gas consumption has increased from 107,133 to 145,955 therms, since the baseline year. Some of the rise is from compressed natural gas buses. The gas increases from Transfort are delineated in Appendix B, Graph 15. Natural gas is cleaner than electricity, so overall emissions have been reduced.
- Transfort electrical use and natural gas use accounted for 2% of the total carbon emissions.
- A shell study and recommissioning was performed at 215 N. Mason, City Hall, and EPIC.
- Natural gas usage has increased from .062 dTH/sq. ft. to .067 dTH/sq. foot. Electricity usage decreased from 11.49 kWh/sq. foot to 10.17 kWh/sq. foot.
- Refer to Appendix B for further information on trend data.

Community Web Links

Rebates: fcgov.com/conservation

Fort Collins Utilities Energy Policy: fcgov.com/electric/energy_policy.php



Energy demand tracking,
Energy Conversion Lab

Compressed natural gas bus



Goals

Reduce traditional fuel use by the City's vehicle fleet by 20% by 2020.

Reach a 1.5 average vehicle ridership (AVR) by 2020 for City employees.

Goal Progress

Traditional fuel use is down by 2.35%. However, it has not reached its AVR goal.⁵ AVR represents the ratio of employees to vehicles arriving at a work site. Higher AVR scores indicate that more employees are using transportation options other than driving their own car, such as cycling, walking, riding the bus, or carpooling.

Opportunities/Recommendations

Fuel Use Opportunity: The City municipality should increase the number of electric vehicle stations.

Recommendation: Best Practices include taking advantage of street excavations, parking garage construction, or other opportunities to pre-install electric conduit for later interconnections.

AVR Opportunity: Many leading sustainability cities include emissions from employees commutes in their carbon inventories. Successful companies and organizations, including Larimer County, are piloting aggressive telework programs.

Recommendation: Expand municipal carbon emission inventory to include commuter emissions, and consider expanded telework program within the organization.

Recent City and Community Activities

- Installed electric vehicle charging stations at City Hall.
- In 2011, the City purchased 28 hybrids and flex fuel vehicles. Fleet has 28 hybrids, 171 flex fuel vehicles, 33 electric utility vehicles, 17 CNG busses, and 16 more on order to be received over the next three years.
- The Bike Library now has 8,000 members.
- A short lecture about the Smart Car and electric vehicles was given at the Sustainable Living Fair. Over 50 residents were given transportation information.

Data Analysis

Fuel

The City is making progress towards its alternative fuel use goal of "reducing traditional fuel use by the City's fleet by 20% by 2020," mainly due to the conversion of buses to compressed natural gas (CNG) and the use of biofuels, which are a less carbon-intensive fuel type. In 2005, the City used 1.8% alternative fuel. In 2011, approximately 9% of usage is alternative fuel (i.e. biodiesel, CNG, propane, and E-85). Alternative fuel use yielded approximately 160 MT CO₂e reduction. The City is also transitioning away from corn ethanol.

Vehicles and Travel

The City fleet includes 566 alternative fuel vehicles including 65 E-85, 12 hybrid cars, 6 electric utility vehicles, 13 CNG buses, one solar arrow board, and various landscaping equipment.

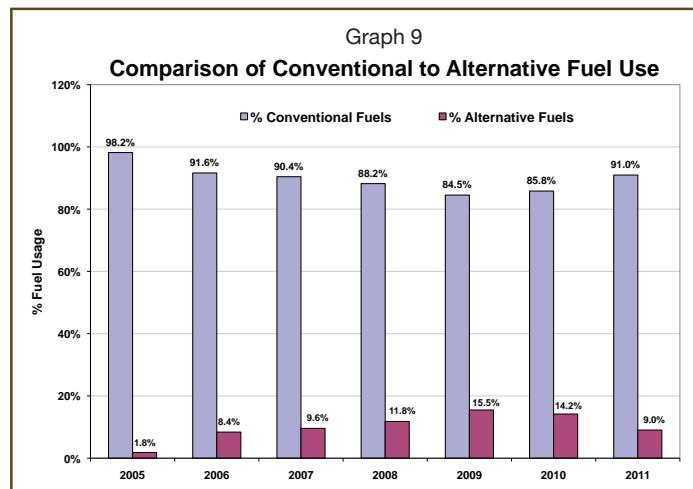
Employee travel using personal vehicles has decreased from 133,553 to 100,591 vehicle miles traveled, while airline travel has increased from 311,134 to 352,348 miles.

Average Vehicle Ridership (AVR)

In September 2011 a survey was sent to City employees to gather baseline data regarding AVR.

The City did not meet its AVR goal of 1.5. Survey results indicate a 1.06 AVR.

Goal #3 Fuel Reduction



Electric
vehicle
plug-in
stations



Goal #4 Solid Waste Reduction



Goal

Reduce solid waste generated by 50% of overall waste stream by 2012 and 80% by 2020. Interim goals will be set to reduce overall waste volume.

Goal Progress

The overall municipal diversion goal of 50% has been met.⁶ Office diversion is 18%, industrial diversion is 78%, and overall diversion is 73%.

Opportunities/Recommendations

Opportunity: NoCo Rebuilding Network and City staff have met to discuss partnerships to provide resources that make sustainable rebuilding materials accessible after natural disasters, such as wildfires, to reduce waste and re-use material.

Recommendation: Expand purchasing of recycled products and increase re-purposing options.

Opportunity: The City used 96,213 lbs. (48 tons) of copy paper, which is an estimated equivalent of 1,077 trees. The total life cycle CO₂e associated with this paper was approximately 271,663 lbs. CO₂e. Every 12 cases of virgin paper requires eight trees. A case of paper weighs 20 lbs.

Recommendation: Encourage increased scanning and document double-sided printing.

Recommendation: Purchase Earth Tub for paper towel composting, additional recycling and compost bins, and additional signs for City buildings.

Recommendation: Reverse the collection process so janitorial staff collects recyclables instead of, or in addition to trash.

Recent City and Community Activities

- Each Earth Tub processed 250 lbs. per week of organic matter. The compost was used for landscaping and flower pots throughout the community.
- Recreation eliminated paper schedules which yielded an 84 MT CO₂e reduction and savings of \$4,350 annually.
- Water Treatment Plant is piloting a soil project using a Trommel screen to sort excavated soil and reuse the material.
- Streets staff processed approximately 18,798 tons of woody debris after the 2011 fall storms. Limbs were ground into free mulch for residents. Mulching leads to lower water use.
- The organization recycled 128 tons of bricks, 16,181 tons of concrete, and 66,844 tons of asphalt.
- Streets recycled street sweeping brooms for animal back scratchers at zoos.
- Fort Collins Housing Authority and Operation Services started working with Paint Genius, a company in Denver that recycles used latex paint into new paint. The building on the northwest corner of Maple and Howes was painted with the used recycled paint.
- The Purchasing Department has completed a green purchasing assessment and together with Sustainability Services is beginning a long-term project to reduce waste and increase sustainable purchasing.



Streets crew cleaning up after the fall storms

Brick recycling at Creamery deconstruction project

- After a fire sprinkler broke at Aztlan, and water damaged the floors, staff was able to reuse most of the flooring, increasing our diversion rate.
- Parks has expanded the use of Big Belly units throughout the community.
- Environmental Service Department staff continues to provide zero waste eco-stations and signage at City and community events to educate about sustainable practices and encourage behavior change.
- The City purchased a second Earth Tub and placed it at the Cramer building work area.
- A City internal event collected used clothing and electronic waste for recycling on Earth Day.

Data Analysis

- City departments with the highest office diversion rates in 2011 include: PFA Station 1; Parks; and the Water Pollution Lab. PFA and ESD worked on a 2011 pilot to repurpose office equipment and supplies. Parks is one of the few departments composting, and the Water Pollution Lab has downsized trash service and dedicated department meetings to recycling education.

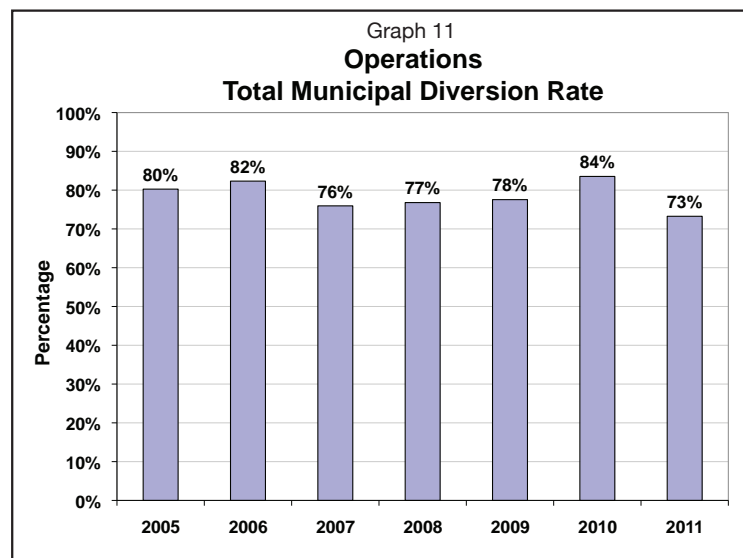
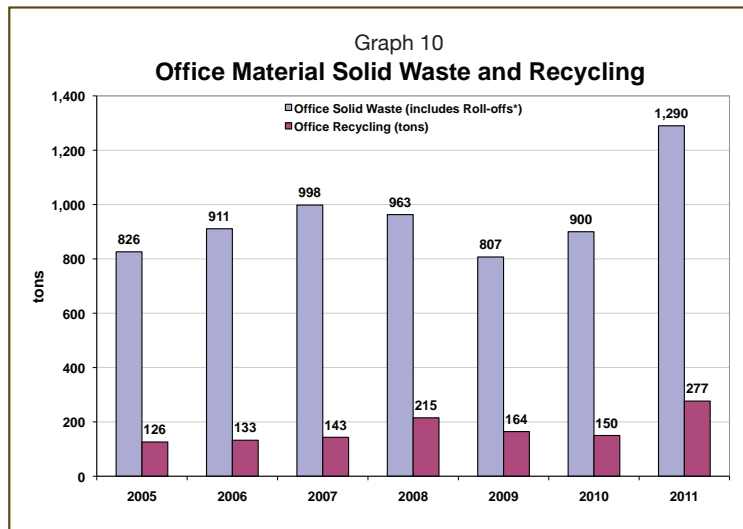
Recycling Co-benefits

In 2011 the organization recycled 277 tons of aluminum, cardboard/paper, scrap metals, plastics, and glass from office waste.

These recycling efforts conserved the equivalent of the following resources:

- 4,539 mature trees;
 - Representing enough saved timber resources to produce more than 3,958 sheets of newspaper!
- 801 cubic yards of landfill airspace;
 - Representing enough airspace to fulfill the municipal waste disposal needs for 136 people for one year!
- 1,007,124 kWh of electricity avoided from recycling;
 - Enough power to fulfill the annual electricity needs of more than nine homes!
- 4,591 barrels of oil;
 - Representing enough energy to heat and cool more than 12 homes for one year!
- 18,690,000 gallons of water.
 - Representing enough water to fill City Park Pool 35 times.⁷

Electronic waste recycling at employee Earth Day celebration.



Goal #5 Education and Outreach



Goal

Information about the municipal sustainability program will be available to all levels of the community — students in grades K-20, the general public, and staff.

Goal Progress

The City has increased outreach activities through new corporate training, Mindful Movies, and Challenge activities to reduce carbon emissions. However, all those efforts were funded through stimulus money, which expires in 2012.



Energy harvesting bike
used in the Give A Watt:
Pedal It Forward event

Kathy Collier (ClimateWise)
and John Phelan (Utilities)
at the EnviroVation Fair

Opportunities/Recommendations

Opportunity: Leading cities spend substantial resources on education and climate change awareness for employees and community members.

Recommendation: Increase employee and public awareness about community and municipal progress, and engage more residents and businesses in challenge activities to reduce carbon emissions.

Opportunity: Community capacity building by staff is the key to transforming Fort Collins as a sustainable community.

Recommendation: Several 2010 and 2011 projects, such as introducing a PSD sustainability course and creating community gardens, were created through donations of resources (i.e., tools, equipment, plants, etc.) and volunteer staff time. Future funding is essential to continue these activities.

Recent City and Community Activities

- In conjunction with ClimateWise partners and CSU, the City hosted the Give A Watt: Pedal It Forward event. Over 500 people tried the new energy harvesting bikes, which were powering computers that displayed energy-saving tips. The additional energy generated was tracked and donated to the Fort Collins Bike Coop and Bicycle Pedestrian Education Coalition. The event was the kick-off for a month-long Transportation Challenge. Participants had the choice of trying 10 different alternative transportation activities. ClimateWise partners and staff presented a seminar about alternative transportation to community members and students at CSU.
- Assisted Larimer County with an 8-week energy challenge at West Oak Street facility that saved 7,163 kWh (i.e., 5.2% savings).
- Over 1,000 residents, employees, and ClimateWise businesses attended the Mindful Movies and More series, as well as training about Peer City Comparisons, Triple Bottom Line, Communicating About Climate Change, Corporate Responsibility, and Adaptation Strategies. The City presented the following films: *Crude*; *Who Killed the Electric Car*; *Vanishing of the Bees*; *Wasteland*; *Food Fight*; *The Economy of Happiness*; *Food Inc.*; *Carbon Nation*; and *A Sea Change*. All films were followed by a discussion of City programs and local resources. These films are available to City employees through the Sustainability library.



- Assisted in the implementation of an education project to install rain gauges in every PSD school.
- Gardens were replanted again at five affordable housing units. The program was expanded to include the single resident occupancy housing units (SRO). SROs were given supplies and information about gardening. These residents are in treatment for mental illness and substance abuse. All plant materials were donated, and the Environmental Services Department (ESD) staff donated their time for this project.
- “Creating a Resilient Community” and “Home Angler” seminars had the highest attendance at the Residential Environmental Program Series. There were 499 attendees at the eight programs.
- Sustainability Scholarships for training were awarded to 31 applicants from six departments. Training topics included Energy Management; LEED Certifications; Pesticide Application; Organizational Change; Colorado River Basin Law; and Alternative Energy Resources. Recipients are required to present a short overview of the information to the Sustainability Team or their respective departments.
- *Sustainability Projects That Zoom and Breathe Easy* videos were produced and posted on fcgov.com and the municipality’s YouTube channel.
- Numerous interviews with Paul Wozniak of TRI 102.5 were conducted in the areas of Healthy Homes, Recycling, Air Quality, Green Bike Tour, and Sustainability.
- Healthy Sustainable Homes (HSH) program launched at the Sustainable Living Fair. HSH is a free, volunteer-driven program to help families improve their indoor air quality.
- Climate Action Updates and Municipal Sustainability Program Updates were given to several of the Advisory Boards.
- Master Naturalists hosted 16 public programs, led 12 school programs reaching 1,384 residents, and hosted booths at the Wild Shots (i.e., exhibit of wildlife photos), Northern Colorado Birding, and Grow With Me Fairs.
- Staff at the Gardens on Spring Creek hosted gardening networking meetings and outreach to Affordable Housing residents. The Gardens also matches contractors from the Landscape Contractors of Colorado Association with local residents and businesses that need technical assistance.

- Energy Services provided customer education through the Home Efficiency Program and energy use evaluations through the Business Efficiency Program.
- Natural Areas staff hosted five classes on native plant identification and published a newsletter for the Colorado Native Plant Society.
- Utilities conducted energy conservation seminars with 2,758 students and 197 adults; water quality training as part of our National Pollution Discharge Elimination System permit requirement with 6,829 students and 137 adults; water conservation programs with 1,470 children and 59 adults; and storm water outreach to 55 businesses.

Community Web Links

ClimateWise: fcgov.com/climatewise

Healthy Sustainable Homes:
fcgov.com/healthyhomes

Green Building: fcgov.com/greenbuilding

Global Reporting Initiative:
fcgov.com/utilities/gri.php

Sustainability videos:
fcgov.com/airquality
fcgov.com/sustainability

Michelle Finchum (Utilities) teaching water conservation at Bauder Elementary School



Goal #6 Funding



Goal

In addition to reporting on annual carbon inventory, cost savings that directly result from energy and waste conservation will be tracked. The savings will be deposited into an Innovation Account to invest in appropriate new projects.

Goal Progress

Staff is tracking annual savings (see Game-Changing Projects on page 4).

Opportunities/Recommendations

Opportunity: City staff or consultants should research grant opportunities and leading international standards to spearhead world class change.

Recommendation: Investigate RMI's RetroFit for commercial buildings, Better Building Challenge, and the Passivhaus approach for energy load management.

Opportunity: City Operations manages 145,955 sq. ft. of building space. Efficiency returns more than twice its cost in industrial processes, and four times its cost in buildings.⁸

Recommendation: Fund initiative related to internal green building energy performance. The Sustainability Team provided a 2013/2014 budget offer ranking list which gave preference to building energy efficiency performance projects.



Recent City and Community Activities

- Natural Areas awarded five community applicants with funds from the \$15,000 available in 2011: Avago Technologies received \$2,000 for a newly certified area with native trees and shrubs; Fossil Creek Meadows HOA received \$6,900 for Russian olive removal; Lindenmeier HOA received \$600 for a restoration project at Lindenmeier Lake; Ridgewood Hills Master Community Association received \$2,000 for native trees and shrubs to begin enhancing their Raptor Corridor Natural Area; and the Rolland Moore West Neighborhood Network received \$3,500 to increase native plant diversity within a created storm water wetland on Ross Natural Area.
- Community AIR (CAIR) micro grants were issued to nine non-profits. Projects included bicycles for students to ride to field trip and labs, conversion of an HOA volleyball court into a neighborhood garden space, distribution of monthly bus passes, and a solar-powered generator trailer acquisition.

Data Analysis

The Innovation Fund Committee evaluated and awarded funds to projects based on triple bottom line criteria.

In 2011 five projects were proposed, and the Team selected three projects:

- Expansion of the solar thermal system at EPIC to add 24 collector panels, for a total of 96 panels (\$40,000);
- Energy efficiency retrofits at Collindale Clubhouse (lighting, HVAC controls, insulation) (\$47,000);
- Lighting updates for the Senior Center Parking lot (\$19,920).

The three projects, when fully implemented, are estimated to reduce 96 metric tons of carbon dioxide emissions/year, save over \$13,000/year in utility and maintenance costs, and deliver at least a 12% return on investment.

In late 2011, the Sustainability and Innovation Fund teams solicited ideas from across the organization and selected eight of them. These ideas ranged from building efficiency improvements and solar panels for electric carts at South Ridge Golf Course to installing photovoltaics at Nix Farmhouse.

Goal

Achieve a 30% forest canopy density in suitable areas of City Parks by 2020, and maintain 70% of native vegetative cover goal in Natural Areas.

Goal Progress

The City has maintained resources to provide tree densities of 30% tree canopy in suitable areas of parks.

Natural Areas planted 169 trees, 420 shrubs, and constructed 3.5 acres of wetlands. Wetlands constitute the highest natural areas value because of increased biodiversity in those areas.

Opportunities/Recommendations

Staff will be conducting a detailed tree canopy inventory.

Recent City and Community Activities

- Staff built a playground out of natural materials to promote imaginative play at Gateway Natural Area. Natural features in Willow Branch Tunnel include: stepping

Playground out of natural materials at Gateway Natural Area



stumps; climbing ladders; a rock stream bed; rock walls; and a canoe carved from a Silver Maple.

- Maintained Audubon Sanctuary status at five parks.

Data Analysis

Staff continues to maintain parks as designated by community members, with an emphasis on public outreach and education, wildlife and habitat management, resource management, and water conservation.

Funds from the Sustainability budget and Innovation Fund were transferred to Forestry for GPS software to initiate an inventory of trees along the roadways to determine canopy densities.

Community Web Link

fcgov.com/naturalareas

fcgov.com/parks

Gardens on Spring Creek expansion



Goal #7 Parks/ Natural Areas



Goal #8 Water



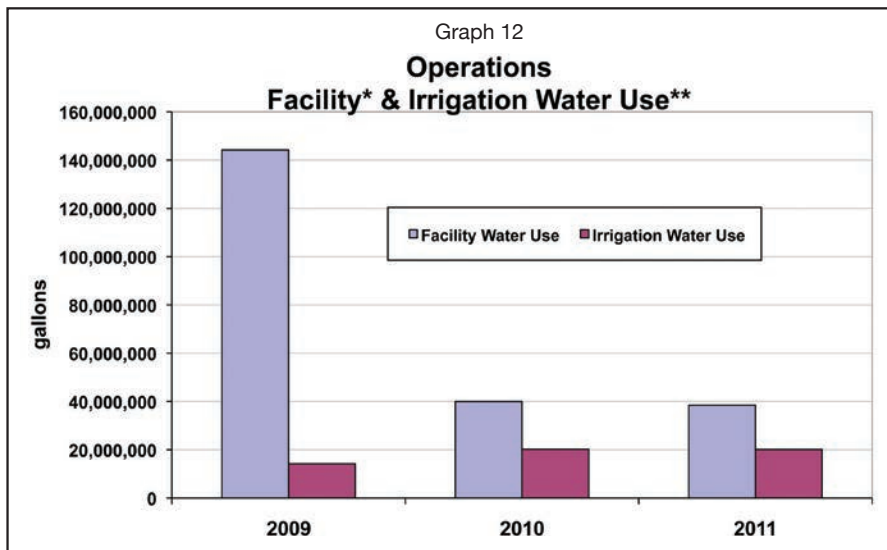
Goal

Reduce municipal operations water irrigation use and increase efficiency per acre. Reduce building water use (normalized to account for weather conditions), 20% by 2020.

Goal Progress

The City organization reached the indoor water use reduction goal.

Water use per employee dropped by 73.3% from baseline year.



* These data represent a maximum of 75 of the City's largest facilities

**Does not include irrigation water for parks, golf courses, or cemeteries

Solar farm at City's Water Treatment Plant



Opportunities/Recommendations

- Conduct water audits at 215 N. Mason, 281 N. College, Senior Center, and Operation Services.
- Modify water schedules to match turf needs.
- Install self-closing nozzles on wash down hoses.
- Invest in more energy efficient pumps and use low-application rotators on slopes.
- Add evapotranspiration rate reductions as an outdoor water use goal.

Recent City and Community Activities

- A preliminary water analysis was initiated to assess the discrepancies in water data from the various databases in 2011.
- ClimateWise piloted a new business reporting system for energy and water using the Carbon City database. Partners included: Gallegos Sanitation, The Rio Grande Mexican Restaurant and World Headquarters Offices, Hewlett Packard, Platte River Power Authority, Trebuchet Group, Sign-A-Rama, Fort Collins, Waterpik, Public Service Credit Union, USDA, Poudre Valley Hospital, Brinkman Partners, Fort Collins Veterinary Emergency Hospital, Houska Automotive, and Beavers Market. Challenges included accessing data on leased property.
- The City piloted the Carbon City database for energy and water use at City buildings.

Data Analysis

Water use in buildings is down by 3.8% since 2010.

Earth Day Fair



Goal

Implement environmentally preferable purchasing (EPP) practices throughout the City organization and establish means to verify departments' compliance with purchasing policy.

Goal Progress

The City has a 6% EPP purchase rate for industrial products and 32% rate for office products from preferred vendors.

Opportunities/Recommendations

Opportunity: The City contracted an EPP Analysis Study through the Green Purchasing Institute.

Recommendation: In collaboration with departments, increase green office practices such as: update the EPP policies; explore products which lend themselves to standardization; create a tracking and reporting tool and an effective way to communicate our successes; enhance the website to include greener alternative recommendations of top five office products and preferred vendor contact information; update Green Building Standards; increase use of recycled or remanufactured toner cartridges; reduce printed material; use 30% post-consumer waste recycled content paper; assist other departments and groups with strategies recommended in audit, such as scanner purchases; and increase consciousness of sustainability practices by including sustainability in processes, manuals, procedures, and training as updates occur, such as Purchasing 101 and triple bottom line seminars.

Recent City and Community Activities

- Purchasing helped facilitate donation of three surplus desks from Operation Services to Crossroads Safe House.
- Purchasing helped Police Evidence donate lost/found/abandoned cell phones to Crossroads Safe House.
- Staff helped Lincoln Center re-purpose surplus dishes and glassware to other City departments. The remainder was donated to the Fort Collins Housing Authority.
- Purchasing helped Advanced Planning donate surplus office supplies to Poudre School District Teachers' Closet.

- Participated in Cartridges for Kids Program.
- Staff helped Police Evidence donate surplus backpacks and jackets to the Murphy Center.
- An interdepartmental team is developing a purchase Sustainable Procurement Action Plan.
- Staff facilitated donations to ReSource for repurposing.

Data Analysis

- The City staff that purchased the highest dollar percentage of EPP goods was the Warehouse Department (19%), followed by Water Treatment Facility (11%), and Drake Wastewater Facility (8%). However, the overall rate was only 6%. Categories that included the least amount of sustainable purchasing were cleaning and break room supplies, technology, furniture, and labels.
- The City purchased \$374,327 in office supplies from Office Depot:
 - 32% was spent on recycled/remanufactured products and 3% on products with other green attributes (i.e., designed for recyclability, renewably powered, etc.).
 - \$132,026 of the \$374,327 met Office Depot Greener Office ratings.
- Purchasing procured green products including road construction and maintenance material (such as recycled aggregate), traffic signal lighting, demolition services, vehicles, and other supplies.
- Purchases of computers met the Electronic Product Environmental Assessment Tool (EPEAT) goal standard.

Community Web Link

fcgov.com/purchasing

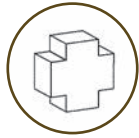
Office Depot — Preferred Vendor



Goal #9 Environmentally Preferable Purchasing



Goal #10 Employee Health and Safety



Goal

Incorporate a City-wide program fostering a culture of health and safety. Increase the number of employees that participate in the Well Day Program from 45% to 75% by 2020 (2% annually). Lower accident frequency and severity.

Opportunities

- Increase the percentage of employees participating in the annual Mayo Clinic Health Assessment by 5% annually.
- Decrease the annual percentage of employees, each year, who are identified in the health assessment as having five or more health risk factors by 5% annually. Based on the 2012 Mayo Clinic Assessment, City employee risk factors are:

– Nutrition	74%
– Safety	60%
– Weight	57%
– Emotional	57%
– Blood pressure	49%

Recommendations

- Continue to provide the Well Day Program for all employees.
- Coordinate Wellness, Sustainability, and Utilities for the 21st Century program activities.
- Continue to track recordable accident frequency, total injury costs incurred, days worked, modified duty, and days lost.

*Science, Technology,
Engineering, and Math
Research project on
the bark beetle impact*



- As an organization, we need to make the connections between our strategies. For example, efficiency not only has a high return on investment, but reduces health issues. These co-benefits are important.

Recent City and Community Activities

- The Sustainability Team partnered with RE/MAX Realtors to help distribute information about the new Healthy Sustainability Homes Program (HSH).
- Sixteen volunteers from the HSH completed 20 hours of training to conduct home assessments in the community as part of their commitment. Twenty trainers were recruited. Volunteers are actively assisting targeting homes of asthmatic children and senior populations.
- The Educational Task Force is coordinating efforts of the Wellness Committee, Safety Committee, Sustainability Team, and for Utilities for the 21st Century Teams. The Wellness and Sustainability Teams have coordinated Talent/Reward Training seminars and the identified sustainable activities that qualify for Well Days points (i.e., gardening, CSA shares, etc.). For example, our electricity conservation measures had a co-benefit of reducing the following air contaminants: 3,201 pounds of NO_x; 2,810 pounds SO_x; 956 pounds of carbon monoxide; and 122 pounds of particulates.
- Utilities' One Planet Wellness Program accomplishments were: hosting tours of Meadow Springs Ranch and Rawhide; commitments by 25 employees to turning off their monitors and CPUs at the end of every work day; participation by 50 employees in the Cultural Values Assessment Workshops; and 15 employees biked to work 10 times.

Oil spill kit



- 736 employees registered for the Well Day Program, and 422 earned their second Well Day vacation day.
- Environmental Services Department staff made non-toxic garden, lawn, and house sprays for City employees who were winners in the Alternative Transportation Challenge drawing.
- The City is collaborating on a Science and Technology research project on the bark beetle impact.

Data Analysis

- As part of ClimateWise requirements, employee Challenges were conducted to increase the health of employees, citizens, and businesses.
- 433 employees earned a third Well Day vacation day through active behavior and training.
- Participation in the Well Days Program continues to increase, and events are expanded each year. Participation grew by nearly 15% from 2010 to 2011.
- HAZMAT team was re-certified to technician level.
- Natural Areas had the highest participation rate for Bike-to-Work Day; Operation Services had the highest mileage count; and IT was the “most improved” department.

Earth Day energy harvesting bike event

- 155 employees participated in the summer Bike-to-Work Day and 148 in the winter event. The City hosted a zero-waste station at these events.
- 1,069 pounds of food and \$12,700 were donated by staff at the Holiday Food Drive to the Food Bank.
- Environmental Services Department staff published a comprehensive list of Community Supported Agriculture options and, in collaboration with the Gardens on Spring Creek, a Garden Resource list.

Community Web Link

citynet/fcgov.com/well_days



Poudre River bike trail



Innovation and Imagination

Innovation and Imagination

- ClimateWise partners, City staff, and Larimer and Adams county employees participated in the inaugural Green Brick Bike Tour, which showcased some of the innovative projects that helped the Fort Collins municipality reduce its carbon emissions by 7% since 2005.
- Operation Services installed a new high-efficiency, low maintenance water filter at the Mulberry Pool, reducing water use by approximately 20%. The filters and boiler were eligible for \$15,200 in rebates.
- ClimateWise designed the new Social Sustainability Superstars program to further address the social impact of each organization and to strengthen the community. Lead partners include: ReSource; Toolbox Creative; City of Fort Collins; Food Coop; Colorado Marathon; New Belgium; and Trees, Water & People. The Corporate Social Responsibility (CSR) Committee has drafted a reporting template, conducted a business survey, and provided trainings for interested business members.

Measurable Indicators

In addition to priority goals, the City monitors progress of key indicators. These indicators align with indicators used by other organizations, such as the Environmental Protection Agency and ICLEI — Local Governments for Sustainability.

Table 4: Indicator Trend Data

Indicators	2005	2011
Carbon Emissions	68,044 MT	63,027 MT
Electricity Use	44,582,789 kWh	42,831,985 kWh
Natural Gas Use	107,133 dTH	145,955 dTH
Percent of Renewable Energy Purchased by City	Not Available	<1% (6% PRPA)
Number of LEED Employees	0	12
Number of LED Energy Efficient Street Lights	Not Available	10,845
Number of LEED Buildings	0	5
Energy Consumption Related to Water Treatment	20,942 dTH and 17,381,121 kWh	24,917 dTH and 16,125,526 kWh
Alternative Fuel Use	14,194 gallons	74,099 gallons
Average Vehicle Ridership	Not Available	1.06 AVR (2011)
Percent of Alternative Fuel Vehicles in Fleet	Not Available	47%
Office Recycling	251,952 tons	553,129 tons
Industrial Recycling Weights	122,404 tons	451,806 tons
Solid Waste Emissions	30,006 tons	31,116 tons
Overall Solid Waste Diversion Rates	80%	73%
Sustainability Scholarships Awarded	0	31
Percent of Forest Canopy	Not Available	30%
Percent of Native Plantings in Natural Areas	Not Available	70%
Adherence to EPP Policies <i>As reported by two preferred providers.</i>	Not Available	35% office and 6% industrial for select vendors
Well Day Participation	Not Available	736 people

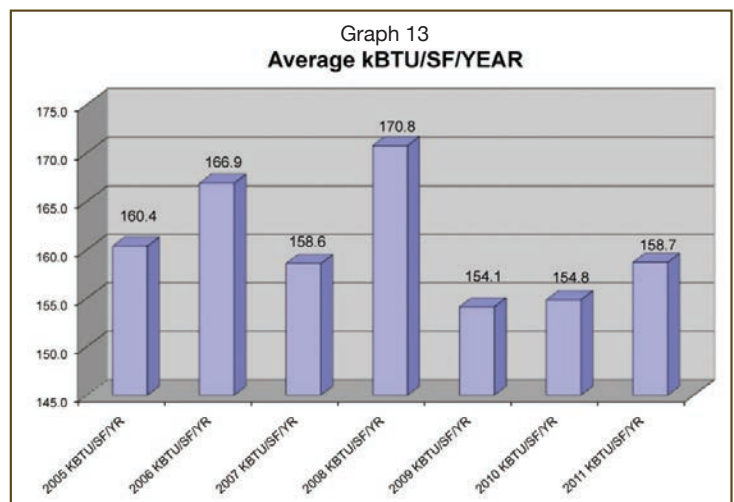
Based on current trends, the City organization is meeting its goals for carbon reduction, fuel, waste diversion, tree canopy, natural areas protection, and outreach. Areas that will require additional staff and funding include water, purchasing, safety, and energy use. Given recent recommendations of leading scientists about climate change and local impacts such as record-breaking wildfires and temperatures, the Sustainability Team is recommending adding the following additional goals:

- The City organization will purchase or lease 20% of electricity from renewable sources by 2020.
- 20% of City event food purchases by staff will be grown within 50 miles or prepared by local businesses.
- Set a numerical goal for environmentally preferable purchasing for all office and industrial products by 2012 based on input from the Purchasing Team. The Sustainability Team recommends a 20% target.
- City buildings will achieve a 10% sq. ft./year energy reduction by 2020 based on the baseline 2005.

The City organization has decreased the average kBTU averages (see graph 13 below). However, the proposed goal would include targets for each building to raise awareness about behavior effects on energy use.

The Sustainability Team recommends engaging in the Better Building Challenge, which sets a goal of 20% reduction in “energy intensity” by 2020. Over 100 leading cities and organizations participate in the Better Building Challenge, including Arvada, CO; Santa Fe, NM; Knoxville, TN; Roanoke, VA; Portland, OR; and PSD Public Schools.

Additional outreach and education through community-based social marketing (CBSM) is planned based on the outcomes of the 2011 Fort Collins’ Air Quality and Recycling Survey. Results showed that 9 out of 10 respondents think individuals could make choices to reduce climate change, and that government should encourage voluntary programs to enable individuals and businesses to reduce climate change impacts. Few survey participants thought technology would solve the problem of climate change, and most did not know about the City’s or community’s carbon goals.



The 2004 Action Plan for Sustainability and corresponding 2009 numerical goals will be reviewed for possible changes. The Municipal Action Plan for Sustainability will be updated.

The Sustainability and Innovation Teams' research aims at moving from mile-wide initiatives that are an inch-deep to more long-term transformative initiatives, concentrating on energy efficiency and re-commissioning because cities consume more than two-thirds of the world's energy and account for 70% of CO₂e emissions. As the American Recovery and Reinvestment Act grants awarded to the City near completion, staff will continue to explore alternative financing mechanisms such as Power Purchase Agreements, state rebates, and leveraging local resources. The California Public Utility Commission approved a tariff pilot for network-controlled dimmable street lights. It is the first of its kind in the nation and could be replicated in Fort Collins.

The following projects were submitted to the Innovation Team for funding in 2012:

- Southridge Golf Efficiencies (\$9,168)
- Traffic Operations — Outdoor Lighting (\$11,160)
- City Department Bikes and Gear (\$3,900)
- Tire Pressure Monitors (\$750)
- Consolidate Leftover Office Supplies (\$0)
- PV on NIX (\$30,000)
- TomTom GPS for Route Optimization (\$900)
- Inventory City Trees (\$7,500)
- Paint 215 N. Mason Building Stairwells (\$2,500)
- Flat Screen Monitor in 215 N. Mason Lobby (\$6,000)
- NIX Outdoor Lighting (\$5,650)
- Battery Chain Saws — Add Dual Battery Packs (\$1,700)
- Collindale II — Electric Golf Cart Storage (\$20,000)
- Door Counter at 215 N. Mason (\$1,700)

Another source of funding is the City's Budgeting for Outcomes (BFO) process. Top ranked budget offers by the Sustainability Team, in descending order by outcome, include the three offers related to solar incentives, solar program and gardens, water conservation programs, Innovation Funding, ClimateWise core and enhancements, Environmental Services core offer, green buildings, and FortZED engagement.

2005 Municipal

GHG Report

Scope 1- Direct GHG Emissions

* conventional fuel only

GHG Source	Quantity Used		Cost	MT of CO2e
Fleet- Gasoline Consumption	417,517	gallons	\$0	3,665.80
Fleet- LPG Consumption	16,672	gallons	\$0	96.53
Fleet- CNG Consumption	5,121	gallons	\$0	35.03
Fleet- Diesel Consumption	267,140	gallons	\$0	2,727.50
	<i>Biogenic</i>	<i>Conventional</i>		
Fleet- E85	0	0 gallons	\$0	0.00 *
Fleet- B10	0	0 gallons	\$0	0.00 *
Fleet- B15	0	0 gallons	\$0	0.00 *
Fleet- B20	14,194	56,775 gallons	\$0	579.67 *
Scope 1 Transportation Subtotal		763,225 gallons	\$0	7,104.53
Facilities Natural Gas Consumption	86,190	dTh	\$696,798	4,666.86
Water-related Natural Gas Consumption	20,942	dTh	\$0	1,133.94
Scope 1 Natural Gas Subtotal		107,133 dTh	\$696,798	5,800.80
Scope 1 Subtotal			\$696,798	12,905.33

Scope 2- Energy Indirect GHG Emissions

GHG Source	Quantity Used		Cost	MT of CO2e
Facilities Electrical Consumption	15,760,580	kWh	\$416,164	13,061.14
Water-related Electrical Consumption	17,381,121	kWh	\$0	14,404.12
Streetlight Electrical Consumption	8,123,199	kWh	\$0	6,731.87
Traffic Signal Electrical Consumption	907,818	kWh	\$0	752.33
"Other" Electrical Consumption	2,410,071	kWh	\$0	1,997.28
Scope 2 Subtotal	44,582,789	kWh	\$416,164	36,946.74

Scope 3- Other Indirect GHG Emissions

GHG Source	Quantity Used		Cost	MT of CO2e
Travel in Personal Vehicle (Reimbursed)	133,553	miles	\$50,817	66.25
Air Travel (Reimbursed)	311,146	miles	\$0	89.45
Landfilled Waste from Municipal Facilities	30,006	tons	-	18,037.08
Scope 3 Subtotal			\$50,817	18,192.78

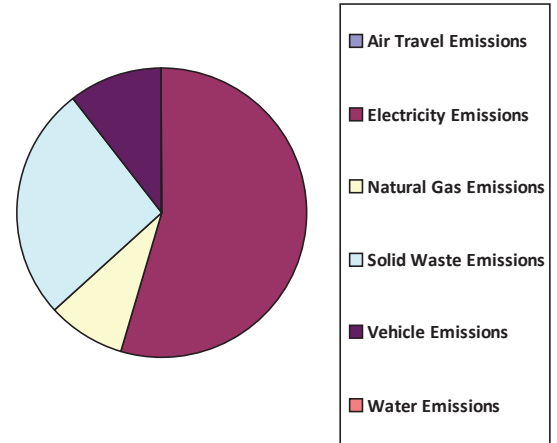
Total Metric Tons of CO2e: 68,044.85

2005 Municipal

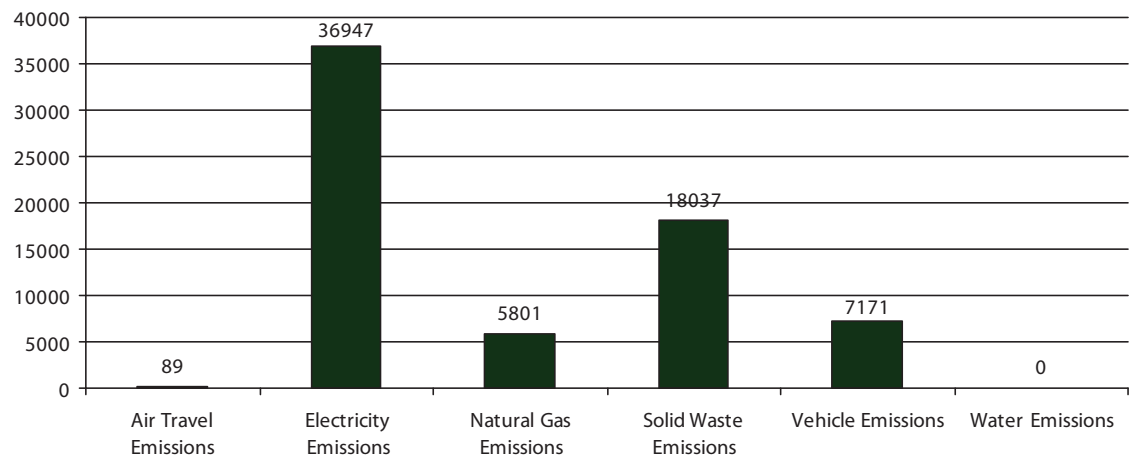
GHG Report

Municipal CO₂e Emissions by Source

Emission Source:	Metric Tons CO ₂ e:	%
Electricity Emissions	36,946.74	54.3%
Solid Waste Emissions	18,037.08	26.5%
Vehicle Emissions	7,170.78	10.5%
Natural Gas Emissions	5,800.80	8.5%
Air Travel Emissions	89.45	0.1%
Total	68,044.85	100.0%



Metric Tons of CO₂e by Emission Source

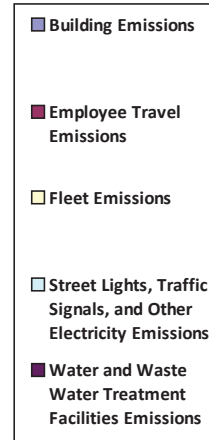
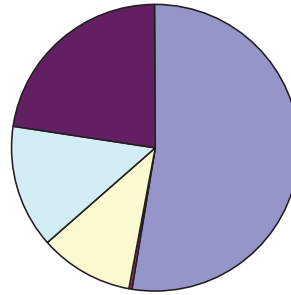


2005 Municipal

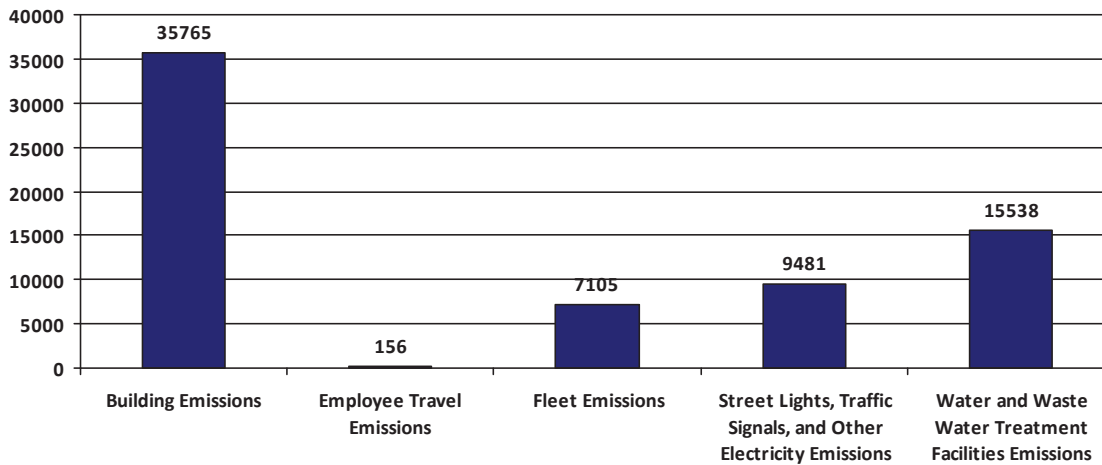
GHG Report

Municipal CO2e Emissions by Sector

Municipal Sector:	Metric Tons CO2e:	%
Buildings Emissions	35,765.08	52.6%
Water and Waste Water Treatment Facility Emissions	15,538.06	22.8%
Street Lights, Traffic, Signals, and Other Electricity Emissions	9,481.48	13.9%
Fleet Emissions	7,104.53	10.4%
Employee Travel Emissions	155.70	0.2%
Total	68,044.85	100.0%



Metric Tons of CO2e by Municipal Source



2005 Municipal

GHG Report

Detailed Recycling Breakdown

Recycling

Material	Quantity	Cost	MT of CO2e
Cardboard	48,880.28 lbs	-	-77.04
Aluminum	59.48 lbs	-	-0.55
Plastic	5,310.32 lbs	-	-4.77
Newsprint	45,951.03 lbs	-	-97.02
Mixed Office Paper	122,651.72 lbs	-	-227.13
Magazines	6,012.15 lbs	-	-8.22
Commingled	23,087.03 lbs	-	-42.24
Residue	0.00 lbs **	-	-
Office Recycling Total	251,952. lbs		-456.98

** included in Landfilled waste - Scope 3

Scrap Metal

Material	Quantity	Cost	MT of CO2e
Aluminum	0.00 lbs	\$0.00	0.00
Copper	0.00 lbs	\$0.00	0.00
Brass	0.00 lbs	\$0.00	0.00
Steel	0.00 lbs	\$0.00	0.00
Mixed Metal	0.00 lbs	\$0.00	0.00
	0.00 lbs	\$0.00	0.00

Crushing Facility

Material	Quantity	Cost	MT of CO2e
1.25 inch crushed concrete	18,303.59 tons	\$0.00	-
1.25 inch dirt and rock road base	0.00 tons	\$0.00	-
1.25 inch recycled asphalt	103,544.23 tons	\$0.00	-
	121,847.82 tons	\$0.00	

Other

Material	Quantity	Cost	MT of CO2e
Wood mulching	232.00 tons	\$2.00	-
Electronics	111.00 tons	\$12.00	-
Yard trimmings	213.00 tons	\$233.00	-
	556.00 tons	\$247.00	
Industrial Recycling Total	122,403.82 tons	\$247.00	0.00

2005 Municipal

GHG Report

Biogenic emissions from biofuels

	<i>Conventional</i>	Biogenic	Cost	MT of CO2e
Fleet- E85	0	0 gallons	\$0	0.00
Fleet - B10	0	0 gallons	\$0	0.00
Fleet - B15	0	0 gallons	\$0	0.00
Fleet - B20	56,775	14,194 gallons	\$0	11.59
Fleet- B100		0 gallons	\$0	0.00
Fleet - Biofuel Total		14,193.80 gallons	\$0.00	11.59

Indicator Breakdown

Text658:

Indicators	Annual Metric Tons CO2e Generated Per Indicator		
Number of City of Fort Collins Employees	1,898	Per Employee	35.85082
Square Footage of Municipal Buildings	1,495,847	Per 1,000 Square Ft.	45.48918
Number of Fleet Vehicles	917	Per Fleet Vehicle*	7.74758
City of Fort Collins Annual Budget	\$465,122,000	Per \$100 of Budget	0.01463

*Only takes into account GHG Emissions from Fleet fuel use.

Additional Data

Total Building Water Use	93,356,584 gallons
Per Employee Water Use	49,187 gallons
Summer High Temperature (Fahrenheit)	103 degrees
Winter Low Temperature (Fahrenheit)	-10 degrees

2011 Municipal

GHG Report

Scope 1- Direct GHG Emission

* conventional fuel only

GHG Source	Quantity Used		Cost	Metric tons of CO2e
Fleet- Gasoline Consumption	336,111	gallons	\$0	2,951.05
Fleet- LPG Consumption	7,746	gallons	\$0	44.85
Fleet- CNG Consumption	111,233	gallons	\$0	760.85
Fleet- Diesel Consumption	5,199	gallons	\$0	53.08
	<i>Biogenic</i>	<i>Conventional</i>		
Fleet- E85	43,279	7,638 gallons	\$0	67.06*
Fleet- B10	30,820	277,382 gallons	\$0	2,832.07*
Fleet- B15	0	0 gallons	\$0	0.00*
Fleet- B20	0	0 gallons	\$0	0.00*
Scope 1 Transportation Subtotal		745,308 gallons	\$0	6,708.97
Facilities Natural Gas Consumption	121,038	dTh	\$613,654	6,553.71
Water-related Natural Gas Consumption	24,917	dTh	\$0	1,349.17
Scope 1 Natural Gas Subtotal		145,955 dTh	\$613,654	7,902.88
Scope 1 Subtotal			\$613,654	14,611.85

Scope 2- Energy Indirect GHG Emission

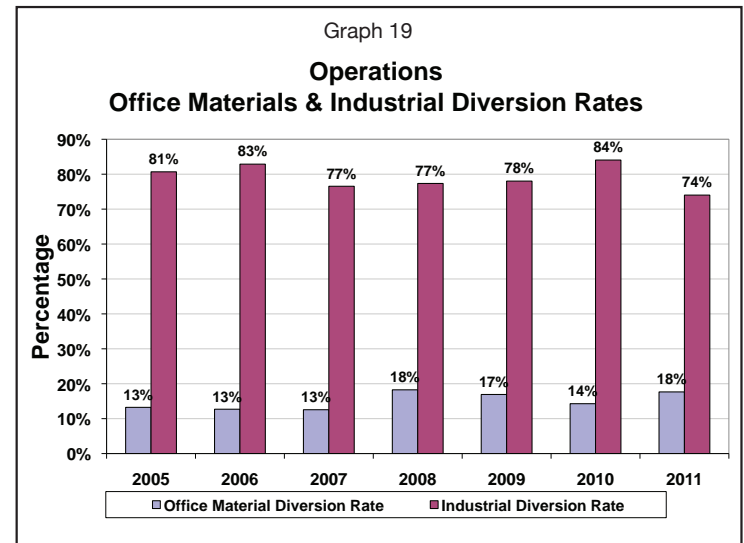
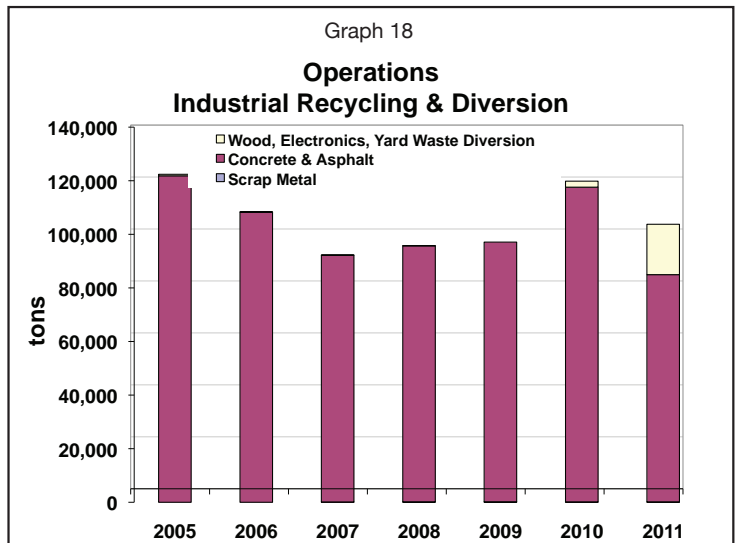
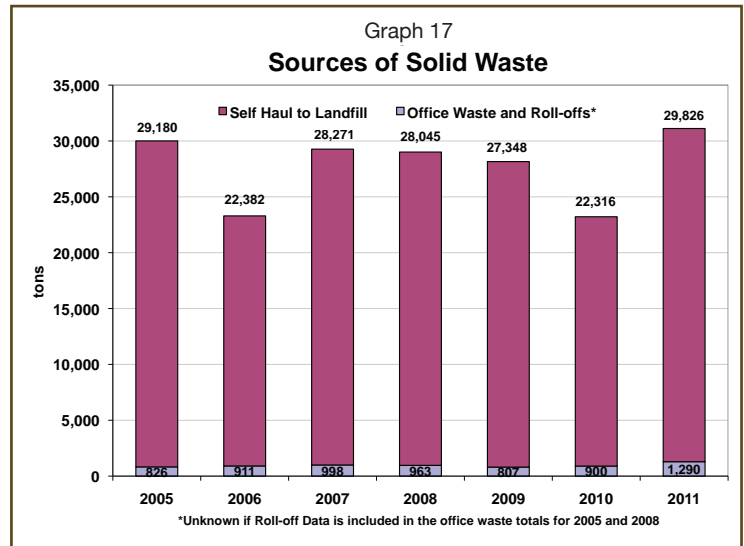
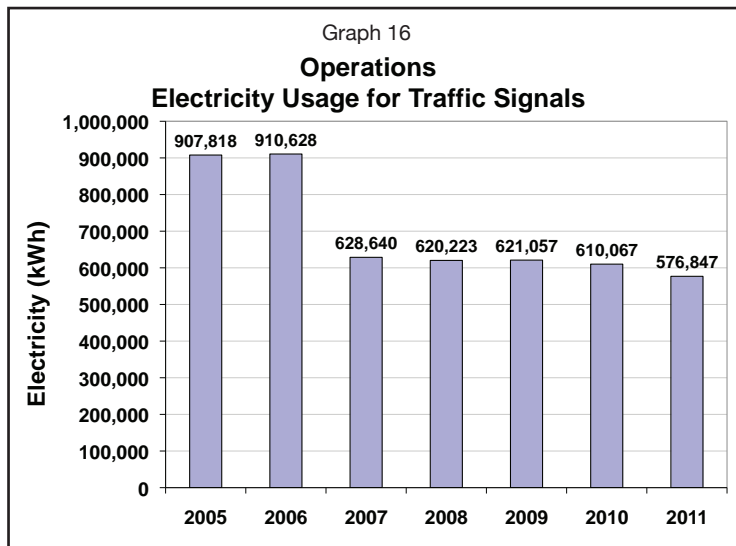
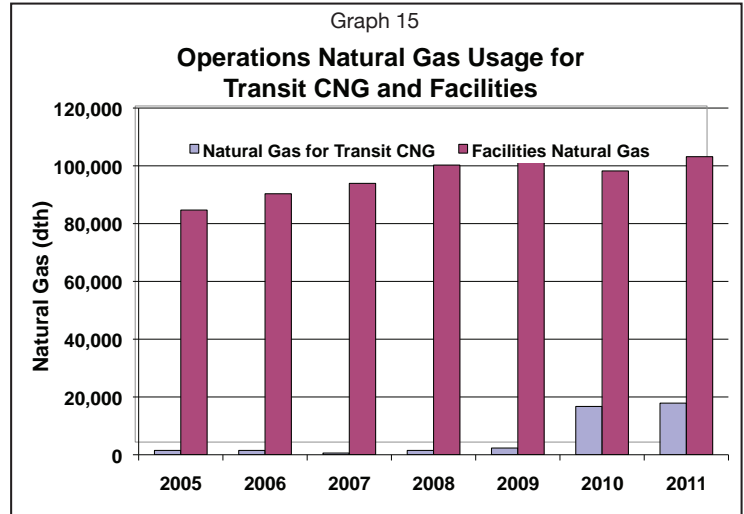
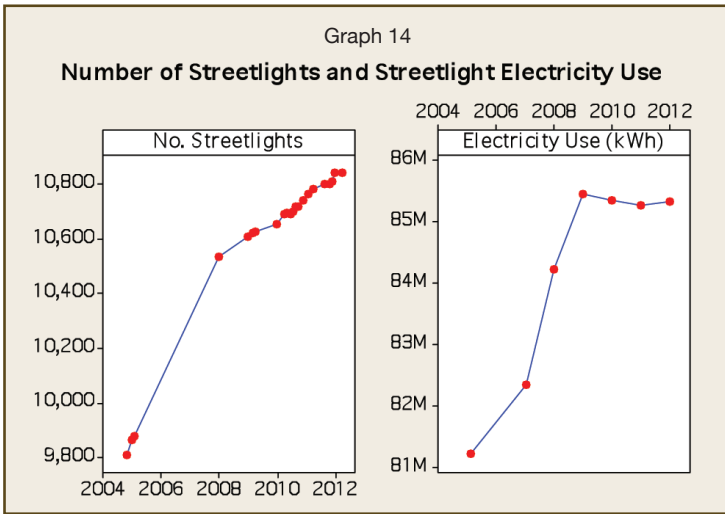
GHG Source	Quantity Used		Cost	Metric tons of CO2e
Facilities Electrical Consumption	15,703,133	kWh	\$546,669	10,613.12
Water-related Electrical Consumption	16,125,526	kWh	\$0	10,898.60
Streetlight Electrical Consumption	8,532,694	kWh	\$0	5,766.91
Traffic Signal Electrical Consumption	576,847	kWh	\$0	389.87
"Other" Electrical Consumption	1,893,785	kWh	\$0	1,279.93
Scope 2 Subtotal		42,831,985 kWh	\$546,669	28,948.43

Scope 3- Other Indirect GHG Emissions

GHG Source	Quantity Used		Cost	Metric tons of CO2e
Travel in Personal Vehicle (Reimbursed)	100,591	miles	\$53,367	49.90
Air Travel (Reimbursed)	352,348	miles	\$54,902	111.66
Landfilled Waste from Municipal Facilities	31,116.04	tons	-	19,305.84
Scope 3 Subtotal			\$108,269	19,467.40

Total Metric Tons of CO2e:

63,027.67



- ¹ For information on methodology, please refer to Quality Management Plan at citynet/sustainability. The increase in municipal GHG emissions between 2010 and 2011 is 2,932 MT CO₂e which represents a 4.9% increase. The increase is mostly attributed to an increase in emissions from industrial City solid waste which constitutes two types of data: 1) self-haul data to the Larimer County landfill and 2) roll-off accounts with Waste Management, Inc. The large increase results primarily from self-haul tonnage going from 22,316 short tons in 2010 to 29,826 short tons in 2011. This resulted in an additional 4,440 MT CO₂e, which served to negate the 2011 emissions reductions savings from electricity usage that were made over 2010. All other increases and decreases in emissions were extremely small in comparison to the solid waste increase. Previous accounting for emissions from departments from self-hauls under estimated overall Scope 3 emissions because volumes were entered directly and not converted to tonnage. All self-haul data from 2005 to 2011 were recalculated during 2012 using the same method in GEMS.

Comparison of the trend lines over time for City and community core emissions (Scope 1 + 2) indicates a very similar pattern, with some variance during the 2008-2009 period (i.e., a larger dip in community core emissions for 2008 followed by a sharp increase in 2009). When evaluating the trend lines for all GHG emissions for the City and community, it appears that different patterns exist for the City concerning its Scope 3 emissions primarily during the 2006-2007 and 2010-2011 time periods. This appears to be related to the City's industrial solid waste emissions, although there is no statistical correlation (e.g., small data set). Community emissions generally follow the same overall pattern whether Scope 3 emissions are included or not. In order to compare our progress with other municipalities and partners, we chose not to include the industrial category. Accounting for solid waste from City Operations now includes industrial categories of waste from departments for self-haul data to the Larimer County Landfill. Industrial waste emissions account for an additional 10,260 MT in 2011. The solid waste methodology change also included switching from estimated volume weights (i.e., cubic yards) to weights based on two required hauler audits from the haulers. The changes account for lower reduction numbers.
- ² epa/greenhousecalculator.com.
- ³ The City added two new facilities to the Utility Manager database (the Science Discovery Museum and Webster House Administration Center). This resulted in increases in electricity, natural gas, water, sewer, and solid waste. The new electricity emission factor (EF) is 1,610 lbs./MWH (based on PRPA Operational Control EF). Staff added the following new utilities data for Natural Areas: natural gas (Xcel Energy); electricity (PVREA); and water (ELCO and Fort Collins-Loveland Water Districts).
- ⁴ Fort Collins' goals were compared to C-40 cities. C-40 cities are a group of cities that have voluntarily agreed to disclose carbon emissions and climate change strategies.
- ⁵ The change in alternative fuel percentages can be explained by a change in methodology to only account for the fraction of a blended alternative fuel that is actually a biofuel.
- ⁶ Accounting for waste diversion and recycling now includes industrial categories of materials: scrap metal; crushed concrete, recycled asphalt, and rock road base sent to the City's Crushing Facility; wood mulching from City departments; re-purposed glass (made into fiberglass); recycled carpet scraps; and construction and demolition material from the old Poudre Creamery building. GEMS does not calculate concrete and organic reductions yet. The City amended the Solid Waste Ordinance to require haulers to provide scale tickets in order to receive more accurate data. Changes in emissions based on this methodology change resulted in approximately 18,505 MT of additional emissions. The record low in the baseline year was -10, but in 2011 it was -13, lower temperatures might account for additional natural gas use. However, the average winter temperatures were warmer for both the December-February and March-May periods in 2011 (2005 — 34.6 and 49.4 vs. 2011 — 31.4 and 48.8 respectively).
- ⁷ Sources: U.S. Environmental Protection Agency, International Aluminum Institute, National Association for PET Container Resources, Institute of Scrap Recycling Industries, Earth Works Group Recycler's Handbook, One Earth Recycle, Bring Recycling.org, National Recycling Coalition, U.S. Forest Products Laboratory, Wheelabrator Technologies and Waste.
- ⁸ Lovins, A. (2011), *Reinventing Fire*. Rocky Mountain Institute.
- ⁹ Generic: GEMS: electricity emissions = 1,490 lbs./MWh; natural gas = .054dTH; electricity 1 kilowatt = 1 lb. coal = 1 therm natural gas = 12 lbs. CO₂e; 1 gal. gas = 22 lbs. CO₂e.

Special thanks to all the staff and community members who supported sustainability efforts:

Sustainability Team: Laura Atwood, Treloar Bower, Peggy Bowers, Laurie D’Audney, Opal Dick, Ken Mannon, Michelle Finchum, Tracy Ochsner, Jim O’Neill, Stu Reeve, Lynn Sanchez, Rachel Steeves, Lucinda Smith, Steve Strickland, Bill Whirty, and Bonnie Pierce. Plus: Ana Arias (editing), Tim Buchanan (wood recycling), Ed Bonnette (solid waste and metal recycling), Alexis Hmielak, Barbara King (Affordable Housing Gardens), Rita Decourcey (data), Ellen Switzer (data), Ray Kemp (data), LeOra Spence (data), Bruce Hendee (leadership), Dr. Rosemarie Russo (Sustainability Coordinator), Challenge participants, and scholarship recipients.

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We are indebted to ClimateWise businesses Shire CSA, Rio Grande Restaurant, and community member Drew McMahan with Seed Starters, who donated plants for the community gardens and planting events.

City Leadership

Darin Atteberry, City Manager

Karen Weitkunat, Mayor

Kelly Ohlson, Mayor Pro Tem, District 5

Ben Manvel, District 1

Lisa Poppaw, District 2

Aislinn Kottwitz, District 3

Wade Troxell, District 4

Gerry Horak, District 6

Water Festival at CSU

Nibble Garden on Spring Creek Bike Trail



2011 Awards and Accolades

The City of Fort Collins and staff have received numerous sustainability-related awards in 2011:

Climate Wise Platinum Level Partner Award

Gold Level Bicycle Friendly Business Award

League of American Bicyclists

Ranked 3rd on the Best Bicycle Cities List

League of American Bicyclists and TheStreet.com

Sheldon Merit Award

Excellence in Environmental Planning for Plan Fort Collins

Energy Star Award — 215 N. Mason, 281 N. College, and Operation Services

National energy efficiency recognition

EPA Director's Award of Recognition — Water Treatment Plant

Partnership for Safe Water

ISO 14001 Certification — Drake Water Reclamation Facility

TUV Rheinland of North America

Certificate of Achievement — Pollution Control Lab

For attaining 100% acceptable results on unknown test samples for all discharge parameters listed in the City's Wastewater treatment permit

Colorado Department of Health and Environment

Cleantech Champion — Fort Collins Utilities

For visionary leadership in electric grid modernization

Colorado Cleantech Industry Association (CCIA)

One of the Top 10 Cities Adopting Smart Grid Technology

U.S. News and World Report

2nd Best City for Weight Loss

Prevention.com

Wind Farms



Morgan Steeves at Gateway Natural Area





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