

# 2011

## CLIMATE ACTION PLAN STATUS REPORT

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The third 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 growth, resource conservation and social well being. Data driven practices and community capacity building are the cornerstone of City operations and allows for continual improvement and progress toward our top ten priority goals. Key accomplishments of 2011:

- The City met our carbon reduction target for 2011. Carbon emission reductions are 7.4% below 2005 levels.<sup>1</sup>
- Less solid waste, which will result in lower methane gas emissions from the landfill;
- More non-carbon and low-carbon power generation brought on-line through the Water Treatment Plants Solar Purchase Agreement ; Discovery Museum PV Project; and the Drake Waste Water Reclamation Plant's Geothermal Project.
- Improved fuel efficiency and use of low carbon fuel in City vehicles.
- Conducted several Challenges with City employees, residents, and select Climate Wise 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 are 59 MT CO<sub>2</sub>e and \$59,000 saved.
- The projects with the highest environmental benefits include the Water Treatment Plant's Solar Purchase Agreement, which yields a 90 metric tons (MT) of carbon equivalent emission reductions (CO<sub>2</sub>e), the Collindale Golf Course lighting replacements (84 MT CO<sub>2</sub>e reduction), and the PV Solar Installation at the Discovery Museum.
- The leading projects in terms of an economic return include the Collindale Golf Lighting Project (\$6,414), Atlan PV installation (\$5,654), and the Solar Purchase Agreement.
- The City joined Food Coop, ReSource, Toolbox Creative, Colorado Marathon, New Belgium, and Trees, Water and People to pilot the Social Responsibility Program through Climate Wise.

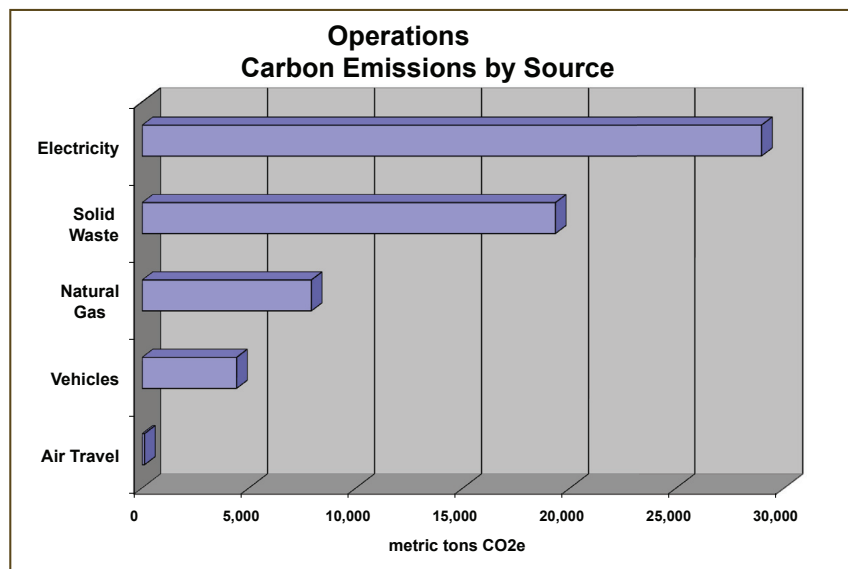
Challenges persist despite our many accomplishments but we are retooling our efforts to be more effective and strategic in terms of funding projects that have low costs and high impacts. Staff is committed to continuing to work towards a sustainable future. In 2012, key projects under way include:

- Using Innovative Fund dollars to finance projects across the organization based on a triple bottom line analysis;
- In late 2011, the Sustainability Team solicited ideas from across the organization and selected eight, ranging from building efficiency improvements and solar panels for electric carts at South Ridge Golf Course to installing photovoltaics at Nix farmhouse.
- Leveraging grant funds to develop a sustainability curriculum for PSD and continuing the CSU School of Global Sustainability (SoGES) partnership in hosting Mindful Movies and the Corporate Training educational series.
- As BFO offers are evaluated, preference to efficiency should be given since efficiency returns more than twice its cost in industry, and four times its cost in buildings.<sup>2</sup>
- 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 (???? bottom line of edits are cut off the pdf)

The organization adopted ten core sustainability goals in 2004 and added numerical targets in 2009. The over arching sustainable goal is to reduce carbon emissions 20% by 2020. The carbon goal is strongly related to other environmental goals, and therefore progress on environmental initiatives often contribute to the over arching carbon objective. Thus the City's carbon reduction of 7.4% from the baseline year represents advancement in a variety of areas ranging from building efficiencies and solid waste management.<sup>3</sup>

Carbon reductions from our baseline year are equivalent to:

- Annual CO<sub>2</sub>e emissions from 1344 passenger vehicles
- CO<sub>2</sub>e 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 2443 tons of material each year. (equal to the weight of 25 gorillas!)
- CO<sub>2</sub>e emissions from 15,909 barrels of oil consumed.



Carbon emissions are tracked in three categories Scope 1 (direct emissions), Scope 2 (electrical indirect emissions and Scope 3 (other direct emissions). Multiyear comparisons are provided in appendix A. Scope 1 emissions are 12,265 metric tons, Scope 2 are 31,909 metric tons and Scope 3 are 19,467 metric tons.

The next few pages describe some program highlights including a table of game changing projects and a list of sustainability related awards.

The table below illustrates the annual impacts of several measurable initiatives and the projects that made a difference in 2011. (A complete environmental and economic ranking is available on page 17.)

## 2011 Projects/Programs

Goal	Project
<b>Goal #1: Carbon</b>	<ul style="list-style-type: none"> <li>• Water Treatment Plant — Solar Power Purchase Agreement</li> <li>• 35.87 kilowatt (kW) photovoltaic (PV) solar collection on the Discovery Museum</li> </ul>
<b>Goal #2: Electricity and Natural Gas</b>	<ul style="list-style-type: none"> <li>• Civic Center Parking Lighting Retrofit</li> <li>• EPIC Solar Thermal Expansion\Senior Center Lighting Upgrades (Parking lot and wall)</li> <li>• Collindale — outdoor lighting, insulation, and display lighting</li> <li>• Streets Outdoor Lighting Replacements</li> </ul>
<b>Goal #3: Fuel Reduction</b>	<ul style="list-style-type: none"> <li>• Transportation Challenge</li> <li>• 6V Charging Station installation</li> </ul>
<b>Goal #4: Solid Waste Reduction</b>	<ul style="list-style-type: none"> <li>• Fall storm mulching</li> <li>• Creamery deconstruction</li> <li>• Recreation eliminated paper schedules</li> <li>• Poudre Fire Authority Warehouse re-use project (i.e. fire suits, office supplies)</li> </ul>
<b>Goal #5: Education and Outreach</b>	<ul style="list-style-type: none"> <li>• Neighborhood Energy Outreach</li> <li>• Give a Watt: Pedal it Forward</li> </ul>
<b>Goal #10: Employee Health and Safety</b>	<ul style="list-style-type: none"> <li>• Expansion of the Affordable Housing Community Gardens</li> </ul>

The City and staff have received numerous sustainability-related awards:

**Climate Wise Platinum Level Partner Award**

**Gold Level Bicycle Friendly Business Award**

*League of American Bicyclist*

**Sheldon (???) is there more to this?)**

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

National energy efficiency recognition

**Governor's Art Award**

Enhance the vitality of the City through the arts

**EPA Director's Award of Recognition** for the 12th year — 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 unknow test samples for all discharge parameters listed in the City's Wastewater treatment permit

*Colorado Department of Health and Environment*

**Cleantech Champion** — Fort Collins Utilites

For visionary leadership in electric grid modernization

*Colorado Cleantech Industry Association (CCIA)*

**2nd Best City for Weight Loss**

*Prevention.com*

**Safest Drivers in America**

*Allstate Insurance Company*

**Ranked 3rd on the Best Bicycle Cities list**

*League of American Bicyclists and TheStreet.com*

**One of the Top 10 Cities Adopting Smart Grid Technology**

*U.S. News and World Report*

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

**Rosemarie, I really want this to go on page 6, but there isn't room**



# Goal #1 Carbon



## Goal

Reduce carbon emissions (carbon dioxide and methane) from municipal operations at least 2% per year 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.

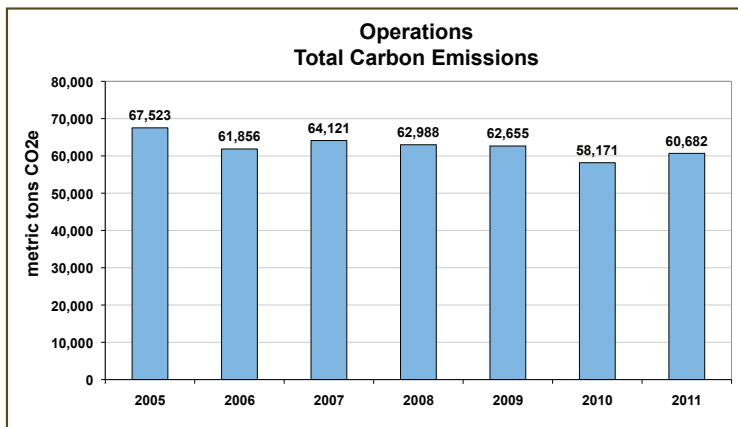
## Goal Progress

The City has met its 2011 reduction target.

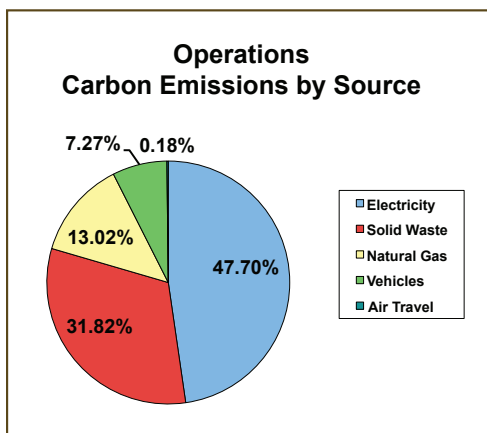
Despite increases in number of employees and square footage of buildings during the 2005–2010 period, carbon emissions (CO<sub>2</sub>e) dropped. In 2010, the City reached the 2% annual reduction target. From 2005 to 2010, carbon emissions dropped by 7.4% or 6,841 tons.<sup>4</sup>

The sources of overall emissions of carbon are listed below:

Graph 1



Graph 2



## Web Links

Community Sustainability — [www.fcgov.com/green](http://www.fcgov.com/green)

Climate Action Plan — [fcgov.com/climateprotection](http://fcgov.com/climateprotection)

## Strategies

- Update 2004 Internal Sustainability Plan.
- Update “Green It, Mean It” and external website; utilize as an inspirational and educational resource including periodic progress reports, management dashboards, successes, tips and resources.
- Identify and implement at least three top priority project for each sustainability goal annually.
- Complete projects from BFO funds to help reach sustainability goals over a three year period.
- Staff will complete Innovation Fund and high-priority grid projects.

## Recent City and Community Activities

- Staff completed its first Quality Management Plan for both the community and municipal carbon emissions.
- ESD and Advanced Planning developed plan for Fort Collins.
- An Air Quality, Sustainability 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 by Steering Committee member Lucinda Smith; and presentations by Rosemarie Russo, (i.e. Plenary) Lucinda Smith, and Kathy Collier (i.e. Climate Wise and Community Progress).
- Climate Wise partners, City staff and Larimer and Adams County employees attended the Carbon Management interactive training and inaugural City Innovative Sustainability Green Brick Bike Tour. The tour showcases the projects that helped the municipality reduce its carbon emissions by 10.3% between 2005 and 2010 (See [fcgov.com/sustainability](http://fcgov.com/sustainability) to download the guide). The tour has a self-guided brochure and will have small educational placards along the route.

## Trend Analysis

- In 2011 municipal operations accounted for 60,682 metric tons — approximately 2% of the community’s total.
- Carbon emission reduction of 2% have been achieved from 2009-2011.



## Goal

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

## Goal Progress

The City did not reach its 2% per annual energy reduction goal but is using less carbon-intensive fuel, and the carbon reductions associated with energy decreased by 1%.

## Strategies

- The Sustainability Team recommends setting a new energy goal: "All new buildings will reach the 2005 baseline, reduce average kBTU/SD/YR by 20% by 2020 for both natural gas and electricity."
- Retrofit outdoor lighting at three buildings.
- Recommend that all employees use the EPA and Energy Star power settings.
- Complete HVAC Controls Retrofit Project and monitor savings at two buildings.

## Recent City and Community Activities

- Six Green Building training sessions were provided 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 ESD assisted Groundwork Colorado with a Community Energy Outreach event on April 16th. 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 Fort ZED Challenge. The initial rate as of September was 3%. Rosemarie Russo, in the role of a Fort ZED Ranger, hosted an educational event for City employees and doubled the participation rate among staff.

## Goal #2 Electricity and Natural Gas



Graph 3

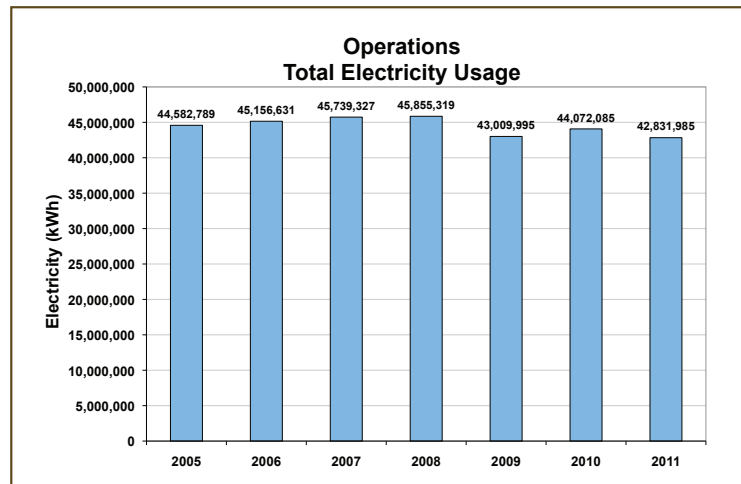
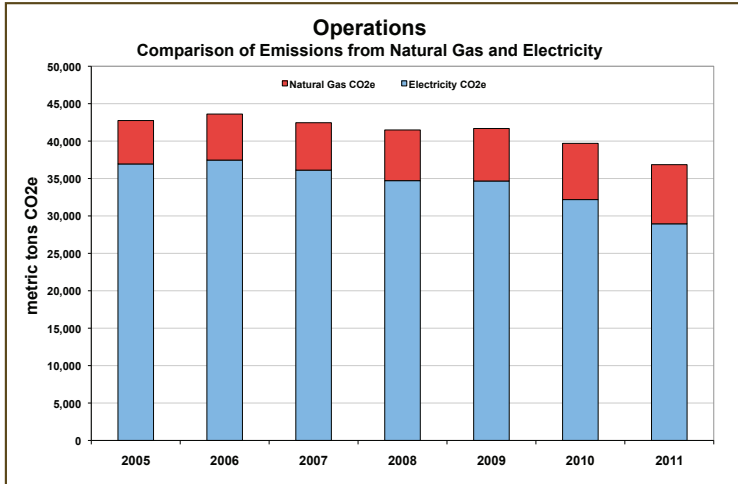


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**Graph 5**



**Graph 4**

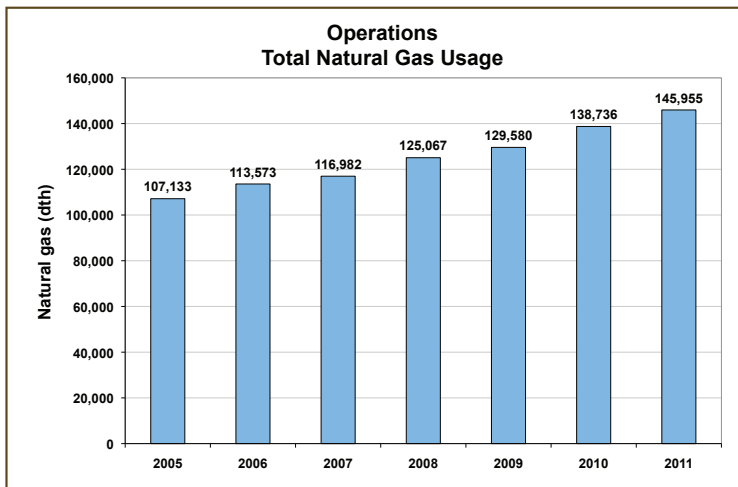


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**Trend Analysis**

- Energy use accounts for 48% of the City's carbon emissions. The 2011 electrical use is lower but natural gas use is higher. The data indicates total electricity usage is down by 3.9% but natural gas has increased by 36%. Traffic signals upgrades yielded significant 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 12. Natural gas is cleaner than electricity, so overall emissions have been reduced.
- Transfort electrical use and natural gas use accounted for 5.2 of the total carbon emissions.
- A shell study and recommissioning was performed at 215 S. Mason, City Hall, and EPIC.

**Web Links**

- Rebates — [fcgov.com/conservation](http://fcgov.com/conservation)
- Fort Collins Utilities Energy Policy — [fcgov.com/electric/energy\\_policy.php](http://fcgov.com/electric/energy_policy.php)

## Goal

Reduce traditional fuel use by the City's vehicle fleet by 20% by 2020 and reach a 1.5 average vehicle ridership (AVR) by 2020 for City employees.

## Goal Progress

The City surpassed its fuel goal. However, it has not reached its average vehicle ridership (AVR) goal.<sup>5</sup> 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 biking, walking, riding the bus, or carpooling.

## Strategies

- Install hydrogen electrolyzer at the Transfort facility enabling pilot testing of hydrogen-operated vehicles (hydrogen/CNG fuel blend).
- Add additional hybrids and flex fuel light duty vehicles.
- Seek to implement the following priorities for the City vehicle purchases: alternative-fueled vehicles; downsize from original request and hybrid.
- Increase average vehicle ridership among City workers through outreach and education. Projects include hosting a seminar about transportation options and a Transportation Challenge.

## Recent City and Community Activities

- Installed electric vehicle charging stations at City Hall.
- The Bike Library now has 8,000 members.
- A short lecture about the Smart Car and electric vehicles was given at the Rocky Mountain Sustainable Living Fair. Over 50 residents were given transportation information.

## Trend Analysis

### Fuel

The City has surpassed 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 CNG and the use of biofuels, which are a less carbon intensive fuel type. In 2005 the City used 2% alternative fuel. Today approximately 9% is alternative fuel (i.e.

biodiesel, CNG, propane & E-85). Alternative fuel use yielded approximately 160 MT CO<sub>2</sub>e reduction.

### Vehicles

The City fleet contains 566 alternative fuel vehicles: 28 E-85; 6 hybrid cars, 6 electric utility vehicles; 6 CNG buses; and 1 solar arrow board.

### Average Vehicle Ridership

Employee travel using personal vehicles has decreased from 133,553 to 100,591 vehicle miles travelled, while airline travel has increased from 11,134 to 352,348.

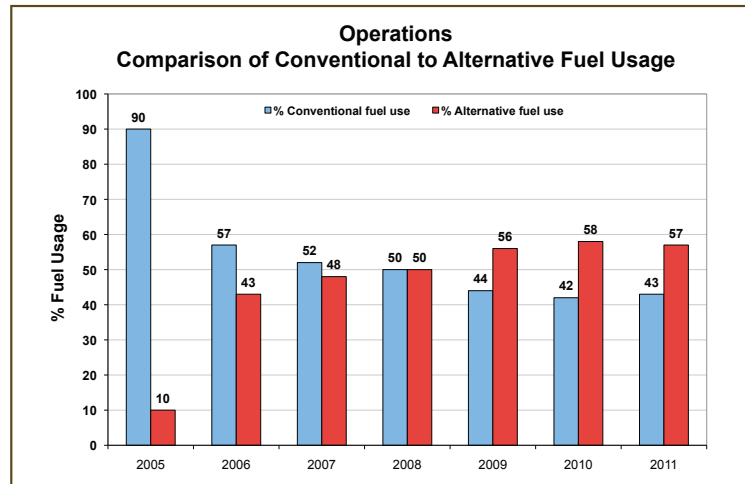
In September 2011, a survey was sent to City employees to gather baseline data regarding average vehicle ridership (AVR).

In 2011, the City has not met its AVR goal of 1.5. Survey results indicate a 1.06 AVR.

## Goal #3 Fuel Reduction



Graph 6



City of Fort Collins hybrid cars.





## 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 diversion goal of 50% has been met.<sup>6</sup>

- Recycled 128 tons of bricks, 16,181 tons of concrete, and 66,844 tons of asphalt.

### Strategies

- Plan and design implementation projects to reduce municipal waste volumes self-hauled by City departments to Larimer County Landfill.
- Increase composting and use of Earth Tubs.
- Increase office diversion rates by department by 10% monitoring recycling; communicate to employees about department diversion rates.
- Present waste reduction/recycling information to new employees, work groups about "Recycle This" campaign.
- Work with vendors at Golf courses and Lincoln Center to reduce waste.
- Collect outdated or unusable City uniforms, including those from Police Services and PFA, to be recycled through Red Apple.
- Continue relocating construction excavation material for use as fill.

### Recent City and Community Activities

- City piloted two composting projects that yielded a 2 MT CO<sub>2</sub>e reduction.
- Recreation eliminated paper schedules which yielded a 84 MT CO<sub>2</sub>e reduction and savings of \$17,000 annually.
- Water Treatment Plant is piloting a soil project using a Trommel screen to sort excavated soil and reuse the material.
- The City has partnered with Greenback LLC to collect old laptop computers at Rivendell Recycling Center. Greenback repairs the laptops when feasible, sells them on-line, and donates 50% of the sales to the Poudre School District.
- Streets' staff made an incredible effort to haul and process approximately 10.5 tons of woody debris after the fall storms. Limbs were ground into free mulch for residents. Mulching leads to lower water use.
- Streets recycled our used street sweeping brooms for animal backscratchers at zoos.
- In 2011, the City started working with Paint Genius, a company in Denver that recycles latex paint into new paint. Fort Collins Housing Authority and Operations Services tried the recycled paint. The old Cramer building on the NW corner of Maple and Howes was painted with recycled paint. Susan Gordan designed an interpretive sign explaining the use of recycled latex for outdoor applications that is posted on the building.



Streets' cleaning up after the fall storms.



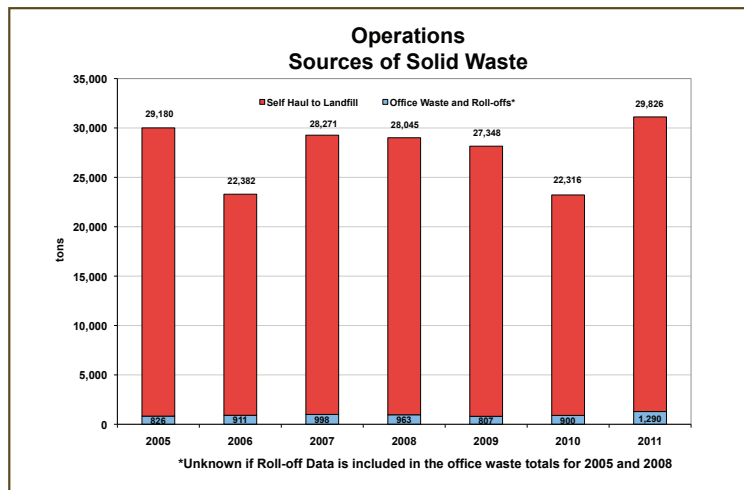
Brick recycling at ??? what project is this?

- The City purchased a second Earth Tub placed at the Cramer building work area.
- The Earth Dazed and Confused event collected used clothing and electronic waste for recycling on Earth Day.

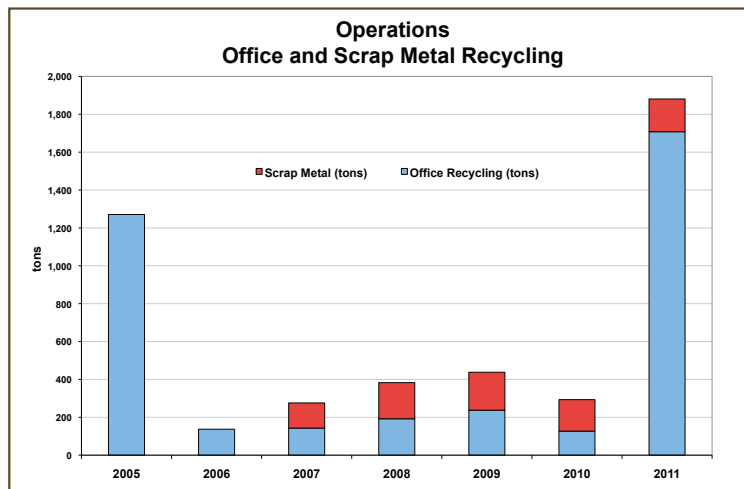
### Trend Analysis

- City departments with the highest diversion rates in 2011 include: PFA Station 1, Parks and the Water Pollution Lab. In 2011, the City recycled 1,700 tons of office material which saved 28,900 trees and enough water to fill City Park Pool 21 times.
- The 2011 office diversion is approximately 57% and the overall diversion including asphalt, metal and trees is 78%.

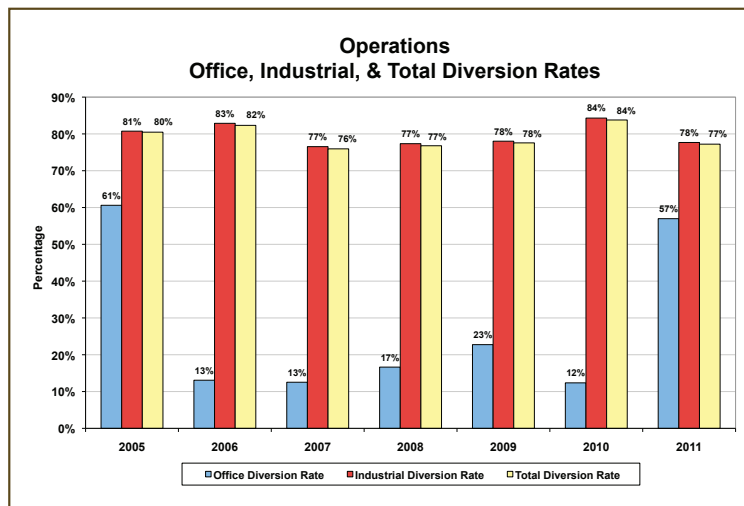
Graph 7



Graph 8



Graph 9



Ragmaking out of used clothing.



Electronic waste recycling on Earth Day.



## 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 and university, the general public — as well as internal customers.

### Goal Progress

The City reached its goal.

### Strategies

- Outreach will be provided through the Residential Series, and targeted presentations to audiences such as Poudre School District, CSU, Homeowner Associations (HOAs), and religious organizations.
- Implement employee challenges as required under Climate Wise for the platinum level.
- Host Corporate Training for business community and City employees (5 sessions).
- The City will promote leadership by participating in community initiatives such as FortZED.
- A survey of the Sustainability Team was conducted about strategic planning, role of the team and the internal and external web site content. The feedback was that the team should continue to meet and act as ambassadors to their respective departments. The priority for 2011 should be on general technical training of all employees and implementing select projects through Task Force Teams.

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### Recent City and Community Activities

- The City hosted in conjunction with Climate Wise partners and CSU the “Give A Watt: Pedal It Forward” event. Over 500 people tried the new energy harvesting bikes which were powering computers with 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 ten different alternative transportation activities. CW partners and City staff presented a seminar about alternative transportation to community members and students at CSU.
- Over a thousand residents, employees, and CW businesses attended the in-house training and Mindful Movies and More Series. Training Peer City Comparisons, Triple Bottomline Training, and Adaptation Strategies. Several City employees are interested in being part of a task force to address adaptation strategies. The City presented the following films: Crude, Who Killed the Electric Car, Vanishing of the Bees, Wasteland, Food Fight and A Sea Change. All films are followed by a discussion of local City programs. Films are also available to City employees through the sustainability library.
- ESD presented two technical training seminars for City staff and CW businesses: communicating about climate Change and Sister City Comparisons and a series of discussion forums following the screenings of The Economy of Happiness, Food Inc., and Carbon Nation.



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

- Gardens were implemented again at five Affordable Housing Units and the program was expanded to the single resident occupancy housing units (SRO). SROs were provided with supplies and information about gardening. These residents are in treatment for mental illness and substance abuse. All plant materials were donated and NR staff donated their time for this project.
- “Creating a Resilient Community” and “Home Angler” Seminars were hosted as part of the Residential Environmental series. Attendance for the events was 63 and 30 participants respectively.
- Sustainability Scholarships applications were awarded to 27 applicants from six departments. Training topics include: Energy Management, LEED Certifications, Pesticide Application, Organizations 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.
- “The Sustainability Projects That Zoom, Part 2” video that showcases seven innovative projects that the municipality is implementing across the organization)has been posted on the City website.
- Five interviews with Paul Wozniak of TRI 102.5 were conducted in the areas of Healthy Homes, Recycling, Air Quality, Green Bike Tour, and Sustainability. Some of the links to the audio interviews are available.
- ESD staff presented at the Climate Wise Envirovation Event about corporate social responsibility.
- Healthy Sustainable Homes(HSH) program launched at the Rocky Mountain Sustainable Living Fair. HSH is a free, volunteer-driven program to help families improve the indoor air quality in their homes and promote more sustainable residential behavior.
- Climate Action Updates and Internal Sustainability Program Updates were given to several of the Advisory Boards.
- A 6.5 minute “Breathe Easy” anti-idling video and a City sustainability project video was posted to the City’s web page.
- Master Naturalists and staff 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), the Northern Colorado Birding, and Grow With Me Fair.
- Staff at the Gardens at Spring Creek hosted

gardening networking meetings and outreach to Affordable Housing residents. The Garden also matches contractors from the Landscape Contractors of Colorado Association with local residents and businesses that need technical assistance.

- Natural Areas staff hosted 5 classes on native plant ID and published a newsletter for the Colorado Native Plant Society.

## Web Links

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City and Scholarship Program — [citynet.fcgov.com/sustainability](http://citynet.fcgov.com/sustainability)

Climate Wise — [fcgov.com/climatewise](http://fcgov.com/climatewise)

Healthy Homes — [fcgov.com/healthyhomes](http://fcgov.com/healthyhomes)

Green Building — [fcgov.com/greenbuilding](http://fcgov.com/greenbuilding)

Global Reporting Initiative — [fcgov.com/utilities/gri.php](http://fcgov.com/utilities/gri.php)

Sustainability videos — [fcgov.com/airquality](http://fcgov.com/airquality)  
[youtube.com/watch?v=hGFR12E6ujE](https://youtube.com/watch?v=hGFR12E6ujE)

**Photo needed for here**



## 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, and possibly deposited into a Sustainability account to invest in appropriate projects.

### Goal Progress

The City reached its goal of tracking annual savings. (See Game-Changing Projects on page 4)

### Strategies

The City's Sustainability Innovation Team will identify and rank team projects and departmental projects.

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### Recent City and Community Activities

- Natural Areas awarded five applicants Natural Areas Enhancement 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.
- CAIR (Community AIR) micro grants were issued to 9 non-profits in Fort Collins in 2011 to harness community action to improve air quality. Projects ranged from bicycles for students to ride to field trip and labs, converting an HOA volleyball court into a neighborhood garden space, distribution of monthly bus passes, and a solar-powered generator trailer.

### Trend Analysis

The Innovation Fund Committee evaluated and awarded funds to projects based on several criteria including the return on investment projected benefits.

In 2011 five projects were proposed and the Team selected 3 projects:

- Expansion of the solar thermal at EPIC to add 24 collector 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.

### Web Links

[fcgove.com/citynet/innovation](http://fcgove.com/citynet/innovation)

## Goal

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

## Goal Progress

The City has met the 30% tree canopy goal.

## Strategies

- The City will maintain Parks as designated and built with an emphasis on periodically replacing landscaping to more drought tolerant species.
- Replace 5% of existing plantings with xeric native species.
- Maintain a 30% forest canopy on City owned property.
- Plant natives and eradicate non-natives at Natural Areas to maintain 70% natural areas.

- Park Planning and Park Maintenance will work together on park designs to maximize “no mow areas” while providing a park that meets the needs of the community.

## Recent City and Community Activities

- Staff built a playground out of natural materials to promote imaginative play. Natural features in Willow branch tunnel, stepping stumps, a rock stream bed, rock walls and a canoe carved from Silver Maple.

## Trend Analysis

In addition to a major restoration at McMurray Natural Areas, the staff created a beautiful wild zone at Gateway Natural Areas. Staff built play structures such as wooden canoes and climbing ladders.

## Web Link

[www.fcgov.com/natural\\_areas](http://www.fcgov.com/natural_areas)

## Goal #7 Parks/ Natural Areas



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Playground out of natural materials (where is this at??)

## 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), by 20% by 2020.

### Goal Progress

The City reached the indoor water use reduction goal.

Graph 10

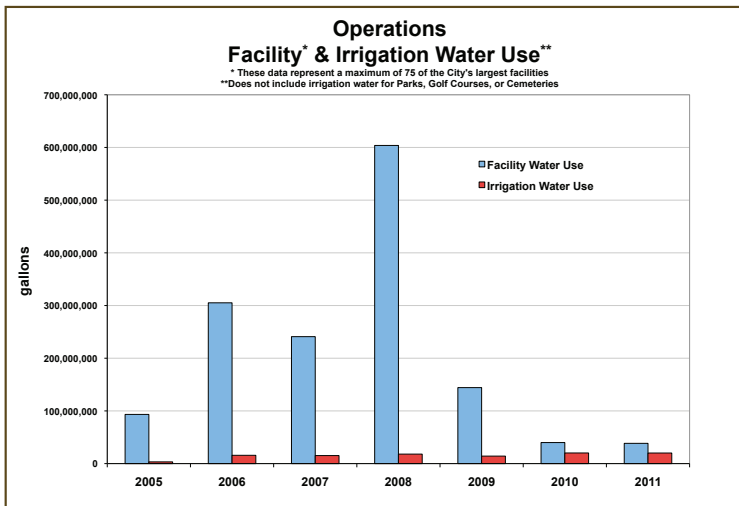


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### Strategies

- 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 MP rotators on slopes.

### Recent City and Community Activities

- A preliminary water analysis was initiated regarding the discrepancies in water data from the various databases.
- Climate Wise piloted a new reporting system for energy and water utilizing the Carbon City database. Partners included: Gallegos Sanitation, The Rio Grande Restaurant and Offices, Hewlett Packard, Platte River Power Authority, Trebuchet Group, Sign-a-rama, Water Pik, 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.
- Piloted the Carbon City database for energy and water use at City buildings.

### Trend Analysis

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

Photo needed for here

## Goal

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

## Goal Progress

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

## Strategies

In conjunctions with departments, increase Green Office practices such as:

- Update the Sustainable Purchasing Policy
- Explore products which lend themselves to standardization.
- Create a tracking and reporting tool.
- Create 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.
- Use of recycled or remanufactured toner cartridges
- Reduction of printed material
- Use of 30% PCW recycled content paper
- Use of other green office products
- Assist other departments and groups with strategies recommended in audit such as scanner purchases.
- Increase consciousness of sustainability practices by including sustainability in processes, manuals, procedures and training as updates occur such as CPIM, Purchasing 101, and TBL seminar.

## Recent City and Community Activities

- Purchasing helped facilitate donation of three surplus desks from Operations Services to Crossroads Safe House.
- Purchasing helped Police Evidence donated lost/found/abandoned cell phones to Crossroads Safe House.
- Purchasing 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 Advance Planning donate surplus office supplies to PSD Teacher's Closet.
- Purchasing helped Police Evidence donate surplus backpacks and jackets to the Murphy Center.
- In 2011, the Warehouse had the highest dollar percentage of EPP goods (19%) followed by Water Treatment Facility (11%) and DWF (**what does this stand for?**) (8%). Categories that included the least amount of sustainable purchasing were cleaning and breakroom supplies, technology, furniture, and labels.

## Trend Analysis

- In 2011, the City purchased \$374,327 in office supplies:
  - 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.<sup>7</sup>
- Purchasing procured green products of road construction and maintenance material (such as recycled aggregate), traffic signal lighting, demolition services, vehicles, and others
- 2011 purchases of computers meet the Electronic Product Environmental Assessment Tool (EPEAT) goal standard.
- Purchased five E85 vehicles; two hybrid cars; two electric vehicles; two CNG buses, and a solar arrow board.

## Web Link

[www.citynet/fcgov.com/purchasing](http://www.citynet/fcgov.com/purchasing)

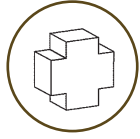
## Goal #9 Environmentally Preferable Purchasing



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## Goal #10 Employee Safety and Health



### Goal

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

### Strategies

- Increase the percentage of employees participating in the annual Mayo Clinic Health Assessment by 5% annually.
- Decrease the percentage of employees, each year, which are identified in the health assessment as having five or more health risk factors by 5% annually. Based on the 2012 Mayo Clinic Assessment, our top risk factors are:
  - Nutrition 74%
  - Safety 6%
  - Weight 57%
  - Emotional 57%
  - Blood pressure 49%
- Continue to host the Wellness Program for all employees.
- Coordinate Wellness, Sustainability and Utilities for the 21st Century program activities.
- Track recordable accident frequency, total injury costs incurred, days worked, modified duty, and days lost

### Recent City and Community Activities

- The Sustainability Team partnered with ReMax Realtors to help distribute information about recycling and the new Healthy Homes Program.

Photo needed for here

- Sixteen volunteers from the Healthy Homes Program completed 20 hours of training to conduct home assessments in the community as part of their training. Twenty trainers were recruited to conduct the Referral efforts are currently underway targeting homes of asthmatic children and senior populations.
- The Educational Task Force is coordinating efforts of the Wellness Committee, Safety Committee, Sustainability Team and four Utilities for 21st Century Teams. The Wellness and Sustainability Team have coordinated Talent and Reward Training seminars (see attached listings) and the identification of sustainable activities that qualify for wellness points (i.e. gardening, CSA shares, etc.)
- Utilities' One Planet Wellness Program accomplishments were: hosting tours of Meadow Springs ranch and Rawhide; 25 employees committed to turning off their monitors and CPUs at the end of every work day; 50 employees participated in the Cultural Values Assessment Workshops, and 15 employees biked to work 10 times.
- Over 700 employees registered for the Well Day Program and 422 earned their second Well Day.
- ESD staff made non-toxic garden, lawn and house sprays for City employees that were winners in the Alternative Transportation Challenge drawing.

### Trend Analysis

- In 2011, as part of Climate Wise requirements, several employee Challenges were conducted to increase the health of employees, citizens, and businesses.
- Participation in the Wellness Program continues to increase and events are expanded each year.
- 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.
- 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 at the Holiday Food Drive.
- ESD staff published a comprehensive list of CSAs and in conjunction with Garden on Spring Creek, a Garden Resource list.

### Web Link

[citynet/fcgov.com/well days](http://citynet/fcgov.com/well%20days)

## Innovation and Imagination

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

## 2011 Projects/Environmental Ranking

Return	Rating	Project	Environmental Benefit
	1	Water Treatment Plant — Solar Power Purchase Agreement	90 metric tons (MT) of carbon reduction equivalent (CO <sub>2</sub> e)
	2	Collindale — outdoor lighting, insulation, and display lighting	60,133 kWh, 5,535 therms, 84 MT CO <sub>2</sub> e reductions
	3	Collindale Golf Course Efficiency Upgrades	Projected — 60,133 kWh, 5,535 therms avoided per year, 50 MT CO <sub>2</sub> e reductions
	4	35.87 kilowatt (kW) photovoltaic (PV) solar collection on Science Discovery Museum	32 MT CO <sub>2</sub> e reductions
	5	215 PV System	1.8 MT CO <sub>2</sub> e reductions
	6	Neighborhood Energy Outreach	32,775 kWh reduction, 29 MT CO <sub>2</sub> e reductions
	7	Expansion of the Affordable Housing Community Gardens	25 MT CO <sub>2</sub> e reductions per month, Healthier air, water, and soils
	8	EPIC Solar Thermal Expansion	2,389 therms avoided, 14.3 MT CO <sub>2</sub> e reductions
	9	Atzlan Northside — 53kW Photo Voltaic System	20 MT CO <sub>2</sub> e reductions
	10	Civic Center Parking Lighting Retrofit	23,381 kWh savings, 19 MT CO <sub>2</sub> e reductions
	11	Transportation Challenge	12 MT CO <sub>2</sub> e reductions
	12	Streets Outdoor Lighting Replacements	13,440 kWh, 11.4 MT CO <sub>2</sub> e reductions
	13	Senior Center Lighting Upgrades (Parking lot and wall)	Improved air quality, reduced electrical use (12,530 kWh/yr avoided), 10.1 MT CO <sub>2</sub> e reductions

### Return on Investments:



High



Medium



Low

**Rosemarie,**  
**I hate breaking**  
**these charts up, but**  
**don't know what**  
**else to do. I could**  
**put photos on page**  
**19 and move the**  
**beginning of the**  
**chart to the next**  
**pate**

*continued*

### 2011 Projects/Environmental Ranking continued

#### Return on Investments:








High











Medium



Low







Return	Rating	Project	Environmental Benefit
	14	Evacuated tube solar thermal system installed at EPIC	10625 kWh savings, 9 MT CO <sub>2</sub> e reductions
	15	Give a Watt: Pedal it Forward	5 MT CO <sub>2</sub> e reductions
	16	Recreation eliminated paper schedules	1.4 MT CO <sub>2</sub> e reductions
	17	Streets wall pack replacement lighting	1620 kWh, 1.4 MT CO <sub>2</sub> e reductions
	18	Bike to Work Day	1 MT CO <sub>2</sub> e reductions per month

### 2011 Projects/Economic Ranking

Return	Rating	Project	Economic Benefit
	1	Civic Center Parking Lighting Retrofit	\$18,705
	2	Evacuated tube solar thermal system installed at EPIC	\$8,500
	3	Collindale — outdoor lighting, insulation, and display lighting	\$6,414
	4	Atzlan Northside — 53kW Photo Voltaic System	\$5,654
	5	Water Treatment Plant — Solar Power Purchase Agreement	\$5,000
	6	Transportation Challenge	\$4,008
	7	35.87 kilowatt (kW) photovoltaic (PV) solar collection on Science Museum	\$3,840
	8	Neighborhood Energy Outreach	\$2,950
	9	Senior Center Lighting Upgrades (Parking lot and wall)	\$2,093
	10	EPIC Solar Thermal Expansion	\$1,800
	11	Streets Outdoor Lighting Replacements	\$1,060
	12	Recreation eliminated paper schedules	\$1,450
	13	Give a Watt: Pedal it forward	\$1,440
	14	Collindale Golf Course Efficiency Upgrades	\$789



2011 Projects/Economic Ranking continue

Return	Rating	Project	Economic Benefit
	15	215 PV System	\$700
	16	Expansion of the Affordable Housing Community Gardens	\$160
	17	Bike to Work Day	\$225
	18	Streets wall pack replacement lighting	\$136
	19	Poudre Fire Authority Warehouse	Not available
	20	Environmental Management Systems — Drake Water Treatment Plant, Water Treatment Plant, and Streets	Not available

In addition to priority goals,<sup>8</sup> the City monitors progress of key indicators. These indicators align with indicators used by other organizations.

Measurable Indicators

Indicators	Improving	Declining	Neutral	Insufficient Data
Carbon Emission Reductions	X			
Electricity Use Reductions	X			
Natural Gas Use Reductions		X		
% of Renewable Purchased by City			X	
# of LEED Employees	X			
% of LED Traffic Lights	X			
% of LEED Buildings	X			
Energy Consumption Related to Water Use		X		
Alternative Fuel Use	X			
Average Vehicle Ridership			X	
% of Hybrid Vehicles in Fleet	X			
Volume of Recycled Material	X			
Reduction of Solid Waste		X		
Solid Waste Diversion Rates		X		
Sustainability Scholarships Awarded			X	
% of Forest Canopy			X	
% of Native Plantings	X			
Adherence to EPP Policies				X
Well Day Participation	X			

# Strategic Opportunities and Future Actions

Rosemarie, should this header have “and Future Actions” in it?

**Opportunity:**

There are numerous projects and purchases that reduce carbon.

**Recommendation:**

Based on carbon analysis the City strategically select the most cost effective projects, while factoring in additional considerations such as the value of piloting projects and providing leadership.

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 in terms of carbon reductions. Although some projects have a high investment premium they serve citizens by pioneering new operational processes and products.<sup>8</sup>

Purchase/Project	Initial Investment	CO <sub>2</sub> e Metric Ton	Carbon Cost/Ton	Funding Sources
HPS Lights	\$11,729	237	\$49	Utility
Server Verbalization	\$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

**Opportunity:**

C-40 Report shows in priority order the following types of projects as strongest in terms of return on investment: Retrofitting existing buildings; renewable energy projects and street lighting projects.

**Recommendation:**

Continue efforts to retrofit and recommission buildings and implement enhanced renewable energy procurement programs.

**Opportunity:**

The City should be increasing connections between EV and the grid.

**Recommendation:**

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

**Opportunity:**

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

**Recommendation:**

Investigate RMI’s RetroFit for commercial buildings, Better Building Challenge, Passivhaus approach for load management.

**Opportunity:**

Many leading sustainability cities include emissions from employees commutes in their carbon inventories. Larimer County is piloting an aggressive Telework Program.

**Recommendation:**

Expand municipal carbon emission inventory to include commuter emissions and consider expanded telework program.

**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.

**Opportunity:**

NoCo Rebuilding Network and staff have met to discuss partnerships to provide resources that make sustainable rebuilding accessible after natural disasters such as wildfires.

**Recommendation:**

Expand the initial Climate Adaptation Planning to include areas beyond water and energy planning.

**Opportunity:**

There are numerous projects and purchases that reduce carbon.

**Recommendation:**

Based on carbon analysis the City strategically select the most cost effective projects, while factoring in additional considerations such as the value of piloting projects and providing leadership.

**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%.

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

- City Operations will purchase or lease 20% of electricity from renewable sources by 2020.
- 20% of food purchases by City staff will be grown within 50 miles or prepared by a local business.
- City buildings will achieve a 10% sq. ft./year reduction based on the baseline 2005 by 2020.
- Achieve a 20% EPP rate for all office and industrial products by 2013.

Staff has implemented several key waste reduction projects in 2012. After a fire sprinkler broke at Atzlan, staff was able to salvage and reuse most of the flooring, increasing our diversion rate. Parks has expanded the use of Big Belly units throughout the community.

The Sustainability and Innovation Teams research aim at moving from wide-wide initiative that are an inch deep because cities consume more than two-thirds of the world's energy and account for 70% of CO<sub>2</sub>e emissions.

Top ranked BFO (what does this stand for?) offers by Sustainability Team include:

- XXXX

BFO: Numerous offers have been submitted for the 2013-2014 funding cycle. Top ranked projects by citizens include:

- Community renewal small-scale incentives
- Climate Wise
- Water conservation
- FortZED Grant development

*The 2004 Annual Sustainability Plan and corresponding 2009 numerical goals will be reviewed for possible changes and additional goals will be considered in the areas such as local food production, enhanced Environmentally preferable purchasing (EPP) goals, and a renewable energy purchase goal. A building KBTU/sq/year goal is being considered.*

*Future Action continued*

<b>Funded Projects</b>	<b>Cost</b>
Southridge Golf Efficiencies	\$9,168
Traffic Ops — 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 Stairwells	\$2,500
Flat Screen TV in 215 Lobby	\$6,000
NIX Outdoor Lighting	\$5,650
Battery Chain saws — Add Dual Battery Packs	\$1,700
Collindale II — Electric Cart Storage	\$20,000
Extra Cost for Door Counter for “Paint 215 Stairwell”	\$1,700
<b>TOTAL</b>	<b>\$99,228</b>

## Recycling Co-benefits for Fort Collins<sup>9</sup>

In 2011 we recycle 270 tons of aluminum, cardboard/paper, scrap metals, plastics, and glass from office waste (i.e. 20% diversion rate).

### These recycling efforts conserved the following resources:



#### 4,539 mature trees were saved

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 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 33 times.

## Green Facts

### Paper Use

*in 2011, the City used 96,213 lbs. (48 tons) of copy paper, which is an estimated equivalent of 1,077 trees. The total lifecycle CO<sub>2</sub>e associated with this paper was approximately 271,663 lbs. CO<sub>2</sub>e. Every 12 cxs of virgin paper requires 8 trees.*

In the coming year, The City will begin a transformation bring existing departments — Environmental Services and Economic Health with a new department Social Sustainability under the leadership of Bruce Hendee to form the Office of sustainability. The new office will act as a resource to assist other departments in supporting our sustainability goals and creating a culture of sustainability.

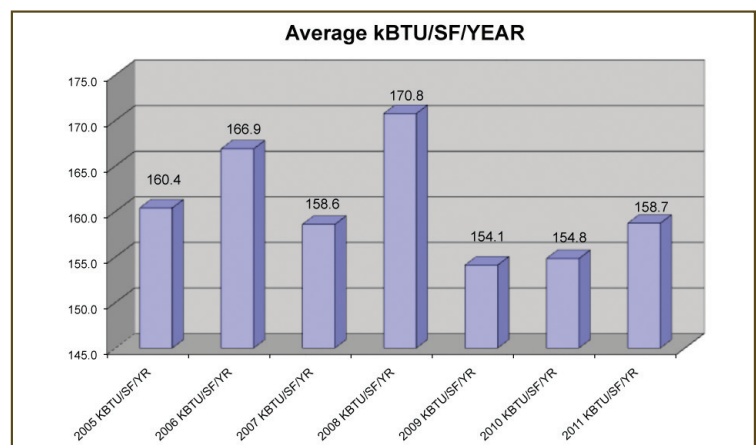
The City Operations has decreased the average Kbtu averages but the proposed goal will include targets for each building to raise awareness about behavior affects on energy use.

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 participate in the Better Building Challenge, includeing Arvada, Santa Fe, Knoxville, Roanoke, Portland, and PSD Public. ????. Other cities are supporting Energy Rating Disclosure such as Austin, Washington D.C. New York, seattle, Philadelphia, and San Francisco

Additional outreach and education through community based marketing is planned based on the results of the 2011 Air Quality Sustainability Survey. Results showed that 9 of 10 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. Few survey participants think technology would solve the problem on climate change and most did not know about the City’s or community’s carbon goals.

## Forecast and Milestones

Graph 11



**Special thanks to all the staff that supported sustainability efforts:**

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, and Bill Whirty, Bonnie Pierce, Ana Arias (editing); Tim Buchanan (wood recycling); Ed Bonnette (solid waste and metal recycling); Alexis Hmielak (photos); Barbara King (Affordable Housing Gardens); Rita Decourcey (data); Ellen Switzer (data); Ray Kemp (data); LeOra Spence (data), Challenge participants; and scholarship recipients.

Kudos to the staff that earned their LEED Green Associate Credentials or are pursuing Sustainability Management Certificates: Megan Bolin, Sarah Carter, Lindsay Ex (???) , and Rosemarie Russo.

We are indebted to Climate Wise businesses Shire CSA, Rio Grande and community member Drew McMahan, Seed Starters, who donated plants for the community garden and planting events.

**City Leadership**

Darin Atteberry, City Manager	Lisa Poppaw, District 2
Karen Weitkunat, Mayor	Aislinn Kottwitz, District 3
Kelly Ohlson, Mayor Pro Tem, District 5	Wade Troxell, District 4
Ben Manvel, District 1	Gerry Horak, District 6

- <sup>1</sup> For information on methodology, please refer to Quality Management Plan
- <sup>2</sup> Lovins, A. (2011), Reinventing Fire
- <sup>3</sup> Ibid
- <sup>4</sup> The City added two new facilities to the Utility Manager database (the Discovery Museum and Webster House Admin). This results in increases in electricity, natural gas, water, sewer, and solid waste.
- <sup>5</sup> The new electricity CF 0.000745 (based on PRPA Operational Control EF). Added the following new utilities data for Natural Areas: natural gas—Xcel Energy, electricity—PVREA, water—ELCO and Fort Collins-Loveland Water Districts.
- <sup>6</sup> 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.
- <sup>7</sup> Accounting for solid waste from City Operations now includes industrial categories of waste from self haul data from departments to the Larimer County landfill. Accounting for waste diversion and recycling now includes industrial categories of materials: scrap metal sent to Aragon Metal Recycling; 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 C&D material from the old Poudre Creamery building.
- <sup>8</sup> Office solid waste (and roll-offs) were picked up by Waste Management, Inc. for at least 7 months in 2010 and all of 2011. An average tonnage was used for the remaining 5 months in 2010. Office recycling is up 84% since 2010. The previous 2 years office recycling was actually down 13% in 2010 from the previous year, and 19% in 2009 from the previous year. Concrete and asphalt recycling was down 28% since 2010, even with the Creamery deconstruction data added to the diversion data from the Crushing Facility.
- <sup>9</sup> Assumption: Participants continue behavior changes.
- <sup>10</sup> Fort Collins’ goals were compared to C-40 cities. C-40 cities have are a group of cities that have voluntarily agreed to disclose carbon emissions and climate change strategies.
- <sup>11</sup> 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. Forst Products Laboratory, Wheelabrator Technologies and Waste

## Generic emissions calculator:

Source	Conversion Factor
Electricity	1 kilowatt = 1 lb. of CO <sub>2</sub> e
Natural Gas	1 therm = 12 lbs. of CO <sub>2</sub> e
Vehicles	1 gallon = 22 lbs. of CO <sub>2</sub> e
Trash	1 lb. = 1.5 lbs. of CO <sub>2</sub> e
Air Travel	2,000 miles = 1,160 lbs. of CO <sub>2</sub> e

For questions or comments about this report or City goals, please contact Dr. Rosemarie Russo, Sustainability Coordinator, [rrusso@fcgov.com](mailto:rrusso@fcgov.com) or 970-416-2327.



# 2011 Municipal

GHG Report



## Scope 1- Direct GHG Emission

GHG Source	Quantity Used	Cost	Metric tons of CO2e
Fleet- Gasoline Consumption	0 gallons	\$0	0.00
Fleet- LPG Consumption	0 gallons	\$0	0.00
Fleet- CNG Consumption	0 gallons	\$0	0.00
Fleet- E85 Consumption	0 gallons	\$0	0.00
Fleet- Diesel Consumption	0 gallons	\$0	0.00
Fleet- B10 Consumption	0 gallons	\$0	0.00
Fleet- B15 Consumption	0 gallons	\$0	0.00
Fleet- B20 Consumption	0 gallons	\$0	0.00
Fleet- B100 Consumption	0 gallons	\$0	0.00
<b>Scope 1 Transportation Subtotal</b>	<b>0 gallons</b>	<b>\$0</b>	<b>0.00</b>
Facilities Natural Gas Consumption	114,120 dTh	\$605,804	6,179.13
Water-related Natural Gas Consumption	24,917 dTh	\$0	1,345.78
<b>Scope 1 Natural Gas Subtotal</b>	<b>139,037 dTh</b>	<b>\$605,804</b>	<b>7,524.91</b>
<b>Scope 1 Subtotal</b>		<b>\$605,804</b>	<b>7,524.91</b>

## Scope 2- Energy Indirect GHG Emission

GHG Source	Quantity Used	Cost	Metric tons of CO2e
Facilities Electrical Consumption	15,664,044 kWh	\$543,151	12,625.88
Water-related Electrical Consumption	16,125,526 kWh		12,997.85
Streetlight Electrical Consumption	8,532,694 kWh	\$0	6,877.71
Traffic Signal Electrical Consumption	576,847 kWh	\$0	464.96
"Other" Electrical Consumption	85,604 kWh	\$0	69.00
<b>Scope 2 Subtotal</b>	<b>40,984,715 kWh</b>	<b>\$543,151</b>	<b>33,035.40</b>

## Scope 3- Other Indirect GHG Emissions

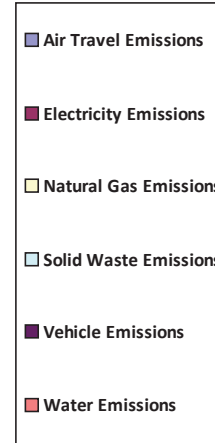
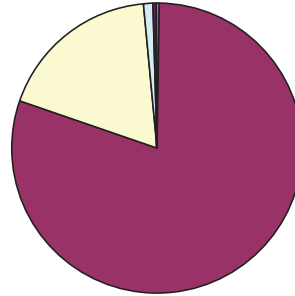
GHG Source	Quantity Used	Cost	Metric tons of CO2e
Travel in Personal Vehicle (Reimbursed)	101,213 miles	\$53,694	50.21
Air Travel (Reimbursed )	352,348 miles	\$54,902	111.66
Water (Consumptive Use)	18,360,037 gallons	-	33.31
Water (Non Consumptive Use)	19,295,632 gallons	-	8.75
Landfilled Waste from Municipal Facilities	2,151.13 tons	-	521.03
<b>Scope 3 Subtotal</b>		<b>\$108,596</b>	<b>724.97</b>

**Total Metric Tons of CO2e: 41,285.28**

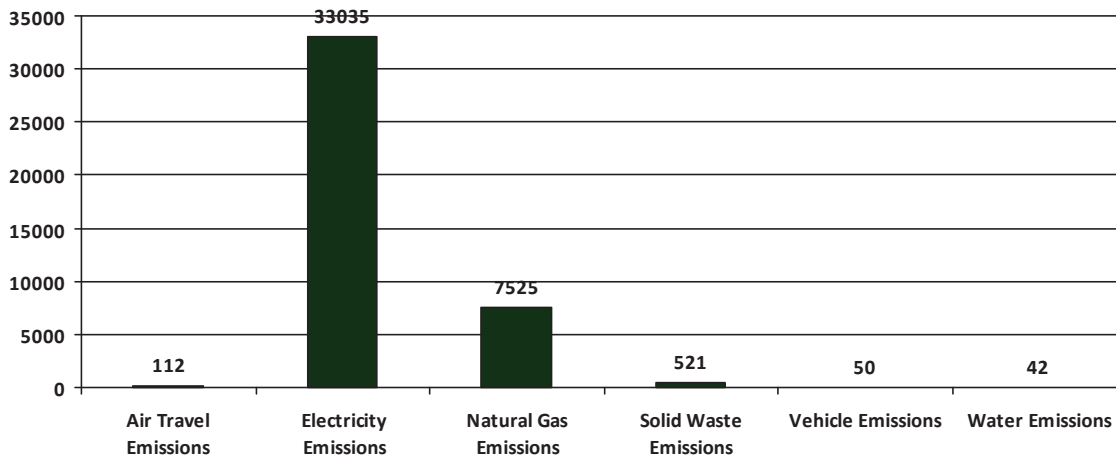


## Municipal GHG by CO2e Emission Source

Emission Source:	Metric Tons CO2e:	
Electricity Emissions	33,035.40	80.0%
Solid Waste Emissions	521.03	1.3%
Vehicle Emissions	50.21	0.1%
Natural Gas Emissions	7,524.91	18.2%
Air Travel Emissions	111.66	0.3%
Water Emissions	42.06	0.1%
<b>Total</b>	<b>41,285.28</b>	



Metric Tons of CO2e by Emission Source



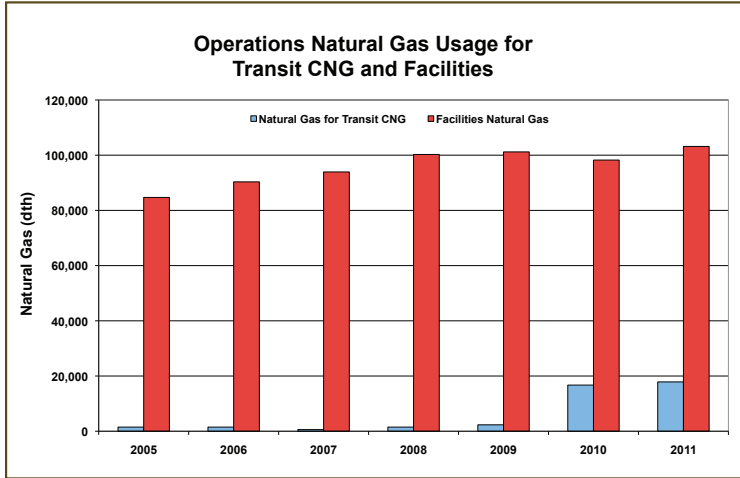
The "2011 Municipal Biogenic emissions from biofuel" page wasn't in the pdf you sent, so I still that one

Goal	Project
<b>Goal #1: Carbon</b>	<ul style="list-style-type: none"> <li>• Water Treatment Plant — Solar Power Purchase Agreement</li> <li>• 35.87 kilowatt (kW) photovoltaic (PV) solar collection on the Science Discovery Museum</li> <li>• Atzlan Northside — 53kW Photo Voltaic System</li> <li>• Environmental Management Systems — Drake Water Treatment Plant, Water Treatment Plant, and Streets</li> </ul>
<b>Goal #2: Electricity and Natural Gas</b>	<ul style="list-style-type: none"> <li>• Collindale — outdoor lighting, insulation, and display lighting</li> <li>• Streets Outdoor Lighting Replacements</li> <li>• EPIC Solar Thermal Expansion\Senior Center Lighting Upgrades (Parking lot and wall)</li> <li>• 215 PV System</li> <li>• Evacuated tube solar thermal system installed at EPIC</li> <li>• Collindale Golf Course Efficiency Upgrades</li> <li>• Civic Center Parking Lighting Retrofit</li> <li>• Streets wall pack replacement lighting</li> <li>• Solar Message Board — Street Project Construction</li> </ul>
<b>Goal #3: Fuel Reduction</b>	<ul style="list-style-type: none"> <li>• Transportation Challenge</li> <li>• Bike to Work Day</li> </ul>
<b>Goal #4: Solid Waste Reduction</b>	<ul style="list-style-type: none"> <li>• Recreation eliminated paper schedules</li> <li>• Poudre Fire Authority Warehouse</li> </ul>
<b>Goal #5: Education and Outreach</b>	<ul style="list-style-type: none"> <li>• Neighborhood Energy Outreach</li> <li>• Give a Watt: Pedal it forward</li> </ul>
<b>Goal #10: Employee Health and Safety</b>	<ul style="list-style-type: none"> <li>• Expansion of the Affordable Housing Community Gardens</li> <li>• Utilities Memorial Garden</li> </ul>

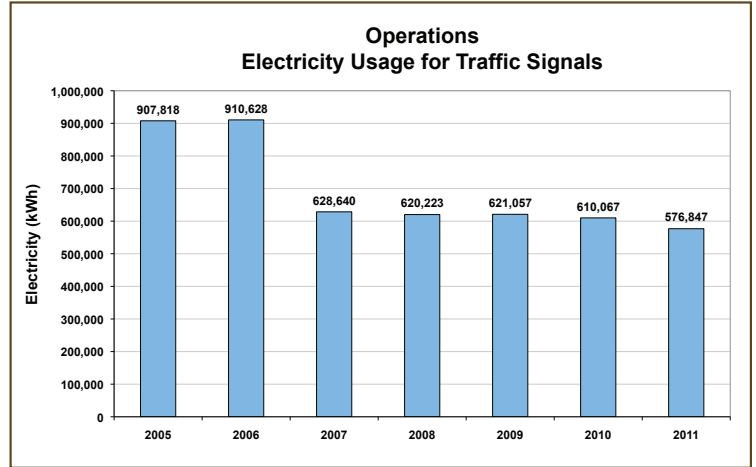
Rosemarie, I got this list from the 2011 Projects/Programs and you indicated which goal each item went with, I'm not sure where to get the projects for the missing goals.

# Appendix C Trend Data

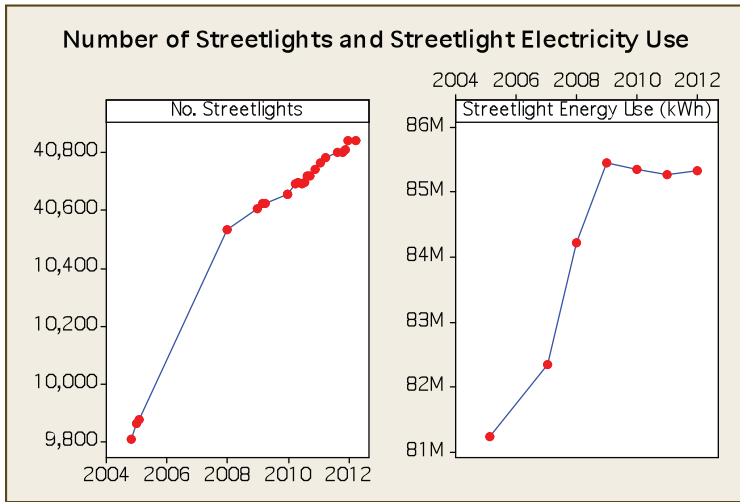
**Graph 12**



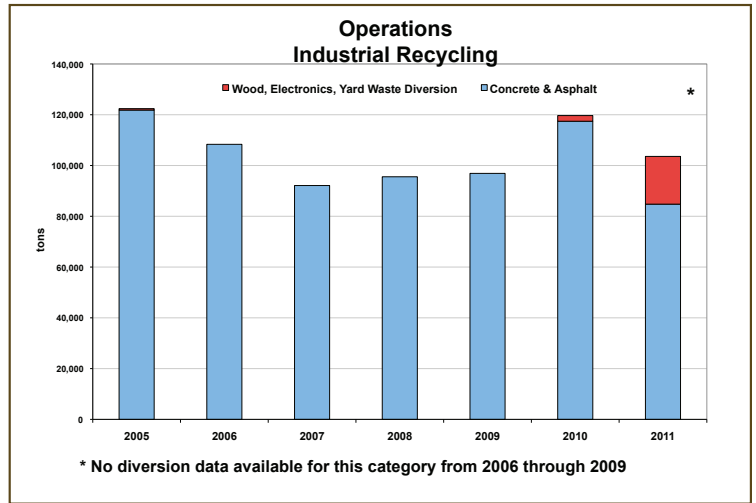
**Graph 13**



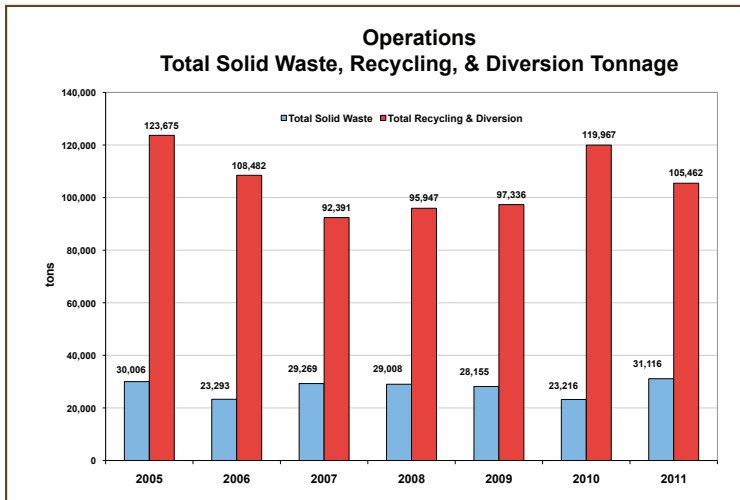
**Graph 14**



**Graph 15**



**Graph 16**



INSIDE BACK COVER

BACK COVER