City of Fort Collins
Sustainability Services

Municipal Greenhouse Gas Emissions Inventory Quality Management Plan

Years 2005 through 2010

November, 2011

Table of Contents

Page

I. Revision History……. 6

II. Introduction…… 9

III. Baseline Year Selection (2005)…… 10

IV. Boundary Conditions……. 10

Organizational Boundaries…… 10
Facilities List……. 11
Greenhouse Gas Emissions Types and Source Scopes…… 12

V. Emissions Quantification ……..……. 15

Quantification Methods…….. 15
A. Electricity……. 15
B. Natural Gas…….. 16
C. Water……..……. 16
D. Transportation……..……..……... 16
E. Solid Waste…….. 17
F. Recycling…….. 19
G. Emissions Not Reported…….……. 21

Emissions Factors and Other Constants…… 21
A. Electricity……. 21
B. Natural Gas…….. 22
C. Water……..……. 23
D. Transportation……..……..……... 23
E. Solid Waste…….. 24
F. Recycling…….. 25

VI. Data Management…….. 26

Activity Data……. 26
A. Electricity…….. 26
B. Natural Gas…….. 27
C. Water……..……. 27
D. Transportation……..……..……... 28
E. Solid Waste…….. 30
F. Recycling…….. 30

Normalization Factors……. 31

Quality Assurance…….. 31

Data Security…… 31

Page

Municipal Reporting Frequency……. 32

Document Retention and Control Policy……. 32

VII. Summary of Inventory Results……. 32

Appendix A – City of Fort Collins Facilities…….. 34

Appendix B – 2005 Base Year Inventory Results…….. 37

Appendix C – 2006 Emissions……. 39

Appendix D – 2007 Emissions…….. 41

Appendix E – 2008 Emissions……. 43

Appendix F – 2009 Emissions…… 45

Appendix G – 2010 Emissions…… 47

List of Tables

Page

Table 1 – Revision History…….. 6

Table 2 – Summary of Exceptions to the Operational Control Approach…… 11

Table 3 – Facilities Not Included in the City of Fort Collins Quality Management Plan……. 12

Table 4 – City of Fort Collins Greenhouse Gas Emissions Types…….. 13

Table 5 – Greenhouse Gas Emissions Source Scopes…….. 14

Table 6 – City of Fort Collins kWh data for 2005……. 16

Table 7 – Solid Waste Methods Revisions for the 2010 Inventory.……..…….. 18

Table 8 – Recycling Methods Revisions for the 2010 Inventory…….…… 19

Table 9 – June 2011 Revision of Emissions Factors in the Greenhouse Gas Emissions Management System (GEMS) for Electricity…… 22

Table 10 – Comparison of Emission Factors for Electricity…… 22

Table 11 – Natural Gas Emissions Factors in GEMS…… 23

Table 12 – Electricity Associated with Water Emissions Factors…… 23

Table 13 – Electricity Associated with Water Emissions Factors in GEMS…… 23

Table 14 – Emission Factors for Transportation in Climate Wise Baseline Tool……. 24

Table 15 – Emission Factors for Transportation in GEMS…….. 24

Table 16 – Recycling Emission Factors in the Climate Wise Baseline Tool……. 25

Table 17 – Recycling Emission Factors in GEMS…… 26

Table 18 – City Fuel Consumption…… 29

Table 19 – Summary of Gross Municipal GHG Emissions……. 32

Table 20 – Previous 2009 Gross Municipal GHG Emissions……....34

Page

Table 21 – Previous 2008 Gross Municipal GHG Emissions……33

Table 22 – City of Fort Collins Facilities…… 34

I. Revision History

This section contains a history of **major** changes made to the City of Fort Collins Municipal greenhouse gas (GHG) Inventory since 2005, the baseline year. A municipal inventory represents a useful tool for creating a quantitative understanding of emissions from City operations and provides a best estimate based upon current understanding and data. That said - it is important to communicate to policymakers, staff, and community members that it does not represent a complete and unchanging picture of municipal emissions for the City of Fort Collins. Inventories will evolve because the science, models, and data infrastructure behind available data are continually evolving, and for this reason, available data and emissions factors are continually being refined and made more accurate. Changes documented in this section generally include changes in overall methodology or significant changes in emissions factors, conversion factors, sources of activity data, or recalculations due to discovery of errors. A summary of the revision history is presented in Table 1 below:

Table 1. Revision History

Date	Revision No.	Where Published	Description of Changes	Impact on 2005 Baseline	Originator
2009	1	2008 Climate Action Plan (CAP) Status Report published July 2009	The City of Fort Collins joined the Climate Wise Program in 2007 and began using the Climate Wise GHG Baseline Tool to calculate GHG Emissions in short tons of CO_2e. At this time the annual inventory included all electricity purchased by the City, natural gas used in buildings, and cubic yards of waste estimated to be collected. Employee airline miles and employee traveling for work-related travel were added. (Source: File = Muni2005baselinev62409-ls.xls)	YES Revisions were made to reflect these changes in methodology. The revised baseline for 2005 was 61,600 short tons = 55,900 MT CO_2e using Climate Wise GHG Baseline Tool v10.13.2007	Climate Wise Program, L. Smith
2009	2	2009 CAP Status Report & 2009 Municipal Operations Sustainability Report	The total 2005 gallons of fuel 2 (B20) consumed in 2005 that was entered into the Climate Wise Baseline Tool actually was comprised of 79 % diesel (2802 metric tons of CO_2e) and 21% B20 (589 metric tons of CO_2e), per S. Armfield, May 2010. (Source: File = 2005MunibaselineMay11-201-LRS.xls)	YES Revisions were made to reflect differences in metric tons of CO_2e emitted from the different fuel types in 2005. The revised baseline for 2005 was 53,500 MT CO_2e.	Fleets Division

Table 1. Revision History (continued)					
Date	**Revision No.**	**Where Published**	**Description of Changes**	**Impact on 2005 Baseline**	**Originator**
2010	3		Year 2006 fuel 2 data was changed from 330,094.12 gallons to 339,603 gallons based on data provided by S. Armfield.	NO Revision was made to 2006 inventory to reflect these changes.	Fleets Division
6/2011	4	2010 Municipal Operations Sustainability Annual Report and 2010 CAP Status Report	1. The Climate Wise GHG Baseline Tool itself was updated to reflect the following changes in v8.10.2010: • Electricity emission factor was updated to 2009 factor • Emissions factor for solid waste disposal was updated based on community inventory modeling of the Larimer County Landfill. This resulted in landfill emissions that were about 2/3 lower than in previous versions of the Baseline Tool, for the same volume of trash. • Upstream emission reductions for recycling based on 3rd edition of EPA's WARM • The emissions inventory is now represented in metric tons 2. A new conversion rate of 80 lbs/cubic yard for solid waste and 50 lbs/cubic yard for recyclables was applied retroactively to all years back to the baseline year of 2005 for conversion of volumes to total weights based on sampling of a representative number of pulls. This significantly reduced solid waste weights. 3. The GHG Emissions Management System (GEMS) will be used to calculate CO_2e emissions	YES Revisions were made to all categories of emissions in the baseline year (2005) and all subsequent inventory year numbers.	Climate Wise Program, L. Smith, S. Gordon, R. Russo

			from electricity sources and not the Climate Wise GHG Baseline Tool that was used previously. This change is retroactive back to 2005.		

II. Introduction

The City of Fort Collins, incorporated in 1872, is the fifth largest city in Colorado in terms of population. The city is a home rule city, organized under provisions of the Colorado Constitution. The City Charter, adopted in 1953, provides for the council-manager form of local government. The City provides a full range of municipal government services to approximately 143,986 residents (2010 Census). These services include general government, public safety, streets and highways, culture and recreation, transportation, public works, development, and public utilities including electric distribution, water and wastewater treatment, storm drainage, and public outreach. In 2011, the City employed 1081 classified employees and 869 seasonal and temporary employees. The City is organized into six different services areas and had an annual operating budget of $507.6 million in 2010.

This Quality Management Plan (QMP) was developed to provide a detailed reference document for the city-wide annual municipal greenhouse gas (GHG) emissions inventory and to provide complete transparency for the data sources, methods, and emissions and conversion factors used to prepare the inventory. The QMP also provides a record of major inventory revisions since the baseline year (2005) and establishes quality assurance and quality control procedures to ensure data integrity. This QMP should be viewed as a "living document" that will be revised as necessary as changes occur and as new and improved methods become available for carbon accounting.

Contact Information for the Quality Management Plan

Name of Municipality:	City of Fort Collins
Address:	Natural Resource Department, 215 N. Mason, PO Box 580, Fort Collins, CO 50522-0580
Inventory Contact:	Bonnie Pierce, Environmental Data Analyst Phone: (970) 416-2648 Fax: (970) 224-6177 Email: bpierce@fcgov.com

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In 2009, the City Manager approved the following greenhouse gas (GHG) goal for the municipal organization:

Reduce greenhouse gas (GHG) 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 December 31, 2020; and ultimately to achieve carbon neutrality for the municipal organization.

Additionally, data used to support the annual municipal GHG inventory are relevant to 5 out of 10 City sustainability goals. For more details regarding the City of Fort Collins sustainability goals refer to http://citynet.fcgov.com/sustainability/goals-new.php.

Baseline Year Selection

The year 2005 was selected as the Fort Collins municipal baseline year because the approved carbon reduction goal of the municipal organization, as well as the community, is to reduce emissions 20% below the 2005 baseline year by 2020. 2005 is also the baseline year for the GHG goals of the State of Colorado and at least 20 other municipal governments across the country.

Baseline Recalculation Policy

From 2005 until 2010, the City of Fort Collins decided that the baseline year emissions would be recalculated if there were structural changes in the organizational boundary and/or changes in accepted calculation methodologies that would result in a 5% or greater change to the baseline year emissions. During this time frame the emission factors and state-of-the-art of GHG accounting methodologies underwent substantial changes necessitating reassessment of the baseline recalculation policy. The following constitutes the revised baseline recalculation policy effective beginning 2011:

The following conditions will always trigger a base year recalculation:

a) Significant structural change to the City of Fort Collins (e.g., acquisitions and divestments)
b) Outsourcing and in-sourcing of emitting activities, and
c) Major changes in calculation methodology (e.g., new emissions factors)

The following conditions will only trigger a base year recalculation if the annual total of the following conditions exceed the 2% significance threshold:

a) Changes due to data accuracy and availability
b) Discovery of significant errors

IV. Boundary Conditions

Organizational Boundaries

For setting organizational boundaries and for municipal reporting of consolidated GHG emissions, the City of Fort Collins will primarily use the Operational Control Approach. Under this approach, the City will account for 100% of the GHG emissions from operations over which it has control with the exception of the following categories presented in Table 2.

Table 2. Summary of Exceptions to the Operational Control Approach	
Category	**Exception**
Buildings the City leases or rents to others	These are listed in the Operation Services Department's Utility Manager Database as "Don't Track" and therefore are not reported in the municipal inventory.
One room in one building (Darah House) that the City leases for its own use	The City does not have operational control over this lease, and therefore doesn't track its GHG emissions.
Police District #1, Suites 1, 2, and part of 3 at 144 Mason St.	The City has operational control over these Suites, but they are not currently included in the municipal inventory.
Fort Collins Capital Leasing Corporation	The City has operational control over it, but does not currently track its GHG emissions.
City leased vehicles and equipment	The City does not have complete operational control over these, but they are currently included in the City's Fleets activity data, and their GHG emissions are therefore included in the municipal inventory.
City-leased vehicles and equipment	Although the City does not have complete operational control over these, they are currently included in the City's Fleets activity data.
Water Treatment Plant and 2 Wastewater Treatment Plants	The City does have complete operational control over these facilities, but not all process emissions are currently included in the municipal inventory.
Poudre Fire Authority	The municipal inventory only includes tracking of solid waste and recycling data (not electricity, natural gas, airline travel, fuel usage, or ground transportation).
Poudre River Library District	Electricity, natural gas, airline travel, ground transportation, solid waste, and recycling are included in the municipal inventory for only the Main Library at 201 Peterson St. and the Library Technical Annex at 256 Mountain Ave. All inventories to date include this information.
Meadow Springs Ranch	The City has operational control over this location, but the only emissions currently tracked for this location are related to solid waste.

Generally, emissions from operations over which the City has no control will not be included in annual inventories. Operational Control means that the City of Fort Collins has the full authority to introduce and implement its operating policies "at the operation."

Facilities List

The City of Fort Collins owns or otherwise has operational control over facilities it owns. Real Estate Services maintains a listing of active City of Fort Collins facilities. A list of Reporting Year 2010 Facilities included under the Operational Control Approach is presented in Appendix A – City of Fort Collins Facilities. The facilities (or emissions associated with these operations),

shown in Table 3 below, were excluded from the City of Fort Collins QMP because the City does not have complete operational control over these locations:

Table 3. Facilities Not Included in the City of Fort Collins Municipal QMP	
Facility/Site Name	**Address**
Downtown Development Authority (DDA)	19 Old Town Square
Fort Collins Housing Authority (FCHA)	1715 W. Mountain Ave.
Urban Renewal Authority (URA)	City staff that provides management of the URA is located at 300 Laporte Ave. Emissions associated with the facility and City employees are included in the inventory, however, no GHG emissions resulting from activities related to the URA are included in the municipal inventory.
Fort Collins/Loveland Airport	4900 Earhart Road, Loveland

GHG Emissions Types and Source Scopes

Setting operational boundaries involves identifying the GHG emissions associated with the City of Fort Collins operations and categorizing them as **Scope 1** – Direct Emissions, **Scope 2** – Indirect Electricity Emissions, or **Scope 3** – Other Indirect Emissions.

An Informational Category is used to document activities that impact Net GHG emissions, such as recycling, although the City reports the municipal inventory using Gross GHG emissions (not considering the benefits of recycling.) The Climate Wise Baseline tool is the primary inventory tool that has been used to guide the municipal inventory from 2005 through 2010. The Local Government Operations Protocol (LGOP), version 1.1, dated May 2010, developed by the International Council for Local Environmental Initiatives (ICLEI) describes GHG scopes required for local government reporting and provides recommended inventory methodologies to provide a standardized and transparent accounting method that enables comparisons of inventory results with other local governments. The LGOP also encourages local governments to track emissions that allow identification of reduction opportunities (e.g., recycling and composting) under a "Supplemental" or "Informational" category. The Natural Resources' ESD staff has discussed a move towards implementing the LGOP for the municipal GHG inventory with the city's Energy Management Team.

Natural Resources' ESD and the Sustainability Team have identified the emission types (Table 4) and source scopes (Table 5) in consultation with the Energy Management Team (EMT).

Table 4. City of Fort Collins GHG Emissions Types	
GHG	**City of Fort Collins Operations/Sources**
Carbon dioxide (CO_2)	Mobile and stationary combustion: Purchased electricity and natural gas for heating buildings, street and traffic lights, water and wastewater treatment processes, electricity associated with water for consumptive use for water and wastewater treatment, electricity associated with water for non-consumptive use (e.g., irrigation), fleet fuel consumption, employee reimbursed travel for work, and airline travel
Methane (CH_4)	Anaerobic decomposition of solid waste in landfills
Nitrous oxide (N_20)	Fuel combustion
Hydrofluorocarbons (HFCs)	Not included in inventory
Perfluorocarbons (PFCs)	Not included in inventory
Sulfur hexafluoride (SF6)	Not included in inventory

Scope 1 - Direct Emissions are from sources that are owned or controlled by the City of Fort Collins, such as emissions from stationary combustion (e.g., natural gas consumption for municipal buildings and fuel use by standby generators) or mobile combustion of fuels (e.g., fleet transportation sources). Although process and fugitive emissions are included in the Scope 1 – Direct Emissions category (ICLEI's Local Government Operations Protocol, May 2010), and some have been identified for the City of Fort Collins (Wastewater Treatment Facility), they have not yet been included in the municipal inventory.

Scope 2 – Indirect Emissions are from consumption of purchased electricity, heat, or steam. They result from City of Fort Collins municipal activities that are controlled by another organization (e.g., purchased electricity from Platte River Power Authority (PRPA) consumed by the City of Fort Collins).

Scope 3 – Other Indirect Emissions result from activities such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the City of Fort Collins, electricity-related activities (e.g., transmission and distribution losses), outsourced activities, and waste disposal.

Informational Category includes all other activities that affect net GHG emissions (e.g., municipal recycling efforts).

GHG emission source scopes and data sources for municipal operations are detailed in Table 5 below.

Table 5. GHG Emissions Source Scopes		
Emission Type	**GHG Emission Category**	**Data Source**
Natural gas for buildings	Scope 1 - Direct	Utility Manager Database – Operations Services
Natural gas for Water Treatment Facilities	Scope 1 - Direct	R. DeCourcey, Water Treatment
Natural gas for Wastewater Treatment Facility	Scope 1 – Direct	R. Kemp, Water Reclamation Plants
Fleet fuel consumption	Scope 1 - Direct	Fleets – T. Oschsner and S. Armfield
Electricity for major city buildings and property	Scope 2 - Indirect	Utility Manager Database – Operations Services
Electricity for water	Scope 2 - Indirect	E. Switzer, Utilities
Electricity for streetlights	Scope 2 - Indirect	E. Switzer, Utilities
Electricity for traffic signals	Scope 2 - Indirect	E. Switzer, Utilities
Other electricity	Scope 2 - Indirect	Sum of all electricity accounts minus energy from above 4 electricity emission types = other electricity (includes small meters like Parks' lights that are not a "facility")
Electricity associated with water for consumptive use for water treatment	Scope 2 - Indirect	Utility Manager Database
Electricity associated with water for consumptive use for wastewater treatment	Scope 2 – Indirect	Utility Manager Database
Electricity associated with water for non-consumptive use	Scope 2 – Indirect	Utility Manager Database – Operation Services
Employee airline travel	Scope 3 – Other Indirect	City Accounting Office
Employee vehicle travel for work (reimbursed)	Scope 3 – Other Indirect	City Accounting Office
Solid waste	Scope 3 – Other Indirect	Waste Management, Inc.
City of Fort Collins recycling	Informational	Waste Management, Inc. (current vendor), Waste-Not Recycling, Green Girl LLC (past vendors), Aragon Iron and Metal, Inc., Streets Crushing Operations Site, Parks Composting (will be included in future inventories)

V. Emissions Quantification

Background

Greenhouse gas emissions from the municipal organization have been quantified and reported in the 2001/2002, 2003/2004, and 2005/2006 Climate Status Reports. These calculations were based on the methodology and emissions factors from the ICLEI greenhouse gas software, with the exception of electricity, which applied a localized emissions factor provided by Platte River Power Authority (PRPA). These calculations were based on the best data available at the time.

When the City of Fort Collins joined the Climate Wise program in 2007, emissions from the municipal organization were reported using the Climate Wise GHG Baseline Tool also used by the vast majority of Climate Wise partners. Starting in 2008, municipal emissions data for the years 2005, 2006, 2007 and 2008 were reviewed and entered into the Climate Wise GHG Baseline Tool. The municipal GHG inventories reflect the extensive efforts of staff to standardize the data sets used.

The methodology described below reflects the methods used to generate the most recent emissions inventory (2010 GHG Inventory) using a combination of the Climate Wise Baseline Tool (spreadsheet tool) and the ESD's new GHG Emissions Management System (GEMS) Database. This set of methods was applied retroactively to all inventory data back to 2005, resulting in baseline emission changes.

Quantification Methods

A. Electricity

Electricity Method for 2010 Inventory: Electricity data is compiled from a combination of data collected from Operation Services and Utilities as described in Section VI., Data Management, below. Most electricity data is generated from the Utility Manager Database system, then reconciled with billing information from Fort Collins Utilities. Currently the data is submitted to Natural Resources' ESD in spreadsheet format or compiled into summary tables. Both Operation Services and Fort Collins Utilities review the Utility Manager Database output to reconcile numbers with billing information.

During 2010, the decision was made to quantify CO2e for electricity using emission factors in the GEMS Database and not through the Climate Wise GHG Baseline Tool. As a result, all electricity CO_2e emissions for 2005 through 2010 were revised using the GEMS Database results (see Appendices C through H). This decision was made because GEMS has the flexibility to assign unique electricity emissions factors for each year, in alignment with the community GHG inventory. The Climate Wise GHG Baseline Tool did not allow the degree of annual flexibility. Table 6 illustrates how the electricity data were combined before entering the data values into the GEMS database to calculate GHG emissions.

Table 6. City of Fort Collins kWh data for 2005

What			Notes/Location	Address	kWh	GHG Baseline Tool
Utility Manager Data					15,610,320	Meter 1
Total of Billed Accounts					18,111,100	
					2,500,780	Meter 5 = Balance of Billed Accounts - Utility Manager Data
Traffic Signals			Not metered, kWh based on monthly inventory		907,818	Meter 4
Street Lights			Not metered or billed, kWh based on monthly inventory		8,123,199	Meter 3
Water Treatment Facility			Served by Xcel (Acct 53-2497529-1) Billing Beriod 12/25/2007-12/25/2008		3,885,681	Meter 2
SW Pump Station 2005						
82836	368944	E204	CITY FTC/UTILITIES	3078 S OVERLAND TRL	133,860	Meter 2
Wastewater Reclamation Facilities:						
16217	368944	E404	CITY FTC/UTILITIES	3036 ENVIRONMENTAL DR	12,166,000	Meter 2
16258	368944	E300	CITY FTC/UTILITIES	900 E MULBERRY ST	1,329,440	Meter 2
					17,514,981	Meter 2 total

Source: Derived from Utilities Billing Data spreadsheet, 2006.

Former Electricity Method: The GHG Baseline Tool was used from 2005 to 2009 to calculate GHG emissions from electricity use (see Appendices B through F).

B. Natural Gas

Natural Gas Method for 2010 Inventory: Natural gas data is compiled from data (Utility Manager Database) collected by Operations Services for municipal buildings and from separate databases from the Water and Wastewater Treatment Plants as described in Section VI. of this report. The Climate Wise GHG Baseline Tool automatically calculates metric tons CO_2e by multiplying decatherms (1 DTH = 1 MMBTu) by 0.05905. This factor does not include estimates for CH_4 or N_2O. (The community-wide inventory uses factors of 0.0597 for the residential and commercial sectors and 0.0596 for the industrial sector, when including CH_4 and N_2O).

C. Water

Electricity associated with Water Method for 2010 Inventory: There are GHG emissions associated with the energy used to treat and pump potable water and to treat wastewater. Consumptive water refers to treated water used by the municipal organization that comes from a tap and goes down a drain and back to the wastewater treatment facility. Non-consumptive water use refers to treated water used by the municipal organization that does not go down a drain (e.g., tap water used for irrigation). The GHG emissions associated with the energy used to treat and pump potable water and to treat wastewater are collected from the Utility Manager Database, as described in Section VI. of this report. These data are then entered into the Climate Wise GHG Baseline Tool to calculate CO_2e emissions. The City of Fort Collins has plans to track the energy associated with pumping then using ditch water for irrigation, but does not currently track these emissions.

D. Transportation

Fleet Fuel Consumption Method for 2010 Inventory: Fuel consumption data from the municipal fleet are collected on an annual basis to determine GHG emissions. Data reported by the Fleets Divisions are grouped by fuel type (gasoline, biodiesel, diesel, liquid propane gas (LPG),

compressed natural gas (CNG), and E85 (85% ethanol alcohol and 15% gasoline)) and are then entered into the Climate Wise GHG Baseline Tool to calculate CO_2e (metric tons) by fuel type. During 2005, the total reported for biodiesel actually consisted of 79% diesel and 21% B20 fuel. During 2010, the City used B10 instead of B20.

Employee Airline Travel Method for 2010 Inventory: Employee airline travel is calculated using data provided annually by the City Accounting Department that includes travel destinations. The mileage for each trip is determined using a spreadsheet that provides roundtrip mileages from Denver International Airport (DIA) to and from the destination, based on mileage obtained from an online airline calculator (e.g., http://www.webflyer.com/travel/mileage_calculator/. The total annual airline miles are then entered into the Climate Wise GHG Baseline Tool to calculate metric tons of CO_2e both with and without a "Radiative Forcing[1] Index" (RFI). The RFI recognizes the impact of airline travel (beyond simple CO_2 emissions) that takes into account the effects of NO_x compounds, ozone, CH_4, water, contrails, and particles which are all emitted from aircraft exhausts at the same time as CO_2. These compounds have a much greater impact on radiative forcing than that for emissions from fossil fuels, but the scientific methodologies for estimating their effects are still evolving. The RFI factor is a multiplier of "2". The City reports municipal emissions without the additional impact of the RFI, the same as with the community GHG inventory.

Employee Driving for Work Method for 2010 Inventory: The number of total miles of travel reimbursed to City employees is collected by the City Accounting Department and entered into the Climate Wise GHG Baseline Tool. The fuel type used in the Climate Wise GHG Baseline Tool is "gasoline". GHG emissions are calculated based on an assumed average fuel efficiency of 17.7 miles per gallon of gasoline (**Source**: Brendle Group, developer of the Climate Wise GHG Baseline Tool). The employee driving for work numbers only cover reported travel (primarily to/from conferences). Sometimes employees don't submit reimbursement requests for travel when they use their own vehicles, and therefore this is not included in the emissions estimate. Employees driving to and from work are also not currently factored into these emissions.

E. Solid Waste

Solid Waste Method for 2010 Inventory: Solid waste data is collected from the vendor (Waste Management Inc.) annual reports that indicate the locations, number of "pulls", and container volumes for municipal facilities. The current assumptions include that the dumpsters are full and that a cubic yard of office solid waste weighs 80 lbs. The weight was derived from actual measurements made by Waste Management Inc. during 2011 of a representative number of trucks that had picked up solid waste from City accounts only (**Source**: email from S. Gordon, subject: Confirmation – 80 pounds per CY trash metric, dated 7/12/11). When 12 months per year of data are available, the monthly totals are summed to obtain the estimated total annual cubic yards (CY) of solid waste. When not all 12 months per year of data are available, a monthly average is calculated and then used to obtain an annual estimate (e.g., 2010). The current municipal GHG inventory only includes office solid waste, not disposal of materials from

[1] Radiative forcing is a measure of how the energy balance of the Earth-atmosphere is influenced when factors that affect climate are altered. The word "radiative" signifies that the factors affect the balance between incoming solar radiation and outgoing infrared radiation within the Earth's atmosphere. Positive forcing tends to warm the Earth's surface, while negative forcing cools the surface. Forcing values are expressed in watts per square meter.

construction and demolition, roll-off accounts or self-hauls to the landfill. These 3 categories of solid waste will be added to the GEMS database for inclusion in the 2011 annual inventory. During 2011, solid waste volumes were revised from 2005 through 2010 to reflect the change in weight of solid waste (80 lbs/CY) for office solid waste and to ensure data was entered into the Climate Wise GHG Baseline Tool in short tons and **not in CYs**.

It is important not to enter solid waste activity data in CYs into the Climate Wise GHG Baseline Tool because the conversion factor from volume to weight in Climate Wise is 450 lbs/CY not the current weight measured at 80 lbs/CY.

Table 7 details how numbers were calculated and/or estimated for each inventory year retroactively based on these revisions in methodology for the 2010 inventory:

Table 7. Solid Waste Methods Revisions for the 2010 Inventory	
Year	**Method:**
2005	The Waste Management Inc.Waste Removal Contract for 2005 cannot be located, so the method used to estimate the annual volume of solid waste from municipal operations was to use 20,650 cubic yards reported in the "City of Fort Collins 2005/2006 Climate Protection Status Report", dated 2008 (Source: http://www.fcgov.com/climateprotection/pdf/2006-climatestatusreport.pdf?1223397946) The value of 826 short tons of waste was entered into the 2010 version of Climate Wise GHG Baseline Tool and this value converts to 269 metric tons CO_2e.
2006	22,783 CY was reported for the year in the Waste Management Inc.City of Fort Collins Waste Removal Contract - Jan 2006 to Dec 2006 Volumes. The 10% estimate of 30.90 CYs for Roll-Off Accounts was subtracted from the total volume. GHG emissions were calculated at 297 metric tons CO2e based on 911 short tons of waste entered into the 2010 version of Climate Wise GHG Baseline Tool.
2007	24,945 CY was reported for the year in the Waste Management Inc. City of Fort Collins Waste Removal Contract – Jan 2007 to Dec 2007 Volumes. The 10% estimate of 43.69 CYs for Roll-Off Accounts was subtracted from the total volume. GHG emissions were calculated at 325 metric tons CO_2e based on 998 short tons of waste entered into the 2010 version of Climate Wise GHG Baseline Tool.
2008	The method used to estimate the annual volume of solid waste from municipal operations was to use the value of 24,073 cubic yards that was hand-written on a report detailing trash by departments. The note indicates that S. Gordon and R. Russo provided analysis and agreed to this value. This value converts to 284.57 metric tons CO_2e when 963 short tons of waste are entered into the 2010 version of Climate Wise GHG Baseline Tool.
2009	The method used to estimate the annual volume of solid waste from municipal operations was to use the value of 20,182 cubic yards that was hand-written on a report detailing trash by departments. This value converts to 263 metric tons CO_2e when 807 short tons of waste are entered into the 2010 Climate Wise GHG Baseline Tool.

Table 7. Solid Waste Methods Revisions for the 2010 Inventory (continued)	
Year	**Method:**
2010	Seven months of volume data were available in the Waste Management Inc. of Colorado "Year to Date Diversion Report – 2010" that were averaged for the remaining 5 months and used (along with the 7 months of actual data) to obtain a total volume of 22,400 CY for the annual volume of solid waste. This value converts to 292 metric tons CO_2e when 896 short tons of waste are entered into the 2010 Climate Wise GHG Baseline Tool.

Former Solid Waste Method: From 2005 to 2009, calculations were based on the assumption that the dumpsters were ¾ full. The volume of the solid waste was estimated in cubic yards and then converted to weight using a conversion factor. Calculations in previous versions (before 2010) of the Climate Wise GHG Baseline Tool relied on the weight conversion used by the Climate Wise Baseline Tool of 450 lbs/CY.

F. Recycling

Recycling Method for 2010 Inventory: The City receives estimated weights by facilities from the vendor Waste Management Inc. on a quarterly basis beginning in 2010 (6 months of data). These numbers are not broken down by categories for different types of recyclables. These weights, which represent recyclables in a typical office setting, are reported in the annual Municipal GHG Emissions Inventory. It is anticipated that representative samples of recycled materials (for services provided by the vendor Waste Management Inc.) will be weighed and characterized for types of recyclables to provide more detailed data prior to the 2011 annual inventory. Data collection for additional recyclables (e.g., metals, foodwaste, etc.) has begun and will be reported in future annual inventories.

Table 8 details how numbers were calculated and/or estimated retroactively for each inventory year based on these revisions in methodology for the 2010 inventory:

Table 8. Recycling Methods Revisions for the 2010 Inventory	
Year	**Method:**
2005	The Waste-Not Recycling annual report for 2005 presented 4 quarters of data (note: 4th quarter was mislabeled as 2004) for recycling for 8 categories of materials. The total in pounds was 204,106. These numbers were converted to 102 short tons then put into the 2010 Climate Wise GHG Baseline Tool by recycled material categories to generate metric tons of CO_2e equal to 401.
2006	The Waste-Not Recycling annual report for 2006 provides 12 months of data (by weight in pounds) for 8 categories of recycled materials. The total volume for the year was 274,156 pounds of recyclables. These numbers were converted to 137 short tons then put into the 2010 Climate Wise GHG Baseline Tool by recycled material categories to generate metric tons of CO_2e equal to 420.

Table 8. Recycling Methods Revisions for the 2010 Inventory (continued)	
Year	**Method:**
2007	The Waste-Not Recycling annual report for 2007 provides 12 months of data (by weight in pounds) for 10 categories of recycled materials. The total estimated weight of recyclables was 285,933 pounds of recyclables, including 19,732 pounds of e-scrap. All of the numbers, except the e-scrap weights were entered into the Climate Wise GHG Baseline Tool by recycled material categories to generate metric tons of CO_2e. The E-scrap weight was converted using EPA's WARM emission factor of 2.26 short tons CO_2e/short ton of E-scrap. Together the values for CO_2e equal 153.91 short tons CO_2 which converts to 478 metric tons CO_2e for 2007.
2008	The Waste-Not Recycling annual report for 2008 provides 12 months of data (by weight in pounds) for 9 categories of recycled materials. The total estimated weight was 352,693 pounds of recyclables. A quantity of 10,470 pounds of E-scrap was also reported for 2008 (included in the overall total). All of the numbers, except the e-scrap weights were entered into the Climate Wise GHG Baseline Tool to generate metric tons of CO_2e. The E-scrap weight was converted using EPA's WARM emission factor of 2.26 short tons CO_2e/short ton of E-scrap. Together the value for CO_2e equals 176.35 short tons CO_2 which converts to 544 metric tons CO_2e for 2008.
2009	The municipal contract for recycling was switched to Green Girl LLC in 2009. Data is available for quarters 1 and 2, but not the remainder of the year. Estimated weights in pounds recycled for 5 categories were summed for 6 months, and then calculated for the year by doubling these numbers for a total weight of 323,600 pounds of recyclables. Data was then converted into 165 short tons and entered by recycled material categories into the Climate Wise GHG Baseline Tool for a total of 532 metric tons CO_2e for 2009.
2010	The municipal contract for recycling included Green Girl LLC and Waste Management Inc. in 2010. Data is available for quarters 1 and 2 from Green Girl LLC and for Quarters 3 and 4 from Waste Management Inc.. All the data were provided in estimated pounds of recycled materials. The total estimated weight for recyclables was 330,335 pounds. Data was then converted into 165 short tons and entered into the Climate Wise GHG Baseline Tool for a total of 532 metric tons CO_2e for 2010.

Former Recycling Methods: From 2005 to 2008, the City received quarterly and annual reports from the vendor Waste-Not Recycling, which reported recycling by estimated weight for cardboard, newsprint, commingled containers, mixed office paper, magazines, aluminum, glass, shred, and other recycling (e.g., e-scraps). During 2009 the contract was switched to Green Girl LLC for Quarters 1 and 2, which reported estimated weights of recyclables for 5 categories of recyclable materials (mixed office paper, newsprint, cardboard, commingled containers, and aluminum). Waste Management Inc. took over the City municipal recycling contract beginning with the third Quarter of 2010.

Recycling Materials not currently included in the GHG Inventory: Weights for metal are calculated by Aragon Iron and Metal, Inc., but are not currently included in the annual inventory. Roll-offs containing waste, construction and demolition material, and food scraps that are recycled are also not currently included in the annual inventory. The Climate Wise GHG

Baseline Tool calculates **gross** emissions, which include GHG emissions without the benefit of recycling factored in. The Climate Wise GHG Baseline Tool also calculates **net** emissions, which does factor in the benefit of recycling. The City of Fort Collins tracks GHG emissions progress using **gross** emissions for the municipal inventory.

G. Emissions Not Reported

The following categories of emissions are not currently addressed in the City of Fort Collins Annual GHG Emissions Inventory:

- HFC, PFC, and SF6 emissions from municipal operations
- Employee travel to/from work
- Separate identification of emissions from purchased electricity for electric vehicles from purchased electricity for buildings
- Separate identification of natural gas used to generate CNG for vehicles through Fast Fuel from natural gas usage for buildings
- Process emissions from the 2 wastewater treatment plants (e.g., CH_4 and CO_2 flared and operation of the on-site lift stations at both the Mulberry and the Drake Water Reclamation facility, CH_4 emissions from anaerobic and anoxic treatment systems, effluent N_2O emissions, etc.)
- Process and transportation emissions for Meadow Springs Ranch
- Process emissions from the water treatment plant (e.g., instrumentation, lighting, and pump (occasionally used) at the Poudre River Intake for the water treatment plant)
- Separately report emissions related to energy associated with non-consumptive water use related to pumping ditch water for irrigation
- Composting (Parks and the Gardens on Spring Creek operate small composting sites for municipal operations)
- Solid waste associated with construction and demolition, roll-off accounts, and self hauls to the landfill
- Fertilizer application
- Propane
- Refrigeration, fire suppressants, and air conditioning equipment
- Emergency generators
- Land-use changes

These categories will be reevaluated to determine their inclusion in future inventories, however some of these categories may ultimately be de minimus and are not reported under other reporting protocols.

Emission Factors and Other Constants

A. Electricity

Current Emissions Factors: Table 9 presents the emissions factors for electricity used in GEMS that were implemented in the annual inventory beginning in 2011 and used to recalculate GHG emissions for the 2005 through 2010 inventories. These factors are identical to the factors used to calculate electricity emissions in the community GHG inventory.

Table 9. June 2011 Revision of Emission Factors in GEMS for Electricity		
Year	**lbs CO_2/MWh**	**kWh/metric tons CO_2e**
2005	1827	0.00082871
2006	1829	0.000829621
2007	1741	0.000789705
2008	1699	0.000757047
2009	1777	0.000806035
2010	1610	0.000730414

Previously Used Emissions Factors in the Climate Wise GHG Baseline Tool: The emissions factors used in the Climate Wise GHG Baseline Tool are periodically updated to reflect changes in the emissions factors provided by PRPA. Table 10 below identifies the electricity factors used in the municipal emission calculations from 2005 until 2009. As noted, above, all emissions factors were revised during the 2010 inventory retroactive back to 2005. Beginning in 2010, the same electricity emissions factors will be used for both the municipal and community annual GHG inventories.

Table 10. Comparison of Emission Factors for Electricity (# CO_2/MWh)					
	2005	**2006**	**2007**	**2008**	**2009**
Municipal Inventory	1,698	1,698	1,707	1,707	
Utilities' Global Reporting Initiative[2] (GRI) report	NA	1,698	1,698	1,775	
Mulberry Water Reclamation Facility Carbon Footprint					1,883 (Source: Emissions and Generation Resource Integrated Database (eGRID[3]))

Current Conversion Factor: To convert to Tons CO_2e the calculation is as follows: (MWh purchased x emissions factor)/2000 = short tons CO_2e

B. Natural Gas

Current Emissions Factors: The Climate Wise GHG Baseline Tool used in the annual inventories from 2005 through 2010 automatically calculates tons CO_2e for natural gas by multiplying decatherms by 0.05905. This emissions factor does not include estimates for CH_4 or N_2O. (The community-wide inventory uses factors of 0.0597 for the residential and commercial sectors and 0.0596 for the industrial sector, when including CH4 and N_2O).

[2] For more information about the GRI refer to http://www.globalreporting.org/AboutGRI/WhatIsGRI/.
[3] For more information about eGRID refer to http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html.

Emissions Factors for GEMS: The following emissions factors (Table 11) for natural gas in GEMS have not yet been implemented for the City of Fort Collins annual inventory, but are planned for use during future inventories:

Table 11. Natural Gas Emissions Factors in GEMS	
Type of GHG Gas	**Emission Factor in GEMS**
CO_2	0.05401 metric tons CO_2e/dth CO_2
CH_4	0.000005 metric tons CO_2e/dth CH_4
N_20	0.0000001 metric tons CO_2e/dth N_2O

Source: The Climate Registry, 2011

Current Conversion Factor: The following conversion factor is used for natural gas calculations: 1 DTH = 1 MMBtu

C. Water

Current Emissions Factors for the Climate Wise GHG Baseline Tool (v 8.10.2010): The following emissions factors (Table 12) were used to calculate tons CO_2e from gallons of water used for the annual inventories from 2005 through 2010:

Table 12. Electricity Associated with Water Emissions Factors	
Type of Water Use	**Emissions Factor**
Consumptive Water	0.000002 Tons CO_2e/gal water
Non-Consumptive Water	0.0000005 Tons CO_2e/gal water

Emissions Factors for GEMS: The following emission factors (Table 13) have not yet been implemented in the annual inventory, but are planned for use during future inventories:

Table 13. Electricity Associated with Water Emissions Factors in GEMS	
Type of Water Use	**Emissions Factor**
Consumptive water	1.814388 E-06 metric tons CO_2e/gal water[4]
Non-consumptive water	4.53597 E-07 metric tons CO_2e/gal water

Source: Climate Wise Baseline Tool, 2011

D. Transportation

Current Emissions Factors: The Climate Wise GHG Baseline Tool (v 8.10.2010) uses the following emissions factors (Table 14) to calculate metric tons CO_2e:

[4] E notation is used in this table. For an explanation refer to http://en.wikipedia.org/wiki/Scientific_notation.

Table 14. Emission Factors for Transportation in Climate Wise Baseline Tool	
Gasoline	0.009391344 metric tons CO_2e/gallon gasoline
Biodiesel	0.007517033 metric tons CO_2e/gallon biodiesel
LPG	0.00612 metric tons CO_2e/gallon LPG
CNG	0.005589286 metric tons CO_2e/therm CNG
E85	0.00088541 metric tons CO_2e/gallon E85
Air Miles	0.00026075 metric tons CO_2e/air mile
VMT – Gasoline Vehicles	0.00048413 metric tons CO_2e/VMT
VMT – Diesel Vehicles	0.00058619 metric tons CO_2e/VMT

Emissions Factors for GEMS: The following emission factors (Table 15) have not yet been implemented in the annual GHG inventory:

Table 15. Emission Factors for Transportation in GEMS	
Gasoline	0.00934 metric tons CO_2e/gallon gasoline
Diesel	0.00952 metric tons CO_2e/gallon diesel
Biodiesel	0.00952 metric tons CO_2e/gallon B20
LPG	0.00614 metric tons CO_2e/gallon LPG
CNG	0.00704 metric tons CO_2e/gallon CNG
E85	0.00592 metric tons CO_2e/gallon E85
Jet Fuel	0.00957 metric tons CO_2e/gallon jet fuel
Air Miles	0.0032 metric tons CO_2e/air mile
VMT – Gasoline Vehicles	Not yet determined
VMT – Diesel Vehicles	Not yet determined

Source: ICLEI, 2011

Current Conversion Factor: A common method of measurement is the Gasoline Gallon Equivalent (GGE). This number is arrived at by comparing the British Thermal Units (BTU) content per unit of each fuel type and then calculating the ratio. To compare diesel fuel to gasoline, the conversion is 1 gallon of diesel #2 equals 0.88 GGE.

E. Solid Waste

Current Solid Waste Emissions Factor: The solid waste emission factor in the Climate Wise GHG Baseline Tool when entering data in short tons of solid waste is 0.3256 metric tons CO_2e/short ton solid waste. **It is important to enter all data in short tons and not CYs** into the Climate Wise Baseline Tool because it uses a different assumption to convert volume to weights (450 pounds/CY of solid waste) than the current conversion factor (80 pounds/CY of solid waste).

Solid Waste Emissions Factor for GEMS: The GEMS emission factor for solid waste of 0.372026363 metric tons CO_2e/cubic yards of solid waste has not yet been implemented. Since the solid waste vendor has changed their method for reporting from cubic yards to short tons, the GEMS Database will have to be updated with a calculator to accommodate the change in reporting method.

Current Solid Waste Conversion Factor: Beginning 2011, the estimated solid waste volumes (cubic yards) are converted to weights (short tons) using the conversion factor of 1 cubic yard weighing 80 pounds. This is a sample-based weight, and not an estimate, based on Waste Management Inc. weighing a representative number of trucks to determine the weight of the on-board load of trash. This conversion factor was used retroactively to recalculate all solid waste totals back to the baseline year, 2005. Additional sampling of on-board loads of trash will be conducted in the future, and it is recommended that the sampling design be further described to help determine if a statistically valid method is used to ensure the sample values are representative of actual loads.

F. Recycling

Current Recycling Emissions Factors: The Climate Wise GHG Baseline Tool uses the following emissions factors (Table 16) to calculate metric tons CO_2e:

Table 16. Recycling Emission Factors in the Climate Wise GHG Baseline Tool

Cardboard (pounds)	0.001555667 metric tons CO_2e/pound
Aluminum (pounds)	0.006784 metric tons CO_2e/pound
Plastic (pounds)	0.000732 metric tons CO_2e/pound
Newsprint (pounds)	0.001395 metric tons CO_2e/pound
Commingled (pounds)	0.001506 metric tons CO_2e/pound
Mixed office paper (includes shred[5]) (pounds)	0.0017095 metric tons CO_2e/pound
Magazines (pounds)	0.001533 metric tons CO_2e/pound
E-scrap[6] (pounds)	Not available
Foodwaste (pounds)	0.0001 metric tons CO_2e/pound
Phonebooks (short tons)	2.65751 metric tons CO_2e/short ton
Fiberboard (short tons)	2.46704 metric tons CO_2e/short ton
Wood (short tons)	2.45797 metric tons CO_2e/short ton
Yardwaste (short tons)	0.19954 metric tons CO_2e/short ton
Single-stream (short tons)	3.01124 metric tons CO_2e/short ton
Glass (short tons)	0.28117 metric tons CO_2e/short ton
Copper wire (short tons)	4.91866 metric tons CO_2e/short ton
Steel (short tons)	1.78679 metric tons CO_2e/short ton

[5] "Shred" refers to shredded paper.
[6] E-scrap refers to recycled electronics.

E-scrap Emissions Factor: The source for this emissions factor is EPA's Waste Reduction Model (WARM). The conversion factor is 2.26 short tons CO_2e/short ton of e-scrap material.

Recycling Emissions Factors in GEMS: The following emission factors (Table 17) have not yet been implemented in the annual GHG inventory:

Table 17. Recycling Emission Factors in GEMS	
Cardboard (pounds)	0.001576196 metric tons CO_2e/pound
Aluminum (pounds)	0.009167462 metric tons CO_2e/pound
Plastic (pounds)	0.000898558 metric tons CO_2e/pound
Newsprint (pounds)	0.002111347 metric tons CO_2e/pound
Mixed office paper (pounds)	0.001851851 metric tons CO_2e/pound
Magazines (pounds)	0.001367009 metric tons CO_2e/pound
Commingled (pounds)	0.001829803 metric tons CO_2/pound
Single-stream (pounds)	3.659636 metric tons CO_2/pound

Source: EPA WARM model, 2011

Current Recycling Conversion Factor:

- The conversion factor for cubic yards of single-stream recycling produced by office buildings is 1 cubic yard equals 50 pounds as provided by Waste Management Inc. during 2010. Since municipal recycling data from 2005 to 2010 were provided by estimated weight in pounds by commodity, no conversions of previous annual recyclable data were required.
- The conversion factor for pounds to short tons is 1 pound = 0.0005 short tons.

VI. Data Management

Activity Data

A. Electricity

1) *Electricity use for City Buildings*
Source: Operations Services
The annual kWh data were provided from Utility Manager (UM) Database software and entered into "Meter 1' on the Climate Wise GHG Baseline Tool from 2005 until 2010. Beginning with the 2010 Inventory, the GEMS Database was used for conversion of all electricity data into metric tons CO_2e from 2005 through 2010. The new emissions factors are listed in Section V, Emissions Quantification.

2) *Electricity use data for Water and Wastewater Treatment Plants*
Source: E. Switzer, Fort Collins Utilities
Annual electricity use data are provided from the water treatment plant on Laporte Ave. (query from the Water Treatment Database), the Southwest pump station, and Water Reclamation facilities at Drake Rd. and Mulberry St. Previously these were summed and

entered into "Meter 2" in the Climate Wise GHG Baseline Tool. Currently the summed data is entered into the GEMS Database to obtain metric tons CO_2e.

3) *Electricity from Streetlights*
Source: E. Switzer, Fort Collins Utilities
The electricity used by streetlights is determined by monthly inventory, and is not metered. Previously the data was entered into "Meter 3" on the Climate Wise GHG Baseline Tool. Currently the summed data is entered into the GEMS Database to obtain metric tons CO_2e.

4) *Electricity from Traffic Signals*
Source: E. Switzer, Fort Collins Utilities
The electricity used by traffic signals is determined by monthly inventory, and is not metered. Previously the data was entered into "Meter 4" on the Climate Wise GHG Baseline Tool. Currently the summed data is entered into the GEMS Database to obtain metric tons CO_2e conversions.

5) *"Other" Electricity*
This refers to all additional electricity meters for which the City of Fort Collins pays utility bills. It is calculated by subtracting the amount of energy recorded in Utility Manager Database for City buildings from the sum of all the accounts billed to the City (excluding Water Treatment Plant and SW pump station, both Wastewater Treatment Plants, street lights and traffic signals). Previously this remaining "other" balance was entered into "Meter 5" on the Climate Wise GHG Baseline Tool. Currently the summed data is entered into the GEMS Database to obtain metric tons CO_2e.

B. Natural Gas

1) *Natural Gas from Buildings*
Source: Operations Services
The total therms used by buildings tracked in the Utility Manager Database are entered into "Meter 6' in the Climate Wise GHG Baseline Tool. Note that the "therms" from the Fast Fuel maker (from Fleets Division, T. Ochsner) are currently included in the total for buildings, but will likely be transferred to the transportation sector in the future.

2) *Natural Gas from Water and Wastewater Treatment Facilities*
Source: R. Kemp, Water Reclamation Plants
R. DeCourcey, Water Treatment Plant
Therms from both Wastewater Treatment Plants (Drake Rd. and Mulberry St.) and therms from the Water Treatment facility (from Rita DeCoursey, reported in decatherms (DTH)) are summed and entered into Meter 7. Some of the data reported by Water Treatment are reported in decatherms and must be converted manually to therms and added to the total before entering the values into the Climate Wise GHG Baseline Tool.

C. Water

There are GHG emissions associated with the energy used to treat and pump potable water and to treat wastewater.

1) *Electricity associated with Consumptive Water Use*
Source: Utility Manager Database
Consumptive water refers to treated water used by the municipal organization that comes from a tap and goes down a drain and back to the wastewater treatment facility. Data from the Utility Manager Database "Sewer" total (multiplied by 1000 because Utility Manager Database reports in kgal) is summed with gallons of water used by Water Treatment and Wastewater Treatment, then entered into Meter 8 of the Climate Wise GHG Baseline Tool to calculate metric tons CO_2e.

2) *Electricity associated with Non-consumptive Water Use*
Source: Utility Manager Database
Non-consumptive water use refers to treated water used by the municipal organization that does not go down a drain (i.e., tap water used for irrigation). This is calculated by subtracting the Utility Manager Database "Waste" kgal from the "Sewer" kgal to determine the amount of tap water use for irrigation. Kgal are multiplied by 1000 to calculate gallons. This is entered into Meter 9 of the Climate Wise GHG Baseline Tool to determine metric tons CO_2e.

D. Transportation

1) *Fleets Fuel Consumption*
Source: L. Spence and S. Armfield, Fleets Division
Fleets provides annual gallons (or gallon equivalents) of fuel consumed by the City, including in-house purchases made at City-owned pumps, and commercial purchases made off-site to fuel City-owned vehicles. This includes gasoline, biodiesel (B20), propane (LPG), compressed natural gas (CNG) and ethanol (E85) for City owned on-road and off-road equipment.

Previous Fuel Consumption Activity Data:
Table 18 shows the fuel consumed by City municipal fleet operations.

Table 18. City Fuel Consumption
Source: Fleets Division, 2011

			2005	2006	2007	2008	2009	2010
IN-HOUSE	Gasoline	Gallons	306,234	298,033	277,023	257,968	223,522	208,938
	(Bio)Diesel	Gallons	285,056	283,499	323,493	291,419	283,931	242,037
	LPG	gallons	14,211	11,850	9,848	9,503	8,319	6,047
	CNG	Gallon Gas Equiv	5,011	8,154	12,268	23,188	38,952	98,513
	E85	gallons	0	0	499	12,196	37,279	40,873
COMMERCIAL	Gasoline	gallons	109,966	120,377	125,090	120,020	106,000	111,778
	(bio)diesel	gallons	53,288	56,104	54,645	52,131	53,005	58,695
	LPG	gallons	2,462	1,848	1,516	2,059	1,733	1,704
	CNG	Gallon Gas Equiv		0	0	0	0	0
	E85	gallons	0	0	1,832	16,134	25,807	21,071
TOTALS	**unleaded**	**gallons**	**416,200**	**418,410**	**402,114**	**377,988**	**329,523**	**320,716**
	biodiesel	**gallons**	**338,344**	**339,603**	**378,138**	**343,550**	**336,936**	**300,732**
	LPG	**gallons**	**16,672**	**13,698**	**11,364**	**11,562**	**10,052**	**7,751**
	CNG	**Gallon Gas Equiv**	**5,011**	**8,154**	**12,268**	**23,188**	**38,952**	**98,513**
	E85	**gallons**	**0**	**0**	**2,332**	**28,330**	**63,087**	**61,945**

** In 2005, ¼ of diesel fuel use was B20.

Fuel purchased by Poudre Fire Authority, Poudre School District, the Northern Front Range Metropolitan Planning Organization (NFRMPO), and the Food Distribution Center has been removed from the City fuel totals, as these are not City-managed operations.

2) *Employee Airline Travel*
Source: City Accounting Department
The data for airline trips taken by employees is provided by Accounting. This information includes travel destination. The mileage for each trip is determined using a spreadsheet that provides roundtrip mileages from DIA to and from the destination, based on mileages reported by Orbitz. Total annual airline miles are then entered into the Climate Wise GHG Baseline Tool. The Tool calculates metric tons CO_2e both with and without a "Radiative Forcing Index". The Radiative Forcing Index recognizes the impact of airline travel beyond simple carbon dioxide emissions. The factor is a multiplier of "2". The City reports municipal emissions without the additional impact of the RFI, the same as with the community inventory.

3) *Employee Driving for Work*
Source: City Accounting Department
The City Accounting Department provides the total number of miles reimbursed to employees per year. This only reflects mileages reported on time sheets.
The number of total miles of travel reimbursed to City employees is entered into the Climate Wise GHG Baseline Tool under "Gasoline". GHG emissions in metric tons

CO_2e are calculated based on an assumed average fuel efficiency of 17.7 miles per gallon of gasoline. To date, the "employee driving for work" category only covers reported travel (primarily to and from conferences). Sometimes employees don't submit reimbursement requests for travel when they use their own vehicle, and this is not factored into the emissions estimate. In addition, employee commuting to and from work is not factored into these emissions.

E. Solid Waste

1) *City solid waste*
Source: Waste Management Inc. (2005 through 2010)
For the 2005 through 2010 municipal GHG inventories, trash hauled by Waste Management Inc. is reported. Beginning with the 2010 annual report, Waste Management Inc. has provided solid waste data in short tons, using the sampling measurement of 80 pounds/CY solid waste for converting estimated volumes to weights. The location of each container, number of "pulls", and estimated container volumes (cubic yards) were reported annually by Waste Management, Inc. from 2005 through 2009. During 2006 and 2007, Waste Management Inc. reported waste from roll-offs as an estimate of 10% of total solid waste hauled for the City. Although these numbers were reported in previous years, the 2010 inventory was corrected, retroactive to 2006, to remove these rough estimates. Waste Management Inc.'s current practice is to report weights determined from an estimate of volume for roll-offs effective in 2011.

Not currently included in the activity data: The Larimer County Solid Waste Department provides annual reports on the volume of trash hauled directly to the county landfill by City departments for free. This includes wet dirt, diseased trees, street swept material, and other predominantly non-organic material with a high mass. These "freebies" are not currently included in the municipal inventory, but will be included in future inventories listed as a separate category of material.

F. Recycling

1) *City recycling*
Source: Green Girl LLC recycling data were reported in weights (pounds) for 5 categories of recycled materials and were provided quarterly (Q1 and Q2 during 2010). Beginning June 2010, Waste Management Inc. took over the contract for City of Fort Collins recycling and provided activity data for recycling for Q3 and Q4, 2010. These values were summed and entered into the Climate Wise GHG Baseline Tool to calculate metric tons CO_2e.

Previous Recycling Activity Data: Data was reported annually by estimated weight from 2005 through 2008 by Waste-Not Recycling and included up to 10 categories of recycled material. During 2009, Green Girl LLC took over the recycling contract, and then Waste Management Inc. was awarded the contract in June 2010.

Normalization Factors

The electricity and natural gas data in Utility Manager Database are not weather normalized[7].

Quality Assurance

Beginning in 2011, the data collection process will be reviewed annually by ESD's Environmental Data Analyst during the annual inventory reporting process. ESD recognizes that there are potential sources for errors that are inherent to an annual inventory that encompasses a large number of facilities, departments, and volumes of separate data. For example, errors could occur when transferring data sources, converting from volumes to weights or metric units, or when calculating GHG emissions. To ensure that the data collected for the City of Fort Collins Municipal Inventory is accurate, the following measures will be taken on at least an annual basis:

- The ESD Environmental Data Analyst will contact the City of Fort Collins Real Estate Services Manager to identify whether new owned or leased facilities, where the City has operational control, have been added during the year and to confirm the status of existing facilities.
- Inquiries to the Energy Management Team will be made to identify new emissions sources at City facilities, including new or changed utilities, emergency generators, propane sources, etc.
- The ESD Environmental Data Analyst will review Utility Manager Database queries and reports and all annual activity summaries used in the annual GHG Municipal Inventory from:
    - Operations Services
    - Fort Collins Utilities
    - The Water Reclamation Plants
    - The Water Treatment Plant
    - Fleets Division
    - City Accounting Department
    - Natural Resources' ESD Waste Reduction and Recycling Program
- The ESD Environmental Data Analyst will review all emissions factors used as part of the annual inventory.
- ESD will request, to the extent possible, that data used to calculate GHG be provided in a form that allows an "actual" calculation, versus an estimate.
- At its discretion, the Environmental Services Division will conduct periodic reviews of the GHG Inventory and identify any areas that appear to be in error.

Data Security

Beginning 2011, information compiled for the purposes of conducting the municipal annual inventories, including activity data, emissions factors, conversion factors, normalization factors, the QMP, and any changes to the current quantification methods will be maintained both in electronic and printed form in secure locations by the ESD Environmental Data Analyst.

[7] Weather normalization is a process to mathematically adjust actual energy data so that it represents energy typically used in an average year for the same location. This accounts for weather differences from year to year that may result in abnormally high or low energy consumption. There are numerous mathematical methods that can be used to achieve this result.

Municipal Reporting Frequency
Current data reporting is conducted on an annual basis in time for an annual inventory reported in July. More frequent reporting (e.g., monthly or quarterly) may be instituted in the future in order to provide GHG emissions tracking information and trend data to City departments and other interested stakeholders.

Document Retention and Control Policy
Effective in 2011, records used to calculate and document the GHG Inventory, from the base year through the end of the goal period, will be maintained by ESD for a minimum of three years beyond the goal period. After the three-year period following the end of the goal period, ESD will dispose of support documents and only the final reports will be kept.

VII. Summary of Inventory Results

Appendices D through I provide details of the activity data and the results of calculations to determine GHG emissions in metric tons CO_2e for the annual inventories from 2005 through 2010. The most current changes to inventories, based on the revisions described in Section I, are listed first, followed by a record of calculations presented in previous years. Table 19 is an overall summary of GHG emissions for the City of Fort Collins as revised during 2011:

Current GHG Inventory Results:

Table 19. Summary of Gross Municipal GHG Emissions

Year	GHG (metric tons CO_2e)
2005	49,900
2006	50,508
2007	49,104
2008	48,416
2009	49,982
2010	44,730

Previous GHG Inventory Results: (See Section I of this QMP for a discussion of changes in methodology over time that resulted in different inventory results.)

Table 20 presents emissions as reported in the Fort Collins Climate Action Plan, 2009 Status Report, dated July 2010

Table 20. Previous 2009 Gross Municipal GHG Emissions

Year	GHG (metric tons CO_2e)
2005	53,500
2006	54,500
2007	55,700
2008	56,400
2009	51,300

The 2009 inventory included emissions from all City of Fort Collins electricity and natural gas accounts, emissions from fleet and solid waste, and employee commuting and airline miles.

Table 21 presents emissions as reported in the Fort Collins Climate Action Plan, 2008 Status Report, dated July 2009:

Table 21. Previous 2008 Gross Municipal GHG Emissions		
Year	**GHG (short tons CO_2e)**	**GHG (metric tons CO_2e)**
2005	61,160	55,339
2006	71,699	65,045
2007	62,401	56,610
2008	60,719	55,084

The 2008 inventory included emissions from all City of Fort Collins electricity and natural gas accounts, emissions from fleet and solid waste, and employee ground and airline travel for work.

Appendix A

Table 22. City of Fort Collins Facilities

Source: Data downloaded from the GEMS Database, 11/29/11

GEMS Site ID	Facility Name	Facility Physical Address
0	Other	
2	City Hall	300 LaPorte Ave.
3	300 LaPorte (Old PS)	300 LaPorte Ave.
4	Fleet Services Facility	835 Wood St.
6	Carriage House	108 Meldrum St. N
8	Northside Aztlan Community Cntr.	112 Willow St. E
9	Mulberry Pool	424 S. Sherwood
10	City Park Center	211 Bryan Ave. S and intersection of Bryan Ave. & Oak St.
11	Park Shop	413 Bryan Ave. S
12	City Park Nine Clubhouse	411 Bryan Ave. S
13	Collindale Clubhouse	1441 Horsetooth Rd. E
14	Streets	625 9th St.
16	Avery House	108 Meldrum St. N
17	Lincoln Center	417 Magnolia St. W
18	Museum	200 Mathews St.
19	Library	201 Peterson St.
20	117 N. Mason St.	117 N. Mason St.
21	Transfort Facility	6570 Portner Dr.
22	321 Maple St.	321 Maple St.
23	Downtown Restrooms	123 Oak St. E
24	Collindale Maintenance Shop	1441 Horsetooth Rd. E
26	230 LaPorte	230 LaPorte Ave.
27	Car Barn	330 Howes St. N
29	Pottery Studio	1541 Oak St. W
34	Senior Center	1200 Raintree Dr.
36	214 N. Howes	214 N. Howes St.
42	112 - 114 N. Howes St.	112 N. Howes St.
43	256 W. Mountain Ave.	256 Mountain Ave. W
44	200 W. Mountain Ave.	200 W. Mountain Ave.
45	Remington St. Parking Garage	102 Remington St.
46	Epic	1801 Riverside Ave.
47	Fleet Annex	906 Vine Dr. W
48	281 N. College	281 N. College
49	Indoor Shooting Range	2554 Midpoint Dr.
50	Southridge Clubhouse	5750 Lemay Ave. S
51	CIS - 330 SC	330 S. College
53	215 N. Mason	215 Mason St. N
56	110 N. Howes St.	110 N. Howes St.
57	200 W. Mountain - Rental	200 W. Mountain
58	Transfort Fueling Site	835 Woods St.
59	Utilities Building A-B	700 Wood St., Bld A-B
60	Utilities Building C	700 Wood St., Bld C

61	Utilities Elec Vehicle Storage	701 Wood St.
62	Utilities Water Meter Shop - D	700 Wood St., Bld D
63	Utilities Water Vehicle Storage	835 Wood St.
65	208 N. Howes (old P Fs)	208 N. Howes
66	222 LaPorte - PV Creamery	222 LaPorte
67	425 10th Street - Romero House	425 10th St.
68	Cramer's	310 Howes St. N
69	220 N. Howes - Rickers	220 Howes St. N
70	518 N. Loomis - Warehouse	518 Loomis St. N
71	Civic Center Parking Structure	120 Mason St. N
72	City Park Pool/Bathhouse	1599 City Park Ave.
73	Fossil Creek Park Shop	5833 Lemay Ave. S
74	Grandview New Shop	1900 Grandview Ave. W
75	Grandview Office	1900 Grandview Ave. W
76	Horticulture Center	2145 Centre Ave. S
77	Traffic Ops	626 Linden St.
78	Youth Activity Center	415 Monroe Dr. E
79	212 LaPorte Ave - Abrasos	212 LaPorte Ave.
80	945 W. Prospect - Rental	945 W. Prospect
81	400 Wood Street - Rental	400 Wood St.
82	212-218 W. Mountain - Rental	212 Mountain Ave. W
83	Transportation Parking Lots	320 Howes St. N
84	Transit Center	N. Mason betweeen LaPorte & Maple (shares trash pickup with 281 N. College Ave.
85	Lee Martinez Farm Office	600 Sherwood St. N
88	Spring Canyon Park Shop	3156 Overland Trail S
89	North-Side Aztlan Center-New	112 Willow St. E
90	Police Services - New	2221 Timberline Rd. S
91	Primrose Studio	Michaud Lane at Reservoir Ridge Natural Area
92	Haiston Oil	300 Howes St. N
96	Transfort Main Fueling Station	6570 Portner Dr.
97	Civic Center Park	201 LaPorte Ave.
98	Police Downtown Sub Station	120 Mason St. N
99	Archery Range	2825 Frontage Rd. SW
103	Crushing Facility	1380 Hoffman Mill Rd.
104	Edora Park	1420 Stuart St. E
106	Gateway Park	Hwy 14 W.
107	Greenbriar Park	730 Willox Lane E
109		600 Sherwood St. N
110	Meadows Spring Ranch	6200 I-25 Access Rd
111	Mulberry WWTF	3036 Environmental Dr.
112	NIX Farmhouse	1745 Hoffman Mill Rd
113	PFA Fire Station 10	2067 Vermont Dr.
114	PFA Fire Station 12	321 Country Club Rd. E
115	PFA Fire Station 14	2109 Westchase Rd.
116	PFA Fire Station 1	505 Peterson St.
117	PFA Fire Station 2	415 Bryan Ave. St.

118	PFA Fire Station 3	2000 Mathews St.
119	PFA Fire Station 4	1945 Drake Rd. W
120	PFA Fire Station 5	4615 Hogan Dr. 12
121	PFA Fire Station 6	2511 Donella Ct.
122	PFA Fire Station 7	2817 Overland Trail N
123	PFA Fire Station 8	4104 Main St.
124	PFA Fire Station 9	Shoreline Dr.
125	PFA Training	3400 Vine Dr. W
126	Rolland Moore Park	2201 Shields St. S
127	Roselawn Cemetary	2718 Mulberry St. E
128	Southridge Golf Maintenance	5090 Lemay Ave. S
129	Spring Park	Stuart St. & Busch Ct.
130		1809 Longworth Rd.
132	Warren Park	1101 Horsetooth Rd. E
133	Mulberry WWTF	3036 Environmental Dr.
134	Water Quality Lab	4316 LaPorte Ave. W
135		3036 Environmental Dr.
136	Water Treatment Facility	4316 LaPorte Ave. W
137	Water Pollution Lab-Drake WWTF	3036 E. Drake Rd.
139	Dewatering RO - Stormwater	700 Wood St.
140	Dewatering RO - Lincoln St.	Lincoln St. near Buckingham Park
141	Fleet RO - Woods St.	830 Wood St.
142	Fossil Creek RO	5833 Lemay Ave. S
143	NIX RO	1745 Hoffman Mill Rd
144	City Park RO	411 Bryan Ave. S
145	City Park RO	411 Bryan Ave. S
146	Toilet Recycle RO	1380 Hoffman Mill Rd.
147	Spring Park RO	Stuart St. & Busch Ct.
148	Utilities RO - Stormwater	700 Wood St., Bld C
149		3036 Environmental Dr.
150	500 Nighthawk	500 block Nighthawk
151	405 Canyon	405 Canyon
152		3829 E. Prospect
153	Drake WWTF	3036 E. Drake Rd.

Appendix B– 2005 Base Year Inventory Results

2005 Baseline: (**Source:** Climate Wise Greenhouse Gas Baseline Tool, data entered June 2011 into file 2005baselineMay11-2010-LRS then modified by B. Pierce on 07/17/11).

NOTE: The Climate Wise Tool originally listed GHG in short tons, so the conversions to metric tons are shown in the column to the right. The conversion factor for solid waste is incorrect, based on actual weights measured, so the correct value is shown in the table to the right.

City of Fort Collins, Prepared by Bonnie Pierce, Year 2005 prepared in 2011

This is a summary of your company's Greenhouse Gas emissions based on the data input on previous sheets.

	GHG Source (unit)	Total Quantity (unit)	Cost ($)	GHG (short tons CO2e)	
Utilities	Electrical Consumption (kWh)	-	$ -	-	
	Electrical Consumption (kWh)	-	$ -	-	
	Electrical Consumption (kWh)	-	$ -	-	
	Electrical Consumption (kWh)	-	$ -	-	
	Electrical Consumption (kWh)	-	$ -	-	
	Natural Gas Consumption (therms)	844,493.00	$ -	4,986.73	
	Natural Gas Consumption (therms)	166,725.00	$ -	984.51	
	Water (consumptive Use) (gal)	211,231.00	$ -	0.39	
	Water (non-consumptive use) (gal)	35,071.00	$ -	0.01	
Transportation	Vehicle (or fleet) 1 (miles)	35,702.00	--	20.89	
	Vehicle (or fleet) 2 (miles)	-	--	-	
	Vehicle (or fleet) 3 (miles)	-	--	-	
	Vehicle (or fleet) 4 (miles)	-	--	-	
	Vehicle (or fleet) 5 (miles)	-	--	-	
	Vehicle (or fleet) 6 (miles)	-	--	-	
	Fuel 1 (gal)	416,200.00	--	4,309.46	
	Fuel 2 (gal)	71,052.24	--	588.87	
	Fuel 3 (gal)	16,672.00	--	112.50	
	Fuel 4 (gal)	5,011.00	--	30.88	
	Fuel 5 (gal)	267,291.76	--	2,802.31	
	Airline Trip 1 (miles)	272,252.00	--	78.27	
	Airline Trip 2 (miles)	-	--	-	
	Landfilled Solid Waste (cubic yards)	-	$ -	-	
	GROSS ANNUAL BASELINE	**--**	**$ -**	**13,915**	**tons**
Recycling	Cardboard (pounds)	49,310.00	$ -	(70.51)	
	Glass (tons)	-	$ -	-	
	Aluminum (pounds)	60.00	$ -	(0.50)	
	Steel (tons)	-	$ -	-	
	Plastic (pounds)	5,357.00	$ -	(4.37)	
	Newsprint (pounds)	46,355.00	$ -	(88.77)	
	Mixed office paper (pounds)	123,730.00	$ -	(207.87)	
	Magazines (pounds)	6,065.00	$ -	(7.52)	
	Phonebooks (tons)	-	$ -	-	
	Fiberboard (tons)	-	$ -	-	
	Wood (tons)	-	$ -	-	
	Foodwaste (tons)	-	$ -	-	
	Yardwaste (tons)	-	$ -	-	
	Commingled (pounds)	23,290.00	$ -	(38.66)	
	Singlestream (tons)	-	$ -	-	
	Copper wire (tons)	-	$ -	-	
	NET ANNUAL BASELINE WITH RECYCLING	**--**	**$ -**	**13,497**	**tons**

GHG (metric tons CO_2e)	
Elect from **GEMS**	37008
NG	4524
NG	893
Water	0
Water	0
Veh 1	19
Fuel 1	3910
Fuel 2	3076
Fuel 3	102
Fuel 4	28
Fuel 5	0
Air 1	71
SW	269
Total GHG	**49,900**

Formerly Reported 2005 Baseline: (Source: Climate Wise Greenhouse Baseline Tool, file named MunicipalFortCollins-GHG-Inventory.doc, 6/17/11)

	GHG Source (unit)	Total Quantity (unit)	Cost ($)	GHG (tons eCO2)	
Utilities	Electrical Consumption (kWh)	15,610,320.00	$ -	13,253.16	
	Electrical Consumption (kWh)	17,514,981.00	$ -	14,870.22	
	Electrical Consumption (kWh)	8,123,199.00	$ -	6,896.60	
	Electrical Consumption (kWh)	907,818.00	$ -	770.74	
	Electrical Consumption (kWh)	2,500,780.00	$ -	2,123.16	
	Natural Gas Consumption (therms)	844,493.00	$ -	4,986.73	
	Natural Gas Consumption (therms)	166,725.00	$ -	984.51	
	Water (consumptive Use) (gal)	211,231.00	$ -	0.39	
	Water (non-consumptive use) (gal)	35,071.00	$ -	0.01	
Transportation	Vehicle (or fleet) 1 (miles)	35,702.00	--	20.89	
	Vehicle (or fleet) 2 (miles)	-	--	-	
	Vehicle (or fleet) 3 (miles)	-	--	-	
	Vehicle (or fleet) 4 (miles)	-	--	-	
	Vehicle (or fleet) 5 (miles)	-	--	-	
	Vehicle (or fleet) 6 (miles)	-	--	-	
	Fuel 1 (gal)	416,200.00	--	4,309.46	
	Fuel 2 (gal)	338,344.00	--	2,804.13	
	Fuel 3 (gal)	16,672.00	--	112.50	
	Fuel 4 (gal)	5,011.00	--	30.88	
	Fuel 5 (gal)	-	--	-	
	Airline Trip 1 (miles)	272,252.00	--	78.27	
	Airline Trip 2 (miles)	-	--	-	
	Landfilled Solid Waste (cubic yards)	21,102.00	$ -	7,121.93	
	GROSS ANNUAL BASELINE	**--**	**$ -**	**58,364**	**tons**
Recycling	Cardboard (pounds)	49,310.00	$ -	(70.51)	
	Glass (tons)	-	$ -	-	
	Aluminum (pounds)	60.00	$ -	(0.50)	
	Steel (tons)	-	$ -	-	
	Plastic (pounds)	5,357.00	$ -	(4.37)	
	Newsprint (pounds)	46,355.00	$ -	(88.77)	
	Mixed office paper (pounds)	123,730.00	$ -	(207.87)	
	Magazines (pounds)	6,065.00	$ -	(7.52)	
	Phonebooks (tons)	-	$ -	-	
	Fiberboard (tons)	-	$ -	-	
	Wood (tons)	-	$ -	-	
	Foodwaste (tons)	-	$ -	-	
	Yardwaste (tons)	-	$ -	-	
	Commingled (pounds)	23,290.00	$ -	(38.66)	
	Singlestream (tons)	-	$ -	-	
	Copper wire (tons)	-	$ -	-	
	ANNUAL BASELINE WITH RECYCLING	**--**	**$ -**	**57,945**	**tons**

Appendix C – 2006 Emissions

2006 Emissions: (**Source:** Climate Wise Greenhouse Gas Baseline Tool, data entered June 2011 into version 2006vMay12-2010-LRS)

NOTE: The Climate Wise Tool originally listed GHG in short tons, so the conversions to metric tons are shown in the column to the right. The conversion factor for solid waste is incorrect, based on actual weights measured, so the correct value is shown in the table to the right.

City of Fort Collins, Prepared by Bonnie Pierce, Year 2006 prepared in 2011

This is a summary of your company's Greenhouse Gas emissions based on the data input on previous sheets.

	GHG Source (unit)	Total Quantity (unit)	Cost ($)	GHG (short tons (CO2e)
Utilities	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Natural Gas Consumption (therms)	896,944.00	$ -	5,296.45
	Natural Gas Consumption (therms)	170,016.00	$ -	1,003.94
	Water (consumptive Use) (gal)	288,871.00	$ -	0.54
	Water (non-consumptive use) (gal)	15,212.00	$ -	0.01
Transportation	Vehicle (or fleet) 1 (miles)	34,420.00	--	18.37
	Vehicle (or fleet) 2 (miles)	-	--	-
	Vehicle (or fleet) 3 (miles)	-	--	-
	Vehicle (or fleet) 4 (miles)	-	--	-
	Vehicle (or fleet) 5 (miles)	-	--	-
	Vehicle (or fleet) 6 (miles)	-	--	-
	Fuel 1 (gal)	418,410.00	--	4,332.34
	Fuel 2 (gal)	339,603.00	--	2,814.56
	Fuel 3 (gal)	13,698.00	--	92.43
	Fuel 4 (gal)	8,154.00	--	50.25
	Fuel 5 (gal)	-	--	-
	Airline Trip 1 (miles)	305,716.00	--	87.89
	Airline Trip 2 (miles)	-	--	-
	Landfilled Solid Waste (cubic yards)	-	$ -	-
	GROSS ANNUAL BASELINE	**--**	**$ -**	**13,697 tons**
Recycling	Cardboard (pounds)	44,588.00	$ -	(63.76)
	Glass (tons)	-	$ -	-
	Aluminum (pounds)	60.00	$ -	(0.50)
	Steel (tons)	-	$ -	-
	Plastic (pounds)	18,768.00	$ -	(15.30)
	Newsprint (pounds)	44,150.00	$ -	(84.55)
	Mixed office paper (pounds)	130,395.00	$ -	(219.06)
	Magazines (pounds)	8,065.00	$ -	(10.00)
	Phonebooks (tons)	-	$ -	-
	Fiberboard (tons)	-	$ -	-
	Wood (tons)	-	$ -	-
	Foodwaste (pounds)	-	$ -	-
	Yardwaste (tons)	-	$ -	-
	Commingled (pounds)	28,130.00	$ -	(46.70)
	Singlestream (tons)	-	$ -	-
	Copper wire (tons)	-	$ -	-
	NET ANNUAL BASELINE WITH RECYCLING	**--**	**$ -**	**13,257 tons**

GHG (metric tons CO_2e)	
Elect from **GEMS**	37766
NG	4805
NG	911
Water	0
Water	0
Veh 1	17
Fuel 1	3930
Fuel 2	2572
Fuel 3	84
Fuel 4	46
Fuel 5	0
Air 1	80
SW	297
Total GHG	**50,508**

Formerly Reported 2006 Emissions: (Source: Climate Wise Greenhouse Gas Baseline Tool, file named MunicipalFortCollins-GHG-Inventory.doc, 6/17/11)

	GHG Source (unit)	Total Quantity (unit)	Cost ($)	GHG (tons eCO2)
Utilities	Electrical Consumption (kWh)	15,925,365.00	$ -	13,520.63
	Electrical Consumption (kWh)	17,710,603.00	$ -	15,036.30
	Electrical Consumption (kWh)	8,235,645.00	$ -	6,992.06
	Electrical Consumption (kWh)	910,628.00	$ -	773.12
	Electrical Consumption (kWh)	2,740,485.00	$ -	2,326.67
	Natural Gas Consumption (therms)	896,944.00	$ -	5,296.45
	Natural Gas Consumption (therms)	170,016.00	$ -	1,003.94
	Water (consumptive Use) (gal)	288,871.00	$ -	0.54
	Water (non-consumptive use) (gal)	15,212.00	$ -	0.01
Transportation	Vehicle (or fleet) 1 (miles)	-	--	-
	Vehicle (or fleet) 2 (miles)	-	--	-
	Vehicle (or fleet) 3 (miles)	-	--	-
	Vehicle (or fleet) 4 (miles)	-	--	-
	Vehicle (or fleet) 5 (miles)	-	--	-
	Vehicle (or fleet) 6 (miles)	-	--	-
	Fuel 1 (gal)	418,410.00	--	4,332.34
	Fuel 2 (gal)	339,603.00	--	2,814.56
	Fuel 3 (gal)	13,698.00	--	92.43
	Fuel 4 (gal)	8,154.00	--	50.25
	Fuel 5 (gal)	-	--	-
	Airline Trip 1 (miles)	-	--	-
	Airline Trip 2 (miles)	-	--	-
	Landfilled Solid Waste (cubic yards)	22,913.00	$ -	7,733.14
	GROSS ANNUAL BASELINE	**--**	**$ -**	**59,972 tons**
Recycling	Cardboard (pounds)	44,588.00	$ -	(63.76)
	Glass (tons)	-	$ -	-
	Aluminum (pounds)	60.00	$ -	(0.50)
	Steel (tons)	-	$ -	-
	Plastic (pounds)	18,768.00	$ -	(15.30)
	Newsprint (pounds)	44,150.00	$ -	(84.55)
	Mixed office paper (pounds)	130,395.00	$ -	(219.06)
	Magazines (pounds)	8,065.00	$ -	(10.00)
	Phonebooks (tons)	-	$ -	-
	Fiberboard (tons)	-	$ -	-
	Wood (tons)	-	$ -	-
	Foodwaste (pounds)	-	$ -	-
	Yardwaste (tons)	-	$ -	-
	Commingled (pounds)	28,130.00	$ -	(46.70)
	Singlestream (tons)	-	$ -	-
	Copper wire (tons)	-	$ -	-
	NET ANNUAL BASELINE WITH RECYCLING	**--**	**$ -**	**59,533 tons**

Appendix D – 2007 Emissions

2007 Emissions: (**Source:** Climate Wise Greenhouse Gas Baseline Tool, data entered June 2011 into version 2007v32510)

NOTE: The Climate Wise Tool originally listed GHG in short tons, so the conversions to metric tons are shown in the column to the right. The conversion factor for solid waste is incorrect, based on actual weights measured, so the correct value is shown in the table to the right.

City of Fort Collins, Prepared by Bonnie Pierce, Year 2007, prepared in 2011, version v 01.14

This is a summary of your company's greenhouse gas emissions based on the data input on previous sheets.

	GHG Source (unit)	Total Quantity (unit)	Cost ($)	GHG (short tons CO2e)
Utilities	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Natural Gas Consumption (therms)	913,512.00	$ -	5,394.29
	Natural Gas Consumption (therms)	113,409.00	$ -	669.68
	Water (consumptive Use) (gal)	281,380.00	$ -	0.57
	Water (non-consumptive use) (gal)	6,607.00	$ -	0.00
Transportation	Vehicle (or fleet) 1 (miles)	105,598.00	--	61.77
	Vehicle (or fleet) 2 (miles)	-	--	-
	Vehicle (or fleet) 3 (miles)	-	--	-
	Vehicle (or fleet) 4 (miles)	-	--	-
	Vehicle (or fleet) 5 (miles)	-	--	-
	Vehicle (or fleet) 6 (miles)	-	--	-
	Fuel 1 (gal)	402,114.00	--	4,163.61
	Fuel 2 (gal)	378,138.00	--	3,133.94
	Fuel 3 (gal)	11,364.00	--	76.68
	Fuel 4 (gal)	12,268.00	--	75.60
	Fuel 5 (gal)	2,332.00	--	2.28
	Airline Trip 1 (miles)	346,150.00	--	99.52
	Airline Trip 2 (miles)	-	--	-
	Landfilled Solid Waste (cubic yards)	-	$ -	-
	GROSS ANNUAL BASELINE	--	**$ -**	**13,678 tons**
	GROSS ANNUAL BASELINE WITH RFI	--	**$ -**	**13,777 tons**
Recycling	Cardboard (pounds)	52,535.00	$ -	(75.13)
	Glass (tons)	-	$ -	-
	Aluminum (pounds)	300.00	$ -	(2.49)
	Steel (pounds)	-	$ -	-
	Plastic (pounds)	5,642.00	$ -	(4.60)
	Newsprint (pounds)	35,576.00	$ -	(68.13)
	Mixed office paper (pounds)	144,869.00	$ -	(243.38)
	Magazines (pounds)	11,651.00	$ -	(14.45)
	Phonebooks (tons)	-	$ -	-
	Fiberboard (tons)	-	$ -	-
	Wood (tons)	-	$ -	-
	Foodwaste (pounds)	-	$ -	-
	Yardwaste (tons)	-	$ -	-
	Commingled (pounds)	35,360.00	$ -	(58.70)
	Singlestream (tons)	-	$ -	-
	Copper wire (tons)	-	$ -	-
	NET ANNUAL BASELINE WITH RECYCLING	--	**$ -**	**13,211 tons**
	NET ANNUAL BASELINE WITH RFI	--	**$ -**	**13,311 tons**

GHG (metric tons CO_2e)	
Elect from **GEMS**	36,370
NG	4894
NG	608
Water	1
Water	0
Veh 1	56
Fuel 1	3777
Fuel 2	2843
Fuel 3	70
Fuel 4	69
Fuel 5	2
Air 1	90
SW	325
Total GHG	**49,104**

Formerly Reported 2007 Emissions: (Source: Climate Wise Greenhouse Gas Baseline Tool, file name is MunicipalFortCollins-GHG-Inventory.doc, 6/17/11)

	GHG Source (unit)	Total Quantity (unit)	Cost ($)	GHG (tons eCO2)	
Utilities	Electrical Consumption (kWh)	17,230,935.00	$ -	14,706.60	
	Electrical Consumption (kWh)	16,964,882.00	$ -	14,479.53	
	Electrical Consumption (kWh)	8,421,683.00	$ -	7,187.91	
	Electrical Consumption (kWh)	628,640.00	$ -	536.54	
	Electrical Consumption (kWh)	2,808,736.00	$ -	2,397.26	
	Natural Gas Consumption (therms)	913,512.00	$ -	5,394.29	
	Natural Gas Consumption (therms)	113,409.00	$ -	669.68	
	Water (consumptive Use) (gal)	281,380.00	$ -	0.57	
	Water (non-consumptive use) (gal)	6,607.00	$ -	0.00	
Transportation	Vehicle (or fleet) 1 (miles)	105,598.00	--	61.77	
	Vehicle (or fleet) 2 (miles)	-	--	-	
	Vehicle (or fleet) 3 (miles)	-	--	-	
	Vehicle (or fleet) 4 (miles)	-	--	-	
	Vehicle (or fleet) 5 (miles)	-	--	-	
	Vehicle (or fleet) 6 (miles)	-	--	-	
	Fuel 1 (gal)	402,114.00	--	4,163.61	
	Fuel 2 (gal)	378,138.00	--	3,133.94	
	Fuel 3 (gal)	11,364.00	--	76.68	
	Fuel 4 (gal)	12,268.00	--	75.60	
	Fuel 5 (gal)	2,332.00	--	2.28	
	Airline Trip 1 (miles)	346,150.00	--	99.52	
	Airline Trip 2 (miles)	-	--	-	
	Landfilled Solid Waste (cubic yards)	24,989.00	$ -	8,433.79	
	GROSS ANNUAL BASELINE	**--**	**$ -**	**61,420**	**tons**
	GROSS ANNUAL BASELINE WITH RFI	**--**	**$ -**	**61,519**	**tons**
Recycling	Cardboard (pounds)	52,535.00	$ -	(75.13)	
	Glass (tons)	-	$ -	-	
	Aluminum (pounds)	300.00	$ -	(2.49)	
	Steel (pounds)	-	$ -	-	
	Plastic (pounds)	5,642.00	$ -	(4.60)	
	Newsprint (pounds)	35,576.00	$ -	(68.13)	
	Mixed office paper (pounds)	144,869.00	$ -	(243.38)	
	Magazines (pounds)	11,651.00	$ -	(14.45)	
	Phonebooks (tons)	-	$ -	-	
	Fiberboard (tons)	-	$ -	-	
	Wood (tons)	-	$ -	-	
	Foodwaste (pounds)	-	$ -	-	
	Yardwaste (tons)	-	$ -	-	
	Commingled (pounds)	35,360.00	$ -	(58.70)	
	Singlestream (tons)	-	$ -	-	
	Copper wire (tons)	-	$ -	-	
	ANNUAL BASELINE WITH RECYCLING	**--**	**$ -**	**60,953**	**tons**
	NET ANNUAL BASELINE WITH RFI	**--**	**$ -**	**61,052**	**tons**

Appendix E – 2008 Emissions

2008 Emissions: (**Source:** Climate Wise Greenhouse Gas Baseline Tool, data entered June 2011, version 2008v41210)

NOTE: The Climate Wise Tool originally listed GHG in short tons, so the conversions to metric tons are shown in the column to the right. The conversion factor for solid waste is incorrect, based on actual weights measured, so the correct value is shown in the table to the right.

City of Fort Collins, Prepared by Bonnie Pierce, Year 2008, prepared in 2011, version v 01.14

This is a summary of your company's greenhouse gas emissions based on the data input on previous sheets.

	GHG Source (unit)	Total Quantity (unit)	Cost ($)	GHG (short tons CO2e)
Utilities	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Natural Gas Consumption (therms)	926,286.00	$ -	5,469.72
	Natural Gas Consumption (therms)	166,725.00	$ -	984.51
	Water (consumptive Use) (gal)	281,380.00	$ -	0.57
	Water (non-consumptive use) (gal)	7,500.00	$ -	0.00
Transportation	Vehicle (or fleet) 1 (miles)	51,881.00	--	30.35
	Vehicle (or fleet) 2 (miles)	-	--	-
	Vehicle (or fleet) 3 (miles)	-	--	-
	Vehicle (or fleet) 4 (miles)	-	--	-
	Vehicle (or fleet) 5 (miles)	-	--	-
	Vehicle (or fleet) 6 (miles)	-	--	-
	Fuel 1 (gal)	377,988.00	--	3,913.80
	Fuel 2 (gal)	343,550.00	--	2,847.28
	Fuel 3 (gal)	11,562.00	--	78.02
	Fuel 4 (gal)	23,188.00	--	142.89
	Fuel 5 (gal)	28,330.00	--	27.66
	Airline Trip 1 (miles)	458,052.70	--	131.69
	Airline Trip 2 (miles)	-	--	-
	Landfilled Solid Waste (cubic yards)	-	$ -	-
	GROSS ANNUAL BASELINE	**--**	**$ -**	**13,626 tons**
	GROSS ANNUAL BASELINE WITH RFI	**--**	**$ -**	**13,758 tons**
Recycling	Cardboard (pounds)	57,388.00	$ -	(82.06)
	Glass (tons)	-	$ -	-
	Aluminum (tons)	-	$ -	-
	Steel (pounds)	-	$ -	-
	Plastic (pounds)	28,087.00	$ -	(22.89)
	Newsprint (pounds)	10,473.00	$ -	(20.06)
	Mixed office paper (pounds)	142,376.00	$ -	(239.19)
	Magazines (pounds)	6,467.00	$ -	(8.02)
	Phonebooks (tons)	-	$ -	-
	Fiberboard (tons)	-	$ -	-
	Wood (tons)	-	$ -	-
	Foodwaste (pounds)	1,260.00	$ -	(0.14)
	Yardwaste (tons)	-	$ -	-
	Commingled (pounds)	45,657.00	$ -	(75.79)
	Singlestream (tons)	47.00	$ -	(156.04)
	Copper wire (tons)	-	$ -	-
	NET ANNUAL BASELINE WITH RECYCLING	**--**	**$ -**	**13,022 tons**
	NET ANNUAL BASELINE WITH RFI	**--**	**$ -**	**13,154 tons**

GHG (metric tons CO_2e)	
Elect from **GEMS**	35,769
NG	4962
NG	893
Water	0.51
Water	0
Veh 1	27.53
Fuel 1	3551
Fuel 2	2583
Fuel 3	71
Fuel 4	130
Fuel 5	25
Air 1	119
SW	285
Total GHG	**48,416**

Formerly Reported 2008 Emissions: (**Source:** Climate Wise Greenhouse Gas Baseline Tool, file name: MunicipalFortCollins-GHG-Inventory.doc, 6/17/11)

	GHG Source (unit)	Total Quantity (unit)	Cost ($)	GHG (tons eCO2)
Utilities	Electrical Consumption (kWh)	17,541,592.00	$ -	14,971.75
	Electrical Consumption (kWh)	16,838,647.00	$ -	14,371.79
	Electrical Consumption (kWh)	8,546,092.00	$ -	7,294.09
	Electrical Consumption (kWh)	620,223.00	$ -	529.36
	Electrical Consumption (kWh)	3,699,847.00	$ -	3,157.82
	Natural Gas Consumption (therms)	926,286.00	$ -	5,469.72
	Natural Gas Consumption (therms)	166,725.00	$ -	984.51
	Water (consumptive Use) (gal)	281,380.00	$ -	0.57
	Water (non-consumptive use) (gal)	7,500.00	$ -	0.00
Transportation	Vehicle (or fleet) 1 (miles)	51,881.00	--	30.35
	Vehicle (or fleet) 2 (miles)	-	--	-
	Vehicle (or fleet) 3 (miles)	-	--	-
	Vehicle (or fleet) 4 (miles)	-	--	-
	Vehicle (or fleet) 5 (miles)	-	--	-
	Vehicle (or fleet) 6 (miles)	-	--	-
	Fuel 1 (gal)	377,988.00	--	3,913.80
	Fuel 2 (gal)	343,550.00	--	2,847.28
	Fuel 3 (gal)	11,562.00	--	78.02
	Fuel 4 (gal)	23,188.00	--	142.89
	Fuel 5 (gal)	28,330.00	--	27.66
	Airline Trip 1 (miles)	458,052.70	--	131.69
	Airline Trip 2 (miles)	-	--	-
	Landfilled Solid Waste (cubic yards)	24,389.00	$ -	8,231.29
	GROSS ANNUAL BASELINE	**--**	**$ -**	**62,183 tons**
	GROSS ANNUAL BASELINE WITH RFI	**--**	**$ -**	**62,314 tons**
Recycling	Cardboard (pounds)	57,388.00	$ -	(82.06)
	Glass (tons)	-	$ -	-
	Aluminum (tons)	-	$ -	-
	Steel (pounds)	-	$ -	-
	Plastic (pounds)	28,087.00	$ -	(22.89)
	Newsprint (pounds)	10,473.00	$ -	(20.06)
	Mixed office paper (pounds)	142,376.00	$ -	(239.19)
	Magazines (pounds)	6,467.00	$ -	(8.02)
	Phonebooks (tons)	-	$ -	-
	Fiberboard (tons)	-	$ -	-
	Wood (tons)	-	$ -	-
	Foodwaste (pounds)	1,260.00	$ -	(0.14)
	Yardwaste (tons)	-	$ -	-
	Commingled (pounds)	45,657.00	$ -	(75.79)
	Singlestream (tons)	47.00	$ -	(156.04)
	Copper wire (tons)	-	$ -	-
	ANNUAL BASELINE WITH RECYCLING	**--**	**$ -**	**61,578 tons**
	NET ANNUAL BASELINE WITH RFI	**--**	**$ -**	**61,710 tons**

Appendix F – 2009 Emissions

2009 Emissions: (**Source:** Climate Wise Greenhouse Gas Baseline Tool, v.08.10.2010, entered June 2011 2009-4210)

NOTE: The Climate Wise Tool originally listed GHG in short tons, so the conversions to metric tons are shown in the column to the right. The conversion factor for solid waste is incorrect, based on actual weights measured, so the correct value is shown in the table to the right.

City of Fort Collins, Prepared by Bonnie Pierce, Year 2009, prepared in 2011, version v10.23.2009

This is a summary of your company's greenhouse gas emissions based on the data input on previous sheets. When your baseline is complete, upload it on your myClimate Wise account.

	GHG Source (unit)	Total Quantity (unit)	Cost ($)	GHG (short tons CO2e)
Utilities	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Natural Gas Consumption (therms)	795,874.00	$ -	4,751.37
	Natural Gas Consumption (therms)	129,131.00	$ -	770.91
	Water (consumptive Use) (gal)	265,715.00	$ -	0.56
	Water (non-consumptive use) (gal)	16,097.00	$ -	0.01
Transportation	Vehicle (or fleet) 1 (miles)	56,900.00	--	30.37
	Vehicle (or fleet) 2 (miles)	-	--	-
	Vehicle (or fleet) 3 (miles)	-	--	-
	Vehicle (or fleet) 4 (miles)	-	--	-
	Vehicle (or fleet) 5 (miles)	-	--	-
	Vehicle (or fleet) 6 (miles)	-	--	-
	Fuel 1 (gal)	329,523.00	--	3,411.98
	Fuel 2 (gal)	336,936.00	--	2,792.46
	Fuel 3 (gal)	10,052.00	--	67.83
	Fuel 4 (gal)	38,952.00	--	240.04
	Fuel 5 (gal)	28,240.00	--	27.57
	Airline Trip 1 (miles)	378,038.00	--	108.69
	Airline Trip 2 (miles)	-	--	-
	Landfilled Solid Waste (cubic yards)	-	$ -	-
	ANNUAL BASELINE	**--**	**$ -**	**12,310 tons**
				metric
				11,166 tons
Recycling	Cardboard (pounds)	124,066.00	$ -	(177.41)
	Glass (tons)	-	$ -	-
	Aluminum (pounds)	2,094.00	$ -	(17.36)
	Steel (tons)	-	$ -	-
	Plastic (tons)	-	$ -	-
	Newsprint (pounds)	11,025.00	$ -	(21.11)
	Mixed office paper (pounds)	181,640.00	$ -	(305.16)
	Magazines (tons)	-	$ -	-
	Phonebooks (tons)	-	$ -	-
	Fiberboard (pounds)	-	$ -	-
	Wood (tons)	-	$ -	-
	Foodwaste (gallons)	2,090.00	$ -	(1.72)
	Yardwaste (tons)	-	$ -	-
	Commingled (pounds)	62,400.00	$ -	(103.58)
	Singlestream (tons)	47.00	$ -	(156.04)
	Copper wire (tons)	-	$ -	-
	UPSTREAM EMISSION REDUCTIONS DO TO RECYCLING*	**--**	**$ -**	**(782) tons**

*These are emission reductions that occur in the material market because it takes less energy to bring a recycled material to market than virgin material.

GHG (metric tons CO_2e)	
Elect from **GEMS**	38,650
NG	4310
NG	699
Water	1
Water	0
Veh 1	28
Fuel 1	3095
Fuel 2	2533
Fuel 3	62
Fuel 4	218
Fuel 5	25
Air 1	99
SW	263
Total GHG	**49,982**

Formerly Reported 2009 Emissions: (Source: MunicipalFortCollins-GHG-Inventory.doc, 6/17/11 provided by Climate Wise Greenhouse Gas Baseline Tool)

GHG Baseline

City of Fort Collins, Prepared by Rosemarie Russo , 2009, version v10.23.2009

This is a summary of your company's greenhouse gas emissions based on the data input on previous sheets. When your baseline is complete, upload it on your myClimate Wise account.

	GHG Source (unit)	Total Quantity (unit)	Cost ($)	GHG (tons eCO2)
Utilities	Electrical Consumption (kWh)	16,137,801.00	$ -	14,322.30
	Electrical Consumption (kWh)	15,920,080.00	$ -	14,129.07
	Electrical Consumption (kWh)	8,535,648.00	$ -	7,575.39
	Electrical Consumption (kWh)	621,057.00	$ -	551.19
	Electrical Consumption (kWh)	6,734,554.00	$ -	5,976.92
	Natural Gas Consumption (therms)	795,874.00	$ -	4,751.37
	Natural Gas Consumption (therms)	129,131.00	$ -	770.91
	Water (consumptive Use) (gal)	265,715.00	$ -	0.56
	Water (non-consumptive use) (gal)	16,097.00	$ -	0.01
Transportation	Vehicle (or fleet) 1 (miles)	56,900.00	--	30.37
	Vehicle (or fleet) 2 (miles)	-	--	-
	Vehicle (or fleet) 3 (miles)	-	--	-
	Vehicle (or fleet) 4 (miles)	-	--	-
	Vehicle (or fleet) 5 (miles)	-	--	-
	Vehicle (or fleet) 6 (miles)	-	--	-
	Fuel 1 (gal)	329,523.00	--	3,411.98
	Fuel 2 (gal)	336,936.00	--	2,792.46
	Fuel 3 (gal)	10,052.00	--	67.83
	Fuel 4 (gal)	38,952.00	--	240.04
	Fuel 5 (gal)	28,240.00	--	27.57
	Airline Trip 1 (miles)	378,038.00	--	108.69
	Airline Trip 2 (miles)	-	--	-
	Landfilled Solid Waste (cubic yards)	22,950.00	$ -	1,771.17
	ANNUAL BASELINE	**--**	**$ -**	**56,636 tons**
				metric 51,369 tons
Recycling	Cardboard (pounds)	124,066.00	$ -	(177.41)
	Glass (tons)	-	$ -	-
	Aluminum (pounds)	2,094.00	$ -	(17.36)
	Steel (tons)	-	$ -	-
	Plastic (tons)	-	$ -	-
	Newsprint (pounds)	11,025.00	$ -	(21.11)
	Mixed office paper (pounds)	181,640.00	$ -	(305.16)
	Magazines (tons)	-	$ -	-
	Phonebooks (tons)	-	$ -	-
	Fiberboard (pounds)	-	$ -	-
	Wood (tons)	-	$ -	-
	Foodwaste (gallons)	2,090.00	$ -	(1.72)
	Yardwaste (tons)	-	$ -	-
	Commingled (pounds)	62,400.00	$ -	(103.58)
	Singlestream (tons)	47.00	$ -	(156.04)
	Copper wire (tons)	-	$ -	-
	UPSTREAM EMISSION REDUCTIONS DO TO RECYCLING*	**--**	**$ -**	**(782) tons**

*These are emission reductions that occur in the material market because it takes less energy to bring a recycled material to market than virgin material.

Appendix G– 2010 Emissions

2010 Emissions (**Source:** 2010_v08102010_bp_071711.xls provided by Climate Wise Greenhouse Gas Baseline Tool)

NOTE: The Climate Wise Tool now converts GHG emissions into metric tons of CO2e so conversion from short tons to metric tons of CO2e is no longer necessary as in years past. The conversion factor for solid waste is incorrect, based on actual weights measured, so the correct value is shown in the table to the right.

City of Fort Collins, Prepared by Bonnie Pierce, Year 2010, prepared 2011, version

This is a summary of your company's greenhouse gas emissions based on the data input on previous sheets. When your baseline is complete, upload it on your myClimate Wise account.

	GHG Source (unit)	Total Quantity (unit)	Cost ($)	GHG (metric tons eCO2)
Utilities	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Electrical Consumption (kWh)	-	$ -	-
	Natural Gas Consumption (therms)	1,152,246.00	$ -	6,239.17
	Natural Gas Consumption (therms)	112,531.00	$ -	609.33
	Water (consumptive Use) (gal)	240,962.00	$ -	0.46
	Water (non-consumptive use) (gal)	15,225.00	$ -	0.01
Transportation	Vehicle (or fleet) 1 (miles)	46,358.00	--	22.44
	Vehicle (or fleet) 2 (miles)	84,235.00	--	49.37
	Vehicle (or fleet) 3 (miles)	-	--	-
	Vehicle (or fleet) 4 (miles)	-	--	-
	Vehicle (or fleet) 5 (miles)	-	--	-
	Vehicle (or fleet) 6 (miles)	-	--	-
	Fuel 1 (gal)	320,716.00	--	3,011.96
	Fuel 2 (gal)	270,659.00	--	2,034.56
	Fuel 3 (gal)	7,751.00	--	47.44
	Fuel 4 (gal)	98,513.00	--	550.62
	Fuel 5 (gal)	61,945.00	--	54.85
	Airline Trip 1 (miles)	243,846.00	--	63.59
	Airline Trip 2 (miles)	-	--	-
	Landfilled Solid Waste (cubic yards)	-	$ -	-
	ANNUAL BASELINE	**--**	**$ -**	**12,747** **metric tons**
Recycling	Cardboard (pounds)	28,788.00	$ -	(44.78)
	Glass (tons)	-	$ -	-
	Aluminum (pounds)	233,393.00	$ -	(1,583.42)
	Steel (pounds)	224,239.00	$ -	(200.33)
	Plastic (tons)	-	$ -	-
	Newsprint (pounds)	735.00	$ -	(1.03)
	Mixed office paper (tons)	58,048.00	$ -	(198,488.75)
	Magazines (tons)	-	$ -	-
	Phonebooks (tons)	-	$ -	-
	Fiberboard (pounds)	-	$ -	-
	Wood (tons)	-	$ -	-
	Foodwaste (pounds)	17,445.00	$ -	(1.74)
	Yardwaste (tons)	-	$ -	-
	Commingled (tons)	112.00	$ -	(337.26)
	Singlestream (tons)	-	$ -	-
	Copper wire (tons)	-	$ -	-
	UPSTREAM EMISSION REDUCTIONS DO TO RECYCLING*	**--**	**$ -**	**(200,657)** **metric tons**

*These are emission reductions that occur in the material market because it takes less energy to bring a recycled material to market than virgin material.

GHG (metric tons CO_2e)	
Elect from **GEMS**	31,756
SW	292
Total GHG	**44,730**