

EXECUTIVE SUMMARY

The earth's temperature is determined by the level of greenhouse gases in the atmosphere. As sunlight passes through our atmosphere, the incoming solar radiation is re-radiated from the earth's surface as heat energy. Greenhouse gases like carbon dioxide, methane, nitrous oxide, chlorofluorocarbons, and water vapor trap some of this reradiated energy. This trapped heat energy warms the earth, much as the glass of a greenhouse traps reradiated energy from sunlight and thereby warms the interior of the greenhouse. The temperature at the Earth's surface is about 60⁰ F warmer than it would be without the greenhouse effect.

While greenhouse gases play a vital role in maintaining the necessary conditions for life on Earth, the rapidly increasing concentrations of these gases are causing a rise in global temperature – Global Warming. Carbon dioxide (CO₂) is responsible for about half of the greenhouse gases causing the global warming trend. CFC's and methane comprise almost an additional 20%.

Evidence is growing that human activities are changing our climate. In 1995, the Intergovernmental Panel on Climate Change (IPCC) said

“.... humans have made a discernible impact on climate change.” – IPCC, 1995

More recently, in January of 1999, the American Geophysical Union (AGU), one of our nation's leading science professional societies, reaffirmed the findings of their previous assessments that greenhouse gases are increasing in the atmosphere, impacts could be highly disruptive to society, and there is a compelling basis for public concern. More importantly, the AGU report warns that scientific uncertainty over the details of climate change does not justify inaction by policy makers.

Many large companies now acknowledge the very real threat of global warming as well and argue that some kind of early response is appropriate. Both British Petroleum and Royal Dutch Shell plan to reduce their greenhouse gas emissions 10% below 1990 levels within the next decade.

We will remember the 1990's as a decade of international agreements to reduce global warming and climate change. The United States participated in the two largest agreements this decade: 1) 1992 Earth Summit in Rio de Janeiro, Brazil and, 2) 1997 Kyoto Protocol in Kyoto, Japan

Our City Council realized that local actions taken to reduce greenhouse gas emissions and increase energy efficiency provide many local benefits: decreasing air pollution, creating jobs, reducing energy expenditures and saving money for the City government, its businesses and its citizens. Consequently, on July 1, 1997, our City Council committed Fort Collins, its government, businesses, and residents to reducing the emissions of greenhouse gases. By passing *Council Resolution 97-97*, the City of Fort Collins joined a family of more than 300 cities and counties around the world in the **Cities for Climate Protection Campaign**.

By joining the campaign, the City of Fort Collins committed to:

- conducting a greenhouse gas emissions analysis for 1990 and a forecast for 2010,
- setting a greenhouse gas reduction target, and
- developing a plan to meet the target.

Fort Collins Greenhouse Gas Emissions Analysis

A greenhouse gas emissions inventory was conducted for the baseline year of 1990. This inventory includes only carbon dioxide, generated by combustion of fossil fuel, and methane from landfill waste decay. The inventory covers residential, commercial, and industrial and transportation sector emissions of CO₂, and Fort Collins' portion of landfill gas generation. In 1990, Fort Collins was responsible for approximately 1,360,000 tons of CO₂, or 15.5 tons per person. By 2010, in the absence of actions to reduce emissions, our emissions are predicted to increase 159% to 3,523,000 tons, or 24.56 tons per person.

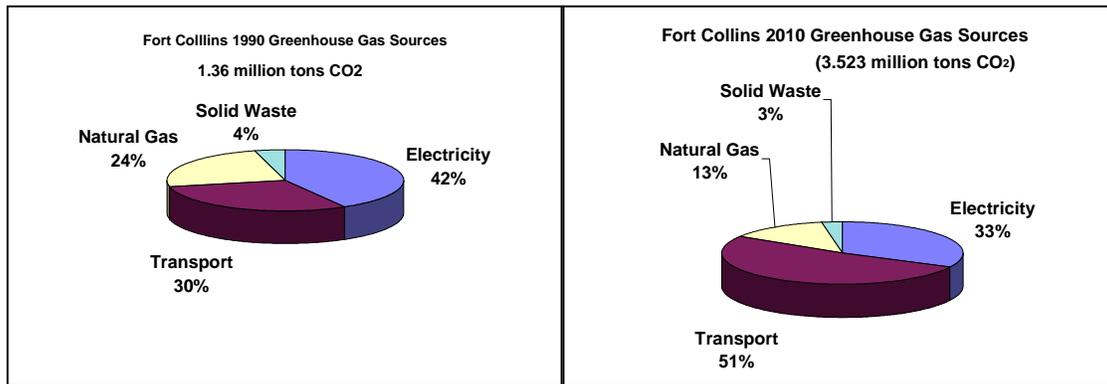


Figure A. Fort Collins Greenhouse Gas Emissions Estimates for 1990 and 2010

Role of Project

The role of this project is not to debate the issue of global warming. In recent years, the scientific community has reached a nearly unanimous consensus that global warming is occurring and the potential consequences could be severe. The role of this plan is to identify local actions we can take to reduce greenhouse gas emissions caused by human activity in and around Fort Collins.

Despite the fact that Fort Collins greenhouse gas emissions only account for approximately 0.037% of the U.S. 1990 greenhouse gas emissions and a much smaller fraction of global emissions, it is incumbent upon any responsible City to consider efforts to reduce the emissions we are responsible for.

Measures To Reduce Greenhouse Gases

Existing measures are those that already exist in the community or City organization although they are not necessarily completed.

New measures are those that emerged initially through greenhouse gas reduction discussions and are primarily intended to reduce greenhouse gases.

Pending measures are those actions not yet approved by the City, but that would be brought forward for consideration under the normal course of business, regardless of their capacity to reduce greenhouse gas emissions.

Tables A, B, and C list the Existing, New, and Pending measures respectively, along with their associated CO₂ reduction capability. Following is a brief description of the measures. Both the Staff Team and the Citizen Advisory Committee rank-ordered the twelve New measures and the twelve Pending measures (where 1 equals best). The rank ordering took into account CO₂ reduction capability, cost, other environmental impacts, public and political support, and feasibility. The rankings are displayed to the left of each New and Pending measure's description.

Table A. Existing Quantified Measures

EXISTING MEASURES	Tons CO ₂ reduced in 2010
VMT Goal: not exceed pop. growth rates	337,676
Business Recycling (apply '98 per capita rate to 2010 pop)	41,735
1997 City Energy Code (existing and projected benefits)	40,436
Curbside Recycling (apply '98 per capita rate to 2010 pop)	39,732
Climate Wise for businesses	38,390
Methane Flaring & Heat Recovery at City's water reclamation plant	35,607
Sequestration of CO ₂ by all trees in Fort Collins	21,071
FC Electricity Distribution System Improvements	15,189
CSU Utility System (Energy Conservation Programs) - Benefit from existing programs	12,524
CSU's Industrial Assessment Center (savings in 2010 from existing projects)	4,429
Wind Power Pilot Program	4,013
Wind Phase II (2.5 more turbines)	5,128
Promote Telecommuting	3,076
Poudre School District Energy Conservation Programs (Existing and projected benefits)	2,552
ZILCH w/ Energy Score (Existing and projected benefits)	652
ZILCH - without Energy Score (Existing and projected benefits)	291
Lighting Upgrades - City Buildings: 1990-1998	257
Propane City Fleet vehicles (assume 1998 use rates)	139
10% Reduction of Municipal Solid Waste in 2010	121
Natural Areas Shrub Plantings	58
Converting to Variable Frequency Drives (City gov. actions through 1998)	48
Consider Accelerated TDM Program; Disincentives for Driving	Unknown
ULEV and ZEV Vehicles for City Fleet; Including Electric Vehicles	Unknown
Clean Cities Program	Unknown
Pollution Prevention (P2) to Promote Energy Efficiency in the Commercial Sector	Unknown
Municipal Pilot of Environmentally Preferable Products	Unknown
"Green Building" for the New City Office Building	Unknown
EXISTING MEASURES TOTAL	603,124

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Table B. New Measures

NEW MEASURES (12)	TYPE	Tons CO₂ reduced in 2010	Staff Team Rank	Citizen Comm. Rank
Replace Traffic Signals with LEDs	Energy	3,137	1	1
Continuation of wind program (5 more turbines)	Energy	10,255	3	2
Climate Change Education and Outreach	Education	40,553	2	5
Optimization of WasteWater Treatment motors/pumps	Energy	961	4	4
Reduce City Gov. Building Energy Use 15% below 1990 levels (per SqFt)	Energy	3,129	7	3
City Gov purchase a portion of wind for own elec needs (1 turbine)	Energy	2,051	5	7
Increase awareness of fuel consumption in City departments	Transportation	62	6	10
Green Building program for Commercial construction	Energy	3,186	8	8
Push for Mandatory Renewable in Electric Deregulation (4% of all in 2010) or Comparable Energy Conservation	Energy	71,561	11	6
Increase citywide tree planting (3600 more trees)	Vegetation	125	9	9
Distribute bids and proposals electronically	Waste	3	10	11
Increase mortality age of City-owned trees	Vegetation	??	12	12
NEW MEASURES TOTAL		135,023		

Table C. Pending Measures

PENDING MEASURES (12)	TYPE	Tons CO₂ reduced in 2010	Staff Team Rank	Citizen Comm. Rank
50% Solid Waste Diversion Goal	Waste	112,787	2	1
Push for tighter national fuel efficiency (CAFÉ) standards	Transportation	120,750	5	2
Second centralized recycling drop-off site	Waste	1095	1	7
Fort Collins-Denver Commuter Rail	Transportation	15-50000	3	6
Expand Larimer County Recycling Center	Waste	18,834	6	3
Landfill Gas to Energy	Waste	84,307	7	4
Increase energy efficiency training for builders	Energy	20,840	4	9
Green-Building program for residences	Energy	1,665	8	5
Trash Districting	Transportation	292	12	8
Parks Satellite Shop	Transportation	13	9	12
Construction and Demolition Pilot	Waste	??	10	11
Work with MAPO to encourage bulk purchasing	Waste	??	11	10
PENDING MEASURES TOTAL		373,154		

Existing Measures

		Vehicle Miles Traveled (VMT) Goal: VMT Growth Rate Not to Outpace Population Growth Rate <i>TRANSPORTATION SERVICES</i>
Tons of CO ₂ Saved In 2010	337,676	Both the Fort Collins Master Transportation Plan and the Transportation Demand Management Plan contain the Council-approved goal of keeping the Vehicle Miles Traveled (VMT) growth rate from exceeding local population growth rate. However, the 1998 Mobility Report Card indicates that Fort Collins' VMT is rising at a rate of about 8% per year, more than double the approximate 3.5% per year population growth rate. Assuming that population grows at the historic rate of 2.2% per year, the Transportation Department estimates that it is still possible to achieve this goal by the year 2010 if successful VMT reduction strategies are implemented. Implementing priority programs in the Bicycle and the Pedestrian Plans as well as construction of the Mason Street Transportation corridor will aid in achieving this goal.
		Business Recycling <i>COMMUNITY-WIDE</i>
Tons of CO ₂ Saved In 2010	41,735	In 1999, the Natural Resources Department conducted a study to identify the full extent of waste diversion taking place throughout Fort Collins. Seventeen businesses and materials processors engaged in recycling activities that diverted over 20,000 tons of material from landfill, representing about 60% of all Fort Collins' material recycled in 1998. Applying the 1998 per capita business' recycling rate to the predicted 2010 population, business recycling activities would reduce 41,735 tons of CO ₂ e in 2010.
		1997 City Energy Code (Existing Model Energy Code) <i>BUILDING AND ZONING</i>
Tons of CO ₂ Saved in 2010	10,379 ('97-'99) 30,057 - future construct. to 2010	In 1997, the City of Fort Collins enacted a more progressive version of the Model Energy Codes for both residential and commercial/industrial new construction, which asks builders to consciously consider energy saving alternatives throughout construction. Code revisions were developed with much public input, especially from residential home builders. To calculate the effectiveness of, It was assumed that the 1997 Model Energy Code reduces 2ekWh per square foot per year of energy use.
		Residential Curbside Recycling <i>NATRUAL RESOURCES</i>
Tons of CO ₂ Saved In 2010	39,732	The City influences solid waste management by requiring haulers to 1) apply variable trash rates, and 2) provide recycling at no extra charge for residential customers. Since these ordinances were passed, haulers have reported an increase in residential curbside recycling from 53% to 86% participation, as well as a slight decrease in trash volumes. Applying the 1998 per capita curbside recycling rate to the predicted 2010 population of 143,450, it is estimated that the curbside program would be responsible for reducing 39,732 tons of CO ₂ e in 2010.

EXISTING MEASURES (Continued)

		Promote DOE’s “Climate Wise” Program to Local Businesses <i>NATURAL RESOURCES</i>
Tons of CO ₂ Saved In 2010	38,390	Climate Wise is a voluntary partnership program designed to assist businesses in turning energy efficiency and environmental performance into corporate assets. In 1999, the City received a grant to assist in recruiting eight local businesses to the program, and to provide technical assistance so that at least three businesses file action plans for reducing greenhouse gas emissions. The greenhouse gas benefits have been estimated based on the assumption that the program could reduce 5% of the industrial sector greenhouse gas emissions predicted for 2010.
		Methane Flaring and Heat Recovery at Waste Water Treatment Plant <i>FORT COLLINS UTILITIES</i>
Tons of CO ₂ Saved In 2010	35,607	The City’s main wastewater treatment plant currently uses approximately eighty-five percent of all methane (CH ₄) produced from water treatment processes to power boilers located at the facility. The City is considering adding another methane-powered boiler to power the NW digester at the plant. If this is installed, all the CH ₄ generated from the digesters would be consumed for energy generation. This process of using the heat energy generated by methane combustion for power generation is estimated to reduce greenhouse gas emissions by over 35,000 tons in 2010.
		Sequestration of CO₂ by All Trees in Fort Collins in 2010 <i>FORESTRY</i>
Tons of CO ₂ Saved In 2010	21,071	Urban forests provide a number of benefits to society including stormwater management, noise and air pollution reduction, and adding beauty to streets and developed areas. Trees also absorb carbon dioxide from the atmosphere as they grow, and thus offset carbon dioxide emissions from other sources. Fort Collins has an estimated 604,527 trees that sequester CO ₂ at an estimated rate of 69.7 pounds CO ₂ /year/tree, equating to over 21,000 tons of CO ₂ removed.
		Fort Collins Electricity Distribution System Improvements <i>FORT COLLINS UTILITIES</i>
Tons of CO ₂ Saved In 2010	15,189	The Fort Collins Utilities has made substantial investments to keep distribution losses low even as population growth necessitates system expansion. Fort Collins’ entire system uses oversized conductors to reduce normal operating losses and to provide enough system capacity to allow backfeeds in the event of system failures. Calculations of greenhouse gas benefits were taken directly from Platte River Power Authority’s 1997 report to the Energy Information Administration.

EXISTING MEASURES (Continued)

		Colorado State University Energy Conservation Upgrades <i>COMMUNITY</i>
Tons of CO ₂ Saved In 2010	12,524	According to CSU's 1997 Utility and Energy Management Report, 29,819 tons of CO ₂ were reduced in the 1996-1997 school year. CSU staff have indicated that approximately 42% of those projects were implemented after 1990, and thus credit could be taken as part of the Cities for Climate Protection project.
		Colorado State University's Industrial Assessment Center <i>COMMUNITY</i>
Tons of CO ₂ Saved In 2010	4,429	Since inception, the IAC has performed assessments at 25 Fort Collins businesses. The savings calculated here represent savings from the approximately 140 projects implemented in Fort Collins since 1990. These projects include recommendations made for several of the major energy consumers in Fort Collins.
		Wind Pilot Power Program <i>FORT COLLINS UTILITIES</i>
Tons of CO ₂ Saved In 2010	4,103	In 1997, the Fort Collins Utilities offered customers the opportunity to subscribe to wind power for an additional \$0.02/kWh, or an estimated average increase of \$12/month on utility bills. Through the initial subscription program, over 600 residential customers and 13 commercial customers signed up to buy all their electrify power from wind, and two 600 kW and one 65 kW turbines were installed at the Medicine Bow, Wyoming farm.
		Wind Power Program – Phase II <i>FORT COLLINS UTILITIES</i>
Tons of CO ₂ Saved In 2010	5,128	In 1999, the Fort Collins Utility committed to adding 2.5 more turbines to the existing two turbines at the Platte River Medicine Bow site, making Fort Collins Utility the Colorado leader in per capita wind energy investment. New Belgium Brewing Company has set a leadership example of employee-based decision-making by committing to purchase wind-power from one of the new turbines. Fort Collins Utilities will work with other local employers to propose a wind power donation program modeled on United Way's charitable donations system. Employees could elect to subsidize green power, demonstrating a shared commitment between employer and employee to support renewable energy.
		Promote Telecommuting <i>TRANSPORTATION SERVICES</i>
Tons of CO ₂ Saved In 2010	3,076	The City's "Employee Trip Coordinator Network" has already established a good avenue for encouraging employees at large businesses to telecommute. The Mobility Report Card indicates that the average employee drives 42 miles per day. Assuming that in 2010, 5% of all citizens telecommuted twice a month, 3,076 tons of CO ₂ would be saved in 2010. Leading by example, the City has just established its own Teleworking Policy.

EXISTING MEASURES (Continued)

		Poudre School District Energy Conservation Upgrades <i>COMMUNITY</i>
Tons of CO ₂ Saved In 2010	2,552	Twenty energy efficiency projects were implemented at Poudre School District schools between 1995 and 1998. These projects resulted in a total annual savings of 971,195 kWh/year of electricity and 53,073 CCF/year of natural gas. If Poudre School District were to continue implementing energy efficiency projects at the past rate out to 2010, over 2,500 tons of CO ₂ would be eliminated in 2010.
		Zero Interest Loans for Conservation Help (ZILCH) <i>FORT COLLINS UTILITIES</i>
Tons of CO ₂ Saved In 2010	943	The Zero Interest Loans for Conservation Help (ZILCH) program, started in 1992, makes zero interest loans available to residents for energy upgrades to homes. If the E-Score energy rating method is used, higher loan amounts are available. Between 1992 and 1997, 28 “non-E-Score” loans were awarded that resulted in natural gas savings, and 15 that resulted in electricity savings. 45 residences used ZILCH E-Score loans between 1992 and 1998 on natural gas project improvements. The benefit of completed and projected future ZILCH projects (both E-Score and Non-E-Score) is estimated to be 943 tons of CO ₂ eliminated in 2010.
		Lighting Upgrades in City Buildings <i>FACILITY SERVICES</i>
Tons of CO ₂ Saved In 2010	257	Twenty-three lighting retrofit projects were implemented between 1993 and 1998 at a number of City buildings. Total annual savings for these projects = 225,576 kWh/year. If the City continues to implement lighting upgrades at the past rate, the benefit of completed plus future lighting projects is estimated to be 257 tons of CO ₂ eliminated in 2010.
		Propane City Fleet Vehicles <i>FLEET SERVICES</i>
Tons of CO ₂ Saved In 2010	139	The City of Fort Collins Fleets Services has demonstrated a longtime commitment to alternative fuel vehicles. As an example, in 1997, 34% of the City's fleet of 450 vehicles was powered by propane. In 1998, the municipal fleet consumed 166,245 gallons of propane fuel (representing about 1/3 of the fleet vehicles). This translates to 139 tons of CO ₂ eliminated in 1998 through the use of propane fuel. It is likely the composition of municipal alternative fueled vehicle fleet will change between 2000 and 2010, depending on the price and availability of fuels. The fleet will grow and may acquire more compressed natural gas, electric, or hybrid vehicles. In any case, the CO ₂ savings will increase with these acquisitions, so the CO ₂ savings presented here represents a very conservative estimate.

EXISTING MEASURES (Continued)

		10% Reduction of Municipal Solid Waste in 2010 <i>FLEET SERVICES</i>
Tons of CO ₂ Saved In 2010	139	In 1997, the City of Fort Collins joined WasteWiSe, a U.S. Department of Energy program designed to assist local governments in reducing the municipal waste generation. The City established goals for itself in the areas of waste prevention and reduction, recycling, and buying recycled products. If the City were to reduce its municipal waste stream 10% by 2010, 139 tons of Co2 would be eliminated in 2010.
		Natural Areas Shrub Plantings <i>FLEET SERVICES</i>
Tons of CO ₂ Saved In 2010	58	Since 1991, the Natural Resources Department has planted an estimated 28,500 native shrubs and 525 native trees on City-owned natural areas. Much of this vegetation was planted in an effort to restore the area's native vegetation. Recently, many of the shrub planting have been intended to create barriers to discourage the movement of prairie dogs onto private property. It has been roughly estimated that this vegetation can sequester (store) between 15 and 100 tons of CO ₂ in 2010.
		City Government Converting to Variable Frequency Drives <i>FACILITY SERVICES</i>
Tons of CO ₂ Saved In 2010	48	The City recognizes the benefit of replacing variable frequency drives with more energy efficient models once they burn out. Since 1990, variable frequency drives have been upgraded at Police Services, the public library, and at Mulberry Pool, for a total annual energy savings of 42,526 kWh. These completed projects will result in a CO ₂ reduction of 48 tons in 2010.
		Consider Accelerated TDM Program; Disincentives for Driving <i>TRANSPORTATION SERVICES</i>
Tons of CO ₂ Saved In 2010	Unknown	The <i>Transportation Demand Management Program</i> adopted by the North Front Range Transportation and Air Quality Planning Council in April 1996 outlines five levels, or "strategy packages", for consideration in to achieve regional modal shift goals. I. Voluntary programs and transit improvements II. Developer requirements and subsidy program III. Regional parking pricing and High Occupancy Vehicle (HOV) study IV. Mandatory Program and Distance-based Fee V. Comprehensive program Levels I and II are largely being implemented now. This measure recommends accelerated evaluation and implementation of TDM measures outlined above.

EXISTING MEASURES (Continued)

		ULEV and ZEV Vehicles for the City Fleet; Including Electric Vehicles <i>TRANSPORTATION SERVICES</i>
Tons of CO ₂ Saved In 2010	Unknown	The City of Fort Collins Fleet Services has established a goal that by the year 2008, 75% of light duty vehicles in the City fleet exceed the 1998 ULEV (ultra low emission vehicle) standards. Fleet Services has expressed interest in purchasing electric vehicles, as part of their commitment to improving air quality and meeting their 75% ULEV goal by 2008. A pilot project to evaluate the use of electric vehicles is being considered.
		Clean Cities <i>TRANSPORTATION SERVICES</i>
Tons of CO ₂ Saved In 2010	Unknown	In May 1996, a Weld/Larimer/Rocky Mountain Rocky Mountain National Park coalition (W/L/RMNP) received the nation's 47th Clean Cities designation. The City of Fort Collins played an instrumental role in creating the coalition. The W/L/RMNP is part of one of the nation's longest clean fuels corridors and extends from Colorado Springs to the Wyoming Border. The coalition promotes the use of alternative fueled vehicles, which emit less CO ₂ per mile than gasoline or diesel.
		Pollution Prevention to Promote Energy Efficiency in the Commercial Sector <i>FORT COLLINS UTILITIES and NATURAL RESOURCES</i>
Tons of CO ₂ Saved In 2010	Unknown	This measure promotes existing programs that encourage energy efficiency in the commercial sector. Existing programs include the Pollution Prevention Pilot Program conducted by natural Resources and the energy audits, advice, and technical assistance (especially integrated design assistance) offered by the Fort Collins Utility.
		Municipal Pilot of Environmentally Preferable Products <i>PURCHASING</i>
Tons of CO ₂ Saved In 2010	Unknown	The City's Affirmative Procurement Plan of 1990 established the requirement to conduct and report on one pilot program for purchasing environmentally preferable products each year by the City government. Products to consider piloting that are in support of WasteWiSe goals include cleaning products, re-refined motor oil, and low emission, high fuel economy vehicles, such as the Honda hybrid vehicle.
		Green Building for the New City Office Building <i>FACILITIES and PURCHASING</i>
Tons of CO ₂ Saved In 2010	(1,222)	The City is currently in the process of finalizing a contract for the new City office building at 301 N. Mason. This building will be built according to the Green Building Criteria developed by Facility Services, using green products where possible, including the use of solar lighting and other energy saving products. In addition, the use of a "design/build" process will be organized so as to reduce construction waste. This is projected to eliminate 1,222 tons of CO ₂ emissions in 2010.

New Measures

1 Staff	1 Citizen	Replace Incandescent Traffic Signals with Light Emitting Diodes <i>TRANSPORTATION SERVICES</i>
Tons of CO ₂ Saved in 2010	3,137	The conversion of traffic signals' red light bulbs from incandescent lamps to LED's is a growing practice across the nation. Red LED's consume less energy, have a longer life, and require less maintenance. Generally, LED's pay for themselves in three to four years, and have a seven to ten year lifetime.
3 Staff	2 Citizen	Increasing Utility Commitment to Wind Energy through Green Pricing Programs <i>UTILITIES</i>
Tons of CO ₂ Saved in 2010	10,256	Continue to expand the City's wind program. It is assumed that voluntary support and legislative standards will enable the project to grow by an average of one additional turbine every other year beginning in 2002. If implemented at this rate, a total of five more turbines would be installed between 2002 and 2010.
2 Staff	5 Citizen	Conduct Climate Change Education and Outreach <i>CROSS-DEPARTMENTAL</i>
Tons of CO ₂ Saved in 2010	40,829	The City of Fort Collins has stressed the importance of public education and outreach in all of its activities. An extremely important component of the Cities for Climate Protection Campaign is to get the "messages" out to the citizens of the community. A central education coordinator could be established and housed either within the City Manager's Office or the Natural Resources Department. This person would coordinate climate change outreach activities, and assist with outreach as requested by individual departments, as well as act as lead for assisting applicants to the Development Review process to use P2.
4 Staff	4 Citizen	Optimization of City's WasteWater Treatment System <i>UTILITIES</i>
Tons of CO ₂ Saved in 2010	961	By upgrading to high efficiency motors and pumps, the Fort Collins water reclamation and water treatment plants would reduce electrical load. This reduction in electrical energy translates into CO ₂ savings from reduced coal consumption by power suppliers.

NEW MEASURES (Continued)

7 Staff Ranking	3 Citizen Ranking	Reduce City Government Building Energy Consumption By 15% per gross square foot. <i>FACILITY SERVICES</i>
Tons of CO ₂ Reduced 2010	3,129	The goal of 15% reduction per gross square foot can be achieved through implementation of numerous short-term and long-range strategies. These include creating a focal point for municipal energy management by hiring an Energy Manager or creating an Interdepartmental Energy Management Team, hiring an HVAC technician for the City, and implementing cost-effective energy audit recommendations.
5 Staff	7 Citizen	City Government Purchase of WIND POWER <i>UTILITIES</i>
Tons of CO ₂ Saved in 2010	2,051	The City would commit to wind-generated power from one 660 Watt wind turbine.
6 Staff	10 Citizen	Increase Awareness of Fuel Consumption, by Department <i>FLEET SERVICES</i>
Tons of CO ₂ Saved in 2010	62	A campaign would be conducted within City departments to raise awareness about how to reduce fuel consumption and about how much fuel is consumed. This campaign would encourage employees to eliminate unnecessary vehicle idling, link trips and optimize routes. In addition, Fleets would provide each department with a standard monthly list of fuel consumption and publicize the information to encourage departments to be more conscious about vehicle usage and fuel consumption.
8 Staff	8 Citizen	Develop a Commercial Green Building Program <i>BUILDING AND ZONING</i>
Tons of CO ₂ Saved in 2010	3,186	The City would establish a program for builders to integrate environmental features into the design and construction of new commercial buildings. The measure could be voluntary, mandatory, or a hybrid. The measure could establish a “green” certification program for new commercial buildings as well as an education and outreach effort to stimulate the market. The certification program could be similar to Boulder and Denver’s programs, allowing the builder to choose from a list of green design features.

NEW MEASURES (Continued)

11 Staff	6 Citizen	Lobby for Mandatory Renewables in Deregulation (or Comparable Energy Conservation Measures) <i>UTILITIES</i>
Tons of CO ₂ Saved in 2010	71,561	Production of energy from renewable sources such as wind, solar, or hydropower does not produce CO ₂ in the course of generating electrical power. In the near future, utility companies will become deregulated and the market will open up to power producers in the private sector. By requiring utilities to provide a certain percentage of power from renewable resources, CO ₂ reductions can be obtained. The Fort Collins Utility has the mandate to provide low-cost, reliable power to the citizens of Fort Collins. Arguments have been made that energy conservation is a more cost-effective way to reduce the environmental impacts of electric power generation than is the use of renewable energy. This debate should actively be carried out by City elected officials, with input from citizens and City staff. If a decision was made to support a renewable portfolio standard, changes could be adopted in the City's 2000 Legislative Policy Agenda to designate a lobbyist, with the responsibility to identify relevant bills and actions at the state and national legislature and to draft the City's responses.
9 Staff	9 Citizen	Increase tree-plantings citywide so restocking equals mortality/removal <i>FORESTRY</i>
Tons of CO ₂ Saved in 2010	125	Recent calculations by the City Forestry Department suggest the number of tree plantings needed to maintain current stocking and storage levels are estimated to be 16,500 and that about 12,800 trees were planted citywide in 1998. Therefore, the number of additional tree-plantings needed to maintain current storage levels is about 3,600. Recommendations to support more planting citywide include offering matching funds for tree-planting grants, conducting an education campaign, conducting a study to identify appropriate species for planting and optimal planting locations and to identify percent cover by trees, citywide.
10 Staff	11 Citizen	Distribute Bids and Proposals Electronically <i>PURCHASING</i>
Tons of CO ₂ Saved in 2010	3	The Purchasing Department is required by ordinance to maintain a list of all vendors requesting to be placed on the City bid list. This process involves receiving vendor applications from contractors and then mailing either notices or the entire bid and proposal packages to these vendors. A change in ordinance would place the burden on the vendors to look at an electronic means of receiving information and copies of City bids and proposals electronically or by fax. It would allow Purchasing to save significant money through reduced printing and mailing costs.
12 Staff	12 Citizen	Increase Mortality Age of Trees on City-owned Property <i>FORESTRY</i>
Tons of CO ₂ Saved in 2010	???	The City's Forestry and Horticulture Program has responsibility for the care, maintenance, and perpetuation of all City property trees. Recommended actions to increase the age of trees include expansion of funding of urban tree maintenance, and focusing on planting in open planting sites.

Pending Measures

2 Staff	1 Citizen	50 % Waste Diversion Goal by 2010 <i>NATURAL RESOURCES</i>
Tons of CO ₂ Saved in 2010	112,787	Because the 1995 overall goal to divert 20% of the waste stream from landfill disposal has been met and exceeded, the City will evaluate how much higher to “raise the bar”. A proposal has been made to City Council to incrementally increase the City’s waste diversion goal from 30% diversion rate by the year 2002, 35% by the year 2004, and ultimately 50% diversion by the year 2010.
5 Staff	2 Citizen	Lobby for More Stringent National Fuel Efficiency Standards <i>CITY MANAGER’S OFFICE/NATURAL RESOURCES</i>
Tons of CO ₂ Saved in 2010	121,000	Increasing the fuel economy of vehicles would significantly decrease the amount of fuel burned, and thus lower CO ₂ emissions. This initiative will adopt changes to the City’s 2000 Legislative Policy Agenda to include language specifically authorizing work on this issue. It will designate one individual as having the responsibility to identify relevant bills/debates, actions at the state and national legislature and draft City response to them. Lastly, it will establish working relationships with the Colorado Municipal League, National League of Cities, the Cities for Climate Protection Campaign, and other coalitions to leverage efforts to raise fuel efficiency standards.
9 Staff	12 Citizen	Create satellite maintenance areas to minimize Park employee travel <i>PARKS AND RECREATION</i>
Tons of CO ₂ Saved in 2010	13	Currently, the Parks Department is developing a Districting Plan to evaluate the most cost-effective approach for minimizing travel times, taking into account future as well as existing parks. The Parks Department conducted an informal study that showed that more than a full FTE was spent driving between Eudora Park and the Parks Shop. This suggests that satellite maintenance areas would reduce staff time spent driving as well as fuel consumption.
3 Staff	6 Citizen	Support Fort Collins – Denver Commuter Rail <i>TRANSPORTATION SERVICES</i>
Tons of CO ₂ Saved in 2010	15,000-50,000	Build transportation infrastructure in Fort Collins to accommodate or improve access to potential future rail links. The population of the North Front Range (including Denver) is forecast to increase by 43% between now and 2020, and employment is projected to grow by 35%. If these trends continue, traffic congestion along the North Front Range will increase until most major roads reach their capacities.

PENDING MEASURES (Continued)

7 Staff	4 Citizen	Larimer County Landfill Gas-to-Energy Project <i>NATURAL RESOURCES</i>
Tons of CO ₂ Saved in 2010	84,308	The Larimer County landfill has initiated a process of sampling and evaluation to determine whether a gas collection system will be required. If installation is required, it would be useful to evaluate the cost effectiveness of installing a system that creates energy (gas to energy), rather than simply flaring off the piped methane. This measure recommends that the City work with the County to locate funding assistance for the installation of a gas-to-energy system for the landfill.
6 Staff	3 Citizen	Expand Larimer County Recycling Center <i>NATURAL RESOURCES</i>
Tons of CO ₂ Saved in 2010	18,834	This initiative calls for the expansion of the Larimer County Recycling Facility. The expansion would also allow Larimer County to consider adding new streams of material at the processing plant and more opportunities for citizens to recycle. Since the City requires trash haulers to charge by volume (pay-as-you-throw rates), the expansion could help reduce residential trash bills as well.
1 Staff	7 Citizen	Expand Central Recycling Drop-off Site or Add Second Site <i>NATURAL RESOURCES</i>
Tons of CO ₂ Saved in 2010	1,095	A new, expanded drop-off site is proposed that would increase the range of the materials that are currently collected through Fort Collins drop-off programs, and also to serve as a recycling education center.
4 Staff	9 Citizen	Increased Voluntary Energy Efficiency Training for Builders <i>BUILDING AND ZONING</i>
Tons of CO ₂ Saved in 2010		Increased training opportunities on energy efficiency construction would help local homebuilders implement existing City energy codes for residential and commercial construction. The City's Building and Zoning Department would be interested in offering more training opportunities to builders.
8 Staff	5 Citizen	Develop a Residential Green Building Program <i>BUILDING AND ZONING</i>
Tons of CO ₂ Saved in 2010	1,665	standards Under this new measure, the City would establish a program for builders to integrate environmental features into the design and construction of new residential buildings. The measure would establish a "green" certification program for new residential buildings, allowing builders to chose from a list of Green design, as well as an education and outreach effort to stimulate the market for "green" homes.

PENDING MEASURES (Continued)

12 Staff	8 Citizen	Trash Districting <i>NATURAL RESOURCES</i>
Tons of CO ₂ Saved in 2010	292	<p>Trash collection in Fort Collins is currently privatized, with six private haulers competing to provide services. A City-administered “districted” system would create routes for trash trucks. The City currently has about 250 miles of streets. If we assume that each of five companies drive two trucks per day on one quarter of the street system per day, this results in a total of 1950,000 miles driven by trash trucks per year. An ideal districted system would result in only one truck covering a route, rather than six. Trash districting would provide some greenhouse gas-reducing benefits by decreasing the number of miles driven by trash trucks.</p>
11 Staff	10 Citizen	Work with Municipal Association of Purchasing Officials to Encourage the Purchase of Environmental Products and Bulk Purchasing. <i>PURCHASING</i>
Tons of CO ₂ Saved in 2010		<p>Fort Collins is a member of MAPO and participates in bulk ordering. The City could take a leadership role in educating the MAPO group about environmental products as well as encouraging bulk purchase of energy efficient and recycled content products.</p>
10 Staff	11 Citizen	Construction and Demolition Debris Project <i>NATURAL RESOURCES</i>
Tons of CO ₂ Saved in 2010		<p>The objective of this project would be to continue research into the design and implementation of a C&D diversion project in the vicinity of greater Fort Collins. The intended outcome of the pilot project is for the City and its partners to create a source-separated disposal system for builders. The project would run 18 months or more, and volumes of diverted C&D waste would be measured.</p>

Fort Collins Greenhouse Gas Reduction Target

Table D and Figure B below identify the greenhouse gas reduction potential of Existing, Pending, and New measures, if they are successfully implemented by 2010. Full implementation of all measures is estimated to result in a 32% reduction of Fort Collins’ predicted 2010 emissions levels. Based on these estimates, the City of Fort Collins has resolved, via Resolution 99-137, to attempt to lower its greenhouse gas emissions at least 30% below predicted 2010 levels while achieving cost-effectiveness in each program.

Table D. Greenhouse Gas Reduction Potential of all Measures

TYPE OF MEASURES	Greenhouse Gas Reductions Tons CO₂ reduced in 2010	Cumulative Greenhouse Gas Reductions Tons CO₂ reduced in 2010	2010 Emissions Rate Tons CO₂ in 2010	Cumulative Percent Reduction from 2010 predicted emissions levels
In the Absence of Actions	0	0	3,523,000	0 %
EXISTING	603,000	603,000	2,920,000	17 %
PENDING	373,000	976,000	2,547,000	28 %
NEW	135,000	1,112,000	2,411,000	32 %

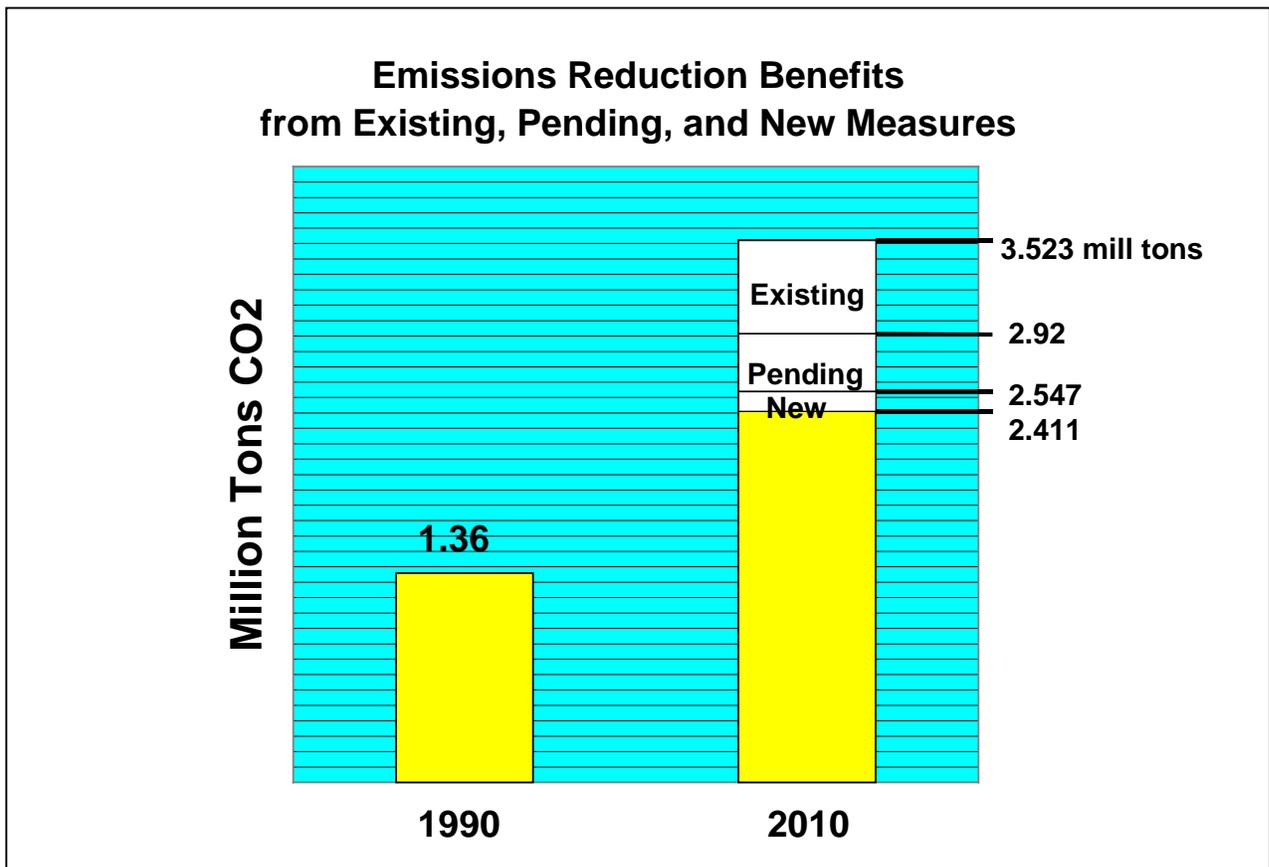


Figure B. Emissions Reduction Benefits from Existing, Pending, and New Measure

The Challenge

Even achieving a 30% reduction below 2010 levels will be challenging, much less a larger reduction target. It will take each new and existing measure to reach it. It will take the commitment of the City government to provide adequate funding to implement the actions outlined here. It will take the commitment of businesses, small and large, to pay attention to energy consumption and waste generation, and strive to reduce it. It will take the commitment of each individual citizen to make the choices to drive less, conserve energy, produce less garbage, and recycle more. No one entity has the responsibility or the ability to do it alone. Together, if we embrace the actions laid out in this plan, we can achieve our greenhouse gas reduction goal and realize the multiple additional benefits of improved air quality, reduced energy consumption and associated cost savings.