Cities for Climate Protection
Santa Rosa
Milestone One: GHG Inventory

Table of Contents

Executive Summary

On December 4, 2001 the Santa Rosa City Council took the leadership role in the County and voted to become a member of Cities for Climate Protection, a project of the International Council on Local Environmental Initiatives (ICLEI). In doing so, Santa Rosa joined over 132 U.S. cities and counties and over 557 worldwide who are reducing their greenhouse gas emissions by committing to 5 Milestones: 1) Conduct a GHG Emissions Inventory 2) Set a Reduction Target 3) Develop an Action Plan 4) Implement the Action Plan and 5) Monitor Progress. Since the City's resolution (see Appendix A), all eight cities and the County have followed suit, setting a precedent in the Nation.

Overview of Results

YEAR	*GHG* (tons of eCO2)
92-93	28,425
95-96	28,277
00-01	40,058

Approximate 40% increase in GHG in 9 years (11,633 tons more)

The City of Santa Rosa examined three fiscal years in detail and found that the corporate greenhouse gas emissions increased 40% within a nine-year period.

This report is the first in a series assessing Santa Rosa's contribution to Global Climate Change. It includes examples of some of the innovative programs that have already been enacted and possible future measures to come. Detailed results of Milestone One, the Corporate Greenhouse Gas Emissions Survey, may be found in Appendix B.

Introduction

Global Climate Change

One of the most challenging issues facing humankind today is global climate change. People often fail to see how their daily decisions and actions can impact the Earth's surface temperature. Although it may be difficult to make the connection, the cumulative effects of our individual decisions and governing policies are contributing the growing problem of global climate change. Already, we have begun to see the ramifications. For example, in 1998 alone[1]:

- 2500 people drowned and 56 million were driven from their homes in China, due to the flooding of the Yangtze River
- The monsoon season put two-thirds of Bangladesh under water for more than a month and left 21 million people homeless
- In India, 3000 people died of heat stroke
- Hurricane Mitch hit Honduras with 180-mile-per-hour winds; it washed away an estimated 70% of all crops, killed 11,000 people and left a third of the population homeless
- 45 countries experienced severe droughts, a number of which were accompanied by runaway fires; a prolonged drought left Russia with its lowest grain harvest in 40 years
- Healthy rainforests do not burn, but 1998 saw serious fires throughout Southeast Asia and the Amazon; fires in southern Mexico were so extensive that they led to air quality alerts throughout Texas
- Since all record keeping began in 1886, the 14 warmest years have occurred after 1980. The temperature in 1998 was the hottest ever recorded, and represented the largest annual increase ever recorded

These disasters represent untold human suffering as well as environmental damage. Economic losses are also severe. A June 2001 news brief released by the Washington D.C. based Worldwatch Institute, a non-profit public policy research organization, reports "during the 1990's the economic toll from natural disasters topped $608 billion, more than the previous four decades combined."[2]

Some impacts of climate change occur more quickly than others. For example, coral bleaching may result from one especially warm season, whereas the ability for species to adapt, or not, may take many years. Other impacts, once initiated, are irreversible such as the melting of ice caps.

Between 1992 and 1996 the range of the Bay Checkerspot butterfly shifted 130 miles to the north and to higher altitudes as a result of climate change. Without natural corridors to allow migration, isolated species could be limited in their ability to adapt to climate change. Plant and animal species near the borders of their ranges are likely to be more affected. Climate change could create more opportunity for the establishment and spread of weeds and pests. Increased fire from climate change could further threaten species in California

[1] Hayes, Denis. (2000). *The Official Earth Day Guide to Planet Repair*. Island Press, Washington DC. Available from http://www.earthdaynet/goals/globalwarming.stm.

[2] Worldwatch Institute, "The Hard Numbers on Climate Change", June 16, 2001. Available from http://www.worldwatch.org/alerts/010716.html.

Local Climate Change in California

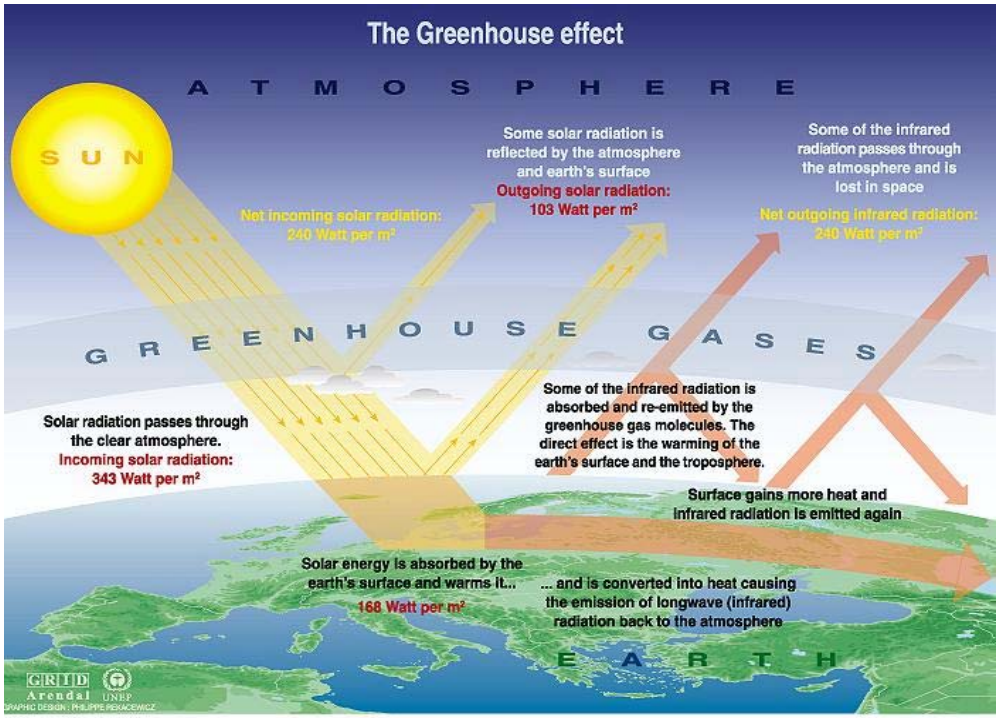
California, the most populous state in the country, is home to over 30 million people and is second only to Texas in carbon dioxide emissions. In fact, California's older power plants' emissions of carbon dioxide, the leading contributor to global warming, have risen 74 percent since 1995.[3]

Based on information from the IPCC[4] and the Hadley climate model program, by the year 2100 California temperatures are predicted to increase between 2-9°F. This will lead to an increase in heat waves and ground level ozone. One study estimates that a 3°F warming could almost double the heat related deaths in LA.[5] Precipitation will increase (ranging from 10-50%) in fall, winter and spring, with the largest increases occurring in winter. This would affect the seasonal pattern of run-off into California's reservoirs. The California coast is already experiencing a rise in sea level. In Los Angeles, San Francisco and San Diego the sea level has risen 3, 5, and 8 inches respectively in the last century. With global warming, it is predicted that the next century could see an additional 13-19 inches. This can lead to flooding, contamination of drinking water, erosion of beaches, and loss of wetlands and salt marshes.

As a leader in progressive ideas and creative solutions, California, the 5th largest economy in the world, has a unique role to play in leading the fight against global warming and climate change. In order to do so, we must first understand the problem.

What is the Greenhouse Effect?

Life as we know it on Earth would not be possible without the greenhouse effect. As a naturally occurring process, it is responsible for keeping the Earth's average surface temperature at a very hospitable 60°F (15°C). Approximately half of the sun's incoming energy reaches the Earth's surface. The rest is reflected back into space or is absorbed by the atmosphere. The Earth absorbs most of the energy that reaches its surface and re-emits it as heat. Some of that heat escapes directly into space. The rest is trapped by gases (such as water vapor, methane, nitrous oxide and carbon dioxide), which return some



Sources: Okanagan university college in Canada, Department of geography, University of Oxford, school of geography; United States Environmental Protection Agency (EPA), Washington; Climate change 1995, The science of climate change, contribution of working group 1 to the second assessment report of the intergovernmental panel on climate change, UNEP and WMO, Cambridge university press, 1996.

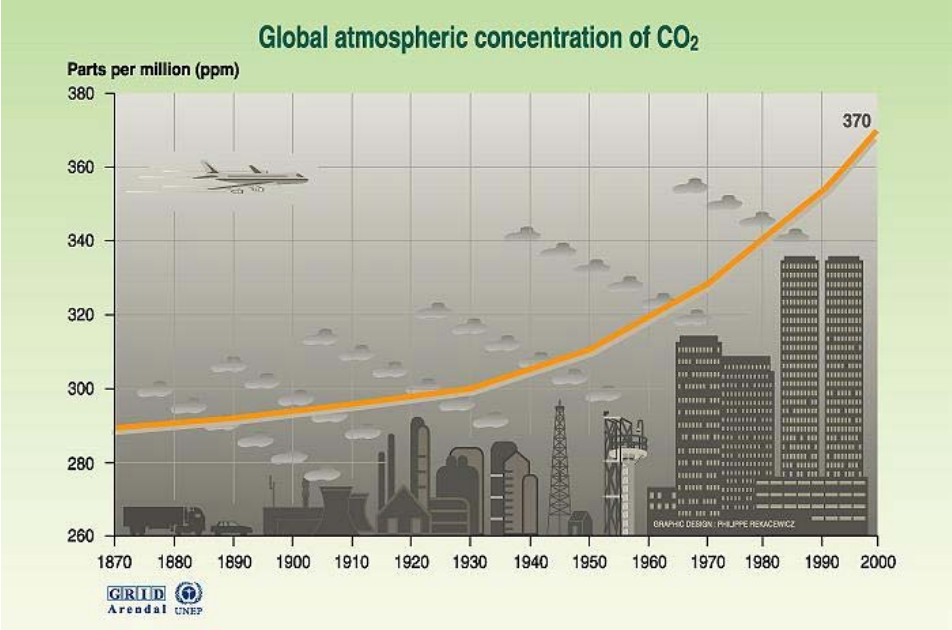
[3] CALPIRG-California Public Interest Research Group, "Smart Energy Cities Project", October 30, 2002. Available from http://calpirg.org/CA.asp?id2=6398&id3=CA&id4=CAFS&.

[4] The World Meteorological Organization (WMO) and the United Nations Environment Program (UNEP) established IPCC-The Intergovernmental Panel on Climate Change in 1988. Its purpose is to evaluate technical, scientific and socio-economic impacts of global climate change. Their periodic Assessment Reports are used worldwide to help guide policy and garner solutions. The Second Assessment Report (SAR-1995) led to the establishment of the Kyoto Protocol in 1997. The Third Assessment Report (TAR-2001) is referenced in this report. A copy of the report, *Summary for Policymakers: Climate Change 2001—Impacts, Adaptations and Vulnerability* can be found in Appendix C.

[5] EPA-California Impacts, October 30, 2002. Available from http://yosemite.epa.gov/OAR/globalwarming.nsf/content/ImpactsStateImpactsCA.html.

of the rising heat back to the Earth. This warming of the earth's surface is called the greenhouse effect. Without it the planet's average surface temperature would be 0.4°F or
-18°C.

For most of life on Earth, there has existed a balance between energy entering and leaving the system. For the last 10,000 plus years the concentrations of CO2 have remained at a constant 280 ppmv. However, since the industrial revolution the equilibrium has been disrupted. In the last century alone carbon dioxide levels have increased by 25%. According to the Third Assessment Report (TAR), "Climate Change 2001: Impacts, Adaptations and Vulnerability" released by the Intergovernmental Panel on Climate Change (IPCC) "there is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities." At the current rates of burning fossil fuels, climate models predict the carbon in the atmosphere will double by 2050 requiring us to adapt to the ensuing changes. The rise in greenhouse gases, of which CO2 is only one, will bring with it associated social, environmental and economic costs.



Sources: TP Whorf Scripps, Mauna Loa Observatory, Hawaii, institution of oceanography (SIO), university of California La Jolla, California, United States, 1999

Atmospheric CO2 has increased from a pre-industrial concentration of about 280 ppmv to about 367 ppmv at present (ppmv=parts per million by volume). CO2 concentration data from before 1958 are from ice core measurements taken in Antarctica and from 1958 onwards are from the Mauna Loa measurement site. The smooth curve is based on a hundred year running mean. It is evident that the rapid increase in CO2 concentrations has been occurring since the onset of industrialization. The increase has closely followed the increase in CO2 emissions from fossil fuels.

About three-quarters of the anthropogenic emissions of CO2 to the atmosphere during the past 20 years is due to fossil fuel burning. The rest is predominantly due to land-use change, especially deforestation.

Intergovernmental Panel on Climate Change (IPCC), Third Assessment Report (TAR), Climate Change 2001

ICLEI/CCP

The International Council on Local Environmental Initiatives (ICLEI) was formed to assist local governments in developing sustainable and practical solutions to global environmental problems. One of their programs, Cities for Climate Protection (CCP), focuses on global warming and climate change. The old adage, "think globally, act locally" offers a sensible framework to address this growing problem since decisions by local government affect how waste, energy and fuel usage is managed and generated. Out of approximately 557 participants in over 50 countries, there are currently over 132 cities and counties in the U.S committed to reducing their Greenhouse Gas (GHG) Emissions and thus, their contribution to Global Climate Change. By participating, local governments commit to completing five milestones.

The Five Milestones

1) Conduct a Greenhouse Gas (GHG) Emissions Analysis

2) Set a target for emissions reduction

3) Draft a Local Action Plan for meeting the target

4) Implement the action plan

5) Monitor and report on progress

There are two stages to the inventory: the corporate (local government) and the community analysis. In a conscious effort to 'lead by example,' the City of Santa Rosa decided to focus on the corporate analysis.

General Overview of Methodology

Corporate Analysis Process

In order to complete Milestone One, an intern was hired to conduct the GHG emissions inventory. The first step was to develop a team and contacts within each of the departments. Once that was accomplished, the bulk of the work consisted of gathering data for the six different sectors:

- Buildings
- Vehicle Fleet
- Employee Commute
- Street Lights (including Traffic Signals, Parking Garages and Lots)
- Water and Sewer
- Waste

Santa Rosa conducted a detailed study of three fiscal years: FY 1992-1993, FY 1995-1996 and FY 2000-2000. Data was developed from department staff in the form of historical records and individual expertise. For example, Public Works helped to categorize the vehicle fleet sector by separating out and classifying the 947 pieces included in the equipment count. Staff assistance such as this proved to be a vital liaison, acting as 'translator' between the existing City framework and the structure of the CCP program.

All electricity information was supplied by PG&E in the form of an Excel spreadsheet. Cost information was not included. Therefore, cost was calculated by using Excel and applying the class average electrical rates of price per KWH (actual rates could vary) for the appropriate fiscal year.

After receiving the information from PGE, it was necessary to create categories that made sense for the City. Some took care of themselves, like Traffic Signals and Agricultural/Reclamation Pumps; consulting the appropriate City staff created others. For example, the Utilities department provided assistance in categorizing the Water/Sewage sector. This proved important because, for example, by extracting sewage lift stations from pump stations it allows the City to view GHG emissions in regard to each sub-sector.

As the collecting phase of the inventory was completed the data was inputted into the software, designed especially for ICLEI by Ralph Torrie and Associates. The software calculates GHG emissions in equivalent carbon dioxide (eCO2) from municipal operations by looking at waste generation and electricity and fuel usages. Since greenhouse gases have different strengths, it allows for an "apples to apples" comparison. For example, methane is approximately 21 times stronger than carbon dioxide. (However, carbon dioxide is much more prevalent, representing 84% of U.S. GHG emissions).

Administrative Services provided all natural gas information.

A valiant effort was made to include all local government operations with as much detail as possible. However, this depended on the availability and quality of the data. When assumptions or inferences were made, they were documented in the CCP software program under each sector in "notes regarding group data."

Electricity

The software comes equipped with electricity emission coefficients in order to take into account the release of greenhouse gases from the production process. The inventory used the default coefficients for California. The following list represents the carbon dioxide emissions from the end use of electricity. These coefficients are based on total carbon dioxide emissions from electricity production in California (adjusted for net interstate flows), divided by the annual end use consumption of kilowatt-hours in the state.

Electricity CO2 Emission Coefficients

1992	1.60 E-1
1995	1.43 E-1
2000	1.64 E-1

(Values in tons of CO2 per million BTU)

As indicated above, electricity production was cleaner (less emissions) in 1995 than 1992. However, in 2000 more pollution was produced per kilowatt. These values are significant because, for example, in comparing Traffic Signal results between FY 95-96 (1207 tons of eCO2) and FY 00-01 (808 tons of eCO2) there was a significant decline in eCO2 emissions in FY 00-01 despite the fact that electricity production was "dirtier." This reduction is due to the City's LED traffic light program.

Corporate Emissions Survey

Overview of Results

YEAR	*GHG* (tons of eCO2)
92-93	28,425
95-96	28,277
00-01	40,058

Approximate 40% increase in GHG in 9 years (11,633 tons more)

Between 1992 and 2001, the City of Santa Rosa has experienced a 40% increase in their corporate greenhouse gas emissions. This is the equivalent to 11,633 more tons of eCO2, with the bulk of the increase occurring between FY 95-96 and FY 00-01. Upon closer inspection by each sector, one may see that the increase is largely due to the Water/Sewer category and more specifically with the Laguna Treatment Plant. Since the Laguna is a sub-regional system, servicing a wider geographical area than Santa Rosa, it is interesting to note that the increase, without the Water/Sewer category, is 11.1%. This increase in GHG emissions is commensurate with other California cities.

	92-93	95-96	00-01
TOTAL (tons eCO2)	28,424	28,277	40,058.7
WATER/ SEWER	(10,825.5)	(10,715.7)	(20,491.7)
OTHER 5 SECTORS	17,599.2	17,561.3	19,567

11.1% INCREASE WITHOUT WATER/SEWER

Results by Sector

GHG by sector (tons of eCO2)

	92-93	95-96	00-01	CHANGE
Buildings	4,032	4,061	4,726	17.2% ⇧
Vehicle Fleet	5,826	6,030	6,554	12.6% ⇧
Employee Commute	2,434	2,539	2,712	11.4% ⇧
S/L & T/S	5,211	4,851	5,495	5% ⇧
Water/ Sewer	10,825	10,716	20,492	89.3% ⇧
Waste	97	81	80	18% ⇩

Buildings

Electricity and Natural Gas

As mentioned above in General Methodology, building data was collected primarily through the PGE Excel spreadsheet. Administrative Services, with the exception of the Laguna Treatment Plant, which was supplied by the Utilities Department, supplied natural gas information.

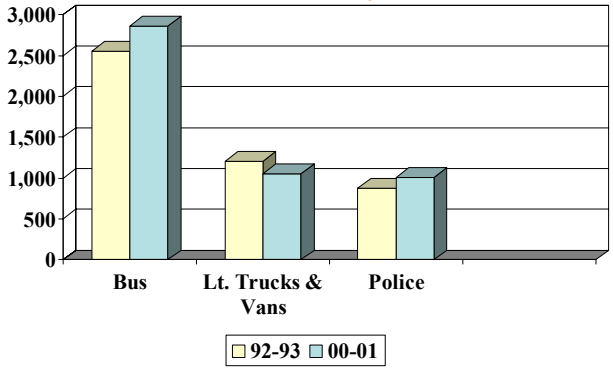
Buildings were grouped individually when possible in order to compare energy usage (for example instead of one group called 'Fire stations' each station was entered independently). Conversely, MSCN was inputted as a single building despite the fact it consists of many individual shop buildings. These subjective decisions were based on a few factors such as how to configure data so to give the City information that proves to be useful, as well as the quality and arrangement of the data received. For example, in an effort to consolidate all park data, the Buildings sector contains a group called 'Parks.' However, due to the vague descriptions on the PGE spreadsheet, it was extremely difficult to extract all pertinent information (such as controllers and irrigation) and discern which addresses/descriptions belonged to which specific park. As a result, there may be items in other sectors (primarily Water/Sewage) that would better fit into the Parks category.

In all three years of study, local government buildings proved to be the category with the largest GHG emissions, after Water/Sewer. Between 1992 and 2001, the emissions increased by 17.2%. In comparing the top three GHG emitters in the buildings sector, the emissions actually decreased. For example, the Public Safety Building reduced emissions by 18.4%, MSCN by 0.5% and City Hall by 14%. This reflects conservation efforts made by the City and their employees. It is important to note that the Finley Center was added in 1995 and currently represents the largest contributor to GHG emissions in the building sector. For more specific information, see the Corporate Greenhouse Gas Emissions Detailed Report in Appendix B.

Vehicle Fleets[6]

Significant Events- Vehicles

Measured in Tons of eCO2



In organizing the data for vehicle fleets, classes of equipment and vehicles were sorted into practical groupings. This information was given to Administrative Services who then provided fuel usage and cost. It is important to note that the 'Fuel Usage by Fiscal Year' report does not take into account fuel issued to credit cards at non-city pumps. Public Works provided electric vehicle information.

Emissions increased 12.6% within the nine-year study period. For instance, police vehicles saw a 16% increase. However, certain categories experienced a decrease in GHG emissions, such as light trucks and vans with a 12.4% reduction (comparing FY 92-93 to FY 00-01). This can be attributed to using alternative fuels in the City fleet (11% of the fleet in FY 2000-01). For electric vehicles alone, the fleet went from one in FY 92-93 to fifteen in FY 00-01. For more details, refer to Appendix B.

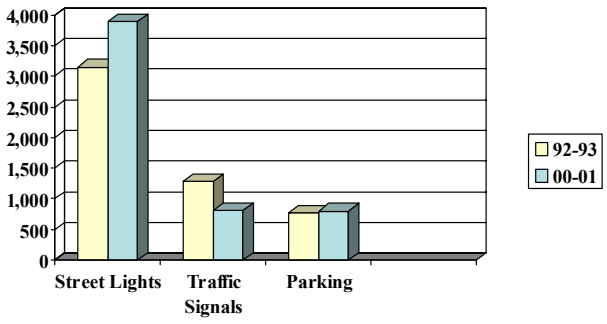
11% of fleet using alternative fuel

Employee Commute

In the Employee Commute sector, GHG emissions increased 11.4%. This is proportionate with the rise in employees and with the drive-alone staying the same, at about 76%. For more detailed information, refer to Appendix B.

Significant Events- Traffic Signals
Street Lights and Parking Lots/Garages

Measured in Tons of eCO2



Traffic Signals and Streetlights

In comparing data between FY 92-93 and FY 00-01, the City has experienced a 5% increase in overall emissions. Upon closer inspection, emissions from streetlights have increased by 23.3%. There has been a slight increase (3.8%) in parking garages/lots. Since FY 95-96 the three oldest garages have been retrofitted with more efficient lighting technology. Again, it is worth mentioning that numbers of streetlight, traffic signals and parking garages have grown. This is especially significant when looking at the traffic signal group where eCO2 emissions have decreased by 37.3%. This is due to switching out red and green lights to LED's.
Refer to Appendix B for more specific information.

[6] It is important to note that the CCP software program only looks at GHG emissions. It does not take into account particulate matter or other sources of air pollution. The future versions of the software will have a place to input and thus recognize the efforts and accomplishments by jurisdictions on behalf of cleaner air.

Water and Sewage

Out of all the sectors studied, Water and Sewer represent the most dramatic increase in greenhouse gas emissions, with the Laguna Treatment Plant representing the largest source. In fact, the Laguna was responsible for 15,244 tons out of a total of 20,492 tons of eCO2 produced in FY 2000-01. The 89.3% jump in emissions occurred between FY 95-96 and FY 00-01. According to Utilities, this rise can be attributed to the following four reasons:

- Change in disinfectant process from chlorine to UV radiation
- Bigger pumps at the plant headworks
- Aeration blowers were replaced with generators
- Compost facility was built

Another reason for the increase is that the Laguna Treatment Plant is a sub-regional facility. Refer to Appendix B for more details.

Waste

This category refers to waste generated by city government employees. Despite an 11% increase in the workforce, greenhouse gas emissions decreased by 18% when comparing FY 92-92 to 00-01. This reduction can be attributed to recycling programs implemented. For more information, refer to Appendix B.

Next Steps

> ***"Curbing greenhouse gas emissions is sound municipal management because it also reduces energy use, cleans our air, saves money, eases traffic congestion and improves community livability."***
>
> ***Santa Rosa Council Member***
>
> ***Jane Bender***

The next step in the CCP process is for City Council to set an emissions reduction target. This second milestone gives the City a concrete goal to work towards. Milestones three (develop an local action plan) and four (implement the action plan) serve as a way to obtain credit and recognition for the measures already put into practice within the organization (such as the LED traffic signals, alternative fuel vehicles, Public Works employee bicycle pool) as well as provide a framework for implementing future measures. The fifth milestone is ongoing and serves to monitor progress and accomplishments.

Setting a Reduction Target

The reduction target is a goal set by city government to reduce greenhouse gas emissions by a designated year. According to the Intergovernmental Panel on Climate Change, an international body of over 2500 scientists studying this issue, in order to have any impact on climate change a reduction of at least 20% by 1990 levels is needed. The Kyoto Protocol calls for the U.S. to reduce 7% below 1990 levels by the year 2010. This can be a daunting task for local jurisdictions to undertake, if indeed data for a base year of 1990 is available. And while the ideal global objective may point to becoming as close to 'climate neutral' as possible, what is most important is to begin by setting a realistic goal that is feasible. If Santa Rosa were to reduce 20% by 1992 levels (our base year), it would require a 43% reduction (which translates into 17,318 tons of eCO2). A more viable goal would be: "Santa Rosa commits to reducing their corporate emissions by 20% from 2000 levels by the year 2012." This would reduce emissions by 8,011 tons of eCO2. This could be thought of as a minimum reduction. The City may want to strive to exceed this goal by using the Kyoto Protocol as a guide and reduce by 7% by 1992 levels by the year 2012, a 13,623-ton reduction.

Opportunities

A 40% increase in emissions within a nine-year period certainly provides a challenge for reducing GHG levels. However, there are many potential opportunities for change. In looking at vehicle fleets, the City can continue to increase alternative fuel vehicles. This can create a substantial reduction as every gallon of gasoline burned by a vehicle releases 20 pounds of carbon dioxide into the atmosphere. As of this writing (October, 2002), 17% of the City fleet is using alternative fuels.

There can be further employee education on reducing use and recycling when considering the Waste category.

In regards to the Buildings sector, the City can continue its conservation efforts and retrofits of existing buildings. However, due to the inherent design, at a certain point reductions would be exhausted. This illustrates the importance of having an overall efficient design from the outset. As additional structures are considered, such as a new City Hall, 'Green Building' practices could be employed.

Opportunities

- Vehicles
  - Increase alternative fuel vehicles
- Waste
  - Education to reduce, reuse and recycle
- Buildings-
  - New City Hall
  - Green Building Program

Opportunities (cont.)

- Employee Commute
  - Maintain and expand incentive programs
    - Wheels to Reels
- Streetlights/Traffic Signals/Parking
  - LED with solar
  - Retrofit existing garages/design future garages taking into account natural lighting
- Water/Sewer
  - Aeration blower retrofit
  - Alternative power generation facility

Santa Rosa has been recognized as one of the Bay Area's Best Workplaces for Commuters. In continuing to reduce GHG emissions, successful employee commute programs, like 'Wheels to Reels', can be expanded.

We've seen the tremendous positive impact of switching out red and green traffic lights to LED's. Currently, the City spends over a million dollars annually to power streetlights. As a potential solution, new technologies, such as LED with solar, can be used to replace existing streetlights.

Water/Sewer presents the greatest challenge in reducing greenhouse gas emissions. To address this problem, City Council has already authorized the installation of more efficient aeration blowers that will save the City $390,000 a year (at current costs) and will avoid 1,172 tons/year of eCO2. Other possible measures are the replacement of two pump stations that will avoid 129 tons of eCO2 per year, saving the City $75,000/yr after payback (5.2 years).

The Utilities Department five-year Capital Improvement Program includes a power generation project at the sub-regional plant. The project is funded in two steps. The first phase designates $100,000 for FY 2002-03 to design and then install a demonstration solar project on site. The second phase, to occur next year, sets aside 5 million dollars to build a power generation plant that may include alternative sources such as solar or wind power.

In light of the existing and potential opportunities, Santa Rosa is well positioned to achieve a significant reduction in corporate GHG emissions over the next decade. The next step in the process is for the City to establish a reduction target and develop a local action plan.

Acknowledgements

This report represents the cooperation, support, expertise and patience of a vast array of people. I would like to extend my heartfelt gratitude to all those connected either directly or indirectly with this project. I would especially like to acknowledge Assistant City Manager, Marc Richardson for his guidance and encouragement. The following people deserve special recognition for their help and participation.

City of Santa Rosa:
Jeff Kolin, City Manager
Marc Richardson, Assistant City Manager
Pat Fruiht, Assistant to the City Manager
Stephanie Acuna, Administrative Secretary
Roberta Atha, Administrative Secretary
Paula Waters, Senior Administrative Assistant
Sheri Hartz, Senior Administrative Assistant
Suzanne Sheppard, Executive Secretary to the City Manager
Sue Stoneman, Assistant City Clerk
Susan McCue, Economic Development Manager
Mirella Stevens, Administrative Assistant
Judy Daugherty, Risk Management Technician
Laurie Tomsky, Senior Administrative Assistant
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Chuck Hammond, Equipment Maintenance Superintendent
Mark Armstrong, Facilities Maintenance Coordinator
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Mark Krumel, Treatment Shift Supervisor
Dave Turpel, Utilities Crew Supervisor
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Charles Russell, Risk Management
Dan Neff, Park Maintenance Superintendent
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Work on the project was completed by Antoinette Lane, Administrative Intern. Ms. Lane is a graduate of Sonoma State University from the Hutchins School of Liberal Studies with an emphasis in Environmental Studies and Planning.

Appendix A: Resolution to Join Cities for Climate Protection

RESOLUTION NO. 25045

RESOLUTION OF THE COUNCIL OF THE CITY OF SANTA ROSA ENDORSING THE AIMS AND OBJECTIVE OF THE CITIES FOR CLIMATE PROTECTION CAMPAIGN

WHEREAS, the Cities for Climate Protection Campaign, sponsored by the International Council for Local Environmental Initiatives (ICLEI), has invited the City of Santa Rosa to become a partner in the Campaign; and

WHEREAS, local government actions taken to reduce greenhouse gas emissions and increase energy efficiency provide multiple local benefits by decreasing air pollution, creating jobs, reducing energy expenditures, and saving money for the City government, its businesses and its residents; and

WHEREAS, local governments greatly influence the community's energy usage by exercising key powers over land use, transportation, construction, waste management, and energy supply and management.

NOW, THEREFORE, BE IT RESOLVED that the City of Santa Rosa commits to participate in the Cities for Climate Protection Campaign and as a participant pledges to:

- Take a leadership role in promoting public awareness about the causes and impacts of climate change.
- Undertake the Cities for Climate Protection program's five milestones to reduce both greenhouse gas and air pollution emissions throughout the community, specifically:
  - Conduct a greenhouse gas (GHG) emissions inventory and forecast to determine the source and quantity of GHG emissions in the jurisdiction;
  - Establish a greenhouse gas emissions reduction target;
  - Develop an action plan with both existing and future actions which, when implemented, will meet the local greenhouse gas reduction target; and
  - Implement the action plan and monitor to review progress.

IN COUNCIL DULY PASSED this 4th day of December 2001.

Appendix B: CCP Emissions Inventory Reports

Appendix C: IPCC Report

Summary for Policymakers, Climate Change 2001-Impacts, Adaptation and Vulnerability

Intergovernmental Panel on Climate Change (IPCC), Third Assessment Report (TAR), "Climate Change 2001": http://ipcc-ddc.cru.uea.ac.uk/