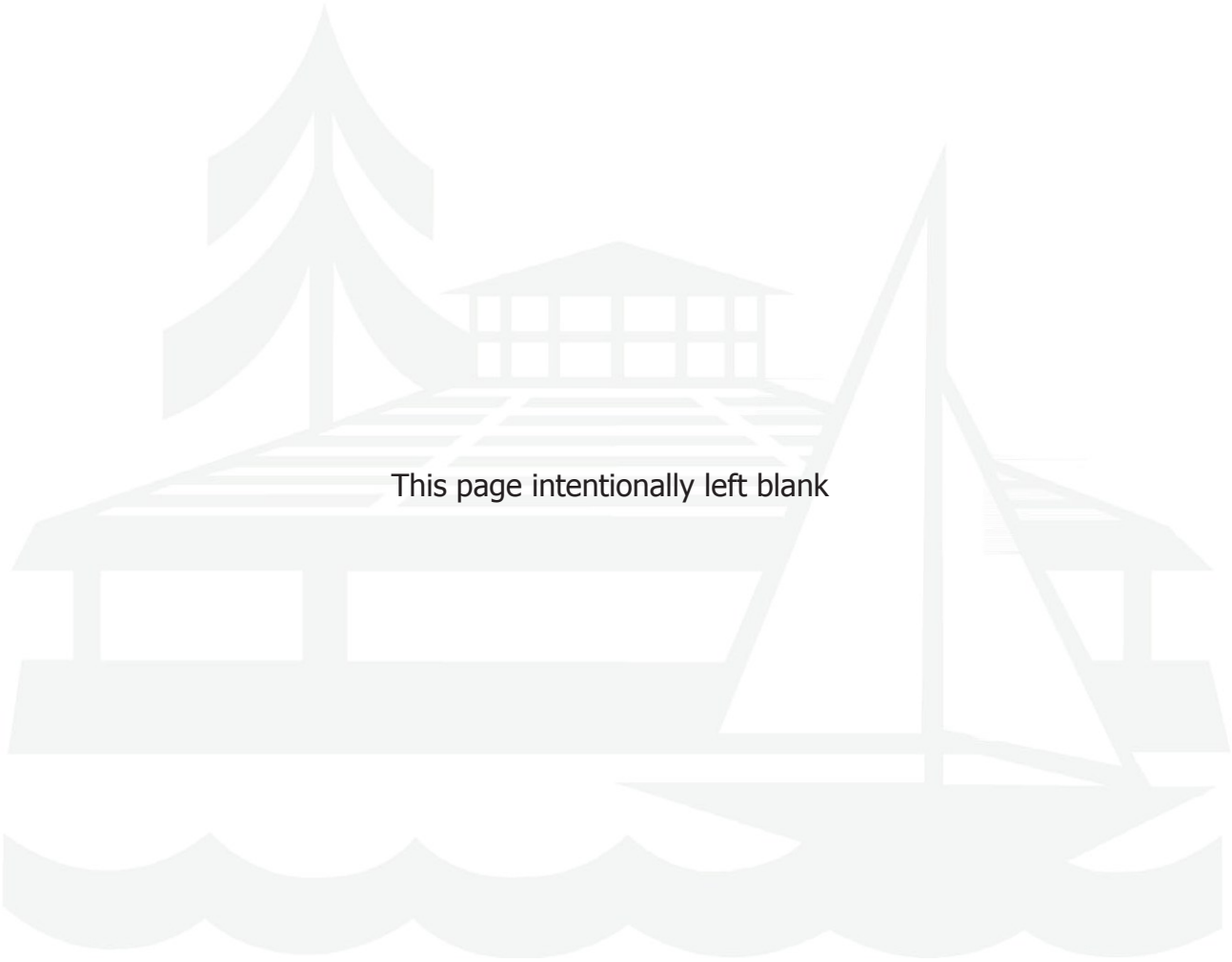
City of Kirkland
Climate Protection Action Plan
April 2009



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ACKNOWLEDGEMENTS

The primary authors of this Climate Protection Action Plan were Donna Burris, Erin Leonhart and Van Ingram-Lock. To develop the Plan, input was received from Kirkland citizens. Also, staff work groups were assembled focusing on Energy Efficiency, Commuting/Transportation, Fuel Efficiency/Alternative Fuels, Land Use, Waste Reduction, Carbon Sequestration, Policy/Legal, and Communication/Outreach. Each group was tasked with identifying measures that will help reach the reduction targets and to assist with feasibility, prioritization, and later, implementation in their respective departments. The multi-departmental effort required the assistance of the following subject matter experts with collecting and analyzing data, reviewing drafts and providing feedback:

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EXECUTIVE SUMMARY

The world's leading atmospheric scientists predict that climate change will have serious environmental, economic, and public health consequences in the coming decades. The longer we wait to reduce our carbon emissions, the more difficult and expensive it will be. While the risks associated with climate change are high, the benefits of acting today are largely positive in improving air quality and creating a more livable city.

The City of Kirkland must take responsibility for its contributions to global climate change. While the City recognizes that Kirkland's actions as a governmental entity alone are not likely to have a major impact on global greenhouse gas emissions trends, local actions can inspire global change. We also recognize that the cost of inaction could be very high and that inaction represents a missed opportunity for cost savings and improving the economic, environmental and social sustainability of the community. As an organization, the City of Kirkland is hopeful that efforts to monitor and reduce emissions in our own governmental operations will serve as an example to engage the involvement of the greater Kirkland community. Climate change results from the cumulative impact of the government and the community and therefore the efforts of all will be required to mitigate it.

Kirkland has a long-standing tradition of environmental stewardship. For over 20 years, the City has implemented various policies, regulations, and programs to protect its natural environment. Recent efforts include:

- In 2000, an interdepartmental team was formed to coordinate all of the City's actions for managing Kirkland's natural environment.

- In 2003, the City Council adopted the Kirkland Natural Resource Management Plan, which

comprehensively summarizes best resource management practices and principles, Kirkland's natural resource management objectives, and recommended implementation strategies.

- In 2005, Kirkland signed the U.S. Conference of Mayors Climate Protection Agreement, committing to help reverse global warming by reducing greenhouse emissions (Exhibit 2).

- In 2007, the Kirkland City Council adopted the staff-recommended greenhouse gas reduction targets via resolution R-4659 (Exhibit 3). For both the community as well as government operations, the reduction targets are:

  - Primary: 20% below 2005 levels by 2020
  - Interim: 10% below 2005 levels by 2012
  - Long-term: 80% below 2005 levels by 2050

EXECUTIVE SUMMARY

This Climate Protection Action Plan presents a framework for confronting climate change and engaging the community. We will meet our greenhouse gas reduction targets by:

- Setting an example for and engaging the community through our sustainability efforts.
- Engaging the community in order to help achieve greenhouse gas reduction goals.
- Investing in energy efficiency and renewable sources of power.
- Improving energy and fuel efficiency in governmental facilities and operations.
- Effecting land use regulations and green building guidelines/standards.
- Maintaining our residential recycling rate while improving multifamily and commercial recycling rates.

INTRODUCTION

What is Climate Change?

According to the U.S. Environmental Protection Agency (EPA), naturally occurring levels of greenhouse gases are necessary to life as we know it, because they keep the Earth's temperature stable and the surface warmer than it otherwise would be. The burning of fossil fuels and increasing rates of deforestation and development have produced growing amounts of carbon dioxide (CO2), methane and other heat-trapping gases. Other causes are agriculture, waste treatment and industrial processes. According to National Oceanic and Atmospheric Administration (NOAA) and National Aeronautics and Space Administration (NASA) data, the Earth's average surface temperature has increased by about 1.2 to 1.4ºF in the last 100 years. The EPA believes it is due to the increase in heat-trapping gases – a global threat known as climate change. Other aspects of the climate are also changing such as rainfall patterns, snow and ice cover, and sea level. The EPA explains that the eight warmest years on record (since 1850) have all occurred since 1998, with the warmest year being 2005. Scientists believe that the warming in recent decades is the result of human activities. If greenhouse gases continue to increase, the Intergovernmental Panel on Climate Change (IPCC) predicts that the average temperature at the Earth's surface could increase by an additional 3.2 - 7.2°F over the 21st century.

These increases may appear minor compared with short-term local temperature changes, such as those from night to day or winter to summer, but they are changes in the Earth's global average temperature. To put this in perspective, global temperatures during the last ice age (about 20,000 years ago) were "only" 9°F cooler than today; however, that was enough to allow massive ice sheets to reach as far south as the Great Lakes and New York City. At the high-end of projected global warming, human activities would change Earth's climate by up to 7°F but in the opposite direction.

What are greenhouse gases?

Greenhouse gases (GHG) are gases in the Earth's atmosphere that trap the sun's energy and thereby heat the Earth's atmosphere. They include, but are not limited to, carbon dioxide (a byproduct of burning fossil fuels), methane from agricultural sources, and nitrous oxide from industrial sources. According to the City of Chicago's climate research, in the last 50 years, levels of CO2 in the atmosphere have risen 25 percent; levels of methane, an even more potent greenhouse gas, have more than doubled.

The EPA states that for over the past 200 years, the burning of fossil fuels, such as coal and oil, and deforestation have caused the concentrations of heat-trapping greenhouse gases to increase significantly in our atmosphere. These gases prevent heat from escaping to space, somewhat like the glass panels of a greenhouse.

How Human Activities Contribute to the Warming Climate

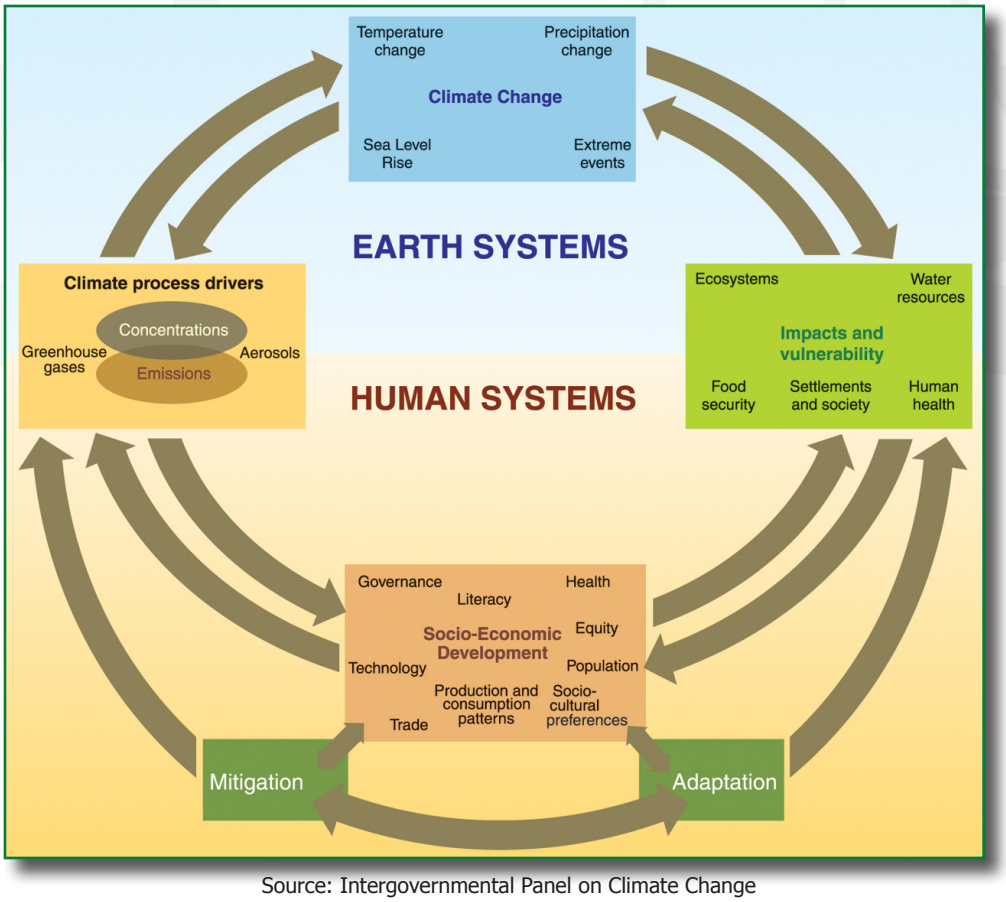
According to the EPA, careful measurements have confirmed that greenhouse gas emissions are increasing and that human activities (principally, the burning of fossil fuels and changes in land use) are the primary cause. The graphic on the following page depicts how human activities are impacting Earth systems. Human activities have caused the atmospheric concentrations of carbon dioxide and methane to be higher today than at any point during the last 650,000 years. A clear majority of scientists agree that most of the global average warming since the mid-20th century is due to human-induced increases in greenhouse gases, rather than to natural causes.

INTRODUCTION

The EPA website affirms that "as with any field of scientific study, there are uncertainties associated with the science of climate change. This does not imply that scientists do not have confidence in many aspects of climate science." Some aspects of the science are known with virtual certainty (defined by the IPCC as conveying a greater than 99% chance that a result is true), because they are based on well-known physical laws and documented trends. Current understanding of many other aspects of climate change ranges from "very likely" (defined by the IPCC as greater than 90% chance the result is true) to "uncertain."

The EPA website asserts "Scientists know with virtual certainty that:

- Human activities are changing the composition of Earth's atmosphere. Increasing levels of greenhouse gases like CO2 in the atmosphere since pre-industrial times are well-documented and understood.
- The atmospheric buildup of CO2 and other greenhouse gases is largely the result of human activities such as the burning of fossil fuels.
- The major greenhouse gases emitted by human activities remain in the atmosphere for periods ranging from decades to centuries. It is therefore virtually certain that atmospheric concentrations of greenhouse gases will continue to rise over the next few decades.
- Increasing greenhouse gas concentrations tend to warm the planet."



Source: Intergovernmental Panel on Climate Change

INTRODUCTION

Climate Change and Local Government

The previously described climate change is a threat to the environmental and economic health of communities throughout the world. On February 16, 2005, the Kyoto Protocol, the international agreement to address climate disruption, became law for the 169 countries that have ratified it to date and the United States is not among them. For 38 of the countries with the most advanced economies, the Protocol sets binding legal commitments to reduce greenhouse gas emissions on average 5.2 percent below 1990 levels. If the United States had ratified the Kyoto Protocol our nation would be required to reduce greenhouse gas emissions by 7% below 1990 levels by 2012.

Why Kirkland is Concerned

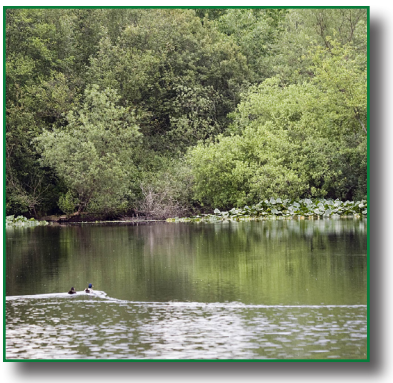
A growing number of U. S. cities (944 cities as of April 2009 including 34 in Washington state), have endorsed the U. S. Conference of Mayors Climate Protection Agreement. In May 2005, the City of Kirkland endorsed the Agreement via Resolution R-4591 (Exhibit 2). By endorsing the Agreement, Kirkland pledged to accept the Agreement's three main parts:

1. We urge the federal government and state governments to enact policies and programs to meet or beat the target of reducing global warming pollution levels to 7 percent below 1990 levels by 2012, including efforts to: reduce the United States' dependence on fossil fuels and accelerate the development of clean, economical energy resources and fuel-efficient technologies such as conservation, methane recovery for energy generation, waste to energy, wind and solar energy, fuel cells, efficient motor vehicles, and biofuels;

2. We urge the U.S. Congress to pass bipartisan greenhouse gas reduction legislation that includes 1) clear timetables and emissions limits and 2) a flexible, market-based system of tradable allowances among emitting industries; and

3. We will strive to meet or exceed Kyoto Protocol targets for reducing global warming pollution (reduce greenhouse gases to 7% below 1990 levels) by taking actions in our own operations and communities, particularly in the areas described in this report.

Passing the City's resolution continued a long-standing tradition of environmental stewardship in Kirkland. For over 20 years, the City has implemented various policies, regulations, and programs to protect its natural environment. In 2000, an interdepartmental team was formed to coordinate all of the City's actions for managing Kirkland's natural environment. In 2003, the City Council adopted the Kirkland Natural Resource Management Plan, which comprehensively summarizes best resource management practices and principles, Kirkland's natural resource management objectives, and recommended implementation strategies. The actions from the Natural Resource Management Plan are listed in the box on the following page.



Forbes Lake

INTRODUCTION

By signing the U.S. Conference of Mayors Climate Protection Agreement, the City of Kirkland committed to helping reverse global warming by reducing greenhouse emissions. To help fulfill its commitment, the City of Kirkland became a member of the International Council for Local Environmental Initiatives (ICLEI). ICLEI is an international association of over 1,000 local governments providing national leadership on climate protection and sustainable development. ICLEI's mission is to improve the global environment through local action. The City is following the milestones established by ICLEI:

- ✓ Conduct a greenhouse gas emissions inventory and forecast to determine the source and quantity of greenhouse gas emissions in the City;
- ✓ 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
- Implement the action plan; and
- Monitor and report progress.

(✓completed)

Climate change results from the cumulative impact of the government, community as well as business and therefore the efforts of all will be required to mitigate it.

While the City recognizes that Kirkland's actions as a governmental entity alone are not likely to have a major impact on global greenhouse gas emissions trends, local actions can inspire global

City of Kirkland's Climate Protection Action List
(Natural Resources Management Plan, 2003)

1. *Inventory global warming emissions in City operations and in the community, set reduction targets and create an action plan.*
2. *Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities.*
3. *Promote transportation options such as bicycle trails, commute trip reduction programs, incentives for car pooling and public transit. Develop a complete integrated network of non-motorized facilities.*
4. *Increase the use of clean, alternative energy by, for example, investing in "green tags" advocating for the development of renewable energy resources, recovering landfill methane for energy production, and supporting the use of waste to energy technology.*
5. *Make energy efficiency a priority through building code improvements, retrofitting City facilities with energy efficient lighting and urging employees to conserve energy and save money.*
6. *Purchase only ENERGY STAR equipment and appliances for City use.*
7. *Practice and promote sustainable building practices using the U.S. Green Building Council's LEED® program or a similar program.*
8. *Increase the average fuel efficiency of municipal fleet vehicles; reduce the number of vehicles; launch and employee education program including anti-idling messages; convert diesel vehicles to bio-diesel.*
9. *Evaluate opportunities to increase pump eficiency in water and wastewater systems; recover wastewater treatment methane for energy production.*
10. *Increase recycling diversion rates in City operations and in the community.*
11. *Maintain healthy urban forests by promoting tree preservation and planting to increase shading, mitigate stormwater runoff to absorb carbon dioxide.*
12. *Help educate the public, schools, and other jurisdictions, professional associations, business and industry about reducing global warming pollution.*

INTRODUCTION

change. It also recognizes that the cost of inaction could be very high and that inaction represents a missed opportunity for cost savings and improving the economic, environmental and social sustainability of the community. As an organization, the City of Kirkland is hopeful that efforts to monitor and reduce emissions in its own governmental operations will serve as an example to engage the involvement of the greater Kirkland community.

To successfully engage the community in implementing the 2009 action plan, the City sought to include feedback from the citizen community. In February of 2009, the City facilitated a Community Conversation regarding climate protection. The 30 participants were polled regarding what they are currently doing at home and work to reduce GHG emissions in the categories of Commuting/Transportation, Energy Efficiency, Fuel Efficiency, Waste Reduction and Recycling, and Environmental Stewardship. The public participation event also explored what participants would be more willing to do. Participants agreed that climate change is a serious problem that Kirkland needs to address and that their action can have at least some impact on reducing future climate change. Ideas of how the City can help included:

- Partnering with businesses & residents to retrofit inefficient equipment
- Placing local restrictions on plastic bags and Styrofoam
- Creating incentives for businesses in Kirkland to create green jobs
- Restoring Cannery building as an education center
- Designating monthly "Green Days" with themes (i.e. bike, bus, recycle, lights out)
- Highlighting stories of the "everyday green guy/gal"
- Educating the public about "no idling"
- Encouraging more walking to school, taking bus to school

The Greenhouse Gas Emissions Inventory

To achieve ICLEI's first milestone, it was necessary to conduct an inventory that would identify greenhouse gas emission sources in the community and within City operations.

Community Inventory

The City's Public Works Department consulted with Puget Sound Clean Air Agency (PSCAA) staff to measure Kirkland's community greenhouse gas emissions. The City also consulted with the Puget Sound Regional Council and obtained Kirkland's community Vehicle Miles Traveled (VMT). Based on Kirkland's VMT and number of households, the Agency helped extrapolate Kirkland's community emissions inventory as a percentage of King County's for 1990 and 2005. Actual data was obtained for electricity and natural gas consumption and utilized in place of the extrapolated data. Figure 1 and Figure 2 describe citywide emissions information for 1990 and 2005. Kirkland's Total Carbon Dioxide Equivalent (CO2e) has increased 22% from 1990 to 2005 (see Exhibit 1 for the data). The goal from the U.S. Conference of Mayors Climate Protection Agreement is a reduction of 7% from 1990 levels.

As described in the charts below, the main sources of greenhouse gases in Kirkland's community inventory for 2005 are transportation which includes gas and diesel consumption (46%) and power (electricity and natural gas) purchases (38%).

THE GREENHOUSE GAS EMISSIONS INVENTORY

Kirkland Community - 1990
Total Carbon Dioxide Equivalent Emitted (%)

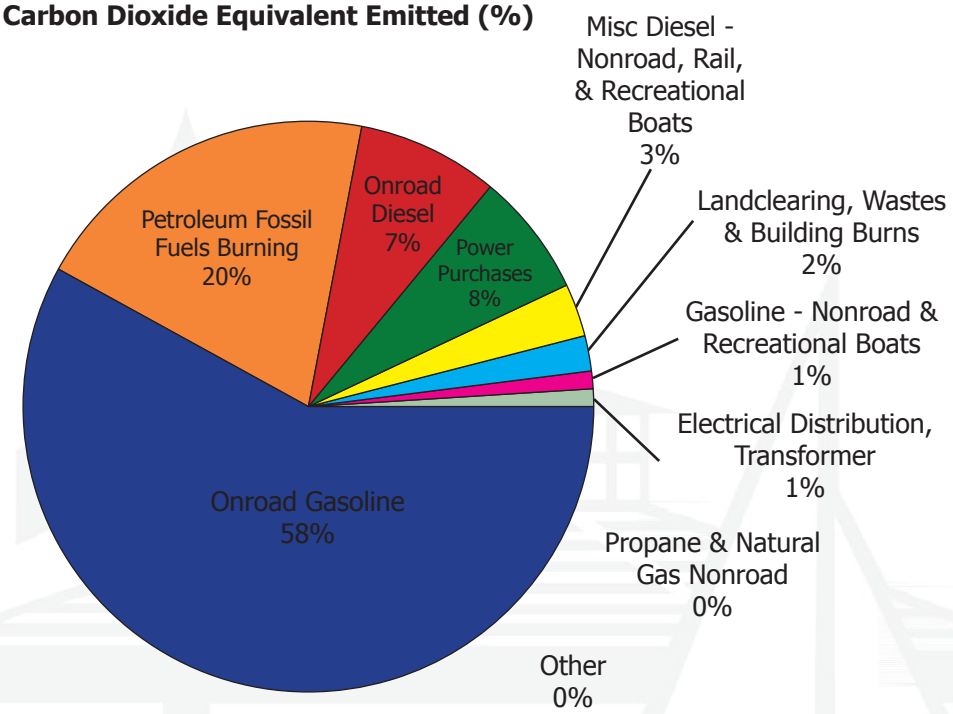


Figure 1

Kirkland Community - 2005
Total Carbon Dioxide Equivalent Emitted (%)

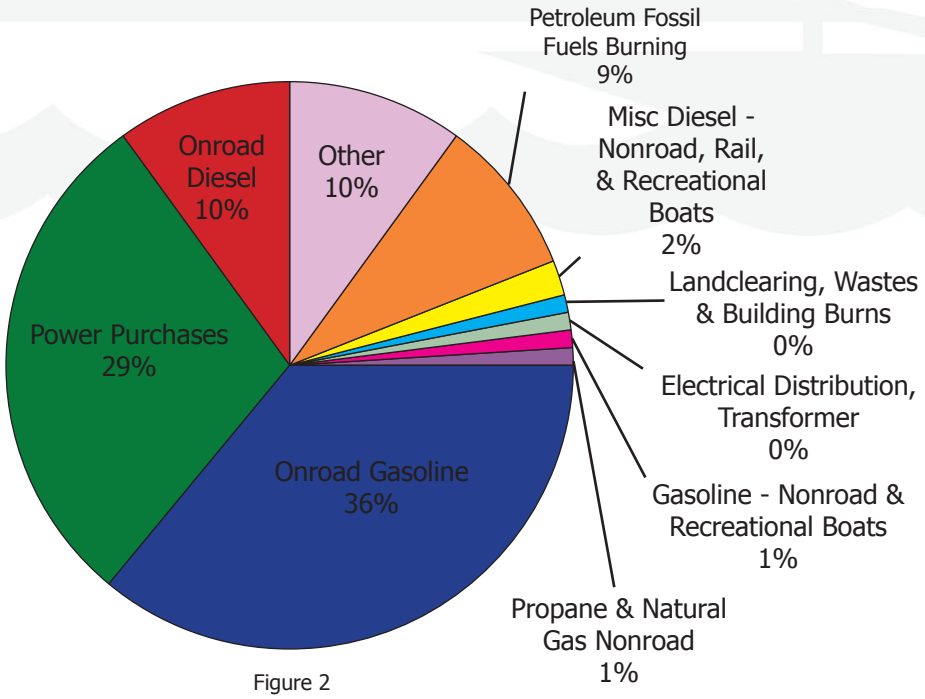


Figure 2

THE GREENHOUSE GAS EMISSIONS INVENTORY

Government Operations Inventory

In 2006, Kirkland joined ICLEI to enlist the association's help in conducting the governmental operations inventory. Staff and City officials met with a representative from ICLEI in November to gain a better understanding of the organization and how the City will work together to accomplish the goals of the U.S. Conference of Mayors Climate Protection Agreement.

Staff utilized ICLEI software and data collected from utility bills and other sources to collect and analyze greenhouse gas data for 2000 and 2005. Although the Agreement refers to the Kyoto Protocol targets (reductions from 1990 levels), information from 1990 was not readily available. According to ICLEI, other organizations with the same issue are using the year 2000 as a base year. Kirkland has chosen to use the year 2005 as its base year for measurements. As of 2005, Kirkland's Governmental Operations Emissions had increased about 7% from 2000. Governmental Operations Emissions are described in the graph below and raw data is available in Exhibit 1.

As described in Figure 3 opposite and Figure 4 below, the main sources of greenhouse gases in Kirkland's governmental operations inventory for 2005 are energy utilized by City facilities (53%) and fleet fuel consumption (27%).

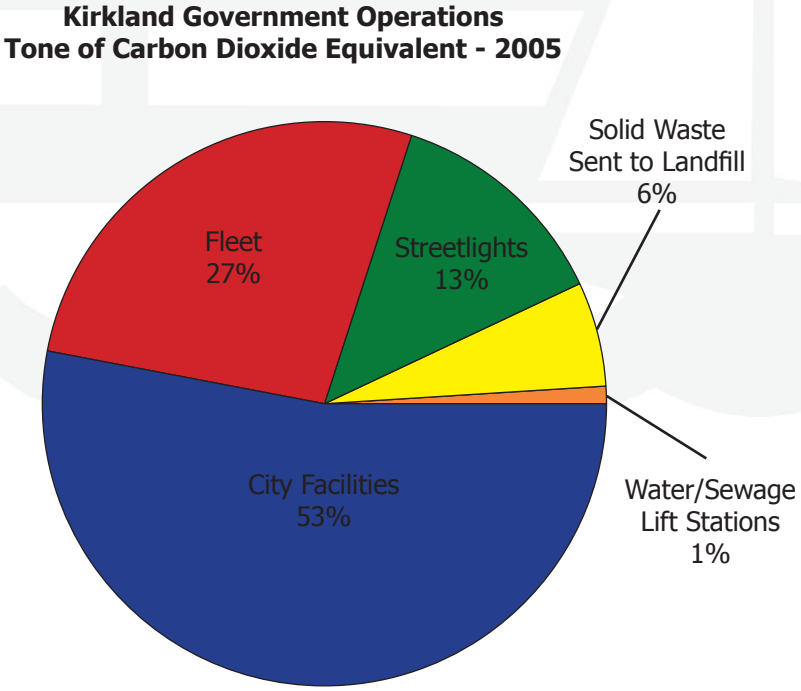


Figure 4

THE GREENHOUSE GAS EMISSIONS INVENTORY

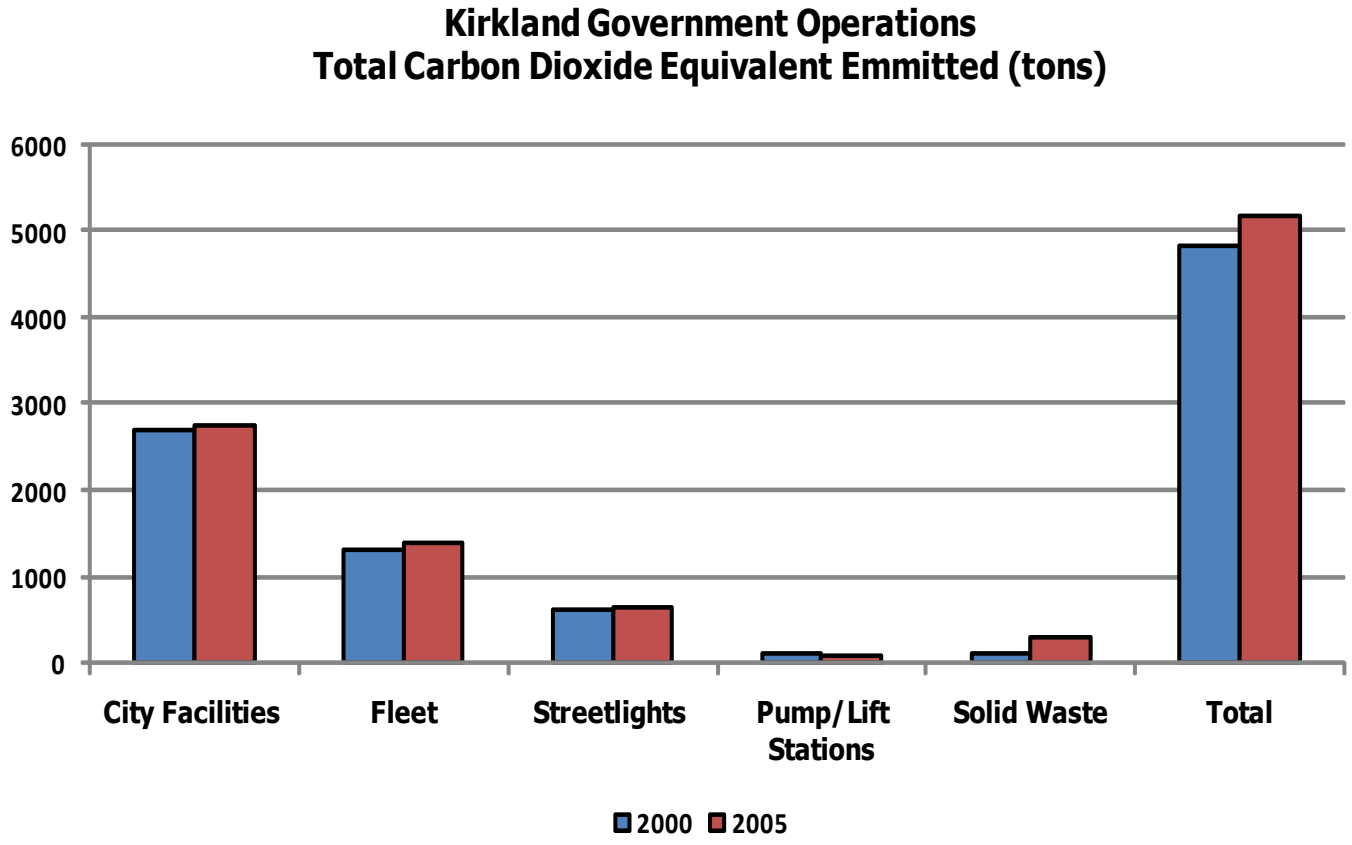


Figure 3

GREENHOUSE GAS EMISSIONS REDUCTION TARGETS

Reduction Targets*

The second ICLEI milestone is to establish target reductions.

At the August 7, 2007 meeting, the Kirkland City Council adopted the staff-recommended greenhouse gas reduction targets via resolution R-4659 (Exhibit 3). For both the community as well as government operations, the reduction targets are:

Primary: 20% below 2005 levels by 2020
Interim: 10% below 2005 levels by 2012
Long-term: 80% below 2005 levels by 2050 (see Appendix 1)

*Although the Kyoto Protocol uses 1990 as the base year, staff deliberately chose not to use the inventory for 1990 because of the lack of available and credible data.

What the City is Currently Doing (Inventory base year of 2005 and earlier)

The City of Kirkland is proud to have a long-standing tradition of environmental stewardship and commitment to sustainability. For over 20 years, the City has implemented various policies, regulations, and programs to protect the natural environment. Below are some of the accomplishments in Kirkland's government operations and in the community.

GOVERNMENT OPERATIONS

- Installing HVAC controllers with away settings
- Installing exterior lighting with timers/light sensors
- Purchasing ENERGY STAR or equivalent appliances, including computer equipment and printers
- Installing central irrigation control system – 4 installed to date
- Utilizing vending machines that include devices to power-down the machines after a period of inactivity
- Eliminated 5 wastewater lift stations
- Testing induction lighting for 3 street lights since 2004
- All copiers and printers have the capability to go into a standby mode after a period of inactivity and are set up that way when implemented.
- Commute Trip Reduction (CTR) Program which includes Supercommuter, Commuter Challenge, Wheel Options, Ride Share Online, Bus Passes and Guaranteed Ride Home
- Bike to Work Month
- Using mulching mowers
- Three major equipment trailers equipped with "rumber" decking material which is made from 100% recycled automobile tires
- Co-mingled Recycling implemented at all City facilities in 2003 for paper, plastic, glass, and metals which replaced a source-separation recycling system that had been in place since at least 1990
- Empty toner cartridges are returned to the remanufacturer and remanufactured toner cartridges are ordered for City printers when available
- Purchased the first hybrid vehicle, a Toyota Prius, in 2003

COMMUNITY

- Commute Trip Reduction (CTR) Program with goal of reducing traffic congestion, air pollution, and petroleum consumption through employer-based programs that decrease the number of commute trips made by people driving alone. To reduce drive-alone trips, office buildings with 50,000 square feet are required to have a Transportation Management Plan (TDM) which the City helps employers establish.
- Bike to Work Month
- Co-mingled recycling for commercial and residential (single and multi-family)

WHAT THE CITY IS CURRENTLY DOING

- Food waste recycling for single-family residential
- Formation of the Green Kirkland Partnership. The mission of the Partnership is "to conserve and sustain natural areas for the benefit and enjoyment of current and future generations."
- Business Recycler of the Year recognition award
- Outreach including ReuseRecycleConserve newsletter

KIRKLAND'S RESPONSIBILITY TO THE ENVIRONMENT

What the City is Doing Going Forward (after inventory base year)

After the greenhouse inventory has been collected and the greenhouse gas reduction targets have been established, the third milestone ICLEI recommends is to develop an action plan which when implemented, will meet the reduction targets.

New strategies are proposed to guide the City of Kirkland – the City and the Community – in reducing greenhouse gas emissions. These are presented in Sections 1 and 2 and primarily relate to the City as an organization and employer (Section 1) as well as present strategies focused on the Community (Section 2). The role of state and federal government is discussed in Section 3. The Communications Plan (Appendix II) is a component of the City's Climate Protection Action Plan and is intended to guide the City's efforts in educating the public, schools, other jurisdictions, professional associations, businesses and industry about greenhouse gas reduction.

SECTION 1: KIRKLAND'S RESPONSIBILITY TO THE ENVIRONMENT – EFFORTS BY CITY GOVERNMENT

- Target Reduction: By Year 2012 – 516 tons
- Target Reduction: By Year 2020 – 1,032 tons
- Target Reduction: By Year 2050 - 4,130 tons

Kirkland has identified approaches to reducing emissions in government operations in the areas of energy efficiency, commuting/transportation/ fuel efficiency, and waste reduction and recycling.

SECTION 1: KIRKLAND'S RESPONSIBILITY TO THE ENVIRONMENT – EFFORTS BY CITY GOVERNMENT

A. ACTION: REDUCE ENERGY CONSUMPTION
B. ACTION: REDUCE WASTE & INCREASE RECYCLING
C. ACTION: ENCOURAGE ALTERNATIVE COMMUTE OPTIONS
D. ACTION: ENHANCE FUEL EFFICIENCY & INCREASE AVAILABILITY OF ALTERNATIVE FUELS

SECTION 2: KIRKLAND'S COMMITMENT TO THE ENVIRONMENT – EFFORTS IN THE COMMUNITY

A. ACTION: BE ENERGY EFFICIENCY EXPERTS
B. ACTION: REDUCE, REUSE, CONSERVE
C. ACTION: BE SMART COMMUTERS
D. ACTION: BUILD SUSTAINABLE COMMUNITIES
E. ACTION: CONDUCT BUSINESS SUSTAINABLY

SECTION 3: THE ROLE OF STATE AND FEDERAL GOVERNMENT

A. ACTION: REDUCE ENERGY CONSUMPTION

According to the 2005 City government inventory, electricity and natural gas consumption from operating City buildings, traffic signals, street lights, and lift stations contributed approximately 67% of the total tons of CO2e generated by governmental operations. Efforts to improve energy efficiency in Kirkland's operations entail building improvements, lighting retrofits, operational changes, and changing behavior. Government actions will be implemented by a combination of hardware retrofits and outreach to staff.

Energy efficiency in building improvements include achieving Leadership in Energy and Environmental Design (LEED®) certification for

EFFORTS BY CITY GOVERNMENT

renovations/new facilities, considering green or reflective roofing with new City facility construction, evaluating utilizing solar panels, installing HVAC controllers with away settings and other mprovements, and utilizing energy-monitoring equipment to shut-off unnecessary equipment when power usage is high (2008).
The renovation of the City Hall Annex building will serve as a demonstration project for the City combining preservation and sustainability goals with an anticipated LEED® – Existing Building Operations and Maintenance Silver Certificate. Included sustainable features will be:

Composite of City Hall Annex

- Planting low maintenance/drought-tolerant landscaping
- Increasing the amount of natural light in the ground floor
- Installing awnings and a trellis on the building's south side to shade the summer sun
- Adding new wall and ceiling insulation
- Installing radiant floor heating for winter and a fresh air distribution system for summer cooling
- Using low-emitting volatile organic compounds (VOC's) in building materials, adhesives, sealants and paints
- Employing the use of lighting control devices such as occupant sensors on room lighting and timers on site lighting

In addition to building improvements, energy efficient information technology includes full implementation of computers, flat screen monitors, and software that will perform a safe shut-down after a period of inactivity.

Dell Desktop Personal Computers (PCs)
⊙ (103 tons of CO2e per year)

The City has a desktop computer replacement schedule of every three years. Therefore, since 2006, a complete citywide transition to ENERGY STAR computers or equivalent has taken place. According to the ENERGY STAR website, PCs that have earned the ENERGY STAR rating use about 15% of the energy of their counterparts do (85 vs. 542 kWh annually). This amounts to a savings of 461 kWh per computer annually. Multiplied by the 453 PCs in the city, this results in a savings of 208,833 kWh and a reduction of 103 tons of CO2e per ICLEI's Clean Air and Climate Protection (CACP) software.

Dell Flat Screen LCD Monitors
⊙ (7 tons of CO2e per year)

In 2008, the City completed citywide implementation from cathode-ray tube (CRT) to flat panel liquid crystal display (LCD) monitors. Dell estimates that flat panel LCDs use about 30% less power than CRTs and have a lower cooling cost. According to Dell, a 19" LCD flat panel monitor utilized 8 hours daily 250 days/year consumes 73 kWh annually. Assuming that a CRT consumes 104 kWh (30% more than LCDs) annually, this is a savings of 31 kWh a year. Multiplying this savings by the 453 PCs citywide equates to an energy savings of 14,043 kWh and a reduction of 7 tons of CO2e per the CACP software.

EFFORTS BY CITY GOVERNMENT

Surveyor® PC Power Management Software
⊙ (36 tons of CO2e per year)

Computers are central to the operations of the City. The computer central processing units (CPU) and monitors are responsible for an increasingly greater percentage of overall building energy usage. In 2009, the City will complete citywide implementation of the PC Power Management software which puts the computer into standby mode after a period of inactivity (estimated to be about 2/3 of the time). The vendor of the software, Verdiem, estimates that a typical PC consumes 535 kWh a year and that by simply powering down PCs when they are not in use can reduce energy consumption by 30% or more. The City's 453 PCs at a reduction of 161 kWh per PC results in a total reduction of 72,707 kWh for a savings of 36 tons CO2e beginning in 2009.

Energy Efficient Purchasing Decisions
⊙ (reduction potential not yet known)

Purchasing or contract decision considerations include selecting ENERGY STAR or equivalent appliances (including computer equipment and printers), utilizing vending machines that include devices to power-down the machines when not in use, and heat recapturing (i.e. in server room).

Energy Efficient Behaviors
⊙ (reduction potential not yet known)

Energy efficient behaviors include discouraging staff use of personal appliances (i.e. heaters, refrigerators), encouraging turning off or unplugging electronic equipment, turning off computers and lights when leaving a room.

ENERGY STAR Partnership
⊙ (reduction potential not yet known)

In January 2009, Council made a fundamental commitment to protect the environment by signing a letter to become an ENERGY STAR partner. In partnership with ENERGY STAR, the City will:

- Measure and track the energy performance of our organization's facilities where possible;
- Develop and implement a plan consistent with the ENERGY STAR Energy Management Guidelines to achieve energy savings;
- Help spread the word about the importance of energy efficiency to our staff and community; and
- Support the ENERGY STAR Challenge, a national call-to-action to help improve the energy efficiency of America's commercial and industrial buildings by 10% or more.

The City has committed to energy reductions to balance the 2009-2010 facilities budget. The tools provided by ENERGY STAR will be critical in tracking organizational progress and attaining reduction goals.

Purchase Green Power
⊙ (932 tons of CO2e per year)

Purchasing electricity from renewable sources rather than fossil fuels reduces greenhouse gas emissions. Energy purchased from renewable sources can offer more stable prices, depending on the structure of the program, because it is not subject to fluctuating fuel prices. Green energy purchases allow an institution or home to use energy from renewable energy sources such as solar, wind, and biomass generation, without

EFFORTS BY CITY GOVERNMENT

having to generate that energy themselves.

The City of Kirkland has set an example by purchasing Green Power from Puget Sound Energy for a substantial percentage of its operations. As part of the outreach to the community, the City will also encourage residential and commercial customers to sign up for green power. Since 2008, as approved by Kirkland's City Council, 50% of the electricity consumption for Kirkland's government buildings was Green Power. This measure reduces the pollution generated by electricity use by 50%. EPA's Green Power Equivalency Calculator estimates that the City's Green Power purchase avoids 932 tons of CO2e per year.

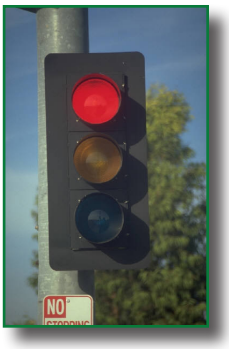
Energy Efficient Lighting Retrofit

⊙ (30 tons of CO2e per year)

The City of Kirkland undertook a major project in 2007 to achieve energy savings while upgrading fixtures that were deteriorated and inefficient. The lighting retrofit was sponsored by Puget Sound Energy and included replacement of magnetic ballasts with electronic and upgrading fluorescent bulbs along with the replacement of incandescent fixtures and the installation of incandescent exit signage with ENERGY STAR rated Light Emitting Diode (LED) bulbs at City buildings with plans for more. In addition, timers/ light sensors on exterior lighting and occupancy sensors in conference rooms were installed. Facilities staff estimates that this project resulted in 60,541 kWh of energy reduction and for a savings of 30 tons of CO2e per year.

Energy Efficient Traffic Signals and Pedestrian Indicators

⊙ (74 tons of CO2e per year)



Taking advantage of rebates available through Puget Sound Energy, the City retrofitted 147 incandescent traffic signals and pedestrian indicators with more efficient LEDs. LEDs require 10% of the energy needed by incandescent signals. At an average savings of 13 watts per signal or indicator at 24 hours a day 365 days a year, the 90% energy savings for the 147 signals and indicators results in a total annual reduction of 150,584 kWh for a savings of 74 tons of CO2e per year a year.

The City will continue to investigate where solar or other alternate power may be an option (i.e. neighborhood signs), and investigate the potential of reduced work schedules.

B. ACTION: REDUCE WASTE & INCREASE RECYCLING

The City of Kirkland strives to lead by example through its long-standing tradition of environmental stewardship in the community and the robust solid waste and recycling programs it offers. Recycling and waste management are critical in reducing greenhouse gases because they save energy. Also, goods manufactured from recycled materials typically require less energy and create less greenhouse gases than producing goods from virgin materials and help to create a market for the recycled commodity clos-

EFFORTS BY CITY GOVERNMENT

ing the loop. Diverting more waste from landfills also extends the life of these facilities and reduces the amount of greenhouse gas emitted from the disposal of waste.

The greenhouse gas inventory for City government for 2005 showed that solid waste sent to the landfill contributed to less than 6% of the total CO2e.

Recycled Content
⦿ (22 tons of CO2e per year)

The City has had a long-standing practice of ordering recycled-content copy paper and janitorial paper products. Recycled-content paper is also typically specified when ordering printed letterhead, envelopes, forms and other printed materials. Many of the office supply items (folders, envelopes, notepads, etc.) that are ordered have at least some recycled content. The City uses 69 tons of copy paper of various sizes and colors annually. When purchasing paper, the specs are "minimum 30% recycled-content or higher," as that typically offers the best value. The Environmental Defense Fund Paper Calculator estimates that 69 tons of 30% recycled-content paper results in 174 tons CO2e and requires 1,159 trees to produce vs. virgin paper which results in 196 tons CO2e and requires 1,656 trees to produce – a savings of 22 tons of CO2e with the use of 30% recycled-content paper.

Zero Waste Events
⦿ (reduction potential unknown)

The City of Kirkland continues to provide leadership and set an example for the community by holding Zero Waste staff events. Staff has developed event planning guidelines to assist staff and citizens weigh options that balance cost and waste. The City could offer "recycling refresher courses" and "paperless office training" periodically and include recycling and waste reduction information in the orientations for new employees. According to PSCAA, every pound of waste that goes into the landfill creates 3 pounds of CO2e pollution.

Food Waste Recycling
⦿ (120 tons of CO2e per year)

Food waste recycling is currently available to staff at City Hall, the Maintenance Center, the Municipal Court, Peter Kirk Community Center, and Fire Station 21. In 2008, the program diverted about 40 tons of food waste from the landfill. According to PSCAA, every pound of waste that goes into the landfill creates 3 lbs of CO2e pollution. Food waste recycling service saves 120 tons of CO2e per year and should be extended to all City facilities, where practical.

C. ACTION: ENCOURAGE ALTERNATIVE COMMUTE OPTIONS

Commute Trip Reduction (CTR) Program
⦿ (reduction potential not yet known)

The goals of the Commute Trip Reduction Program are to reduce traffic congestion, air pollution, and petroleum consumption through employer-based programs that decrease the number of commute trips made by people driving alone.

- Provide annual bus passes to full-time benefited employees to encourage the use of transit (ongoing program despite not being funded for 2009-10)
- Provide employees that carpool, walk, bike or use transit more than 30% of the time up to $30 per month

EFFORTS BY CITY GOVERNMENT

- Participate in Metro Promotions: Commuter Challenge, Wheel Options, Ride Share Online which included several financial incentives to get more employees to use alternative commutes such as carpool, bus, vanpool, bicycling and telecommuting
- Encourage alternate start times/flex schedules/ telecommuting
- Offer guaranteed Ride Home Incentive
- Participate in national Bike to Work Month
- Encourage employees to use the bus, carpool, or teleconference to meetings

Bike to Work Month

⦿ (0.8 tons of CO2e per year)

The Puget Sound Bike to Work event started in 1973. Later Cascade Bicycle Bike Club took over the promotion and called it Bike to Work Day and promoted it as a commute challenge event. Annually, 15 to 25 City employees participate in the Bike to Work Month Commute Challenge each May and more than 1,600 miles of driving has been reduced each May by City employees. About 1 lb of CO2e is eliminated for every mile biked.

Green Bike Project

⦿ (10 tons of CO2e per year)

The City of Kirkland is sponsoring and participating in King County's "Green Bike Project" to reduce drive-alone commuting. Twenty-three City employees pledged to reduce drive-alone commuting. The program requires that the participants bicycle to work for at least 60 percent of their total commute times from August through mid-November and mid-February to end of May which represents about 300 miles round vehicle trips per day; Approximately, 22,000 vehicle miles are avoided by the participants. According to Project America, the average miles per gallon on our nation's highways is 21.4 mpg. Every gallon of gas saved keeps 20 pounds of carbon dioxide out of the atmosphere. The 22,000 vehicle miles saved during the Green Bike Project is equal to 1,028 gallons of fuel which equals 10 tons of CO2e.

City employees participating in Green Bike Project

D. ACTION: ENHANCE FUEL EFFICIENCY & INCREASE AVAILABILITY OF ALTERNATIVE FUEL

According to the 2005 inventory, City automobiles and trucks contributed 27% of the total tons of CO2e generated by governmental operations. Emissions from vehicles are the second most polluting source in City government after energy consumption from City facilities. Actions that will increase fuel efficiency or expand alternative fuel research will also reduce pollution caused by commuting and transportation making this area of the action plan of special significance.

Alternative Fuel Vehicles

⦿ (20 tons of CO2e per year)

The City is continuing its on-going efforts to increase the average fuel economy of the fleet, including transitioning to "alternative fuel" vehicles (e.g. electric, hybrid, biodiesel, etc.) when feasible. The City's fleet includes 17 hybrid vehicles which reduce carbon emissions by approximately one ton each year per vehicle, an all electric truck Neighborhood Electric Vehicle (NEV) which is expected to emit 2.5 tons less CO2e per year due to the use of hydropower and wind power within Puget Sound Energy's portfolio, and a biodiesel (B99) vehicle which reduces 19 lbs of CO2e per gallon of fuel than its gasoline counterpart, according to the Puget Sound Green Fleets Guide.

EFFORTS BY CITY GOVERNMENT

As part of the vehicle replacement program, the City expects to replace existing vehicles with additional hybrids as well as "plug-in" hybrids when they become available in 2010, where functionally possible.
The City currently has one gasoline fueled vehicle projected to be replaced in 2010 with a "plug-in" hybrid.

Fire Marshall's Toyota Prius

The City is a charter member of the Puget Sound Clean Cities Coalition, which works to develop alternative fuel sources in the Puget Sound Region, to promote biodiesel availability, and to help develop the market so that ultra-low sulfur and biodiesel fuels will become available and affordable, since their use would cut toxic emissions from diesel vehicles.

The EPA has required all oil companies to produce ultra low sulfur diesel (ULSD) in 2006 which contains 15 parts per million, a dramatic reduction over low sulfur diesel (LSD) with 500 parts per million. ULSD is being required for all diesel engines beginning with 2007 models. In October, 2006, the City began using ULSD to run all our pre-2007 diesel engines, in addition to the required post-2007 model diesel engines.

Waste Management, the City's hauler, uses ULSD in all of its operations within the City or other low-emissions fuels as approved by City staff. The fleet of collection vehicles was retrofitted with particulate traps thereby further reducing emissions up to 90% from previous levels.

Keep Proper Tire Pressure on All City Vehicles
⊙ (40 tons of CO2e per year)

Visual tire inspection is often insufficient to detect low pressure, and scheduled maintenance may occur after the tire pressure has dropped below the manufacturer's suggested limits. Improper tire pressure is estimated by the U.S. Department of Energy to reduce vehicle fuel economy by 3.3% annually. A reduction of total vehicle fleet fuel usage by 3.3%, as per the U.S. Department of Energy's estimates, can result in a savings of 3,960 gallons of fuel and a reduction of carbon dioxide emissions by 40 tons.

Save Money and Reduce Pollution: Launch an anti-idling message
⊙ (10 tons of CO2e per year)

According to www.fueleconomy.gov, every gallon of gas you save not only helps your budget, it also keeps 20 pounds of carbon dioxide out of the atmosphere. If 100 of the City's fleet vehicles (excluding police patrol, fire emergency, and maintenance equipment vehicles) reduced unnecessary vehicle idling by 5 minutes a day for 240 days a year, the City could potentially see a reduction of carbon emissions of 10 tons of CO2e per year. (Calculation based on factors provided by U.S. Department of Energy's Fuel Economy Guide.) Unnecessary vehicle idling pollutes the air, wastes fuel, and causes excess engine wear:

- Air pollution from idling vehicles can pollute the air in and around the vehicles.
- Exhaust from cars can also enter adjacent buildings through air intakes, doors, and open windows.
- Idling vehicles waste fuel and money. On average, a car will burn more than half a gallon of fuel for every hour spent idling. In general, 10 seconds of idling uses more fuel than restarting the car.
- Engine Wear-and-Tear. Vehicle engines do not need to idle more than a few minutes to warm

up. In fact, extended idling causes engine damage.

The City's Fleet Supervisor will be conveying the anti-idling message at Public Works and Parks staff meetings, Directors' meetings, and other staff will spread the message at preconstruction meetings with private developers and contractors doing business with the City.

Green Fleets Initiative

◉ (reduction potential not yet known)

The Puget Sound Green Fleets Guide is a joint project of the Puget Sound Clean Air Agency and the Puget Sound Clean Cities Coalition. The Green Fleets Guide is intended to help fleet managers and decision makers understand the emissions produced by fleet operations and identify effective ways to reduce these emissions.

In 2007, the City Managers of Kirkland and Mercer Island initiated the Green Fleets Initiative. The initiative was intended to bring the "CEO's" and fleet managers of the Eastside Cities to work together to development a Leadership in Energy & Environmental Design (LEED®) style standard to measure and recognize efforts from local government agencies to meet these standards, and to explore serving as a purchasing cooperative. By the end of 2008, a draft of Standards was completed. A new name was adopted, "Evergreen Fleets Standard," to reflect that the coalition had grown to include over 20 cities, 4 counties, a Native American tribe, 3 Washington State agencies, the Puget Sound Clean Cities Coalition, and the Puget Sound Clean Air Agency. Eight of the coalition members, including Kirkland, volunteered to participate in a pilot program to be completed by the spring of 2009, at which time appropriate revisions will be applied.

An integral part of the Evergreen Fleets Initiative provides for voluntary reporting of greenhouse gases to the Puget Sound Clean Air Agency. The Initiative's goal was to develop a reporting template that would be in concert with the mandatory reporting required by Washington State GHG policy and legislation beginning with the year 2009. The State's template will be designed to be compatible with the Western Climate Initiative (WCI) and the Climate Registry (TCR). It should be noted that all coalition members will continue to voluntarily report their GHG emissions to the Puget Sound Clean Air Agency even if the member is below the annual emissions reporting threshold of 2,500 tons annually. Kirkland is currently below this annual threshold.

KIRKLAND'S RESPONSIBILITY TO THE ENVIRONMENT

SECTION 2: KIRKLAND'S RESPONSIBILITY TO THE ENVIRONMENT – EFFORTS IN THE COMMUNITY

- Target Reduction: By Year 2012 – 81,524 tons
- Target Reduction: By Year 2020 – 163,048 tons
- Target Reduction: By Year 2050 - 652,194 tons

Kirkland has identified strategies to reducing emissions in the community in the areas of energy efficiency, waste reduction and recycling, commuting, building sustainable communities, and conducting business sustainably.

A. ACTION: BE ENERGY EFFICIENCY EXPERTS

For much of the country, the local electric utility is a major source of emissions due to its dependence on burning coal and gas to produce electricity. Puget Sound Energy (PSE) is the electric provider for Kirkland and much of the region. PSE's mix of electricity includes 45% hydroelectric power resulting in a cleaner mix and lower greenhouse gas emissions from this source.

According to the 2005 community inventory for Kirkland, 38% of the emissions can be attributed to electricity and natural gas consumption. To influence the community, outreach will be the City's primary focus in order to educate and engage Kirkland citizens and to influence their behavior.

Encourage Citizens to Follow the City's Example and Purchase Green Power

⊙ (1,009 tons of CO2e per year)

Purchasing electricity from renewable sources rather than fossil fuels reduces greenhouse gas emissions. Energy purchased from renewable sources can offer more stable prices, depending on the structure of the program, because it is not subject to fluctuating fuel prices. Green energy purchases allow an institution or home to use energy from renewable energy sources such as solar, wind, and biomass generation, without having to generate that energy themselves.

The City of Kirkland has set an example by purchasing green power for a percentage of their operations. As part of our outreach to the community, the City will also encourage residential and commercial customers to sign up for green power. In 2005, 576 households and 6 businesses in incorporated Kirkland purchased 1,513,689 kWh of Green Power. EPA's Green Power Equivalency Calculator estimates that this Green Power purchase avoids 1,009 tons of CO2e per year.

ENERGY STAR Partnership

⊙ (reduction potential not yet known)

ENERGY STAR is a partnership between the U.S. Environmental Protection Agency and industry to voluntarily label products that meet certain energy efficiency criteria. ENERGY STAR products include home electric appliances, office equipment, and light fixtures and bulbs. According to the EPA, more than 2 billion ENERGY STAR-certified products have been purchased since 1992, generating utility bill savings of $14 billion in 2006. This represents saving an amount of energy equivalent of the generation capacity of 70 power plants. These energy savings translate to a GHG emissions reduction of 37 million metric tons, equal to removing 25 million vehicles from the road. ENERGY STAR also certifies buildings for energy efficiency and provides energy management strategies for business and government

agencies.

Buildings account for 40% of total energy use and about 35% of GHG emissions in the United States. Benchmarking is a tool offered through ENERGY STAR and enables an entity (business, school, government facility) to compare the general energy performance of a building against similar buildings in the region. The process yields a 1-100 score that is generally a function of how the building operates and what energy efficiency features are present. The score makes energy consumption information easy to grasp for building owners, operators, and tenants.

As part of City outreach to the business community, all businesses, particularly small businesses, will be invited to become ENERGY STAR partners. Partners have access to a wide range of resources, including energy guide books, technical assistance hotline, fact sheets, and public relations materials. To become a partner, businesses agree to buy ENERGY STAR-certified equipment and upgrade the energy efficiency of their facility whenever financially viable.

Conserve Water and Help Save Energy Too
⦿ (4 tons of CO2e per year)

The City of Kirkland is a member of the Cascade Water Alliance (Cascade) along with Bellevue, Covington Water District, Issaquah, Redmond, Sammamish Plateau Water and Sewer District, Skyway Water and Sewer District, and Tukwila. Cascade administers the regional water conservation program for its members. The program is built upon the premise that water is a valuable and essential natural resource that needs to be used wisely. Under the program, Kirkland's conservation goal, which is based on Kirkland's portion of Cascade's regional goal, is to initially achieve 15,000 gallons per day (gpd) in savings. The science of energy savings realized from conserving hot water is uncertain; however, the electricity required to transport, treat, and distribute water is known. According to the California Energy Commission, on average it takes 1,450 kWh per Million Gallons (MG) to deliver clean water to our homes.

Encourage Energy Efficient Behaviors
⦿ (reduction potential not yet known)

- Turn thermostat to 55° at night & when away – according to PSCAA, every degree the heat is turned down could reduce CO2e up to 350 pounds/year
- Turn off and unplug electronic equipment & lights when not in use
- Turn water heater down to 120°
- Inspect and tune furnace every two to three years (before the heating season starts), and clean or replace the air filters on your furnace every two months during the heating season
- Take shorter showers
- Wash clothes in cold water

Promote Energy Efficient Improvements
⦿ (reduction potential not yet known)

- Weather-seal windows, doors, ducts & plumbing
- Improve insulation in the attic, crawlspace & walls. Utilize PSE contractor referral service for pre-qualified contractors participating in the PSE's insulation rebate program.
- Change to compact fluorescent (CFL) bulbs – an ENERGY STAR-qualified CFL provides a reduction of 693 tons of CO2 over its life cycle and uses 75% less energy than and lasts up to 10 times longer compared to an incandescent

EFFORTS IN THE COMMUNITY

bulb.
- Choose energy efficient equipment and appliances (i.e. ENERGY STAR)
- Install programmable thermostats

Insulation

⊙ (reduction potential not yet known)

Insulation seems like an unexciting material but when installed properly, it requires no maintenance and does its job quietly for the life of the house. The amount of insulation in floors, walls and ceilings is a critical factor in determining your home's energy efficiency, and the amount you spend for heating. The amount of insulation in your home is often determined by the building or energy codes in place at the time it was built. Unless insulation has been added at a later date, many older homes do not have adequate insulation. It may lack the visibility and appeal of new windows or the mechanical sophistication of a new high efficiency furnace, but insulation can significantly reduce energy costs – an average of 15% - and greatly improve home comfort according to Puget Sound Energy.

Landscape Strategies

⊙ (reduction potential not yet known)

Utilize landscape strategies to reduce direct sun from striking and heating up building surfaces, prevent reflected light carrying heat into a house from the ground or other surfaces, reduce wind velocity which slows air to prevent heat loss, and provide shade created by trees to reduce air temperatures in the adjoining building and provide evaporative cooling. On average, according to the US Department of Energy, landscaping for energy efficiency provides enough energy savings to return an initial investment in less than eight years.

B. ACTION: REDUCE, REUSE, CONSERVE

One indicator for measuring success with solid waste and recycling programs is recycling diversion rate – the amount of solid waste that is recycled or reused instead of being sent to the landfill. According to PSCAA, every pound of material recycled rather than thrown away prevents 3 pounds of CO2e pollution. This calculation is used below in determining savings from recycling. To better determine actual savings after the inventory base year of 2005, staff calculated and counted savings for the difference in diverted tonnage between 2005 and 2008.

Single-Family Residential Recycling and Yard/Food Waste Recycling

⊙ (831 tons of CO2e per year)

Kirkland has one of the highest single-family diversion rates in King County. In 2008, single-family residents diverted 69% of their total solid waste stream through recycling and organics recycling each week. They disposed an average of 18.2 pounds of garbage per household per week and recycled an average of 40.5 lbs per household during 2008 (not including the 1.8 tons of electronics collected in the average month; electronics are collected separately from commingled recycling). The percentage of yard waste, which now includes food waste, diverted relative to other recyclables has increased from 30.2% to 57% since 2003. The residential food waste

outreach plan is to capitalize on the momentum of this popular program and to not only increase participation but also increase the amount of food waste recycled by current participants.

In 2005, single-family customers recycled 11,616 tons including food/yard waste and this increased by 277 tons to 11,893 tons in 2008 resulting in a savings of 831 tons of CO2e per year.

Multifamily Recycling
⊙ (630 tons of CO2e per year)

The multifamily recycling diversion rate for 2008 was 15.6% (up from 14.9% in 2007) and is a particular focus area for improvement. In 2005 multifamily residents recycled 1,454 tons and this increased by 210 tons to 1,664 tons in 2008 avoiding 630 tons of CO2e per year.

The City provides multi-family properties with assistance to improve their recycling through programs focusing on increased recycling capacity, convenience, and education. To expand the base for recycling, City of Kirkland will work with Waste Management to implement residential food waste recycling for multi-family residential units.

Commercial Recycling including Yard/Organics and Construction, Demolition, and Landclearing (CDL)
⊙ (5,382 tons of CO2e per year)

The diversion rate for businesses was 17.3% (up from 13.3% in 2007) although actual business rates are presumably higher because only Waste Management is required to report tonnage to the City, and businesses may recycle with any hauler they choose. In 2005, businesses diverted 2,326 tons from the landfill by recycling and this increased by 1,794 tons to 4,120 tons largely due to the addition of CDL and organics recycling.

Solid Waste Rates
⊙ (reduction potential not yet known)

For several years, the City has offered a solid waste rate structure that embeds the cost of recycling within its garbage rates. In so doing, all customers are provided with adequate weekly recycling capacity at no extra cost. Additionally, in 2009 the City adopted a rate structure in which the prices of the smaller residential cart sizes and commercial dumpsters have been lowered relative to the larger containers sizes which encourages customers to reduce their container, reduce waste, and continue to take advantage of the embedded recycling.

Consider decreasing frequency of garbage pick-up
⊙ (219 tons of CO2e per year)

Battery Recycling Receptacle at Peter Kirk Community Center

According to INFORM, Inc. (www.informinc.org), an average garbage truck gets less than 3 miles per gallon. Also, one gallon of diesel is equivalent to 22 lbs of carbon dioxide emissions. Currently, Waste Management drives about 119,536 miles annually within the City of Kirkland. To reduce the amount of vehicle emissions created from weekly garbage pick-up, staff could investigate decreasing pick-up frequency to every other week or work with our hauler to replace their diesel-powered fleet to CNG vehicles. A change in frequency to every other week reduces the vehicle miles traveled to about 59,768 miles annually, which provides for a reduction of 219 tons of CO2e per year.

Battery Recycling Program
⊙ (14.25 tons of CO2e per year)

A Battery Recycling Program was implemented in 2007 with drop-off locations at City Hall, the Maintenance Center, the Kirkland Library, North Kirkland Community Center, Peter Kirk Community Center, and the 505 Market Building. Approximately 9,500 lbs of batteries have been

collected through the end of 2008.

Encourage Contractors to Participate in CDL Recycling and Diversion
⊙ (348 tons of CO2e per year)

Construction and demolition waste accounts for approximately 40% of all municipal waste disposed of in the country. CDL debris results from construction, remodeling, repair or demolition of buildings, roads, or other structures. It includes, but is not limited to, wood, concrete, drywall, masonry, roofing, siding, structural metal, wire, insulation, asphalt, packaging materials related to construction or demolition and natural vegetation resulting from clearing land for development. According to Sustainable Sources, 8,000 lbs of waste are typically thrown into the landfill during the construction of a 2,000 square foot home.

From 2006 to 2008, an average of 143 new single-family residential homes was built annually. They are estimated to have produced 572 tons of CDL. The City of Kirkland will look to identify and implement education opportunities and potential incentives for contractors to participate in recycling or diverting CDL. Waste prevention activities not only reduce jobsite waste, but saves on disposal cost. King County's Green Tools Program has some publications we can utilize to educate and encourage contractors to participate. Assuming that the City was successful in getting 20% (29 homes based on the average built for the past three years) of the homes built to divert their construction waste, this would result in an avoidance of 348 tons of CO2e annually.

Strive for Zero Waste at Public Events
⊙ (reduction potential not yet known)

It's time to view our consumption as cradle-to-cradle instead of cradle-to-grave. According to Grassroots Recycling Network, "the system of consumption and wasting that drives our demand for raw materials creates an unsustainable demand on natural resources as well as an enormous environmental hazard on the disposal end."

The City of Kirkland can provide leadership and set an example for the community by holding zero waste public events and developing and implementing a program to obtain participation from local businesses.

C. ACTION: BE SMART COMMUTERS

In the Kirkland community and throughout the northwest, on-road gasoline and diesel consumption are the leading contributors to greenhouse gas emissions. According to the 2005 community inventory for Kirkland, on-road gasoline and diesel consumption emissions contributed to 46% of the total tons of CO2e – the highest of all sources. According to PSCAA, every gallon of gasoline reduced prevents roughly 20 pounds of CO2e emissions.

Kirkland has identified approaches to reducing emissions with an emphasis on commute trip reduction, transportation demand management, and community outreach.

EFFORTS IN THE COMMUNITY

FOR BUSINESSES:

Commute Trip Reduction/Transportation Management Program
⦿ (8,846 tons of CO2e per year)

Commute trip reduction programs in King County result in about 20,000 less vehicles on the road each day. The City of Kirkland adopted the Commute Trip Reduction Program originally in 1991. The goals of the program are to reduce traffic congestion, reduce air pollution, and petroleum consumption by encouraging commuters to bus, carpool, vanpool, bicycle, walk, or work compressed work weeks or flexible work schedules instead of driving alone to work everyday. The law currently requires major employers to provide employee transportation programs to encourage this shift.

To reduce drive-alone trips, office buildings with 50,000 square feet are required to have a Transportation Management Program (TMP) which the City helps employers establish. The City provides allowances for developers to lower the required parking if they implement Transportation Demand Management (TDM) programs. Additionally, the City assists small businesses in the implementation of a TDM program.

Covered bicycle parking is required throughout the city for all new development, with the exception of single-family residential uses. Bike lanes exist throughout Kirkland, and more are planned. City policy also encourages pedestrian-friendly urban design. Numerous pedestrian improvements have been and will be implemented including high-visibility flashing crosswalks, public art, streetscape amenities, and an integrated sidewalk and street network to facilitate easy and pleasant connections by foot.

In 2007, 3,160 employees participated in the CTR program and the average vehicle miles traveled was 12.48 each way. On a daily basis, the CTR program results in 78,874 fewer vehicle miles traveled. Over 240 days annually, 18,929,664 drive-alone vehicle miles are reduced. At an average of 21.4 mpg, 8,846 tons of CO2e are reduced as a result of the CTR program.

FOR CITIZENS:

Implement Active Transportation Plan
⦿ (reduction potential not yet known)

The Active Transportation Plan currently calls for the development of trails, reducing vehicle accident rates, adding sidewalks, improving safety for people crossing streets, increasing the number of children who walk to school, removing physical barriers to walking, improving on-street bicycle facilities, and adding programs that make bicycling more convenient.

Locally-grown produce sold at Kirkland Wednesday Market

Buy Local
⦿ (reduction potential not yet known)

According to Sustainable Table, the concept of buying local is simply to buy food (or any good or service) produced, grown, or raised as close to your home as possible. With industrialization, our food is now grown and processed in fewer and

fewer locations, meaning it has to travel further to reach the average consumer's refrigerator. Although this method of production is considered efficient and economically profitable for large agribusiness corporations, it is harmful to the environment, consumers, and rural communities as a tremendous amount of fossil fuels is used to transport foods such long distances.

Inexpensive oil will not last forever. The world's oil production has already peaked, according to some estimates, and while demand for energy continues to grow, supply will soon start dwindling, sending the price of energy through the roof. We'll be forced then to reevaluate our food systems and place more emphasis on energy efficient agricultural methods, like smaller-scale organic agriculture, and on local production where possible. But why wait? We can start by buying locally. In 2008, Kirkland utilized Community, Trade and Economic Development (CTED) funds to conduct a local economic sustainability study and used the feedback from the citizens and businesses surveyed to develop the Buy Local Program. The Program, to be launched in June, will be administered via a website which will offer an online business directory that customers can use to search for businesses, goods and services in addition to providing news about upcoming local events, sales, networking opportunities and workshops.

King County Metro In Motion Program

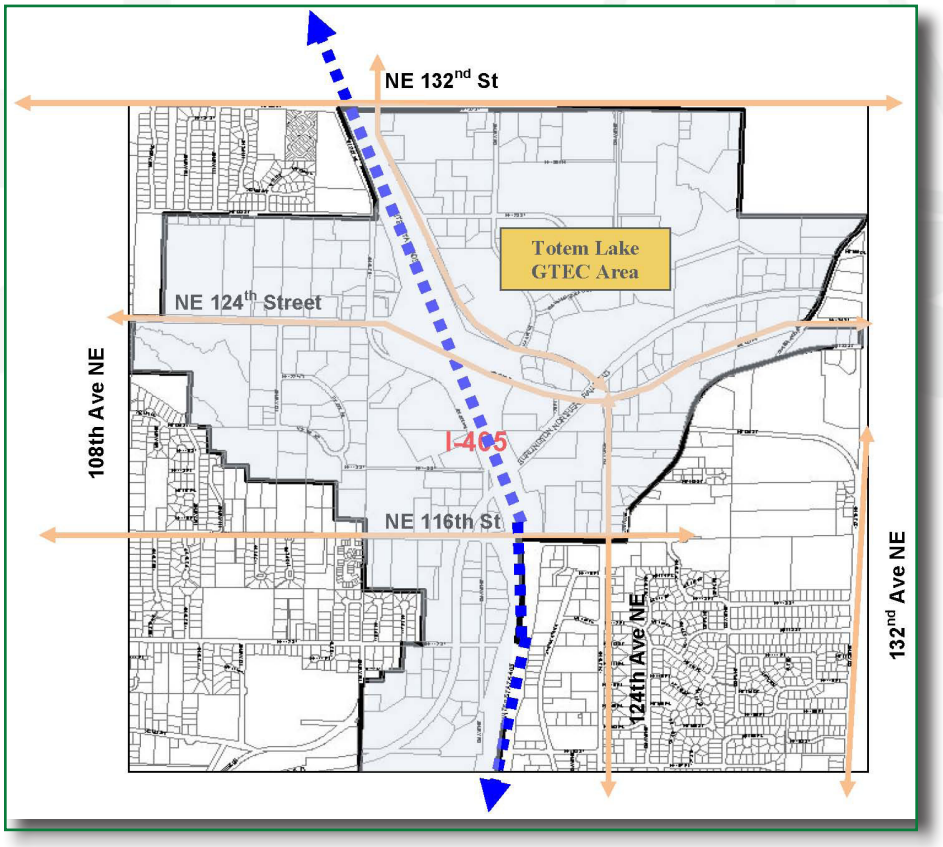


FIGURE 6: GTEC in Totem Lake

⊙ (reduction potential not yet known)
The In Motion program was designed to help individuals leave their cars at home — some of the time. It was built using the foundations of community-based social marketing: speaking to the motivations of local communities by providing information, getting action commitments, and offering prompts and incentives to encourage new, healthier travel behavior.

Average results for In Motion programs:
- Participation rates between 8% and 10% of the households contacted.
- Reported changes of 20% fewer drive-alone trips.
- Corresponding increases in busing, biking, ridesharing and walking.
- Increased openness to using alternative modes more often.

Save Money and Reduce Pollution: Anti-idling
⊙ (304 tons of CO2e per year)
Every gallon of gas you save not only helps your budget, it also keeps 20 pounds of carbon dioxide out of the atmosphere. If 2,000 Kirkland residents reduced unnecessary vehicle idling by 5 minutes a day for 365 days a year, the community could potentially see a reduction of carbon emissions of 304 tons of CO2e per year. (Calculation based on factors provided by U.S. Department of Energy's Fuel Economy Guide.) Unnecessary vehicle idling pollutes the air, wastes fuel, and causes excess engine wear.

- Air Pollution from idling vehicles can pollute the air in and around the vehicles.
- Exhaust from cars can also enter adjacent buildings through air intakes, doors, and open windows.
- Idling vehicles waste fuel and money. On average, a car will burn more than half a gallon of fuel for every hour spent idling. In general, 10 seconds of idling uses more fuel than restarting the car.
- Engine Wear-and-Tear. Vehicle engines do not need to idle more than a few minutes to warm up. In fact, extended idling causes engine damage.

Through its outreach efforts, the City will encourage anti-idling behaviors.

Growth and Transportation Efficiency Center (GTEC) in Totem Lake
⊙ (603 tons of CO2e per year)
The City has elected to designate the Totem Lake Neighborhood as a GTEC – see the map on page 32. The purpose of a Growth and Transportation Efficiency Center is to increase access to the neighborhood while reducing the number of drive alone trips. The goal is to reduce current single-occupancy vehicle rate of 85% to 76.5% and reduce current vehicle miles of travel (VMT) from 13.62 to 11.85 daily. If 2,000 vehicles reduced their current vehicle miles traveled (VMT) from 13.62 to 11.85, the community could potentially see a reduction of 1,292,100 VMTs annually (365 days), which translates into 603 tons of CO2e per year based on an average of 21.4 miles per gallon.

The GTEC program is a collection of jurisdiction-adopted goals and policies, facility and service improvements and marketing strategies about how the City will help make progress for reducing drive alone trips and vehicle miles traveled for the GTEC over the next six years (2014). Building upon the success of the existing commute trip reduction (CTR) program, the City strives to meet the goals of the plan for the future by working in partnership and coordination with other agencies.

D. ACTION: BUILD SUSTAINABLE COMMUNITIES
We all can think of a street, neighborhood, or public place that is unique or memorable, but what makes it special? What elements combine to produce a place that not only works for people in the community but rises far above the ordinary?

EFFORTS IN THE COMMUNITY

Managing growth, reducing traffic, creating sustainable development, and making smart transportation investments are the challenges we face today. The City of Kirkland is committed to developing a strategy and putting into action ways to address these issues and create a community that is livable, walkable, and sustainable.

Higher density is essential for creating lively places with lots of amenities. It allows for beautiful public spaces. Increased density greatly reduces driving, traffic congestion, and vast amounts of air pollution that come with it. Urban Village strategies include:

- Density – Compact Development
- Growth pattern – Infill (brownfield) development
- Land use – Mixed land use (i.e. Downtown and Juanita neighborhoods)
- Scale – Human scale. More detail, since people experience the landscape up close as pedestrians.
- Public services (shops, schools, parks) – Local, distributed, smaller. Accommodates walking access.
- Transportation – Multi-modal transportation and land use patterns that support walking, cycling and public transit.
- Connectivity – Highly connected roads, sidewalks and paths, allowing relatively direct travel by motorized and non-motorized modes.
- Street design – Streets designed to accommodate a variety of activities. Traffic calming.

Kirkland's Green Building Program
⊙ (29.6 tons of CO2e per year)

Kirkland's Green Building program offers a priority permit processing incentive designed to encourage sustainable building in the construction of new single family residential development. Additionally, the program offers educational resources and hosts seminars on green building topics to help educate builders, staff and the public about the benefits of sustainable building. On an ongoing basis, staff researches incentive programs and obstacles that may exist in the State or Local code. In addition, as part of Kirkland's review of building permits, staff checks for compliance with the 2003 Washington State Energy Code as mandated by the state. This is one of the strictest energy codes in the country with respect to building envelope requirements (insulation R-values, window and door U-factors), mechanical equipment efficiency requirements and allowed power consumption for lighting in non-residential buildings.

Kirkland's Green Building Program requires participating homes to achieve an ENERGY STAR certification. As a result, the construction of one home using green building design and construction along with an ENERGY STAR rating can keep 2,070 pounds of greenhouse gasses out of the environment each year. For reference, this reduction is the equivalent to driving 2,200 less vehicle miles or planting 200 trees (King County Green Tools 2007). From 2006 to 2008, an average of 143 new single-family residential homes was built annually. If the City were successful in encouraging 20% of these projects (29 homes) constructed under the Green Building Program, this would avoid 29.6 tons of CO2e per year.

The overall green building market (both non-residential and residential) is likely to more than double from today's $36-49 billion to $96-140 billion by 2013 (Source: McGraw Hill Construction (2009) and Green Outlook 2009: Trends Driving Change)

With Kirkland's Green Building Program, the City

expects the number of new residential and commercial building permits using some form of green certification (such as LEED® and Built Green™) to continue to increase by 2013 and beyond. Built Green is an environmental building program of the Master Builders Association of King and Snohomish Counties, developed in partnership with King County, Snohomish County, and other government agencies in Washington State. Built Green is designed to help homebuyers find quality, affordable homes that offer opportunities to protect the health of their families and the Northwest environment.

Table 1 exhibits the City of Kirkland's new single family permits received during the time period from 2000 through 2008. The Green Building Program was in pre-pilot mode in fall of 2007, and became a pilot program on January 1, 2008. In 2008, despite the housing market's downturn in new single family home permits which decreased by over 70% from the previous year, the number of certified Built Green™ projects remained steady.

Require LEED® and Built Green™ in all new building construction within City limits
⊙ (3994.6 tons of CO2e per year)
Buildings account for 40% of total energy use and about 35% of GHG emissions in the United States. Design and construction of new buildings, or major renovation of existing ones, provides an opportunity to implement energy saving measures that reduce GHG emissions. Green building design looks at buildings as a complete system to maximize health, comfort, and productivity of occupants while minimizing resource use for construction and operation. An example of the kind of savings possible by carefully considering the whole building system before construction is that windows, insulation, and lighting systems can be chosen to minimize the cooling load, allowing smaller cooling equipment to be used for savings in both capital and operations costs.

The US Green Building Council developed the LEED® certification system which is the nationally recognized standard for green building. Many cities and counties, as well as the State of Washington, have adopted laws requiring new construction or major renovation of public buildings follow LEED® standards.

LEED® certified buildings cost only about 2% more than equivalent non-green buildings, mostly for design costs, and that premium is decreasing as green building becomes more widespread.

Improving energy efficiency of buildings can help reduce criteria air pollutants by reducing energy use. Depending on the fuel sources of the local electrical grid, criteria air pollutants are reduced along with greenhouse gas emissions. Green construction materials help avoid volatile organic compounds (VOCs) emissions as well.

In addition to energy and water cost savings, there are significant paybacks from increased employee productivity and health. These projects can also serve as a good public education program. In addition to energy and water cost savings, there are significant paybacks from increased employee productivity and health. These projects can also serve as a good public education program.

EFFORTS IN THE COMMUNITY

Table 1 exhibits the City of Kirkland's new single family permits received during the time period from 2000 through 2008. The Green Building Program was in pre-pilot mode in fall of 2007, and became a pilot program on January 1, 2008. In 2008, despite the housing market's downturn in new single family home permits which decreased by over 70% from the previous year, the number of certified Built Green™ projects remained steady.

Built Green™ Homes	2000	2001	2002	2003	2004	2005	2006	2007	2008	Totals
3 Star (self certified)	1	0	3	4	4	6	15	2	0	35
4 Star (3rd part certified)	0	0	0	0	14	2	0	2	3	21
Total Built Green™ by year	1	0	3	4	18	8	15	4	3	56
Total NSFR by Year	134	143	103	151	201	254	211	170	49	1,416
% Built Green™	1%	0%	3%	3%	9%	3%	7%	2%	6%	4%

Table 1: Built Green™ Permits for new Single Family Residential Homes

In addition, since 2006 five projects within City limits have registered with the U.S. Green Building Council for future LEED® certification.

- Allied Health Building, Lake Washington Technical College – 55,186 sf
- City Hall Annex, City of Kirkland – 6050 sf
- The Campus at Kirkland, SRMKJV, LLC – 185,487 sf
- ParkPlace, Touchstone – 250,000 sf
- Weber Project, 4,900 sf

EFFORTS IN THE COMMUNITY

Plant more trees; Reduce heat island effect ⊙ (5,051 tons of CO2e per year)

Native trees are critical to environmental health. Trees improve air quality and reduce greenhouse gases, reduce erosion, filter pollutants, and shade creeks and streams, cooling water for threatened salmon. Additionally, they improve water quality and provide important wildlife habitat. When trees are planted as part of a broader energy efficiency program, a significant reduction in electricity and natural gas use can be realized. According to CitiesGoGreen.com, a newly planted tree does not truly begin offering ecological services until it has been in the ground and established for 7 to 10 years. Kirkland's tree inventory was last updated in 2007 and includes public trees in the right-of-way (ROW) only; it does not include trees on private property, in parks, new development, or all trees downed, removed or planted since the inventory was completed in 2007. A tree is generally not accepted as an established mature tree until its diameter reaches 6". According to the 2007 inventory, there are about 10,000 stand-alone trees in the ROW. There are an additional 913 groups of trees that on the average are estimated to have 5 trees per group (counted once in the 10,000 number already) for a total of 13,652 trees. Researchers have demonstrated that 100 healthy, mature trees remove 37 tons of carbon dioxide and 248 pounds of other pollutants annually (CitiesGoGreen.com). This results in a reduction of 5,051 tons of CO2e per year.

As urban areas develop, changes occur in the landscape. Buildings, roads, and other infrastructure replace open land and vegetation. Surfaces that were once permeable and moist become impermeable and dry. These changes cause urban regions to become warmer than their rural surroundings, forming an "island" of high temperature in the landscape.

Dark materials used on roofs and roads absorb heat during the day and hold it long after the sun sets. A decrease in vegetation to provide shade and cool the air compounds the heating effect. These are the primary factors that cause heat island effect. As a result, ground-level ozone concentrations increase because of the chemical reaction between car exhaust and heat – the more heat, the more ozone is produced.

Trees that are planted intentionally to shade buildings help to reduce heat island effect. Trees have the potential to produce other beneficial effects on emissions beyond shading. Trees properly planted with energy savings in mind can reduce the amount of energy (electricity, natural gas, or other fuel) used to cool and heat buildings. This not only reduces associated emissions, but also saves money. The shade from a single well-placed mature tree reduces annual air conditioning use two to eight percent (in the range of 40-300 kWh), and peak cooling demand two to ten percent (as much as 0.15-0.5 kW).

Tree-shaded asphalt is also a benefit as it encourages drivers to be more aware, lowers ambient air temperatures, extends the life of asphalt roads, and reduces hydro-carbon emissions from parked cars.

Finally, an increased number of trees planted in school walk zones provide shade to pedestrians. Science indicates that the more trees that are planted in planting strips increases the number of walkers. Because we spend so much time isolated in our cars and homes, we have little time

EFFORTS IN THE COMMUNITY

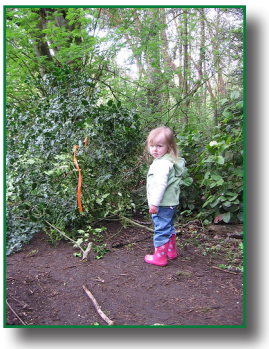
or opportunity for social contact, and the normal random meetings that take place while walking along pedestrian friendly streets and around public spaces. Because we spend more and more time stuck in traffic, we have less and less time for volunteering and getting involved in our communities.

Community Involvement and Education
⊙ (reduction potential not yet known)

The Public Works Department oversees public education and involvement efforts on an on-going basis, including production and distribution of a storm water newsletter, a storm drain stenciling program ("Dump no waste, drains to stream"), the salmon watcher program, and informal education of residents and business owners when storm water infractions occur. Also, a Green Home Remodeling Guide published by King County is available for homeowners. The Guide shows specific issues and strategies involved in environmentally-friendly home remodeling projects.

The City's internal Green Team also promotes sustainable building practices by posting notices about upcoming "green" events at the front counter. The Planning, Building, Public Works Departments work together to develop programs to support and promote sustainable "green" building practices.

The Parks and Community Services Department oversees the Green Kirkland Partnership. The mission of the Partnership is "to conserve and sustain natural areas for the benefit and enjoyment of current and future generations." The Partnership is guided by the City's 20-Year Forest Restoration Plan, which involves community volunteers to restore degraded natural areas back to sustainable health. Many different groups contribute to the Green Kirkland Partnership, each important to the future of the community's green spaces. These groups include the citizens of Kirkland, the City of Kirkland, park neighbors, Cascade Land Conservancy, EarthCorps, park visitors, and various corporate, youth, faith-based, and non-profit organizations.



The following is a summary of achievements since the Green Kirkland Partnership program began in 2005:

- Total number of acres in restoration: 17
- Total number of trees girdled/freed of invasive English ivy: 138
- Total number of native plants (including trees) planted: 2,340 (includes 808 trees
- Total number of invasive trees removed: 230
- Total Number of Volunteers: 2,780
- Total Number of Volunteer Hours: 8,349
- Total value of Volunteer Labor $160,975

GREEN KIRKLAND PARTNERSHIP

E. ACTION: CONDUCT BUSINESS SUSTAINABLY
⊙ (reduction potential not yet known)

36% of businesses renewing their licenses with the City of Kirkland indicate that they provide green goods and services and 83% have implemented green practices – primarily recycling. To recognize the efforts of these businesses and to encourage sustainable business practices, the City of Kirkland initiated its Green Business Program.

EFFORTS IN THE COMMUNITY

Qualified businesses receive a core program logo in the form of a window cling; an electronic file that can be used for corporate printed materials; and a listing on the participant recognition webpage, an opportunity to distinguish their business and promote their sustainable business practices. In addition to the "Kirkland Green Business" logo, eligible businesses can obtain logos for seven categories:

- Waste Reduction/Recycling
- Water Conservation
- Transportation/Commute Trip Reduction
- Pollution Prevention
- Green Building
- Energy Efficiency
- Green Power

In addition, as part of our Green Business Program, businesses can participate in the program and play a key role in reducing pollution, climate change, energy consumption, and traffic congestion. By participating, businesses are required to have 75% of their employees registered on Rideshare Online at www.rideshareonline.com and create a plan on how they would contribute to commute trip reduction in other ways.

THE ROLE OF STATE AND FEDERAL GOVERNMENT

SECTION 3: THE ROLE OF STATE AND FEDERAL GOVERNMENT

Local, state and federal governments provide incentives and regulations to encourage actions that will reduce greenhouse gas emissions. At the state level, the Climate Action Team (CAT) was established in 2007 as part of Governor Gregoire's Climate Change Challenge (www.ecy.wa.gov/climatechange). The CAT is a broad-based group of Washington business, academic, tribal, State and local government, labor, religious, and environmental leaders. This group worked throughout 2007 to create the "Comprehensive Climate Approach," defining 12 targeted areas and 45 sets of mitigation strategies that Washington could undertake to reduce greenhouse gas (GHG) emissions efficiently and effectively. The summary of the CAT recommendations is included as an attachment to this report (Exhibit 4).

The recommendations from the CAT fell into the following categories:

- Transportation
- Energy efficiency and green building
- Waste management
- State Environmental Policy Act

These recommendations are being pursued in the State Legislature and would be supportive to this Action Plan.

At the federal level, President Obama has a New Energy for America plan, which focuses on investments in clean energy, increasing the use of plug-in hybrid cars and implementation of a cap-and-trade program to reduce greenhouse gas emissions. This aggressive plan would ensure the federal government's support to fight climate change, which would help Kirkland reach local goals.

In addition to the President's plan, Congress passed the Energy Independence and Security Act of 2007 providing local governments with new opportunities to combat climate change. The law, as passed, included the following:

- Corporate Average Fuel Economy (CAFE). The law sets a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020.
- Renewable Fuels Standard (RFS). The law sets a modified standard that starts at 9.0 billion gallons in 2008 and rises to 36 billion gallons by 2022.
- Energy Efficiency Equipment Standards. The adopted bill includes a variety of new standards for lighting and for residential and commercial appliance equipment. The equipment includes residential refrigerators, freezers, refrigerator-freezers, metal halide lamps, and commercial walk-in coolers and freezers.
- Repeal of Oil and Gas Tax Incentives. The enacted law includes repeal of two tax subsidies in order to offset the estimated cost to implement the CAFE provision.

The law also includes a provision that creates a block grant program for cities and counties to institute programs to improve energy efficiency and reduce dependence on fossil fuels. Funding for the new Energy Efficiency and Conservation Block Grant (EECBG) program is authorized at $2 billion annually, 68% of which goes directly to local governments. This program was funded through the American Recovery and Reinvestment Act (ARRA) of 2009.

CONCLUSION AND NEXT STEPS

The ARRA also includes funding for a range of environmental programs including weatherization assistance and loans to promote energy innovation.

CONCLUSION AND NEXT STEPS

To determine Kirkland's progress in meeting its government operations and community reduction targets, staff will:

- Monitor progress on each of the efforts and measures the City has committed to in this Plan at least annually so that, as needed, program revisions and corrections are timely.

- Update the greenhouse gas inventory and provide progress reports:
  - For the Community every three years (2008 to be completed in 2010 when King County's data is available)
    For the Government operations annually.

- Compare the updated inventory with that of the base year's (2005) and determine how close the City is to the target reductions.

- Provide a progress report to internal staff, Directors, Council, and citizens to include the following:

  - Avoided emissions from energy efficiency improvements in City buildings, lighting, operations, and information technology as well as report on new technologies to be applied.
  - Improvements in diversion rates and recycling efforts in the community and the government operations.
  - Sustainable development in the community and government operations.
  - Efforts to make commuting and transportation more efficient in the community and government operations.
  - Actions taken to support the recommendations of the State's Climate Action Team to foster the success of this action plan in the community.
  - Highlight the City's outreach efforts with internal staff and in the community.

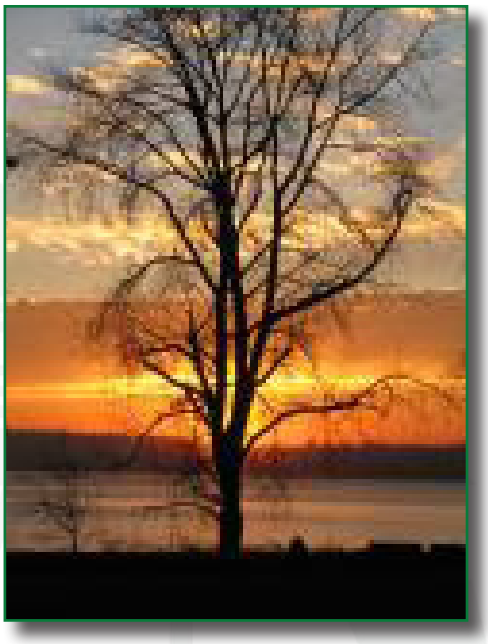


EXHIBIT 1

KIRKLAND COMMUNITY TONS CARBON DIOXIDE EQUIVALENT 1990 & 2005		
Tons CO2 Equivalent / 1990	**King County**	**Kirkand**
Power Purchases	1,824,794	50,919
Misc Diesel Nonroad and Rail	842,233	21,382
Gasoline Nonroad & Rec Boats	232,791	6,474
Ld Clearing, Wastes, and Building Burns	718,607	15,910
Petroleum Fossil Fuels Burning	4,820,967	134,987
Onroad Gasoline	9,681,028	387,241
Onroad Diesel	1,171,772	46,871
Electrical Distribution Transformer SF6	190,076	5,051
Total	19,482,269	668,835
Tons CO2 Equivalent / 2005	**King County**	**Kirkland**
Power Purchases	2,644,634	240,161
Fuel Burned in Large Industries	720,677	N/A
Misc Diesel Nonroad	621,544	18,026
Rail	94,860	2,018
Gasoline Recreational Boats	82,993	2,407
Diesel Recreational Boats	2,524	73
Gasoline Nonroad	317,460	9,207
Propane & Natural Gas Nonroad	199,026	5,772
Ld Clearing, Wastes, and Building Burns	95,929	2,782
Petroleum Fossil Fuels Burning	4,538,607	76,523
Onroad Gasoline	8,119,107	290,407
Onroad Diesel	2,217,017	79,299
Electrical Distribution Transformer SF6	114,881	3,332
OTHER (new in 2005):		
Onroad Propane Vehicles	7,763	278
Onroad Natural Gas Vehicles	120,992	4,328
Wood Fireplaces	20,458	593
Stoves & Inserts	20,867	605
Firelogs & Pellets	7,952	231
Nitrous Oxide Emitted from Soils	65,831	341
Methane from Natural Gas Distribution	259,795	7,535
Fuel Used But Not Burned	1,696,496	49,202
Other Industrial Processes	429,465	12,456
Beverages Manufacturing	17,266	501
Nitrous Oxide Emitted from Hospitals	28,697	832
Methane	287,346	8,334
TOTAL TONS	**22,732,187**	**815,242**

CLIMATE PROTECTION ACTION PLAN: EXHIBITS

EXHIBIT 1

KIRKLAND GOVERNMENT OPERATIONS CARBON DIOXIDE EQUIVALENT 2000 & 2005			
Total Carbon Dioxide Equivalent Emitted (tons)	**2000**	**2005**	**Change**
City Facilities - PSE bills for parks, fire stations, buildings	2684	2748	64
Fleet - fuel efficiency for City vehicles and equipment	1314	1395	81
Streetlights	601	651	50
Water/Sewage Lift Stations	101	79	-22
Solid Waste Sent to Landfill	115	203	175
TOTAL	4815	5163	348
Total Carbon Dioxide Equivalent Emitted (%)	**2000**	**2005**	**Change**
City Facilities - PSE bills for parks, fire stations, buildings	55.7	53.2	-2.5
Fleet - fuel efficiency for City vehicles and equipment	27.3	27	-0.3
Streetlights	12.5	12.6	0.1
Water/Sewage Lift Stations	2.1	1.5	-0.6
Solid Waste Sent to Landfill	2.4	5.6	3.2
TOTAL	100	100	-0.1

EXHIBIT 2
Resolution R-4591

RESOLUTION R-4591

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF KIRKLAND AUTHORIZING INTERNATIONAL COUNCIL FOR LOCAL ENVIRONMENTAL INITIATIVES (ICLEI) MEMBERSHIP & CITIES FOR CLIMATE PROTECTION® CAMPAIGN PARTICIPATION.

WHEREAS, scientific consensus has developed that CO_2 and other greenhouse gases released into the atmosphere have a profound effect on the Earth's climate; and

WHEREAS, in 2006 the U.S. National Climatic Data Center confirmed clear evidence of human influences on climate due to changes in greenhouse gases; and

WHEREAS, the U.S. Conference of Mayors endorsed the 2005 U.S. Mayors' Climate Protection Agreement initiated by Seattle Mayor Nickels and signed by 275 mayors in the United States as of July 2006 including the City of Kirkland's Mayor; and

WHEREAS, the Urban Environmental Accords adopted by local government delegates during UN World Environment Day 2005 call for reduced emissions through energy efficiency, land use and transportation planning, waste reduction, and wiser energy management; and

WHEREAS, in 2003 the American Geophysical Union adopted a Statement noting that human activities are increasingly altering the Earth's climate and that natural influences cannot explain the rapid increase in near-surface temperatures observed during the second half of the 20th century; and

WHEREAS, in 2001, at the request of the Administration, the National Academy of Sciences (NAS) reviewed and declared global warming a real problem caused in part by the actions of humankind; and

WHEREAS, the 2001 Third Assessment Report from the International Panel on Climate Change (IPCC) and the 2000 U.S. Global Change Research Program's (USGCRP) First National Assessment indicate that global warming has begun; and

WHEREAS, 162 countries including the United States pledged under the United Nations Framework Convention on Climate Change to reduce their greenhouse gas emissions; and

WHEREAS, energy consumption, specifically the burning of fossil fuels, accounts for more than 80% of U.S. greenhouse gas emissions; and

EXHIBIT 2
Resolution R-4591

R-4591

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 local government, its businesses, and its residents; and

WHEREAS, the Cities for Climate Protection® Campaign sponsored by ICLEI – Local Governments for Sustainability has invited the City of Kirkland to join ICLEI and become a partner in the Cities for Climate Protection Campaign.

NOW, THEREFORE, be it resolved by the City Council of the City of Kirkland as follows:

Section 1. The City Manager is hereby authorized and directed to join ICLEI, on behalf of the City of Kirkland, as a Full Member and 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.

Section 2. The City of Kirkland will undertake the Cities for Climate Protection Campaign's five milestones to reduce both greenhouse gas and air pollution emissions throughout the community, and specifically:

- Conduct a greenhouse gas emissions inventory and forecast to determine the source and quantity of greenhouse gas emissions in the City;
- 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;
- Implement the action plan; and
- Monitor and report progress.

Section 3. The City of Kirkland requests assistance from ICLEI's Cities for Climate Protection Campaign as it progresses through the milestones.

Passed by majority vote of the Kirkland City Council in open meeting this 5th day of September, 2006.

Signed in authentication thereof this 5th day of September, 2006.

MAYOR

Attest:

City Clerk

- 2 -

EXHIBIT 3
Resolution R-4659

RESOLUTION R 4659

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF KIRKLAND ADOPTING GREENHOUSE GAS REDUCTION TARGETS

WHEREAS, the City Council adopted the Natural Resource Management Plan on August 5, 2003 which contains the following Guiding Principles

> Natural resources are considered to be community assets that significantly affect the quality of life in Kirkland In fact, human survival is dependent upon healthy natural systems
>
> Natural resources exist in complex, interrelated systems that need to be managed comprehensively in order to maintain the viability of each

WHEREAS, scientific consensus has developed that carbon dioxide and other greenhouse gases released into the atmosphere have a profound effect on the Earth's climate, and

WHEREAS, in 2006 the U S National Climatic Data Center confirmed clear evidence of human influences on climate due to changes in greenhouse gases, and

WHEREAS, the U S Conference of Mayors endorsed the 2005 U S Mayors' Climate Protection Agreement initiated by Seattle Mayor Nickels and signed by 540 mayors in the United States as of June 2007 including the City of Kirkland's Mayor committing the City of Kirkland to its three main parts

a. We urge the federal government and state governments to enact policies and programs to meet or beat the target of reducing global warming pollution levels to 7 percent below 1990 levels by 2012, including efforts to reduce the United States' dependence on fossil fuels and accelerate the development of clean, economical energy resources and fuel-efficient technologies such as conservation, methane recovery for energy generation, waste to energy, wind and solar energy, fuel cells, efficient motor vehicles, and biofuels,

b. We urge the U S Congress to pass bipartisan greenhouse gas reduction legislation that includes 1) clear timetables and emissions limits and 2) a flexible, market-based system of tradable allowances among emitting industries, and

EXHIBIT 3
Resolution R-4659

c We will strive to meet or exceed Kyoto Protocol targets for reducing global warming pollution (reduce greenhouse gases to 7% below 1990 levels) by taking actions in our own operations and communities

WHEREAS, the City Council authorized staff to join International Council for Local Environmental Initiatives (ICLEI), on behalf of the City of Kirkland, as a Full Member and participate in the Cities for Climate Protection Campaign As a participant, the City of Kirkland pledged to take a leadership role in promoting public awareness about the causes and impacts of climate change by undertaking the Cities for Climate Protection Campaign's five milestones to reduce both greenhouse gas and air pollution emissions throughout the community, specifically

- Conduct a greenhouse gas emissions inventory and forecast to determine the source and quantity of greenhouse gas emissions in the City,
- 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,
- Implement the action plan, and
- Monitor and report progress

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 local government, its businesses, and its residents,

NOW, THEREFORE, be it resolved by the City Council of the City of Kirkland as follows

Section 1 The City of Kirkland hereby adopts the following Greenhouse Gas Reduction Targets

a Emissions 20% below 2005 levels by 2020 for both the Kirkland community and municipal operations with an interim goal of 10% below 2005 levels by 2012, and

b Emissions 80% below 2005 levels by 2050

Section 2 The Kirkland City Council directs staff to provide reports, at least biennially, outlining the greenhouse gas emission performance compared to set targets

Section 3 The Kirkland City Council directs staff to develop a long term action plan that will lead to the targeted reductions in greenhouse gas emissions for municipal operations and the community through capital investment, operational changes, program development and public outreach

EXHIBIT 3
Resolution R-4659

R-4659

Passed by majority vote of the Kirkland City Council in open meeting this 7th day of August, 2007

Signed in authentication thereof this 7th day of August, 2007

MAYOR

Attest

City Clerk

- 3

EXHIBIT 4
State's Climate Action Team Recommendations

DEPARTMENT OF ECOLOGY State of Washington

CTED | Community, Trade and Economic Development

Responding to the Climate Change Challenge **December 2008**

2008 Climate Action Team Recommendations

Proposed Policies to Reduce Greenhouse Gas Emissions

Strategies to reduce global warming pollution that will create jobs, stimulate the economy, and reduce our dependence on foreign oil

Overview

The Climate Action Team (CAT) was established in 2007 as part of Governor Gregoire's Climate Change Challenge. The CAT, a broad-based group of Washington business, academic, tribal, State and local government, labor, religious, and environmental leaders, worked throughout 2007 to create the "Comprehensive Climate Approach," defining 12 targeted areas and 45 sets of mitigation strategies that Washington could undertake to reduce greenhouse gas (GHG) emissions efficiently and effectively.

In 2008, the CAT refined their previous recommendations through Implementation Working Groups that focused on four areas:

- Transportation
- Energy efficiency and green building
- Waste management
- State Environmental Policy Act (SEPA)[1]

The final CAT report outlines twenty four strategies that will to continue to move Washington towards a low-carbon future, with an emphasis on the economic opportunities it holds for the state. Implementing some or all of these recommendations will create green economy jobs, develop new industries, and drive investment in Washington's economy. These strategies will also reduce GHG emissions in both the short- and long-term.

For a more detailed look at the CAT recommendations please see their full report at *http://www.ecy.wa.gov/climatechange/2008CATdocs/ltw_app_v2.pdf*.

Summary of recommendations

Energy Efficiency and Green Buildings – Efficiency improvements to the built environment

The recommendations include a set of actions aimed at improving energy efficiency and strengthening green building industries.

1. Establish incentive-based approaches to encourage energy efficiency.
    - Use Public Utility Tax (PUT) credits for non-residential buildings.
    - Expand the use of Local Improvement Districts to include energy efficiency.
    - Provide partial sales tax refunds for new and existing buildings that meet a high level of energy performance.
    - Offer tax and credit incentives to encourage development of combined heat and power and distributed energy systems.

Publication Number: 08-01-035

EXHIBIT 4
State's Climate Action Team Recommendations

2. Revise the Washington State Energy Code (WSEC) as part of the 2009 revision cycle to achieve 30 percent reductions in new building energy use relative to the 2006 edition of the WSEC. Also develop a long-term State Building Efficiency and Carbon Reduction Strategy that establishes specific targets for building energy use intensity for new buildings similar to the Architecture 2030 Challenge schedule to have net zero emissions from new buildings by 2030.
3. Upgrade the energy efficiency and develop and implement energy benchmarking and performance disclosure in existing, new, and renovated buildings.
    - Substantially upgrade the energy efficiency in existing, new, and renovated public buildings.
    - Establish an energy benchmark disclosure requirement for private buildings.

Beyond Waste – Reducing and recycling the next 50 percent

Washington now diverts about 48 percent of solid waste generated in the state to reuse, recycling and beneficial use applications. The following recommendations begin with setting a new state recycling goal of 80 percent. They then focus on ways to reach that goal by 2020. They build on the parts of the current waste management system that are working well and target products and organic materials with the largest potential to reduce GHG emissions.

1. Enhance the collection system for recyclable materials.
    - Require source separation of solid waste by residential and commercial generators into at least three categories: recyclable materials and products, organic materials, and residual solid wastes.
    - Require local governments to update their local comprehensive solid waste management plans, on a phased schedule. The update for small rural counties and small population areas is optional.
    - Provide the private sector with adequate financial and other incentives necessary to invest in the infrastructure needed to support this action.
2. Develop markets for organic materials diverted from landfills:
    - Encourage anaerobic digestion and compost land application by providing financial incentives through feed-in tariffs and wheeling provisions.
3. Develop an Environmentally Responsible Purchasing strategy for state and local governments:
    - Create an intergovernmental work group to evaluate the need for and recommend revisions to state purchasing practices to ensure that products and services used by state and local governments have the lowest possible environmental and carbon footprint.
4. Collaborate with retailers to voluntarily reduce the carbon footprint and waste from products and packaging they sell to consumers.

EXHIBIT 4
State's Climate Action Team Recommendations

Responding to the Climate Change Challenge **December 2008**

5. Create a Product Stewardship Framework designed to maximize producer engagement and private sector ingenuity, and to maximize outreach to and input from producers of potentially covered products:
    - Establish an advisory committee and product selection and rule-making processes to minimize the environmental and health impacts of products throughout all stages of their lifecycle, including GHG emission impacts.
    - Potential initial products include carpet, mercury-containing lighting and thermostats, paint, and rechargeable batteries.

Transportation – Reducing GHG emissions & increasing transportation choices for the future

Emissions from transportation account for nearly half of the state's total GHG emissions. The transportation recommendations include tools and best practices to achieve the vehicle miles traveled (VMT) reduction benchmarks outlined in E2SHB 2815.

1. Expand and enhance transit, rideshare, and commuter choice to enable users to make environmentally-friendly transportation choices:
    - Develop and enhance a Washington State Transportation Access Network, a deliberate and coordinated strategy to ensure a statewide approach to transit and provide affordable alternatives to a car-dependent lifestyle.
    - Enhance existing urban commute trip reduction and rideshare programs to expand the number of commute trips by vanpool, carpool, and telework, and implement compressed workweek schedules statewide.
    - Implement a Statewide Residential Trip Reduction Program to encourage all travelers, not just commuters, to travel in ways other than driving alone for their trips.
2. Encourage Compact and Transit Oriented Development:
    - Promote and support housing and employment density by:
        - Expanding the use of the Multi-Family Tax Exemption.
        - Adjusting grant criteria.
        - Establishing new revenue sources (tax credits, loans, revolving funds).
        - Identifying new finance mechanisms.
        - Leveraging public and private partnerships.
        - Conducting education and outreach.
    - Develop programs and provide incentives for "climate-friendly" parking management.
    - Encourage bicycle and pedestrian accessibility by adopting a policy based on the "Complete Streets" national movement.
    - Better enable Growth Management Act Transportation Concurrency provisions to address all modes of transportation.

EXHIBIT 4
State's Climate Action Team Recommendations

- Encourage urban brownfield redevelopment by augmenting the state's brownfield revolving loan fund to create opportunities for compact and transit-oriented development.

3. Use per capita VMT and GHG emissions reductions as criteria for funding and pursue new revenue sources.
   - Reexamine existing and proposed new investments to align the achievement of the VMT and GHG provisions of E2SHB 2815.
   - Pursue new revenue sources for transportation choices, particularly transit operations.
4. Use transportation pricing to reduce per capita VMT and GHG emissions, raise needed revenue, and manage the system for better efficiency and reliability. Implement use-based pricing strategies including: tolls, parking charges, and per capita VMT or gasoline taxes to fund alternatives such as transit, cycling, and walking, or provide an incentive to invest in a more efficient vehicle.
5. Pursue non-VMT actions to achieve additional GHG emissions reductions from the transportation sector:
   - Increase the use of rail for both the movement of passengers and freight.
   - Encourage GHG emissions reductions and fuel efficiency improvements in diesel engines.
   - Implement a package of transportation systems management strategies.
   - Accelerate deployment and commercialization of Plug-In Hybrid Electric Vehicles (PHEVs) and Electric Vehicles.
   - Using the work being done in California, Ecology, CTED, WSDOT, and other affected agencies seek resources from the 2010 Legislature to evaluate and implement a Low Carbon Fuel Standard (LCFS) requirement appropriate for Washington.

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[1] SEPA recommendations are summarized in Ecology publication 08-01-036.

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APPENDIX 1
Climate Protection Ideas for 2050

The City of Kirkland's long-term greenhouse gas reduction goal for 2050 is to achieve 80% below 2007 inventory levels for the government and in the community. Achieving the 2050 goal will require aggressive action on energy, buildings, land use, transportation, consumption, solid waste, food and many other areas. Below is a list of ideas that staff considered.

Community

- Vehicle registration based on miles
- Lobby for tolls on 520
- Partner with Metro for increased transit service
- Convenient alternate fuel availability
- Charging stations for electric cars
- Allow small-scale neighborhood retail and personal services within residential neighborhoods
- Facilitate infill development to ensure that land is used in the most efficient manner possible
- Support home-based businesses that are compatible with the neighborhood character
- Encourage clusters of complementary businesses
- Create long-term roadmap for achieving a one-planet footprint (e.g. incorporate basic principles of "One Planet Living" in ordinances (zero carbon, zero waste, sustainable transport, local and sustainable materials, local and sustainable food, sustainable water, natural habitat/wildlife, equity and fair trade, health and happiness))

Government

- Increase flex schedule option for employees
- Cisterns for truck washing, irrigating, toilet flushing
- Allocate a set percentage of the capital improvement budget for major transportation projects to fund bicycle and pedestrian projects.

APPENDIX 2
Communications and Outreach Plan

Communications and Outreach Plan

This Communications Plan is a component of the City's Climate Protection Action Plan and is intended to guide the City's efforts in educating the public, schools, other jurisdictions, professional associations, businesses and industry about greenhouse gas reduction. Much of the City's education efforts will be implemented using existing communications tools and coordinated with current federal, state and local campaigns.

The City of Kirkland recognizes that a key strategy in reducing greenhouse gas emissions will be public education and citizen engagement. The City's challenge is to engage the community in understanding how personal choices make a difference in climate change – for the better and for the worse. Homeowners, business owners, employees, individuals and others will need to be able to see where the challenge of climate change presents opportunities for new technologies, new jobs, and economic prosperity for all, including society's more disadvantaged populations (Washington State Dept. of Ecology, Framework for Citizen Engagement (12/21/07).

The City is committed to providing information and data that will enable the public and businesses to make carbon-efficient choices. The City acknowledges that "carbon neutral" living is a deliberate lifestyle choice for some residents and not so for many others – and that messaging will need to take this into account. Also, because the City has taken its own initiatives to reduce greenhouse gas emissions, its messages to the public will have credibility.

Communications Goals

- Achieve a dual role of raising awareness of the urgent need to reduce greenhouse gas emissions and of providing information on greenhouse gas emissions associated with daily choices
- Encourage residents, businesses and institutions to reduce greenhouse gas emissions and provide tools to help them attain reductions in their daily lives
- Involve and inform City of Kirkland elected and appointed officials and employees about policies & procedures related to the City's climate protection efforts
- Integrate and implement communications strategies with relevant local and national education campaigns, programs and activities
- Publicize and recognize the accomplishments of the City's and community's greenhouse gas emissions reduction efforts
- Implement communications strategies (see below) that will be sustained over an extended period of time

Communications Strategies

- Engage Kirkland community stakeholders in policy-making where appropriate
- Develop key messages that explain the effects of greenhouse gas emissions and that encourage daily life choices that will reduce individual carbon footprints
- Conduct surveys to gauge awareness and create outreach and education campaigns to enhance awareness
- Use existing City communications methods and education programs to promote greenhouse gas emission reductions
- Seek advertising funding and partnership opportunities

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Target Audiences

Internal:

- Kirkland City Council
- Department Directors & Managers
- Employees
- Boards and Commissions
- Green Teams

External:

- Individual residents and employees
- Neighborhood associations
- Business community
- Health care and education institutions
- Vendors/Suppliers
- Faith community
- Environmental organizations
- Builders and developers
- Professional associations
- Government agencies
- Non-government organizations
- Media
- Youth organizations

Partners:

- International Council on Local Environmental Initiatives (ICLEI) (http://www.iclei.org/)
- Puget Sound Clean Air Agency (http://www.pscleanair.org/)
- Puget Sound Clean Cities Coalition (http://pugetsoundcleancities.org/)
- King County (http://www.kingcounty.gov/exec/globalwarming/)
- Washington Dept. of Ecology (http://www.ecy.wa.gov/climatechange/index.htm)
- Washington Dept. of Community Trade & Economic Development (http://www.cted.wa.gov/)
- Kirkland Business Associations (Chamber of Commerce, Kirkland Downtown Association, Kirkland Business Association, Kirkland Business Roundtable)
- Kirkland Major Employers (Evergreen Hospital, Google, Costco)
- Sustainable Kirkland/Sustainable Communities ALL Over Puget Sound (SCALLOPS) (http://www.sustainablekirkland.org/)
- Energy providers (Puget Sound Energy)
- ENERGY STAR Partnership (http://www.energystar.gov/)
- Educational institutions (Lake Washington Technical College, Lake Washington School District, Northwest University)
- City of Kirkland Green Team

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Public Education Messages

The City's public education messages will address:

- What are climate change and the greenhouse effect?
- What can be done in Kirkland to protect the climate?
  - Energy Efficiency
  - Commuting & Transportation
  - Waste Reduction & Conservation
  - Sustainable Development
- How is the City of Kirkland reducing its greenhouse gas emissions?
- How is the Kirkland community reducing its greenhouse gas emissions?

Outreach Programs

Existing education and outreach programs will be leveraged and could be enhanced to promote the key public education messages:

- **Kirkland Green Program:** The citywide initiative for the City of Kirkland organization that encourages sustainable practices within the workplace and in the community. A primary outreach tool for the program is the Kirkland Green website, an informational webpage (www.ci.kirkland.wa.us/kirklandgreen) created as a central source for the City's sustainability initiatives. In a partnership with the City, the Earth Lab Foundation customized a carbon calculator for Kirkland which is posted on the City's website at www.ci.kirkland.wa.us and enter Kirkland Green in the search box.
- **Reuse/Recycle/Conserve Newsletter:** The biannual citizen newsletter focuses on recycling and solid waste reduction, water conservation, energy efficiency, and surface water stewardship providing useful resources, tips and ideas to residents and the business community.
- **Green Tips:** A presentation typically held at the first City Council meeting of each month that offers information on "living green" in Kirkland. The City Council meetings are broadcast live on Comcast Ch. 21 and available as archives on the City's website (www.ci.kirkland.wa.us/depart/council/Watch_Council_Meetings.htm). Video links are available on the Kirkland Green website.
- **Kirkland Green E-Updates:** A monthly email newsletter distributed to subscribers. Information on "green" happenings in and around Kirkland, tips on sustainable living, and information regarding volunteer opportunities for habitat restoration are included in the newsletter.
  - **For consideration:** Create a blog website as a place for individuals to post comments about a particular "green" topic.
    - **Resources:** Dedicated staff time will be required to maintain this. Until the City adopts a formal policy on blogs, this idea will not be instituted.
- **KGOV & KLIFE:** The City's government access channels often broadcast information associated with the City's "green" initiatives.
  - **For consideration:** Create a television production dedicated to climate protection or integrate stories and updates into the monthly Currently Kirkland magazine show.

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Communications and Outreach Plan

- **Resources:** Depending on the type of production, funding may be needed to create a standalone piece.

- **Public Presentations:** City representatives are often invited to speak at neighborhood and business association meetings about the City's sustainability programs. The City's Green Building Team is active in presenting educational forums and workshops on sustainable development.

  - **For consideration:** Establish and train a Kirkland Green Speaker's Bureau whose members will present information about the City of Kirkland's Climate Action Plan efforts and results.

    - **Resources:** Staff will need to seek out opportunities and schedule presentations.

  - **For consideration:** Continue to partner with other agencies and the private sector to host educational programs for the government, industry professionals, and the general public.

    - **Resources:** City facilities are typically used to host these events and speakers are often willing to present at no charge.

- **Community Events:** The City often participates in community events and activities to promote sustainable living and to provide information and tools. In 2007 and 2008, the Greater Kirkland Chamber of Commerce, with support from the City of Kirkland, hosted Sustainable September, a "green learning month" that offered continuing education courses, tours and an expo. It is anticipated that the City will participate in future Sustainable September events.

  As part of its 2008 Summer "Outdoor Movies at the Beach" event, the City hosted "Green Flix" – the viewing of short films with an environmental message.

  - **For consideration:** Host a viewing of "An Inconvenient Truth" and other "green flix" at the City's Outdoor Movie at the Beach.

    - **Resources:** Costs will depend on the length of film.

  - **For consideration:** Promote and possibly participate in national, regional and local public participation events (e.g. National Conversation on Climate Action)

- **City Publications/Printed Materials:** The City produces publications that reach a wide range of readers and target populations. The City's "Did You Know?" and "Water Conservation Tip" graphics offer targeted messages about how to reduce waste and conserve water. They are often printed in the City's newsletter, City Update.

  - **For consideration:** Create climate protection-themed graphics.

    - **Resources:** Staff to develop artwork.

- **Community Engagement:** In years past, the City has hosted World GIS Day that engages local youth in learning about City operations and its GIS program. Due to funding limitations, it is not certain that GIS Day will be held in 2009 or 2010.

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Communications and Outreach Plan

- **For consideration:** If the City hosts GIS Day in conjunction with National GIS Day (November), the topic of climate protection could be integrated into the day's learning objectives.

    - **Resources:** If the City hosts GIS Day, staff planning committees and the Green Team can work together to incorporate a Climate Protection theme into events.

Other community engagement opportunities include:

- Promote and possibly participate in national, regional and local public participation events (e.g. National Conversation on Climate Action)

- **Media Relations:** The City often issues news releases about new sustainability programs and efforts.

- **Internal Communications & Education**

Green Scene: An informational portal on the City's Intranet and a central source of information for City employees about green initiatives that impact City operations. (http://srv-portal02/SiteDirectory/Greenscene/default.aspx)

In-house recycling program: A program that provides City employees with opportunities to divert recyclables and food scraps from the waste stream.

Waste Reduction Tips: These biweekly tips, posted on Kirknet, provide City employees with ideas on how to reduce waste in the workplace and in their daily lives.

Zero Waste Events: Staff has developed event planning guidelines to assist with weighing options that balance cost and waste with the goal of producing the least amount of waste.

Opportunities to enhance outreach and education efforts can be accomplished with communications funding. Due to limited city funding, the City would most likely have to seek private sponsorship and/or grants to offer more public education. Some ideas to consider include:

- Kid's Learning Opportunities
    - On-line game
    - Recycled art show/competition
    - In-school presentations
    - Public service announcement production contest
- Opinion Survey
    - Survey homeowners and businesses about their climate protection behaviors and practices
- Employee Education Campaign
    - Department/Employee recognition and competition for waste reduction
- Marketing/Advertising funding
    - Seek sponsorship funding to support paid advertising for community events, seminars and programs
    - Seek volunteer professional consultant to create marketing materials
    - Participate in Puget Sound Clean Air Agency and ENERGY STAR education campaigns

CLIMATE PROTECTION ACTION PLAN: GLOSSARY AND REFERENCES

Carbon Dioxide (CO2) or Carbon Dioxide Equivalent (CO2e)

Carbon dioxide (CO2), essential to living systems is emitted in a number of ways. It is emitted naturally through the carbon cycle (animal respiration, organic decay) and through human activities like the burning of fossil fuels. It is removed from the atmosphere by photosynthesis in green plants. Natural sources of CO2 occur within the carbon cycle where billions of tons of atmospheric CO2 are removed from the atmosphere by oceans and growing plants, also known as 'sinks,' and are emitted back into the atmosphere annually through natural processes also known as 'sources.' When in balance, the total carbon dioxide emissions and removals from the entire carbon cycle are roughly equal. Since the Industrial Revolution in the 1700's, human activities, such as the burning of oil, coal and gas, and deforestation, have increased CO2 concentrations in the atmosphere. In 2005, global atmospheric concentrations of CO2 were 35% higher than they were before the Industrial Revolution. (U.S. Environmental Protection Agency)

Criteria Air Pollutants

Six commonly found air pollutants that the Clean Air Act requires EPA to set National Ambient Air Quality Standards. They are particle pollution (often referred to as particulate matter), ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead. These pollutants can harm your health and the environment, and cause property damage. Of the six pollutants, particle pollution and ground-level ozone are the most widespread health threats. EPA calls these pollutants "criteria" air pollutants because it regulates them by developing human health-based and/or environmentally-based criteria (science-based guidelines) for setting permissible levels.

Volatile Organic Compounds (VOCs)

The United States Environmental Protection Agency (EPA) defines a VOC as any organic compound that participates in a photoreaction. Other definitions are not so broad and define VOCs as organic chemical compounds that have high enough vapor pressures under normal conditions to significantly vaporize and enter the atmosphere.

Vehicle Miles Traveled (VMT)

Vehicle miles traveled (VMT) is a standard measure of vehicular traffic in a community. A VMT is created when a single vehicle travels one mile (regardless of the number of passengers). If one vehicle travels 10,000 miles and a second vehicle travels 5,000 Miles, there is a total of 15,000 VMT. Annual per capita values are typically in the range of 6,000 –10,000 VMT, so that total VMT for a community of 100,000 will typically be in the range 600 million to 1 billion VMT per year.

References

Environmental Protection Agency website
Intergovernmental Panel on Climate Change
Puget Sound Energy's All About Insulating Your Home
Sustainable Sources