City of Kirkland – Governmental Operations

Climate Protection Action Plan
Progress Report IV

November, 2013

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Background

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, since named the Green 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.
- In 2006, Council authorized Kirkland's membership to ICLEI – Local Governments for Sustainability.
- In 2008, Council adopted the staff-recommended greenhouse gas reduction targets via resolution. 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
- In 2009, Council adopted the Climate Protection Action Plan proposed by staff to achieve the reduction targets. To determine Kirkland's progress in meeting its government operations and community reduction targets, staff committed to the following:

    - 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 for government operations annually.

    - Update the greenhouse gas inventory every 3 years for the community.*****

    - 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.*

- *This fourth annual report provides an update for the year 2012 for governmental operations.*

** King County's base inventory was utilized to arrive at Kirkland's community inventory for the base year 2005. In July, 2011, the City of Kirkland annexed the Juanita, Finn Hill, and Kingsgate neighborhoods nearly doubling our population. With annexation, Kirkland population increased from almost 49,000 to 80,000 and our land area increased from 11 square miles to 18 square miles. Staff is currently working with the County to discuss aligning our community inventory with the County's and to determine how to factor in the annexation and arrive at a new baseline inventory and/or modify the reduction targets if needed. Staff is also consulting with King County and other agencies to review the methodology that will allow for regional comparisons of emissions inventories. Therefore, a community report is not available at this time.*

2012 Greenhouse Gas Emissions Inventory – Governmental Operations

As shown in Figure 1, the greenhouse gas emissions inventory for government operations decreased by approximately 10% from 2005 to 2012. This was largely a result of the 63% higher emissions from fleet and 38% higher emissions generated by streetlights and signals being offset by the reduction in emissions through the purchase of Green Power, food waste recycling, using paper products made from recycled-content, and the commute trip reduction program. The reduction in emissions for 2012 is something to be proud of since annexation occurred in July, 2011 and nearly doubled the population of Kirkland with the assumption of the Juanita, Finn Hill, and Kingsgate neighborhoods.

The main sources of greenhouse gases in Kirkland's governmental operations inventory for 2012 were fuel utilized by fleet (48%) and energy utilized by signals and streetlights (37%) as shown in Figure 2.

Did we meet our goal? YES, for government operations!
In 2008, Council adopted the staff-recommended greenhouse gas reduction targets via resolution. The target reductions were the same for both the community as well as government operations. (Staff is working with King County to determine how to account for annexation and to arrive at methodology that will allow for regional comparisons. Therefore, a community report is not available at this time.) The reduction targets are:

- *Primary: 20% below 2005 levels by 2020*
- ***Interim: 10% below 2005 levels by 2012 – we met our goal for operations!***
- *Long-term: 80% below 2005 levels by 2050*

Figure 3 shows that we met our Interim goal for *operations*. It also shows what our Primary and Long-term reduction goals are.

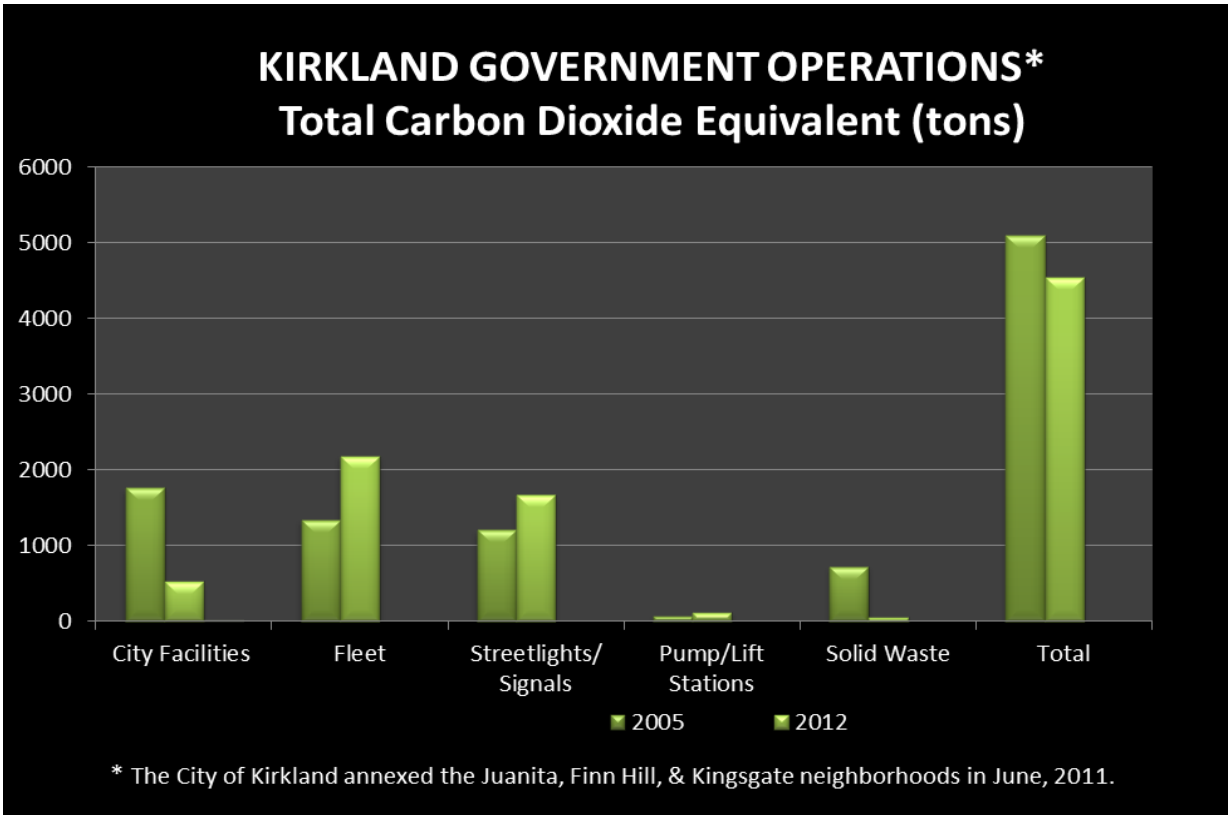

Figure 1

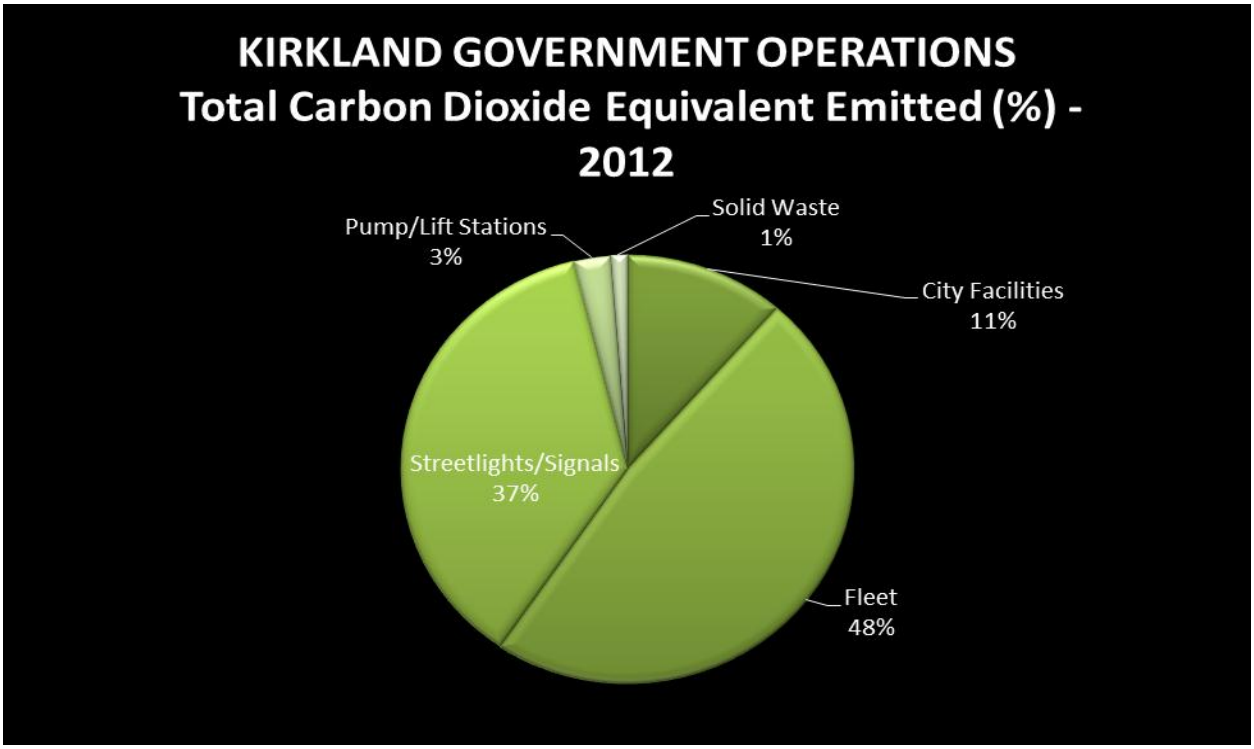

Figure 2

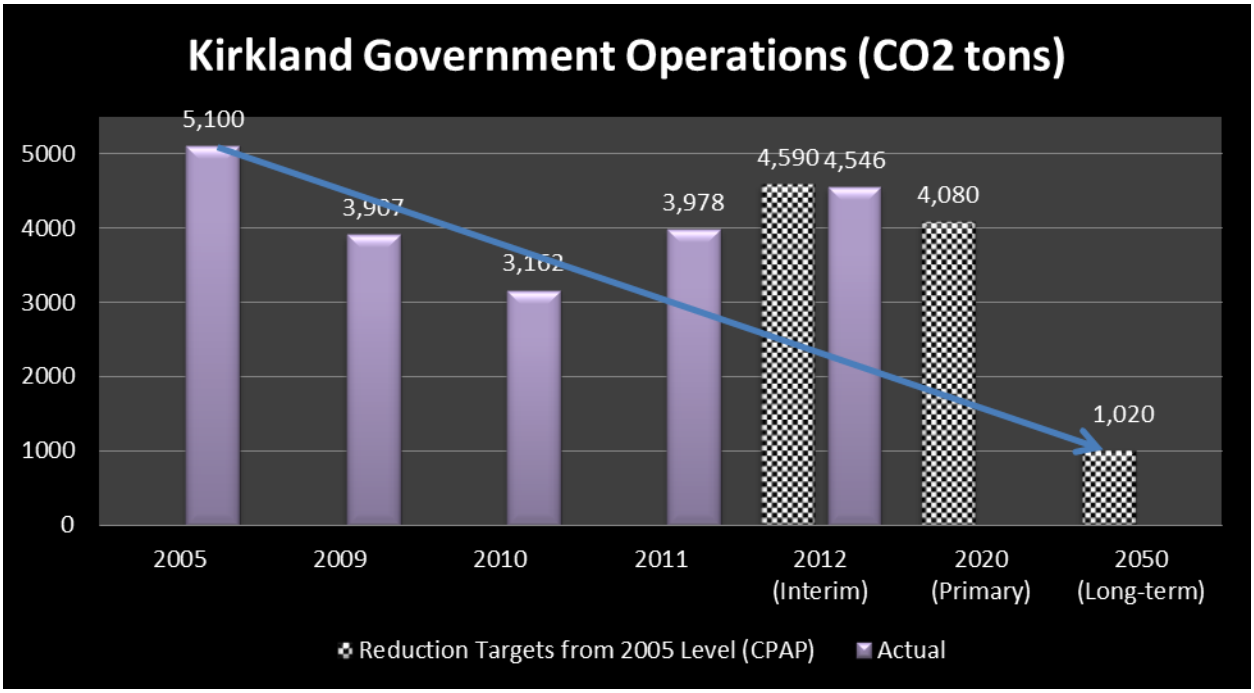
Kirkland Government Operations (CO2 tons)
5,100
3,907
3,162
3,978
4,590
4,546
4,080
1,020
5000
4000
3000
2000
1000
0
2005
2009
2010
2011
2012 (Interim)
2020 (Primary)
2050 (Long-term)
Reduction Targets from 2005 Level (CPAP)
Actual

Figure 3

Kirkland's efforts in reducing emissions in government operations were focused in the areas of:

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

A. ACTION: REDUCE ENERGY CONSUMPTION

According to the 2012 City government operations inventory, electricity and natural gas consumption from operating City buildings, traffic signals, street lights, and lift stations contributed approximately 51% of the total tons of CO_2e generated by governmental operations. Efforts to reduce emissions from energy consumption in governmental operations include a combination of hardware retrofits and outreach to staff.

Energy Efficiency Through Building Improvements, Purchasing Decisions, and Behaviors (200 tons of CO_2e per year as a result of reduced energy consumption)
The Facilities Services Team continues to seek efficiency in resource management through building improvements, hardware retrofits, purchasing decisions, and changing behaviors. Energy efficient behaviors include discouraging staff use of personal appliances (i.e. heaters, refrigerators), encouraging turning off or unplugging electronic equipment, and turning off computers and lights when leaving a room.

A comparison of energy consumption at City buildings and fire stations showed that tons of CO_2e decreased 15% (258 tons) from 2005 to 2012.

- City Hall was entered in Puget Sound Energy's (PSE) Simplified Building Tune-up Program and the resulting recommendations were implemented. The Program involves working with a PSE consultant in all phases from conducting a building survey and an energy baseline to making recommendations and supporting project implementation.
- Through the Washington State Department of Enterprise Services, we conducted an energy audit of all City-owned buildings maintained by Facilities. A grant application was submitted in January, 2013 for the 2012 Energy Efficiency Grants for Higher Education and Local Governments to allow us to perform energy conservation upgrades that would not be addressed through maintenance and lifecycle replacement.

Dell Desktop Personal Computers, Flat Screen LCD Monitors, Surveyor® PC Power Management Software – (143 tons of CO_2e per year)
The City's use of ENERGY STAR PCs, flat panel liquid crystal display (LCD) monitors, and power management software results in a savings of 143 tons of CO_2e annually.

**Purchase Green Power (981 tons of CO_2e per year)*
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 (1,540,008 gkWh) in 2012 avoided 981 tons of CO_2e per year.

Energy Efficient Traffic Signals and Pedestrian Indicators (330 tons of CO_2e per year)
Taking advantage of rebates available through Puget Sound Energy and funding made available by the American Recovery and Reinvestment Act of 2009 (ARRA), the City retrofitted 411 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 117 watts per signal or indicator at 24 hours a day 365 days a year, the 90% energy savings per signal is 1024.92 kWh per signal resulting in a savings of 727,693 kWh for the remaining 710 signals and equivalent to an annual reduction of 330 tons of CO_2e.

The remaining 710 LED signals and indicators purchased with ARRA funding were retrofitted in 2012.

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 closing 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 showed that solid waste sent to the landfill contributed about 14% to total CO_2e in 2005 and that decreased to 1% in 2012. This is a result of further reducing container size and frequency of pick-up Citywide, increasing wood and metal recycling at the maintenance yard, and a constant focus on outreach to internal staff.

**Recycled Content (23.8 tons of CO_2e 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 2005 inventory showed that the City uses 69 tons of minimum 30% recycled-content copy paper of various sizes and colors annually. The Environmental Defense Fund Paper Calculator estimated that 69 tons of 30% recycled-content paper results in 174 tons CO_2e and requires 1,159 trees to produce vs. virgin paper which results in 196 tons CO_2e and requires 1,656 trees to produce – a savings of 22 tons of CO_2e with the use of 30% recycled-content paper. Our copy paper use (2011 data) showed that we used 20.75 tons of 40% recycled-content paper, 22.56 tons of 30%, and about 0.1 of 50% recycled-content paper. The Calculator estimates that this results in the use of 679 trees and 106 tons of CO_2e vs. virgin paper which would use 1,042 trees and 122 tons of CO_2e – a savings of 363 trees and 16 tons of CO_2e.

In 2012, the 5.2 tons of paper towels and toilet paper used in City facilities were made from 40% post-consumer wastepaper. This resulted in a savings of an estimated 21,320 kWh of energy, 36,400 gallons of water, and 312 pounds of air pollutants (Green Seal's Choose Green Report - Bathroom Tissue and Paper Towels, March 2004). In addition, 7.28 tons of CO2 was saved (Cool Planet website, 2009).

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. Staff is encouraged to bring their own utensils and mugs to meetings and holiday events for example.

**Food Waste Recycling (225 tons of CO_2e per year)*
Food waste recycling has expanded to City Hall, the Public Works and Parks Maintenance Centers, the Municipal Court, Peter Kirk and North Kirkland Community Centers, and Fire Stations 21, 22, and 26. In 2012, the program diverted about 75 tons of food waste and compostable materials from the landfill. According to PSCAA, every pound of waste that goes into the landfill creates 3 lbs of CO_2e pollution. Food waste recycling service saved 225 tons of CO_2e per year and should be extended to all City facilities, where practical.

C. ACTION: ENCOURAGE ALTERNATIVE COMMUTE OPTIONS

**Commute Trip Reduction (CTR) Program (90.4 tons of CO_2e per year)*
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 since 2009)
- Provide employees that carpool, walk, bike or use transit more than 30% of the time up to $30 per month

- 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

Using the information for 2011, 79 City employees continued to participate in the CTR Program and at an average of 23 miles commute round trip vehicle miles travelled per person at 2 times per week, 180,752 miles of driving were reduced. Using the methodology below for bicyclists, with 1 lb of CO_2e being eliminated for every mile not driven, this results in a savings of 90.4 tons of CO_2e.

**Bike to Work Month*
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. In 2011, there was no City group organized for the Bike to Work Month Commute Challenge.

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

According to the 2012 inventory, City automobiles and trucks contributed 48% of the total tons of CO_2e generated by governmental operations. Emissions from vehicles are the most polluting source in City government after energy consumption from streetlights and signals. 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 (23.5 tons of CO_2e 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. With the addition of 3 more hybrid vehicles in 2011, the City's fleet now includes 21 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 CO_2e per year due to the use of hydropower and wind power within Puget Sound Energy's portfolio, a biodiesel (B99) vehicle which reduces 19 lbs of CO_2e per gallon of fuel than its gasoline counterpart, according to the Puget Sound Green Fleets Guide, a biodiesel-fueled lawn mower which emits 50% of the emissions of a gasoline mower, and a Public Grounds Walk-Behind Mower converted to propane, reducing emissions by 80% from a gasoline mower.

The City continues to be 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.

Keeping Proper Tire Pressure on All City Vehicles (40 tons of CO_2e 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. Fleet staff ensure that all vehicles have tire pressure gauges available.

Save Money and Reduce Pollution: Launch an anti-idling message (10 tons of CO_2e 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 CO_2e 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 conveyed the anti-idling message at Public Works and Parks staff meetings and Directors' meetings. Other staff includes this message at preconstruction meetings with private developers and contractors doing business within 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. A pilot program was completed in 2009, and final changes were adopted. The Evergreen Fleets program is now

"owned" and administered by the Puget Sound Clean Air Agency. Membership was opened to any interested fleet, public or private. Membership currently stands at 85, with some participating fleets as far away as Alabama.

An integral part of the Evergreen Fleets Standard provides for voluntary reporting of greenhouse gases to the Puget Sound Clean Air Agency. The Standard'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 effective in 2010. 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 Washington State annual emissions reporting threshold of 2,500 tons. Despite that Kirkland is currently below this annual threshold, we still voluntarily report our emission data to Evergreen Fleets.

According to the 2012 inventory, City automobiles and trucks contributed 48% of the total tons of CO_2e generated by governmental operations. Emissions from vehicles are the most polluting source in City government. 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.

Conclusion and Next Steps

The 2012 inventory of governmental operations revealed that Kirkland met the 2012 interim greenhouse gas reduction target (10% below 2005 levels).

In 2014, staff will provide a greenhouse gas inventory update for the year 2013 for governmental operations and anticipate resolution and an update for the community inventory.

EXHIBIT 1

KIRKLAND GOVERNMENT OPERATIONS
CARBON DIOXIDE EQUIVALENT YEARS 2005 & 2012

Total Carbon Dioxide Equivalent Emitted (tons)	**2005**	**2012**	**Change**
City Facilities - PSE bills for parks, fire stations, buildings	1760	521	-1239
Fleet - fuel efficiency for City vehicles and equipment	1339	2185	846
Streetlights/Signals	1208	1667	459
Water/Sewage Lift Stations	68	120	52
Solid Waste Sent to Landfill	725	54	-671
TOTAL	5100	4547	-553
Total Carbon Dioxide Equivalent Emitted (%)	**2005**	**2012**	**Change**
City Facilities - PSE bills for parks, fire stations, buildings	34.5	11.5	-23
Fleet - fuel efficiency for City vehicles and equipment	26.3	48.1	21.7
Streetlights	23.7	36.7	13
Water/Sewage Lift Stations	1.3	2.6	1.3
Solid Waste Sent to Landfill	14.2	1.2	-13
TOTAL	100	100	