

**CITY COUNCIL AGENDA ITEM**  
CITY OF SHORELINE, WASHINGTON

|                      |   |
|----------------------|---|
| <b>AGENDA TITLE:</b> | Sustainability Strategy Update  |
| <b>DEPARTMENT:</b>   | Planning and Community Development  |
| <b>PRESENTED BY:</b> | Juniper Nammi, AICP, Associate Planner, Green Team Co-Chair<br>Miranda Redinger, Associate Planner, Green Team Co-Chair |
|                      | <input type="checkbox"/> Ordinance <input type="checkbox"/> Resolution <input type="checkbox"/> Motion                  |
|                      | <input checked="" type="checkbox"/> Discussion <input type="checkbox"/> Public Hearing                                  |

**ISSUE STATEMENT:**

Council adopted the Shoreline Environmental Sustainability Strategy in July 2008. Since adoption, 84% (42 of 50) of the recommendations contained in the Strategy have been completed or are ongoing (see Attachment A). The remaining eight recommendations have been tabled until further resources become available. This work has been accomplished through the efforts of the interdepartmental Green Team, or as separate projects on department work plans. Other than grant-funded projects, all work has been accomplished with existing staff and resources.

The last update to Council on sustainability and Green Team efforts was February 22, 2011. Tonight's study session will be Council's update on the City's progress since that time towards "creating an environmentally sustainable community," a Council goal from 2007-2010. This update will also provide an opportunity to debut the *forevergreen* indicators tracking webpage, which will serve as the mechanism to measure and communicate progress towards environmental sustainability over time.

This report and the staff presentation to Council will highlight Green Team work, departmental projects, and updates to guiding documents that have incorporated elements of sustainability.

**FINANCIAL IMPACT:**

The work of implementing the Sustainability Strategy is being accomplished by existing staff and resources. Although the Green Team does have a \$300 line item in the 2012 budget to cover programmatic expenses, this allocation was not used in 2011. In the future, if specific projects or recommendations require additional funding, sources such as grants or partnerships with outside organizations will be sought.

**RECOMMENDATION**

This item is before the Council for information only and no action is required at this time.

Approved By:            City Manager **JU**    City Attorney \_\_\_\_

## **BACKGROUND**

The City Council first adopted “Create an Environmentally Sustainable Community” as one of their 2007-2008 Council goals. This goal aimed:

*To provide management and stewardship of natural resources and environmental assets such that their value is preserved, restored, and enhanced for the present and future generations; and such actions complement community efforts to foster economic and social health.*

The first step to implementing the Shoreline Environmental Sustainability Strategy was establishing a permanent, interdepartmental ‘Green Team’ to coordinate work on the strategy recommendations and sustainability efforts in general. Since January 2009, this interdepartmental team has met regularly and worked in subcommittees and with staff throughout all City departments. Given that this effort led to the implementation of so many of the recommendations, in early 2012, the Green Team restructured to accommodate a more standard annual work plan; to focus on communication about sustainability initiatives to staff, decision-makers, and the community; and to act as a resource for facilitating additional efforts.



The *forevergreen* indicator tracking webpage will be an effective bridge for this transition. After having spent the last three years working on internal efforts to ensure that the City’s policies, programs, projects, and decisions included consideration of environmental sustainability, the webpage will provide a way to track and measure progress comprehensively. It will also enable citizens and other municipalities to view this progress, find details about programs and projects, and will hopefully empower individual households to become involved in both public sustainability initiatives and efforts within their own homes.

## **DISCUSSION**

The following information provides a summary of the work undertaken by the Green Team and other staff since the previous Council update in February, 2011.

1. **King County-Cities Climate Collaboration and Green Building Core Committees and Climate Pledge** – On June 9, 2011, King County and several of its cities introduced and pledged their support for a new partnership – the King County-Cities Climate Collaboration – to enhance the effectiveness of King County local government climate and sustainability efforts. More cities, including Shoreline, joined the collaboration at the Green Tools Annual Government Confluence in September 2011.

Through the King County-Cities Climate Collaboration, county and city staff are partnering on:

- Outreach – to develop, refine, and utilize messaging and tools for climate change outreach to engage decision makers, other cities, and the general public;

- Coordination – to adopt consistent standards, benchmarks, strategies, and overall goals related to responding to climate change;
  - Solutions – to share local success stories, challenges, data and products that support and enhance climate mitigation efforts by all partners; and
  - Funding and resources - to secure grant funding and other shared resource opportunities to support climate related projects and programs.
2. **Environmentally Preferred Purchasing Guidelines (EPPG)** – The Leadership Team adopted guidelines for an Environmentally Preferred Purchasing Policy in 2009. The Green Team developed specific chapters, including Sustainable Contractor, Vendor and Consultant Services Practices; Green Fleet Program; Office Supplies; Pesticide Purchasing Guidelines; Cleaning Products and Services; and Life-Cycle Analysis (Attachment B). The Leadership Team adopted the EPPG in January 2012, and a subcommittee of the City’s Management Team will develop a strategy and training to implement it.
  3. **Indicator Baselines and Tracking System** – Over 30 potential indicators were identified during development of the Strategy because, as it asserts, “what gets measured, gets done.” In 2009, the City applied for funding through the federal Energy Efficiency and Conservation Block Grant (EECGB), part of which has been used to create a web-based indicator tracking system. Members of the Green Team and other staff selected a consultant team and indicators that will be meaningful and easy to update annually. In addition to other data provided for the site, Public Works Environmental Services Division staff compiled a carbon inventory of both City operations and citywide carbon emissions utilizing the ICLEI 5 Milestones for Climate Protection software (Attachment C), which will be a key metric. Staff and the consultants have collected data, developed a framework for information, and designed an engaging and dynamic method to set baselines and targets for environmental sustainability and track progress over time. The system should be a model for other municipalities to use, and should contribute to Shoreline’s role as a regional and national leader in climate initiatives and environmental protection. A thorough tour of the newly launched *forevergreen* page will be the primary focus of the staff presentation.

The following provides a summary of City projects undertaken by staff in various departments since the previous Council update in February, 2011 that achieve sustainability goals.

1. **Green Building Program** – The City of Shoreline is working on a Green Building Program with multiple components. The initial component of this program is outreach and education. The Environmental Services Division has developed and launched a variety of educational resources, tours, workshops and other outreach tools to develop awareness and understanding about what green building entails. Second, the Planning and Community Development Department is working to identify opportunities for encouraging, facilitating, and (where appropriate) requiring green building techniques. Staff will continue working through ideas and opportunities with City leadership, community stakeholders, Planning Commission, King County staff, and Council.

2. **Aurora Corridor** – The Aurora Corridor project, currently under construction, contributes to environmental sustainability in two key ways. First, the improvement of pedestrian facilities throughout the corridor makes walking a safer and more inviting option, which will remove significant barriers that have existed for walkability in the core of Shoreline. This pedestrian system and Bus Rapid Transit amenities will provide a backbone from which a safe, connected walking, biking, and transit network can be built. Second, the Silva Cell and stormwater treatment technology being installed are innovative green infrastructure tools that will facilitate healthier, longer-lived trees, cleaner runoff from the street and a beautifully landscaped corridor that will provide for both human enjoyment and wildlife habitat.
3. **Tree Canopy Inventory and Code Update** – Planning and Community Services staff obtained Washington Department of Natural Resources grant funding to conduct an Urban Tree Canopy Analysis. This project was completed in April 2011, and demonstrated that there has been no significant loss of canopy over the last 20 years, although it made no assertion about changes in composition of vegetation over that time.

At the direction of City Council, staff started working to update the tree regulations in January 2009 to address a number of issues related to equity, clarity and flexibility. The City Council redirected these amendments in May 2011. Tree Code amendments have now been recommended by the Planning Commission and are expected to be before the Council on May 21, 2012 for discussion.

4. **Adoption or updates to the Engineering and Development Manual, functional Master Plans, Subarea Plans, and the Comprehensive Plan** –
  - *Engineering and Development Manual* – adopted in March 2012. Public Works and Planning staff updated the manual to reflect 2009 changes to stormwater regulations and new developments in the field of green and complete streets.
  - *Transportation Master Plan* – adopted in December 2011. This plan contains many elements conducive to sustainability, including a chapter and appendix dedicated to it, and pedestrian, bicycle, and transit plans, which include prioritized trail development and funding strategies. It also addressed Transit-Oriented Development, Bus Rapid Transit, and development of Light Rail.
  - *Surface Water Master Plan* – adopted in December 2011. This plan will provide the Surface Water Utility with the guidance on program priorities and levels of service for the next five years. These include capital programs for drainage and water quality, operations and maintenance, regulatory requirements, water quality monitoring and education/outreach programs.
  - *Parks, Rec., & Open Space Master Plan* – adopted in July 2011. This plan will provide direction for Capital Improvement Projects, vegetation management, and other improvements and maintenance for the City's

park system, which serves as natural habitat in addition to a location for human recreation.

- *Town Center Subarea Plan* – adopted in July 2011. This plan encourages many principles of sustainability and Smart Growth, including walkability, connectivity, affordability, green building, and transit.
- *Shoreline Master Program* – scheduled to be discussed before Council at the April 23, 2012 Study Session. This Plan provides regulations that will ensure no net loss of ecological function for the City’s coastline. Background documents developed for this process include an inventory of existing plant and animal species, description of how natural functions have been impeded historically, recommendations for restoration opportunities, and standards for future development and redevelopment.
- *Comprehensive Plan* – currently underway. This update will incorporate recommendations from the documents listed above and direction from the Vision 2029 Framework Goals to create a guiding document for the City for the next 20 years. Specific changes to address sustainability include separating Natural Environment policies from the Land Use Element into its own element and adding policy language regarding climate change, green building, and other topics; including policies for Transit-Oriented Development and other innovative land uses; and incorporating other recommendations from a white paper submitted as part of the development of the Sustainability Strategy specifically focused on revisions to the Comprehensive Plan. An additional component of the update process is a Speaker’s Series, where many of the topics focus on topics of environmental, equitable and economic sustainability.

### **NEXT STEPS**

Since 2007, the City has concentrated on developing internal mechanisms to promote environmental sustainability. In the future, the City will likely broaden this focus to include other components necessary to create a truly sustainable system, such as social equity and economic development, as well as more actively involve the community through education, outreach, and programs that empower sustainable household choices. The City can be a model for innovative policies, land use, community design, habitat management, recycling programs, transportation systems, stormwater treatment, development standards, etc., but if you examine Shoreline’s overall carbon footprint, the municipal contribution is relatively small. It will be decisions made at the household level that will ultimately determine whether or not the government and citizens of Shoreline will be successful in their efforts to “create an environmentally sustainable community.”

Several opportunities have been identified that will advance this goal in the coming years:

- *Development of a Climate Action Plan* – the Environmental Services Division has received grant funding to hire a consultant to create this plan. While the Environmental Sustainability Strategy was designed as a general, non-prescriptive plan, the City would benefit from having very specific, programmatic guidance to deal with issues related to climate change, energy conservation, etc.

- Partnering with organizations and utilizing other external resources – Futurewise, a statewide public interest group working to promote healthy communities and cities through responsible growth management, recently attained matching funds to apply for a grant that would provide consultant assistance in developing toolkits for community involvement and otherwise promote Shoreline as a model for sustainability.
- Station-area planning – This process will focus heavily on community involvement in decision-making regarding the development of station areas, and provides an opportunity to focus on economic and equity aspects of sustainability, in addition to environmental benefits.
- Indicator tracking – The *forevergreen* Indicator Tracking web page will be a critical tool for community involvement and in measuring our success, as well as providing a model for other jurisdictions and organizations to emulate.
- Continuing to work with King County, Puget Sound Regional Council, and other local, regional, and national entities – Working with other entities committed to cooperative solutions and shared problem-solving will exponentially increase the City's resource base.

### **SUMMARY**

The City of Shoreline has taken an innovative, decentralized approach to implementing sustainability. Through the combination of an interdepartmental team that coordinates City-wide policy development and implementation as well as through individual projects, programs, and regulatory changes, significant progress has been made towards implementation of the Strategy. Now, staff and decision-makers can concentrate on what comes next and ways to maximize investments already made to enhance the quality of life for residents, including plant and animal inhabitants of the city.

We are still a long way from true environmental sustainability; however, the tools and policies that will take us there are being created and implemented at a manageable pace. This approach allows the transformation of Shoreline into a sustainable community to occur at all levels and in all departments of the City, and maximizes the amount of work that can be accomplished with existing staff levels and resources.

### **RECOMMENDATION**

This item is before the Council for information only and no action is required at this time.

#### **ATTACHMENTS:**

Attachment A – Environmental Sustainability Strategy Recommendations Progress Report for 2012

Attachment B – Environmentally Preferred Purchasing Guidelines

Attachment C – ICLEI Carbon Data Report

## 2012 Progress Report on Implementation of Sustainability Strategy Recommendations

# Completed!
 # In Process/Ongoing
 # Tabled

| #   | RECOMMENDATIONS  | NOTES   |
|---|--|---|
| <b><i>City Operations, Practices &amp; Outreach</i></b> |  |   |
| 1   | <b>Integrate sustainability into City and departmental missions, functions and decision making at all levels using clear and transparent tools.</b>  | Sustainability has been added as a City Value, and integrated into decision-making for Capital Improvement Projects, functional Master Plans, and will be included in the Comprehensive Plan Update.  |
| 2   | <b>Create baselines for all Sustainability Strategy focus areas and implement indicator tracking system to track progress over time.</b>   | With funding from the Energy Efficiency and Conservation Block Grant (EECBG), staff is working to have an indicator tracking website up and running by April 2012. Most metrics will be updated annually, using data that is currently tracked.                 |
| 3   | <b>Create standard office procedures, training and department expectations that support sustainability goals; then measure, reward and promote individual and departmental achievement of these goals.</b> | Documents have been created outlining Sustainable Office Procedures (including a PowerPoint that was presented at dept. meetings), and how training could be incorporated into new hire packets. There is no system to measure and reward achievement.          |
| 4   | <b>Establish a permanent GREEN team or interdepartmental committee(s) to focus on sustainability program management and sustainability techniques.</b>   | The current Green Team was established in December 2008, reorganization in 2012 will refocus the team's long-term mission and functions.  |
| 5   | <b>Pursue funding to establish a key City staff position or contracted consultant related to sustainability.</b>   | Environmental Services staff has secured a grant to hire consultant to draft Climate Action Plan. Futurewise has secured matching funds and submitted grant application for consultant services to develop and implement additional sustainability initiatives. |
| 6   | <b>Develop a comprehensive environmental purchasing policy (EPP) for all City purchasing decisions.</b>  | Leadership Team approved in January 2012; implementation work underway.   |
| 7   | <b>Create a green business certification and promotion program.</b>  | The City has worked with the Chamber of Commerce on their green business program and sponsored a conference w/ EECBG funding.   |

| #   | RECOMMENDATIONS   | NOTES  |
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| 8   | Provide expanded “how to” sustainability info to the community through varied approaches (e.g. mailers, events, City website and informational brochures).  | City has created and/or distributed brochures on Green Building, Low Impact Development, Natural Yard Care, and other environmental sustainability topics. Shoreline holds a variety of environmental events annually. |
| <b><i>Energy &amp; Carbon Reduction</i></b> |   |  |
| 9   | Develop a baseline for energy consumption and carbon data using ICLEI “5 Milestones Toolkit.”   | Environmental Programs Coordinator completed ICLEI carbon data inventory.  |
| 10  | For all new construction of City facilities (including the City Hall), meet requirements specified in LEED Core Performance Guide, referenced in the prescriptive path for LEED Energy and Atmosphere Credit 1. | The City Hall received a LEED Gold certification. To date, the City has not yet considered developing specific policy guidance on standards or certification of other new facilities in the future.                    |
| 11  | For all new construction of City facilities (including the City Hall), require the use of Commissioning as outlined by the ASHRAE Commissioning Process Guideline 0-2005.                                       | There is no specific policy guidance on certification of new facilities, or currently any direction to pursue development of such.   |
| 12  | Upgrade existing City facilities to meet Energy Star building performance standard for similar building types.  | The City will begin using the Energy Star Portfolio Manager in 2012 to measure energy performance and compare efficiency with similar building types.  |
| 13  | Include requirements to meet Energy Star for building equipment and appliances in purchasing guidelines.  | No standards or requirements were incorporated into the Environmentally Preferred Purchasing Guidelines (EPPG) with regard to Energy Star qualified products.  |
| 14  | Engage in Seattle City Light’s (SCL) green power program (Green Up). Increase green power purchase to 100% during annual budget planning.   | The City made a two year commitment to participate in the Green Up program at the Gold level, which is scheduled to end in April 2012.   |
| 15  | Require all new fleet vehicles be alternatively fueled, or rated by EPA for 45 mpg or higher for fossil fuel vehicles.  | Environmentally Preferred Purchasing Guidelines contain recommendations for green fleet purchasing.  |
| 16  | Conduct a campaign for City   | The City has an adopted a Commute Trip   |



| #  | RECOMMENDATIONS   | NOTES  |
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|  | staff to reward “smart” trip planning to reduce unnecessary trips and the total miles traveled for work related trips.  | Reduction (CTR) program with limited incentives, provides reduced fee ORCA passes, and participates in the Cascade Bicycle Club’s annual Bike to Work month. CTR program incentives were scaled back a few years ago as part of budget reductions, but the City is required to have a program under state regulations.   |
| 17   | Promote use of SCL and Puget Sound Energy (PSE) incentives, or other encouragement for conservation and alternative energy as part of an outreach campaign.   | Staff has investigated what programs are available in Shoreline. Promotion of such incentives could be part of restructured Green Team’s focus on community outreach or increased Green Building technical assistance by the Planning & Community Development department to permit applicants.   |
| 18   | Work with SCL and PSE to prepare a report showing the Shoreline community’s overall energy use as of baseline year; update figures provided by SCL/PSE.   | Environmental Programs Coordinator used this data to complete ICLEI Carbon Inventory.  |
| 19   | Collect information about greenhouse gas emissions and energy use through the State Environmental Policy Act (SEPA) review process.   | The Planning Department is currently reporting estimated greenhouse gas emissions data through SEPA when it is the lead agency on a project. The department is aware of the guidance provided by the Washington Department of Ecology <a href="http://www.ecy.wa.gov/climatechange/sepa.htm">http://www.ecy.wa.gov/climatechange/sepa.htm</a> and will be working to improve incorporation and review of this information on an ongoing basis. |
| 20   | Employ PLACE <sup>3</sup> S (PLAnning for Community Energy, Economic and Environmental Sustainability) or similar software, for future land use planning efforts (e.g. the next major Comprehensive Plan update). | P&CD staff attended King County training on PLACE <sup>3</sup> S software, but did not recommend procuring this software due to the data and time intensive nature of this land use modeling tool. PLACE <sup>3</sup> S or other land use modeling software may be worth considering in the future.  |
| <b><i>Sustainable Development &amp; Green Infrastructure</i></b> |   |  |
| 21   | Prioritize and promote Green Building and Low Impact Development (LID) proficiencies for select staff (e.g. Planning and Development Services, Environmental Services and Capital Projects Engineers).            | Staff continues to regularly attend Green Building and LID trainings, and several are interested in receiving certifications.  |
| 22   | Establish a Residential Green Building Program, including   | Staff has created brochures and offers technical assistance on Green Building.   |

| #  | RECOMMENDATIONS   | NOTES   |
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|    | worksheets on specific innovations for permitting clients.  |   |
| 23 | Revise zoning and engineering standards to provide guidance and incentives for Low Impact Development (LID) and Green Building.   | The City adopted the Department of Ecology's 2005 Stormwater Management Manual for Western Washington, which requires use of LID techniques when appropriate to the site conditions. Zoning standards are being reviewed for opportunities to encourage or require LID and green building. Currently staff is researching what the potential financial impact to builders would be if the International Green Construction Code were adopted.                                     |
| 24 | Adopt a Green Building Policy for the City's capital projects. Construct new buildings and additions to LEED Silver Standard (with Washington State exemption limits). Specify a commitment to LID principles as outlined in Low Impact Development: Technical Guidance Manual for Puget Sound. | There is no specific policy mandating these standards, but several changes have been made. Capital Projects budget form has been updated with a question regarding sustainability. LID techniques have been integrated into capital projects, such as Aurora corridor improvements and Green Street demonstration. The EPPG includes recommendations to incorporate consideration of sustainable materials and processes into contracts, bid specifications, and RFP/RFQ scoring. |
| 25 | Prioritize and structure the development of the Green Streets program.  | The Public Works department completed the first Green Streets demonstration project in 2011. Further projects will be contingent on funding and priority.   |
| 26 | Modify the stormwater utility fee to promote low impact development, calibrate for true system impact/cost and encourage natural drainage improvements.   | This recommendation was considered as part of the 2011 update of the Surface Water Master Plan. The City decided not to modify the Surface Water Management fees at this time and to encourage natural drainage/LID through incentive programs rather than rate credits.  |
| 27 | Expand and reorient the existing priority sidewalk improvement program to focus on linking destinations and network connectivity.   | The 2011 Transportation Master Plan (TMP) recommends over 100 sidewalk improvement projects, and Council has prioritized construction of new sidewalks.   |
| 28 | Improve identification, mapping, designation, surfacing and signage of existing trails. Develop a plan for future trail expansion.  | The GIS Analyst has mapped trails, the Parks department has developed standards for signage, and the TMP contains a trails plan.  |
| 29 | Develop bicycle and pedestrian plans in the Transportation  | The TMP contains bicycle and pedestrian plans.  |

| #  | RECOMMENDATIONS   | NOTES   |
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|    | Master Plan that identify a cohesive network which connects major destinations.   |   |
| 30 | Update the Transportation Master Plan and provide a stronger link to the Land Use Element in the Comprehensive Plan.  | The update of the Comprehensive Plan will incorporate policies directly from the TMP.   |
| 31 | Develop a plan with near-term and long-term priorities for transit system improvements prior to or as part of the Transportation Master Plan process to guide advocacy, intergovernmental coordination and advance planning.                            | The TMP contains recommendations for transit system improvements, the Aurora Improvement Project created Bus Rapid Transit (BRT) lanes, Transportation Services staff are working with local transit providers for continuity of service, and P&CD and PW staff will continue to work with Sound Transit for light rail station area planning.  |
| 32 | Advocate for a revised Sound Transit Phase II Plan (ST2) which includes improvements that serve the City of Shoreline.  | The City is working with Sound Transit for light rail station area planning.  |
| 33 | Advocate for a single, integrated and continuous bus rapid transit system on Aurora Ave. (SR 99) between Everett and Seattle.   | The Aurora Improvement Project created BRT lanes.   |
| 34 | Consider advocating for a Metro “feeder” route to improve east-west transit and support Aurora backbone.  | Staff will continue to advocate for improvements to east-west transit routes.   |
| 35 | Consider providing a program based on the State’s commute trip reduction (CTR) program for medium-sized sites, not currently required to participate in the State CTR program.  | The City is required to have a CTR program for worksites with 100 employees or more and adopted an updated CTR program in 2008 to meet these requirements. Funding for incentives has been significantly decreased in recent years, but reduced cost bus passes are offered to City employees. Consideration of any voluntary CTR programming for smaller sites is not economically feasible for the City at this time. |
| 36 | Future updates to Comprehensive Plan and/or Housing Strategy should include a focus on Transit Oriented Development (TOD) and transit supportive neighborhoods to create density nodes that support transit use. Continue to focus new development near | Update of Comprehensive Plan will contain policies regarding TOD.   |

| #   | RECOMMENDATIONS   | NOTES   |
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|   | existing and proposed transit corridors and improvements.   |   |
| <b><i>Resource Conservation &amp; Waste Reduction</i></b> |   |   |
| 37  | Expand existing efforts to reduce, reuse, and recycle in City offices, parks, and other facilities.   | City facilities offer composting and recycling, and parks are being equipped with Big Belly recycling containers.   |
| 38  | Include in purchase guidelines preference/requirement for products that promote reduction and reuse (e.g. duplex copiers, durable goods); reduce consumption of raw materials (e.g. recycled content and recyclable materials) and present reduced risk to human and ecological health (non-toxic materials). | Environmentally Preferred Purchasing Guidelines contain such standards.   |
| 39  | Provide convenient opportunities (prominent and labeled bins) for sorting, collecting, and composting solid waste streams in the community.   | The City's contract with CleanScapes provides these services.   |
| 40  | Implement construction and business waste reduction outreach and incentives through the permitting process and municipal waste contract.  | Construction waste diversion through demolition permitting requirements is currently being researched by City staff.  |
| 41  | For high use operations including irrigation and park restrooms replace fixtures and equipment with the highest efficiency, cost-effective water conservation options available.  | If funding becomes available, equipment could be replaced. No policy or purchasing standards exist at this time, but general guidance is available in the EPPG. |
| 42  | For retrofits and new construction of City indoor facilities, specify/replace fixtures with high efficiency, low flow alternatives.   | While there is currently no specific policy guidance, City Hall contains high efficiency, low flow systems.   |

| #                                  | RECOMMENDATIONS  | NOTES  |
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| 43                                 | Investigate the use of non-potable sources or non-potable uses, such as grey water reuse for toilet flushing.  | This recommendation has not yet been researched or considered, but the opportunity may arise with the acquisition of the water utility from Seattle Public Utilities for the western portion of the City.                                      |
| 44                                 | Work with utilities to expand existing and develop new incentives to reduce potable and irrigation water consumption.  | This recommendation has not yet been researched or considered, but the opportunity may arise with the acquisition of the water utility from Seattle Public Utilities for the western portion of the City.                                      |
| 45                                 | Implement residential waste incentives and requirements through the municipal waste contract and permit process. Expand community outreach and information efforts to reduce waste and recycle.                          | The City's contract with CleanScapes provides these services and sponsors competitions that reward reductions.   |
| <b><i>Ecosystem Management</i></b> |  |  |
| 46                                 | Identify underutilized park lands and other City property and use for habitat improvements, infiltration, water treatment and other compatible purposes.   | The updated Transportation, Parks and Surface Water Master Plans identify opportunities to utilize City park and right-of-way property for pedestrian/bike facilities, natural drainage solutions, community gardens, and habitat restoration. |
| 47                                 | Consider the development of a Natural Resources and Habitat Action Plan.   | Perhaps funds could be available for this in the future.   |
| 48                                 | Continue and expand restoration and enhancement priority locations and targets for publicly funded or assisted wetland and stream enhancement projects.  | The Surface Water Master Plan contains recommendations for "GreenWorks" and other wetland and stream enhancement projects.   |
| 49                                 | Implement the Cascade Land Conservancy's (CLC) Green Cities Program by prioritizing forest health data collection and improvement projects and strengthening partnerships to increase the acreage analyzed and enhanced. | The City has collected data through Tree Canopy Inventory and Vegetation Management Plans, and the Sustainability Indicators Tracking website project will collect data on acreage enhanced through restoration projects.                      |

| #  | RECOMMENDATIONS   | NOTES  |
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| 50 | <b>Promote and expand environmental mini-grant program, with focus on critical area and urban forest enhancement.</b> | The mini-grant program is subject to funding availability. |



# **Environmentally Preferred Purchasing Guidelines**

**January 2012**

## **INTRODUCTION: PURCHASING ENVIRONMENTALLY PREFERABLE PRODUCTS AND SERVICES**

### **Purpose**

The City of Shoreline recognizes that we are a large consumer of goods and services. Every one of our purchases has an environmental impact resulting from the combined effect of a product's manufacture, use, and disposition. As a result, every day purchasing decisions of our employees and contractors can positively or negatively affect the environment.

The goal of this policy is to reduce the adverse environmental impact of our purchasing decisions by buying goods and services from manufacturers and vendors and conducting business with contractors and consultants who share our commitment to the environment. By including environmental considerations in our purchasing and contracting decisions, along with our traditional concerns with price, performance, and availability, we will remain fiscally responsible while promoting practices that improve public health and safety, reduce pollution and climate change, conserve natural resources, and support businesses that share our goal to reduce the adverse environmental impact of their products and services.

This Environmentally Preferred Purchasing (EPP) policy is intended to:

- Reduce the spectrum of environmental impacts from City use of products, including reduction of: greenhouse gas emissions, landfill waste, health and safety risks, and resource consumption;
- Incorporate environmental sustainability standards into procurement decisions;
- Empower department purchasing staff to be innovative and demonstrate leadership by incorporating progressive and best-practice sustainability specifications, strategies, and practices in procurement decisions;
- Encourage vendors to promote products and services that they offer which are best suited to the City sustainability policies;
- Encourage and promote both local and national companies to bring forward emerging and progressive sustainable products and services by being a consumer of such products and companies;
- Communicate the City's commitment to sustainable procurement, by modeling the best product and service choices to citizens, other public agencies and private companies; and
- Support consultants, contractors, and other businesses providing services to the City to abide by standards enumerated in the EPP policy.

It is not the intent of this policy to require a department, buyer, or contractor to take any action which conflicts with local, state, or federal requirements or to procure



products that do not perform adequately for their intended use, exclude sufficient competition, are not yet proven technologies, or are not available at a fair price in a reasonable period of time.

### **Defining Environmentally Preferable**

Buying the most environmentally preferable alternative means the City of Shoreline will seek products and services that have a reduced negative impact on human health and the environment when compared with competing products and services serving the same purpose to the degree practicable. This comparison should consider all phases of the product's life-cycle, including raw materials acquisition, production, manufacturing, packaging, distribution, operation, maintenance and disposal, including potential for reuse or ability to be recycled.

In practice, this means seeking products that have reduced environmental impact because of the way they are made, used, transported, stored, packaged, and the manner in which they are disposed. It means looking for products that do not harm human health, are less polluting and that minimize waste, maximize use of bio-based or recycled materials, conserve energy and water, and reduce the consumption or disposal of hazardous materials.

### **Balancing Environmental Considerations with Performance, Availability, and Financial Cost**

When comparing cost, the City of Shoreline will not focus exclusively on the initial price. Instead, the life-cycle costs and environmental impacts of the item should be considered, which may include maintenance, operating, insurance, disposal, replacement and potential liability costs. This simple analysis only includes cost factors associated with a product's useful life with the City, but a more thorough analysis may also include the range of environmental damages assignable to products and services from raw material production and extraction, manufacturing, distribution, and use and disposal – including transportation. Because this detailed analysis involves a great deal of information that may or may not be available to a project manager, this document provides links to organizations that have already compiled the data and rated products based on these factors. These are included in Chapter 6, which also provides a more thorough discussion of Life Cycle Analysis.

Environmental factors that should be considered in selecting products include life-cycle analysis of:

- Pollutant releases;
- Waste generation;
- Recycled content;
- Energy consumption;
- Depletion of natural resources;
- Potential impact on human health and the environment; and
- Opportunity to reuse or repurpose.

The City of Shoreline recognizes that competition exists not only in prices, but also in the technical competence of suppliers, in their ability to make timely deliveries, and in the quality and performance, including environmental performance, of their products and services. Balancing these sometimes competing factors means that initial cost is never the only consideration. It also means we will sometimes pay more for higher performing goods and services, including those with superior environmental performance, when practical.

### **What This Policy Includes**

Environmentally preferred purchasing policies have been developed for the following priority categories:

- Chapter 1: Sustainable Contractor, Vendor and Consultant Services Practices
- Chapter 2: Green Fleet Program
- Chapter 3: Office Supplies
- Chapter 4: Pesticide Purchasing Guidelines
- Chapter 5: Cleaning Products and Services
- Chapter 6: Life-Cycle Analysis (LCA)

Other areas of purchasing consideration include: office equipment, furniture, building renovation and new construction, landscaping products and services, maintenance materials such as paint, and renewable electricity. No specific environmentally preferred purchasing policies have been developed for these categories at this time; however environmental impacts should always be a consideration when making purchasing decisions.

### **Administration of EPP**

Purchasing is a City-wide function facilitated by the Purchasing Officer in the Administrative Services Department. Due to the interdepartmental nature of the EPP policy, the Green Team, or future designated Environmental Policy point person/team, together with the Purchasing Officer, are responsible for facilitating implementation, training and maintenance of the EPP policy. Some tasks related to administration of this policy may also require coordination with Human Resources staff or individual departments.

Ongoing administrative tasks include:

- Providing assistance to staff in charge of purchasing in reviewing specifications to ensure that they are amended to include environmental considerations, where appropriate;
- Tracking the development of environmental standards and specifications that Shoreline can integrate into its purchasing specifications, including those developed by independent, well-respected organizations, such as Environmental Choice, Green Seal, or Energy Star;
- Identifying additional environmentally preferable purchasing opportunities;

- Engaging in education and outreach to promote understanding of Shoreline's environmental purchasing principles for all of the organization's departments, contractors and vendors;
- Training the purchasing and contracting staff and all senior managers to familiarize them with their responsibilities under this environmental purchasing policy; and
- Training the entire Shoreline staff to ensure everyone is aware of our goal of purchasing more environmentally preferable goods and services from businesses sharing our environmental commitment.

Within five to ten years following adoption of specific environmentally preferred purchasing policies, the Purchasing Officer, or other appropriate staff person will solicit an employee panel tasked to complete a comprehensive review of the guidelines, goals, and action plans.

For more information on the original development of this policy please refer to Appendix A: Origins of This Policy.

## CHAPTER 1: SUSTAINABLE CONTRACTOR, VENDOR, AND CONSULTANT SERVICES PRACTICES

**Purpose:** Pursuant to the goals set forth in the *Environmentally Preferred Purchasing (EPP)* policy and the guiding principles for *Integrating Sustainability into the City's Decision-Making Process*, this policy endeavors to:

- Develop and maintain environmental standards and specifications the City can integrate into its contracts with contractors, vendors, and consultants;
- Support contractors, vendors, and consultants that exemplify sustainable practices and reduce the adverse environmental impact of their services provided to the City; and
- Establish a program to recognize the efforts of contractors, vendors, and consultants that are the most successful at implementing the goals of this policy and the EPP.

**Policy:** The City will endeavor to incorporate environmental best management practices and life-cycle analysis into all phases of the contract process so that any work performed on its behalf by contractors, consultants, and vendors reflects the commitment to sustainability.

**Objectives:** The City actions that have some of the largest impacts on the environment are those pertaining to how the City plans, constructs, and operates its infrastructure, but every contracted service involves choices about materials and processes that could be environmentally preferable. Therefore, the City shall build sustainability into the contract process, from guidelines for RFP/RFQ submittal and selection to life-cycle analysis of products.

### Strategies & Practices:

Examples of strategies and practices to reduce environmental impacts include:

- General
  - Electronic document submittals whenever possible. Hard copies should be printed double-sided, on recycled-content paper.
  - Include sustainability as part of the RFP/RFQ project scope and selection criteria when feasible. Revise material quote form to include preference for sustainable manufacturing, packaging, and delivery methods.
  - Include consideration of sustainable options in the Capital Improvement Project and Budget development forms.
  - Project Manager is responsible for knowledge of Best Management Practices pertaining to particular project.
  - Provide Life-Cycle Analysis to justify purchasing recommendations. Request such analysis to be done by contractors, consultants and vendors when appropriate.
- Contractor (Construction)

- Consider employing commonly accepted methods of construction that require less waste and fewer materials, while meeting the standards and specifications they are required to meet (e.g. advanced framing).
- Reuse, repurpose, and recycle materials as the preferred means of waste disposal.
- Utilize recycled, repurposed, or reused products as the source material whenever practical.
- Consultant
  - Part of submittal requirements could be for the consultant to articulate how they will utilize green practices in the delivery of services. Consideration could be given for innovative sustainability practices in the selection criteria.
- Vendor
  - Vendors are encouraged to demonstrate environmental consideration by outlining alternative product availability and use, minimal packaging material practices, and incorporation of consolidated delivery methods and scheduling, to name a few. These considerations could be assigned weight factors for use in the RFP/RFQ evaluation process.

The City may want to consider convening a Contractor, Vendor, and Consultant Services User Group or alternate mode of consulting with users of contracted services when evaluating, recommending, and implementing policies and procedures for all phases of the contract process.

## CHAPTER 2: GREEN FLEET PROGRAM

**Purpose:** The purpose of this policy is to establish and maintain a Green Fleet Program for the City of Shoreline to reduce the City's dependence on petroleum-based fuels, reduce emissions, and promote sustainable energy technologies.

**Policy:** The City of Shoreline shall make every effort to purchase and use low emission vehicles and equipment when feasible.

**Objectives:** The primary objectives of this policy are to:

- Eliminate and surplus under used or inefficient vehicles that are not cost effective for the City;
- Promote sharing of vehicles across department lines for the purpose of attending meetings and conducting City business;
- Purchase fleet vehicles that provide the best available net reduction in vehicle fleet emissions, including but not limited to, alternative-fueled, hybrid and electric vehicles, or EPA rated 45+ mpg, while continuing to provide and meet service levels;
- Purchase environmentally preferred or certified parts, materials and equipment for vehicle maintenance provided they are cost effective and meet local, state and federal safety requirements;
- Retrofit current vehicles where feasible to operate on alternative fuel or alternative fuel blends, or to reduce the need for idling;
- Purchase the proper vehicles to perform the required tasks; and
- Perform regular preventative maintenance on vehicles to maintain fuel efficiency and the extended life of City vehicles.
- Acquire used vehicles from other agencies (i.e. Metro) that still have useful life.

### **Strategies and Practices:**

The current Vehicle User Group should incorporate sustainable purchases and practices into fleets acquisition, operations, and maintenance. The Vehicle User Group consists of the Fleet Management Supervisor, the Street Supervisor, the Parks Superintendent, the Permit Services Manager, Operations Manager, Purchasing Officer, and the Finance Manager.

The Vehicle User Group will be responsible for evaluating, recommending, and implementing policies and procedures for the purchase, assignment, and surplus of vehicles and equipment designed to meet the objectives of the Green Fleet Program.

Explore the possibility of certifying the City's fleet as green through the Evergreen Fleets Program: <http://www.evergreenfleets.org/Home/tabid/38/Default.aspx>.

Facilitate use of mass transit for City business through provision of ORCA passes that can be checked out by staff who choose not to purchase their own card utilizing the City discount.

Investigate possibility of Zip Car or other shared vehicle at City Hall, which could be used by staff for personal errands. This may encourage more employees to commute by alternative means because they would still have access to a vehicle during the day.

Fleet Services will complete an inventory and fuel efficiency assessment of all vehicles and equipment annually.

Determining the right vehicle for the right task is a crucial initial step in the acquisition process. Once established, the following considerations should be prioritized in purchasing decisions:

- Vehicles with alternate energy options;
- Recommended vehicle maintenance schedule and associated products;
- Vehicle components – non-toxic materials, recycled materials (seats, carpets, plastics, etc);
- Reduced emissions;
- Highest miles per gallon;
- Preference for local vendor;
- Consider shared procurement with other jurisdictions when feasible to obtain better purchase price on environmentally preferred vehicles; and
- Cost.

One source for comparing vehicle ratings on emissions and fuel economy is the U.S. EPA website at <http://www.epa.gov/greenvehicles/Index.do>.

## CHAPTER 3: OFFICE SUPPLIES

**Purpose:** Utilize the City’s purchasing power to reduce landfill waste, resource consumption, health and safety risks, and greenhouse gas emissions associated with office supplies, and increase the market for sustainable alternatives to standard options.

**Policy:** Administrative Assistants and all those responsible for purchasing shall choose the “greener” alternative for office supplies as long as they are cost-competitive or have a life-cycle benefit.

**Objective:** Provide City staff with the knowledge and tools needed to make effective, efficient, and sustainable purchasing decisions for office supplies.

### Strategies and Practices:

Green Product Initiatives undertaken by office supply retailers can be useful tools for making environmentally preferred purchasing decisions. The three largest office supply retailers, Staples, Office Max, and Office Depot each carry thousands of reasonably priced products with recycled content and other environmental attributes and have developed internal green labels and ordering tools that assist in quickly identifying products with reduced environmental impacts. The City should understand the basis for these tools and labels and check for consistency with this purchasing policy before directing staff to use them when making purchasing decisions. Ideally, products or product criteria can be identified in the vendor selection and contracting process and arrangements made to give ordering preference to the greener product.

When ordering office supplies, consider the following:

- 1) Is the current item you are buying a non-green item?
- 2) If your answer is yes, is there a greener product available (recycled or environmentally friendly)?
- 3) If a greener product is available, is it similar in function to non-green product, and does it cost less or is it within budget to purchase?

Take the time to learn the office supplier’s system for indicating environmentally preferable products and know what they mean. The most common symbol with office supplies is the recycle symbol, which can either indicate that it has recycled content or is recyclable. Another is the suppliers’ notation next to an item indicating it is green, such as ‘Eco Easy’, or a description with terms like ‘post consumer waste’ or ‘soy-based ink.’

Below is a partial list of green items that the City currently purchases on a regular basis and preferable product descriptions:

- Calendars and desk accessories (recycled content);



- File and hanging folders (recycled content);
- Highlighters and markers (low or no odor ink, refillable cartridge);
- Notebooks/pads/Post-it notes (recycled content);
- Paper and binder clips (recycled content);
- Pencils and pens (recycled content and refillable);
- Scissors (recycled content); and
- Sheet protectors (recycled content).

City staff should proactively put “Reduce, Reuse, Recycle” into practice. Through employee orientation and training as well as with support from the staff responsible for office supply ordering we should make it standard practice to do things such as:

- Stocking refillable pens and the refills, instead of tossing pens when they are empty. This takes initiative to ensure the pens and refills are of a consistent type so knowing what to order and having it available are standard procedure, as well as reminding others of this practice when they request new pens be ordered.
- Do not order more supplies until checking to see if there are surplus available from other departments. This could be accomplished through regular communication between Administrative Assistants and/or by establishing an area for extra office supplies where all departments could bring excess items and others could check stock before ordering new materials.
- Before tossing, check to see if it is recyclable. If unsure, Environmental Services staff can assist or ask the City’s waste management service provider.

Remember, the goal of this office supply policy is not to be specific and restrictive, but to allow the departments the flexibility to make informed choices following consistent City-wide guidelines that can be less wasteful of both materials and dollars.

*Contracts:* One of the most effective ways to ensure purchases are the most sustainable and cost-competitive is to establish guidelines in the vending contract.

Contracts should include provisions to favor products that:

- Require recycled, more sustainable, and/or less packaging;
- Are made from recycled content or may be reused or recycled;
- Contain less toxic chemicals;
- Are produced locally; and
- Are durable as opposed to disposable.

If the City is unable to incorporate selection of environmentally-preferable products into the vendor contract, it should consider developing and maintaining a list of alternative office supply sources that carry reasonably priced sustainable office supplies. These may be small and/or local businesses that do not provide a full range of office supplies, but have excellent products that are not carried by a

contracted office supply vendor. Alternately, as companies are found with office supply products the City is interested in, staff could contact them and recommend that they apply for inclusion on the [Shared Procurement Portal](#). One example of green office supply vendor is ReBinder – a Seattle-based green office supplier (<http://www.rebinder.com/>).

## CHAPTER 4: PESTICIDE PURCHASING GUIDELINES

**Purpose:** It is the intent of the City of Shoreline to reduce use of pesticides. When they are necessary, the City shall require purchase of pesticide products that minimize environmental and health impacts, toxics, pollution, and hazards to worker and community safety to the greatest extent practicable.

**Policy:** When maintaining buildings and landscapes, the City of Shoreline shall manage pest problems through Integrated Pest Management (IPM), and encourage residents to use similar practices. IPM emphasizes prevention and the use of physical, mechanical and biological controls. Chemical pesticide products should be used only after safer approaches or products have been determined to be ineffective. After coming to the determination that a pesticide is needed, purchasers shall consider the environmental effects of the preferred choice pesticide, and if any effective alternatives exist that are less toxic to the environment.

### Definitions:

- 1) *Pesticides*: any substance or mixture of substances, including herbicides, insecticides, fungicides, etc, intended for preventing, destroying or controlling any pest.
- 2) *Integrated Pest Management (IPM)*: an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices. IPM programs use current, comprehensive information on the life-cycles of pests and their interaction with the environment. This information, in combination with available pest control methods, is used to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment.

**Objective:** Utilize best management practices to avoid pesticide use when feasible, and to control species that require it in the most effective and environmentally-friendly manner possible.

### Strategies and Practices:

- Follow practices articulated by the King County Noxious Weeds Control Board;
- Use and practice non-pesticide methods to prevent pest problems;
- Apply pesticides only as needed, and utilize best management practices for the species that needs to be controlled, such as cutting and manually applying chemicals directly to an invasive plant;
- Select the least hazardous pesticides effective for control of targeted pests based on current best management practices;
- Minimize pesticide use where possible, especially around sensitive populations (children, infirm and elderly) and employees; and
- Avoid pesticide use in critical areas as required by Shoreline Municipal Code

**20.80.085 Pesticides, herbicides and fertilizers on City-owned property.**

*Pesticides, herbicides and fertilizers which have been identified by State or Federal agencies as harmful to humans, wildlife, or fish, shall not be used in a City-owned riparian corridor, shoreline habitat or its buffer, wetland or its buffer, except as allowed by the Director for the following circumstances:*

- A. *When the Director determines that an emergency situation exists where there is a serious threat to public safety, health, or the environment and that an otherwise prohibited application must be used as a last resort.*
  - B. *Compost or fertilizer may be used for native plant revegetation projects in any location. (Ord. 398 § 1, 2006); and*
- When requesting products or services for pest management, clear specifications ensure selection of firms that provide an effective IPM program:
    - Request resumes of service technicians or relevant subcontractors who will be on site to service the account or supply technical support;
    - Ask for a description of experience in the design or implementation of IPM programs (including specifics about the types of equipment and products used to control pests);
    - Request a list of clients receiving IPM service from the company;
    - Ask about training provided to clients; and
    - Request a summary of all regulatory inspections and violations in the past three to five years and the company's response to any violations.

## CHAPTER 5: CLEANING PRODUCTS AND SERVICES

**Purpose:** It is the intent of the City of Shoreline to use only cleaning products and services that are safe and, to the extent possible, reduce negative environmental, health, and social impacts. Therefore, the goal of this policy is to reduce exposure of the building occupants to contaminants that adversely impact the indoor environment by implementing environmentally preferable janitorial cleaning standards for City staff and/or in contract requirements.

**Policy:** All associated vendors will be asked to provide equipment, products, and supplies that meet Green Seal Environmental Standards, LEED certification standards, or similar. The City and vendor shall consider implementation of such products and equipment as they become available. Products will be reviewed for environmental and safety criteria, performance, and price.

Product reviews will consider the following (not intended to be a restrictive list of criteria):

- No cancer-causing or reproductive toxins;
- Limits on strong acids and caustics;
- Reduce or avoid use of products containing Volatile Organic Compounds (VOC);
- Avoid use of aerosol sprays and other atomizing propellants;
- Consider safety, such as effects on skin and eyes; and
- Consider environmental impacts, such as biodegradability, use of phosphates, dyes, and packaging.

**Objectives:** Meet the City's obligations for LEED Gold certification of the City Hall building by using cleaning products and practices that promote high indoor air quality for health of employees and to support such products in the market and endeavor to apply the same green cleaning practices to all other City buildings and facilities.

### **Strategies and Practices:**

*Training* - Provide regular, comprehensive training, and materials for the proper use of chemicals, including step-by-step instructions for the proper dilution (including chemical dispensing equipment training), and disposal of chemicals and cleaning tools to prevent spills and inadvertent contact with staff and contractors.

*Safety* - Emergency protocol in the event of a product spill and/or chemical mix will be clearly displayed in the janitorial closets. Label all equipment used for dispensing a product, such as drums, spray bottles and containers.

*Cleaning Products* - The City of Shoreline requires, where appropriate to the facility being cleaned, the use of environmentally preferable janitorial cleaning products

that have been third-party certified by either Green Seal and/or Ecologo and that are bio-based products. These products can be found at:  
Green Seal: [www.greenseal.org](http://www.greenseal.org) and EcoLogo: <http://www.ecologo.org/en/>  
A copy of the cleaning product manufacturer's MSDS for all chemicals brought onto the premise is kept in a notebook by the Facilities Manager.

When purchasing cleaning products, request information from vendors on worker safety, storage and disposal requirements, and to highlight any positive environmental attributes of their products. Ask about supplier training on the proper use of their products. When evaluating the attributes of varying products and services, marketing phrases and product claims can be confusing. The Department of Ecology offers resources that can help.

*Equipment-* Use better cleaning equipment, such as microfiber mops and cloths to reduce the need for cleaning chemicals; and use high efficiency vacuum cleaners to reduce dust. When possible, preference is given to use of equipment with low energy consumption and ergonomically designed to minimize vibrations, noise and user fatigue and with safe guards, e.g. rubber bumpers to reduce building damage.

*Cleaning Schedule-* Clean by need rather than a schedule, especially for highly polluting cleaning activities. For example, some institutions forgo scheduled floor stripping in favor of flexible timelines that allow floors to be stripped only when needed.

*Quantity-* Products should be purchased in form and quantity that is consistent with its intended use. Safe chemical use includes minimizing exposure, proper training and understanding chemical hazards, proper labeling and storage. Buying less helps keep our environment safe, and reduces the need to dispose of excess product when it is time to discard leftover cleaners.

*Life-Cycle Analysis-* Should address a cost per application rather than cost per volume. It may be more responsible and risk adverse to purchase concentrated forms of cleaners and inventory less product. This also contributes to reduction in packaging waste.

## CHAPTER 6: LIFE-CYCLE ANALYSIS (LCA)

*Nature operates according to a system of nutrients and metabolisms in which there is no such thing as waste—carbon, hydrogen, oxygen, nitrogen—are cycled and recycled. Waste equals food.*

*-William McDonough*

**Purpose:** The City of Shoreline may not be able to emulate this level of natural efficiency, but this chapter addresses the importance of considering impacts of a products entire life-cycle in the final purchasing decision.

The costs and environmental impacts considered over the lifespan of a product or service include its:

- Raw material extraction/production (resource conservation);
- Manufacturing (local preferred, environmental-friendly methods);
- Packaging (resource conservation);
- Transport (pollution prevention);
- Energy Consumption (resource conservation);
- Maintenance (resource conservation); and
- Disposal (reusable or recyclable).

**Policy:** In addition to determining "lowest responsible bidder," the following supplemental criteria shall be given consideration: raw materials source, manufacturing, packaging, transport, energy consumption, maintenance, and disposal. Whenever there is reason to believe that applying the "life-cycle analysis" technique to bid evaluation would result in lowest total cost to the city, first consideration shall be given to the bid with the lowest life-cycle cost that complies with specifications.

**Objectives:** To identify methods for Life-Cycle Analysis that are functional for project managers to use and ensure that the City is considering environmental implications of all phases of a products life-cycle in order to choose the best value over the long-term.

### **Strategies & Practices:**

A Life-Cycle Analysis provides a means to overcome pricing discrepancies between traditional and environmentally preferable products by encouraging the integration of environmental factors into procurement decisions. Doing so requires looking beyond initial costs. The following are examples of different LCA approaches that may be used.

Pollution Prevention - Any practice which reduces the amount of hazardous substance, pollutant, or contaminant entering the waste stream or otherwise released into the environment prior to recycling, treatment, or disposal. Pollution

prevention activities include buying products and materials that are reusable, more durable, and/or repairable.

Natural Resource Protection - Giving preference to sustainable, reusable content, and recycled materials over virgin materials, as well as to the conservation of water and energy.

Cradle-to-Grave - Assessment of manufacturing a product, from the extraction of materials and energy to the return of the materials to the earth at the product's disposal.

Cradle-to-Cradle - A framework that strives for production techniques that are waste free. In a cradle-to-cradle production, all material inputs and outputs are seen either as technical or biological nutrients. Technical nutrients can be recycled or reused with no loss of quality and biological nutrients composted or consumed. By contrast, cradle-to-grave refers to a consumer taking responsibility for the disposal of goods purchased, but not necessarily putting products' constituent components back into service.

Developing and utilizing an LCA framework means recognizing that a product or service has environmental impacts long before and after a local government purchases and uses it. The goal is to strive to purchase products and services with as few negative environmental impacts in as many life-cycle stages as possible. A product's life-cycle is generally broken down into stages.

1. Product Design.
2. Raw material extraction and processing- All industrial systems require a supply of raw material, ultimately extracted from the earth. Examples include petroleum drilling, growing and harvesting trees, mining of minerals, and livestock production.
3. Manufacturing, processing, formulation, distribution, transportation- These are the processes and sub-processes required to transform a raw material into a usable consumer product and to get it to the consumer. Often times a substantial amount of energy and emissions are generated during this process.
4. Product use and maintenance- Use of the product may result in energy consumption and/or waste discharge.
5. End-of-life management: reuse, recycling and disposal. At the end of its useful life, the product will be disposed of by the consumer. Materials entering the solid waste stream will be recycled, incinerated, or land-filled.

When preparing an RFQ/RFP for a project where an LCA of materials or products is appropriate, the following points should be considered and communicated:

- Life-cycle costing is often utilized as a method of award;
- Greater analysis is involved;
- The conditions must be stated in the solicitation document;



- Message must make clear to the bidders the basis for award;
- Solicitation must include the relevant information that will be considered in the evaluation of the offer, and requirements must be absolutely clear;
- Contracts require careful administration; and
- The result may initially be a higher acquisition price, which may be justifiable based on long-term savings.

Many LCA's involve a complex formula that would require a project manager or purchasing officer to perform a detailed analysis of imbedded costs, such as materials acquisition, transportation and packaging alternatives, and mechanisms of disposal or reuse. Because this would be time-consuming, that is not the approach recommended for Shoreline. The directive of this policy is that in the design and approach to a project, managers and others with decision-making authority on purchases generally consider the relevant environmental impacts, and attempt to make an informed decision to select the product or service with the least harmful effect on the environment, not simply the option with the lowest sticker price.

To aid in this decision-making, there are a number of resources available online to provide comparisons and other information on LCA, so project managers may refer to them without having to do the research and calculations themselves. It is the recommendation of this EPP policy to utilize these sites whenever feasible.

- BEES: Tools for Evaluating Green Building Materials:  
<http://www.cooperhewitt.org/blog/2011/05/05/bees-online-tools-for-evaluating-green-building-materials>
- Green Cleaning Pollution Prevention Calculator:  
<http://www.fedcenter.gov/janitor/>
- Green Seal- variety of green products and services:  
<http://www.greenseal.org/>
- Responsible Purchasing Network- cleaning supply and vehicle calculators:  
[http://www.responsiblepurchasing.org/purchasing\\_guides/cleaners/](http://www.responsiblepurchasing.org/purchasing_guides/cleaners/)  
<http://www.responsiblepurchasing.org/calculator/single.php>
- Electronic Product Environmental Assessment Tool (EPEAT)- computers, notebooks, monitors, etc.:  
<http://www.epeat.net/>
- EPA Energy Star- variety of green products and services:  
<http://www.energystar.gov/>
- State of Washington Laws address waste reduction, management of hazardous materials and purchase of environmentally preferable products as follows:
  - RCW 70.95 Waste Reduction – preventing and reducing waste to the air, land, and water, including toxicity of waste.
  - RCW 43.19 Goals for environmentally preferable products
  - RCW 43.19A EPA recycled content standards

**Sample Analysis:**

Suppose that the City of Shoreline's Fleet Manager is looking to purchase a new van. His choices include one van with a purchase price of \$30,000 that gets 10 MPG and another one with a purchase price of \$40,000 that gets 20 MPG. Because the second van is a more efficient model, it is expected to have a slightly higher resale value after its 15-year service life with the City, while other variables are equivalent for the 2 vehicles.

**Van A:**

Purchase Price-Vehicle: \$30,000  
 Service Life: 200,000 miles AND 15 years  
 Average Vehicle Mileage: 10 MPG  
 Average Fuel Cost: \$4.00 per gallon  
 Average Annual Maintenance & Repairs: \$2,000  
 Estimated Residual Value after 15 years of service: \$3,000

**Van B:**

Purchase Price-Vehicle: \$40,000  
 Service Life: 200,000 miles AND 15 years  
 Average Vehicle Mileage: 20 MPG  
 Average Fuel Cost: \$4.00 per gallon  
 Average Annual Maintenance & Repairs: \$2,000  
 Estimated Residual Value after 15 years of service: \$6,000

**Calculations**

|                          | Van A     | Van B      |
|--------------------------|-----------|------------|
| Purchase Price           | \$30,000  | \$40,000   |
| (+) Fuel Cost            | \$80,000  | \$40,000   |
| (+) Maintenance & Repair | \$30,000  | \$30,000   |
| (-) Residual Value       | \$ 3,000  | \$ 6,000   |
| (=) Total                | \$143,000 | \$ 116,000 |

According to this example, over the 15-year service life of these vehicles, the City would save \$27,000 in fuel costs and resale value, making it well-worth the \$10,000 difference in initial price. If these savings were multiplied by an entire fleet of vehicles, it becomes clear how buying the more efficient option could lead to substantial long-term savings for Shoreline.

## **APPENDIX A: ORIGINS OF THIS POLICY**

The Shoreline Environmental Sustainability Strategy, adopted July 2008, prioritized the development of a comprehensive environmental purchasing policy for all City purchasing decisions (Recommendation #6). The strategy also recommends such purchasing guidelines include a preference or requirement for products that promote reduction and reuse, reduce consumption of raw materials, and present a reduced risk to human and ecological health (Recommendation #38).

The City's Green Team, tasked with implementing the Sustainability Strategy, took the lead on developing the City's EPP policy in collaboration with the Purchasing Officer in order to implement the above mentioned recommendations.

The Green Team was asked to:

- Develop written environmentally preferable purchasing recommendations and practices to clarify people's responsibilities under the EPP policy, including those for staff, consultants, contractors and vendors;
- Adopt a life-cycle cost formula, or other analysis method, to be used in decision-making, if an efficiently applicable formula or method could be found or developed;
- Prioritize a list of environmentally preferable purchasing goals and objectives;
- Identify environmentally preferable purchasing opportunities;
- Develop metrics for measuring progress in implementing the goals of this policy;
- Prepare educational and outreach materials to promote understanding of Shoreline's environmental purchasing principles for all of the organization's departments, contractors and vendors;
- Train the purchasing and contracting staff and all senior managers to familiarize them with their responsibilities under this environmental purchasing policy;
- Train the entire Shoreline staff to ensure everyone is aware of our desire to buy more environmentally preferable goods and services from businesses sharing our environmental commitment;
- Establish a program to recognize the efforts of individuals and departments that are the most successful at implementing the goals of this policy; and
- Prepare a regular report documenting Shoreline's efforts to select environmentally preferable goods and services.

Designees of the Green Team and Administrative Services Department completed an examination of Shoreline's purchasing practices of the following commodities based on anticipated purchasing needs and volumes, and prioritized its efforts to integrate environmental considerations into these purchases:

- Office products (recycled content, less hazardous);
- Paper (recycled content, process chlorine-free);
- Ink and toner cartridges (less toxic, remanufacture or recycled);

- Office equipment (energy efficiency, recyclable, refurbished);
- Hybrid electric or alternative fuel vehicles (more efficient);
- Pest management products and services (less hazardous);
- Cleaning products and services (biodegradable, less hazardous);
- Contract services, vendor and consultant practices (best practices);
- Vehicle maintenance products and services (less hazardous);
- Building renovation and new construction (green building);
- Furniture (refurbished, recycled content, locally sourced);
- Landscaping products and services (less toxic);
- Paint (less toxic);
- Products that do not contain persistent, bioaccumulative, toxic compounds (less toxic);
- Products that do not contain wood from endangered forests (resource conservation); and
- Renewable electricity (resource conservation).

Prioritized purchasing decisions were included as chapters in this EPP policy. Other purchasing decision categories may warrant future consideration for inclusion, but for now should follow the general goals and guidelines set out in this policy document.

The Green Team decided that the following tasks did not make sense at the time of the original EPP development and tabled them for future consideration:

- Development of metrics for measuring progress in implementing the goals of this policy;
- Establishing a program to recognize the efforts of individuals and departments that are the most successful at implementing the goals of this policy; and
- Preparing a regular report documenting Shoreline's efforts to select environmentally preferable goods and services.



**GREENHOUSE GAS BASELINE  
MUNICIPAL & COMMUNITY  
2009 INVENTORY**



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## Introduction to Climate Change

### The Greenhouse Effect and Global Warming

The greenhouse effect is a natural warming process that is essential for life on Earth. When discussing the greenhouse effect it is important to identify the major chemical contributors; these gases (water vapor, carbon dioxide, methane, and nitrous oxide) are special because of their ability to absorb incoming (solar) and outgoing (infrared) radiation. The problem with the greenhouse effect lies within the quantities, absorption characteristics, and life-spans of these gases in the atmosphere.

Water vapor being the most abundant greenhouse gas (GHG) in the atmosphere is a strong absorber but also has the shortest life-span so its long term global warming effects are negligible.

Carbon dioxide, methane, and nitrous oxide on the other hand are much larger contributors to global warming, because of their strong absorption properties, long life-spans, and increasing concentrations since the dawn of the Industrial Revolution (1750).

As these gas concentrations continue to increase so does the amount of energy absorbed by the atmosphere. This increase in absorbed energy increases the average global temperature, I know what you are thinking warmer weather in Washington sounds like a great idea but there are consequences for even the slightest warming. Small changes in average temperature cause undesirable climate effects for the Northwest.

(Source: IPCC AR4 synthesis report Sec. 2.2 Drivers of climate change)

### Climate Change in the Pacific Northwest (PNW)

To prevent misconceptions when addressing climate change in the Pacific Northwest (PNW), it is important to acknowledge the impacts of both **natural** weather variability and **human-caused** climate change ('global warming') on PNW resources. The following summary of impacts was compiled by the University of Washington's Climate Impacts Group, based on extensive scientific research and modeling.

#### Natural Variable Climate Impacts

Weather changes from day to day, creating large and small impacts on our natural habitat. Changes, such as in precipitation and temperature, may be subtle or they may have noticeable impacts on the region's mountain snowpack, river flows and flooding, the likelihood of summer droughts, forest productivity, forest fire risk, salmon abundance, and quality of coastal and near-shore habitat.

## Potential & Existing Human-caused Climate Change Impacts on PNW Resources

### **Water**

- Decreased mountain snowpack
- Earlier snowmelt
- Higher winter stream flow in rivers that depend on snowmelt
- Higher winter stream flow in rain-fed river basins if winter precipitation increases in the future as projected
- Lower summer stream flow in rivers that depend on snowmelt (most rivers in the PNW)
- Earlier peak (spring) stream flow in rivers that depend on snowmelt (most rivers in the PNW)
- Decreased water for irrigation, fish, and summertime hydropower production
- Increased conflict over water
- Increased urban demand for water

### **Salmon**

- Increasing winter floods that can wash-out egg clusters
- decreased summer stream flow
- increased water temperature
- decreased available habitat and food supply

### **Forests**

- Seedling regeneration may be altered by:
  - Increase in high snow forests
  - Decrease in dry forests
- Tree growth may be affected by
  - Increase in high snow forests
  - Decrease in dry (east-side) forests
- Increases in forest fires
- Overall, the PNW is likely to see increased forest growth region-wide over the next few decades followed by decreased forest growth as temperatures increase and overwhelm the ability of trees to make use of higher winter precipitation and higher carbon dioxide.
- Potential for extinction of local populations and loss of biological diversity if environmental shifts outpace species migration and adaptation rates and interact negatively with population dynamics.

### **Coastline**

- Increased coastal erosion and beach loss due to rising sea levels
- Increased landslides due to increased winter rainfall
- Permanent inundation, especially in south Puget Sound around Olympia
- Increased coastal flooding due to sea level rise and increased winter stream flow from interior and coastal watersheds



## **Shoreline's Commitment to Climate Protection**

### **About Shoreline**

The City of Shoreline stretches north from Seattle's city line to Snohomish County and from the east shore of Puget Sound to the City of Lake Forest Park. It has 3.4 miles of shoreline, with 330 acres of park land/open space inside its 12.3 square miles of area. With a population of 54,580, Shoreline is Washington's 15<sup>th</sup> largest city. It is primarily residential with more than 70 percent of the households being single-family residences. Over the years, the Shoreline community has been known for its numerous parks, strong neighborhoods, large backyards, trees and excellent schools.

### **US Mayor's Climate Protection Agreement**

To help protect Shoreline's community and natural environment, the City Council authorized Mayor Robert Ransom to sign the U.S. Mayors Climate Protection Agreement, City Resolution No. 242, on April 24, 2006.

#### **RESOLUTION NO. 242**

#### **A RESOLUTION OF THE CITY OF SHORELINE, WASHINGTON, AUTHORIZING SUPPORT FOR THE U.S. CONFERENCE OF MAYORS CLIMATE PROTECTION AGREEMENT**

WHEREAS, the 73<sup>rd</sup> Annual U.S. Conference of Mayors amended and endorsed the U.S. Mayors Climate Protection Agreement which reads:

#### Mayors Climate Protection Agreement

- 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; and
- 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
- C. We will strive to meet or exceed Kyoto Protocol targets for reducing global warming pollution by taking actions in our own operations and communities such as:
  - 1) Inventory global warming emissions in City operations and in the community, set reduction targets and create and 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;

- 4) Increase the use of clean, alternative energy by, for example investing in “green tags” advocating for the development of renewable energy resources, recovering land fill 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 system;
- 8) Increase the average fuel efficiency of municipal fleet vehicles; reduce the number of vehicles; launch an employee education program including anti-idling messages; convert diesel vehicles to bio-diesel;
- 9) Evaluate opportunities to increase pump efficiency in water and wastewater systems; recover wastewater treatment methane for energy production;
- 10) Increase recycling rates in City operation and in the community;
- 11) Maintain healthy urban forests; promote tree planting to increase shading and to absorb CO<sub>2</sub>; and
- 12) Help educate the public, schools, other jurisdictions, professional associations, business and industry and about reducing global warming pollution.

WHEREAS, the City Council supports the three proposals of the Mayors Protection Agreement including suggested local measures to promote energy efficiency and reduce harmful emissions that are feasible and cost effective for Shoreline; now therefore

**BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SHORELINE, WASHINGTON:**

That the Mayor is authorized to execute on behalf of the City Council a statement of support for the U.S. Mayors Climate Protection Agreement and the City Clerk shall file the statement with officials coordinating support on behalf of the U.S. Conference of Mayors.

### **City Council Goal**

From 2007 through 2009, the City Council further supported climate protection initiatives through one of its own goals, i.e. to ‘create a sustainable community.’

### **ICLEI Membership**

To comply with the proposed reductions of the Mayors Climate Protection Agreement, the City of Shoreline partnered with ICLEI (International Council for Local Environmental Initiatives) since 2007.

ICLEI is an international membership association of local governments dedicated to climate protection and sustainable development. It is currently known as ICLEI-Local Governments for Sustainability. In the U.S., there are more than 600 cities, towns and

counties working with ICEI to reduce GHGs and to create sustainable communities. Locally, more than 30 Washington jurisdictions, such as: Edmonds, Kirkland, Seattle, Snohomish County and Shoreline belong to ICLEI.

### ICLEI's 5 Milestones

To assist jurisdictions develop benchmarks that result in the implementation of an effective Climate Action Plan, the following 5 Milestones were developed:

- 1: Conduct a baseline emissions inventory and forecast
- 2: Adopt an emissions reduction target
- 3: Develop a Climate Action Plan for reducing emissions
- 4: Implement policies and measures
- 5: Monitor and verify results

## Shoreline's Baseline Inventory

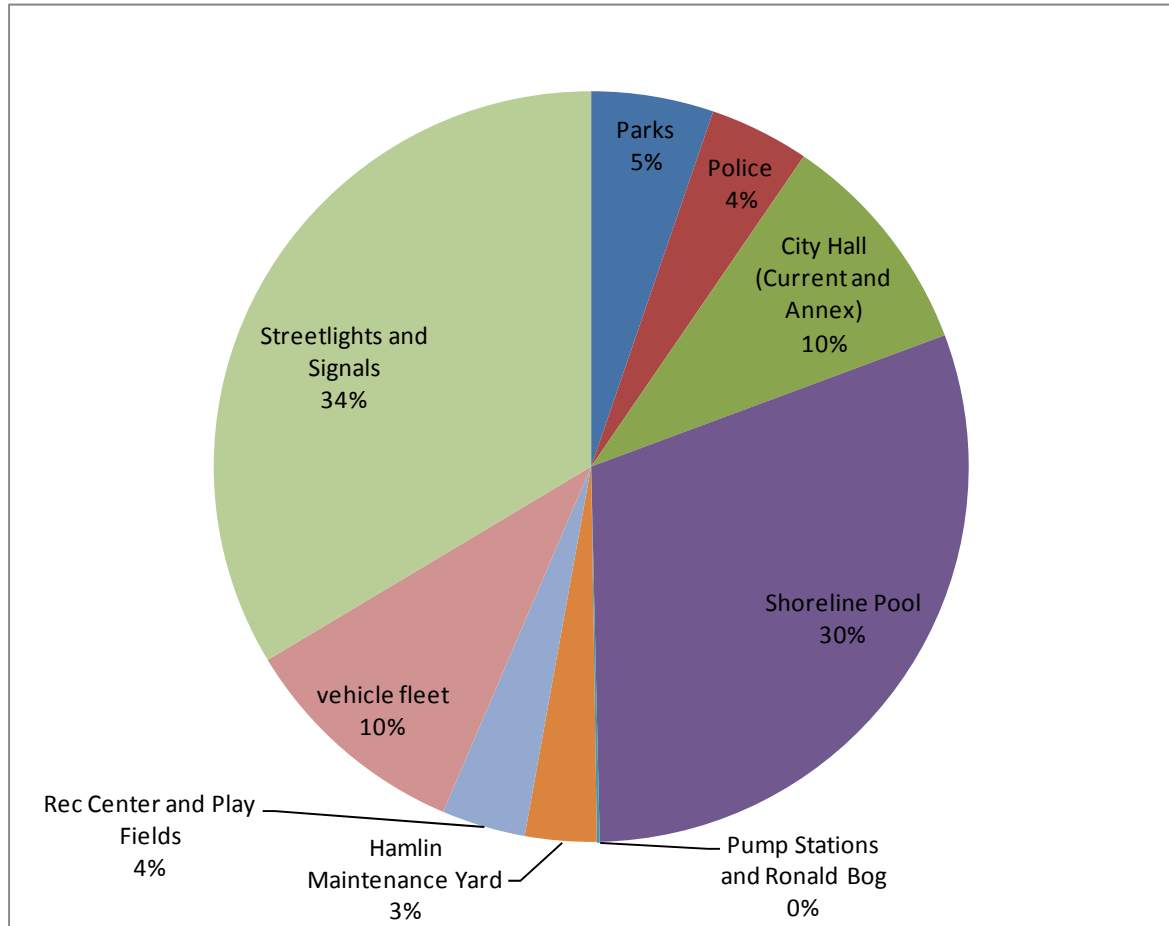
### Municipal Inventory

GHG emissions are created when the City performs operation and maintenance activities for the following nine sectors: the City Hall, Parks, Police, Shoreline Pool, Richmond Highlands Recreation Center/Recreational Fields, Hamlin Maintenance Yard, Municipal Vehicle Fleet, Streetlights/Signals, and Ronald Bog/Pump Stations.

Based on the data and calculations from 2009, each sector was ranked according to CO<sub>2</sub>e units (see table 2.1). CO<sub>2</sub>e describes the amount of CO<sub>2</sub> that a GHG that would have to have, in order to create the same global warming potential as CO<sub>2</sub>. CO<sub>2</sub>e allows GHGs to be compared according to their global warming potential over a specified period of time, often 100 years.

**Table 1. Municipal Usages and GHG Emissions (2009)**

| <b>Government Operations</b>  | <b>Electricity<br/>(kWh)</b> | <b>Natural Gas<br/>(therms)</b> | <b>Fuel<br/>(gal)</b> | <b>Cost<br/>(\$)</b> | <b>CO<sub>2</sub>e<br/>(tons)</b> |
|-------------------------------|------------------------------|---------------------------------|-----------------------|----------------------|-----------------------------------|
| Streetlights and Signals      | 1,828,774                    | 0                               | 0                     | \$308,229            | 831                               |
| Shoreline Pool                | 443,360                      | 93,481                          | 0                     | \$119,527            | 750                               |
| Vehicle Fleet                 | 0                            | 0                               | 20,182                | \$43,588             | 247                               |
| City Hall (Current and Annex) | 534,216                      | 0                               | 0                     | \$31,779             | 242                               |
| Parks                         | 287,548                      | 0                               | 0                     | \$18,992             | 130                               |
| Police                        | 163,414                      | 5,539                           | 0                     | \$17,860             | 106                               |
| Rec Center and Play Fields    | 140,369                      | 4,192                           | 0                     | \$15,080             | 89                                |
| Hamlin Maintenance Yard       | 166,877                      | 0                               | 0                     | \$10,626             | 76                                |
| Pump Stations/Ronald Bog      | 2,518                        | 0                               | 0                     | \$778                | 3                                 |
| <b>Total</b>                  | <b>3,567,086</b>             | <b>103,212</b>                  | <b>20,182</b>         | <b>\$566,459</b>     | <b>2,474</b>                      |

**Figure 1. Percentage Municipal CO<sub>2</sub>e Emissions (2009)**

## Recommendations

|                                    |  |
|------------------------------------|--|
| <b>Streetlights &amp; Signals:</b> | Upgrade to LED lighting  |
| <b>Shoreline Pool:</b>             | Upgrade facilities or reduce hours of operation                |
| <b>Vehicle Fleet:</b>              | Upgrade to fuel efficient vehicles                             |
| <b>City Hall:</b>                  | New facility upgraded to LEED-Gold certified                   |
| <b>All facilities:</b>             | Continue to monitor facilities and operations for efficiencies |

## Community Inventory

When reviewing the GHG emissions for the residential and commercial sectors in Shoreline's community, it is important to compare the size of each sector to the amount of emissions. The community is roughly comprised of 90% residential, single and multi-family homes; 10% commercial; and less than 1% industrial.

The residential sector, which also represents the largest proportion in the community, is responsible for 62% of the total CO<sub>2</sub>e emitted. The commercial sector is small, but responsible for 23% of the total CO<sub>2</sub>e. The industrial sector is minuscule in size, and contributes 6% of the CO<sub>2</sub>e. (See Tables 2, 3, and 4 and Figure 2.)

**Table 2. Community Usages and CO<sub>2</sub>e Emissions (2009)**

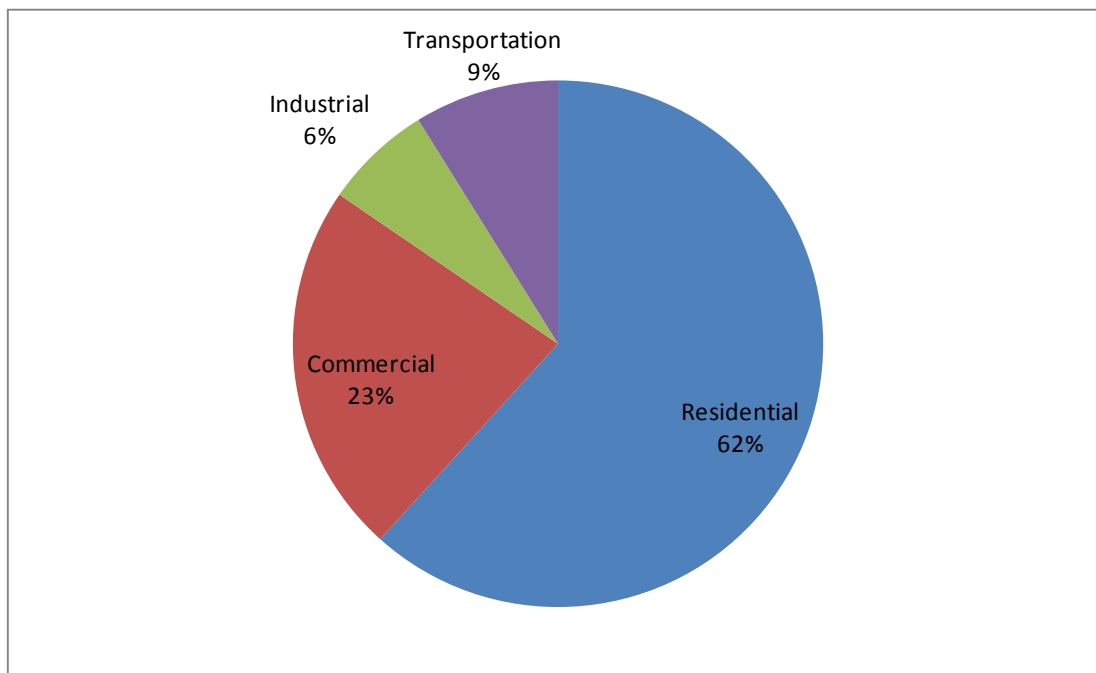
| Community                             | Electricity (kWh) | Natural Gas (therms) | Fuel Oil (gal) | Waste (tons) | Total CO <sub>2</sub> e (tons) |
|---------------------------------------|-------------------|----------------------|----------------|--------------|--------------------------------|
| Residential (single and multi-family) | 295,181,454       | 9,419,961            | 292,000        | 11,894       | 195,488                        |
| Commercial                            | 86,788,275        | 5,126,690            | 0              | 11,401       | 72,292                         |
| Industrial                            | 16,136,697        | 2,313,406            | 0              | 0            | 20,874                         |
| Total                                 | 398,106,426       | 16,860,057           | 292,000        | 23,295       | 288,654                        |

**Table 3. Community CO<sub>2</sub>e Emissions (2009)**

| Community CO <sub>2</sub> e           | Electricity CO <sub>2</sub> e (tons) | Natural Gas CO <sub>2</sub> e (tons) | Fuel Oil CO <sub>2</sub> e (tons) | Waste CO <sub>2</sub> e (tons) | Total CO <sub>2</sub> e (tons) |
|---------------------------------------|--------------------------------------|--------------------------------------|-----------------------------------|--------------------------------|--------------------------------|
| Residential (Single and Multi-family) | 134,081                              | 55,237                               | 3,284                             | 2,885                          | 195,487                        |
| Commercial                            | 39,422                               | 30,062                               | 0                                 | 2,808                          | 72,292                         |
| Industrial                            | 7,330                                | 13,544                               | 0                                 |                                | 20,874                         |
| Total                                 | 180,833                              | 98,843                               | 3,284                             | 5,693                          | 288,653                        |

**Table 4. Community Transportation and CO<sub>2</sub>e Emissions (2009)**

| Community      | Vehicle Miles Traveled | Gasoline CO <sub>2</sub> e (tons) | Diesel CO <sub>2</sub> e (tons) | Total CO <sub>2</sub> e (tons) |
|----------------|------------------------|-----------------------------------|---------------------------------|--------------------------------|
| Transportation | 43,413,025             | 23,497                            | 4,566                           | 28,063                         |

**Figure 2. Community CO<sub>2</sub>e Emissions (2009)**

## Recommendations

- Electrical Usage:** Provide incentives and education of more efficient practices, e.g. SustainableWorks 2011 audits and retrofit projects in the Shoreline community
- Natural Gas:** Encourage upgrading to new, more efficient systems
- Transportation:** Motivate use of bus use, carpools, biking and walking