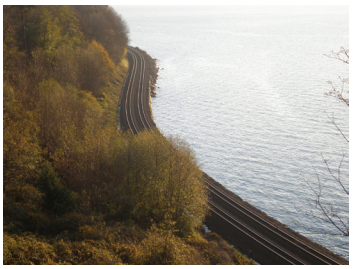
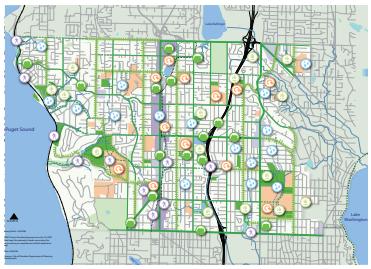
SHORELINE
ENVIRONMENTAL SUSTAINABILITY STRATEGY


FINAL

City of Shoreline
July 14, 2008

acknowledgments

The Shoreline Environmental Sustainability Strategy was developed through the collaborative efforts of community members, public officials, City of Shoreline staff, and the consulting firms – AHBL, Inc. and O'Brien and Company. The following City of Shoreline staff members and elected officials were contributors to the Strategy's creation:

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The City wishes to thank all of the members of the Shoreline community and City staff who took time to attend the community conversations and review and comment on drafts of the Shoreline Environmental Sustainability Strategy. Additional thanks to Susan Will and Jessica Simulcik Smith for their technical support.

**Term ended prior to City Council adoption of this Strategy.*

table of contents

TABLE OF CONTENTS

executive summary

A standard definition of sustainability is meeting the needs of the present without compromising the ability of future generations to meet their own needs, while working to regenerate and restore the environment where it has been damaged by past practices. Towards this end, a major goal of creating and implementing the Shoreline Sustainability Strategy is so future generations of local residents will have the resources and means to live at least as well as, and preferably better than, people today.

This is evident in the Mission Statement of the document, which states, *"The City of Shoreline will exemplify and encourage sustainable practices in our operations and in our community by:*

- *Being stewards of our community's natural resources and environmental assets;*
- *Promoting development of a green infrastructure for the Shoreline community;*
- *Measurably reducing waste, energy and resource consumption, carbon emissions and the use of toxics in City operations; and*
- *Providing tools and leadership to empower our community to work towards sustainable goals in their businesses and households."*

These aspirations will affect many overarching City policies and development regulations, the operations of every City department, the design of every Capital Improvement Program, and eventually begin to change the appearance and health of the built and natural environments. It is no small task.

Because this scope is so broad, and the universe of "sustainability" so vast, the City opted to propose a strategy that provides overarching direction for future efforts through the delineation of guiding principles, focus areas, new tools, available resources, and an evaluation of existing programs and staff capacity to implement more ambitious projects. This is different than drafting a plan which would lay out a specific workload or timeline for particular programs and endeavors. It provides the flexibility for the Council and staff to work to evaluate innovative ideas and prioritize their implementation based on cost analysis and funding availability, leveraging of partnerships, and staff capacity as opportunities arise and political will dictates.

As a first step in this process, 10 Guiding Principles were developed and organized into two areas of emphasis. Strategic Guidance principles address overall effort and process, and Action Area principles address key substantive aspects of initiatives.

STRATEGIC GUIDANCE:

1. Sustainability will be a key factor in policy development
2. Lead by example and learn from others
3. Environmental quality, economic vitality, human health and social benefit are interrelated systems
4. Community education, participation and responsibility are key elements
5. Commitment to continuous improvement

ACTION AREAS:

6. Manage expected growth in a sustainable way
7. Address impacts of past practices
8. Proactively manage and protect ecosystems
9. Improve and expand waste reduction and resource conservation programs
10. Energy solutions are key to reducing our carbon footprint

In order to further organize the subject matter into categories which could provide additional structure and continuity to the document, the consultant team of AHBL and O'Brien and Co. also categorized recommendations into different Focus Areas. These represent the areas in which the City can leverage its impact, influence and investment most efficiently and effectively:

- City operations, practices and outreach
- Energy conservation and carbon reduction
- Sustainable development and green infrastructure
- Waste reduction and resource conservation
- Ecosystem management and stewardship

These topics were rolled out for public discussion at a series of two open houses dubbed "Community Conversations." The first occurred on October 11, 2007, and featured a rotating series of short, focused and facilitated discussions. The second

workshop took place on November 14, 2007, and centered on establishing priorities for implementation.

With public input in hand, the consultant and City staff teams set to drafting the actual document. The "Strategic Directions" section contains a more thorough discussion of the Focus Areas. Each category's section includes a description of key issues and what the City is doing currently to address them; a brief description of recommendations, including what existing programs should be continued, expanded or modified; and summary diagrams that show key objectives, recommendations, targets and indicators and how they relate to each other.

It also begins with a list of ten key program strategies, which are also an example of the types of actions the City will commit itself to pursuing upon adoption of the Strategy, even though the specifics will be determined by existing, modified, or proposed processes. These Key Program Strategies are as follows:

1. Develop and integrate the sustainability program into all City functions
2. Develop a residential green building program
3. Build and support a sustainability leadership structure
4. Measure emissions in permitting and planning and take steps to mitigate
5. Prioritize non-motorized transportation investment and planning
6. Adopt a more aggressive green fleet policy
7. Adopt a clear and aggressive green building policy
8. Adopt a comprehensive environmental purchasing policy
9. Strengthen internal recycling efforts and community outreach
10. Structure and prioritize natural resources enhancement

This chapter also includes three graphic displays of "Green Infrastructure" opportunity - types, sites and a map - that represents geographic locations that attendees of the first Community Conversation marked as prospects for innovative projects.

The focus of the document then turns to implementation and introduces the Capacity Assessment Matrix, a tool developed to analyze each of the fifty recommendations in terms of available financial and human resources, located in Appendix C. This methodology specifically considers initial cost premium, lifecycle cost savings, benefits, required staffing, operating budget impacts, capital budget impacts, internal responsibility, external responsibility, available external resources and whether the action is required to meet an existing agreement.

The Strategy then details the sixrteen Priority Recommendations that the consultants viewed as "easy wins" and ways to leverage current City efforts or achieve results using existing resources in new ways. Of these priorities, the first eight are new recommendations, many of which are important initial steps that must be taken if the City is to establish baselines by which to benchmark its progress towards increased sustainability. The last eight are continuations or expansions of existing programs or initiatives. Each Priority Recommendation includes a discussion of why it is a priority as well as implementation considerations.

The body of the document concludes with Implementation Resources, including funding, regulations and policy planning, as well as opportunities for business partnerships. The appendices then delve into more depth by presenting analyses of many aspects that will be necessary to achieve goals. While the body of the document is written for general public consumption, the appendices will be most helpful to elected and appointed officials and staff as they begin the work of integrating sustainability into their established processes and programs.

EXECUTIVE SUMMARY

Overall, the Strategy is organized so that chapters could stand alone and be understood without reading the document as a whole. As a result, there is some redundancy as the big picture relationships and comprehensive nature of environmental sustainability are interwoven. It is also intended to be read by a wide spectrum of people with varying knowledge of sustainability and municipal issues, from the Council members who will ultimately make many decisions to residents who are interested in becoming part of the larger solution to many of the threats that loom on the horizon, like climate change, deteriorating water quality and habitat loss. One goal of the Strategy is that it may be a call to action and provide inspired direction to all.

The appendices are summarized below:

A: Of the 50 Sustainability Recommendations listed in this appendix, 27 of them are current programs. The consultant team's notes are included for additional clarification.

B: The Existing Program Summary Matrix contained here details these ongoing efforts and provides direction as to whether the City should ensure their continuation, modify the overall approach or expand current efforts.

C: The Capacity Assessment Matrix is another tool to evaluate existing capacity to implement recommendations through examination of a number of benefit, finance and human resource factors.

D: The Low Impact Development and Green Building Code Assessment is a thorough look at existing codes dealing with these topics, a description of their intent and a gap analysis.

E: The Sustainable Decision-Making Tool delineates a four-step process by which staff may identify or distill a potential action or decision, make an initial qualitative evaluation and comparison, perform a brief SWOT (strength, weakness, opportunity, threat) analysis and a preliminary cost and resource evaluation. This will allow for comparison of alternatives, as well as indicate which recommendations should be pursued for further analysis, tabled until more information or resources become available or rejected as infeasible.

F: This list of twenty-eight indicators, which may be used to establish a baseline for City operations and existing conditions, is organized by Focus Area. These would enable the City to track progress towards sustainability over time to gauge how successful its initiatives have been at achieving their intended goals. Indicators would measure data for both internal City operations and the greater Shoreline community.

G: Implementation Tools is a more complete guide to resources available for municipalities, to assist them in their quest to become more sustainable, energy efficient and environmentally proactive.

acronymns

You may come across these acronyms while reading the Shoreline Environmental Sustainability Strategy. Here is an explanation of the acronyms for your convenience.

ASHRAE – American Society of Heating, Refrigerating and Air-conditioning Engineers
BMP – Best Management Practice
CFL – Compact Fluorescent Lamp
CIP – Capital Improvement Program
CLC – Cascade Land Conservancy
CSBA – Certified Sustainable Building Advisor
CTR – Commute Trip Reduction
DOE – Department of Ecology
EDG – Engineering Development Guide
EPA – Environmental Protection Agency
EPP – Environmental Procurement Policy
FTE – Full Time Equivalent
GHG – Greenhouse Gas(es)
GIS – Geographic Information System
ICLEI – International Council for Local Environmental Initiatives
IBID – Index of Benthic Invertebrate Diversity
Ivy OUT – Ivy Off Urban Trees
KCSWDM – King County Surface Water Design Manual
LEED – Leadership in Energy and Environmental Design
LEED AP - Leadership in Energy and Environmental Design Accredited Professional
LID – Low Impact Development
LOS – Level of Service
MPG – Miles Per Gallon
NEST – Neighborhood Environmental Stewardship Team
PLACE3S – Planning for Community Energy, Economic and Environmental Sustainability
PSE – Puget Sound Energy
ROW – Right-of-Way
RSW – Residential Solid Waste
SEPA – State Environmental Policy Act
SCL – Seattle City Light
SMC – Shoreline Municipal Code or Seattle Municipal Code
TBD – To Be Determined
USGBC – United States Green Building Council
WQI – Water Quality Index
WRIA – Water Resource Inventory Area

DEPARTMENT ACRONYMS:

C - Clerks
CMO – City Manager's Office
CS – Community Services
ED – Economic Development
F – Finance
IT – Information Technology
HR – Human Resources
PDS – Planning and Development Services
PRCS – Parks, Recreation and Cultural Services
PW – Public Works
PW-E – Public Works-Engineering
PW-ES – Public Works-Environmental Services
PW-F/O – Public Works-Facilities/Operations
PW-S/A – Public Works-Streets/Aurora
PW-SW – Public Works-Surface Water

1 introduction & policy framework

PURPOSE

The City of Shoreline has taken a bold step towards creating a better future for its citizens by developing a clear, cohesive and measurable approach to sustainability.

For several years, the City has made gains in the realm of environmental protection and stewardship. By creating an Environmental Sustainability Strategy, Shoreline intends to build on existing efforts, expand into new areas it deems critical to a viable community future and provide leadership in the region.

Sustainability is necessarily a community effort. This plan recognizes and relies on the continuing good work of Shoreline's community - individuals, businesses, non-profits, utilities and City staff and decision-makers.

In addition to supporting this goal, the Strategy guides the design of programs and policies in support of other Council Resolutions, including the:

- US Conference of Mayors Climate Protection Agreement (Resolution No. 242);
- Cascade Agenda (Resolution No. 260); and
- Green City Partnership Program (Resolution 260).

In addition, the Strategy supports and implements numerous aspects of existing policies contained in the City of Shoreline Comprehensive Plan.

What is Sustainability?
Sustainability means meeting the needs of the present without compromising the ability of future generations to meet their needs. The hope is that future generations will live at least as well as, and preferably better than, people today. True environmental sustainability requires regeneration and restoration of the environment where it has been damaged by past practices.

A bicyclist approaching the Interurban Trail.

City Council 2007-2008 Work Plan, Goal #6: Create an Environmentally Sustainable Community

Provide management and stewardship of natural resources and environmental assets such that their value is preserved, restored and enhanced for future generations, and such actions complement community efforts to foster economic and social health. Components include:

- *Implementing "Green" practices at all City-owned or operated facilities;*
- *Requiring new development or redevelopment to achieve high standards for stormwater management and energy efficiency; and*
- *Reduction of solid waste and maximizing recycling and reuse of resources.*

WHY A STRATEGY?

Sustainability is a complex issue that addresses the full range of local government activities, from operations and public programs to capital projects and development regulation. Many of the individual aspects of sustainability are or can be incorporated during the next regular updates of adopted plans (e.g. Comprehensive Plan), but no one plan can adequately address sustainability because it impacts the entire range of City functions.

Instead the City has crafted this Strategy to identify a broader, more inclusive set of principles and priorities set forth as policy to be adopted by the City Council. It takes stock of existing environmental initiatives as well as strengths, weaknesses, threats and opportunities. It identifies objectives, measurable performance targets, indicators to track progress, and decision-making tools. From this analysis, gaps in the existing program mix have been identified and recommendations crafted. The Sustainability Strategy, in conjunction with other guidance documents, will advise and inform updates to plans, programs, projects, codes and budgets that will be further refined by City staff, stakeholders and the City Council. The City will use the Guiding Principles, priorities, tools and resources described herein to implement policies and processes which will increase the community's environmental sustainability.

A community garden at High Point in West Seattle.

View out to Puget Sound from Shoreline.

What gets measured gets done.

MISSION STATEMENT

The following Mission Statement creates a framework that aligns the City's various plans, policies, operations and actions.

The City of Shoreline will exemplify and encourage sustainable practices in our operations and in our community by:

- ***Being stewards of our community's natural resources and environmental assets;***
- ***Promoting development of a green infrastructure for the Shoreline community;***
- ***Measurably reducing waste, energy and resource consumption, carbon emissions, and the use of toxics in City operations; and***
- ***Providing tools and leadership to empower our community to work towards sustainable goals in their businesses and households.***

Ten Guiding Principles

As a first step in this process, ten Guiding Principles were developed and organized into two areas of emphasis. Strategic Guidance principles address overall effort and process, and Action Area principles address key substantive aspects of initiatives.

STRATEGIC GUIDANCE

1 **Sustainability will be a Key Factor in Policy Development**
The City will establish policy decisions and priorities considering their long-term impacts on the natural and human environment.

2 **Lead by Example and Learn from Others**
The City will lead by example and encourage other community stakeholders to commit to sustainability. We will learn from others' success and design our programs, policies, facilities and practices as models to be emulated by other organizations and individuals.

Dr Arthur Kruckeberg and his wife Mareen created a four-acre collection of rare and native plants now owned by the City of Shoreline.

3 **Environmental Quality, Economic Vitality, Human Health and Social Benefit are Interrelated Systems**
The City recognizes that a sustainable community requires and supports economic development, human health and social benefit. Human health depends on the environmental, economic and social health of our communities.

Natural landscaping at Shoreline Townhomes on Echo Lake. Grass bioswale connects drive-way to new raingarden.

4 **Community Education, Participation and Responsibility are Key Elements**
The City will promote community awareness, responsibility and participation in sustainability efforts through public outreach programs and other opportunities for change. The City will serve as catalyst and facilitator for partnerships to leverage change in the broader community.

5 **Commitment to Continuous Improvement**
The City will apply adaptive management to its efforts and clearly communicate findings to the Shoreline community - individuals, businesses, non- profits, utilities, and City decision makers. Analytical and monitoring tools and performance targets will be used to ensure the best possible investments in the future are made.

ACTION AREAS

6

Manage Expected Growth in a Sustainable Way
The regional benefits of growth management must not come at the expense of livability. Growth and density will be focused in environmentally suitable areas and serviced by improved infrastructure, including non-motorized facilities, transit and enhanced access to parks and natural features.

7

Address Impacts of Past Practices
We must address the impacts of past actions as we plan for the future. The City will identify and address environmental degradation resulting from urban development. Impacts caused by outdated infrastructure will be a priority. Stormwater solutions, including urban forest health and low impact development standards, and the lack of pedestrian walkways will be emphasized.

A "Built Green" home in Shoreline.

8

Proactively Manage and Protect Ecosystems
Good stewardship demands that we protect and actively manage our dynamic local environment. The City will establish clear priorities and targets for natural area enhancement such as salmon habitat and wetlands restoration. We will manage public lands for multiple benefits and empower stakeholders to improve residential, institutional and commercial properties.

The Interurban Trail crossing Aurora Avenue.

9

Improve and Expand Waste Reduction and Resource Conservation Programs
The City will evaluate and implement strategies to reduce solid waste. The City will partner with utilities to reduce water consumption, promote conservation, and investigate new technologies. The City will implement the "Cradle to Cradle" concept- reducing environmental impacts from initial sourcing through the end of product life.

10

Energy Solutions are Key to Reducing Our Carbon Footprint
The City will reduce the amount of energy used in vehicles and facilities and promote sustainable sources. The City will evaluate energy use and carbon emissions and develop conservation targets. The City recognizes the relationship between energy and sustainable development principles. Transportation solutions and efficient buildings are key priorities for both.

FOCUS AREAS

As this Strategy was developed, five Focus Areas emerged from the Guiding Principles. Focus Areas frame, analyze and organize key components of the Strategy. The Focus Areas are:

1. City Operations, Practices and Outreach
2. Energy Conservation and Carbon Reduction
3. Sustainable Development and Green Infrastructure
4. Waste Reduction and Resource Conservation
5. Ecosystem Management and Stewardship

STRATEGY ORGANIZATION

The Strategy is organized into the following sections:

Chapter 1: Introduction
The Introduction identifies the City Council direction for the Strategy, the basic policy framework for this effort and its content.

Chapter 2: Methodology
This chapter outlines the methods used to develop the Strategy. It touches on techniques employed, including a review of existing municipal sustainability programs, interviews with City staff, public involvement and analysis of existing program strengths, weaknesses and opportunities. It also briefly describes the development of a sustainable decision-making tool and an assessment of the City's capacity to implement the Strategy.

Chapter 3: Strategic Directions
This is the core of the Environmental Sustainability Strategy. It is organized into sections aligned with the five Focus Areas. Each section summarizes why the Focus Area is important and offers specific objectives. The summary describes existing City efforts related to that Focus Area, characterizes the recommendations and highlights a key issue or potential action in greater detail. Diagrams in each section relate objectives, targets, indicators and recommendations for each of the five Focus Areas. In addition, a map and discussion of Green Infrastructure System Opportunities is included in the Sustainable Development and Green Infrastructure section.

Chapter 4: Implementation
This chapter addresses key issues related to implementation of the Strategy. It assesses the capacity needed to act on the recommendations, with additional detail provided on all high priority recommendations. Factors such as costs (e.g. first, lifecycle, capital and operations costs), benefits, staffing requirements and internal and external responsibility are identified to a conceptual level of detail. Key resources vital for the next phases of implementation (e.g. approval of plans, codes, programs, projects and budgets) are identified.

Appendices A through F
Appendices provide additional details on recommendations, existing program assessment, revisions to City development codes and the sustainable decision-making tool.

Signage and new multifamily housing along the Interurban Trail.

2 methodology

METHODS FOR DEVELOPING THIS STRATEGY

The Shoreline Environmental Sustainability Strategy was developed using several approaches, including:

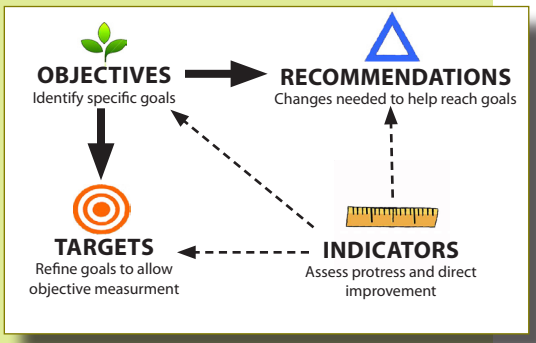
1. Assessment of what other innovative local governments are doing to promote sustainability;
2. Interviews with key staff to assess what is working and identify opportunities;
3. Development of a policy framework, strategic objectives and initial targets;
4. Inventory and assessment of current City plans, programs, and policies;
5. Public involvement and input using various interactive techniques; and
6. Development of decision tools, analysis of key gaps and potential recommendations.

The first step in developing the Strategy was to identify lessons learned from other communities around the region that have successfully implemented sustainability programs.

Based on these lessons learned and interviews with key staff, a set of draft Guiding Principles and Key Objectives were developed. These serve as a two-tiered framework for the Strategy and provided a foundation for an assessment of current City plans, programs, and policies to evaluate what is already occurring, and to identify existing gaps.

COMMUNITY CONVERSATIONS

A series of two community conversations provided stakeholders the opportunity to identify potential actions aligned with the Guiding Principles and to help prioritize the recommendations that emerged from this process. Prioritization of these recommendations was based on many factors that impact ease of implementation, as well as the environmental and community benefit. In addition, a decision tool was created for City staff to develop potential actions as the Strategy evolves.



A diagram of the relationship of key components of the Strategy.

Key Terms and Relationships:

Guiding Principles *establish the overarching direction and focus of the strategy.*

Key Objectives *identify clear goals for our strategic efforts.*

Targets *refine goals into measurable statements reflecting budget and other considerations.*

Indicators *measure progress toward our goals and let us know if the Strategy needs adjustment.*

Recommendations *include specific actions and new ideas to help us reach our goals.*

CASE STUDY LESSONS

In developing the Shoreline Environmental Sustainability Strategy the City had the benefit of building on the collective experience of other cities. Lessons learned from review of such programs include:

- Create or use a framework that provides structure for the program;
- Engage the community and build capacity for citizen involvement;
- Make the program autonomous within the City governance structure;
- Identify a champion to be a steward and public face of the program;
- Give the plan statutory authority;
- Make sustainability the overarching policy framework;
- Start with a measurable rallying point;
- Create a baseline;
- Keep indicators static – adjust targets;
- Base decisions in science;
- Focus on "executable tasks;"
- Find a perpetual funding source; and
- Start small and scale up.

WHAT IS GREEN BUILDING?

Green buildings are designed and built to be healthier for their occupants, conserve water and energy, and reduce impacts on the environment. Green buildings do more than reduce negative environmental impacts – they often provide long-term benefits to owners, such as reduced operations and maintenance expense over the service life of the building.

WHAT IS LOW IMPACT DEVELOPMENT?

Low Impact Development (LID) is an environmentally sensitive approach to stormwater management with the goal of mimicking a site's predevelopment hydrology and generating no measurable impacts to aquatic environments influenced by the development.

STAFF INTERVIEWS

Meetings and interviews were conducted with key City staff to develop overarching policies for the program, get feedback on current programs and potential assessment criteria, develop a set of preferred programmatic characteristics and elements, and get input on public outreach.

COMPREHENSIVE PLAN GAPS

A review of the City's Comprehensive Plan revealed that it provides general guidance for many components of sustainability, however it was evident that there are important aspects that are not currently addressed. It was recommended to City staff that following adoption of the Sustainability Strategy, the policy framework of the Comprehensive Plan be augmented to address key gaps, including:

- Identifying and leveraging partners in achieving sustainability
    - Utilities and other local governments
    - Businesses and institutions
    - Citizen involvement
- Actions that improve public health
    - Encouraging active lifestyles
    - Eliminating use of toxic substances
    - Promoting use of non-hazardous materials
- Local and/or regional food production, sales and consumption
    - Farmer's markets
    - Community garden programs
    - Public awareness campaigns
    - Farm to school programs
- Water conservation
- Fleet vehicle and other key operations policies
- Air quality
- Green Building and Low Impact Development
    - Incentives and codes
    - Assistance and training
    - Capital Improvement Plan and policies

METHODOLOGY

INVOLVING THE PUBLIC

"Community Conversations" (public workshops), were conducted as part of the development of the Strategy. The overall intent of the workshops was to hear what was important to stakeholders and their ideas on what the City can do and what individuals can do to further sustainability.

COMMUNITY CONVERSATION #1

The first Community Conversation featured a "conversation café" – a rotating series of short, focused and facilitated discussions. This discussion was focused on receiving specific public input on key sustainability issue areas identified by the City and Consultant Team.

- Green Infrastructure
- Carbon and Energy
- Low-Impact Development (LID) and Green Building
- Waste Reduction and Resource Conservation

The issue areas were subsequently modified to create the Focus Areas that provide a framework for analysis and organization of the Strategy. Comments received at this workshop were helpful in solidifying the Guiding Principles that provide the policy framework for this effort. Participants at the workshop also provided input on desired initiatives and changes related to both the City's internal operations and the larger Shoreline community. These ideas were incorporated into Key Objectives upon which the recommendations, targets and indicators of the Strategy are based.

COMMUNITY CONVERSATION #2

The second workshop was focused on establishing priorities for implementation. Attendees were given a limited budget of "green bucks" they could allocate to potential actions, and thus help establish priorities for actions. Attendees were also asked to comment on the proposed indicators, and offer their ideas on how the indicators could be refined.

COMMUNITY CONVERSATIONS: Engaging the Public

Key issues identified included:

- **High participant interest in the development of a Green Infrastructure System:** creek enhancement and daylighting, improved street landscaping, an integrated pedestrian walkway and trail network, and improving east-west bike and transit connections.
- **Energy and Carbon comments included:** create real alternatives to the single occupant vehicle through City investment, leadership and regulation; support individual actions in the home and the Comprehensive Plan, codes and tax incentives.
- **Community input on Waste Reduction and Resource Conservation included:** recommendations on initiatives related to food and yard waste composting, construction waste recycling, water conservation tools such as rain barrels and reuse and community outreach messaging.
- **Green Building and LID feedback included:** revise existing codes, provide technical assistance, provide incentives and reduce impervious surfaces through pervious pavements and other technologies.
- **Community Conversation #2 participants expressed the highest support for the following recommendations:** revise code standards to guide and promote green building and LID, provide expanded "how to be sustainable" information, implement waste reduction incentives, and modify the stormwater utility fee to LID.
- **Key input on indicators included:** research other cities, partner with schools and non-profits on data collection, engage the Chamber of Commerce and measure actual consumption and usage instead of proxies such as cost and facility size.

Community Conversation #1

SUSTAINABLE DECISION-MAKING

Upon establishing the possibilities for what the City could do with its Sustainability Strategy – from governance models to specific program components, the next step was to identify decision-making criteria for assessing what the City should do. Assessment criteria are useful in studying possible actions and policy directions for the City. They will help provide a better sense of the value of existing programs, as well as identify where new actions are needed. Assessment criteria can identify actions or policies that on their face may seem to fit the overall sustainability strategy, but when evaluated more closely seem a poor use of City's finite resources. The intent is to find actions and policies that leverage resources and provide significant benefit either by creating major improvements in a particular focus area, or better yet, addressing multiple high level goals.

Initial efforts in the Sustainability Strategy should be focused strategically on areas of greatest impact and "low-hanging fruit" – opportunities that will build on existing programs and lead to early successes.

City of Shoreline booth on Bike to Work Day.

Three general areas of consideration include:

Impact
Where does the City have the greatest opportunity to benefit the economy, the environment and the community?

Influence
The greatest opportunity to make a difference may be in those areas where the City can influence or support others in the community.

Investment
The sustainability program should, above all, be sustainable – projects should be selected that contribute to the City financially, optimize existing resources and programs, build on previous work, improve worker morale and safety, or enhance customer relations.

The recommended decision-making approach considers *impact, influence and investment* through a four-step process:

- **Step 1:** Identify and Distill Potential Actions or Decisions
- **Step 2:** Initial Qualitative Evaluation and Comparison
- **Step 3:** Modified Strength, Weakness, Opportunity and Threat (SWOT)
- **Step 4:** Preliminary Cost and Resource Evaluation

See Appendix C for more details on the decision-making tool that was developed for the Strategy. This tool can be used to identify and evaluate potential actions and recommendations.

ESTABLISHING KEY OBJECTIVES

An important aspect of developing the Strategy was to inventory and analyze existing policy direction and current programs and compare them with potential objectives that are built on the Guiding Principles.

METHODOLOGY

The City's environmental sustainability objectives were drawn from four sources:

- On-going activities promoting some act of environmental stewardship provide insights as to what the City cares about;
- Major regional and national initiatives the City has recently adopted include specific objectives;
- The City's Comprehensive Plan includes language promoting aspects of sustainability; and
- As part of this project, through the Community Conversations and City Team meetings, additional specific objectives were identified based on the Guiding Principles.

Using this process, potential objectives for the Environmental Sustainability Strategy were identified in five Focus Areas:

- City Operations, Practices and Outreach,
- Energy Conservation and Carbon Reduction,
- Sustainable Development and Green Infrastructure,
- Resource Conservation and Waste Reduction, and
- Ecosystem Management and Stewardship.

Some of these potential objectives focus on internal action within the City organization, some on external actions between the City and stakeholders, and some on both internal and external actions.

> *"Emphasize affordability and sustainability."*
>
> Comment from Community Conversation #2 Participant

RECOMMENDED CITY ACTIONS

The discussion in Chapter 3 forms the heart of the Environmental Sustainability Strategy. It includes a summary of each Focus Area: what the City is currently doing, what changes are recommended and a visual map of the relationship between objectives, recommendations, targets and the indicators that provide feedback for continuous improvement.

IMPLEMENTATION & CAPACITY ASSESSMENT

Implementation of the Environmental Sustainability Strategy will entail both City and citizen action. Assessing available financial and human resources both internal and external to the City is an important step towards developing a realistic implementation approach. A capacity assessment methodology was established to assist the City in determining the cost and benefits of potential actions. This methodology specifically looks at:

- Initial cost premium
- Lifecycle cost savings
- Benefits
- Required staffing
- Operating budget impacts
- Capital budget impacts
- Internal responsibility
- External responsibility
- Available external resources
- Whether action is required to meet an existing agreement

See Chapter 4 for more details on capacity assessment, including a summary of findings, additional details on short-term recommendations and additional resources available for further assessment.

3 strategic directions

STRATEGIC DIRECTIONS OVERVIEW

The following sections define the five key Focus Areas of the Shoreline Environmental Sustainability Strategy: City Operations and Outreach, Energy and Carbon, Sustainable Development, Resource Conservation and Waste Reduction and Ecosystem Stewardship.

Each Focus Area section includes:

- A description of key issues and what the City is doing currently to address them;
- A brief description of recommendations, including what existing programs should be continued, expanded or modified; and
- Summary diagrams that show key objectives, recommendations, targets and indicators and how they relate to each other.

The City is taking significant steps in its operations, projects, programs and practices to address sustainability. The framework provided by a set of Guiding Principles and Key Objectives organized by Focus Area will give the program more structure.

RECOMMENDED ACTIONS

Sustainability is a complex issue and cuts a broad swath across many topics. Even with a significant attempt at distillation, 50 recommendations emerged as a result of this effort. Key recommendations are summarized within each Focus Area and a complete and detailed list is provided in Appendix A for ease of implementation.

TOP TEN PROGRAM STRATEGIES

Several of the recommendations from the list of 50 are interrelated and represent high priorities, especially when combined. To represent these high-priority and integrated action steps, a list of "top 10" program strategies was developed. These are summarized on pages 18 and 19.

A 5-Star "Built Green" residence in Shoreline.

Sustainability Strategy Focus Areas

Focus Areas were developed based on the policy guidance of the Guiding Principles and input during Community Conversation #1. The Focus Areas capture the essence of the five major program areas in the Strategy and provide a concise analytical and organizational framework.

- *City Operations and Outreach*
- *Energy and Carbon*
- *Waste Reduction and Resource Conservation*
- *Sustainable Development and Green Infrastructure, and*
- *Ecosystem Conservation and Management*

Performance Measurement

Performance measurement, through a system of targets and indicators, will help ensure efficacy and accountability. Preliminary performance targets have been identified. The City will need to do additional staffing and budget analysis to finalize targets.

Top 10 List of Key Program Strategies

1

Develop and integrate the sustainability program into all City functions
Establish and reinforce sustainability as a consistent and unifying factor in policy development and program analysis across all departments. Evaluate the impact of potential decisions and actions on sustainability in a structured and transparent manner (e.g. Sustainable Decision Making Tool). Establish baselines and performance targets for all focus areas. Implement an indicator tracking system to measure progress over time, communicate progress and engage business community and residents in the overall effort.

2

Develop a residential green building program
Model sustainability by prioritizing and promoting Green Building and Low Impact Development (LID) proficiencies in select City staff and providing information on related building practices, resources and opportunities. Revise zoning and engineering standards to provide clear guidance and incentives for LID and Green Building.

People are an essential part of a sustainable community.

3

Build and support a sustainability leadership structure
Create a permanent Green Team – a sustainability leadership structure with management and technical components. A temporary sustainability project team with management and technical committees was set up to develop the Strategy. Implementation of the Sustainability Strategy will require significant City staff resources. Current fiscal projections indicate that additional City staff positions will likely not be available for sustainability in the budget for the next few years. Establishment of a permanent leadership structure to guide implementation will require the adjustment of staff resources, responsibilities and priorities to act on recommendations contained in the Strategy, while meeting existing City responsibilities.

4

Measure emissions in permitting and planning and take steps to mitigate
Evaluate energy consumption and greenhouse gas emissions in both long range planning and development review decisions using quantitative tools. This includes implementation of this recommendation in State Environmental Policy Act (SEPA) review and the use of quantitative tools during the next major Comprehensive Plan update.

Pedestrian and bus transportation in Shoreline.

5

Prioritize non-motorized transportation investment and planning
Devote more planning and capital resources to developing a pedestrian and bike system as an attractive alternative to single occupant vehicles. Prioritize non-motorized transportation planning and improvements with a focus on linking destinations, including an emphasis on the development of the Green Streets program. Non-motorized transportation investment is a key item in the U.S. Mayor's Climate Protection Agreement.

STRATEGIC DIRECTIONS

Adopt a more aggressive green fleet policy
Require alternative fuel vehicles, 45 mpg or higher for fossil fuel vehicles and most efficient cost effective option available for exempt vehicle types. The current policy of replacing 2% of the vehicles annually with alternative fuel vehicles will not achieve the commitments made in the U.S. Mayor's Climate Protection Agreement. 6

Adopt a clear and aggressive green building policy
Lead by example. For all new City construction, require at a minimum the US Green Building Council's Leadership in Energy and Environmental Design (LEED) Silver standard and the American Society of Heating, Refrigeration and Air Condition Engineers (ASHRAE) Commissioning standard. For existing City buildings, require upgrade of building systems and fixtures to meet Energy Star, using most efficient options. This is required to effectively meet the Mayor's Climate Agreement. 7

Forested slopes merge into shoreline and railroad tracks.

Adopt a comprehensive environmental purchasing policy
Develop and adopt clear guidelines, preferences and requirements for preferred environmental attributes such as durability, waste reduction, low toxicity and environmental safety. This is a relatively "quick-win" that will enhance sustainability efforts across departments. 8

Strengthen internal recycling efforts and community outreach
Expand existing efforts to reduce, reuse and recycle in City offices, parks and other facilities with dedicated containers, more opportunities and more training. Additional "quick-wins" are available in City facilities and operations. With the CleanScapes transition occurring, the time is right to expand messaging and outreach on this issue in City facilities as well as out in the community. 9

A vegetated swale at High Point in West Seattle.

Structure and prioritize natural resources enhancement
A focused effort is needed to establish City priorities, targets, partners and funding mechanisms. A specific plan to identify and prioritize enhancement of our natural resources would improve the City's ability to obtain grant funding and synthesize existing watershed and functional plans. Two local examples of focusing and leveraging resources are Lake Forest Park and Kirkland. In the medium-term, the restructuring of surface water management utility fees and an enterprise fund should be considered for increasing stream, wetland and forest canopy enhancement efforts. 10

The following sections of the Strategic Directions chapter contain more detailed discussion of each of the five Focus Areas that are general priority areas and provide the organizational framework for this strategic plan.

FOCUS AREA 1: CITY OPERATIONS, PRACTICES & OUTREACH

INTRODUCTION

Sustainability is a community effort – and the City is best placed to lead, educate, and build capacity in the community. General strategies for City operations, practices, and outreach include engaging the community, ensuring accountability, and starting with measurable citizen rallying points. By focusing on tasks that individuals or groups can perform, City resources can leverage greater investment.

WHY IS IT IMPORTANT?

By building sustainability into internal operations, the City can lead by example – creating benchmarks and finding efficiencies that will inform efforts by businesses and individuals. Outreach is equally important in that it builds capacity and can have an exponential impact on sustainability efforts. Creating opportunities for businesses and individuals to contribute to sustainability, and training people to implement strategies are essential.

WHAT IS SHORELINE ALREADY DOING?

Shoreline has an active, engaged community that is already willing to devote time and resources to sustainability programs. Examples include habitat restoration projects in both the Thornton Creek and Boeing Creek watersheds. Information and outreach on efficient resource use are available for businesses through a City partnership with the Environmental Coalition of South Seattle (ECOSS).

The City's Environmental Mini-Grant program helps manage and steward natural resources and environmental assets for preservation, restoration, and enhancement. Grants up to $5,000 per application are awarded to individuals, community groups, and business owners on a first-come, first-served basis for projects on private or public property that provide a public benefit to the community.

Green Business Program

The movement to green Shoreline businesses is being helped by the Shoreline Chamber of Commerce. With a grant from King County, the Chamber is developing a Sustainable Business Certification program, much like the City of Kirkland's. The focus will be on educating businesses and then helping with marketing – recognizing these businesses for sustainability efforts. The Chamber is working in collaboration with the City's Economic Development Program to develop a model that can be easily adopted.

Natural Lawn Care booth at an Earth Day Fair in Shoreline.

FOCUS AREA 1: CITY OPERATIONS, PRACTICES & OUTREACH

As part of its Water Quality and Environmental Stewardship program, the City's Surface Water and Environmental Services (SWES) division manages an environmental education outreach program to involve the public in protection of aquatic ecosystems.

The City uses brochures and its web page to provide information on existing programs and education.

OBJECTIVES

Many objectives in this section overlap with other sections, and reinforce the integrated nature of the Sustainability Strategy. Objectives include increasing capacity and technical expertise, and leveraging and directing the resources of the larger Shoreline community in support of key sustainability objectives.

RECOMMENDATIONS

- **Start from a baseline for all Focus Areas and track progress over time.**
- **Create standard departmental procedures and expectations that support sustainability goals; then train staff, measure, reward and promote individual and departmental achievement of these goals.**
- **Establish a permanent green team or interdepartmental committee to focus on sustainability program management and techniques.**
- **Pursue funding to establish a key City staff position or contracted consultant related to sustainability.**
- **Develop a City-wide Environmental Purchasing Policy that governs internal purchasing decisions.**

Recommendations continued on next page.

Existing Program Evaluation: City Operations, Practices & Outreach

Analysis included evaluation of existing programs related to this Focus Area. Please see Appendix B for full details on program evaluation.

*Existing programs to **Ensure Continuation***

- *Adopt-a-Road and Adopt-a-Trail Programs*
- *Stormwater Standards and Program Update*
- *Regional Roads Maintenance Forum*

*Existing program areas where the City should **Expand Current Efforts***

- *Earth Day Celebration*
- *Neighborhood Environmental Stewardship Team*
- *Environmental Mini Grant Program*
- *Ivy Out Volunteer Program*
- *Habitat Restoration Projects*

*Existing program areas where the City should **Modify Overall Approach***

- *Green Building Program Implementation*
- *Sustainable Business Extension Service*
- *City Buildings, Operations, Practices and Policies*

Categories:

Ensure Continuation (As-Is): Program is valuable; no immediate need for significant changes to resources or approach.

Expand Current Efforts: Program is an excellent start; additional resources to expand program area will maximize benefits.

Modify Overall Approach: Existing efforts do not adequately address Sustainability Strategy objectives; planning and resources are required to restructure and then expand.

FOCUS AREA 1: CITY OPERATIONS, PRACTICES & OUTREACH

(Recommendations continued)

- **Work with Shoreline Chamber of Commerce to create a green business program.**
- **Provide "how to" info to the community through mailers, events, the website and brochures.**
- **Practice and promote green building and LID proficiencies in City planning and building.**
- **Provide incentives to the private sector to build to LEED, Built Green, or other sustainable building standards.**
- **Provide worksheets on specific innovations for permitting clients (e.g. greywater systems that meet code).**

A key element is to provide leadership and continuity during Strategy development, implementation, and expansion. A Green Team or permanent committee dedicated to sustainability would provide a leadership structure for the Strategy and serve as a resource for other City staff. Most successful programs also have a key position dedicated to sustainability – a champion who directs startup and manages daily operations. Most fully developed programs operate with only one or two additional full-time positions devoted to sustainability. Establishing a new full time sustainability position at the City of Shoreline may not be possible at this point due to budget constraints, but there are grant funds available that could help fund near-term contract work. In particular, the City should consider establishing a volunteer coordinator position to organize and leverage community resources.

Please see Appendix A for a complete list of recommendations, Appendix B for the full evaluation of existing programs and Chapter IV for implementation capacity and resources.

City of Shoreline staff on a forest management tour on Vashon Island.

City of Shoreline staff at the Transfer Station grand opening.

FOCUS AREA 1: CITY OPERATIONS, PRACTICES & OUTREACH

OBJECTIVE 1
Model Sustainability in City Operations

TARGET

Implement recommendations in four key areas: measurement, policy, leadership and training.

INDICATOR

1. TBD, City must determine benchmarks in all four areas. For example number of staff hours devoted to sustainability training per year per FTE[1] (as compared to previous four years). Sustainability credentials earned (LEED-AP [2], CSBA[3], others).

Recommendations

1. Integrate sustainability into City and Departmental missions, functions and decision making at all levels using clear and transparent tools.
2. Create baselines of existing conditions for all five Focus Areas. Track and report City's progress to community.
3. Create standard office procedures, training and expectations that support sustainability goals. Then measure, reward and promote individual and departmental achievement of those goals.
4. Develop a comprehensive environmental purchasing policy for all City purchasing decisions.
5. Establish a green team with two interdepartmental committees to focus on (internal) sustainability program management and sustainability techniques.
6. Prioritize and promote Green Building and LID[4] proficiencies in City building and planning staff including credentials such as LEED-AP, CSBA or equivalent.

1 Full-time Equivalent
2 Leadership in Energy and Environmental Design Accredited Professional
3 Certified Sustainable Building Advisor
4 Low Impact Development

FOCUS AREA 1: CITY OPERATIONS, PRACTICES & OUTREACH

OBJECTIVE 2
Engage Community in Sustainability Strategy Implementation

TARGET

Targets to be identified based on City budgets.

INDICATOR

1. Number of volunteer hours and distinct individuals devoted to sustainability projects per year (as compared to previous 4 years).
2. Number of businesses participating in green business certification program.
3. Number of LEED[6] certified and three star or above BuiltGreen projects within City limits (non-city owned).

Recommendations

1. Design public outreach campaign to expand community participation; provide practical "how to" information on sustainable living through a multi-faceted approach.
   - Celebrate Shoreline – sustainability booth and theme.
   - Sustainability Spotlight in Shoreline Currents newsletter.
   - Sustainable Shoreline Hero column in Shoreline Enterprise.
   - City "Green" web page and brochure describing and promoting the Strategy.
   - Student/volunteer carbon footprinting project.
1. Pursue grants to establish a key City staff position related to sustainability, such as a Volunteer Coordinator.
2. Provide incentives to the private sector to build to LEED, BuiltGreen or other sustainable standard.
3. Provide worksheets on specific innovations for permitting clients (e.g. greywater systems that meet code).

6 Leadership in Energy and Environmental Design

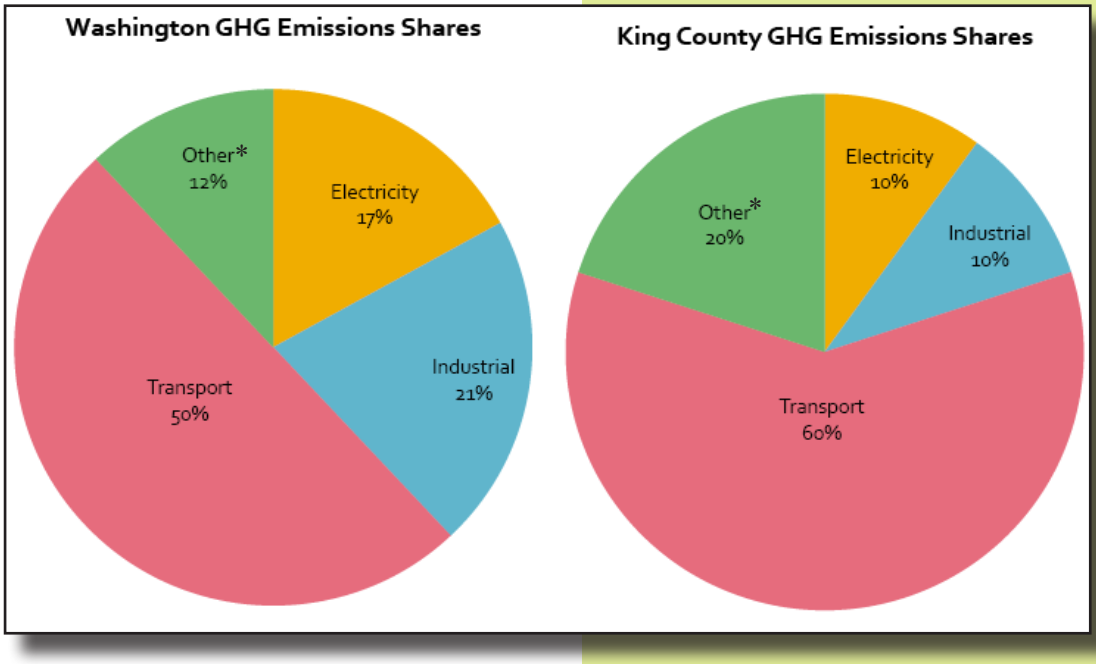
FOCUS AREA 2: ENERGY CONSERVATION & CARBON REDUCTION

WHY IS IT IMPORTANT?

Volatile energy pricing, reduced access to fossil fuels, and climate change have led the City to make energy conservation and reducing its carbon footprint significant priorities.

- Conservation will help reduce operating costs. Financial projections predict a budget gap starting in 2010.
- As energy prices become more volatile, economists predict future access to economical and domestic sources of fossil fuel will be uncertain. Conservation becomes an important "future-proofing" measure.
- Energy conservation is critical to successfully reducing the City's carbon footprint. Carbon dioxide is a greenhouse gas (GHG) – produced by burning of fossil fuels – that degrades the ozone layer and contributes to adverse climate change.

A privately-owned Smart Car in Shoreline.



***Other* includes non-energy agricultural and industrial emissions.**

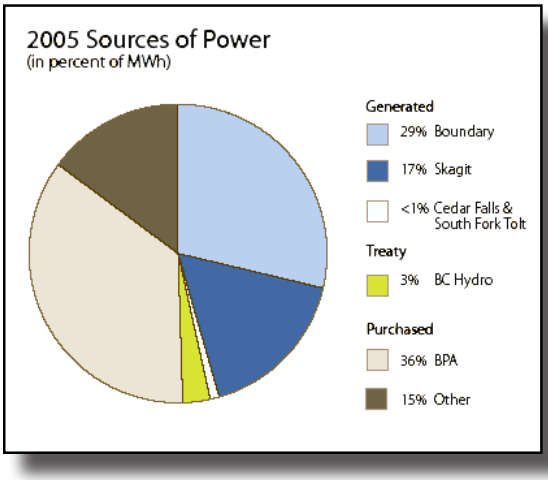
Figure 3.1
Puget Sound Energy Sources (2006)
State of Washington, CTED: Fuel Mix Disclosure

FOCUS AREA 2: ENERGY CONSERVATION & CARBON REDUCTION

SNAPSHOT OF CURRENT CONDITIONS

Most City vehicles run on fossil fuel – about 24,000 gallons of gasoline in 2007 alone (for a total cost of more than $60,000). In Washington State, 50% of greenhouse gas emissions come from transportation – the proportion rises to 60% in King County (see figure 3.1). Natural gas or oil is used to heat some City facilities – gas bills totaled $125,000 for Parks, Police, and Public Works facilities in 2007 – and many businesses and homes. The City uses more than 14,000 kWh of electricity annually for lighting, operating office equipment, and other plug loads.

Shoreline's electric utility, Seattle City Light, derives the majority of its power from hydroelectric sources (see Figure 3.2). Yet as energy demands increase, cheap hydroelectric power will be in increasingly limited supply.



Generation Type	Percentage
Hydro	86.45
Natural Gas	5.28
Nuclear	4.23
Wind	3.06
Coal	0.89
Other	0.09
TOTAL	**100.00**

Figure 3.2
Seattle City Light Sources (2005)
http://www.seattle.gov/light/aboutus/customerguide/

WHAT IS SHORELINE ALREADY DOING?

- The City is committed to purchase, and require contractors to operate, alternative fuel vehicles. For example, the municipal waste management contract requires CleanScapes to use 20% biodiesel fuel in its vehicles in the performance of its contract.
- The City is improving business access and transit lanes along Aurora Avenue.
- The City promotes alternatives to driving through transit improvements, enhanced bicycle access, and a Commute Trip Reduction (CTR) Program for City employees and other large employers.
- The City is also a member of the International Council for Local Environmental Initiatives (ICLEI), a global network of municipal governments committed to local environmental solutions. ICLEI provides information and training, organizes conferences, facilitates networking and city-to-city exchanges, carries out research and pilot projects, and offers technical services and consultancy. ICLEI's development model incorporates a five-milestone structure that participating local governments work through: (1) establish a baseline; (2) set a target; (3) develop a local action plan; (4) implement the local action plan; and (5) measure results. Shoreline may use ICLEI's proprietary software to model policy alternatives.
- In 2006, Shoreline formally joined the US Conference of Mayors Climate Protection Agreement, a commitment to align US cities with the Kyoto Protocol and reduce greenhouse gas emissions.

FOCUS AREA 2: ENERGY CONSERVATION & CARBON REDUCTION

OBJECTIVES

Objectives in this focus area aim to promote the use of clean energy and reduce energy consumption in City buildings and fleet and in day-to-day operations. Recommendations include new strategies, as well as modifications, expansion, or continuation of existing programs. Note that there are recommendations in other focus areas that can result in reducing energy uses in the community – for example incorporating energy planning into land use planning.

RECOMMENDATIONS

- **Employ PLACE³S software or similar for future land use planning efforts (e.g. the next major Comprehensive Plan update).**
- **Develop a baseline for energy consumption and carbon data using ICLEI "5 Milestones Toolkit" or similar.**
- **For new construction of major 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.**
- **For new construction of major City facilities (including the City Hall), require the use of Commissioning as outlined by the ASHRAE Commissioning Process Guideline 0-2005.**
- **Upgrade existing City facilities to meet the Energy Star building performance standard for similar building types.**
- **In purchasing guidelines, require building equipment and appliances to be Energy Star rated.**

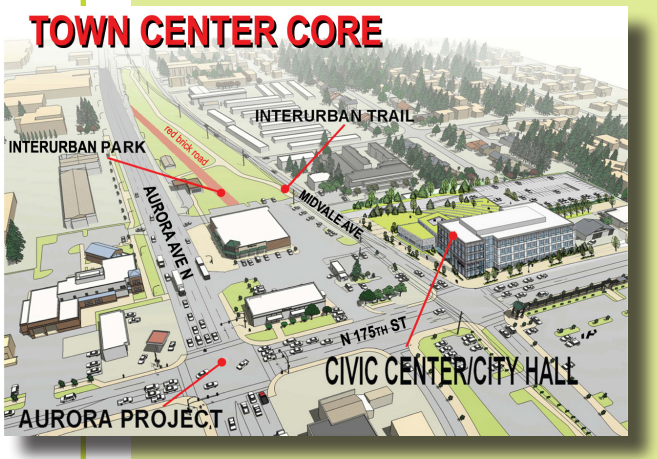
Recommendations continued on next page.

Civic Center/City Hall

*The new Civic Center City Hall is expected to beat the energy code by at least **14%** resulting in savings over a conventionally designed building. Construction is expected to begin in May and last 18 months, with completion in late summer of 2009. Below are examples of the resource saving strategies incorporated in the City Hall's green design.*

- *Solar and alternative energy source power solutions*
- *Energy efficient lighting*
- *Climate control tools*
- *Onsite rainwater reclamation*
- *Connectivity to mass transit along 175th Street and Aurora Avenue*

Reduced energy consumption and carbon footprint are only two of multiple environmental goals for the building, as it aims to meet the US Green Building Council's LEED Silver Standard for new construction.



A rendering of Town Center and the proposed Civic Center/City Hall.

FOCUS AREA 2: ENERGY CONSERVATION & CARBON REDUCTION

(Recommendations continued)

- **Engage in Seattle City Light's (SCL) green power program (Green Up).**
- **As part of annual budget planning, increase proportion of green power purchase to 100%.**
- **Require all new fleet vehicles be alternatively fueled, or rated by EPA for 45 mpg or higher for fossil fuel vehicles (except exempt types).**
- **Conduct a campaign to reward City staff for "smart" trip planning to reduce unnecessary trips/miles traveled for City business.**
- **Promote use of Seattle City Light (SCL) and Puget Sound Energy (PSE) incentives or other incentives for conservation and alternative energy as part of an outreach campaign.**
- **Work with SCL & PSE to prepare a report showing Shoreline Community's overall energy use as of baseline year; update figures provided by SCL/PSE.**
- **Collect information about greenhouse gas emissions and energy use through the State Environmental Policy Act (SEPA) review process.**

Examples of residential applications of energy efficient mechanisms and appliances, including the solar hot water collector on Shoreline Community College's Zero Energy House.

A focus on green buildings is recommended for several reasons. As one of the most visible aspects of sustainability, green building standards can serve as a gateway to the Sustainability Strategy, through which the community might access less tangible aspects. Green building as a practice is also one of the most effective ways to achieve measurable results quickly and thus generate momentum and provide feedback to stakeholders.

Please see Appendix A for a complete list of recommendations, Appendix B for the full evaluation of existing programs and Chapter IV for implementation capacity and resources.

Existing Program Evaluation: Energy and Carbon

*Existing programs to **Ensure Continuation***
- *Civic Center/City Hall – targeting LEED Silver*

*Existing program where the City should **Expand Current Efforts***
- *Earth Day Celebration – including energy outreach*
- *Promoting Alternatives to Driving*
- *Business Access/Transit Lanes*

*Existing program areas where the City should **Modify Overall Approach***
- *Climate Protection Campaign*
- *Fleet Vehicles*
- *Green Building Implementation*

Please see the Existing Program Evaluation description on page 21 for category definitions. See Appendix B for full details on program evaluation.

OBJECTIVE 3
Reduce Energy Consumption in City Facilities

TARGET

Reduce energy consumption in City facilities by 5% per year and 20% by 2012.

INDICATOR

Percentage decrease in City electric and gas bills (measured in $/sf) – obtainable from Seattle City Light (SCL) and Puget Sound Energy (PSE).

Recommendations

1. For all major new City facilities (including the City Hall), require the use of Commissioning as outlined by the ASHRAE[6] Commissioning Process Guideline 0-2005
2. Upgrade existing facilities to meet Energy Star standard for similar building types.
3. Include requirements to meet Energy Star for building equipment and appliances in purchasing guidelines.
4. Develop a baseline for energy consumption and carbon data using ICLEI[7] "5 Milestones Toolkit" or similar.
5. For all major new facilities (including the City Hall), meet requirements specified in LEED[8] Core Performance Guide, references in the prescriptive path for LEED Energy and Atmosphere Credit 1.

OBJECTIVE 4
Increase Reliance on Green Power in City Facilities

TARGET

Increase Green Power use as a proportion of total electricity consumption in City facilities by 25% per year, to 100% by 2012.

INDICATOR

Proportion of City consumption supplied by alternative energy sources through Seattle City Light "Green Up" Program.

Recommendations

1. Engage in the green power program with Seattle City Light. As part of annual budget planning, increase proportion of green power purchase to 100%.

6 American Society of Heating Refrigerating and Air-Conditioning Engineers

7 International Council for Local Environmental Initiatives

8 Leadership in Energy and Environmental Design

OBJECTIVE 5
Reduce Fossil Fuel Consumption by City Vehicles

TARGET

Downward trend of annual consumption of fossil fuel used to operate City fleet.

INDICATOR

Amount of fossil fuel (in gallons) purchased annually for City fleet.

Recommendations

1. Require all new fleet vehicles be alternatively fueled, or rated EPA[9] for 45 mpg or higher for fossil fuel vehicles. (Only applies to vehicle types where these options exist.) For exempt vehicles, require the most efficient options available as vehicles are replaced.
2. Launch campaign for City staff – reward "smart" trip planning to reduce miles traveled.

OBJECTIVE 6
Reduce Energy Consumption in Community Households

TARGET

Reduce per capita/ per household energy consumption by 10% in the first year and an additional 3% per year through 2012.

INDICATOR

Percentage decrease in consumption units from electric and gas bills (per capita).

Recommendations

1. Employ PLACE[3]s[10] software or similar for land use planning.
2. Promote use of Seattle City Light (SCL)/ Puget Sound Energy (PSE) and other incentives for conservation and alternative energy as part of public outreach campaign.
3. Work with SCL/PSE to prepare a citizen's report showing Shoreline community's overall energy use as of baseline year; update figures provided by SCL/PSE.
4. Provide expanded "how to" sustainability info to community.

9 Environmental Protection Agency
10 Planning for Community Energy, Economic and Environmental Sustainability

FOCUS AREA 3: SUSTAINABLE DEVELOPMENT & GREEN INFRASTRUCTURE

WHY IS THIS IMPORTANT?

Sustainable development and *green infrastructure* are complex terms frequently used to mean different things. This discussion deals primarily with the physical and environmental aspects of sustainable development, particularly transportation, land use, and building construction. Green infrastructure is a relatively new term and refers to the integration of functioning ecosystems with the built environment to improve both ecological and human conditions.

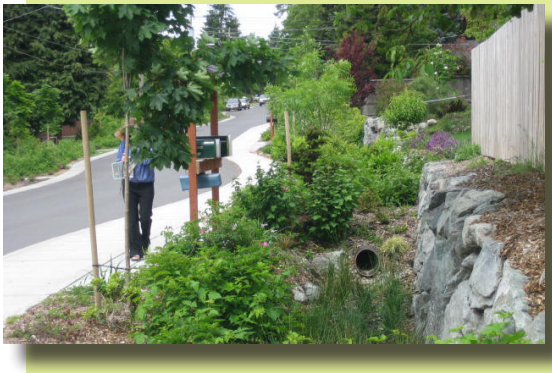
Perhaps more than any of the Strategy's Focus Areas, Sustainable Development and Green Infrastructure has the potential to provide benefits across all five Focus areas. For example, several of the recommendations to improve transportation, land use, and building construction will have the impact of reducing greenhouse gas emissions, thus reducing the carbon footprint of the community. Recommendations in this Focus area are intended to create a built environment that addresses the impacts of past practices, conserves energy and resources, and supports a livable community and healthy ecosystem.

Creating real alternatives to single occupant vehicles that use less energy and generate less pollution is a priority of this Focus Area because transportation is currently responsible for more than 50% of the greenhouse gas emissions in King County. In particular, promoting non-motorized transportation, compact growth and strengthening the links between transportation and land use planning are vital needs.

The City recently installed Business Access and Transit (BAT) Lanes as part of the Aurora Corridor Phase I project. The extension of the transit improvements to 205th Street is planned.

What are Green Streets?

Green streets combine non-motorized improvements, natural drainage, landscaping and other improvements in innovative ways to connect parks, ecosystems and neighborhoods. In more commercial and mixed-use areas, green streets may include standard sidewalks with street trees in conjunction with innovative natural drainage design, such as the recent improvements on Aurora Ave N. As you move away from the arterials, green streets can include a closer connection with natural processes, with native landscaping, off -street trails, low-impact drainage connections or features, and habitat enhancements. The Green Streets program will be addressed in the demonstration project currently being developed and the next update of the Transportation Master Plan. The scoping process for the update is scheduled to begin in 2008.



A vegetated swale a along street in Seattle is an example of Green Infrastructure.

FOCUS AREA 3: SUSTAINABLE DEVELOPMENT & GREEN INFRASTRUCTURE

This strategy also aims to promote efficient and environmentally sensitive building and land use practices on both private and public land. Improved management of stormwater, using techniques that mimic, restore and enhance natural systems, is an important objective of Low Impact Development (LID). Green building is the practice of increasing the efficiency with which buildings use resources — energy, water and materials — while reducing building impacts on human health and the environment. Better siting, design, construction, operation, maintenance, and removal over the life cycle of a building are the keys to green building.

WHAT IS GREEN INFRASTRUCTURE?

In the City of Shoreline, green infrastructure can be thought of as a network of parks, vistas, shorelines, creeks, urban forests, civic spaces, pedestrian walkways and trails that connect neighborhoods, landscapes, plants and animals to one another. Green infrastructure can also include elements such as native landscaping, constructed natural drainage systems and restored wetlands, and other attempts to enhance and mimic nature for the benefit of both humans and the larger ecology. Green infrastructure, including the use of natural drainage techniques and native landscaping, will contribute to reduced stream erosion from stormwater, improved water quality and habitat. It can also help link and leverage parks, connect neighborhoods for non-motorized users and contribute to community appearance and pride.

Green building is strongly linked to green infrastructure. It doesn't make sense to construct a building that wastes resources – energy, water, and materials – within an infrastructure that is intended to be sustainable.

SNAPSHOT OF CURRENT CONDITIONS

Much of the City's built environment, including buildings and infrastructure, was created before there was an awareness of green building and sustainable development practices. Many areas of the City were developed without sidewalks or adequate stormwater facilities. Development along Aurora Avenue North and in other commercial areas of the City is auto-oriented and does not make efficient use of land, with low building to lot area ratios and large areas of surface parking adjacent to public rights-of-way. Shoreline is primarily residential in character and over 50% of the households are single-family homes according to the Comprehensive Plan. Commercial development stretches along Aurora Avenue with other neighborhood centers located at intersections of primary arterials. Existing sidewalk and bicycle facilities are largely discontinuous, making non-motorized modes of transportation less attractive and more hazardous for trips between neighborhoods, schools, commercial areas and civic institutions. Transit service, although improving slowly, is limited in many areas – east-west travel in the City is particularly difficult.

Sustainable Development in the context of this strategy means the fulfillment of human needs through the use and development of the physical environment while maintaining or improving the quality of our natural environment.

FOCUS AREA 3: SUSTAINABLE DEVELOPMENT & GREEN INFRASTRUCTURE

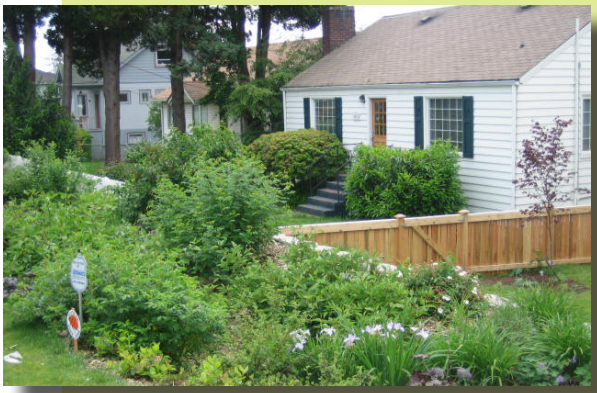
WHAT IS SHORELINE DOING ALREADY?

The City has made major improvements recently, particularly in the area of transportation. Specific existing sustainable development and green infrastructure initiatives by the City include:

- Completion of the Interurban trail and pedestrian bridges, providing a key non-motorized route through the heart of the City;
- Completion of Phase I of the Aurora Corridor Improvement Project and planning for Phase II, which represents a major improvement for pedestrian and transit mobility, natural drainage, landscaping and beautification;
- A land use plan that seeks to accommodate new growth primarily in existing developed centers and near transportation corridors;
- Capital improvements and zoning changes in the North City Subarea to support redevelopment into a mixed-use, pedestrian friendly center;
- Commute trip reduction program for large employers in the City;
- Initial work on Green Streets design standards and plans for a Demonstration Project;
- The new Civic Center/City Hall, targeting the LEED Silver Standard, which will serve as a model for sustainability practices and green building;
- The existing sidewalk improvement program has added significant sections of new or improved pedestrian wallkways, particularly near schools and major arterials; and
- A recognized "can do" attitude by City staff towards accommodating green building within the limits of existing codes and staff proficiencies.

"Greener Infrastructure"

There are many ways to make our current infrastructure more sustainable. For example, rights-of-way can be used for stormwater quality and quantity treatment, using surface swales and attractive native vegetation, and non-motorized improvements that encourage exercise and promote human health.



Right-of-way landscaping merges with private landscaping in Seattle.

"Increase code and permitting flexibility."

Comment from Community Conversation #2 Participant

FOCUS AREA 3: SUSTAINABLE DEVELOPMENT & GREEN INFRASTRUCTURE

OBJECTIVES

Objectives in this focus area aim to encourage non-motorized travel, concentrate new growth in proximity to services and transit, reduce the environmental impacts associated with buildings and reduce the impact of stormwater on the natural environment. Many of the objectives and related recommendations in this Focus Area need to be considered for incorporation in the next update of the Transportation, Parks and Surface Water Master Plans.

RECOMMENDATIONS

- **Develop plans for a coordinated bicycle and pedestrian system which provides connections to major destinations and offers an attractive alternative to other modes;**
- **Establish clear transit priorities, strengthen the land use and transportation link in adopted plans, and lobby for improvements that benefit Shoreline residents;**
- **Promote a transit-supportive land use pattern that focuses new development nodes near existing and proposed transit corridors and improvements, especially along the I-5 corridor;**
- **Promote green building and LID by training select staff, providing outreach information and revising building and development codes;**
- **Adopt a City green building policy for capital projects and maintenance upgrades;**
- **Prioritize green streets planning, design and implementation; and**
- **Promote natural solutions to stormwater management in private and public development with both incentives and requirements by revising engineering and development code standards, implementing CIP projects, and through public outreach.**

Please see Appendix A for a complete list of recommendations, and Chapter IV for Implementation Capacity and Resources.

GREEN INFRASTRUCTURE SYSTEM OPPORTUNITIES

As part of the Sustainability Strategy, the project team and community participants interactively created a "map" of green infrastructure types and opportunities. This included both existing elements in Shoreline, as well as potential improvements for future consideration. Green infrastructure can serve as a conceptual tool for considering the physical and spatial elements of sustainability planning, as well as the relationships between elements.

Figure 3.3 describes potential types of green infrastructure opportunities.
Figure 3.4 describes potential sites (locations) of green infrastructure opportunities.
Figure 3.5 is a map showing how and where a green infrastructure system could be physically integrated into the Shoreline community.

Existing Program Evaluation: Sustainable Development

*Existing programs to **Ensure Continuation***

- *Civic Center/City Hall – targeting LEED Silver*
- *Stormwater Standards and Program Update*
- *Regional Roads Maintenance Forum*

*Existing programs where the City should **Expand Current Efforts***

- *Promoting Alternatives to Driving*
- *Business Access/Transit Lanes on Aurora*
- *Aurora Corridor Stormwater Solutions*

*Existing program areas where the City should **Modify Overall Approach***

- *Green Building Program Implementation*
- *Green Street Demonstration*
- *City Buildings Operations, Practices and Policies*

Please see the Existing Program Evaluation description on page 21 for category definitions. See Appendix B for full details on program evaluation.

Placeholder : Insert three11x17 sheets here, pages 31-34

OBJECTIVE 7
Reduce Use of Single Occupant Vehicles

TARGET

Upward trend of transit use (relative to increasing population), specific number TBD based on review of data.

INDICATOR

Public transit ridership or number of transit boardings per year in Shoreline (as compared to previous 4 years).

Recommendations

1. Include a plan for transit system improvement priorities in the Transportation Master Plan Update.
2. Advocate for continuous bus rapid transit system along Aurora Ave.
3. Advocate for a revised Sound Transit Phase II Plan that serves Shoreline.
4. Expand commute trip reduction program to include medium size employers.
5. Advocate for a Metro "feeder" route to improve east-west transit.
6. Pedestrian and bicycle improvements also support this objective.

OBJECTIVE 8
Concentrate New Growth in Proximity of Services and Transit

TARGET

Upward trending percentage, specific number could be established in a future update of the Housing Strategy or Comprehensive Plan.

INDICATOR

Percentage and number of new residential units and total units (or average density) within a designated commercial center.

Recommendations

1. Future update of Housing Strategy or Comprehensive Plan should include a focus on Transit Oriented Development (TOD) and transit supportive neighborhoods near existing centers to create transit nodes. Focus new development near existing and proposed transit corridors and improvements.
2. Update Transportation Master Plan (TMP) and provide a stronger link to the Land Use Element in the Comprehensive Plan.

OBJECTIVE 9

Improve Pedestrian Facility Network to Connect Destinations & Improve Safety

TARGET

Upward trend, based on City plans and budget.

INDICATOR

Percentage of identified core pedestrian network that has horizontal or vertical separation of pedestrian facilities from vehicular traffic on at least one side of the street.

Recommendations

1. Expand and reorient the existing sidewalk program focus on linking destinations and connectivity and identify a core network for planning purposes.
2. Prioritize and structure the development of the Green Streets program, e.g. develop siting criteria and plan in addition to pilot project.
3. Improve identification, mapping, designation, surfacing and signage of existing trails. Plan future trail expansion with a focus not only on recreation, but also on utilitarian walking.

OBJECTIVE 10

Create a Cohesive Bicycle Network for Both Transportation and Recreation

TARGET

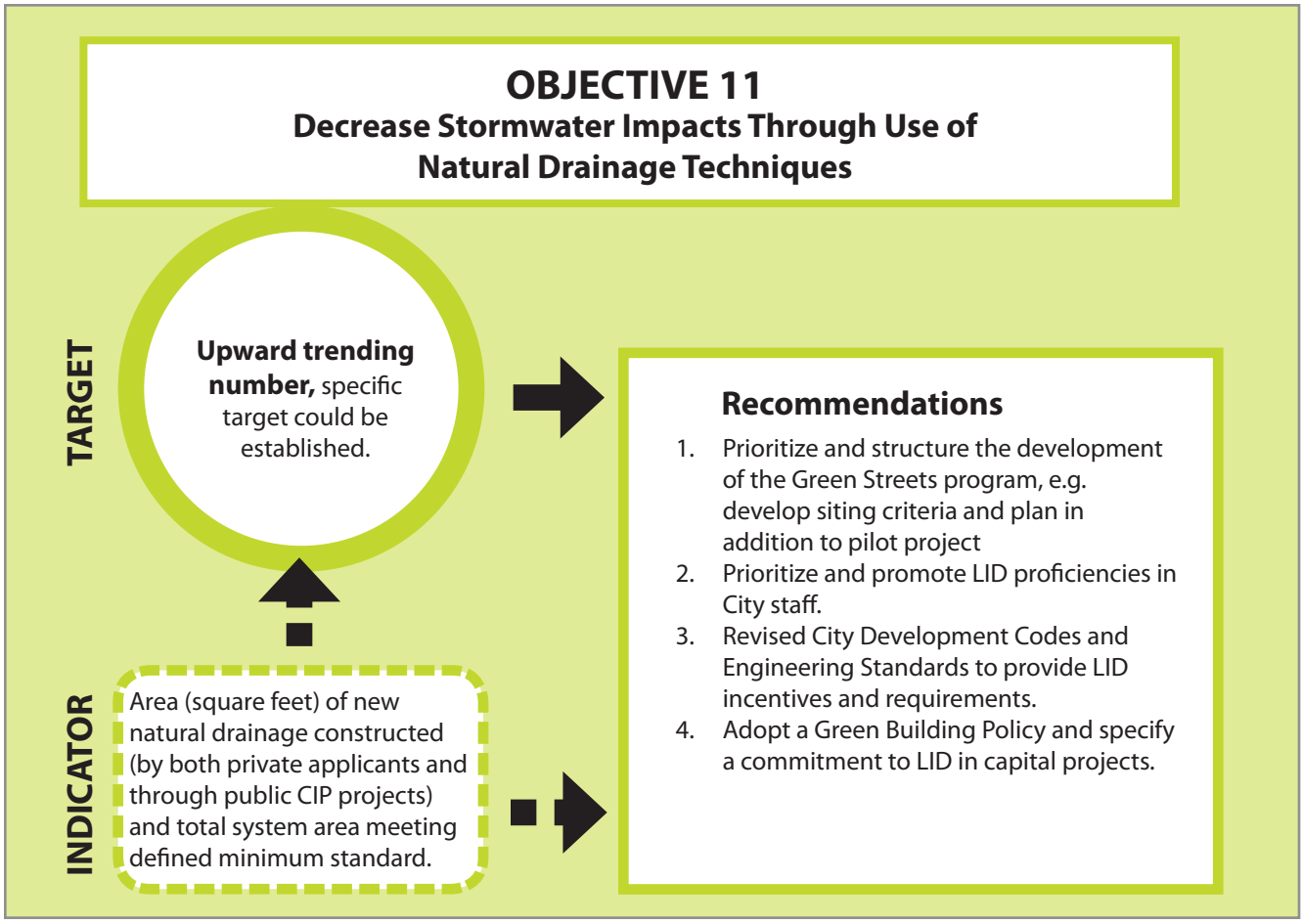
Upward trend, specific target TBD.

INDICATOR

Percentage of identified core bicycle network that meets minimum standards.

Recommendation

1. Create and adopt a bicycle and pedestrian facility plan (or subsection of Transportation Master Plan) that identifies a core system of facilities and focuses on a strategy that connects major destinations. Priority improvements include interurban "feeders." complete gaps on 155th and 185th, and connections in the Fircrest, North City and Richmond Beach areas.


OBJECTIVE 11
Decrease Stormwater Impacts Through Use of Natural Drainage Techniques
TARGET
Upward trending number, specific target could be established.
INDICATOR
Area (square feet) of new natural drainage constructed (by both private applicants and through public CIP projects) and total system area meeting defined minimum standard.
Recommendations
1. Prioritize and structure the development of the Green Streets program, e.g. develop siting criteria and plan in addition to pilot project
2. Prioritize and promote LID proficiencies in City staff.
3. Revised City Development Codes and Engineering Standards to provide LID incentives and requirements.
4. Adopt a Green Building Policy and specify a commitment to LID in capital projects.

OBJECTIVE 12
Reduce Impervious Surfaces Citywide & in New Development

TARGET

Downward trend or at a minimum no net increase from baseline to reflect increasing population and density. A more specific goal should be established.

INDICATOR

1. Percentage of impervious surface citywide, and
2. Median percentage of impervious surface in new projects, compared to previous four years. Note due to the expense of collecting this info in GIS[13], a five-year reporting cycle may be appropriate.

Recommendations

1. Prioritize and structure Green Street Program.
2. Revise zoning and engineering standards to promote LID[14].
3. Modify stormwater utility fee.
4. Promote Green and LID training for staff.
5. Provide expanded outreach information, including "how to" and standard engineering details.
6. Identify underutilized park lands and use for water treatment and other purposes.
7. Specify a commitment to LID principles as outlined in Low Impact Development: Technical Guidance Manual for Puget Sound.
8. Adopt new stormwater manual (existing program).

13 Geographic Information System
14 Low Impact Development

FOCUS AREA 4: RESOURCE CONSERVATION & WASTE REDUCTION

WHY IS IT IMPORTANT?

The simplest and most cost-effective way to conserve resources – both water and material resources – is to simply not use them. However, in the real world, resources must be consumed, and inevitably, waste is generated in every process from the simple act of eating a meal to building a home.

The Sustainability Strategy focuses on efficient resource use and appropriate means of dealing with waste. The result will put less of a burden on the municipal infrastructure, as well as provide opportunities for businesses and residents to reduce costs due to waste disposal.

Economic efficiencies and environmental benefits can be realized through improved purchasing policies and operations practices. In short, the less you use, the more you save.

In addition, this focus area provides City staff and the community with a very tangible way to become participants in the greater Sustainability Strategy. The public's ready awareness of the three "R" principles, reduce, reuse and recycle, gives this focus area a "jump start" - thereby providing leverage for the more complex areas of sustainability addressed in the strategy.

CleanScapes

CleanScapes, based in Seattle, Washington, provides sustainable solid waste and recycling collection and comprehensive StreetScape management services to municipalities, commercial properties, business improvement districts, and stadiums in Washington, Oregon, and California.

Beginning March 1, 2008, CleanScapes is the new garbage and recycling company for the City of Shoreline. CleanScapes was selected by the City of Shoreline through a competitive process at the end of 2007. New services include:

- *Recycling for businesses and residents;*
- *Weekly garbage collection;*
- *Every-other-week recycling;*
- *Fluorescent tube and bulb collection (residences only);*
- *Year round, every-other-week food scrap and yard debris collection;*
- *Bulky waste (appliances, furniture) collection; and*
- *Outreach and education for businesses.*

Cleanscapes' garbage trucks are fueled by biodiesel manufactured out of reclaimed fryer oil from their restaurant customers.

FOCUS AREA 4: RESOURCE CONSERVATION & WASTE REDUCTION

SNAPSHOT OF CURRENT CONDITIONS

The City's municipal waste contract with CleanScapes, Inc., is effective from 2008 through 2015. The contract reflects Shoreline's increasing awareness of and commitment to efficient resource use and waste management. The new contract offers new and expanded services in these areas:

- Universal garbage carts will save money and reduce back injuries as well as time spent in collection and noise in neighborhoods.
- Organic material, such as vegetative food and compostable paper (e.g. pizza boxes), will be added to yard debris to minimize solid waste rates.
- Expanded recycling will include plastics #3-7, motor oil, scrap metal and fluorescent light bulbs.
- Multi-family recycling service is provided to all multi-family garbage customers at no additional cost, just as it is for single-family residential service.
- Commercial recycling service is provided as part of basic garbage service for businesses.

> *"Most [schools] only recycle paper. What about all the cans, water bottles, even food?"*
>
> Comment from Community Conversation #2 Participant

Shoreline does not have a dedicated Construction Waste Recycling program. Construction and demolition activities generate enormous quantities of solid waste. Commercial construction generates between 2 and 2.5 pounds of solid waste per square foot, and the majority of this waste can potentially be recycled.

City of Shoreline garbage instructions.

With the salmon species being listed as an endangered species several years ago, the issue of water quality became a serious environmental and political concern in the Puget Sound region. Water consumption has been less prominent in the public's awareness. With summer droughts, however, and a better understanding of how water quality and quantity are interrelated, this is changing. Many local utilities offer rebates and incentives to replace existing fixtures and appliances with high-efficiency models. For instance, Shoreline Water District customers who purchase a qualified washing machine are eligible for WashWise Rebates that range from $25 to $100.

FOCUS AREA 4: RESOURCE CONSERVATION & WASTE REDUCTION

WHAT IS SHORELINE ALREADY DOING?

The City has made significant, incremental steps toward efficient resource use and waste management. Programs include:

- The City's Sustainable Business Extension Service (SBES) is a partnership with the Environmental Coalition of South Seattle (ECOSS) to provide fixtures and education to businesses that want to reduce water and energy consumption.
- Curbside Garbage Collection & Recycling: CleanScapes provides curbside collection of solid waste and recycling for Shoreline residents and businesses. Residents can also dispose of florescent tubes and bulbs via curbside services. Yard waste and food scrap collection, as well as bulky waste collection, is also available from CleanScapes for a fee.
- Household Battery Recycling: Batteries that are accepted include alkaline, lithium, nickel-cadmium and nickel metal hydride.
- Clean Sweep Recycling Events: The City of Shoreline offers semi-annual recycling events for residents to dispose of various materials, such as bulky yard waste, scrap metal, electronics, used motor oil, etc.
- Residential Hazardous Waste Recycling: Throughout the year, household hazardous waste, such as pesticides, oil-based paint, toxic cleaning products, fluorescent light bulbs, antifreeze, hobby chemicals, thinners and solvents, automotive products, aerosols, glues, and adhesives, can be taken to the Aurora Household Hazardous Waste Collection Site in North Seattle.
- TechnoTrash Recycling: CDs, DVDs, videotapes, cell phones and similar devices can be taken to Shoreline City Hall and City Hall Annex for proper disposal.
- Recycling Tips: A complete list of resources is available via the City's Guide to Recycling and "Where To Take It" flyer.
- Business Hazardous Waste Recycling and Disposal Hotline - (206)296-3976.

OBJECTIVES

Objectives in this Focus Area include reducing material consumption and material use in City buildings and other day-to-day operations, and simultaneously reducing overall quantities of waste directed to landfills and increasing recycling efforts.

RECOMMENDATIONS

- **Expand existing efforts to reduce, reuse, and recycle in City offices, parks, and other facilities.**
- **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).**
- **Provide convenient opportunities (prominent and labeled bins) for sorting, collecting, and composting solid waste streams in the community.**
- **Implement construction and business waste reduction outreach and incentives through the permitting process and municipal waste contract.**

Recommendations continued on next page.

FOCUS AREA 4: RESOURCE CONSERVATION & WASTE REDUCTION

(Recommendations continued)

- **For high use operations including irrigation and park restrooms replace fixtures and equipment with the highest efficiency, cost-effective water conservation options available.**
- **For retrofits and new construction of City indoor facilities, specify/replace fixtures with high efficiency, low flow alternatives.**
- **Investigate the use of non-potable sources or non-potable uses, such as grey water reuse and rainwater catchment for toilet flushing.**
- **Work with utilities to expand existing incentives and develop new incentives to reduce potable and irrigation water consumption.**
- **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.**

Please see Appendix A for a complete list of recommendations, Appendix B for the full evaluation of existing programs and Chapter IV for implementation capacity and resources.

Existing Program Evaluation: Resource Conservation & Waste Reduction

Existing program to ***Ensure Continuation***

- *Pesticide-Free Parks*
- *Free Wood Chips at Hamlin Park*
- *Battery and Techno Waste Recycling*
- *City of Shoreline Stormwater Program and Standards Update*

Existing program areas where the City should ***Expand Current Efforts***

- *Municipal Compost Facility*
- *Business Solid Waste Reduction, Recycling and Resource Conservation Program*
- *Clean and Green Car Wash Kits*

Existing program area where the City should ***Modify Overall Approach***

- *Solid and Hazardous Waste Management Program*

Please see the Existing Program Evaluation description on page 21 for category definitions. See Appendix B for full details on program evaluation.

City of Shoreline recycling instructions.

OBJECTIVE 13

Reduce Solid Waste Land-filled & Increase Recycling in City Operations

TARGET

Downward trend of solid waste and **upward trend** of recycling**.** Specific targets TBD (e.g. reduce by 10% per year solid waste from City operations).

INDICATOR

1. Volume of total waste generated (as compared to previous four years).
2. Percentage of total waste recycled (as compared to previous four years).

Recommendations

1. Expand existing efforts to reduce, reuse and recycle in City facilities.
2. Include preferences in purchasing guidelines for products that
   a. Promote reduction and reuse (e.g. durable goods);
   b. Reduce consumption of raw materials (e.g. recycled content and recyclable materials); and
   c. Present less risk to human and ecological health (non-toxic materials).
3. Create standard office procedures, training and expectations. Measure, reward & promote individual and department achievements

OBJECTIVE 14

Increase the Use of Healthy & Resource-Efficient Supplies in City Operations

TARGET

Specific target to be addressed when baseline developed.

INDICATOR

Percentage of purchases that meet requirements in the targeted areas.

Recommendations

1. Expand existing efforts to reduce, reuse, and recycle in City offices, parks, and other facilities.
2. Include preferences in purchasing guidelines for products that:
   a. Promote reduction and reuse (e.g. durable goods)
   b. Reduce consumption of raw materials (e.g. recycled content and recyclable materials); and
   c. Present less risk to human and ecological health (non-toxic materials).

OBJECTIVE 15

Increase Recycling Percentage & Reduce Solid Waste in the Community

TARGET

Upward trend. Specific target TBD (e.g. Divert an additional 10% per year of total volume from landfills).

INDICATOR

Percentage of total solid waste recycled by the Community (via CleanScapes).

Recommendations

1. Provide convenient opportunities (prominent and labeled bins) for sorting, collecting, and composting solid waste streams outside the home.
2. Expand existing community outreach efforts to reduce waste and recycle.
3. Implement construction and business waste reduction outreach and incentives through the permitting process and municipal waste contract.

OBJECTIVE 16

Reduce Potable Water Use in City Park and Outdoor Operations

TARGET

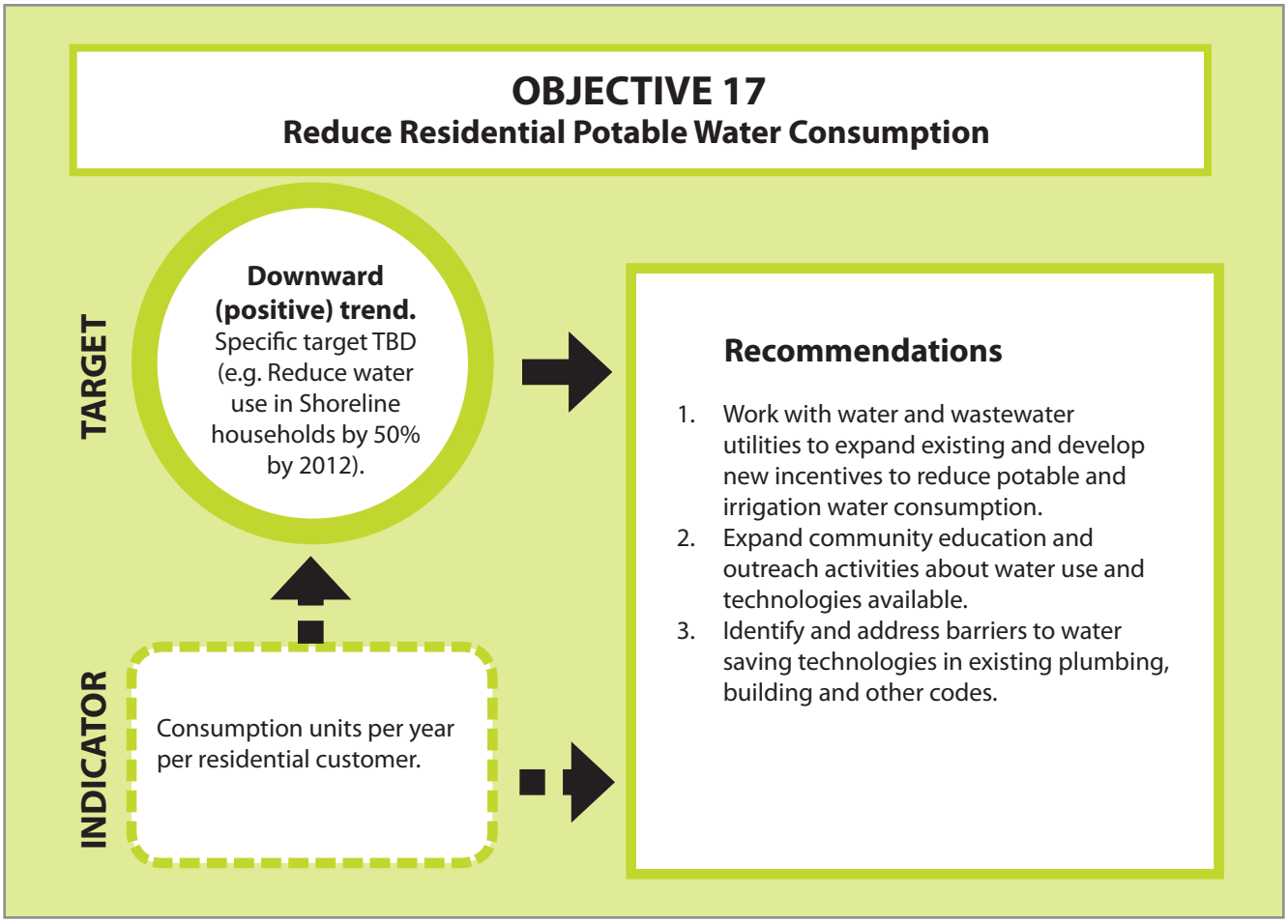
Downward (positive) trend. Specific target TBD (e.g. Reduce total potable water use for irrigation by 100% by 2012).

INDICATOR

Consumption units per year for outdoor operations based on utility billing.

Recommendations

1. High use operations including irrigation and park restrooms, new and replacement fixtures and equipment should be highest efficiency cost-effective options available. For example, efficient and censored irrigation facilities and automatic low flow fixtures in restrooms.
2. Expand use of naturalized drought tolerant plantings in low use park areas. Naturalize lawn grass that is not being used regularly.
3. For retrofits and new construction of City indoor facilities specify/replace fixtures with high efficiency, low flow alternatives.
4. Investigate the use of non-potable sources for non-potable uses (e.g. greywater reuse and rainwater catchment for toilet flushing).


OBJECTIVE 17
Reduce Residential Potable Water Consumption
TARGET
Downward (positive) trend. Specific target TBD (e.g. Reduce water use in Shoreline households by 50% by 2012).
INDICATOR
Consumption units per year per residential customer.
Recommendations
1. Work with water and wastewater utilities to expand existing and develop new incentives to reduce potable and irrigation water consumption.
2. Expand community education and outreach activities about water use and technologies available.
3. Identify and address barriers to water saving technologies in existing plumbing, building and other codes.

FOCUS AREA 5: ECOSYSTEM MANAGEMENT & STEWARDSHIP

WHY IS IT IMPORTANT?

Current trends place the health and future of our remaining natural areas and systems at risk: reduction in tree canopy, degradation of surface water quality, declining forest health, fragmentation of upland habitat and degradation of stream and wetland habitats. Although the scope of these problems – and the range of solutions needed to address them – transcend the purpose and limits of this strategy, new and existing regional, landscape-scale planning across jurisdictional boundaries will be supported with these Focus Area recommendations.

Ecosystem management and stewardship preserve and enhance valuable resources and build on existing initiatives. They also complement efforts in the other Focus Areas, for example, effective stewardship of our tree canopy can help reduce our carbon footprint. These strategies will help address the impacts of past practices and ensure that future generations can enjoy the City's natural resources. Stewardship efforts must engage the community - building human capital to support a sustainable future.

Good stewardship demands that we both protect and actively manage our dynamic local environment. In addition to providing habitat for plants and animals, we rely on ecosystem functions to meet a variety of human needs, including flood control, temperature moderation, clean water, carbon sequestration and oxygen production. Our natural areas are community treasures – they are highly valued recreation and aesthetic resources and they remind us of our link to the natural world.

Natural Areas in Shoreline

The City includes the Puget Sound shoreline and several lakes and ponds, such as Echo Lake, Hidden Lake, Ronald Bog and Twin Ponds. Streams in Shoreline include Boeing Creek, McAleer Creek, Storm Creek, Thornton Creek and various smaller streams and tributaries. The City of Shoreline manages approximately 345 acres of parks, open spaces and trails, of which approximately 100 acres are natural areas. In addition, large natural areas are located on Shoreline Community College campus, Shoreline School District properties, Fircrest campus and private property (e.g. The Highlands,

Boeing Creek in Shoreline.

FOCUS AREA 5: ECOSYSTEM MANAGEMENT & STEWARDSHIP

The scope of the problems facing our natural areas requires that the City leverage the help of non-profit organizations, schools, research institutions, businesses and other governments. Collective stewardship of these resources and community partnerships are the backbone for effective management. However, clear leadership, priorities, funding and accountability are also needed to get the job done.

SNAPSHOT OF CURRENT CONDITIONS

Urban forest assessment is occurring in Hamlin, Shoreview, Boeing Creek and South Woods parks. These assessments will help the City determine the health of major forested park sites in Shoreline and prioritize areas that need the most attention from Park maintenance staff and Ivy Off Urban Trees (Ivy O.U.T.) volunteers. Additionally, the City has partnered with the community to improve streams and habitat in the Thornton Creek, Boeing Creek and Ballinger Creek watersheds.

Despite existing efforts, the continued increase in invasive species of vegetation (e.g. ivy and Himalayan blackberry) is a growing issue. It will continue to kill mature trees and reduce the habitat available for native species unless additional progress is made, particularly on private lands. The City recently revised its Tree Ordinance, but anecdotal evidence suggests that increased development continues to reduce habitat and canopy coverage on private property. A detailed City-wide canopy assessment has not occurred, so it is not possible to document canopy loss with precision.

Numerous large and small stormwater improvement projects have been completed by the City – eliminating most existing flooding problems. However, stormwater continues to erode and degrade natural water bodies. The City is developing a new Stormwater Program to meet federal and state mandates, including more aggressive development controls. However, most of the City was developed under old standards - retrofits and new regional facilities will be needed to improve

Volunteers remove invasive English ivy from the trunk of a large tree in South Woods.

"Create more safe and legal access points to the beach."

Comment from Community Conversation #2 Participant

basin hydrology.

WHAT IS SHORELINE DOING ALREADY?

Key existing ecosystem management and stewardship efforts by the City include:

- Forest health assessment in several parks;
- 2006 Park Bond funding for acquisition of 25 acres of open space;
- Update of the Critical Areas Ordinance (2006);
- Continued participation in Water Resource Inventory Area (WRIA) 8 Chinook Salmon Regional Recovery Plan and implementation;
- Ivy O.U.T. (Off Urban Trees) program;
- Various habitat restoration projects in partnership with the community; and
- The Neighborhood Environmental Stewardship Team (NEST) program.
- Natural Yard Care Program

OBJECTIVES

The objectives for this Focus Area work to enhance and restore forest and watershed systems, and provide a means of encouraging, sustaining and measuring long-term progress. Specifics include systematically improving the hydrological and habitat conditions of the City's watersheds over time, measuring and conserving tree canopy and forest health citywide and establishing effective programs for ongoing stewardship. Measurable performance targets should be established and backed up with sufficient investment and monitoring to ensure results.

Key Recommendation: Develop a Natural Resources Action Plan

The key recommendation in this Focus Area is to consider the creation of an appropriate framework, such as a Natural Resources Action Plan. Such a plan would synthesize and prioritize the various improvements identified in current planning documents prepared by various agencies and City departments and identify key gaps. Examples of documents to be synthesized include the Thornton Creek Watershed Plan, the pending Lake Ballinger Basin Plan, Surface Water Master Plan, Parks and Open Space Plan, forest assessments, Critical Areas Inventory and Shoreline Master Program Inventory and Characterization Reports. The City of Kirkland is a good model for this approach. In conjunction with this effort, the City should establish specific targets and funding levels for natural area restoration so priorities can be established, performance monitored and the overall objectives achieved.

Please see Appendix A and Chapter IV for implementation capacity and resources.

A view of the Puget Sound from Shoreline.

FOCUS AREA 5: ECOSYSTEM MANAGEMENT & STEWARDSHIP

RECOMMENDATIONS

The strategy seeks to employ creative approaches and utilize increased participation by volunteers to accomplish these objectives where feasible. Recommended ways to accomplish the objectives include:

- **Synthesize existing recommendations and set priorities and targets in a Natural Resources Action Plan;**
- **Prioritize forest health data collection and improvement projects;**
- **Enhanced public outreach and education information and programming for private property owners;**
- **Creating a sustainability position at the City (e.g. volunteer coordinator) to coordinate activities and leverage greater community support;**
- **Green Infrastructure initiatives such as the Green Streets program, which can help address stormwater from existing development;**
- **Revised City standards that promote Low Impact Development (LID)/Green Building;**
- **Stewardship partnerships with the Cascade Land Conservancy's Green Cities Initiative, private landowners and institutions such as the Shoreline School District (e.g. senior year volunteer requirements) and Shoreline Community College; and**
- **Identification of underutilized City Park lands for ecological improvements.**

Innis Arden and other locations).

Existing Program Evaluation: Ecosystem Stewardship

Existing programs to ***Ensure Continuation***

- *Regional Roads Maintenance Forum*
- *Adopt-a-Road and Adopt-a-Trail Programs*
- *Critical Areas Ordinance*
- *WRIA 8 Participation*
- *Pesticide-Free Parks*
- *City of Shoreline Stormwater Program and Standards Update*
- *Storm Drain Medallions & Stenciling*

Existing program areas where the City should ***Expand Current Efforts***

- *Earth Day Celebration*
- *Neighborhood Environmental Stewardship Team*
- *Environmental Mini Grant Program*
- *Urban Forest Assessment Planning*
- *Clean & Green Car Wash Kits*
- *Ivy OUT Volunteer Program*
- *No Spray Zones in Richmond Beach and other areas of the City*
- *Natural Yard Care Program*

Existing program areas where the City should ***Modify Overall Approach***

- *Habitat Restoration Projects*
- *Open Space Acquisition*
- *Green Street Demonstration*

Please see the Existing Program Evaluation description on page 21 for category definitions. See Appendix B for full details on program evaluation.

A seal pup on the beach at Point Wells.

OBJECTIVE 18
Improve/Restore Critical Areas and Habitat

TARGET

Upward trending number of acreage enhanced, specific goal TBD based on City input.

INDICATOR

Acres of fish, stream, and wetland habitat and related buffers that are enhanced and/or restored (as compared to previous 4 yrs).

Recommendations

1. Synthesize existing recommendations and set priorities and targets in a Natural Resources Action Plan.
2. Pursue funding for Volunteer Coordinator.
3. Implement the Cascade Land Conservancy's Green Cities Program by prioritizing data collection improvement projects and increasing use of volunteers for improvement projects.

OBJECTIVE 19
Improve Health of Public Forests

TARGET

Upward trending number of acreage treated, specific acreage goal TBD based on City input.

INDICATOR

Acres (and percentage) of public forests enhanced that year (as compared to previous four years).

Recommendations

1. Identify underutilized park lands for habitat improvements, infiltration, water treatment and other compatible purposes.
2. Prioritize forest health data collection and improvement projects – emphasize partnerships and increasing the acreage analyzed and enhanced.
3. Pursue funds or adjust responsibility and priorities to create space in the budget for a sustainability position.
4. Public outreach for private property owners.

OBJECTIVE 20

Strategic Use of the ROW for Green Infrastructure

TARGET

Upward trending number, specific target TBD following collection of baseline data and City review of existing, planned and possible CIP[1] efforts.

INDICATOR

Number of street trees and square feet of landscaping planted in the right-of-way (ROW) per year by City and private development as compared to previous 4 years.

Recommendation

1. Prioritize and structure the development of the Green Streets program, e.g. develop siting criteria and plan in addition to pilot project.

OBJECTIVE 21

Prevent Tree Canopy Loss & Increase Forest Health City-wide

TARGET

Target TBD following collection of baseline data, e.g. no net loss and 40% canopy coverage or break down further by zoning using American Forest's goals.

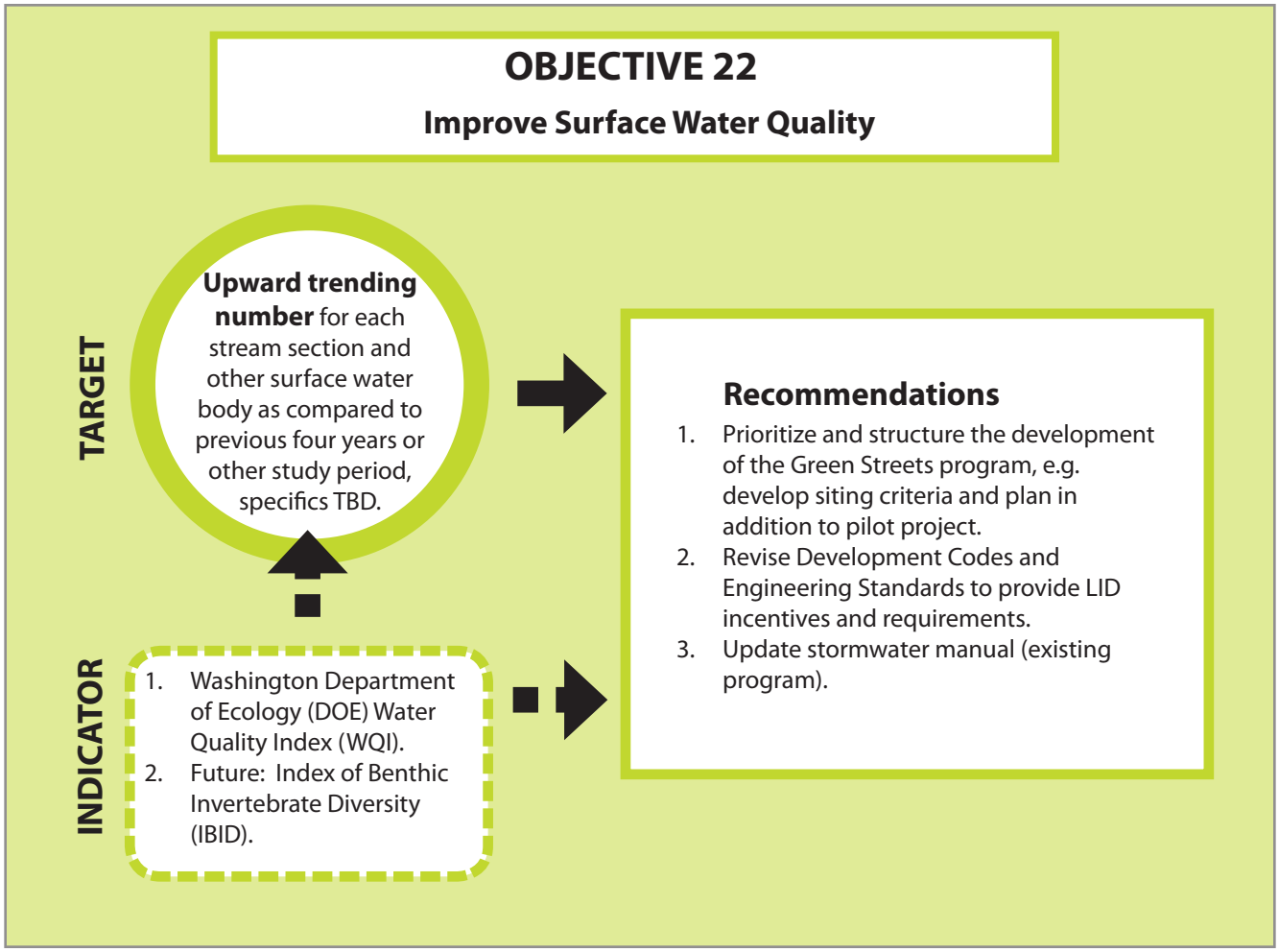
INDICATOR

Median tree retention percentage achieved (better to use canopy coverage) and replacement trees planted on lots reviewed under the tree code. Percentage of tree canopy coverage citywide based on analysis of remote sensing data.

Recommendations

1. Develop a system to track effectiveness of tree ordinance and modify requirements as needed.
2. Software such as City Green may be useful here. Tree loss from development needs to be tracked better, but it is difficult to do – many trees are removed without permits.
3. Public and business outreach and "how to" materials regarding pruning and invasive removal.
4. Promote partnerships with private landowners and institutions, e.g. Shoreline Community College
5. Prioritize and Structure development of Green Streets program.
6. Revise zoning and engineering standards to promote LID[2]/Green Building.
7. Identify underutilized park lands and use for habitat, infiltration water treatment and other purposes.
8. Public forest analysis and stewardship.

1 Capital Improvement Program
2 Low Impact Development


OBJECTIVE 22
Improve Surface Water Quality
TARGET
Upward trending number for each stream section and other surface water body as compared to previous four years or other study period, specifics TBD.
INDICATOR
1. Washington Department of Ecology (DOE) Water Quality Index (WQI).
2. Future: Index of Benthic Invertebrate Diversity (IBID).
Recommendations
1. Prioritize and structure the development of the Green Streets program, e.g. develop siting criteria and plan in addition to pilot project.
2. Revise Development Codes and Engineering Standards to provide LID incentives and requirements.
3. Update stormwater manual (existing program).

4 implementation

INTRODUCTION

The Shoreline Sustainability Strategy provides direction on priorities and next steps for the City. However, action plans will need to be developed to move the Strategy into reality. That will require further effort on the part of the City, including more detailed budget analysis, creation of work plans, plan amendments and code changes.

This chapter provides guidance for implementation. It includes a discussion of the process for assessing the City's capacity to act on the many recommendations that have emerged through Strategy development and a detailed discussion of those recommendations that have been identified as "short-term" priorities for implementation. A Capacity Assessment Matrix that summarizes implementation factors for all fifty recommendations is included in Appendix C.

Implementation will not be without its challenges. The good news is that there are a number of resources that can assist Shoreline in achieving its goals. Resources in the area of funding, regulations and planning policy, and business partnerships have been researched for this Strategy, and are summarized in this Chapter. Appendix G provides more details about this research.

A vegetated swale at 155th and Aurora.

The Ballard Library in Seattle is a LEED certified building.

The City of Seattle reports that since requiring all City-funded buildings to achieve at least LEED Silver certification, first cost premiums have decreased from up to 4% to none, and sometimes the City of Seattle is enjoying reductions in first costs.

CAPACITY ASSESSMENT

The assessment of the City's capacity to implement the recommendations contained in this Strategy is not intended to be definitive but rather help guide a "vetting" process of potential actions. It includes evaluation criteria such as first cost premiums, life cycle cost savings, operations and capital costs, internal and external influences, resources and priorities. It was used to create a preliminary implementation analysis of the recommendations for this Strategy.

Figure 4.1 (spanning pages 60-61) shows an example of how the Capacity Assessment matrix can be used to consider implementation needs. In this case, the action being evaluated is development of an Environmental Procurement Policy (EPP). Figure 4.2 describes the criteria analyzed in the Capacity Assessment Matrix. A Capacity Assessment of all 50 recommendations has been performed and is presented in Appendix C. Where potential cost savings have been identified, these items are italicized in the Capacity Assessment Matrix.

Very few of the recommendations contained in this Strategy are expected to result in high costs. Expansion of the sidewalk and trail programs may require additional capital costs that fall within the 30% or greater range, i.e. HIGH. Forest and critical area enhancement may also necessitate high capital costs to make progress in these areas. The majority of the recommendations are expected to have low or negligible first cost premiums and many of the recommendations identified in the Strategy are expected to have lifecycle cost savings. Energy, waste and water recommendations generally result in lifecycle cost savings because they reduce consumption. Ecosystem management and sustainable development recommendations tend to have higher costs and many of the benefits associated with these recommendations, such as improved water quality and reduced carbon emissions, do not easily translate into monetary savings that can be quantified. Many of the City operations and outreach recommendations will also have indirect benefits to the City or larger community that are difficult to quantify.

COST CATEGORIES

Costs categories identified in this chapter and in the Capacity Assessment Matrix in Appendix C refer to the percentage above the current or conventional cost or in addition to what is currently budgeted annually for that item, project or program. These include first, lifecyle, operations and capital costs. When (and only when) a recommendation refers to a new item, project or program, and no comparison of current or conventional costs is possible, cost categories were determined based on the dollar cost maximums listed below.

NEGLIGIBLE	up to 2% over existing practices or under $5,000 if new
LOW	up to 10% or under $20,000
MEDIUM	up to 30% or under $75,000
HIGH	over 30% or over $75,000

Figure 4.1: Environmental Procurement Policy Example

#	POTENTIAL ACTION	FIRST COST PREMIUM	LIFECYCLE COST SAVINGS	BENEFITS	ADDITIONAL STAFF/ CONSULTANT REQUIRED	OPERATING BUDGET COSTS
6	Develop an environmental purchasing policy for all City purchasing decisions.	Initial development should require only LOW to MEDIUM additional staff investment	*Yes. LOW energy & resource efficiency reduces operations costs; durable products reduce maintenance costs & replacement schedules*	Promotes sustainable, non-toxic and efficient products and businesses	No. City should be able to accomplish with existing staff and resources in this Strategy.	NEGLIGIBLE

CAPACITY ASSESSMENT MATRIX

Figure 4.2: Capacity Assessment Criteria Description	
Criterion	**Description**
First Cost Premium	The additional acquisition or start-up cost differential above the conventional or current cost for that item or program. See also description of Cost Categories.
Lifecycle Cost Savings	The net savings that can be realized over the entire lifecycle of the proposed item or program, after considering acquisition, operations, maintenance and disposal costs. See also description of Cost Categories.
Benefits	A description of the potential benefits, particularly non-monetary benefits, that are expected to result from implementation of the recommendation.
Additional Staffing or Consultant Required	Are additional City staff or consultants required to implement this recommendation?
City Operating Budget Costs	The expected cost impact of this recommendation on the City's operating budget, e.g. staff salaries, utilities, maintenance, etc. See also description of Cost Categories.
City Capital Budget Costs	The expected cost impacts of this recommendation on the City's capital budget, e.g. physical improvements, vehicles, buildings, facilities, etc. See also description of Cost Categories.
Internal Responsibility	What City Department(s) have responsibility for implementation of this recommendation?
External Responsibility	Are there parties outside the City that will share responsibility for implementation?
Implementation Resources	What outside resources are available to aid implementation?
Required to Meet Existing Agreement	Is the recommendation required to meet the Mayor's Climate Agreement or other specific City Council commitment?
Priority	High (1), Medium (2), or Low (3) relative priority for implementation when compared to other recommendations in the Strategy.
Timeframe	Expected timeframe for implementation: Short (1-3 years, e.g. budget cycle), Medium (3-6 years, e.g. CIP cycle) and Long (7-10 years, Comp Plan Update cycle).

CAPITAL BUDGET COSTS	INTERNAL RSPNSBLTY	EXTERNAL RSPNSBLTY	IMPLMNTN RESOURCES	REQUIRED TO MEET EXISTING AGREEMENT	PRIORITY	TIMEFRAME
No. However, actual items often have LOW increased initial costs.	Finance and support from all departments.	No	King County and City of Seattle EPP are excellent models	No	1	S

PRIORITY RECOMMENDATIONS

SHORT-TERM PRIORITIES

The Capacity Assessment Matrix was used to determine if a recommendation was short-term, mid-range, or long-term based on timing, feasibility, and importance. This section of the Sustainability Strategy focuses on short-term recommendations, and provides the rationale for its identification for near-term implementation. They generally represent "easy wins" - ways to leverage current City efforts or achieve results using existing resources in new ways. Recommendations in this section are listed according to the order in which they are listed in Appendix A: Complete Sustainability Recommendations List with Notes. Numbers in parentheses correspond to the numbering system in that document and in Appendix C – Capacity Assessment Matrix for easy reference.

Porous concrete trail at Fremont Place in Shoreline.

A Four-Star "Built Green" development in Shoreline.

The following list is a compilation of all the short-term priorities discussed in this section.

- *Integrate sustainability into City and departmental missions, functions and decision making at all levels using clear and transparent tools (#1).*
- *Create baselines for all Sustainability Strategy focus areas and implement system to track progress over time (#2).*
- *Establish a permanent Green Team – a sustainability leadership structure with management and technical components (#4).*
- *Pursue funding to establish a key City staff position or contracted consultant related to sustainability (#5).*
- *Develop a comprehensive environmental purchasing policy for all City purchasing decisions (#6).*
- *Develope a baseline for energy consumption and carbon data using ICLEI "5 Milestones Toolkit" (#9).*
- *Include requirements to meet Energy Star for building equipment and appliances in purchasing guidelines (#13).*
- *Collect information about greenhouse gas emissions and energy use through the State Environmental Policy Act (SEPA) review process (#19).*
- *Prioritize and promote Green Building and Low Impact Development (LID) training for select staff (#21).*
- *Establish a Residential Green Building Program (#22).*
- *Revise zoning and engineering standards to provide guidance and incentives for LID and Green Building (#23).*
- *Expand existing efforts to reduce, reuse, and recycle in City offices, parks, and other facilities (#37).*
- *Include in purchase guidelines preference/ requirement for products that promote*

Priorities continued next page

PRIORITY RECOMMENDATIONS

(Priorities continued)

reduction and reuse; reduce consumption of raw materials and present reduced risk to human and ecological health (#38).

- *Provide convenient opportunities for sorting, collecting, and composting solid waste streams in the community (#39).*
- *Implement construction and business waste reduction outreach and incentives through the permitting process and municipal waste contract (#40).*
- *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 (#45).*

Integrate sustainability into City and departmental missions, functions and decision making at all levels using clear and transparent tools (#1).

WHY A PRIORITY?

Sustainability is not just another program, it must be central to the mission of the City and all departments. In order to integrate the Guiding Principles and Key Objectives of this Strategy into everyday operations staff training, standard procedures and departmental expectations will need to reflect sustainability (discussed in Recommendation #3 in Appendix A). In addition, the City Leadership Team and the Green Team must establish and reinforce sustainability as a consistent and unifying factor in policy development and program analysis across all departments. The impact of potential decisions and actions on sustainability must be evaluated in a structured and transparent manner. The Sustainable Decision Making Tool presented in Appendix E is provided as a means to implement this recommendation.

IMPLEMENTATION CONSIDERATIONS

Implementation of this recommendation should be done in concert with the establishment of the permanent Green Team (Recommendation #4). The City has identified related office procedures, training and department expectations that support sustainability goals (Recommendation #3) as an item for short- to medium-term implementation because it will require incremental efforts over more than one budget cycle. In addition, the planned move to the new City Hall in 2011 is seen as a key milestone and catalyst for this change. However, many aspects of this recommendation can and should be implemented in the short-term in order to weave sustainability concepts into the overall work program.

Infusing sustainability into the overall fabric of the City will require a culture shift, and it is not possible to fully estimate the amount of time or effort it will take each individual in the organization to adjust to the change. However, the use of the Sustainable Decision-Making Tool presented in Appendix E is not expected to require a substantial amount of additional effort on the part of City staff. Key decisions are already analyzed using more formal processes and sustainability can be integrated into them. The use of this tool for sustainability evaluation is expected to only result in a Negligible to Low (less than 10% increase) in the overall time spent on this critical task. An individual decision can be evaluated using the Sustainable Decision Tool in a group setting in less than one hour.

Much of the work related to this recommendation and the related Recommendation #3 is expected to be done by the Green Team as discussed in Recommendation #4. The total time commitment of approximately 1 FTE identified below in Recommendation #4 is inclusive of this recommendation and Recommendation #3 (i.e. office procedures, training and department expectations that support sustainability goals).

PRIORITY RECOMMENDATIONS

Create baselines for all Sustainability Strategy focus areas and implement a system to track progress over time (#2).

WHY A PRIORITY?

Guiding principle 5 of this Strategy articulates a "Commitment to Continuous Improvement." Selecting indicators that measure what we want to change and establishing baseline data is an essential starting point for this commitment. It will enable the City to see its progress, reevaluate its priorities, programs and policies on a defined, regular basis to ensure that the best possible investments in the future are being made. A community must know where it is today in order to determine how navigate into the future it envisions.

IMPLEMENTATION CONSIDERATIONS

Adaptive management is only possible with active performance monitoring via a system of indicators and performance targets (e.g. a carbon scorecard). Indicators are defined as standards of measurement (of performance) that give evidence of a condition or direction of environmental change. Performance targets are goals established to measure progress of desired change for each indicator.

Analytical and monitoring tools should emphasize simplicity to ensure long-term utility for the City in terms of application and communication of the results for the explicit purpose of becoming more sustainable. Many cities are developing or using advanced performance monitoring systems that include specific objectives with representative indicators (metrics) and performance targets and may provide models for Shoreline to build on. Another available resource for developing baselines and a tracking system is University of Washington environmental science students, who have contacted the City regarding internship opportunities.

Gathering data from utilities and other agencies and creating spreadsheets full of such information will be time consuming, but the importance of the task for future benchmarking can not be overstated. It is the logical place to begin so we may know if we are affecting the change we seek.

Establish a permanent Green Team – a sustainability leadership structure with management and technical components (#4).

WHY A PRIORITY?

A Green Team, comprised of two interdepartmental committees, focused on sustainability program management and sustainability techniques will provide internal guidance and technical support for community sustainability efforts. Successful programs in other cities have used sustainability as a lens through which all city policies, practices, and programs are analyzed. Green teams serve as hubs or focal points for these comprehensive efforts.

IMPLEMENTATION CONSIDERATIONS

A temporary sustainability project team with management and technical committees was set up to develop the Strategy. A permanent Green Team will require a closer examination of the make-up and work-load of the team and its members to ensure the long-term viability of a sustainability leadership structure. Current budget projections indicate that additional FTEs likely will not be available in the budget in the near-term. Adjustment of resources, responsibilities and priorities will be needed to accommodate this ongoing work. Establishing a salaried "Sustainability Coordinator" is not recommended at this time due to budget constraints.

PRIORITY RECOMMENDATIONS

However, it is very important to have clear leadership and emphasis at the highest levels of the City. According to City staff, the temporary sustainability team responsibilities amount to an average of one hour per week for four individuals on the management committee and two hours for up to eight individuals in any given week on the technical committee. Several team members, spent considerably more time per week during the Strategy development.

With implementation of the Sustainability Strategy, staff commitment on a permanent Green Team is expected to be approximately two hours per week for each of the recommended six individuals on the management committee and four hours per week for the recommended six to eight individuals on the technical committee, for a total of approximately 40 hours per week.

Decorative grate connected to a vegetated swale.

Drainage swale in Portland, OR.

This represents approximately one Full Time Equivalent (FTE) worth of effort and includes time spent implementing and sustaining the overall sustainability program, including the Green Team, and integrating sustainability into office procedures, departmental missions and decision-making. Current identified resources likely will not accommodate more than 20 hours per week. Specific initiatives will require additional effort beyond these amounts for select individuals as described in Appendix C. In addition to an examination of overall staff allocation, a volunteer position or grant-funded position may be necessary to provide resources for implementation and bridge the gap to a more sustainable funding and staffing model.

Pursue funding to establish a key City staff position or contracted consultant related to sustainability (#5).

WHY A PRIORITY?

Successful programs analyzed by the consultant team had leaders or champions who provided leadership and continuity during development, implementation and expansion. In interviews with City staff the one potential new staff position mentioned more than any other was a dedicated Volunteer Coordinator.

The City of Shoreline is lucky to have a high level of volunteerism. However, volunteers take time to manage. Staff members that currently organize, contact and lead volunteers have other responsibilities that generally have priority over these efforts. In order to effectively harness volunteer resources, the City needs to have more capacity for managing volunteers.

IMPLEMENTATION CONSIDERATIONS

The current and projected City budget does not appear to have resources available for a new FTE related to sustainability. Grant resources should be investigated to fill this need. The King County's Grants and Awards and Washington State's grant programs are excellent resources.[1]

Develop a comprehensive environmental purchasing policy for all City purchasing decisions (#6).

WHY A PRIORITY?

An environmental purchasing policy is a way to bring together policies, communication tools, process improvements, standards, and reporting mechanisms to help City staff become familiar with the Sustainability Strategy in a tangible way, through the products they use regularly. This is an "easy win" given limited resources that must be invested to achieve tangible results.

IMPLEMENTATION CONSIDERATIONS

External resources are abundant. An organization of governments exists called the Responsible Purchasing Network (RPN.org). It has many resources, including sample specifications, ongoing education webinars, and background research.

The City should consider membership in the Sustainable Products Purchasers Coalition[2], a consortium of businesses, government agencies and non-profit organization, whose members include King County and the City of Seattle. These organizations provide access to life cycle data and promote the aggregate purchasing power of members as a way to illustrate to the marketplace the value of providing verifiable environmental product data.

1 King County Grants and Awards website: http://dnr.metrokc.gov/grants; Washington State grants website: http://www.ecy.wa.gov/services/ee/grants/html

2 http://www.sppcoalition.org

The City may also pursue cooperative purchasing – using other cities' contracts, and buying in collaboration. There are regional and national purchasing collaborations, such as Western States Contracting Alliance.

To guide development of preferences the City may rely on a growing number of independent third-party certification programs: Green Seal, EcoLogo (Canada), Forest Stewardship Council (wood products), and the Electronic Product Environmental Assessment Tool.

The cost of developing a policy is primarily measured in staff time. City staff time needed to get this project up and running is estimated at approximately 1 FTE for one year, spread across the entire City. Approximately .25 of FTE will be needed in the Finance Department, .25 in Parks, .25 in Public Works (primarily Fleets and Facilities) and the remaining .25 spread across other departments. However, no additional FTEs will be hired. Start-up and maintenance of the program will be rolled into the existing staff duties. This means that other responsibilities will need to be adjusted within the City and departmental work plans to accommodate this program.

The policy will have cost implications in terms of actual purchases. Although it is difficult to generalize because the range of City purchases is so broad, the estimate for a typical office item, first cost premiums will generally be in the Negligible to Low range (less than 10% over conventional items). For some items, such as vehicles, costs may be in the Low to Medium range (less than 30% above conventional). For instance, a commitment to buying alternative-fuel vehicles will result in a minimum $3,000 to $4,000 cost premium per vehicle, which will affect budgets and/or replacement schedules. The costs and benefits of purchasing decisions will be evaluated for each item with the criteria and context of the purchasing program.

PRIORITY RECOMMENDATIONS

Develop a baseline for energy consumption and carbon data using ICLEI "5 Milestones Toolkit (#9).

WHY A PRIORITY?

The City Council signed onto the U.S. Mayor's Climate Protection Agreement in April 2006[3]. As part of this agreement the City must strive to meet or exceed Kyoto Protocol targets for reducing global warming pollution by taking actions in our own operations and communities. The first step to reducing emissions is identifying the levelsfrom which we must decrease.

IMPLEMENTATION CONSIDERATIONS

The City joined the International Council for Local Environmental Initiatives (ICLEI)[4], the international leader for municipal implementation of climate protection, to obtain climate protection inventory software and training. ICLEI has developed software that the City will use to inventory green house gas emissions, analyze potential improvements and monitor progress towards specific emission reduction targets. City staff has received an initial orientation to the software and expect to receive additional training in 2008 to define the inventory data for collection.

The first step is to inventory the City's global warming emissions for 1990 and 2007, consistent with the timeframes in the recently adopted Mayor's Climate Protection Agreement. To further this effort, City staff is researching how to accurately measure emission levels. City staff recently met with the City of Seattle to learn about and assess their method of completing a climate protection inventory.

3 City of Shoreline authorized support of the US Conference of Mayors Climate Protection Agreement by adoption of Resolution 242 on April 24, 2006.
4 http://www.iclei.org/

Labeling for recycled products.

Include requirements to meet Energy Star for building equipment and appliances in purchasing guidelines (#13).

WHY A PRIORITY?

The Energy Star logo is one of the most recognized branding images in the United States. Energy Star lamps, fixtures, and appliances are industry standards for energy efficiency, and many green-building programs simply reference Energy Star requirements. Many rebates are available for Energy Star products, which can result in little or no added cost for even significant upgrades of equipment. Additionally, using this respected standard builds on existing research and negates the need for the City to set its own standards in this regard. Most consumers recognize the Energy Star seal and can therefore identify with the City's commitment to energy efficiency through purchasing decisions. This recommendation is a high priority for short-term implementation because it is "low hanging fruit" and can be acted on immediately.

IMPLEMENTATION CONSIDERATIONS

Energy Star labeled products are readily available and often do not have cost premiums over conventional alternatives. Rebates through local utilities are available – PSE offers rebates on lamps, fixtures, and appliances, for instance.

Energy Star products often have measurable paybacks that make them economically more attractive than conventional alternatives. For example, the estimated payback of a compact fluorescent bulb versus an incandescent bulb is $25 – the CFL lasts longer and uses less energy. Implementation of this item will require minimal administrative oversight, primarily relating to rebate applications. This recommendation will not require any real additional time commitment on the part of staff to implement.

Collect information about greenhouse gas emissions and energy use through the State Environmental Policy Act (SEPA) review process (#19).

WHY A PRIORITY?

This is currently required under state law. The SEPA checklist already requires a project proponent to estimate the air emissions that will result from the project. The Washington Department of Ecology is expected to issue specific direction and guidance on this issue in the near future. King County asks project proponents to include greenhouse gas emissions in that estimate. An effort to collect this information should be rolled out first. This will set the stage for eventual regulation and mitigation requirements through the SEPA process. Particular attention needs to be paid to how threshold levels would be set and structured.

IMPLEMENTATION CONSIDERATIONS

Please see the King County SEPA worksheet.[5] Training sessions in Western Washington have already occurred and will be available in the future. The Department of Ecology is expected to provide more detailed guidance soon. The City should use the King County worksheet and monitor DOE guidance on mitigation.

5 http://www.metrokc.gov/ddes/forms/SEPA-GHG-EmissionsWorksheet-Bulletin26.pdf

The City should encourage applicants to detail aspects of their projects that mitigate GHG emissions in the material production, building construction and building operation phases of the project.

This recommendation can be implemented at negligible cost. The immediate benefits include SEPA decisions that are more likely to be affirmed on administrative and judicial appeal. Long-term benefits will likely accrue from more energy efficient construction that produces fewer emissions.

Moving freight by rail is three times more fuel efficient than by trucks. Trains can move a ton of freight 423 miles on a single gallon of fuel. [http://www.csx.com/?fuseaction=general.csxo_env_fue].

Additional work will be needed to determine appropriate mitigation thresholds and requirements. Costs associated with developing or adopting a mitigation system could range from Negligible to Low. Existing staff can be trained to address both the review of the worksheet and likely the development of a mitigation system. Consultant assistance to develop a mitigation system is estimated to cost approximately $20,000.

The City should monitor regional movement on this issue. The City could decide that projects above a certain impact should institute specific mitigation measures in building design and construction.

PRIORITY RECOMMENDATIONS

Mitigation requirements should be integrated or at least considered in the context of the recommendation that calls for revised codes intended to promote sustainability through Low-Impact Development and Green Building (Recommendation #22). The mitigation piece of this recommendation is subject to change if the regional carbon cap and trade program currently being considered at the State level is instituted and covers land development and building construction. Regardless of the outcome of mitigation discussions at the State level, City codes that promote and/or require aspects of Green Building will help mitigate project impacts and support this recommendation.

Prioritize and promote Green Building and Low Impact Development (LID) training for select staff (e.g. PDS, PRSC, PW, F/IT and PRSC) (#21).

WHY A PRIORITY?

This item ranked as a high priority in the Consultant recommendations and as a recommended item for short-term implementation by City staff. Green building is increasing in popularity and additional City staff training is needed to encourage and serve local implementation. Green buildings represent an increasing segment of both residential and commercial markets. Two-thirds of U.S. homebuilders were constructing green homes (at least 15% of their projects) by the end of 2007. The residential green building market is forecast to grow from $7.4 billion today to more than $40 billion by 2010.

Benefits to the City include reduced burdens on infrastructure – green buildings reduce energy use, water consumption and waste. Green building is perhaps the most publicly visible aspect of sustainability – Energy Star, LEED, and Built Green are widely recognized. Low Impact Development (LID), a site approach to sustainable design that emphasizes the reduction of stormwater run-off, is also becoming more widespread and effective.

Although many of the benefits are known and demand is increasing, builders and homeowners are often frustrated with planning and permitting departments that are unfamiliar with green building strategies. Likewise, inadequate design, construction, testing and maintenance by development teams can leave questions about site specific efficacy and durability. Technical proficiency within the City can enable and encourage best practices and effective outcomes. In Shoreline, anecdotal evidence (e.g. conversations with one local green developer) suggests that City staff have exhibited a "can do" attitude and flexibility within existing codes and knowledge. However, a trained staff will not only benefit developers who are currently pursuing this market niche, it can encourage others to do so as well.

IMPLEMENTATION CONSIDERATIONS

For building and planning staff, additional training (in-house or external) should focus on green building standards, such as LEED, BuiltGreen and Energy Star. To support these efforts and reduce staff certification fees, the City should join the Cascadia Region Green Building Council, a chapter of the Canada and U.S. Green Building Councils (USGBC).

Training resources are readily available from the National Sustainable Building Advisor Program[6] and from the Cascadia Region Green Building Council[7]. Approximately 40 hours of study would probably be needed to prepare for the LEED Accredited Professional Exam (which costs $350 for non USGBC members and $250 for members).

6 www.nasbap.org
7 www.cascadiagbc.org

Establish a Residential Green Building Program (#22).

WHY A PRIORITY?

The establishment of a green building program at the City will promote the adoption of these concepts in the private sector through public outreach, informed service and assistance at the permit counter, and improved permit processing. This priority goes hand in hand with two other recommendations discussed in this Chapter, including prioritizing training of City staff in the concepts of green building and LID (Recommendation #21), as well as revising zoning and engineering standards to be more consistent with the City's green building and LID goals (Recommendation #23). Customer assistance materials, including standard details, code compliance worksheets, LEED and Built Green checklists and other information are needed as part of this program. Providing information to homeowners and builders on green building practices, resources and opportunities will help increase awareness and adoption of green building concepts. At the same time, establishing expertise and a formal process or pathway for green building and LID projects at the City will improve the speed and reduce the overall effort of processing these permits.

IMPLEMENTATION CONSIDERATIONS

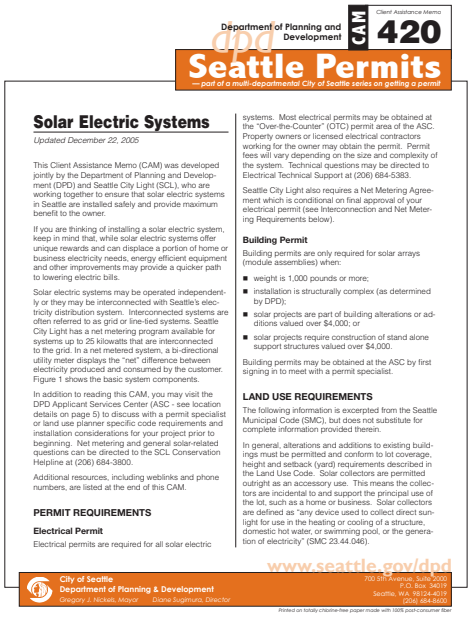
According to City staff, a $20,000 grant has been awarded to the City to support outreach by PDS and Public Works – Environmental Services staff in 2008. Based on discussions with the City, staff time needed to get this project up and running will be approximately .5 of an FTE, spread across the Planning and Development Services Department and Environmental Services. This does not include the time necessary to implement Recommendation #21 and #23 in Appendix A. However, no additional FTEs need to be hired.

Start-up and maintenance of the program can be rolled into the existing staff duties. This means, however, that other responsibilities will need to be adjusted within the Planning and Development Services work plan and some other code review may be streamlined to accommodate this program.

Planning offices wanting to encourage private green development generally provide incentives or educational tools to facilitate this. One example includes the City of Seattle's practice of producing client informational worksheets on innovative concepts to support projects that want to employ such systems. These worksheets provide an easy pathway for permitting approval by setting forth what is acceptable.[8]

Another example includes a sustainable building and infrastructure policy passed by the City of Issaquah in December 2004. Resolution #2004-11 provides free professional consultation to developers intending to use LEED. Also, such projects are bumped to the front of the building permitting queue.

6 http://web1.seattle.gov/DPD/CAMs/CamLIst.aspx



Department of Planning and Development

CAM 420

Client Assistance Memo

Seattle Permits

— part of a multi-departmental City of Seattle series on getting a permit

Solar Electric Systems

Updated December 22, 2005

This Client Assistance Memo (CAM) was developed jointly by the Department of Planning and Development (DPD) and Seattle City Light (SCL), who are working together to ensure that solar electric systems in Seattle are installed safely and provide maximum benefit to the owner.

If you are thinking of installing a solar electric system, keep in mind that, while solar electric systems offer unique rewards and can displace a portion of home or business electricity needs, energy efficient equipment and other improvements may provide a quicker path to lowering electric bills.

Solar electric systems may be operated independently or they may be interconnected with Seattle's electricity distribution system. Interconnected systems are often referred to as grid or line-tied systems. Seattle City Light has a net metering program available for systems up to 25 kilowatts that are interconnected to the grid. In a net metered system, a bi-directional utility meter displays the "net" difference between electricity produced and consumed by the customer. Figure 1 shows the basic system components.

In addition to reading this CAM, you may visit the DPD Applicant Services Center (ASC - see location details on page 5) to discuss with a permit specialist or land use planner specific code requirements and installation considerations for your project prior to beginning. Net metering and general solar-related questions can be directed to the SCL Conservation Helpline at (206) 684-3800.

Additional resources, including weblinks and phone numbers, are listed at the end of this CAM.

PERMIT REQUIREMENTS

Electrical Permit

Electrical permits are required for all solar electric systems. Most electrical permits may be obtained at the "Over-the-Counter" (OTC) permit area of the ASC. Property owners or licensed electrical contractors working for the owner may obtain the permit. Permit fees will vary depending on the size and complexity of the system. Technical questions may be directed to Electrical Technical Support at (206) 684-5383.

Seattle City Light also requires a Net Metering Agreement which is conditional on final approval of your electrical permit (see Interconnection and Net Metering Requirements below).

Building Permit

Building permits are only required for solar arrays (module assemblies) when:

- weight is 1,000 pounds or more;
- installation is structurally complex (as determined by DPD);
- solar projects are part of building alterations or additions valued over $4,000; or
- solar projects require construction of stand alone support structures valued over $4,000.

Building permits may be obtained at the ASC by first signing in to meet with a permit specialist.

LAND USE REQUIREMENTS

The following information is excerpted from the Seattle Municipal Code (SMC), but does not substitute for complete information provided therein.

In general, alterations and additions to existing buildings must be permitted and conform to lot coverage, height and setback (yard) requirements described in the Land Use Code. Solar collectors are permitted outright as an accessory use. This means the collectors are incidental to and support the principal use of the lot, such as a home or business. Solar collectors are defined as "any device used to collect direct sunlight for use in the heating or cooling of a structure, domestic hot water, or swimming pool, or the generation of electricity" (SMC 23.44.046).

www.seattle.gov/dpd

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The City of Seattle's Client Assistance Memo.

PRIORITY RECOMMENDATIONS

Revise zoning and engineering standards to provide guidance and incentives for Low Impact Development and Green Building (#23).

WHY A PRIORITY?

This recommendation also relates strongly to #21 and #23 described above. Revised code standards are needed in conjunction with staff training, community assistance and outreach to effectively implement LID and Green Building. These three recommendations (staff training, community information and outreach, regulatory changes and incentives) can be seen as three different aspects of one unified concept – a Residential Green Building Program. This program will help kick-start the use of sustainable development principles at the building and site level. The Residential Green Building Program has been identified as #2 in the Top Ten List of Key Program Strategies in Chapter 3 – Strategic Directions.

IMPLEMENTATION CONSIDERATIONS

A detailed set of recommended revisions to the Shoreline Development Code and Engineering Standards and Guidelines is included in Appendix D. Revised development regulations and engineering standards are needed to more efficiently and effectively implement LID and Green Building. Modifications to building code interpretations and local amendments may also be needed to provide additional flexibility. This recommendation will require approximately .5 of an FTE for one year to accomplish.
However, no increase in Planning and Development Services staffing levels is proposed. Start-up and maintenance of the program will be rolled into the existing staff duties. This means that other responsibilities will need to be adjusted within the Planning and Development Services work plan and other codes streamlined to achieve greater efficiencies to accommodate this program.

Recycled Marmoleum flooring in a Four-Star Built Green house.

Alternatively, the City may choose to obtain consultant assistance for this effort. Estimated costs of revising UDC and engineering codes consistent with this recommendation are approximately $50,000. Additional review of potential local building code interpretations and amendments could also be done by a consultant. The entire package, including some assistance with standard details that support LID and Green Building, could be accomplished for approximately $75,000.

Expand existing efforts to reduce, reuse and recycle and conserve water in City offices, parks and other facilities (#37).

WHY A PRIORITY?

Conservation of resources – materials and water – is more than an environmental consideration. Reducing consumption is fiscally responsible – reducing both purchased quantities and volumes of waste directed to municipal facilities saves operations costs. A comprehensive recycling program in City buildings gives employees and visitors "ownership" of the Sustainability Strategy, and recycling bins in parks and public venues make the City's efforts visible. Plus, the City has received numerous requests to increase recycling capacity at recreation facilities.

Water use is another opportunity to reduce operations costs for the City and reduce the burden on the Shoreline Water District. Water-efficient fixtures, in both new and existing facilities, will impose a first cost premium with a payback based on reduced operations costs. This recommendation is a high priority for short-term implementation because it is "low hanging fruit" and can be acted on immediately.

IMPLEMENTATION CONSIDERATIONS

Basic recycling efforts and facilities at City offices and parks can be improved. The City can investigate current efforts by its neighbor Lake Forest Park and build on the existing plan to implement plastic bottle recycling in Twin Ponds Park. Shoreline can extend the program to additional parks and City facilities and the recycling of additional materials as feasibility issues are resolved and funding is available. Explore partnerships with other municipalities and borrow from existing programs.

New, low-flow water fixtures as mandated by EPA do not have a cost premium, while those that conserve even more water may still be slightly more expensive due to their novelty. However, with greater demand, these costs are coming down, while the long-term benefits and reduced amounts of water needed increasingly off-set any initial up-charge.

The City should take incremental steps towards reducing waste and increasing recycling at City facilities. Costs for this effort should not exceed the Low level (less than 10% above current program costs). Ongoing costs associated with servicing the recycling receptacles will be Negligible to Low. Implementation of this recommendation will require approximately another .5 FTE in total effort the first year to set up and perhaps .25 of an FTE in ongoing effort. However, existing Environmental Services Staff appear to have a vast array of responsibilities and should not solely shoulder the burden for this initiative – it should be shared throughout City departments. Volunteers and interns can also be considered for ongoing program implementation. By spreading the responsibility for this ongoing effort throughout the City and managing it via the Green Team, these costs can be absorbed.

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) (#38).

WHY A PRIORITY?

Sustainable purchasing is a way to demonstrate the City's commitment to buying goods, materials, services, and capital improvements in a manner that reflects core values of fiscal responsibility, social equity, community and environmental stewardship.

IMPLEMENTATION CONSIDERATIONS

Creation of environmental purchasing guidelines can be based on successful local models, especially the City of Seattle and King County programs. Other resources include EPA Comprehensive Procurement Guidelines and Green Seal's Choose Green Reports. Final determination of guidelines will be a collaborative effort that involves Fleets and Facilities, Purchasing, and local utilities, at minimum. Purchasing guidelines can be effectively and clearly conveyed to City staff via technical tip sheets and online resources – the City of Seattle has been effective in this regard.

Environmental purchasing guidelines may be initially presented as preferences, but should in time be given a mechanism for enforcement. For instance, the City of Seattle Environmental

PRIORITY RECOMMENDATIONS

Purchasing program is based on Washington State laws and regulations specific to procurement, with an additional seven Seattle Municipal Code items and four resolutions that address reuse and recycling, and energy and water consumption associated with purchasing. The City of Shoreline should adopt resolutions, at minimum, that support environmental purchasing. The City should develop specific purchasing criteria based on existing models and investigate participation in purchasing partnerships and the creation of preferred product procurement lists.

Provide convenient opportunities (prominent and labeled bins) for sorting, collecting, and composting solid waste streams in the community (#39).

WHY A PRIORITY?

Twenty years ago, only one curbside recycling program existed in the United States, which collected several materials at the curb. By 2006, about 8,660 curbside programs had sprouted up across the nation.

Communities are often drivers of recycling efforts because they are simple ways of leveraging existing resources – residents and business owners – to achieve substantial environmental and economic benefits. Shoreline residents have expressed this as a priority for the community. The City currently hosts semi-annual Clean Sweep events that target community waste. However, the City cannot do it all – it needs the assistance of local businesses, schools and volunteers in this effort. Programs should target areas such as beverage containers, electronic waste, low level hazardous waste, yard waste and other waste that is difficult to dispose of or that is generated outside the home.

IMPLEMENTATION CONSIDERATIONS

Dozens of local governments have demonstrated that residential solid waste (RSW) sorting and composting strategies work. Some of these strategies require a major paradigm shift – new equipment, new approaches to staffing, new set-out behaviors from residents. Other strategies are based on using existing resources more imaginatively. This recommendation has strong potential for engagement of volunteers, including businesses and school groups. Direct City investment in this effort should be limited to the Low-cost range – less than $20,000 – and that money should be targeted for obtaining and supporting partnerships.

Native residential landscaping in an urban right-of-way.

City of Shoreline staff attend a forest management tour in Vashon Island.

Implement construction and business waste reduction outreach and incentives through the permitting process and municipal waste contract (#40).

WHY A PRIORITY?

The EPA estimates that up to 40 percent of U.S. solid waste is construction and demolition debris. Deconstruction – taking homes and commercial buildings apart, rather than landfilling the waste – involves more labor than conventional demolition, but it also avoids costly disposal fees. What could be a total loss – through demolition and landfilling – turns into a revenue-generating opportunity to resell materials.

IMPLEMENTATION CONSIDERATIONS

Both King County and City of Seattle have had tremendous success using education and technical assistance to help reduce construction and business waste. Expedited permitting is a popular incentive with builders. For example, some municipalities use free and early demolition permit issuance for projects that recycle construction waste, as well as outreach materials to promote building deconstruction and related recycling and reuse of materials. Rate structure could encourage construction waste recycling. The City of Chicago requires construction above certain thresholds to recycle up to 50% of the associated demolition waste. [9]

7 http://egov.cityofchicago.org/city/webportal/portalContentItemAction.do?contentOID=536932617&contenTypeName=COC_EDITORIAL&topChannelName=HomePage

Earth Day Festival natural lawn care booth at Central Market in Shoreline.

Currently there is no drop-off for commercial hazardous waste near Shoreline. At a minimum, information and outreach materials are needed on this issue. Start-up costs associated with this effort are expected to be Low because existing models and programs can be replicated.[10]

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 (#45).

WHY A PRIORITY?

As with multiple other high-priority recommendations, timing and feasibility combine to make this an "easy win" that will build momentum for the Sustainability Strategy. The new CleanScapes contract presents opportunities to introduce new incentives and requirements to reduce waste and improve recycling efforts. With a new service provider, residential customers are more amenable to programmatic changes.

IMPLEMENTATION CONSIDERATIONS

By linking the familiar three R's – reduce, reuse, recycle – with the Sustainability Strategy in community outreach efforts, the City and CleanScapes can revitalize interest in the three R's and bridge to other less familiar concepts, or provide a "gateway" for the community. Specific requirements should be established for waste and recycling facilities in new residential construction. The City of Seattle has developed a worksheet for project designers.[11]

8 http://www.metrokc.gov/dnrp/swd/facilities/cdl-stations.asp

9 http://www.seattle.gov/util/stellent/groups/public/@spu/@csb/documents/webcontent/cos_004542.pdf

IMPLEMENTATION RESOURCES

OVERVIEW

In performing the capacity assessment, it was important to identify resources that may assist the City directly or indirectly in achieving specific recommendations. Innovative and more conventional methods can be combined to facilitate implementation. Resources can come in the form of funding and/or in-kind support. Additionally, the work other area municipalities have done can be shared or at least act as a model for Shoreline's implementation process.

FUNDING

Funding aspects of implementation include: dollars for new or expanded efforts, financial incentives to encourage the private sector to participate in the sustainability initiative, and leveraging incentives from other agencies and/or organizations to incentivize greening private sector activity.

Sustainable Enterprise Funds can help municipalities invest in projects that require additional incentive to overcome technical or financial risks. The City of Shoreline should explore partnerships with other municipalities to maximize available resources. The Greater Vancouver Regional District (GVRD) is an example of a community that has used this technique. In a partnership with five other communities, Vancouver is combining budget dollars to get maximum environmental benefit out of its limited budget.

Sustainability Grants are available that may help implement specific recommendations, for example to fund a volunteer coordinator position. Such a position can help leverage staff efforts by seeking out community groups willing to dedicate labor and resources to sustainability efforts. Often, seed money in the form of a grant is used for first-year costs (e.g. salary, administrative costs). The proven benefit can then be used to justify permanent budget allocations for a volunteer coordinator position.

Creative Tax Programs can also be used to encourage or fund sustainability initiatives. To reduce their carbon footprint, states (Washington included) have provided tax credits for installation of renewable energy systems Municipalities (such as San Francisco and Berkeley) have provided loans for installation of such systems that are paid back through property taxes payments. The total tax to the system owner is the same or less than what property owners would save on electric bills so it is a win-win. Shoreline residents may in fact approve higher property tax rates for improved waste management programs, green building assistance, or alternative energy strategies, if they are convinced of the long-term financial benefits. Because repayment is tied to property taxes, the City can project annual budgets with little additional risk. Tax penalties are less popular, but Portland city officials have proposed a "carbon tax" on new homes and commercial buildings. For such a tax to be successful, strong partnerships with the construction industry and real estate organizations would be necessary.

Constructing a porous concrete trail along Fremont Place.

Permit Fees are another possibility, and likely to be more acceptable than tax penalties. The City of Portland imposes a fee on every building permit to fund green building mini-grants, education, and outreach, and staff training. The key is volume – demand within the Urban Growth Area will remain high, and the small fee is acceptable to most developers. Since Shoreline receives substantially fewer permits than Portland, the City might choose to dedicate fees to a limited set of initiatives. Shoreline may also create a "green district" (Kirkland is experimenting with this) and impose fees based on levels-of-service directed to green improvements to infrastructure.

Utility Rebate Programs can be used by the City in its own projects, as well as to encourage greening private sector development activity. Both Seattle City Light and Puget Sound Energy (for gas customers) provide utility grants and rebates for a variety of energy improvements in the commercial, industrial, public, and residential realm.

Municipal Grants for Green Building provide another form of financial incentive. Several municipal models for such grants including King County's Department of Natural Resources and Parks awards to private sector developers achieving LEED or Built Green (Technical assistance is also provided with the grant). Outside the region, Santa Monica provides a good model for such efforts. The City can use its website and planning processes to inform citizens (including prospective developers) about these and utility programs that provide financial incentives.

REGULATIONS & PLANNING POLICY

The regulatory environment and planning policy can sometimes hamper the very actions warranted by the City's new Sustainability Strategy. The goal is to remove those barriers (due to conflicts or redundancy requirements, for example, where an innovative technology is permitted but a conventional system is required as backup) and to use regulations and policy to encourage actions in keeping with the Strategy.

Comprehensive Plans can be modified to incorporate sustainability, through integration with existing elements, or creation of sustainability elements. For example, the City of Lynnwood is in the process of developing an Energy Element to its Comprehensive Plan. It is important, however, to ensure that sustainability is not an "add-on" to the overall plan. Suggestions for improvements to the Comprehensive Plan can be drawn from a recent APA workshop - "Incorporating Sustainability into the Comprehensive Plan."[12]

Codes and Ordinances can be used to require or encourage sustainable actions within the City and by its citizens. The project team conducted an assessment of the City's LID and Green Building codes for this project. The results are included in Appendix C. Many jurisdictions require public projects to be LEED certified (Seattle enacted such a policy in 2000). Seattle, and other cities, such as Arlington, Virginia, also offer incentives to private sector developers, such as floor area ratio or density bonuses or, as with the Austin, Texas', Green Building Program, technical assistance. Some municipalities, such as Ft. Collins, Boston, and Washington, DC, have even experimented with green requirements for private buildings. Requirements for private developers are fairly controversial and are not recommended in the Shoreline Environmental Sustainability Strategy.

Green Permitting Processes reward projects

12 http://www.washington-apa.org/2007conf/program.html

that are green, and can encourage conventional projects to go green. As pointed out earlier in this chapter, the City of Issaquah passed a resolution in December 2004 that provides technical assistance and expedited permitting. Earlier this year, Kirkland enacted a similar policy. Other innovative examples include Chicago and Santa Monica. Chicago combines reduced planning fees in combination with expedited permitting.

For green permitting to work effectively, Shoreline Planning and Building Department staff must be proficient in green building. A natural complement to reviewing plans will be providing information/education to development clients on approved green technologies. The City of Austin provides a full kit of resources to developers and builders that includes design assistance and workshops. The City of Santa Barbara's building department is developing an educational kiosk that provides builders information on the local Built Green program and its relationship with city processes.

Also as mentioned earlier in this chapter, the City of Seattle provides Client Assistance Memos for a variety of development strategies. An example – Green Parking Lots – is included as Appendix F. Made available both electronically and at permit counters, these technical resources can help promote green building without placing undue additional burden on staff.

City of Shoreline staff tour the Kruckeberg Gardens.

Green Building Code(s). Sustainable design strategies are considered by Shoreline's permitting department on a case-by-case basis – no different than a conventional building permit. New, unfamiliar strategies and technologies must be researched and vetted, which often delays processing. Additionally, Shoreline does not emphasize green building beyond IBC and State requirements such as the Washington State Energy Code (which is more stringent than IECC), citing a lack of resources dedicated to code revisions and enforcement.[13]

However, resource-constrained departments such as Shoreline's can implement performance standards that do not require significant code changes and that are compatible with IBC standards. The key to encouraging green building from the permitting side, according to the International Code Council, is increasing proficiency among permitting and review staff so that new green building strategies can be quickly reviewed and accepted or denied, thereby placing no undue additional burden on developers.

Ongoing development of the IECC, the National Green Building Standard (for residential construction), and ASHRAE/IESNA/USGBC 189 *Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings*, are making it increasingly possible for the full range of concerns associated with sustainable and environmentally responsible building to be properly addressed.

With regard to the IECC, more performance-based

13 The International Code Council (ICC), a membership association dedicated to building safety and fire prevention, develops the codes used to construct residential and commercial buildings. Most U.S. cities, counties and states that adopt codes choose the International Codes developed by the ICC, specifically the International Building Code (IBC). Additionally, the U.S. Department of Energy continues to reference the International Energy Conservation Code (IECC) as the benchmark for conserving resources used in construction and daily living.

methods will be incorporated. The result will be a range of thresholds, up to and including the goal envisioned by the Architecture 2030 Challenge (which aims to reduce carbon dioxide emission due to combustion of fossil fuels in buildings to net zero by the year 2030)[14] that will allow individual jurisdictions to designate achievable levels of energy conservation with few, if any, code amendments. This will, in turn, eliminate redundant or even contradictory regulations and levels of enforcement.

BUSINESS PARTNERSHIPS

Green Business Certification may be one of the best ways to engage Shoreline's business community in the Sustainability Strategy. The City of Shoreline already partners with the Environmental Coalition of South Seattle (ECOSS) to help educate Shoreline businesses regarding sustainable business practices.

ECOSS provides information and education on industrial innovations that will lead to energy and water conservation and pollution prevention in small- to medium-size businesses. According to the Shoreline Economic Development Program, businesses have been slow to take advantage of ECOSS' services.

In late 2007, King County awarded a grant to the Shoreline Chamber of Commerce for development of a sustainable business program. The Chamber is seeking to use the grant to create a "one-stop shop" to educate businesses to be more efficient – to use less, waste less, and save money – and to be recognized for sustainability efforts.

Shoreline can also use existing resources to promote sustainable business practices. Puget Sound Energy and Seattle City Light can provide data that can be used to create an overall "business footprint" for Shoreline businesses. This may be used to encourage businesses to pursue sustainable business strategies and take advantage of resources in order to promote their business and save money through operations and maintenance efficiencies.

The Cities of Kirkland, Santa Monica, and several in the Bay Area are good examples of municipalities that have developed green business certification programs in partnership with the business community.

Junco enjoying the day in Shoreline's urban forests.

14 http://www.architecture2030.org/

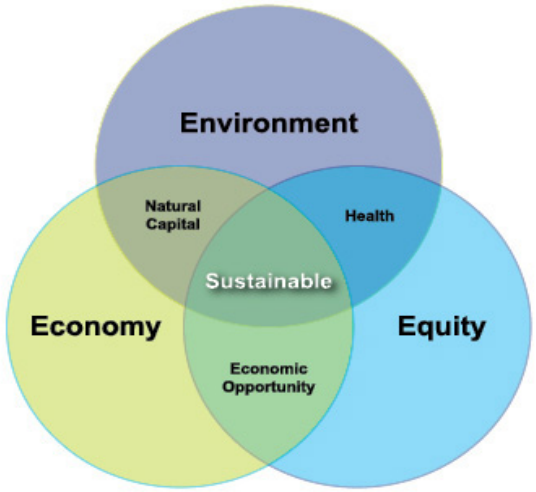
IN CLOSING...

It is important to note that the completion and adoption of this document do not mark an end to Shoreline's quest to become a sustainable community, but are only the beginning. The myriad of principles, focus areas, objectives, recommendations and indicators included herein will need to be examined in further detail as the City moves from the theory of a guiding document to the practice of implementing sustainability. Each year the Council will review progress and make adjustments to reflect changing circumstances and priorities.

The sixteen Priority Recommendations delineate a focus for initial efforts and represent the areas in which the City can most efficiently and effectively leverage its impact, influence and investment. They include convening a "Green Team" to work out the details of programs; establishing baselines and indicators to track progress; creating an environmental purchasing policy; instituting a residential green building program; revising zoning and engineering standards; implementing construction waste programs; and other ambitious goals, many of which are part of existing work programs.

The complete list of fifty recommendations can be examined more closely over time, as staff capacity increases and other resources become available through demonstrated proficiency and increased community participation. The Mission Statement and Guiding Principles set the tone and intent of the City's commitment to creating an "Environmentally Sustainable Community" and can inform the decision-making process as the paradigm changes and the market adapts. The main benefit of having a flexible strategy, rather than a static plan, is that this document can be updated as opportunities present themselves and new information and products become available.

The third Strategic Guidance Principle recognizes that environmental quality, economic vitality, human health and social benefit are interrelated. This builds on a widely understood concept of a "three-pronged bottom line (3E) approach", which suggests that Environment is only one aspect of a truly sustainable system, counterbalanced with (Social) Equity and Economy.



As demonstrated in the graphic above, the area where Environment and Equity overlap can be measured by the health of the community, both its people and ecosystems. Community health goes beyond individual human health to enhance the community's access to needed human services and provide that social needs are fairly met. The area where Environment and Economy intersect falls into the realm of natural capital, including green infrastructure. Natural capital includes the City's tree canopy because it accounts for the economic value of services provided by our urban forests, such as carbon sequestration and water quality that would otherwise need to be managed through City funding. The combination of Equity and Economy provides for economic opportunity. When economic benefit is pursued independently of social equity, environmental degradation, detriment to human health and social injustice are often the result.

IN CLOSING...

Only when all three principles are functioning in a productive manner can a system be sustainable in the broadest sense, indeed local government best serves its communities when it achieves synergy among the 3Es.

While the Sustainability Strategy focuses on the Environmental aspects, this does not imply that the other criteria are inconsequential or to be ignored. In fact, proposed City Council goals for 2009-2010 reflect this progressive and interconnected approach. The proposed goal to "develop a shared community vision that integrates the Environmental Sustainability, Comprehensive Housing and Economic Development Strategies into the Comprehensive Plan and community development initiatives" addresses all prongs of this 3E model. Such an overarching goal will emphasize the interdependence of these elements, and allow for prioritization of tracking indicators of community health, natural capital, and economic opportunity to gauge success.

Because this document is focusing on environmental aspects of sustainability, it is appropriate to bring the discussion full circle with a reminder that the Mission Statement lays a clear charge.

The City of Shoreline will exemplify and encourage sustainable practices in our operations and in our community by:

- ***Being stewards of our community's natural resources and environmental assets;***
- ***Promoting development of a green infrastructure for the Shoreline community;***
- ***Measurably reducing waste, energy and resource consumption, carbon emissions and the use of toxics in City operations; and***
- ***Providing tools and leadership to empower our community to work towards sustainable goals in their businesses and households.***

If the City's leaders, staff and the community as a whole commit to these principles and are willing to work together in order to achieve such goals, the legacy for future generations will be a truly sustainable community. One in which they will enjoy the same (or possibly better) resources and opportunities as those that live here today.

1 appendices

APPENDIX A
Complete Sustainability Recommendations List with Notes

APPENDIX B
Existing Program Evaluation Summary Matrix

APPENDIX C
Capacity Assessment Matrix

APPENDIX D
LID and Green Building Code Assessment

APPENDIX E
Sustainable Decision Making

APPENDIX F
Potential Indicators

APPENDIX G
Implementation Resources

APPENDIX A

Complete Sustainability Recommendations List with Notes

#	RECOMMENDATIONS	NOTES
City Operations, Practices & Outreach		
1	**Integrate sustainability into City and departmental missions, functions and decision making at all levels using clear and transparent tools.**	Sustainability is not just another program, it is now central to the very mission of the City. Establish and reinforce sustainability as a consistent and unifying factor in policy development and program analysis across all departments. Evaluate the impact of potential decisions and actions on sustainability in a structured and transparent manner (e.g. Sustainable Decision-Making Tool).
2	**Create baselines for all Sustainability Strategy focus areas and implement indicator tracking system to track progress over time.**	Establish and maintain sustainability indicators tracking system with indicators identified in the Shoreline Sustainability Strategy, Appendix F.
3	**Create standard office procedures, training and department expectations that support sustainability goals; then measure, reward and promote individual and departmental achievement of these goals.**	Represents a "quick win". Use the move to the planned new City Hall as a key opportunity for internal change. Employee of the quarter and other new programs could be used to reward sustainability. Currently, there are no formal standards or clear employee and department expectations related to sustainability. Performance should be measured, and a "carrots rather than sticks" approach should be used to build and maintain support.
4	**Establish a permanent GREEN team or interdepartmental committee(s) to focus on sustainability program management and sustainability techniques.**	Current working structure of leadership team and technical working group could be formalized and enhanced. Establishing a "Sustainability Coordinator" is not recommended at this time due to budget constraints. It is very important to have clear leadership and emphasis at the highest levels of the City.

Notes:
1) The number (#) assigned to each recommendation is for reference purposes only and is not intended to indicate priority or sequence. The number used here is the same number used in the Capacity Assessment Matrix, in Appendix C in the strategy.
2) An * in the # column indicates that this is a continuation or expansion of an existing City of Shoreline program, policy or project. These recommendations are presented in the context of the existing programs in Appendix B.

#	RECOMMENDATIONS	NOTES
City Operations, Practices & Outreach – continued		
5	**Pursue funding to establish a key City staff position or contracted consultant related to sustainability.**	For example, the need for a Volunteer Coordinator position was mentioned several times by different people in staff interviews. Volunteers require organization and guidance to leverage this resource effectively. Other ideas included a mid or senior level Sustainability Coordinator Position to oversee the overall effort. Current budget needs and projections do not appear to support an additional general funded position.
6	**Develop a comprehensive environmental purchasing policy (EPP) for all City purchasing decisions.**	EPP represents a "quick win". Use the move to the planned new City Hall as a key opportunity for internal change. Existing programs from King County, Seattle and elsewhere can be modified and adopted. Guidelines for specific areas should be separate and updatable.
7 *	**Create a green business certification and promotion program.**	Chamber of Commerce has received grant funding to start this program. The City should collaborate on this effort with the Chamber. The City's existing sustainable business program, part of the Economic Development Program, is not a certification program and does not currently appear to be a high priority. More emphasis, structure and focus would be helpful here. Consider stronger efforts to attract and promote environmentally friendly businesses.
8 *	**Provide expanded "how to" sustainability info to the community through varied approaches (e.g. mailers, events, City website and informational brochures).**	Use the move to the planned new City Hall and website update as key opportunities to promote community outreach. City currently uses website effectively and regularly mails out information. Additional sustainability outreach can be achieved through the City's informational mailers. Time and resources for additional outreach are always an issue to consider.

#	RECOMMENDATIONS	NOTES
Energy & Carbon Reduction		
9	**Develop a baseline for energy consumption and carbon data using ICLEI "5 Milestones Toolkit."**	Using ICLEI's process (provided in a toolkit to cities who "sign on" to ICLEI, the City creates a baseline for their carbon emissions. The City (generally with the use of volunteers) collects energy and waste data, and calculates greenhouse gas emissions for a base year (e.g., 2000) and for a forecast year (e.g. 2015). The inventory and the forecast capture emissions from all municipal operations (e.g., city owned and/or operated buildings, streetlights, transit systems, wastewater treatment facilities) and from all community-related activities (e.g., residential and commercial buildings, motor vehicles, waste streams, industry). The inventory and forecast provide a benchmark against which the city can measure progress.
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 purpose of the LEED EA Credit 1 is to achieve increasing levels of energy performance over a prescribed baseline. Credit requirements can be met through whole building energy simulation or one of two applicable prescriptive compliance paths. City buildings that get state funding must comply with the state requirement to achieve LEED Silver. Regardless of whether state funding is used, the City should consider implementation of this and related recommendations. For recommendations #10, #11 and #24, the City should consider the definitions, thresholds and exemptions defined in the recent Washington State High Performance Public Buildings Law (ESSB 5509). For example, the LEED requirements apply to "major facility projects," which for new construction is defined as buildings larger than five thousand gross square feet of occupied or conditioned space as defined in the Washington State Energy Code.
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.**	Commissioning is a process that ensures buildings operate as intended, thus ensuring energy efficiencies are actually achieved.

#	RECOMMENDATIONS	NOTES
Energy & Carbon Reduction – continued		
12	**Upgrade existing City facilities to meet Energy Star building performance standard for similar building types.**	Shoreline can also become an ENERGY STAR partner. As part of the City's partnership commitment, they agree to: measure, track, and benchmark energy performance; develop and implement a plan to improve energy efficiency; and educate staff and the public about the partnership and achievements with ENERGY STAR, or similar, efficiency improvements (Energy Star provides tools to develop the plan, and benchmark buildings against similar types, including local government facilities).
13	**Include requirements to meet Energy Star for building equipment and appliances in purchasing guidelines.**	Energy Star provides lists of equipment and appliances that meet their standards. Their website shows a range, including equipment that goes well beyond their minimal standards.
14	**Engage in Seattle City Light's (SCL) green power program (Green Up). Increase green power purchase to 100% during annual budget planning.**	Greater coordination with power utilities could be pursued. In addition, zoning and permitting incentives could specifically target energy efficient construction. Local non-profit groups, such as Shoreline Solar Project could be approached as partners.
15 *	**Require all new fleet vehicles be alternatively fueled, or rated by EPA for 45 mpg or higher for fossil fuel vehicles.**	This requirement would only apply to vehicle types where these options are generally available and cost effective. For exempt vehicles, require the most efficient options available. Fleet decisions must consider the use and initial cost of the vehicles as well as maintenance costs.
16	**Conduct a campaign for City staff to reward "smart" trip planning to reduce unnecessary trips and the total miles traveled for work related trips.**	The campaign could reward staff for "smart" trip planning, including using the most efficient vehicle for the job, combining trips and planning the trip route to reduce miles traveled and gas used.
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.**	Utilities promote these incentives through bill stuffers. The city could include information in its public outreach campaign (see General recommendations).

#	RECOMMENDATIONS	NOTES
Energy & Carbon Reduction - continued		
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.**	The City should work with Seattle City Light and Puget Sound Energy to gain their support for the City's Sustainability Strategy by assisting with collection of baseline data. The City of Kirkland has successfully engaged Puget Sound Energy in components of their sustainability efforts. Data in such a report would need to be normalized and explain other factors that impact utility rates such as house size and annual temperature variations.
19	**Collect information about greenhouse gas emissions and energy use through the State Environmental Policy Act (SEPA) review process.**	The SEPA Checklist already requires a project applicant to estimate the air emissions that will result from the project. The Washington State Department of Ecology is currently working to clarify the SEPA Checklist to include greenhouse gas emissions. The City of Seattle and King County recently starting requiring project applicants to include greenhouse gas emissions in the air emissions estimate. See worksheet: http://www.metrokc.gov/ddes/forms/SEPA-GHG-EmissionsWorksheet-Bulletin26.pdf. An effort to collect this information should be rolled out first. This will set the stage for eventual regulation and requiring mitigation of impacts through the SEPA process. Particular attention needs to be paid to how threshold levels would be structured and set.
20	**Employ PLACE^{3}S (PLA**nning for **C**ommunity **E**nergy, **E**conomic and **E**nvironmental **S**ustainability) **or similar software, for future land use planning efforts (e.g. the next major Comprehensive Plan update).**	PLACE^{3}S is an innovative planning method that fully integrates focused public participation, community development and design, and computer-assisted quantification tools (GIS) to help communities produce plans that retain dollars in the local economy, save energy, attract jobs and development, reduce pollution and traffic congestion and conserve open space. It creates an information base to function as a common yardstick, empowering a community to compare components of each plan (apples-to-apples), make informed trade-offs, and arrive at a consensus. The consensus-based plan would be broadly supported, economically and environmentally realistic, make investment sense, and encourage Smart Growth benefits to be tracked and reported annually.

#	RECOMMENDATIONS	NOTES
Sustainable Development & Green Infrastructure		
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).**	Emphasize training where it will do the most good. Planners, Building Plan Reviewers, Engineers, Grant Coordinator, and Surface Water and Environmental Services personnel appear to be the highest priorities. Some of these personnel have already received training. By being "literate" in green building, City staff can be available to provide information at the permitting counter to those interested in green building and LID, and help when developers have innovative projects.
22 *	**Establish a Residential Green Building Program, including worksheets on specific innovations for permitting clients.**	Provide information to homeowners and builders on residential green building practices, resources, and opportunities. Concurrently establish a green building permitting process and expertise in the Planning Department. Funding was just obtained to start outreach in 2008. City of Seattle has produced informational sheets on innovative systems; these can be used as a model for Shoreline worksheets.
23 *	**Revise zoning and engineering standards to provide guidance and incentives for Low Impact Development (LID) and Green Building.**	Many opportunities exist in this area and they will be detailed in consultant recommendations. These range from LID engineering details and specific standards to provide guidance, modifying how impervious surface coverage is calculated, and creating development flexibility and incentives for green building projects. The City's stormwater engineering standards are currently under review. Over forty jurisdictions in the country have enacted policies to incentivize green building standards. Most do this with the carrot: expedited permitting, tax credits, grants, technical assistance, density bonuses, FAR allowances tied to meeting a standard are examples. Both Issaquah and Kirkland for example allow a verified five star Built Green project to receive expedited permitting.

#	RECOMMENDATIONS	NOTES
Sustainable Development & Green Infrastructure - continued		
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.**	City staff have indicated that this is something that they intend to examine, but do not expect to take action in the short-term. This item should be considered for short-term, high priority status. Current plans for new City Hall/Civic Center are consistent with this recommendation. Phase II plan for Aurora Corridor is generally in line with the intent of this recommendation. Additional specifics regarding LID should be in new adopted policy.
25 *	**Prioritize and structure the development of the Green Streets program.**	A demonstration project is needed, but emphasis should also be on planning, site selection criteria, and implementation strategies using an "opportunistic" approach that addresses site conditions, neighbor interest and budgets. Priority should be placed on funding and specific goals for this program. The Transportation and Storm Water Master Plans should be revised to include additional guidance for where and how this initiative should be pursued.
26	**Modify the stormwater utility fee to promote low impact development, calibrate for true system impact/cost and encourage natural drainage improvements.**	This would require a fee study and is potentially a medium-term time frame action. Current fee is collected with property taxes. It is a flat fee for residential users and for commercial is based on the amount of impervious surface on the property without any consideration of LID practices that might reduce the effective impervious. Fee structure for commercial properties only provides incentives for proper maintenance of required private stormwater facilities such as detention tanks.
27 *	**Expand and reorient the existing priority sidewalk improvement program to focus on linking destinations and network connectivity.**	Aurora corridor program will represent a major achievement. Existing focus on sidewalks near schools will result in benefits, but there is a recognized need to both broaden and reorient the program as budget constraints allow. The Transportation Master Plan should be revised to provide clear guidance on the development of an overall pedestrian system for utilitarian walking. A bond issue or other funding mechanism could be explored as a funding mechanism for this future work.

#	RECOMMENDATIONS	NOTES
Sustainable Development & Green Infrastructure - continued		
28 *	**Improve identification, mapping, designation, surfacing and signage of existing trails. Develop a plan for future trail expansion.**	City has recently convened a trail user and planning group to identify and prioritize improvements. Specific priorities and locations should result from this effort. City should also focus on linking destinations with trails and treating them as part of the transportation system – focus not just on trails pleasure walking, but for utilitarian walking as well. The Parks and Transportation Master Plan scheduled updates should provide clear guidance on the development of an overall pedestrian system, including trails.
29 *	**Develop bicycle and pedestrian plans in the Transportation Master Plan that identify a cohesive network which connects major destinations.**	Improvements include Interurban Trail "feeders," completing gaps on 155th and 185th, and connections in the Fircrest, North City and Richmond Beach areas. The Transportation Master Plan should be revised to provide clear guidance on the development of an overall pedestrian system for utilitarian, as well as recreational, walking.
30 *	**Update the Transportation Master Plan and provide a stronger link to the Land Use Element in the Comprehensive Plan.**	Provide a vision for the future of all major streets consistent with the land use plan to guide future investment and capital improvement decisions, including transit routes, street classifications and Right-of-Way improvement standards and needs.
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.**	Clear consensus between the City staff and Council on specific priorities and a strong commitment to pursuing these transit improvements through all available means will increase the likelihood that progress is made in this area. Adoption of resolutions outlining such priorities, such as recently adopted Resolutions 272 and 273, is a good first step.

#	RECOMMENDATIONS	NOTES
Sustainable Development & Green Infrastructure - continued		
32 *	**Advocate for a revised Sound Transit Phase II Plan (ST2) which includes improvements that serve the City of Shoreline.**	Under the current version of the ST2 proposal, Shoreline residents will receive no direct benefits for their additional financial contributions. Current Sound Transit service to Shoreline is very limited. In Resolution No. 272, the Shoreline City Council expresses support for changes to the current ST2 proposal, including continuation of the light rail system to North 205th, light rail stops at North 145th and North 185th, Bus Rapid Transit stops at those locations if light rail is not feasible, and $40 million financial contribution toward the completion of the Business Access Transit (BAT) lanes in the Aurora Corridor.
33 *	**Advocate for a single, integrated and continuous bus rapid transit system on Aurora Ave. (SR 99) between Everett and Seattle.**	Coordination between Community Transit, Metro and Sound Transit is needed along Aurora Ave (State Route 99). Current transit agency plans will result in two different systems and no regional coordination. The lack of integration results in service gaps, significant delay and inconvenience that decreases rider-ship. The Shoreline City Council recently adopted Resolution 273 which states these concerns and directs staff to contact adjacent communities along the corridor, transit agencies, neighboring city council and planning commissions and State legislators to engage them on this matter.
34	**Consider advocating for a Metro "feeder" route to improve east-west transit and support Aurora backbone.**	Residents and staff have noted that east-west transportation in the City is poor. City should try and capitalize on Aurora corridor investment and service levels. Where the demand exists or is likely with future densities, additional east-west service should be a priority for the City and its lobbying efforts.

#	RECOMMENDATIONS	NOTES
Sustainable Development & Green Infrastructure - continued		
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.**	This is another potential idea that was mentioned by a City staff member that should be investigated. More incentives for non-SOV commuters can be targeted for large and medium size employers not currently required to participate in the CTR program. Current program only requires participation of six employers in the City. Funding options for a program expansion would need to be researched as it is significant issue for this program. Current support and administration of this program for the City is provided through an inter-local agreement with Metro, however voluntary expansion of the program might not get additional funding/support. Options for expansion of the CTR program should be explored the next time the CTR plan is updated.
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 existing and proposed transit corridors and improvements.**	Existing park and ride at 192nd and Aurora has been considered as a key potential location in the past for a TOD. This location is more convenient for riders making connections on Aurora than the current Aurora Village location. Sustainability factors (e.g. managing growth in locations near existing and future transportation investment, such as light rail stations, where density will help support transit use) should be given strong consideration in public conversations and subarea plan development. The Housing Strategy emphasizes the need for housing choice, affordability and use of design to attain neighborhood compatibility. These concepts should also be considered in proposals to create density nodes.
Resource Conservation & Waste Reduction		
37 *	**Expand existing efforts to reduce, reuse, and recycle in City offices, parks, and other facilities.**	Build on existing plan to implement plastic bottle recycling in Twin Ponds Park. Extend program to additional parks and City facilities and the recycling of additional materials as feasibility issues are worked out and as funding is available. Current recycling program at City Hall should be emphasized and improved.

#	RECOMMENDATIONS	NOTES
Resource Conservation & Waste Reduction - continued		
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).**	This is perhaps the most mature element of most EPP guidelines (Seattle, King County EPA).
39	**Provide convenient opportunities (prominent and labeled bins) for sorting, collecting, and composting solid waste streams in the community.**	This recommendation has strong potential for engagement of volunteers. Efforts should be focused on obtaining partnerships with businesses and schools. Focus should be on waste generated outside the home and items that are difficult to dispose of because they are not allowed in residential curbside collection.
40 *	**Implement construction and business waste reduction outreach and incentives through the permitting process and municipal waste contract.**	Both King County and City of Seattle have had tremendous success using education and technical assistance to help reduce construction and business waste. Expedited permitting is a popular incentive with builders. The reduction of construction waste should be an important focus, e.g. free and early demo permit issuance for projects that recycle construction waste as well as outreach materials to promote building "deconstruction" and related recycling and reuse of materials. Rate structure could encourage construction waste recycling. Currently there is no drop-off for commercial hazardous waste near Shoreline. At a minimum, information and outreach materials are needed on this issue.

#	RECOMMENDATIONS	NOTES
Resource Conservation & Waste Reduction - continued		
41 *	**For high use operations including irrigation and park restrooms replace fixtures and equipment with the highest efficiency, cost-effective water conservation options available.**	Examples include more efficient irrigation equipment, automatic low-flow fixtures in park restrooms, grey water reuse systems, etc. Retrofit if funding is available, develop a phased plan for replacement or at a minimum require when existing equipment reaches end of serviceable lifespan. A supporting recommendation is to include expanded use of naturalized drought tolerant plantings in low use park areas. Fixture and equipment selection must take into consideration product performance, maintenance and replacement constraints and costs.
42 *	**For retrofits and new construction of City indoor facilities, specify/replace fixtures with high efficiency, low flow alternatives.**	Examples include automatic low flow fixtures in bathrooms, two-stage flush toilets, etc. Require for new facilities. For existing facilities, retrofit if funding is available, develop a phased plan for replacement or at a minimum require when existing equipment reaches end of serviceable lifespan. Fixture and equipment selection must take into consideration product performance, maintenance and replacement constraints and costs.
43	**Investigate the use of non-potable sources or non-potable uses, such as grey water reuse for toilet flushing.**	There are a range of opportunities to save potable water use for indoor water consumption, from conserving water consumption overall, to replacing potable water used for non-drinking purposes, such as toilet flushing, with grey water. Rainwater catchment for outdoor use/irrigation is less effective in our climate, because the rain comes mostly in the seasons when it is not needed. However, a new Built Green residential project near Shoreline Community College includes rainwater catchment for irrigation and it can be used to supplement irrigation needs in some applications.

#	RECOMMENDATIONS	NOTES
Resource Conservation & Waste Reduction - continued		
44	**Work with utilities to expand existing and develop new incentives to reduce potable and irrigation water consumption.**	For example, not all utility districts in Shoreline bill based on consumption, so there is no financial incentive to conserve and not all utility districts actively promote conservation. Shoreline Water District used to give out rain barrels at cost and such programs should be reinstated. Overall, more strategic direction and expansion of water and wastewater conservation programs are needed. City should meet with utilities and see what is planned and where they can partner.
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 recent CleanScapes contract is a major achievement in the City's efforts to reduce waste and improve recycling efforts. By linking the familiar three R's with the Sustainability Strategy in community outreach efforts it will both revitalize interest in three R's and bridge to other less familiar concepts. Specific requirements should be established for waste and recycling facilities in new residential construction.
Ecosystem Management		
46 *	**Identify underutilized park lands and other City property and use for habitat improvements, infiltration, water treatment and other compatible purposes.**	This is another great idea that was mentioned by City staff during the interviews. Transform some underutilized grass areas into plant and wildlife habitat. Reduction in maintenance costs would partially offset cost of habitat improvements. Improvements at Cromwell Park provide an example. Areas at Hamlin Park, Ronald Bog and elsewhere could also be considered.
47	**Consider the development of a Natural Resources and Habitat Action Plan.**	A focused and strategic planning effort is needed to establish or synthesize key goals, specific objectives, priority locations, targets, partners and funding mechanisms. An action Plan will organize this effort and improve the City's ability to obtain grant funding.

#	RECOMMENDATIONS	NOTES
Ecosystem Management - continued		
48 *	**Continue and expand restoration and enhancement priority locations and targets for publicly funded or assisted wetland and stream enhancement projects.**	The City has some established priorities and targets for habit improvement in the current Surface Water Master Plan. Specific City goals should be updated and expanded for enhancement of wetlands and streams in future updates of the Surface Water and Parks Master Plans and in other logical project or planning processes. Focus can be on City owned property at first, but outreach efforts should seek partners and opportunities on private property as well.
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.**	City staff has identified this as a medium timeframe priority, however it should be considered for earlier implementation to strengthen the Green Cities Partnership. Existing work with Seattle Urban Nature Project includes Hamlin, Shoreview, Boeing and South Woods parks as a priority and findings will be reported to City Council in early 2008. Current program budget is $50K and program should be continued and enhanced if possible. Next steps will include looking at additional parks and acting on implementation recommendations. City should look at grants and volunteers through CLC and Ivy OUT to leverage greater implementation support if possible.
50 *	**Promote and expand environmental mini-grant program, with focus on critical area and urban forest enhancement.**	Existing City environmental grant program should be expanded to leverage greater community support of restoration and enhancement efforts.

Notes:
1) The number (#) assigned to each recommendation is for reference purposes only and is not intended to indicate priority or sequence. The number used here is the same number used in the Capacity Assessment Matrix, in Appendix C in the strategy.
2) An * in the # column indicates that this is a continuation or expansion of an existing City of Shoreline program, policy or project. These recommendations are presented in the context of the existing programs in Appendix B.

APPENDIX B

Existing Program Evaluation Summary Matrix

Existing Program Evaluation/Recommendation Summary Matrix

Notes: Existing Programs inventory was generated prior to finalization of the Focus Areas so this table is not organized into the Strategy's Focus Areas as are like the recommendations and Appendicies A and C. RECOMMENDATION CATEGORIES: Ensure Continuation, Modify Overall Approach and Expand Current Efforts. The City department with primary responsibility for the item are noted in parentheses - see acronym list inside front cover.

INVENTORY ITEM	ANALYSIS	RECOMMENDATION
Climate Protection and Transportation Management		
Business Access/Transit Lanes on Aurora (PW) – The Aurora Corridor Project includes lanes dedicated to transit and making transit more efficient, competitive and attractive to users.	**Expand Current Efforts:** Aurora Corridor Project is an excellent foundation on which to build a comprehensive transit program. Next steps should include setting clear priorities for improving transit service and connectivity, considering the specifics outlined in the recommendations.	**#31:** Update Transportation Master Plan with transit priorities to guide increased advocacy. **#32**: Advocate for a revised Sound Transit Phase II Plan that serves Shoreline directly. **#33**: Advocate for a single, integrated and continuous bus rapid transit system on Aurora Ave. (SR 99) between Everett and Seattle. **#34**: Consider advocating for a metro "feeder" route to improve east-west transit and support Aurora backbone.
Promoting Alternatives to Driving(PW/PADS) – The City of Shoreline promotes non-motorized transportation through installation of dedicated bicycle and pedestrian pathways such as the Interurban Trail, installation of bicycle lanes on City streets, promotion of the Commute Trip Reduction (CTR) program for City employees and citizens, installation of pedestrian walkways near local schools, and construction and maintenance of urban trails as part of the City's 2006 Parks Bond.	**Expand Current Efforts:** This comprehensive approach to Alternatives to Driving should be a major focal point of community outreach efforts and a revised website, providing that the City demonstrates its commitments to improving transit and non-motorized transportation in its capital investments and regional coordination, so that residents have real alternatives.	**#27**: Expand and re-orient the existing sidewalk improvement program to focus on linking destinations and connectivity. **#28:** Improve identification, mapping, designation, surfacing and signage of existing trails. Develop a plan for future trail expansion. **#31:** Update Transportation Master Plan with transit priorities to guide increased advocacy. **#32:** Advocate for a revised Sound Transit Phase II Plan that serves Shoreline directly. **#33:** Advocate for a single, integrated and continuous bus rapid transit system on Aurora Ave. (SR 99) between Everett and Seattle. **#35**: Consider providing a program based on the existing commute trip reduction program to include medium-size employers. **#36**: Future update to Comp Plan and/or Housing strategy should include a focus on Transit Oriented Development (TOD) and transit-supportive neighborhoods to create transit nodes.

INVENTORY ITEM	ANALYSIS	RECOMMENDATION
Climate Protection and Transportation Management - continued		
Climate Protection Campaign (PW) – In 2007 and 2008, the City of Shoreline will collect baseline data from local practices that contribute to global warming. In fall/winter 2008, a pilot education program will be proposed.	**Modify Overall Approach:** This City Inventory Item can really be divided into separate categories -- energy consumption and greenhouse gas emissions, in both City and public arenas. Need to include language from US Mayors Climate Protection Agreement and other commitments, and continue to develop more specific initiatives. Good starts are Recommendations at right.	**#1:** Integrate sustainability into all City functions and decision-making using clear and tranparent tools. **#2:** Create baselines for all environmental focus areas. **#9**: Develop a baseline for energy consumption and carbon data using ICLEI "5 Milestones Toolkit." **#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 & Atmosphere Credit 1. **#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. **#12**: Upgrade existing City facilities to meet Energy Star building performance standard for similar building types. **#13**: Include requirements to meet Energy Star for building equipment and appliances in purchasing guidelines. **#14**: Engage in Seattle City Light's (SCL) green power program (Green Up). As part of annual budget planning, increase proportion of green power purchase to 100%. **#16**: Conduct a campaign for City staff to reward "smart" trip planning to reduce unnecessary trips/miles travelled. **#17**: Promote use of SCL/PSE and other incentives for conservation and alternative energy as part of public outreach program. **#18**: Work with SCL/PSE to prepare a report showing Shoreline Community's overall energy use as of baseline year; update figures provided by SCL/PSE. **#20**: Employ energy software such as PLACE^{3}S or similar for land use planning.
Fleet Vehicles (PW-operations) – The City of Shoreline has begun incorporating hybrid fuel cell vehicles into its vehicle fleet. Staff is also investigating the possibility of purchasing electric vehicles.	**Modify Overall Approach:** Targets should be more ambitious -- current target is 2% of fleet per year, which just follows the replacement schedule. Also, continue to reevaluate and increase targets as technology changes dictate.	**#15**: Require all new fleet vehicles be alternatively fueled, or rated by EPA for 45 mpg or higher for fossil fuel vehicles (only applies to vehicle types where these options exist).
Regional Roads Maintenance Forum (PW) – As an active member of this program, the City of Shoreline implements and tracks Best Management Practices in its municipal maintenance activities such as regular inspection of vehicles for leaks and street sweeping to prevent solid and hazardous waste from entering waterways.	**Ensure Continuation (As Is):** This is an existing program that should be continued, and expanded in time to include maintenance specific to Green Streets.	**#25**: Prioritize and structure the development of the Green Streets program.
Community Building and Outreach		
Earth Day Celebration (PCS/PW) – In partnership with local businesses and Shoreline Community College, the City of Shoreline offers a variety of Earth Day programs including habitat restoration projects at local parks and the Natural Yard Care for Earth Day & Everyday	**Expand Current Efforts:** Sustainability calls to action will occur more often. For example, have one Shoreline volunteer work day each quarter and engage greater volunteer participation.	**#8**: Provide expanded "how to" sustainability information to the community through varied approaches (e.g. mailers, events, website and City Hall brochures).

INVENTORY ITEM	ANALYSIS	RECOMMENDATION
Community Building and Outreach - continued		
Neighborhood Environmental Stewardship Team (PW) – The Neighborhood Environmental Stewardship Team (NEST) program actively involves community residents in learning about and selecting environmental changes that promote health and sustainability in their neighborhood and homes.	**Expand Current Efforts:** This program can be expanded and developed using Internet resources. Creation of "how to" sheets with technical guidance and available resources might help grow the program. This initiative can be greatly helped through either a sustainability coordinator or volunteer coordinator position.	**#5:** Pursue grants to establish a key City staff position related to sustainability (e.g., Volunteer Coordinator). **#8:** Provide expanded "how to" sustainability information to the community through varied approaches (e.g. mailers, events, website and City Hall brochures).
Environmental Mini Grant Program (PW/C&IR) – This new program supports local non-profits, youth and community groups that want to implement environmental projects to benefit the Shoreline community.	**Expand Current Efforts:** Program is doing well and should be ramped up. Make sure funding source is reliable. Volunteer Coordinator position and a specific focus on critical area and urban forest enhancement would help expand, leverage and focus resources.	**#5**: Pursue grants to establish a key City staff position related to sustainability (e.g., Volunteer Coordinator). **#50:** Promote and expand environmental mini-grant program, with focus on critical area and urban forest enhancement.
Adopt-a-Road and Adopt-a-Trail Programs (PW/C&IR/PRCS) – The City of Shoreline Adopt-a-Road Program helps clean up litter and debris on City streets. Since the program began, over 100 volunteers have removed over 5,000 lbs of litter. An Adopt-a-Trail program was started in 2007 to care for the new Inter-urban Trail system.	**Ensure Continuation (As Is):** As part of overall community building and outreach initiative, both Adopt-a programs can be continued and perhaps further developed. Adopt-a-Trail program might even be used to develop linkages -- volunteer labor and a focus on maintenance and signage in addition to litter.	**#5**: Pursue grants to establish a key City staff position related to sustainability (e.g., Volunteer Coordinator). **#28:** Improve identification, mapping, designation surface and signage of existing trails. Develop a plan for future trail expansion.
Habitat Conservation and Restoration		
Urban Forest Assessment Planning (PRCS) – The City of Shoreline is contracting with Seattle Urban Nature Project to perform an urban forest assessment for Hamlin, Shoreview, Boeing Creek and South Woods parks. These assessments will help the City determine the health of major forested park sites in Shoreline and prioritize areas that need the most attention from Park maintenance staff and Ivy OUT volunteers.	**Expand Current Efforts:** While this has been tagged as a low-priority Inventory Item for consultant analysis, it is the gateway to other Items and Recommendations. Forest enhancement provides public amenities, habitat, and opportunities for stormwater infiltration that reduce burdens on infrastructure. Adopt an integrated approach to UFA Planning.	**#46**: Identify underutilized park lands and use for habitat improvements, infiltration, water treatment and other compatible purposes. **#47:** Consider development of a Natural Resources Action Plan. **#49**: Implement the Cascade Land Conservancy's (CLC) Green Cities Program by prioritizing forest health data collection and improvement projects and pursue partnerships to increase the acreage analyzed and enhanced. **#50**: Promote and expand environmental mini-grant program, with focus on critical area and urban forest enhancement.
Open Space Acquisition (PRCS) – The City of Shoreline is always seeking opportunities to ensure the protection of natural habitat. The 2006 Park Bond recently approved by Shoreline voters includes funding for the acquisition of 25 acres of open space.	**Modify Overall Approach:** Create specific targets for acquisition, conservation and/or restoration of open space and habitat (different things!).	**#46**: Identify underutilized park lands and use for habitat improvements, infiltration, water treatment and other compatible purposes. **#47** Consider the development of a Natural Resources Action Plan.

INVENTORY ITEM	ANALYSIS	RECOMMENDATION
Habitat Conservation and Restoration - continued		
Critical Areas Ordinance (PADS) – The City of Shoreline updated its Critical Areas Ordinance in March 2006 to comply with State guidelines as well as provide greater protection for local streams, wetlands, steep slopes and fish and wildlife habitat areas.	**Ensure Continuation (As is):** CAO was recently revised and no immediate modification of regulations are recommended. However, additional efforts are needed in the larger arena of critical area stewardship. Create specific targets for acquisition, conservation and/or restoration of wetland and stream enhancement projects	**#48:** Establish restoration and enhancement targets for publicly funded or assisted wetland and stream enhancement projects.
WRIA 8 Participation (PW) – Since 2001, the City of Shoreline has participated in the Water Resource Inventory Area (WRIA) 8 regional process to develop and implement a plan for the recovery of endangered Chinook salmon.	**Ensure Continuation (As is):** Existing participation in WRIA process has been useful in identifying regional prioririties and some local priorities. Additional work needed to set clear targets for local watershed enhancement efforts and demonstrate greater progress.	**#48:** Establish restoration and enhancement targets for publicly funded or assisted wetland and stream enhancement projects.
Ivy Out Volunteer Program (PRCS/C&IR) – The City of Shoreline initiated Ivy O.U.T. (Off Urban Trees) events in parks in 2005 and in 2006 formalized a monthly schedule of rotating work parties in City parks.	**Expand Current Efforts:** This is an good example of using community resources. This overlaps with recommendations to develop volunteer resources and community education. The Ivy O.U.T. format can be broadened to include other initiatives and used as a template for new programs.	**#49:** Implement the Cascade Land Conservancy's (CLC) Green Cities program by prioritizing forest health data collection and improvement projects and pursue partnerships to increase the acreage analyzed and enhanced.
Habitat Restoration Projects (PADS/PW/PRCS) – The City of Shoreline has partnered with the community to improve stream systems and fish & wildlife habitats through vegetation restoration in the City.	**Modify Overall Approach:** Opportunities to increase public involvement through greater education (via Web resources). Additional work needed to truly prioritize, ramp up commitment and set specific targets. More structure and hard targets needed. Natural Resources Action Plan is recommended.	**#48:** Establish restoration and enhancement targets for publicly funded or assisted wetland and stream enhancement projects. **#50:** Promote and expand enviromental mini-grant program, with focus on critical area. **#47:** Consider the development of a Natural Resources Action Plan.

INVENTORY ITEM	ANALYSIS	RECOMMENDATION
Land Use and Development		
Green Building Program implementation	**Modify Overall Approach:** See Recommendations.	**#10:** For major new City facilities meet LEED Core Performance Requriements for Energy and Atmosphere Credit #1. **#11:** For new construction of major City facilities (including City Hall), require the use of Commissioning as outlined by the ASHRAE Commissioning Process Guideline 0-2005. **#12:** Upgrade existing City facilities to meet Energy Star building performance standard for similar building types. **#13:** Include requirements to meet Energy Star for building equipment and appliances in purchasing guidelines. **#21**: Prioritize and promote Green Building and LID training for select staff (e.g., PADS, Grants & Engineers). **#22:** Establish a Residential Green Buidling program, including outreach and worksheets. **#23**: Revise zoning and engineering standards to provide guidance and incentives for LID and Green Building. **#24** Adopt a Green Building Policy for City Capital Projects - LEED Silver and LID principles as outlined in Puget Sound Manual. **#26**: Modify the stormwater utility fee to promote LID, calibrate for true system impact/cost and encourage natural drainage improvements.
Civic Center/City Hall (PW/PADS) – The new Civic Center/City Hall is to be built to a minimum LEED Silver standard. It will serve as a model for sustainable practices throughout the community by implementing standards of construction to the extent possible that support re-use of materials, energy conservation, water efficiency, landscaping and indoor environmental quality. To parallel the construction of the new Civic Center/City Hall, a Green Building brochure will offer examples and resources for residents to incorporate sustainable building practices into their home remodeling projects.	**Ensure Continuation (As Is):** This is the flagship for the City, and in all ways should be used to advance and model sustainable design strategies.	
Green Street Demonstration (PW) – Green Street Demonstration Projects will focus on developing opportunities that will provide a "living demonstration" to serve as an educational experience, support sound environmental practices and improve water quality in the City of Shoreline.	**Modify Overall Approach:** Need to develop a plan with specific priorities and siting critieria. Focus should continue to be on "oppotunistic approach" however and not a "one size fits all". Demo project important, but need to jumpstart the planning piece and identify capital improvement plans and integrate with Transportation Master Plan and Surface Water Master Plan.	**#25**: Prioritize and structure the development of the Green Streets program - focus on surface water enhancements, connectivity and linking destinations.
Sustainable Business Extension Service (CMO) – economic development program) - SBES promotes resource conservation programs and environmentally sound business practices to Shoreline's local businesses. This free confidential service provides improved access to government programs, rebates and technical assistance in the ever-changing world of environmental and safety regulations.	**Modify Overall Approach:** Collaborate with Shoreline Chamber of Commerce and identify local business champions to sponsor and/or assume leadership roles in implementing the program. The Chamber of Commerce is using a King County grant to develop a Sustainable Business Program similar to Kirkland's, with the intent of partnering with the City to implement and administer. Emphasis should be on supporting, enabling and coordinating with the Chamber of Commerce efforts.	**#7**: Work with the Shoreline Chamber of Commerce to create a green business certification and promotion program.

INVENTORY ITEM	ANALYSIS	RECOMMENDATION
Land Use and Development - continued		
City Buildings Operations Practices and Policies – This is not necessarily sustainable now, but future decisions should be made to reduce the carbon/ecological footprints of our buildings, purchasing decisions, and standard operations.	**Modify Overall Approach:** This is a major area of opportunity, as reflected in Recommendations. Specific targets should be adopted, and as mentioned above, City Hall is a great way to kick off all new initiatives, including public outreach and possibly new requirements for developers.	**#14**: Engage in Seattle City Light green power program (Green Up). As part of annual budget planning, increase proportion of green power purchase to 100%. **#37**: Expand existing efforts to reduce, reuse, and recycle in City offices, parks, and other facilities. **#38**: Include in purchase guidelines preference/requirement for products that promote reduction and reuse; reduce consumption of raw materials; and, present reduced risk to human and ecological health (non-toxic materials). **#3**: Create standard office procedures, training and department expectations that support sustainability goals; then measure, reward and promote individual and departmental achievement of these goals. **#4**: Establish a permanent green team or interdepartmental committee to focus on sustainability program management and sustainability techniques. **#6**: Develop a comprehensive environmental purchasing policy for all City purchasing decisions.
Toxics Reduction		
No Spray Zones in Richmond Beach (PW) – Based on community interest, the City of Shoreline initiated a pilot "No Spray Zone" in the Richmond Beach neighborhood in 2004. The City agreed not to spray pesticides in the right-of-way for four years, and local residents agreed to maintain the six-inch area adjacent to the road pavement.	**Expand Current Efforts:** Increase awareness of this program and make an explicit offer to expand it to other communities if they are interested.	**#7**: Provide expanded "how to" sustainability information to the community through varied approaches (e.g. mailers, events, website and City Hall brochures).
Natural Yard Care Program (PW) - This program is currently limited to outreach during the annual Earth Day Celebration and about three neighborhood workshops annually. The annual event includes informational booths, workshops, and free tools given away.	**Expand Current Efforts:** Surveys have indicated behavior change as a result of this program to date. Opportunities exist to expand program to include additional workshops and demonstration gardens at the new City Hall and other City properties.	No specific recommendations in Strategy for expansion of this program, but grant funding is currently being pursued for expansion of this program.
Pesticide-Free Parks (PCS) – The City of Shoreline is proud to say that it makes every effort to not use pesticides or herbicides in the maintenance of City parks. Chemical pesticide or herbicide use is prohibited for use near City-owned critical areas such as streams and wetlands. The current Shoreline Parks and Maintence Standards manual includes best management practices from the Tri-County Integrated Pest Management Model Policy.	**Ensure Continuation (As Is):** Program is working well. Possible future efforts might include the creations of specific lists of banned products and preferred providers of environmentally sustainable products. Make lists publicly available. Adopt new best management practices when they are safe, reliable and cost effective.	**#38**: Include in purchase guidelines preference/requirement for products that promote reduction and reuse; reduce consumption of raw materials; and, present reduced risk to human and ecological health (non-toxic materials). **#2:** Create standard office procedures, training and department expectations that support sustainability goals; then measure, reward and promote individual and departmental achievement of these goals.

INVENTORY ITEM	ANALYSIS	RECOMMENDATION
Waste Reduction and Management		
Solid & Hazardous Waste Management Program (PW) – The City of Shoreline coordinates hazardous waste and recycling collection programs for residents and businesses including: • Two Clean Sweep Recycling Events are offered annually to provide an easy and affordable way for residents to dispose of and recycle bulky household items. • To help recycle Christmas trees, the City of Shoreline offers an annual chipping event in conjunction with various community groups that collect trees from residents.	**Modify Overall Approach:** This is a major area of opportunity, as reflected in Recommendations. Waste management should be a comprehensive approach to environmental sustainability, from household decisions (e.g., sorting and recycling) to City operations (e.g., proper disposal and diversion at transfer stations). Recycling must be made a priority in the City - recycling in City operations is the biggest need. Construction Waste Management is also essential to reducing overall waste volumes and is integrated with green building initiatives; residential recycling is another way of providing focus and generating momentum within the community for the Sustainability Strategy.	**#37**: Expand existing efforts for staff to reduce, reuse, and recycle in City offices, parks, and other facilities. **#39**: Provide convenient opportunities (prominent and labeled bins) for sorting, collecting, and composting solid waste streams in the community. **#40**: Implement commercial, residential, and construction waste information outreach and incentives through the permit process and municipal waste contract. **#3**: Create standard office procedures, training and department expectations that support sustainability goals; then measure, reward and promote individual and departmental achievement of these goals. **#7**: Work with the Shoreline Chamber of Commerce to create a green business certification and promotion program.
Municipal Compost Facility (PW/PCS) – Located on the grounds of Shorecrest High School, the compost facility allows the City of Shoreline to reuse green waste collected from the right-of-way.	**Expand Current Efforts:** Compost is a major opportunity for reducing waste and building a community focus on sustainability. An integrated program of collection, processing, and distribution (especially in concert with a pea-patch/community garden program) is one way of building an IDENTITY for the Shoreline Sustainability Strategy. Residents will rally around an objective of reducing waste and composting; the community may even be able to accept and process (for revenue) other muncipalities' compost; and, distribution of compost and development of community garden network is a benefit to the City.	
Business Solid Waste Reduction, Recycling & Resource Conservation Program (PW) – In 2007, the City of Shoreline began conducting outreach, site assessment and assistance to businesses to reduce solid waste and encourage recycling.	**Expand Current Efforts:** Important to coordinate current ECOSS work with the new Chamber of Commerce work on development of a Sustainable Business Program	
Free Wood Chips at Hamlin Park (PCS) – Wood chips are offered free to the public at the Hamlin Park Maintenance Facility, 16006 15th Avenue NE, from 7:00 a.m. to 3:30 p.m., seven days a week.	**Ensure Continuation (As Is):** No signficant change to program is recommended.	

Battery Recycling (PW) – The Household Battery Collection program provides bins year-round for collection of household batteries at each of the libraries in Shoreline, as well as at City Hall, the City Hall Annex and the Shoreline Police Station.	**Ensure Continuation (As Is):** No significant change to program is recommended.	
INVENTORY ITEM	**ANALYSIS**	**RECOMMENDATION**
Water Resources Management		
Clean & Green Car Wash Kits (PW) – The City of Shoreline loans easy-to-use car wash kits to community groups for fundraising events that allows them to wash cars in an environmentally sustainable way by keeping soap and other pollutants out of our streams.	**Expand Current Efforts:** Additional outreach needed. Current kits are well used, but many car washes do not use them. More kits may be needed.	**#8:** Provide expanded "how to" sustainability information to the community through varied approaches (e.g. mailers, events, website and City Hall brochures). **#26**: Modify the stormwater utility fee to promote LID, calibrate for true system impact/cost and encourage natural drainage improvements. **#41**: For high-use operations including irrigation and park restrooms, replace fixtures and equipment with the highest efficiency cost-effective water conservation options available. **#42**: For retrofits and new construction of City indoor facilities, specify/ replace fixtures with high-efficiency, low-flow alternatives. Investigate the use of non-potable sources, such as greater reuse and rainwater catchment. **#44**: Work with utilities to expand existing incentives and develop new incentives to reduce potable and irrigation water consumption.
City of Shoreline Stormwater Standards update (PW) – The City of Shoreline is updating its stormwater standards. Improvements in these standards will result in cleaner water being discharged to our streams and the Puget Sound.	**Ensure Continuation (As Is):** Need specific targets here	
Aurora Corridor Project Stormwater Solutions (PW) – The first mile of the Aurora Corridor Project includes stormwater quality improvements such as filters, swirl separators and oil-water separators. The next two miles of the Aurora project will include exploration of natural water treatment systems as well as methods used in the first mile.	**Expand Current Efforts:** Demonstration project should be closely monitored, lessons learned used to influence future projects (need targets) and to shape policy/codes.	
Storm Drain Medallions & Stenciling (PW) – The City of Shoreline provides free training and loans stencil kits to community groups who want to stencil the message "Dump No Waste, Leads to Stream" at catch basins on residential streets. Staff place medallions with the same message at catch basins on arterial roads.	**Ensure Continuation (As Is):** Program has been successful and is noticed in the community. Volunteers have been effectively engaged.	

APPENDIX C

Capacity Assessment Matrix

CAPACITY ASSESSMENT LEGEND

Costs categories identified in Chapter 4 and this Capacity Assessment Matrix refer to the percentage above the current or conventional or in addition to what is currently budgeted annually for that item, project or program. These include both first and lifecyle costs where (and only where) a recommendation refers to a new item, project or program, where no comparison of current or conventional costs is possible, cost categories were determined based on the dollar cost maximums listed below.

Where potential cost savings have been identified, these items are italisized in the Capacity Assessment Matrix.

COST CATEGORIES - COSTS BEYOND CONVENTIONAL OR CURRENT

NEGLIGIBLE	up to 2% over existing practices or under $5,000 if new
LOW	up to 10% or under $20,000
MEDIUM	up to 30% or under $75,000
HIGH	over 30% or over $75,000

PRIORITY CATEGORIES

1	High Priority
2	Medium Priority
3	Lower Priority

TIME-FRAME CATEGORIES

Short	1-3 years (Budget cycle)
Medium	3-6 years (CIP cycle)
Long	7-10 years (Comprehensive Plan)

DEPARTMENT ABBREVIATIONS

C	Clerks
CMO	City Manager's Office
CS	Community Services
ED	Economic Development
F	Finance
IT	Information Technology
HR	Human Resources
PDS	Planning and Development Services
PRCS	Parks, Recreation, and Cultural Services
PW	Public Works
PW-E	Public Works - Engineering
PW-ES	Public Works - Environmental Services
PW-F/O	Public Works - Facilities/Operations
PW-S/A	Public Works - Streets/Aurora
PW-SW	Public Works - Surface Water

Note: Italics indicates cost savings.

#	POTENTIAL ACTION	FIRST COST PREMIUM	LIFECYCLE COST SAVINGS	BENEFITS	ADDITIONAL STAFF OR CONSULTANT REQUIRED	CITY OPERATING BUDGET COSTS
FOCUS AREA 1: City Operations, Practices & Outreach						
1	**Integrate sustainability into City and departmental missions, functions and decision-making at all levels using clear and transparent tools.**	NEGLIGIBLE	Not directly	Will provide continuity & leadership.	No. But adjustment of staff responsibilities and workloads necessary.	NEGLIGIBLE
2	**Create baselines for all Sustainability Strategy focus areas and implement system to track progress over time.**	Yes. Additional MODERATE staff time commitment	Not directly. LOW indirect savings possible from overall program.	Performance measures for City and community will help assess progress.	No. Can accomplish with existing staff w/ some training. See above.	Yes, LOW
3	**Create standard office procedures, training & expectations; measure, reward & promote individual and departmental achievements.**	NEGLIGIBLE	*LOW. Procedures & training should help reduce resource use and related cost.*	City operations savings and leadership that can be used to educate/guide community motivation.	No. Existing staff can accomplish.	No
4	**Green Team**	NEGLIGIBLE	Not directly	Will provide continuity & leadership.	Not required, but would help. At a minimum, adjustment of staff responsibility and workloads necessary.	NEGLIGIBLE
5	**Pursue funding to establish a key City staff position or contracted consultant.**	NEGLIGIBLE If done in house.	Not directly. Depends on implementation outcome. Indirect savings expected to be LOW to MEDIUM.	Leadership and expertise continuity/ tracking of effort.	Existing finance staff aided by Environmental Services can pursue funding.	Depends on funding obtained.

1 http://www.kingcounty.gov/

APPENDIX C — Capacity Assessment Matrix

CITY CAPITAL BUDGET COSTS	INTERNAL RSPNSBLTY	EXTERNAL RSPNSBLTY	IMPLMNTN RESOURCES	REQUIRED TO MEET EXISTING AGREEMENT	PRIORITY	TIMEFRAME
No	City-wide, CMO	No	City of Seattle Green Team is an excellent model.	No	1	S
No	City -wide, Green Team Structure. Leadership & Management.	Yes. Community participation.	Many federal, State, and local resources are available .	Yes. Energy baseline required by Mayor's Climate Agreement, other baselines recommended.	1 Baseline data collection will likely take 1-2 years.	S-M
No	City-wide, CMO	No	Many internal "sustainable practices" programs as models.[1]	No	1 - Quick win.	S-M
No	City-wide, CMO	No	City of Seattle Green Team is an excellent model.	No, however sustainability management structure is vital.	1	S
No	CMO, F, PW-ES	No	Yes, necessary given budget forecast.	No, but could support Cascade Agenda requirement to appoint a staff representative to program.	1	M

FOCUS AREA 1: City Operations, Practices & Outreach *continued*

#	POTENTIAL ACTION	FIRST COST PREMIUM	LIFECYCLE COST SAVINGS	BENEFITS	ADDITIONAL STAFF OR CONSULTANT REQUIRED	CITY OPERATING BUDGET COSTS
6	**Develop an environmental purchasing policy for all City purchasing decisions.**	Initial development should require only LOW to MEDIUM additional staff investment.	*Yes. LOW energy & resource efficiency reduces operations costs savings; durable products reduce maintenance costs & replacement schedules.*	Promotes sustainable, non-toxic and efficient products and businesses.	No. City should be able to accomplish with existing staff and resources in this Strategy.	NEGLIGIBLE
7	**Create a green business certification and promotion program.**	NEGLIGIBLE	No direct savings expected. Potential for business promotion and expansion though, which could impact tax base positively.	Makes Strategy visible to the community; operations savings for businesses, promotes green businesses.	No. Chamber of Commerce is creating a program. City and Chamber should coordinate.	NEGLIGIBLE
8	**Provide expanded "how to" sustainability info to the community through varied approaches (e.g. mailers, event, website and city hall brochures).**	NEGLIGIBLE	No direct savings expected. Indirect savings to larger community possible.	Benefits all residents and business owners through greater efficiencies; City benefits via reduced burden on infrastructure and services.	No. Existing staff appears adequate.	Yes. But negligible and can be absorbed into current budget..

FOCUS AREA 2: Energy & Carbon Reduction

9	**Develop a baseline for energy consumption and carbon data using ICLEI "5 Milestones Toolkit."**	Yes, NEGLIGIBLE to LOW depending on which ICLEI services/ products the City chooses to use.	*Yes. Predicted to be LOW. 5 Milestones Toolkit helps reduce energy consumption, saving money.*	Enables community- and City-wide planning specific to energy use standardized comparisons to other jurisdictions using program.	Yes. Can be accomplished with existing staff but training will be required.	Yes. LOW direct costs of establishing a baseline. Indirect costs expected.

CITY CAPITAL BUDGET COSTS	INTERNAL RSPNSBLTY	EXTERNAL RSPNSBLTY	IMPLMNTN RESOURCES	REQUIRED TO MEET EXISTING AGREEMENT	PRIORITY	TIMEFRAME
No. However, actual items often have LOW increased initial costs.	F and support from all departments.	No	King County and City of Seattle EPP are excellent models.	No	1	S
No	Limited. Some coordination will likely rest with GREEN TEAM.	Shoreline Chamber of Commerce	Department of Ecology, ECOSS	No	1 City and Chamber should meet. Chamber is moving forward.	S-M
No	GREEN TEAM, PW-ES PW, PDS, CS	No	Model materials on other municipalities; partner with other municipalities or utilities to pursue non-profit partnerships.	Yes: Res. #242: Help educate the public, schools, other jurisdictions, professional associations, business and industry and about reducing global warming pollution. [1A]	1	S-M
No	Yes, creation of baseline and regular updates PW-SW, PW-ES.	Not for creation of the baseline, but community is involved in data collection and target setting.	Yes, the City should pursue volunteer assistance and partnerships with Seattle City Light and PSE in establishing baselines.	Yes: Res. #242: Inventory global warming emissions in City operations and in the community, set reduction targets and create an action plan.	1	S-M

1A Reference: City of Shoreline Resolution 242 Authorizing support for the US Conference of Mayors Climate Protection Agreement. http://cosweb.ci.shoreline.wa.us/uploads/attachments/cck/

FOCUS AREA 2: Energy & Carbon *continued*

#	POTENTIAL ACTION	FIRST COST PREMIUM	LIFECYCLE COST SAVINGS	BENEFITS	ADDITIONAL STAFF OR CONSULTANT REQUIRED	CITY OPERATING BUDGET COSTS
10	**For all new major City facilities (City Hall), meet requirements for LEED Energy & Atmosphere Credit # 1.** [2]	Yes, NEGLIGIBLE. Strategies sometimes incur a first-cost premium.	*Yes, energy savings generally to fall within MEDIUM range.*	Standards save money in operations.	Yes. LEED Consultant for new buildings.	*No. MEDIUM savings expected.*
11	**For all new major City facilities (City Hall), require Commissioning.** [3]	Yes. Expected to be LOW. Activities add development costs.	*Yes. Savings expected to be MEDIUM. The process can lead to greater efficiencies and quality of construction.*	Commissioning identifies inefficiency and potential conflicts. Can ensure proper bldg function.	Yes. LEED Consultant for new buildings.	*No. MEDIUM positive budget savings impacts are expected.*
12	**Upgrade existing City facilities to meet Energy Star (ES) building performance standard for similar building types.**	Yes, expected to result in increased costs in the MEDIUM to LOW range.	*Yes. Expected to result in MEDIUM or HIGH savings over building life. Substantial savings possible from ES performance strategies.*	The City will save money in operations and maintenance by upgrading existing facilities to use less energy.	Yes. Fleets and Facilities will manage this process but consultant likely necessary.	*No, operating budget savings expected to be MEDIUM*
13	**Include requirements to meet Energy Star (ES) for building equipment in purchasing guidelines.**	Yes. LOW TO NEGLIGIBLE. ES often costs more. Increasingly, quality models meet standard.	*Yes -- energy savings expected and will vary from LOW to MEDIUM depending on the specific equipment.*	City will save money in operations and maintenance costs.	No	*No. LOW to MEDIUM savings expected.*
14	**Engage in Seattle City Light's (SCL) green power program (Green Up). Increase green power purchase to 100% through annual budget planning.**	NEGLIGIBLE. Costs relate to ongoing operating budget impacts.	No. Green power can be expected to cost more. NEGLIGIBLE.	Green power is consistent with commitment to reducing carbon emissions and aligning operations w/ Kyoto Protocol.	No	Yes. Annual budget will increase due to cost of green power, expected to be LOW.

2 The purpose of the LEED EA Credit 1 is to achieve increasing levels of energy performance over a prescribed baseline. Credit requirements can be met through whole building energy simulation or one of two applicable prescriptive compliance paths.

3 "Commissioning" defined and outlined by the ASHRAE Commissioning Process Guidelines 0-2005.

4 http://www.northwestenergystar.com/

CITY CAPITAL BUDGET COSTS	INTERNAL RSPNSBLTY	EXTERNAL RSPNSBLTY	IMPLMNTN RESOURCES	REQUIRED TO MEET EXISTING AGREEMENT	PRIORITY	TIMEFRAME
Yes, first costs may increase, though expected to be NEGLIGIBLE.	Yes -- requires City staff familiarity with Guide PW-F/O,PDS.	No	Developers working with LEED; consultants.	Yes: Res. #242: Practice and promote sustainable building practices using the US Green Building Council's LEED program or a similar system.	1	M-L
Yes, LOW. 1st costs will increase when commissioning is added to scope.	Yes -- requires City staff familiarity w/procedures and benefits PW-F/O.	No	Local commissioning authorities .	Yes: Res. #242: Prioritize energy efficiency through building code, energy efficient lighting and employee conservation.	1	M-L
Yes, see first cost premium, capital costs expected in the MEDIUM to LOW range.	Yes PW-F/O	No	NW Energy Star (via WSU Energy Extension) is an invaluable resource.	Yes: Res. #242: Prioritize energy efficiency through building code, retrofitting City facilities w/energy efficient lighting & urging employees to conserve energy.	3	S-L
Yes, NEGLIGIBLE to LOW will vary depending on replacement schedules	Yes -- Purchasing F	No	NW Energy Star (via WSU Energy Extension) is an invaluable resource.[4]	Yes: Res. #242: Purchase only Energy Star equipment and appliances for City use.	1 - Quick win	S
No. This is an operating cost.	Yes PDS, PW-F/O, F	Not yet -- future plans could include expansion to all City buildings.	SCL	Yes: Res. #242: Increase alternative energy: invest in "green tags;" advocate renewable energy; recover landfill methane; support waste-to-energy technology.	1 - Initial efforts 2 - 100% green power.	M

FOCUS AREA 2: Energy & Carbon *continued*

#	POTENTIAL ACTION	FIRST COST PREMIUM	LIFECYCLE COST SAVINGS	BENEFITS	ADDITIONAL STAFF OR CONSULTANT REQUIRED	CITY OPERATING BUDGET COSTS
15	**Require all new fleet vehicles be alternatively fueled, or rated by EPA for 45 mpg or higher for fossil fuel vehicles.** [5]	Cost premium expected to be MEDIUM.	*Yes. Fuel efficiency results in operations savings. MEDIUM expected when compared to existing costs.*	Fuel-efficient vehicles save $$ and contribute to stated goals of reducing carbon emissions, a public symbol of commitment.	No	*No. Should result in savings in MEDIUM (30%) range or greater.*
16	**Conduct a campaign for City staff to reward "smart" trip planning to reduce unnecessary trips/ miles traveled.**	Expected to be NEGLIGBLE.	*LOW savings expected for modest trip consolidation. MEDIUM if more aggressive tools are used (e.g., GIS trip routing).*	Smart trip planning reduces dependence on vehicles, reducing carbon emissions.	No	*No, LOW savings expected from reduced fuel use..*
17	**Promote SCL, Puget Sound Energy (PSE), or other incentives for conservation and alternative energy as part of an outreach campaign.**	NEGLIGIBLE to LOW if existing incentives are used.	Indirect benefits to larger Shoreline community. LOW savings expected, depending on effectiveness.	Will reduce energy use & carbon emissions, resulting in savings and alignment with Kyoto Protocol.	No	TBD. LOW to NEGLIGIBLE, depending on scope.
18	**Work with SCL & PSE to report Community's overall energy use as of baseline year. Update SCL/PSE figures.**	Partnership requirements unclear. Potential costs in the LOW range.	No direct or indirect cost savings. Will help determine baselines and monitor progress.	Helps determine baselines and monitor progress toward goals.	No. Should be able to do with existing utility assistance.	NEGLIGIBLE
19	**Collect information about greenhouse gas emissions and energy use through State Environmental Policy Act (SEPA) review process.**	Negligible direct costs to City to get training and to review this information.	No direct lifecycle cost savings. SEPA reporting, self-mitigation, & eventual mitigation may result in higher performance buildings and LOW lifecycle cost savings in community.	High performance buildings & energy efficient construction. Helps determine baselines and monitor progress toward goals.	No additional City Staff, however planners should get additional training to implement.	Negligible

5 For exempt vehicles, require the most efficient options available.
6 http://www.pugetsoundcleancities.org/
7 http://greencarcongress.com/
8 http://nwbiodiesel.org/

CITY CAPITAL BUDGET COSTS	INTERNAL RSPNSBLTY	EXTERNAL RSPNSBLTY	IMPLMNTN RESOURCES	REQUIRED TO MEET EXISTING AGREEMENT	PRIORITY	TIMEFRAME
Yes. Fleets & Facilities will need more $$/ vehicle, unless replacement schedules are extended.	Yes PW-F/O	No	Puget Sound Clean Cities Coalition,[6] Green Car Congress[7] and NW Biodiesel Network[8]	Yes: Res. #242: Increase avg. fuel efficiency of municipal fleet; reduce # of vehicles; educate employees; convert diesel to bio-diesel.	1	M-L
No	Yes HR, PW-S/A	No	Use ESRI GIS or similar software for trip routing. See UPS example in Implementation section. Must develop specific resources.	Yes. Helps reduce carbon emissions.	1 - Quick win.	S-M
No	Yes CS, PW-ES	Yes. Shoreline partners, residents and businesses participation encouraged.	SCL[9] and PSE[10]	Yes: Res. #242: Increase alternative energy: invest in "green tags;" advocate renewable energy; recover landfill methane; support waste-to-energy technology.	1	M
No	Yes CS, PW-SW, PW-ES	No	SCL[9] and PSE[10]	Yes	1 Must establish a baseline for reporting.	M
No	Yes - PDS	DOE likely to provide additional guidance.	Department of Ecology (DOE). King County Greenhouse Gas (GHG) emissions worksheet.[11]	Yes: Res. #242: Inventory emissions in City and Community; Set targets; create Action Plan; Recent interpretations by DOE reinforce that now required by State Law.	1 Immediate implemen-tation recom-mended.	S

9 http://www.seattle.gov/light/
10 http://www.pse.com/Pages/default.aspx
11 http://www.metrokc.gov/ddes/forms/SEPA-GHG-EmissionsWorksheet-Bulletin26.pdf

FOCUS AREA 2: Energy & Carbon *continued*

#	POTENTIAL ACTION	FIRST COST PREMIUM	LIFECYCLE COST SAVINGS	BENEFITS	ADDITIONAL STAFF OR CONSULTANT REQUIRED	CITY OPERATING BUDGET COSTS
20	**Employ PLACE³S software or similar for future land use planning efforts (e.g. next major Comp Plan update).**	NEGLIGIBLE TO LOW, PLACE³S has free and fee versions, depending on desired functions.	*Indirect LOW to MEDIUM savings depending on how aggressively findings are implemented.*	PLACE³S fully integrates public participation & computer-assisted tools (GIS) to produce plans.[12]	Yes. Staff training will be needed, including GIS and Planners. PLACE³S requires data input and analysis by City staff.	Yes, staffing and any fees associated with the tool but expected to be LOW.

FOCUS AREA 3: Sustainable Development & Green Infrastructure

21	**Prioritize and promote Green Building and Low Impact Development (LID) proficiencies for select staff.**	NEGLIGIBLE. TO LOW. Many instructional materials for Green Building and LID have been developed and are available.	*Low savings can be expected in larger community as a result of reduction in stormwater conveyance and treatment, energy use, and use of non-sustainable building materials.*	Encourages and supports internal & external sustainable development, saving energy & waste & reducing toxics.	Yes. Training but will require outside resources. Some staff required for organizing training and consultants to provide training.	LOW
22	**Establish a Residential Green Building Program, including worksheets on specific innovations for permitting clients.**	LOW to MEDIUM. Would require some initial staff time to set up program and establish green permitting system.	*Indirect NEGLIGIBLE to LOW savings expected in larger community.*	Encourages and supports internal & external sustainable development, saving energy & waste & reducing toxics.	No	NEGLIGIBLE
23	**Revise zoning and engineering standards to provide guidance and incentives for Low Impact Development (LID) and Green Building.**	Minimal staff time for quick fixes. LOW to MEDIUM cost for complete overhaul of standards.	*Indirect NEGLIGIBLE to LOW savings expected in larger community.*	Improved water surface water quality. Establish City as leader and example.	Yes. Consultant may be needed for code revisions	NEGLIGIBLE - once. Part of the Code, LOW to MEDIUM for initial effort.

12 These plans retain dollars in the local economy, save energy, attract jobs and development, reduce pollution and traffic congestion and conserve open space.
13 http://cpr.ca.gov/report/cprrpt/issrec/res/res22.htm
14 http://www.psat.wa.gov/Programs/LID.htm
15 http://www.seattle.gov/dpd/GreenBuilding/
16 http://www.ci.issaquah.wa.us/Page.asp?NavID=326

CITY CAPITAL BUDGET COSTS	INTERNAL RSPNSBLTY	EXTERNAL RSPNSBLTY	IMPLMNTN RESOURCES	REQUIRED TO MEET EXISTING AGREEMENT	PRIORITY	TIMEFRAME
No	GIS and PDS	Yes, PLACE^{3}S is a fully integrated tool, meaning community members are active participants.	City partners and participants; PLACE^{3}S and DOE support.[13]	Yes: Not this tool in particular, but overall objectives and results will result in greater energy efficiency and reduced carbon emissions.	3 Energy analysis necessary during future Comp Plan update.	M
No	Yes PDS, PW, F/IT, PRCS	No	Yes. Puget Sound Partnership LID handbook.[14]	Yes: Res. #242: Practice and promote sustainable building practices using the US Green Building Council's LEED program or a similar system.	1	S
No	Yes PW-ES, PDS	No	Existing programs such as Green Built, LEED. See Seattle[15], Issaquah[16], and Seattle technical resources.[17]	Yes: Res. #242: Practice and promote sustainable building practices using the US Green Building Council's LEED program or a similar system.	1	S
No	Yes PDS, PW	No	Numerous federal, private, state and King County funding programs available.[18,19]	Yes: Res. #242: Practice and promote sustainable building practices using the US Green Building Council's LEED program or a similar system.	1	S

17 http://www.seattle.gov/util/About_SPU/Drainage_&_Sewer_System/Natural_Drainage_Systems/Natural_Drainage_Overview/SPU01_002593.asp
18 http://www.epa.gov/greenbuilding/tools/funding.htm
19 www.dsireusa.com

FOCUS AREA 3: Sustainable Development & Green Infrastructure *continued*

#	POTENTIAL ACTION	FIRST COST PREMIUM	LIFECYCLE COST SAVINGS	BENEFITS	ADDITIONAL STAFF OR CONSULTANT REQUIRED	CITY OPERATING BUDGET COSTS
24	**Adopt a Green Building Policy for Capital Projects. Construct new buildings and additions according to LEED Silver Standard and specify a commitment to LID principles.**	NEGLIGIBLE TO LOW - generally this standard will result in a first-cost premium, e.g. to document action for LEED.	Yes, expected to result in LOW cost savings for City, potential MEDIUM when combined with other recommendations such as commissioning.	Annual savings of 20% energy & water, 38% in waste water production and 22% reduction in construction waste projected.[20] LEED can be implemented in concert with LID.	No additional City Staff, however architect selected for building construction must have LEED training.	*No, LOW savings are expected.*
25	**Prioritize and structure the development of the Green Streets program.**	LOW to MEDIUM. Some staff time required for establishing program.	Not for program development. See Capital Costs.	Decreased demand on stormwater conveyance and treatment systems.	Not required. Some staff time required for establishing program and integrating into Transportation and Stormwater Master Plans.	LOW to MEDIUM
26	**Modify the stormwater utility fee to promote low impact development, calibrate for true system impact/cost and encourage natural drainage improvements.**	MEDIUM one-time costs, consultant likely needed for Fee Study.	*Yes. This item will generate increased revenue in the LOW range & decreased system impacts in the LOW to MEDIUM range.*	Encourages private improvement, more funds for improved pedestrian facilities, greater user safety, neighborhood beautification, traffic calming, extension of park system.	Yes, consultant Fee Study needed.	LOW, but only for one budget cycle. Will likely require hiring of a consultant.

20 Washington State Law Mandates Green Building, Renewable Energy Access, 2005-04-21. Retrieved 2007-02-10
21 http://www.usgbc.org/DisplayPage.aspx?CategoryID=19

CITY CAPITAL BUDGET COSTS	INTERNAL RSPNSBLTY	EXTERNAL RSPNSBLTY	IMPLMNTN RESOURCES	REQUIRED TO MEET EXISTING AGREEMENT	PRIORITY	TIMEFRAME
Yes, see first cost premium, capital costs expected in the LOW range.	Yes	No	LEED trained building consultants, developers and/ or architects.[21]	Yes: Res. #242: Practice and promote sustainable building practices using the US Green Building Council's LEED program or a similar system.	1 - need to adopt a policy, however, existing City Hall plans are consistent.	S-M
Yes, funds would be needed to establish a demonstration project, however, *MEDIUM savings are expected from implementation.* Seattle estimates that their SEA-Street design saves >20% of traditional street drainage cost.	Yes PW-S/A, PW-SW	No	Existing programs such as SeaStreets[22] and programs in Portland[23]	No, but strongly supports Green Cities Partnership.	1	S-M
No. May preclude need for future stormwater infrastructure enhancements in long-term & will provide increased revenue in LOW range.	Yes CMO, PW-SW	No	See other municipal programs, e.g. City of Portland	No	2	S-M

22 http://www.seattle.gov/util/About_SPU/Drainage_&_Sewer_System/ Natural_Drainage_Systems/Street_Edge_Alternatives/index.asp

23 http://www.portlandonline.com/BES/index.cfm?c=eeeah

FOCUS AREA 3: Sustainable Development & Green Infrastructure *continued*

#	POTENTIAL ACTION	FIRST COST PREMIUM	LIFECYCLE COST SAVINGS	BENEFITS	ADDITIONAL STAFF OR CONSULTANT REQUIRED	CITY OPERATING BUDGET COSTS
27	**Expand and reorient the existing sidewalk improvement program to focus on linking destinations and connectivity.**	LOW to MEDIUM. Revise the Transportation Master Plan.	No direct savings.	Would improve sidewalk continuity and overall walkability in targeted areas. Encourages walking and healthier lifestyles.	Depends if consultant retained to revise Transportation Master Plan. However, revision is planned.	NEGLIGIBLE
28	**Improve identification, mapping, designation, surfacing and signage of existing trails. Develop a plan for future trail expansion and regional connections.**	MEDIUM to HIGH costs associated with improvement plan.	No direct savings.	Would improve safety and comfort of user, and potentially increase trail usage. Encourages walking and healthier lifestyles.	Yes. Trail improvements likely contracted out. Staff time required to coordinate effort.	LOW
29	**Strengthen the bike and pedestrian facility elements to strategize a network.**	NEGLIGIBLE. Rolled into Transportation Plan Update.	Not directly. More bicycle and pedestrian trips means less car trips, precluding road widenings and other infrastructure investments.	Potentially better mode split and improved air quality. Non-motorized improvements encourage walking and healthier lifestyles.	Potential for outside assistance. Staff time required to do updating, but update planned.	NEGLIGIBLE
30	**Update the Transportation Master Plan (TMP) and provide a stronger link to the Land Use Element in the Comp Plan.**	NEGLIGIBLE. Staff time req to do updating, but update already planned.	No direct savings.	More consistency & coordination among plans would result in better implementation of planning goals.	NEGLIGIBLE. Staff time required to do updating, but update planned.	NEGLIGIBLE

24 http://www.bicyclealliance.org/saferoutes/minigrants.phprg/saferoutes/minigrants.php
25 http://www.wildliferecreation.org/wwrp-projects
26 http://www.wsdot.wa.gov/ta/operations/localplanning/pdf/GMA_Ammend.pdf

CITY CAPITAL BUDGET COSTS	INTERNAL RSPNSBLTY	EXTERNAL RSPNSBLTY	IMPLMNTN RESOURCES	REQUIRED TO MEET EXISTING AGREEMENT	PRIORITY	TIMEFRAME
Yes. Expansion of program would require capital funding. Costs in MEDIUM to ***HIGH*** range expected.	Yes PW and PDS	No	Grants available - WSDOT Safe Routes to Schools Program and Washington State Transportation Improvement Board.[24]	Yes: Res. #242: Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities.	1 - non-motorized improve-ments	M
Yes, MEDIUM to ***HIGH***. Signage, surfacing, future planning would require funding. Recommend incremental increases in the 30% range.	Yes PRCS, PW and PDS	No	Grants available - Washington Wildlife and Recreation Program and other sources.[25]	No, but supports Green Cities Partnership.	1 - Initial efforts ongoing 2 - Trail improve-ments	M
N/A for planning. Facility construction would require funding. Recommend incremental increase in the 30% range.	Yes PW-E, PRCS	No	CTED Grants possible.[26]	Yes: Res. #242: Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities.	2	M-L
N/A for planning.	Yes PDS, PW-E	No	CTED Grants possible.	Yes: Res. #242: Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities.	2	M

FOCUS AREA 3: Sustainable Development & Green Infrastructure *continued*

#	POTENTIAL ACTION	FIRST COST PREMIUM	LIFECYCLE COST SAVINGS	BENEFITS	ADDITIONAL STAFF OR CONSULTANT REQUIRED	CITY OPERATING BUDGET COSTS
31	**Identify clear and specify near- and long-term priorities for transit improvements as part of the TMP process.**	NEGLIGIBLE. Part of TMP update process.	No direct savings.	Potentially improved transit service. Priority setting is needed to coordinate actions, develop momentum and achieve results.	Yes. May require funding for increased lobbyist or new position.	NEGLIGIBLE
32	**Advocate for a revised Sound Transit Phase II Plan (ST2) which includes improvements that serve the City of Shoreline.**	LOW to MEDIUM depending on level of involvement.	No direct savings. Improved transit Will encourage smart growth investment & reduce carbon emissions.	Improved transit means better mode split. Improved transit services would result in less car use, improved air quality, etc.	Yes. May require funding for increased lobbyist or new position.	LOW to MEDIUM
33	**Advocate for a single, integrated and continuous bus rapid transit system on Aurora Ave. (SR 99) between Everett and Seattle.**	NEGLIGIBLE	No direct savings.	Improved transit creates better mode split. Improved transit services would result in less car use, improved air quality, etc.	Yes. May require funding for increased lobbyist or new position.	NEGLIGIBLE
34	**Advocate for a Metro "feeder" route to improve east-west transit and support Aurora backbone.**	NEGLIGIBLE	No direct savings.	Improved transit = better mode split. Improved transit services would result in less car use, improved air quality, etc.	Yes. May require funding for increased lobbyist or new position.	NEGLIGIBLE

27 http://transit.metrokc.gov/
28 http://www.soundtransit.org/
29 http://commtrans.org/

CITY CAPITAL BUDGET COSTS	INTERNAL RSPNSBLTY	EXTERNAL RSPNSBLTY	IMPLMNTN RESOURCES	REQUIRED TO MEET EXISTING AGREEMENT	PRIORITY	TIMEFRAME
No direct costs. N/A for planning.	Yes. PDS, PW-E	No	CTED grants possible.	Yes: Res. #242: Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities.	1	M
No direct costs. TBD - future transit investments may require local match.	Yes CMO, PW, PDS	Yes	Partner with: Metro[27] Sound Transit[28] Community Transit.[29]	No, but strongly supports Res. #272 which states Council's position on the current ST2 proposal.	2	S-M
No direct costs.	Yes CMO, PW, PDS	Yes	Partner with: Metro[27] Sound Transit[28] Community Transit.[29]	No, but strongly supports Res. #273 which states Council's position on the current transit agency plans for the Aurora corridor.	2	S-M
No direct costs. TBD - future transit investments may require local match.	Yes CMO, PDS, PW	Yes	Partner with: Metro[27] Sound Transit[28] Community Transit.[29]	No	2	M-L

FOCUS AREA 3: Sustainable Development & Green Infrastructure *continued*

#	POTENTIAL ACTION	FIRST COST PREMIUM	LIFECYCLE COST SAVINGS	BENEFITS	ADDITIONAL STAFF OR CONSULTANT REQUIRED	CITY OPERATING BUDGET COSTS
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.**	MEDIUM	Not directly. Potentially less car trips may preclude future road widenings and other infrastructure investments.	Reduced demand on roads would reduce need for road expansions, improve air quality.	Yes. Creation of new program will require staff	LOW. Staff time for maintaining the program.
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 existing and proposed transit corridors and improvements.**	NEGLIGIBLE, if done during future update.	Not directly. Potentially less car trips may preclude future road widenings and other infrastructure investments.	Reduced demand on roads would reduce need for expansion, improve air quality and reduce carbon emissions.	No	No

FOCUS AREA 4: Resource Conservation & Waste Reduction

37	**Expand existing efforts to get City employees to reduce, reuse, and recycle in City offices, parks, and other facilities.**	NEGLIGIBLE. Additional receptacles, staff training and coordination with CleanScapes.[30]	*NEGLIGIBLE to LOW savings may be achieved by diverting additional solid waste.*	Reduces waste directed to landfills and increases recycling; may include energy generation from waste.	See short-term priorites.	NEGLIGIBLE to LOW, depending on extent of program.

30 http://www.cleanscapes.com/

CITY CAPITAL BUDGET COSTS	INTERNAL RSPNSBLTY	EXTERNAL RSPNSBLTY	IMPLMNTN RESOURCES	REQUIRED TO MEET EXISTING AGREEMENT	PRIORITY	TIMEFRAME
LOW to MEDIUM. Depending on County or State funding or employer support.	Yes PW-S/A	Yes	Possibly County, CTED, WSDOT grant funding for CTR expansion pilot.	Yes: Res. #242: Promote transportation options such as bicycle trails, commute trip reduction programs.	3	M
N/A	Yes PDS, PW, Council	No	King County TOD program, Puget Sound Regional Council (PSRC), Municipal Research and Services Center (MRSC).	Yes: GMA and Res. #242: Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities.	3	M
NEGLIGIBLE- - additional receptacles and other capital assets may be needed.	Yes. PW -ES, PW-F/O, PW-SW	CleanScapes	CleanScapes[30]	Yes: Res. #242: Prioritize energy efficiency through building code, energy efficient lighting and employee conservation.	1	S

FOCUS AREA 4: Resource Conservation & Waste Reduction *continued*

#	POTENTIAL ACTION	FIRST COST PREMIUM	LIFECYCLE COST SAVINGS	BENEFITS	ADDITIONAL STAFF OR CONSULTANT REQUIRED	CITY OPERATING BUDGET COSTS
38	**Include in purchase guidelines preference/ requirement for products that promote reduction and reuse, reduce consumption of raw materials and present reduced risk to human and ecological health.**	LOW. Green products may cost more than current. Recommend 10% premium cap on certain items.	NEGLIGIBLE. Reduced consumption will save money, however this may be offset by product premium.	Established EPPs can save money; reduced consumption reduces waste; environmental considerations benefit all residents.	Potential for consultant but with guidance and examples from this Strategy, existing staff should be able to develop and implement this.	LOW. Additional costs may be incurred, both for additional staffing hours and for regular purchases
39	**Provide Shoreline residents with convenient opportunities (prominent and labeled bins) for sorting, collecting, and composting solid waste streams in the community at public places and events.**	Yes. Can be LOW and incremental as budget allows.	*Indirect savings in the LOW range expected due to overall reduction in waste sent to sorting facility and to landfills.*	Reduce generated solid waste. Programs allow communities to embrace sustainability. May act as "gateways" of participation.	No. Should be accommodated within Fleets and Facilities/Parks Departments and existing CleanScapes contract.	Yes, if additional collection services are required. Recommend incremental improvements in the LOW range as budgets allow.
40	**Implement construction and business waste reduction outreach and incentives through the permitting process and municipal waste contract.**	NEGLIGIBLE. Add to existing outreach efforts; partner with ECOSS and Chamber or Commerce.	No direct savings expected. LOW savings for average business. Construction recycling savings NEGLIGIBLE and LOW increased costs possible.	Reduce burden on infrastructure, transfer stations & landfills; Reduce env't damage; Savings for residents and businesses.	Existing staff may need additional training. Research and development of incentives may require consultant resources.	NEGLIGIBLE to LOW depending on whether consultant resources are used.
41	**Replace equipment in high-use outdoor operations with highest efficiency, cost-effective water conservation options available.**	LOW. Fixtures to be replaced as needed.	*MEDIUM savings. Reduced water consumption results in reduced operations costs.*	Reduced operations costs, reduced burden on City and regional infrastructure, responsible management of water resources.	No. Fleets and Facilities aware of options. Can add requirement to replacement & maintenance schedules.	*MEDIUM savings. Potential impacts to maintenance staff. Potential savings in operations for offset.*

31 http://www.newdream.org/procure/start/develop.php

CITY CAPITAL BUDGET COSTS	INTERNAL RSPNSBLTY	EXTERNAL RSPNSBLTY	IMPLMNTN RESOURCES	REQUIRED TO MEET EXISTING AGREEMENT	PRIORITY	TIMEFRAME
Increased costs in the LOW range possible for major machines and appliances.	F with support from purchasing personnel from all major departments, particularly Fleets and Facilities.	No	King County may be willing to partner. KC and City of Seattle EPPs are excellent models.[31]	No	1	S
NEGLIGIBLE. Additional bins required.	PW-ES PW-F/O, PRCS	Yes Community participation	CleanScapes. Business partners such as Shoreline Community College and School District.	Yes: Res. #242: Increase recycling rates in City operations and in the community.	2 Explore additional opportunities after CleanScapes transition.	S
No	PDS, PW-ES, PW-SW	CleanScapes, Chamber, ECOSS	ECOSS, Shoreline Chamber of Commerce, CleanScapes.	Yes: Res. #242: Increase recycling rates in City operations and in the community.	2 Need contractors	S
LOW additional costs for efficient fixtures. Many not considered capital items. Irrigation system would be considered a capital item.	PRCS, PW-F/O	No	ECOSS and some utilities provide rebates, incentives.	No	2	M-L

FOCUS AREA 4: Resource Conservation & Waste Reduction *continued*

#	POTENTIAL ACTION	FIRST COST PREMIUM	LIFECYCLE COST SAVINGS	BENEFITS	ADDITIONAL STAFF OR CONSULTANT REQUIRED	CITY OPERATING BUDGET COSTS
42	**For retrofits and new construction of City indoor facilities, specify/replace fixtures with high efficiency, low flow alternatives.**	LOW cost premium expected.	*MEDIUM savings. Decreased operations costs. Durable alternatives must be selected to see this savings.*	Reduced operations costs, reduced burden on City and regional infrastructure, and responsible management of water resources.	No. Fleets and Facilities aware of options. Can add requirement to replacement & maintenance schedules.	*MEDIUM savings Potential impacts to maintenance staff. Potential savings in operations for offset.*
43	**Investigate non-potable sources uses, such as grey water reuse and rainwater catchment for toilet flushing.**	LOW to MEDIUM. Applicability determination will require consultant resources.	TBD. Dependent on implementation.	Reduced burden on City and regional infrastructure and decreased operations costs.	Yes. Consultant research of feasibility	LOW, increased maintenance costs.
44	**Work with utilities to expand existing incentives and develop new incentives to reduce potable and irrigation water consumption.**	NEGLIGIBLE - coordination effort only if utilities offer incentives.	TBD -- depends on implementation.	Reduction of potable water use reduces burden on City and regional infrastructure and decreases operations costs.	Yes. Research into applicability	Negligible
45	**Implement residential waste incentives & requirements through municipal waste contract & permits. Expand community outreach.**	UNDERWAY. Additional may be considered. Recommend only additional expenditures that are LOW.	No direct. Indirect LOW savings in larger community as a result of reduction in solid waste generated and disposed.	Reduce burden on infrastructure, transfer stations & landfills; Reduce env't damage; Savings for residents.	Existing staff has demonstrated skills and competence in research and coordination w/ CleanScapes.	Potentially LOW -- depending on scope of outreach.

FOCUS AREA 5: Ecosystem Management

46	**ID under-utilized City property and use for habitat improvements, water treatment and other compatible purposes.**	LOW costs associates with identification. Cost may jump to MEDIUM depending on nature of any improvements.	Dependent on size of areas and how natural they're allowed to become. LOW direct cost savings for vegetation maintenance expected.	Potential habitat improvement. "On-site" stormwater treatment. Less maintenance costs.	Potential for consultant assistance.	NEGLIGIBLE. Cost of maintaining habitat my be offset by reduced maintenance costs.

32 http://yosemite.epa.gov/R10/HOMEPAGE.NSF/webpage/Grants

CITY CAPITAL BUDGET COSTS	INTERNAL RSPNSBLTY	EXTERNAL RSPNSBLTY	IMPLMNTN RESOURCES	REQUIRED TO MEET EXISTING AGREEMENT	PRIORITY	TIMEFRAME
Yes. LOW additional costs for efficient fixtures.	PW-F/O	No	ECOSS and some utilities provide rebates, incentives, and free fixtures.	No	2	M
Yes. LOW to MEDIUM. Implementation of reuse and catchments systems will require capital	Yes. PRCS, PW-F/O	No	Consultant resources, DOE, Shoreline Water District.	Yes: Res. #242: Evaluate opps to increase pump efficiency in systems; recover wastewater treatment methane.	3	M-L
No	Yes CMO, PW-SW, PW-ES	Yes., Utilities	Shoreline Water District	No	2	M-L
No	Yes PW-SW, PW-ES	Yes. Community participation.	CleanScapes and Identify champions in the community.	Yes: Res. #242: Increase recycling rates in City operations and in the community.	1	S
Yes, improvements may require MEDIUM costs, but may be partially offset by savings.	Yes PRCS, PW-SW	No	Local grants offered by EPA.[32]	Yes: Res. #242: Maintain healthy urban forests; promote tree planting to increase shading and to absorb CO^2 Supports Cascade Agenda Principle using land efficiently.	2	M

FOCUS AREA 5: Ecosystem Management *continued*

#	POTENTIAL ACTION	FIRST COST PREMIUM	LIFECYCLE COST SAVINGS	BENEFITS	ADDITIONAL STAFF OR CONSULTANT REQUIRED	CITY OPERATING BUDGET COSTS
47	**Consider the development of a Natural Resources and Habitat Master Plan.**	MEDIUM	*No direct savings.* ***HIGH*** *indirect savings by acting sooner rather than later.*	Increase City's ability to obtain grant funding.	Yes. Potential for consultant services.	LOW
48	**Continue and expand restoration & enhancement priority locations & targets for publicly funded or assisted wetlands & stream enhancement projects.**	NEGLIGIBLE cost to ID targets could be rolled into Action plan efforts .	No savings expected. MEDIUM TO **HIGH** costs. Critical area improvement costs depends on size and number of locations targeted.	Healthier wetland and stream habitats.	Yes. Ramp up likely to require 5 FTE.	NEGLIGIBLE for target identified
49	**Implement Cascade Land Conservancy's (CLC) Green Cities Program by prioritizing forest health data collection & improvement projects & strengthening partnerships to increase the acreage analyzed & enhanced.**	Recommend incremental increases at the LOW to MEDIUM level.	No cost savings. MEDIUM TO **HIGH**. Forest health improvement takes a concerted effort over many years to control invasive vegetation.	Enhanced urban forests in the community.	Yes. Consultant services needed.	LOW to MEDIUM. Volunteer coordination could assist.
50	**Promote & expand environmental mini-grant program, with focus on critical area & urban forest enhancement.**	LOW to MEDIUM, depending on level of expansion.	No direct cost savings.	Increased community support & action to achieve goals.	Yes. Ramp up of likely to require 5 FTE.	Low - Existing program.

32 http://yosemite.epa.gov/R10/HOMEPAGE.NSF/webpage/Grants
33 http://www.fws.gov/birdhabitat/Grants/NAWCA/Small/2005.shtm
34 http://www.greenseattle.org/

CITY CAPITAL BUDGET COSTS	INTERNAL RSPNSBLTY	EXTERNAL RSPNSBLTY	IMPLMNTN RESOURCES	REQUIRED TO MEET EXISTING AGREEMENT	PRIORITY	TIMEFRAME
Yes	Yes PRCS, PDS, PW-SW	Yes, indirectly for grant applications.	Local grants offered by EPA[32].	No, but strongly supports Green Cities Partnership.	1	L
LOW for ID efforts MED to **HIGH** for actual improvements	Yes PRCS, PW-SW, PDS	No	USFWS Small Grants and Marching Funds (2005 list[33]).	Yes: Res. #242: Maintain healthy urban forests; promote tree planting to increase shading and to absorb CO2; and strongly supports Green Cities Partnership.	1	M-L
LOW	Yes PRCS	Yes - Partnerships with Seattle Urban Nature Project and Cascade Land Conservancy.	Green Seattle[34] Potential partnership with CLC.	Yes: Implements CLC's Green Cities Parntership and Res. #242: Maintain healthy urban forests; promote tree planting to increase shading and to absorb CO2.	1	S-M
MEDIUM	Yes PRCS, PW-SW, PW-ES, PDS	No	Lake Forest Park[35] Weyerhaeuser[36]	No	2	S-M

35 http://www.cityoflfp.com/city/eqcomm/documents/eqcminigrant2007.pdf]

36 Potential partnerhip with Weyerhaeuser [partnered with schools with Arkansas (http://www.arcf.org/images/2006-07_Mini-Grant_form.pdf)]

APPENDIX D

LID and Green Building Code Assessment

Project Memo

TO: Juniper Nammi

FROM: Alyse Nelson and Wayne Carlson, AICP, LEED®AP and Gabe Snedeker, AICP

DATE: February 13, 2007

PROJECT: Shoreline Sustainability Strategy

OUR FILE NO.: 207323.30

SUBJECT: Regulatory Code & Engineering Development Guide Gap Analysis for Low Impact Development

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As a piece of this effort, AHBL has reviewed portions of Shoreline's Municipal Code and its Engineering Development Guide to better understand the challenges to the application of Low Impact Development Best Management Practices (BMPs) within the City of Shoreline. This analysis also highlighted areas of the code and standards that were supportive of Low Impact Development (LID) techniques. This summary memo introduces key themes found in the municipal code (SMP) and the Engineering Development Guide (EDG). It also underlines considerations for providing a greater foundation for LID within these documents. Finally, it summarizes the next steps of the project.

User Guide to the Gap Analysis Table

The attached Gap Analysis Table is ordered by code reference, which appear in column one. A second column calls out the LID Principle or Best Management Practice that largely defines what the referenced code or standard is addressing (or not addressing). A third column further explains the LID concept behind the Principle or BMP. The fourth column lists a description of the referenced code or standard. Finally, a brief explanation of the problem or "gap" is provided.

Summary of Findings

Shoreline's code offers a good base to support LID BMPs and techniques, including tree conservation, flexible setback standards, parking regulations that allow reductions in minimum standards and encourage compact stalls, incentives for tree protection and retention, and acceptable site development standards. Areas where there was an opportunity to expand support for LID or remove impediments include:

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- The Shoreline Municipal Code does not include provisions for Planned Unit Developments (PUD), Cottage Housing Developments, or Master Planned Developments. While they utilize a master planning process on large sites, there seems to be minimal code language to support such processes. Flexible zoning regulations such as the PUD or other discretionary process could provide developers with an opportunity for flexibility from the dimensional standards of the code in exchange for the provision of benefits. LID could be used as one of the potential methods to receive a PUD/Cottage Housing incentive, such as relaxed dimensional standards or bonus density.

- Communities have considered a broad range of incentives - the most common incentive being relief from bulk and dimensional standards and identifying a dedicated review team for projects. We can provide you with a matrix detailing some of the ideas that local communities are considering as a follow-up.

- The Engineering Development Guide would benefit from alternative LID road sections that encourage open conveyance and other LID features. For example:

    - Medians and cul-de-sacs could be utilized for bioretention,

    - Road widths could be reduced in some instances, particularly for low volume roadways such as local streets,

    - Pervious pavement should be encouraged where feasible, particularly for sidewalks, alleys, residential streets, on- and off-street parking areas, trails, and bicycle paths.

- Encourage amenity zones and other landscape areas, such as areas within parking lots, to function as places for bioretention. While landscape areas are typically considered chiefly for their aesthetic value, they also present an important opportunity to utilize LID.

- Consider expanding the protection of trees that are retained on a site to include the critical tree root zone, which has been found to be a better method of protection than the dripline method currently used by Shoreline.

- Expand site development code language to incorporate support for LID tools such as protecting and stockpiling native soils, reducing compaction by limiting building footprint pads and construction roadway access, and encouraging clearing and grading activities during the dry season.

Next Steps

This gap analysis of the Shoreline Municipal Code and Engineering Development Standards is a portion of the larger Shoreline Sustainability Strategy effort taken on by the City at this time. This summary memo and attached table will be used as a basis for future efforts to implement Low Impact Development within the municipal code and development standards. We look forward to discussing the ideas presented in this memo and how LID can be integrated into the City of Shoreline Municipal Code and Engineering Development Standards.

Code Reference	LID Principle (P:) or BMP:	LID Concept	Description	Problem or Gap
EDG 1.2.9	**LID Concept Overall**		**Alternative Methods -** As provided for in Section 20.10.050 of the SMC and for the purpose of meeting the need to consider Low Impact Development (LID) and LEED systems as acceptable "alternate facility designs", LID designs that are consistent with the BMPs outlined in Low Impact Development Technical Guidance Manual for Puget Sound, the 2005 King County Surface Water Design Manual, and/or LEED techniques employed to meet the intent of the adopted Surface Water Management Code shall be considered a Blanket Stormwater Adjustment and individual variances to use these design methodologies are not required. Provided, developments that employee LID BMPs and LEED technologies must be designed using the methodologies outlined in the 2005 KCSWDM.	It is good that they are providing an easier method to utilize LID BMPs. It would be even better if Shoreline provides alternative sections to give developers a clear sense of what they want for broader objectives, such as minimizing impervious surface.
EDG 2.03	**P: Narrow Streets**	Minimize total imperviousness	**Private Streets, Minimum Width** - Minimum widths are 20' of pavement/traveled way width for those serving 4 or fewer lots and 24' for those serving more than 4.	These widths seem reasonable. Pervious pavement and open drainage should be used to further minimize impervious surface coverage.
EDG 2.05.A	**P: Loop Roads in Preference to Cul-de-sacs**	Minimize total imperviousness	**Cul-de-sacs -** Cul-de-sac Islands are optional features for any cul-de-sac. If provided, it must have a full-depth vertical curb. The island shall be landscaped.	Cul-de-sacs and dead-ends should be discouraged for LID projects. Where unavoidable, they should allow for biofiltration/bioretention facilities within the landscape area. Curb cuts to allow water to enter this area and/or a no curb design should be allowed.
EDG 2.05.A	**P: Loop Roads in Preference to Cul-de-sacs**	Minimize total imperviousness	**Cul-de-sacs, Minimum Width -** Minimum right-of-way diameter across a bulb section shall be 100 feet in a permanent cul-de-sac and 84 feet in a temporary cul-de-sac. Right-of-way may be reduced, provided utilities and necessary drainage are accommodated on permanent easements w/n the development. Minimum surfacing across the bulb shall be 90 feet of paving in curb type road. Sidewalks shall be constructed on both sides of the stem and on the bulb.	Consider LID alternative designs, including the reduction of width, encouraging bioretention, and using pervious pavement.
EDG 2.05.C	**P: Loop Roads in Preference to Cul-de-sacs**	Minimize total imperviousness	The Director of Public Works may require an off-street walk or an emergency vehicle access to connect a cul-de-sac at its terminus with other streets, parks, schools, bus stops, or other pedestrian traffic generators, if the need exists. Off-street sidewalks shall be contained in the right-of-way or a sidewalk easement.	These pedestrian/emergency vehicle access easements could be encouraged to be paved with pervious surfaces where feasible.
EDG 2.05.G	**P: Loop Roads in Preference to Cul-de-sacs**	Minimize total imperviousness	**Hammerheads -** A hammerhead per Standard Detail 209 may be used to fulfill the requirement to provide a turnaround facility where the street serves (or will serve) 4 or fewer single family residential units.	It is good that hammerheads can be used without special approval requirements. Hammerheads may be a feasible option in more cases than presented here. They are beneficial over cul-de-sac designs for LID projects because they minimize impervious surface.
EDG 2.06	**P: Alley Access**	Minimize total imperviousness	**Alleys** - Alleys shall have a minimum easement/tract width of 20' with a paved surface of 16', based on a 10' structure setback. For differing structure setback requirements, alley configuration shall be designated to provide for safe turning access to properties. Paved surface shall have a thickened edge on one side and cross slope in one direction. Public streets to which an alley connects or which provide access to the front boundary of the properties served by the alley shall be 28' minimum paved width with vertical curb. Alley entry shall be provided by a driveway approach.	There may be additional ways to incorporate LID into alley designs, such as using pervious pavers with reinforced grass in between as is done with Vancouver, B.C.'s Country Lane model.

Code Reference	LID Principle (P:) or BMP:	LID Concept	Description	Problem or Gap
EDG 2.12	**P: Minimize Curb & Gutter**	Minimize effective imperviousness	**Medians -** Edges shall be similar to outer road edges: formed vertical curb; except that median shoulders shall be minimum five feet in width. Twenty feet of drivable surface (which includes traveled way and paved shoulders) shall be provided on either side of the median. Median may be landscaped or planted. Street trees shall be planted in median subject to approval by the Director of Public Works.	Medians offer an opportunity to utilize a part of the road right-of-way for biofiltration. Instead of the typical design, medians could be lower than the road with curb cuts to allow water to flow into it. Landscaping should be required, with trees and shrubs particularly suited for biofiltration/bioretention utilized. Special approval by the Director of Public Works should not be required if using trees from a City-approved list.
EDG 2.15	**P: Narrow Streets**	Minimize total imperviousness	**Right-of-Way Reduction on Local Streets -** In proposed developments served by underground utilities within easements, the right-of-way may be reduced to the minimum roadway width plus sidewalk and amenity zones with the approval of the City. Where it is desired to reduce right-of-way to a minimum width, the right-of-way, plus easement, shall allow for construction and maintenance of the following as appropriate, sidewalks, amenity zone, drainage facilities, sign placement, and also allow sidewalk widening around mailbox locations. On local streets, installation of fixed objects, other than required above ground utility structures, greater than four inches in diameter within four feet of back of sidewalk shall not be permitted.	It is good that Shoreline allows right-of-way reductions when underground utilities are in easements. ROW reductions for LID utilization could be considered, but the width of the ROW is not as important as the width of paved area. The City of Woodinville is considering road sections that are slightly more narrow than existing Shoreline standards. To acquire support by the Fire Marshall, City staff offered to support an ordinance that would require sprinklers on structures smaller than IBC would require. Also see Vancouver, B.C. as a model for alternative residential alleys/access streets. http://www.city.vancouver.bc.ca/engsvcs/streets/design/enviro.htm
EDG 201	**P: Narrow Streets**	Minimize total imperviousness	Typical Local Street Section	Shoreline should create an alternative local street section that incorporates LID principles and BMPs such as open drainage, narrow street design, and pervious pavement.
EDG 202	**P: Narrow Streets**	Minimize total imperviousness	Typical Arterial Street Section	An alternative arterial street section may allow for open drainage and pervious pavement where feasible (perhaps over on-street parking/sidewalk areas).
EDG 203	**P: Narrow Streets**	Minimize total imperviousness	Typical Alley Section	The alley section does not feature curb/gutter/sidewalk, but could offer additional options such as pervious pavement.
EDG 204	**P: Narrow Streets**	Minimize total imperviousness	Half Street Section	An alternative half street section could allow for LID principles and BMPs.
EDG 205	**P: Minimize Curb & Gutter**	Minimize effective imperviousness	Shoulder Treatment Section	Shoulder treatment section shows a ditch conveyance, but lacks detail. An alternative shoulder treatment might provide for LID provisions such as biofiltration in the ditch area. Consider requiring existing ditches on redeveloped sites to be brought up to swale specs.
EDG 207	**P: Minimize Curb & Gutter**	Minimize effective imperviousness	Median Section/Plan View	This section/plan shows the typical raised median with curb. An alternative could be a LID-inspired median with curb cuts and a depressed median with bioretention facilities. Specific planting requirements may also be needed.
EDG 209	**P: Narrow Streets**	Minimize total imperviousness	Street Ends Plans	These drawings show the cul-de-sac and hammerhead standard designs. They should be evaluated for the potential to reduce widths. The ability to utilize pervious pavement should also be included where it would be feasible.
EDG 211/212	**P: Minimize Curb & Gutter**	Minimize effective imperviousness	Traffic Circle Details	Traffic circles are a good place to use bioretention facilities - curb cuts and a depressed landscape area inside the traffic circle would be an alternative design that would make this possible.

Code Reference	LID Principle (P:) or BMP:	LID Concept	Description	Problem or Gap
EDG 217	**P: Minimize Curb & Gutter**	Minimize effective imperviousness	Chicane	A chicane is a traffic calming technique that incorporates raised areas that requires cars to slow down and weave around the obstacles. These raised areas might be a place to incorporate bioretention facilities through the use of curb cuts and depressed landscape areas. Sight distance would be a key issue to deal with in this alternative section.
EDG 3.01.A.13/14	**P: Driveways**	Minimize total imperviousness	A residential driveway shall serve no more than two parcels. A joint use driveway easement may be used to serve two adjacent parcels: Minimum width shall be sufficient to accommodate the driveway, cross slope in one direction and curb or thickened edge on one side. Minimum easement length shall extend 20 feet from right-of-way line. Driving surface shall be paved with appropriate materials. A paved approach shall be provided from the edge of pavement of the intersecting street to the edge of the right-of-way consistent with Details 301-304.	It is good that Shoreline allows joint use driveways, it could encourage them and also encourage pervious pavement options.
EDG 3.01.B	**P: Driveways**	Minimize total imperviousness	**Minimum Driveway Approach Widths -** Sets minimum and maximum widths: 1-2 Dwelling Units (attached or detached) on a local or arterial street 10 foot min, 20 foot max; Multifamily on a local street 20' min, 30' max; on an arterial street 24' min, 36' max ; Commercial on a local street 24' min, 30' max; on an arterial street 30' min, 36' max Thirty-six foot wide driveways may be allowed when separate left- and right-turn exist lanes are approved by the Director. A commercial driveway wider than 36' requires an Engineering Variance. Joint use single family and multifamily driveway approaches may be reduced to a minimum of 16 feet in width, subject to approval of the Director and the Fire Marshal.	It is good to set both minimum and maximum driveway approach widths. It is also good to allow reductions to the standards - perhaps specific approval from the Director and Fire Marshal wouldn't be required when utilizing LID.
EDG 3.02	**BMP: Permeable Paving**	Runoff flow and volume control	**Concrete Sidewalks -** All sidewalks shall be constructed with Class 4000 concrete 5-inches thick with a non-slip broom finish. All local streets and arterials abutting residential areas shall have a 6-foot wide sidewalk on either side of the street. All arterial streets abutting zoning designations CB, I, NB, O, or RB zones - 8' on both sides of the street. Alleys - no sidewalks are required.	Pervious surfacing should be allowed where feasible.
EDG 3.03.A	**P: Minimize Curb & Gutter**	Minimize effective imperviousness	**Curbs, Gutters, and Sidewalks -** Type A vertical curb and gutter shall be used for street edges and shall always be used under the following conditions: (1) on all arterials, neighborhood collectors, and local streets (2) in drainage low spots where special drainage facilities are required (3) on streets with grades greater than 8%. Type A vertical curb and gutter shall be used on all street classifications. All curb and gutter shall be constructed with Class 4000 concrete. Rolled curbs may only be used to replace or match existing conditions as approved by the Director of PW.	Curb and gutter concentrates surface flows, increasing effective imperviousness. Where possible, runoff should be dispersed to open areas or diverted to infiltration facilities. Where infiltration is not possible, runoff should be diverted to biofiltration areas for water quality treatment before final disposal to the storm sewer system. Curb and gutter can still be used if desired. However, breaks in the curb which allow stormwater to flow to roadside bioinfiltration areas should be allowed.
EDG 3.05	**P: Pedestrian Paths**	Minimize total imperviousness	**Soft-Surface Path Construction -** Minimum 5' width; acceptable surface materials are crushed rock, wood chips, and asphalt or other materials as approved by the Director of PW. Maximum grade shall not exceed 10% - depending on site conditions, stairs and/or switchbacks may be required. For grades greater than 5%, the Director of PW may specify the type of paving material to be used.	Great that pervious pavement standards are given here - soft-surface paths should be required in LID projects.

Code Reference	LID Principle (P:) or BMP:	LID Concept	Description	Problem or Gap
EDG 3.06	**P: Pedestrian Paths**	Minimize total imperviousness	**Paved Path Construction -** Width minimum 5'; acceptable surface materials are asphalt concrete and Portland cement concrete or other materials as approved by the Director of PW. Max grade shall not exceed 10% (5% where bicycle use is anticipated). Director may specify type of paving for grades greater than 5%. Paths shall be a minimum 5' from the edge of the vehicular travel way (or require a physical barrier). A 2' graded shoulder is required on either side of a paved bicycle pathway. When asphalt paths are used, the widths shall correspond to the widths required for concrete sidewalks.	Materials, separation between roadway and path could be a place for biofiltration facilities.
EDG 3.09	**BMP: Bioretention Areas**	Runoff quality and volume control	**Amenity Zone** - All streets shall have an amenity zone except where protection of critical areas requires special consideration. Minimum width is 4'. Amenity zone shall be located between the curb and the sidewalk on all streets. Street tree type and placement shall conform to section 20.50.480 SMC. Utilities, street light poles, and traffic signs may be located in the amenity zone.	This amenity zone may be a place to use for biofiltration/bioretention facilities.
EDG 3.11	**P: Pedestrian Paths**	Minimize total imperviousness	**Separated Walkways, Bikeways, and Trails** - Gives specific details of widths/allowed materials for different types of paths	Should provide incentives/encourage pervious pavement options. Bicycle lanes/paths could be pervious.
EDG 301-305	**P: Minimize Curb & Gutter**	Minimize effective imperviousness	Curb and Gutter Section Driveway Approach Standards	An alternative LID design could be appropriate (particularly in amenity zones or for open drainage crossings).
EDG 306	**P: Minimize Curb & Gutter**	Minimize effective imperviousness	Shoulder & Ditch Section Driveway	An alternative LID design should show more "ditch" detail, where the ditch could be used for biofiltration.
EDG 307	**P: Shared Driveways**	Minimize total imperviousness	Joint Use Driveway	It is good that Shoreline encourages joint use driveways. Pervious pavement and other LID alternatives should be encouraged.
EDG 312	**P: Minimize Curb & Gutter**	Minimize effective imperviousness	Curb Sections	Type A curb and gutter could allow breaks in the curb to allow water to enter biorention areas.
EDG 329	**P: Pedestrian Paths**	Minimize total imperviousness	Typical Section for Trails	Drainage/pavement - could allow for LID features
EDG 4.01.A	**BMP: Permeable Paving**	Runoff quality and volume control	**Local and Arterial Streets, Pedestrian Facilities, and Bikeways: Surfacing -** See Standard Details 201 or 202 and Appendix A and B for the minimum paved section. Any proposed exception to these materials will be subject to soils strength testing and traffic loading analysis and subject to review and approval by the Director of PW as outlined in EDG 4.02.	Pervious pavement options should be an allowed alternative where feasible without unnecessary difficulty of requiring studies and approval by the Director of PW. Pervious pavement would be particularly viable on pedestrian and bikeways, alleys, and residential access streets.
EDG 4.01.C	**BMP: Permeable Paving**	Runoff quality and volume control	**Driveway Approaches: Surfacing** - Surface material depends on street type - curbed street requires driveway approach paved with portland cement concrete Class 4000 from curb to back edge of sidewalk. Shoulder and ditch sections require driveway approaches surfaces as required by SD 306. Thickened edge roadways with underground utilities, portland cement concrete may be used for driveways between the thickened edge and the right-of-way line provided that a construction joint is installed at the right-of-way line.	Pervious surfacing should be allowed where feasible.

Code Reference	LID Principle (P:) or BMP:	LID Concept	Description	Problem or Gap
EDG 5.03	**BMP: Bioretention Areas**	Runoff quality and volume control	**Street Trees & Amenity Zones** - Landscaping in the right-of-way shall be coordinated with off-street landscaping required on developer's property under the provisions of Chapter 20.50 SMC. Existing trees and landscaping shall be preserved where desirable and placement of new trees shall be compatible with other features of the environment. New trees must be consistent with the approved street tree list (App C).	Amenity zones may be a useful place for LID features. Street trees/landscaping should be compatible with LID BMPs. It is good that they are encouraging tree/landscaping retention. Tree box design for street trees might be something to consider.
EDG 7.01	**LID Concept Overall**		**Drainage -** Drainage facilities shall be designed consistent with the 1998 King County Surface Water Design Manual (urban environments only) and Chapter 20.60, subchapter 3 or the SMC and the City of Shoreline Surface Water Design Code (Section 1: Addendum to the 1998 KCSWDM).	While the '98 KCSWDM is weak in terms of LID principles, Section 1 provides for alternative methods in 1.2.9 to encourage LID/LEED projects. This could be expanded to incorporate alternative LID sections for additional support.
EDG 739	**P: Minimize Curb & Gutter**	Minimize effective imperviousness	Rock Lined Shoulder Ditches & Curbed or Turnpike Shoulders	Consider providing alternative sections that include bioretention.
EDG Appendix A	**P: Narrow Streets**	Minimize total imperviousness	Street Minimum Widths Alley Minimum Pavement Width: 16' Neighborhood Collector Min. Pavement Width: 28' Local Street Min. Pavement Width: 24'	It may be possible to further reduce these minimum pavement widths in some cases. In particular, the local street minimum pavement width might be reduced. However, Shoreline has done a good job of minimizing road widths and these standards are reasonable.
EDG Appendix A	**P: Minimize Curb & Gutter**	Minimize effective imperviousness	Street Curb Requirements Alleys: no curb requirement Neighborhood Collectors: Type A curb required Local Streets: Type A curb required	Alternative standards should be considered where curb and gutter are not required for all street sections.
EDG Appendix C	**BMP: Bioretention Areas**	Runoff quality and volume control	Street Tree Planting Schedule	This street tree list should be evaluated to determine if it includes trees that will be effective for LID purposes. Comments/notes section could incorporate those trees good for LID bioretention areas.
SMC 15.05.030	**BMP: Minimal excavation foundations**	Runoff flow and volume control	International Building Code Amendments	Minimal excavation foundations (pin foundations) should be evaluated to ensure that the IBC does not preclude them. Further, a local amendment might be incorporated to encourage pin foundations.
SMC 20.30.410	**P: Cluster Development/ Open Space**	Minimize total imperviousness	Preliminary subdivision review procedures and criteria. A. Environmental. 1. Where environmental resources exist, such as trees, streams, ravines or wildlife habitats, the proposal shall be designed to fully implement the goals, policies, procedures and standards of the critical areas chapter, Chapter 20.80 SMC, Critical Areas, and the tree conservation, land clearing and site grading standards sections. 2. The proposal shall be designed to minimize grading by using shared driveways and by relating street, house site and lot placement to the existing topography. 3. Where conditions exist which could be hazardous to the future residents of the land to be divided, or to nearby residents or property, such as, flood plains, steep slopes or unstable soil or geologic conditions, a subdivision of the hazardous land shall be denied unless the condition can be permanently corrected, consistent with subsections (A)(1) and (2) of this section. 4. The proposal shall be designed to minimize off-site impacts, especially upon drainage and views.	There is good language here that would encourage LID. With more regulations, guidance, and engineering design standards, LID could be a feasible approach for developers to use when designing subdivisions. Since there seems to be limited application of such zoning techniques as PRD/PUD/Cottage Housing, a LID incentive program tied to such techniques could be considered.

Code Reference	LID Principle (P:) or BMP:	LID Concept	Description	Problem or Gap
SMC 20.30.410.B	**P: Pedestrian Paths**	Minimize total imperviousness	Pedestrian paths w/n subdivisions 4. Pedestrian walks or bicycle paths shall be provided to serve schools, parks, public facilities, shorelines and streams where street access is not adequate.	Should allow such paths to use pervious materials.
SMC 20.30.410.D	**P: Minimize Curb & Gutter**	Minimize effective imperviousness	1. Improvements which may be required, but are not limited to, streets, curbs, pedestrian walks and bicycle paths, critical area enhancements, sidewalks, street landscaping, water lines, sewage systems, drainage systems and underground utilities. 2. Improvements shall comply with the development standards of Chapter 20.60 SMC, Adequacy of Public Facilities.	Chapter 20.60 contains general language that wouldn't preclude LID. Alternative sections and standards for LID would be one way to encourage LID projects.
SMC 20.30.420.J	**P: Alley Access**	Minimize total imperviousness	**Alleys -** Alleys shall be used for loading and vehicle access wherever practicable.	Good opportunity to reduce impervious surface and reduce front yard setbacks.
SMC 20.50.020	**P: Cluster Development/ Open Space**	Minimize total imperviousness	**Impervious Surface Coverage -** R-4 45%, R-6 50%, R-8 65%, R-12 75%, R-18 85%, R-24 85%, R-48 90%	Impervious surface reduction would be an asset to LID - perhaps a reduced coverage for lower density development might be considered. In addition, higher density development could be encouraged to use pervious pavement and other LID BMPs that would reduce impervious coverage consistent with the modeling assumptions in the DOE Manual. The 2005 DOE Manual allows pervious pavement to be modeled at the half the area (e.g., 5,000 square feet of pervious pavement is only modeled as 2,500 square feet). Until the City adopts the 2005 DOE Manual (or equivalent), most public works professionals would not recommend this reduction because it is widely believed that the predicted volume under the 1992 Manual will not accommodate the modeled storm event.
SMC 20.50.020, .040, .070, .080	**P: Cluster Development/ Open Space**	Minimize total imperviousness	**Dimensional Standards -** Min Front Yard/Rear Yard/Side Yard setbacks and exceptions, such as: 20.50.040.F - Allowance for Optional Aggregate Setback, for lots w/ unusual geometry, flag lots, an existing cluster of significant trees, etc. City may reduce the individual required setbacks.	Shoreline has relatively small setback requirements and a variety of exceptions that offer developers a chance to preserve native vegetation or unique characteristics of the site. They offer opportunities to use zero lot line and alley loaded designs.
SMC 20.50.140.E	**P: Cluster Development/ Open Space**	Minimize total imperviousness	**Parking -** Break large parking areas into smaller ones to reduce their visual impact and provide easier access for pedestrians. Limit individual parking areas to no more than 30 parking spaces.	While this standard is meant to serve urban design purposes, it could also be an opportunity to utilize LID BMPs for stormwater management by utilizing the landscape areas for bioretention.
SMC 20.50.140.F	**P: Cluster Development/ Open Space**	Minimize total imperviousness	**Individual Garages/Curb Cuts -** Minimize the impact of individual garage entrances where they face the street by limiting the curb cut width and visually separating the garage entrance from the street with landscaped areas. Emphasize pedestrian entrances in order to minimize the garage entrances.	This is another urban design standard which could serve LID purposes as well. The landscaped areas could be used for stormwater management with features such as raingardens or biofiltration areas. Moreover, minimizing driveway cuts serves to maximize uninterrupted flow paths.
SMC 20.50.160	**P: Cluster Development/ Open Space**	Minimize total imperviousness	**Open Space Standards for Multifamily development -** Multifamily projects are required to set aside a certain square footage of the site for common recreational open space. Exception 20.50.160(A)(3) provides an opportunity to use stormwater runoff tracts as credit up to 50% for the open space requirement.	Open space areas, particularly stormwater runoff tracts, could be a good place to encourage LID features such as raingardens and preservation of native vegetation.

Code Reference	LID Principle (P:) or BMP:	LID Concept	Description	Problem or Gap
SMC 20.50.170	**P: Pedestrian Paths**	Minimize total imperviousness	**Pedestrian circulation and safety -** Provide direct pedestrian access from building entries to public sidewalks, other buildings, on site open space, and parking spaces. Connect buildings in multifamily complexes such as courtyard bungalows with sidewalks or paved paths.	Pedestrian paths/sidewalks could be encouraged to utilize pervious pavement where feasible.
SMC 20.50.230	**P: Cluster Development/ Open Space**	Minimize total imperviousness	Impervious Surface Coverage NB & O 85%, CB 85%, RB & I 90%	While commercial and industrial uses demand a higher impervious surface coverage, it could be possible to encourage LID BMPs such as the use of pervious pavement, native vegetation preservation, and biofiltration systems in landscape areas as development incentives.
SMC 20.50.230	**P: Cluster Development/ Open Space**	Minimize total imperviousness	**Bonus for Mixed-Use Projects in NB/O Zones** - (3) Bonus for mixed-use development in NB and O zones: In order to provide flexibility in types of housing and to meet the policies of the Comprehensive Plan, the base height may be increased for mixed-use development to four stories or up to 50 feet, if the added story is stepped back from the third story walls at least eight feet, and subject to the following requirement: Residential dwelling units shall occupy a minimum of 25 percent to a maximum of 90 percent of the total floor area of the building.	This bonus density opportunity for mixed-use projects could be a model for how to utilize bonuses for projects that incorporate LID BMPs. It should be evaluated where bonus density would make sense.
SMC 20.50.240(A)(1)	**P: Cluster Development/ Open Space**	Minimize total imperviousness	**Street Frontage/Exception for Plazas -** In order to form an outdoor plaza or courtyard with a clear walkway connecting the sidewalk to the building entry, the 50 percent building street frontage may be reduced.	Plazas present a place to encourage the incorporation of bioretention facilities in landscaped areas and pervious pavement in more dense situations.
SMC 20.50.240(A)(2)	**P: Parking**	Minimize total imperviousness	**Street Frontage/Parking Standards -** In cases where buildings have little relationship to pedestrians, pedestrian frontage may be created by connecting design elements to the street...Such pedestrian accesses through parking shall provide the following elements: 1. Vertical plantings, such as trees or shrubs; 2. Texture, pattern, or color to differentiate and maximize the visibility of the pedestrian path; 3. Emphasis on the building entrance by landscaping and/or lighting, and avoiding location of parking spaces directly in front of the entrance. 4. The pedestrian walkway or path shall be raised three to six inches above grade in a tapered manner similar to a speed table.	This might be a place to encourage the incorporation of bioretention facilities in landscaped areas and pervious pavement for walkways.
SMC 20.50.250	**P: Pedestrian Paths**	Minimize total imperviousness	**Pedestrian circulation and safety** A. Pedestrian and bicycle access shall be incorporated to and through all developments where the total site area exceeds 28,000 square feet (half a City block). B. Minimize curb cuts for vehicle access that will disrupt pedestrian and/or bicycle flow, and provide shared driveway access where possible.	Consider additional language encouraging pervious pavement for walkway material. It is good Shoreline encourages shared driveways as a mechanism to reduce impervious surface.

Code Reference	LID Principle (P:) or BMP:	LID Concept	Description	Problem or Gap
SMC 20.50.300	**LID Concept Overall**		**20.50.300 General requirements** A. Tree cutting or removal by any means is considered a type of clearing and is regulated subject to the limitations and provisions of this subchapter. B. All land clearing and site grading shall comply with all standards and requirements adopted by the City of Shoreline. Where a Development Code section or related manual or guide contains a provision that is more restrictive or specific than those detailed in this subchapter, the more restrictive provision shall apply. C. Permit Required. No person shall conduct clearing or grading activities on a site without first obtaining the appropriate permit approved by the Director, unless specifically exempted by SMC 20.50.310. D. When clearing or grading is planned in conjunction with development that is not exempt from the provisions of this subchapter, all of the required application materials for approval of tree removal, clearing and rough grading of the site shall accompany the development application to allow concurrent review.	Site analysis requirements/encouragement could be incorporated into the Subchapter 5 - Tree Conservation, Land Clearing, and Site Grading Standards on tree retention/site development. In particular, this Subchapter lacks attention to the need to map and preserve native soils. It may fit here or merit an entirely new section.
SMC 20.50.300	**BMP: Limit clearing, grading, and construction to dry season**	Runoff reduction	General Requirements	There is no mention of encouraging clearing and grading activity during the dry season.
SMC 20.50.330.D	**P: Soil Analysis**	Maximize site infiltration capacity	**Preconstruction Meeting Requirements** - An on-site meeting is required prior to the commencement of permitted clearing and grading activities. The site must be marked to indicate: (1) The extent of clearing and grading to occur, (2) Delineation of any critical areas and critical area buffers, (3) Trees to be removed and retained; and, (4) Property lines.	Add to this that native soils and vegetation protection areas should be delineated on-site with fencing.
SMC 20.50.330.D	**P: ID and protect important tree and native vegetation stands from root damage, soil compaction, stockpiling**	Runoff minimization	1. For the following areas, the retention and planting plan and any application and permit plans shall show all trees designated for protection. 2. The Director may require that protected trees be permanently preserved within a tract, easement or other permanent protective mechanism.	It is great that Shoreline encourages retention areas to be designated and protected. This language could be expanded to offer additional support for LID principles and BMPs, provided those areas have drought-tolerant plantings.
SMC 20.50.330.E	**BMP: Write a site construction plan**	Runoff minimization	Preconstruction Meeting E. Preconstruction Meeting Required. Prior to the commencement of any permitted clearing and grading activity, a preconstruction meeting shall be held on-site with the permittee and appropriate City staff. The project site shall be marked in the field as follows: 1. The extent of clearing and grading to occur; 2. Delineation of any critical areas and critical area buffers; 3. Trees to be removed and retained; and 4. Property lines.	A preconstruction meeting is an important way to educate permittees to the importance of clearing and grading activities and its impact on LID. A fifth item to delineate onsite might be native soil and vegetation protection areas. Trees to be retained should be fenced along their critical tree root zone. Perhaps add that areas to be preserved will be marked with fencing. This requirement may be useful in tandem with encouraging a site construction plan.

Code Reference	LID Principle (P:) or BMP:	LID Concept	Description	Problem or Gap
SMC 20.50.3370.B/C	**BMP: Fence vegetation and soils that are to be protected**	Runoff reduction	B. Tree dripline areas shall be protected. No fill, excavation, construction materials, or equipment staging or traffic shall be allowed in the dripline areas of trees that are to be retained. C. Prior to any land disturbance, temporary construction fences must be placed around the dripline of trees to be preserved. If a cluster of trees is proposed for retention, the barrier shall be placed around the edge formed by the drip lines of the trees to be retained.	This is great; however, Shoreline needs to determine if it should continue protecting driplines or move toward protecting critical tree root zones. Per the Technical Guidance Manual for LID: "The dripline method may be applicable for broad-canopy trees; however, this method will likely underestimate the extent of roots and lead to extensive root damage for narrow-canopied trees and leaning trees....As a general guideline, the trunk diameter method provides more design flexibility for variable growth patterns. Also - should consider incorporating similar requirements for soil preservation areas. Gig Harbor, for example, goes 10 feet beyond the dripline.
SMC 20.50.340.A	**BMP: Establish Erosion and Sediment Controls just before or immediately after clearing and grading begins**	Runoff reduction	A. Any activity that will clear, grade or otherwise disturb the site, whether requiring a clearing or grading permit or not, shall provide erosion and sediment control (ESC) that prevents, to the maximum extent possible, the transport of sediment from the site to drainage facilities, water resources and adjacent properties. Erosion and sediment controls shall be applied as specified by the temporary ESC measures and performance criteria and implementation requirements in the adopted stormwater management design manual.	Erosion and sediment control measures should be applied just before the commencement of site development activities.
SMC 20.50.340.B.4	**BMP: Designate stockpile areas and establish away from protection areas**	Runoff reduction	**Fill Material -** Detrimental amounts of organic material shall not be permitted in fills. Only earth materials which have no rock or similar irreducible material with a maximum dimension greater than 12 inches shall be used. In absence of an approved soils engineering report, these provisions may be waved.	More could be said here about creating areas for stockpiling and keeping them separate from protection areas. Also, this could be a place to talk about amending site soils and the value of stockpiling on-site topsoil for later use in landscape areas.
SMC 20.50.340.B.4	**BMP: Stockpile and reuse excavated soils**	Runoff reduction	Fill Material	This could be a place to encourage the stockpiling and reuse of excavated soils. Also need to incorporate requirements to cover or seed stockpiled soils to prevent erosion (LID BMP).
SMC 20.50.340.C	**BMP: Phase construction to limit activities that can damage vegetation and soil, this includes phasing clearing and grading activities**	Runoff reduction	**Access Roads** - Access roads to grading sites shall be maintained and located to the satisfaction of the Director to minimize problems of dust, mud and traffic circulation.	Access roads should be limited to one, if at all possible. In addition, if they can be located at the site of the future road, unnecessary soil compaction can be avoided.
SMC 20.50.340.F	**BMP: Fence vegetation and soils that are to be protected**	Runoff reduction	**Temporary Fencing -** Temporary fencing, where required by the Director, to protect life, limb and property, shall be installed. Specific fencing requirements shall be determined by the Director.	Fencing is an important component in the protection of trees, vegetation, and soils from site development activities. More instruction about what is required to be fenced might be appropriate here.
SMC 20.50.350(B)1	**P: Attempt to keep existing vegetation interconnected**	Runoff minimization	1. The Director may allow a reduction in the minimum significant tree retention percentage to facilitate preservation of a greater number of smaller trees, a cluster or grove of trees, contiguous perimeter buffers, distinctive skyline features, or based on the City's concurrence with a written recommendation of an arborist certified by the International Society of Arboriculture and approved by the City that retention of the minimum percentage of trees is not advisable on an individual site.	This section gives an opportunity to maintain vegetation in an interconnected manner. More explicit support for such practices might be incorporated.

Code Reference	LID Principle (P:) or BMP:	LID Concept	Description	Problem or Gap
SMC 20.50.350.C	**P: Attempt to keep existing vegetation interconnected**	Runoff minimization	**Incentives for Higher Levels of Tree Protection -** The Director may grant reductions or adjustments to other site development standards if the protection levels identified in subsection (B) of this section are exceeded. On a case-by-case review, the Director shall determine the balance between tree protection that exceeds the established minimum percentage and variations to site development requirements. If the Director grants adjustments or reductions to site development standards under this provision, then tree protection requirements shall be recorded on the face of the plat, as a notice to title, or on some other legal document that runs with the property. Adjustments that may be considered are: 1. Reductions or variations of the area, width, or composition of required open space and/or landscaping; 2. Variations in parking lot design and/or any access driveway requirements; 3. Variations in building setback requirements; 4. Variations of grading and stormwater requirements.	The minimum tree retention requirements are 20% of the significant trees on a given site, excluding critical areas and buffers, or at least 30% of the significant trees, including critical areas and buffers. If these are exceeded, this section provides incentives in the form of relaxed development standards (approved by the Director). This type of flexibility could be used with LID projects as well.
SMC 20.50.350.D	**P: Attempt to keep existing vegetation interconnected**	Runoff minimization	1. Trees should be protected within vegetated islands and stands rather than as individual, isolated trees scattered throughout the site.	This is good support for the LID principle to keep vegetation interconnected. More support might be considered for this principle.
SMC 20.50.350.D	**P: Attempt to keep existing vegetation interconnected**	Runoff minimization	2. Site improvements shall be designed to give priority to protection of trees with the following characteristics, functions, or location: •Existing stands of healthy trees that have a reasonable chance of survival once the site is developed, are well shaped to withstand the wind and maintain stability over the long term, and will not pose a threat to life or property. •Trees which exceed 50 feet in height. •Trees and tree clusters which form a continuous canopy. •Trees that create a distinctive skyline feature. •Trees that have a screening function or provide relief from glare, blight, commercial or industrial harshness. •Trees providing habitat value, particularly riparian habitat. •Trees within the required yard setbacks or around the perimeter of the proposed development. •Trees having a significant land stability function. •Trees adjacent to public parks, open space, and sensitive area buffers. •Trees having a significant water-retention function, such as cottonwoods.	This is good support/prioritization of trees to preserve that also supports LID. The prioritization of trees with water-retention function is particularly relevant for LID projects.
SMC 20.50.350.D	**P: Attempt to keep existing vegetation interconnected**	Runoff minimization	3. Building footprints, parking areas, roadways, utility corridors and other structures shall be designed and located with a consideration of tree protection opportunities.	This is good site analysis language - good to encourage developers to think up front about preserving native vegetation.
SMC 20.50.350.D	**BMP: Fence vegetation and soils that are to be protected**	Runoff reduction	**Grading/Trees** 4. The project grading plans shall accommodate existing trees and avoid alteration to grade around existing significant trees to be retained.	This is good - could be stronger and state that excavation or changing of grade near trees designated for protection will be limited to the absolute minimum within the trees' critical root zones. Trenching within the critical root zones should be restricted. Stockpiling/disposal of excavated or construction materials should be prohibited within vegetation retention areas. Efforts should be taken to minimize soil compaction within these zones.

Code Reference	LID Principle (P:) or BMP:	LID Concept	Description	Problem or Gap
SMC 20.50.360	**BMP: Bioretention Areas**	Runoff quality and volume control	Tree replanting and site restoration	Add language to encourage a selection of species based on the underlying soils and the historic, native indigenous plant community type for the site. Emphasize climax species and encourage a mix similar to native forests (2 evergreen to 1 deciduous)
SMC 20.50.360.K	**BMP: Perform post-construction inspection to verify re vegetated areas are stabilized and stormwater management systems are working properly**	Runoff minimization	Performance Assurance - performance bond and maintenance bond for tree replacement and site restoration permits	Consider adding a section here that addresses the need for clearly written plans and tools are necessary to maintain the benefits of native vegetation/replanting areas over time. Key mechanisms include HOA covenants, transfers/dedication of land to City or land trusts, easements/tracts, and property owner education. Such language could be incorporated into this section.
SMC 20.50.360.L	**BMP: Perform post-construction inspection to verify re vegetated areas are stabilized and stormwater management systems are working properly**	Runoff minimization	Monitoring - The Director may require submittal of periodic monitoring reports as necessary to ensure the survival of replacement trees.	Consider adding a section here that addresses the need for clearly written plans and tools are necessary to maintain the benefits of native vegetation/replanting areas over time. Key mechanisms include HOA covenants, transfers/dedication of land to City or land trusts, easements/tracts, and property owner education. Such language could be incorporated into this section.
SMC 20.50.390.C	**P: Parking**	Minimize total imperviousness	For all nonresidential uses, the maximum amount of allowed parking shall not exceed 50 percent over the minimum required number of stalls. Any proposal for parking that exceeds 10 percent over the minimum required number of stalls must be approved by the Director.	This is a good start to creating maximum standards. It is unclear as to if it applies to residential uses (second sentence seems to). The 50% maximum might be too high for nonresidential uses.
SMC 20.50.390A, B, C, D	**P: Parking**	Minimize total imperviousness	Minimum off-street parking requirements - Standards	Shoreline does not use maximum requirements, just minimum requirements. They could consider further reducing their minimum requirement and incorporating a maximum standard. (See below)
SMC 20.50.400	**P: Parking**	Minimize total imperviousness	Reductions to minimum parking requirements A. Required parking may be reduced by 20 percent with coordinated design and shared access to consolidated parking areas linked by pedestrian walkways.Multiple parcels may be treated as a single development site if all owners sign a binding and recorded agreement. The requirement for primarily nighttime uses, such as theaters, bowling alleys and restaurants, may be supplied in part by parking serving primarily daytime uses, such as banks, offices and retail stores. B. The Director may approve a reduction of up to 50 percent of the minimum required number of spaces if: 1. The applicant can prove that parking demand can be adequately met with a reduced parking requirement through measures such as proximity to transit routes, commuter trip reduction programs, supplementary on-site nonmotorized and high occupancy vehicle facilities, or 2. The applicant can prove that parking demand can be adequately met through a shared parking agreement.	Shoreline offers ways to reduce minimum parking requirements through shared parking agreements, commute trip reduction programs, and close proximity to transit routes. Parking is a key source of impervious surface, particularly in commercial, multifamily, and industrial projects. It is great that Shoreline is considering alternatives. Additional alternatives/incentives to minimize parking should be considered.
SMC 20.50.410	**P: Parking**	Minimize total imperviousness	4. No more than 50 percent of the required minimum number of parking stalls may be compact spaces.	It is good that Shoreline allows compact spaces - this percentage is respectable. Compact stalls could be encouraged or required in certain situations.

Code Reference	LID Principle (P:) or BMP:	LID Concept	Description	Problem or Gap
SMC 20.50.410	**BMP: Permeable Paving**	Runoff quality and volume control	A. All vehicle parking for single-family detached dwellings and duplexes must be in a garage, carport or on an approved impervious surface.	Pervious pavement should be allowed where it is feasible.
SMC 20.50.410(C)(1)	**P: Parking**	Minimize total imperviousness	In commercial zones, the Director may allow required parking to be supplied in a shared parking facility that is located more than 500 feet from the building it is designed to serve if adequate pedestrian access is provided and the applicant submits evidence of a long-term, shared parking agreement.	Shared parking agreements offer an opportunity to reduce impervious surfaces by sharing parking between uses with either day- or night-orientation.
SMC 20.50.410J, K	**P: Parking**	Minimize total imperviousness	Loading Requirements	The use of pervious pavement in loading zones should be considered.
SMC 20.50.430	**P: Pedestrian Paths**	Minimize total imperviousness	Nonmotorized access and circulation - Pedestrians A. Commercial or residential structures with entries not fronting on the sidewalk should have a clear and obvious pedestrian path from the street front sidewalk to the building entry. B. Pedestrian paths should be separate from vehicular traffic where possible, or paved, raised and well marked to clearly distinguish it as a pedestrian priority zone.	Pervious pavement options could be encouraged.
SMC 20.50.460	**BMP: Bioretention Areas**	Runoff quality and volume control	Landscaping Standards C. Existing, healthy trees and shrubs, vegetated critical areas, landscaped bio-swales, or trees and their area within the dripline may substitute for required landscaping tree-for-tree and area-for-area. In order to promote the retention of existing mature trees during site development, credit shall be given for one additional required tree if the retained tree is significant (eight-inch diameter at breast height if deciduous). (See Subchapter 5 of this chapter, Tree Conservation, Land Clearing, and Site Grading Standards, and Chapter 20.80 SMC, Critical Areas, for additional requirements).	This is a good alternative that would encourage LID-type projects. It should be considered whether Shoreline wants to continue using the dripline approach or transition to critical tree root zone preservation.
SMC 20.50.470	**BMP: Bioretention Areas**	Runoff quality and volume control	Street frontage landscaping Standards A. A 10-foot width of Type II landscaping for all development including parking structures, surface parking areas, service areas, gas station islands, and similar paved surfaces. B. A 20-foot width of Type II for institutional and public facilities in residential zone areas. C. Frontage landscaping can be substituted in multifamily, commercial, office, and industrial zones with two-inch caliper street trees 40 feet on center if they are placed in tree pits with iron grates or in planting strips along the backside of curbs. Institutional and public facilities may substitute 10 feet of the required 20 feet with street trees. D. Trees spacing may be adjusted to accommodate sight distance requirements for driveways and intersections. See SMC 20.50.520(O) for landscaping standards.	Alternative frontage landscaping requirements for LID projects could be considered.

Code Reference	LID Principle (P:) or BMP:	LID Concept	Description	Problem or Gap
SMC 20.50.480	**BMP: Bioretention Areas**	Runoff quality and volume control	Street Tree Standards	Ensure that the City-approved list incorporates key native trees, specify which ones are appropriate with regard to soils/site constraints to encourage proper utilization. The Technical Guidance Manual for LID encourages creating multi-layer canopy structures with small, medium, and large threes and shrubs; emphasizing climax species; and mixing trees similarly to native forest situations with 2 evergreen trees to 1 deciduous.
SMC 20.50.490	**BMP: Bioretention Areas**	Runoff quality and volume control	Landscaping along interior lot lines A. Type I landscaping in a width determined by the setback requirement shall be included in all nonresidential development along any portion adjacent to single-family and multifamily residential zones or development. All other nonresidential development adjacent to other nonresidential development shall use Type II landscaping within the required setback. If the setback is zero feet then no landscaping is required. B. Multifamily development of more than four units shall use Type I landscaping when adjacent to single-family residential zones and Type II landscaping when adjacent to multifamily residential and commercial zoning within the required yard setback. C. A 20-foot width of Type I landscaping shall be provided for institutional and public facility development adjacent to single-family residential zones. Portions of the development that are unlit playgrounds, playfields, and parks are excluded.	Consider adding support for bioretention and native vegetation preservation.
SMC 20.50.500	**BMP: Bioretention Areas**	Runoff quality and volume control	Landscaping of Surface Parking Area - Standards A. Multifamily developments with common parking areas shall provide planting areas in parking lots at the rate of 20 square feet per parking stall. B. Commercial, office, industrial, or institutional developments shall provide landscaping at a rate of: 1. Twenty square feet per parking stall when 10 to 30 parking stalls are provided or; 2. Twenty-five square feet per parking stall when 31 or more parking stalls are provided. D. Permanent curbs or structural barriers shall be provided to protect shrub and trees from vehicle barriers.	Parking lot landscaping areas offer a place for bioretention facilities. Perhaps a less prescriptive approach could be used for LID projects that consider site characteristics as well as aesthetics.
SMC 20.50.510	**BMP: Bioretention Areas**	Runoff quality and volume control	**Alternative landscape design -** Alternative landscape designs may be allowed, subject to City approval, if the design accomplishes equal or better levels of Type I or II landscaping.	This section might be a place to incorporate LID standards more explicitly.
SMC 20.50.520	**BMP: Bioretention Areas**	Runoff quality and volume control	General standards for landscape installation and maintenance E. Plant selection shall consider adaptability to climatic, geologic, and topographical conditions of the site. Preservation of existing vegetation is encouraged.	This is good language that is supportive of LID. Perhaps some of this information can be incorporated into the City approved lists of trees.
SMC 20.50.520	**BMP: Bioretention Areas**	Runoff quality and volume control	General standards for landscape installation and maintenance N. Applicants shall provide a landscape maintenance and replacement agreement to the City prior to issuance of a certificate of occupancy.	The LID Technical Guidance Manual supports clearly written management plans and protection mechanisms to maintain landscape/open space areas over time. HOA covenants, property owner education, dedicated tracts/easements, and dedication to City or land trusts are key methods.

Code Reference	LID Principle (P:) or BMP:	LID Concept	Description	Problem or Gap
SMC 20.60.090	**LID Concept Overall**		Core surface water and stormwater requirements This section features additional core requirements required for development proposals subject to drainage review and are additional requirements to those described in the Surface Water Design Manual. Core requirements include: (1) Discharge at a Natural Location (2) Off-site analysis (3) Flow control (4) Conveyance system (5) Erosion and sediment plan (6) Maintenance and operation (7) Financial guarantees and liability (8) Water quality	These are good additional requirements, which often are in line with LID principles and BMPs. Perhaps additional support for LID could be inserted here, either as separate core requirements in certain impacted drainage basins or revisions to include LID support within the existing core requirements.
SMC 20.60.100	**LID Concept Overall**		Any applicable special requirements are required to be met for all development proposals required to have drainage review. They include: (1) Other adopted area-specific requirements, such as critical areas (2) Floodplain/floodway delineation in areas adjacent to floodplains, streams, wetlands, etc. (3) Flood protection facilities when adjacent to a class 1 or 2 stream w/ existing flood protection facilities (4) Source control, where a proposal requires a commercial building or commercial site development permit, then water quality source controls are applied to prevent rainfall and runoff from coming into contact with pollutants, (5) Oil control, where developments are a high-use site or a redevelopment proposal is proposing $100,000 or more of improvements to an existing high-use site, oil control shall be applied to all runoff from the high-use portion of the site.	Some of these special requirements might offer a place to encourage LID principles or BMPs, in certain sensitive basins.
SMC 20.60.130	**LID Concept Overall**		Best Management Practices A. The City adopts "Urban Landuse BMPs, Volume IV of the 1992 Stormwater Management Manual for the Puget Sound Basin" (DOE SWMM), and future amendments by reference as the Source Control BMP Manual for the City of Shoreline.	The City should additionally adopt the 2005 LID Technical Guidance Manual (PSAT).
SMC 20.100.010	**P: Cluster Development/ Open Space**	Minimize total imperviousness	Master Plans	Shoreline seems to use Master Planning processes, such as SMC 20.100.010, First Northeast Transfer Station Master Plan and the Fircrest Campus Excess Property Master Plan (in the works in Seattle's AHBL office). Master planning processes offer a great opportunity to utilize LID. There does not appear to be any code support for master planning processes w/n the SMC - but this could be a key place to encourage LID.
SMC 20.xx.xxx	**P: Cluster Development/ Open Space**	Minimize total imperviousness	No PUD/PRD/Cottage Housing regs	There are no provisions for PUDs/PRDs/Cottage Housing that were found in the SMC. Cottage housing was repealed by Ord 408. These types of regulations can encourage innovation through design flexibility. Affordable housing was the only density bonus found (SMC 20.40.230). LID could be encouraged/required as a mechanism to get additional density or other developer benefits.
SMC 20.xx.xxx	**P: Establish Soil Conservation Areas**	Runoff minimization	Except for erosion hazard areas, soil conservation areas are not specifically included in the SMC.	Soil conservation is a key principle of LID. This should be incorporated in a variety of places throughout the code.
SMC 20.xx.xxx	**BMP: Vegetated Roofs**	Runoff quality, flow, and volume control	No mention of green roof standards.	There should be standards/guidelines created to encourage green roofs in a variety of settings.

APPENDIX E

Sustainable Decision Making

Placeholder : Insert two double-sided 11x17 sheets here, pages 151-154

APPENDIX F

Draft Indicators

City Operations, Practices & Outreach		
1)	Objective:	Increase purchasing of environmentally preferred products for City operations.
	Target:	Adopt a comprehensive Environmental Purchasing Policy (EPP) with specific targets in four key areas: Reduce consumption, reduce toxic materials, increase use of recycled-content materials, and increase use of recyclable materials.
	Indicator:	Percentage of purchases that meet top-tier EPP requirements.
	Discussion:	Shoreline can adapt policies already in place in Seattle, King County, and Washington State.
2)	Objective:	Promote sustainability among Shoreline businesses
	Target:	Upward trend. Specific target TBD. E.g. Increase by 10% each year the number of participating green businesses for the next five years.
	Indicator:	Number of participating (or certified) green businesses (per year as compared to previous 4 years)
	Discussion:	Requires establishment of green business program. Sustainable Business Extension program does not currently have a CERTIFICATION component, but the Shoreline Chamber of Commerce has started developing a Green Business Program. City could track number of businesses that participate in program based on criteria that they offer an environmentally preferable product or service alternative (similar to Chinook book criteria) and implement recommended changes to the Sustainable Business Extension program.
Energy & Carbon Reduction		
3)	Objective:	Reduce energy consumption in City facilities.
	Target:	Reduce energy consumption in City facilities from baseline by 5% per year and 20% by 2012.
	Indicator:	Percentage decrease in City's monthly electric and gas usage (measured in consumption unit/sf or similar) -- obtainable from SCL and PSE.
	Discussion:	2012 is both consistent with the US Mayors Climate Protection Agreement language and aligned with the City of Shoreline update to its Comprehensive Plan.
	Dept/Data Source:	PW-F/O or PCRS – whoever manages each facility. Data from PSE and SCL bills or directly from utility companies.

Note: 1) the number (#) assigned to each recommendation is for reference purposes only and is not intended to indicate priority or sequence. The number used here does not correlate with the numbers used for the recommendations in this Strategy. 2) FI – before a number means that the indicator is more involved to develop and is reserved as a potential Future Indicator for consideration.

Department Acronyms:

C – Clerks
CMP – City Manager's Office
CS – Community Services
ED – Economic Development
F – Finance
HR – Human Resources
IT – Information Technology
PDS – Planning and Development Services
PRCS – Parks, Recreation and Cultural Services
PW – Public Works
PW-E – Public Works-Engineering
PW-ES – Public Works-Environmental Services
PW-F/O – Public Works-Facilities/Operations
PW-S/A – Public Works-Streets/Aurora

Energy & Carbon Reduction - continued		
4)	Objective:	Increase reliance on Green Power in City facilities, in order to reduce carbon emissions from facilities, consistent with US Mayors Climate Protection Agreement and Kyoto Protocol target of 7% reduction from 1990 levels by 2012.
	Target:	Increase Green Power consumption as a proportion of total electricity consumption in City facilities by 10% per year, and 50% by 2012.
	Indicator:	Proportion of City Consumption supplied by alternative energy sources though Seattle City Light "Green Up" Program.
	Discussion:	Could also offset carbon emissions from natural gas and other sources through various initiatives.
	Dept/Data Source:	PW-F/O or PCRS – whoever manages each facility. Data from PSE and SCL bills or directly from utility companies.
5)	Objective:	Increase use of alternative fuel vehicles in City fleet.
	Target:	Reduce carbon emissions from City fleet vehicles and equipment by replacing 2% of petroleum-based-fuel vehicles per year with hybrid or alternative fuel vehicles.
	Indicator:	Percentage of fleet that is hybrid or alternative fuel
	Discussion:	This target is consistent with the existing vehicle purchase and replacement policy.
	Dept/Data Source:	PW-F/O – fleet manager.
6)	Objective:	Reduce carbon emissions from fleet vehicles and equipment, consistent with US Mayors Climate Protection Agreement and Kyoto Protocol target of 7% reduction from 1990 levels by 2012.
	Target:	Reduce carbon emissions from city fleet vehicles and equipment by increasing average miles/gallon of fleet 5% per year and 25% by 2012.
	Indicator:	Average fleet miles per gallon.
	Dept/Data Source:	PW-F/O – fleet manager.
7)	Objective:	Reduce energy consumption.
	Target:	Reduce per capita/per household energy consumption by 10% in the first year and an additional 3% per year through 2012.
	Indicator:	Percentage decrease in consumption units of electric and gas annually (measured in % change per capita or per household).
	Discussion:	Further discussion with PSE and SCL needed, but appears feasible. Could also potentially get at this through statistically valid survey.
	Dept/Data Source:	PW-ES, Data from PSE and SCL directly or survey.

Sustainable Development & Green Infrastructure		
8)	Objective:	Increase staff training on sustainability issues.
	Target:	Upward trending number for next 5 years, than stabilize at appropriate level based on FTE, specific number TBD, including targets for certain positions.
	Indicator:	Number of staff hours devoted to sustainability training per year per full time employee equivalent (as compared to previous 4 years).
	Discussion:	The City already gathers and tracks training hours and establishes a training budget by department and by employee for some departments. A specific amount could be devoted to sustainability.
9)	Objective:	Decrease stormwater impacts through use of natural drainage techniques.
	Target:	Upward trending number, specific target could be established.
	Indicator:	Area (square feet) of new natural drainage constructed (by both private applicants and through public CIP projects) and total system area meeting defined minimum standard.
	Discussion:	Realistic goal can be set for public improvements following review of CIP. Target for private development will be harder to establish, should be modest at first, but should be attempted. Need to define a minimum standard, e.g. consistent with LID Manual and King County Surface Water Design Manual.
10)	Objective:	Reduce impervious surfaces in new development.
	Target:	Downward trending number or possibly the goal of no net increase over existing baseline is more realistic given increasing population and density.
	Indicator:	Median percentage of effective impervious surface in new projects (as compared to previous 4 years).
	Discussion:	Could also establish a defined numeric target, calculations derived from permitting data that is not currently tracked or aggregated. Current calculations do not identify "effective" impervious or distinguish between pervious and impervious paving systems.
11)	Objective:	Promote efficient energy and material use in buildings.
	Target:	Upward trending number, Potential goal might be 3 projects in 2008.
	Indicator:	Number of certified LEED and 3+ star BuiltGreen projects within the City (by public and private).
	Discussion:	Seems like an easy measure, but current permit system does not appear to track this.

Sustainable Development & Green Infrastructure - continued		
12)	Objective:	Increase pedestrian facility network length on major streets to make walking to destinations easier and safer.
	Target:	Upward trend; specific target TBD.
	Indicator:	Percentage of the total major street length (principal arterials, minor and neighborhood collector) citywide that has separated pedestrian facilities (sidewalk or paved off street trail) on at least one side of the street.
	Discussion:	Target TBD by City based on analysis of GIS data, CIP and internal discussion. Future Transportation Plan update is an opportunity to set the target. May also want to consider establishing a target and indicator for trail improvements as well. Additional investigation of sidewalk connectivity measurements may also be needed - see Pedestrian LOS indicator.
13)	Objective:	Improve pedestrian/bicyclist access to open space and parks.
	Target:	Upward trending number, specific numeric goal TBD.
	Indicator:	Percentage of households within a 1/4 mile of a neighborhood park or 1/2 mile of a community/regional park.
	Discussion:	Similar to measure currently identified in Parks Plan. An alternative measure could also try to get at accessibility through the presence of pedestrian/bicycle facilities on major streets within 1/4 and 1/2 mile of park boundary.
14)	Objective:	Increase number of bicycle facilities throughout the city to encourage this mode and improve safety.
	Target:	Upward trending number, specific target TBD.
	Indicator:	Total miles of designated bicycle routes meeting minimum standard.
	Discussion:	Bike lanes and interurban trail will be measured using GIS. City would need to define a minimum standard for other bike improvements that constitute a "bike route", map these and track year to year or change over 5 years.
15)	Objective:	Increase use of modes of transportation other than single occupant vehicles.
	Target:	Upward trend (relative to increasing population), specific number TBD based on review of data.
	Indicator:	Public transit rider-ship or number of transit boardings per year in Shoreline (as compared to previous 4 yrs).
	Discussion:	Obtain data from 3 transit agencies, could establish a specific target after baseline data collection. This indicator could also be combined with change in transit rider-ship compared with employment growth and/or park and ride usage (e.g. King County Benchmarks Program) when establishing a trend. Note: The City already conducts a statistically valid survey for "Strategic Objectives" and we could get more directly at mode split by asking about it in the survey. Please see "potential future indicator" for additional suggestions.

Sustainable Development & Green Infrastructure - continued		
16)	Objective:	Increase number of new households (density) near transit.
	Target:	Upward trend, specific number could be established through future comprehensive plan or housing strategy updates.
	Indicator:	Percentage of new residential units within 1/4 mile of transit stop with 30 minute minimum headway.
	Discussion:	Requires integrating permit data with GIS analysis, could establish a specific target after baseline data collection and policy discussion.
17)	Objective:	Concentrate new growth in proximity of services and transit.
	Target:	Upward trending number, specific numeric goal TBD.
	Indicator:	Number of new residential units and total units (or average density) within a designated commercial center (and perhaps a 1/8 mile or other distance from boundary).
	Discussion:	Would need to define boundaries of designated commercial centers, 1/8 mile may be appropriate to the size of the centers themselves.
FI-18)	Objective:	Reduce the number of single occupant vehicle commuters (SOV).
	Target:	TBD by City after collection and analysis of baseline data.
	Indicator:	Percent of commute trips taken by a mode other than SOV.
	Discussion:	More info needed to develop and apply this, but this is a more encompassing indicator than #1. The City collects Commute Trip Reduction (CTR) data from the City's largest employers and this data could be reported, however it would over estimate the number of workers who take alternative modes if extrapolated and it does not capture people who commute from Shoreline to jobs elsewhere. The City should consider using a statistically valid phone survey to get this data (e.g. expand the existing survey used to obtain the "strategic objectives" measurements). Census numbers can be compared with the phone survey every 10 years. Could also do this in conjunction with an expansion of the CTR program.
FI-19)	Objective:	Measure and improve the overall pedestrian "level of service."
	Target:	TBD by City after collection of baseline data and refinement of the methodology to match local conditions and factors.
	Indicator:	Pedestrian LOS - combination of measuring continuity and directness of pedestrian network.
	Discussion:	More info needed to develop and apply this. Adapt Fort Collins Pedestrian LOS methodology, assigning a LOS of A,B,C,D,E, or F in terms of continuity, directness, street crossings, visual interest, and security. Concurrency requirements currently focus on cars and concurrency for other modes, especially pedestrians, is not currently measured in Shoreline. http://www.ci.fortcollins.co.us/transportationplanning/pdf/levelofservice.pdf

Sustainable Development & Green Infrastructure - continued		
FI-20)	Objective:	Reduce impervious surfaces citywide.
	Target:	Downward trend or possibly the goal of no net increase from baseline is more realistic given increasing population and density. A specific goal could also be established.
	Indicator:	Percentage of impervious surface citywide.
	Discussion:	LIDAR data can be interpreted to create an impervious data layer - research partnership, internship or thesis opportunity with UW. Given cost and rate of change considerations, data would be updated perhaps every 5 years.
Resource Conservation & Waste Reduction		
21)	Objective:	Reduce solid waste land-filled as a result of City operations.
	Target:	Downward (positive) trend. Specific target TBD. E.g. Reduce by 10% per year total volume directed to landfills from City operations.
	Indicator:	Volume of total waste generated (as compared to previous 4 years).
	Discussion:	Internal discussion necessary to establish target, but this appears to be plausible at least in the short to medium-term.
22)	Objective:	Increase recycling in City operations.
	Target:	Upward trend. Specific target TBD. E.g. Increase by 10% the percentage of materials sorted and recycled from City operations waste stream.
	Indicator:	Percentage of total waste recycled (as compared to previous 4 years).
	Discussion:	Internal discussion necessary to establish target, but this appears to be plausible at least in the short to medium-term.
23)	Objective:	Increase recycling rates in the community.
	Target:	Upward trend. Specific target TBD. E.g. Divert an additional 10% per year of total volume from landfills.
	Indicator:	Percentage of total solid waste recycled by the Community (via CleanScapes).
	Discussion:	City to determine if this can be measured or monitored through existing waste contract.
24)	Objective:	Reduce potable water use in City outdoor operations.
	Target:	Downward (positive) trend. Specific target TBD. E.g. Reduce total potable water use for irrigation by 100% by 2012.
	Indicator:	Consumption units per year for outdoor operations based on utility billing.
	Discussion:	Data based on water bill. Potential strategies include storm water storage and reuse, and Citywide moisture sensors, centrally controlled. Need to investigate how and if consumption units for irrigation are or can be separated.

Resource Conservation & Waste Reduction - continued		
25)	Objective:	Reduce potable water use in City indoor operations.
	Target:	Downward (positive) trend. Specific target TBD. E.g. Reduce water use in City office facilities by 50% by 2012.
	Indicator:	Consumption units per year for indoor operations based on utility billing.
	Discussion:	Baseline will be established to include new City Hall/Civic Center facility. Need to investigate how and if consumption units for indoor operation are or can be separated. Probably want to calibrate this by units/per square foot of space or per employee.
26)	Objective:	Reduce residential potable water consumption.
	Target:	Downward (positive) trend. Specific target TBD. E.g. Reduce water use in Shoreline households by 50% by 2012.
	Indicator:	Consumption units per year per residential customer.
	Discussion:	Data would be gathered from water district billing data. Potential strategies include information outreach, changes to plumbing code interpretation, subsidization for the installation of low-flow and waterless fixtures, and grey water re-use for toilet flushing and irrigation. City will need to coordinate data collection with Shoreline Water District. Could broaden measure to include commercial customers, but size of business customers is more diverse. Could do measures of both units/per employee and units/per resident.
Ecosystem Management		
27)	Objective:	Improve surface water quality.
	Target:	Upward trend. Specific target could be established through trend analysis.
	Indicator:	Washington Department of Ecology (DOE) Water Quality Index (WQI).
	Discussion:	The City has begun collecting data to use in the WQI and is determining whether or not it is appropriate as a reporting tool for the sustainability indicators. The WQI is intended as a tool to summarize and report Ecology's Freshwater Monitoring Unit's routine stream monitoring data. The WQI is a unit less number ranging from 1 to 100; a higher number is indicative of better water quality. Scores are determined for temperature, pH, fecal coliform bacteria, dissolved oxygen, total suspended sediment, turbidity, total phosphorus, and total nitrogen. Constituent scores are then combined and results aggregated over time to produce a single yearly score for each sample station.

Ecosystem Management - continued		
28)	Objective:	Improve/restore habitat areas.
	Target:	Upward trending number, specific goal TBD based on City input.
	Indicator:	Acres of stream, wetland and related buffers that are enhanced and/or restored (as compared to previous 4 years).
	Discussion:	City does not currently track and aggregate this data. Data should be broken out by voluntary/public projects and those done as permit requirements and mitigation. Invasive species removal could be tracked as a subset.
29)	Objective:	Improve health of public forests.
	Target:	Upward trending number, specific acreage goal TBD based on City input.
	Indicator:	Acres (and percentage) of public forests enhanced that year through removal of invasive species, replacement of dead or dying, thinning and other forest health management practices (as compared to previous 4 years).
	Discussion:	This is most actively occurring under Urban Forests Program and Ivy Out efforts in parks. SF can be hard to track but should be measured. We will continue to study the Green Seattle program to look at ways to improve and refine this indicator.
30)	Objective:	Increase citywide tree canopy and natural vegetation through strategic use of the right of way.
	Target:	Upward trending number, Specific target TBD following collection of baseline data and City review of existing, planned and possible CIP efforts.
	Indicator:	Number of street trees and square feet of landscaping planted in the right-of-way (ROW) per year by City services or programs (or private development in the ROW) as compared to previous 4 years.
	Discussion:	Data from CIP projects, operations and DSG permit data related to right of way improvements would be combined. Might want to measure every 2 to 5 yrs to be more tangible and show change.
31)	Objective:	Increase volunteer hours devoted to sustainability projects.
	Target:	Upward trending number, based on current City "strategic objectives" program, target is 3,800 for all volunteer programs in 2008.
	Indicator:	Number of volunteer hours and distinct individuals devoted to sustainability projects per year (as compared to previous 4 years).
	Discussion:	The City already gathers and tracks volunteer hours through "strategic objectives" program and could track hours in future years devoted to sustainability projects, e.g. habitat, recycling, right-of-way landscaping and other similar projects with a sustainability benefit.

Ecosystem Management - continued		
FI-32)	Objective:	Improve surface water quality.
	Target:	Upward trending number for each stream reach and other surface water body as compared to previous 4 yrs or other study period, specifics TBD.
	Indicator:	Index of Benthic Invertebrate Diversity (IBID).
	Discussion:	IBID was developed and used by UW - Derek Booth. There is an opportunity to partner with the Homewaters project and schools like Evergreen and Meridian Park that have done IBID sampling over the years in Thornton creek.
FI-33)	Objective:	Increase and maintain citywide tree canopy
	Target:	Target to be established following collection of baseline data. E.g. 40% or potentially break down further by broad zoning category using American Forest's goals.
	Indicator:	Percentage of tree canopy coverage citywide
	Discussion:	Establish baseline in medium-term and update every 5 to 10 years based on remote sensing imagery. Consider use of CityGreen software.
FI-34)	Objective:	Measure and reduce the rate of tree canopy loss due to permitted development.
	Target:	Target to be established following collection of baseline data and further discussion. No net loss at least in single family areas may not be realistic given increasing density.
	Indicator:	Median tree retention percentage achieved (better to use canopy coverage) and replacement trees planted on lots reviewed under the tree code.
	Discussion:	Data could be tracked, but is tedious and replacement trees may not survive. More input from City needed to establish an appropriate indicator for private development. Overall City canopy coverage is a better potential future indicator and may be sufficient.

APPENDIX G
Implementation Resources

Appendix G: Implementation Resources

In performing the Capacity Assessment process, it was important to identify resources that may assist the City directly or indirectly in achieving specific recommendations. Resources may facilitate sustainability either by promoting it or simply by removing barriers. For this Strategy, research on resources for three areas was conducted: Funding, Regulations and Planning Policy, and Business Partnerships. For each suggested resource, possible models have been provided, along with recommendations for City action with regard to the resource type. A summary of this research is provided in Chapter IV of the Strategy Document.

Funding

Sustainable Enterprise Funds

This funding type helps municipalities invest in sustainability projects that require additional incentive to overcome technical or financial risks. The City of Shoreline should explore partnerships with other municipalities to maximize available resources.

Sustainable Enterprise Fund (GVRD)

An example of a successful partnership involves six BC municipalities including Vancouver, Richmond, Whistler, Delta, Burnaby and North Vancouver. These communities will purchase up to 80 million liters of biodiesel blend for use in vehicle fleets during the next five years. Delta's participation in this project is being supported by the GVRD's Sustainability Enterprise Fund. The Corporation applied to the fund last year and was awarded $12,000 to test the use of biodiesel to demonstrate operational, technical and economic feasibility.

Greater Vancouver Regional District (GVRD) member municipalities have access to money that complements municipal, provincial and federal funding sources. This funding is for projects that utilize technology established elsewhere but is new to the region, or to adapt best practices to conditions specific to the region. The focus is on improving sustainability in parks, housing, air quality and energy management, drinking water supply and treatment, wastewater conveyance and treatment, storm water management and solid waste management. A maximum contribution guideline of $25,000 covers up to 1/3 of costs for projects that derive regional benefits, and 10% of costs for projects that focus on single municipal sustainability issues.

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Sustainability Grants

Cities can leverage substantial amounts of work by having a volunteer coordinator on staff who seeks out community groups willing to dedicate labor and resources to sustainability efforts. Often, seed money in the form of a grant is used for first-year costs (e.g., salary, administrative

needs). The benefits often lead to City Councils approving permanent allocations for volunteer coordinator positions.

Some resources for sustainability grants specific to volunteerism include:

- The Abell Foundation, Inc.
- Atherton Family Foundation
- Brico Fund
- Claneil Foundation, Inc.
- Cottonwood Foundation
- Elkind Family Foundation
- The Hugh and Jane Ferguson Foundation
- Gates Family Foundation
- Walter and Duncan Gordon Foundation
- Levi Strauss Foundation
- Massachusetts Environmental Trust
- New England Grassroots Environment Fund
- Norcross Wildlife Foundation, Inc.
- Patagonia, Inc.
- Recreational Equipment, Inc. (REI)
- Russell Family Foundation

Recommendation: We recommend the City create a job description for a Volunteer Coordinator position and pursue grants to fund the first year of expenses for the position. A second, less-secure option would be to approach the Retired Senior Volunteer Program (RSVP) or similar group to solicit a retiree to coordinate the program on a voluntary basis. Some funding or the coordinator's activities should still be secured.

Creative Tax Programs

Tax Incentives:

Berkeley and San Francisco have created programs for residential solar electricity implementation. The cities pay installation costs up-front, and the loans are repaid via property taxes over a 20-year period. Installations are required to be maintained and remain with the property. The extra property tax includes administrative fees and interest, predicted to be lower than for private loans because the city will secure low-interest bonds and loans. Over two decades, the total taxes are approximately what property owners would save on electric bills.

Many tax programs are applied at the State level, e.g. Oregon and New Mexico:

- The Oregon Department of Energy offers the Business Energy Tax Credit to those who invest in energy conservation, recycling, renewable energy resources and less-polluting transportation fuels. The tax credit is 35 percent of the eligible project costs — the incremental cost of the system or equipment that's beyond standard practice. Recipients take the credit over five years: 10 percent in the first and second years and 5 percent each year thereafter. If recipients cannot take the full tax credit each year, they can carry the unused credit forward up to eight years. Those with eligible project costs of $20,000 or less may take the tax credit in one year.
- New Mexico Senate Bill 463 (SB463) encourages private sector design and construction of energy efficient, sustainable buildings for commercial and residential use. The amount of the tax credit is based on the qualified occupied square footage of the building and the

sustainable building rating achieved. The tax credit can be substantial: A LEED Silver-certified 2,000 square foot home that is at least 40% more energy efficient than a home built to the standard building code can receive a $10,000 tax credit.

Analysis: Shoreline may find that its citizens are willing to take the lead in sustainability efforts – i.e., voting with their pocketbooks – through creative property tax programs. Residents may approve higher property tax rates in exchange for improved waste management programs, green building assistance, or alternative energy strategies, for example. Because repayment is tied to property taxes, the City's can project annual budgets with little additional risk.

Tax Penalties:
Portland city officials are proposing a "carbon tax" on new homes and commercial buildings – in reality, this "tax" is a fee penalty. Program components include:

- For new homes and commercial buildings, there are three options for energy efficiency: 1) Meet the state's code and pay a fee to the city; 2) beat the code's efficiency requirements by 30 percent and pay no fee but qualify for incentives from the state and local non-profits; 3) beat the code by 45 percent and get a cash rebate from the city in addition to the other incentives.
- For existing homes and commercial buildings, owners would be required to disclose energy and storm water performance to potential buyers or tenants.
- Incentives for developers building green, and energy efficiency training for building trades workers.
- As part of every existing home sale, an energy efficiency report must be done by home inspectors.

Recommendation: Both the construction industry and realtors associations are fighting the proposal, citing prohibitive costs. As in Portland, tax or fee penalties may meet substantial opposition from builders, developers, owners, and others in Shoreline. We recommend alternative strategies to encourage and provide incentives for sustainability initiatives. Where proposed strategies may encounter opposition, a dedicated public involvement process is recommended.

Utility and Permit Fees

Enterprise Fund – Santa Monica has its own water and waste utilities, so the city can impose a fee on levels-of-service that is directed to related improvement programs; e.g., a portion of water and sewer bills directed to improved treatment facilities and storm water management education programs

Permit Fees – Portland imposes a fee on every building permit, which is directed toward green building mini-grants, education and outreach, and staff training. The key is volume – demand within the UGB (Urban Growth Boundary) will remain high, and the small fee is acceptable to most developers. While there is no threshold for the number of permits necessary to support a related green building program, Shoreline likely receives substantially fewer than Portland, so Shoreline may choose to dedicate fees to a limited set of initiatives. For instance, fees can be dedicated to obtaining green building accreditations for staff and to education/outreach efforts.

Recommendation: We recommend an additional fee for each building permit application, dedicated to staff training and accreditation. Internal capacity is essential to subsequent education/outreach efforts and code revisions.

Utility Rebate Programs

Puget Sound Energy

- Commercial HVAC Equipment Energy Efficiency Rebate Program
- Commercial Kitchen and Refrigeration Energy Efficient Equipment Rebate Programs
- Commercial Lighting & Lighting Controls Energy Efficiency Rebate Programs
- High Efficiency Commercial Clothes Washer Rebate Program
- High Efficiency ENERGY STAR® Qualified Transformer Rebate Program
- Manufactured Home Rebate Program
- Portable Classroom Energy Efficient Controls Rebate Program
- Residential Energy Efficiency Rebate Programs

Puget Sound Energy

- Commercial Energy Efficiency Rebate Programs
- Cool Rebates Program
- Multi-Family Residential Energy Efficiency Rebate Program
- New Construction Incentive Program
- Residential Energy Efficiency Rebate Program
- Vending Machine Rebate Program

Recommendation: The City can use web resources and other outreach/education tools to inform developers of rebate opportunities. All rebates should be pursued in new City-owned and operated projects, in order to gain first-hand knowledge of application processes.

Municipal Grants for Green Building

- King County's Department of Natural Resources and Parks provides financial grants and free technical assistance to new construction and major renovation commercial building projects in King County, outside the City of Seattle, seeking LEED* certification. Private, nonprofit, and public projects are eligible to apply for grant awards based on the level of certification achieved. Eligible projects can receive a grant in the amount of $15,000 for achieving a certification level of LEED Silver, $20,000 for LEED Gold, or $25,000 for LEED Platinum. **Web site:** www.seattle.gov/dpd/GreenBuilding
- The Seattle/King County Built Green Grant Program provides competitive grants for single-family residential and community development projects to help offset the cost of certifying and designing innovative green projects throughout Seattle and King County. The grants are funded through the Department of Natural Resources and Parks, Water and Land Resource Division and Seattle Public Utilities. To be eligible for this grant, buildings need to achieve either Built Green 4-star or 5-star certification. **Web site:** http://www.builtgreen.net
- Puget Sound Energy (PSE) offers its commercial and industrial customers financing when building a new facility or expanding an existing one through the New Construction Grants program. Grants and rebates are available for many high-efficiency electric and natural gas applications that are at least 10% beyond the applicable energy code. **Web site:** http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=WA50F&state=WA&CurrentPageID=1&RE=1&EE=1
- Puget Sound Energy (PSE) offers grants to its customers who install efficiency upgrades to their existing equipment or facility. Grants often range from several hundred dollars to over a hundred thousand dollars, and typically pay for about 50% of a project's cost; sometimes up to 70% of the installed cost. **Web site:**

http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=WA49F&state=WA&CurrentPageID=1&RE=1&EE=1

- The City of Santa Monica offers a grant program to encourage construction of LEED™ certified buildings and implementation of Innovative Green Building Technologies. Grants for LEED™ certified buildings will range from $20,000 to $35,000 depending on the level of certification. Innovative Technology Grants will cover 50% of project costs up to $5000 for new construction or renovation projects that involve cutting edge energy efficiency or urban runoff mitigation technologies.
- See available online resources for additional grant opportunities:
    - http://www.dsireusa.org
    - http://www.epa.gov/greenbuilding/tools/funding.htm
    - http://www.mrsc.org/Subjects/Planning/GreenBuild.aspx#grants

Recommendation: The City can use Web resources and other outreach/education tools to inform developers of grant opportunities. All possible grants should be pursued in new City-owned and operated projects, in order to gain first-hand knowledge of application processes.

Regulations and Planning Policy

Codes and Ordinances

Many major jurisdictions require public projects to be built green, typically meaning LEED (Leadership in Energy and Environmental Design) certified. Other cities, such as Arlington, Virginia and Seattle, also offer incentives such as floor area ratio bonuses or, as with the Austin, Texas Green Building Program, technical assistance for private construction projects. Some municipalities, such as Ft. Collins, Boston, and Washington, D.C., have even experimented with green requirements for private buildings.

Many small municipalities assume that more stringent codes will discourage development, thereby damaging economic growth. However, through a combination of expedited permitting and applications of existing green building standards, many small municipalities have found that developers save money – in construction time and operations and maintenance benefits. The key to most successful efforts is increasing city staff capacity to allow expedited permitting once new codes are in place.

The Mayor of Seattle signed new downtown zoning legislation on April 12, 2006 which established an incentive for the construction of green buildings. The incentive applies to buildings in the central office core and adjoining areas, including Denny Triangle and a portion of Belltown. Commercial and residential buildings in those portions of downtown which achieve a minimum LEED* certification at the Silver level can be built to greater heights and/or greater maximum floor areas. The Downtown Zoning Ordinance allows owners and developers to use either the LEED for New Construction (LEED–NC) or LEED for Core & Shell (LEED–CS) products.

Austin Energy, the City of Austin's energy utility, has a full kit of resources available for developers and builders, including design assistance and education. The City and its utility partner on regular workshops.

Recommendation: Shoreline should systematically review current codes and compile a comprehensive list of proposed code revisions specific to green building strategies. This list should be vetted with representatives from development and construction fields in order to win support for proposed changes

Shoreline can devise a set of incentives, including variances and exceptions that can be applied to projects incorporating sustainability strategies. One example is a simple tradeoff such as allowing greater heights in exchange for smaller footprints and more open space and/or infiltration capability.

Design assistance and education resources should be pursued in Shoreline, especially if other small municipalities can pool resources and work with local utilities to share cost and take advantage of existing expertise.

Green Permitting Processes

The City of Issaquah passed Resolution #2004-11 in December, 2004, adopting a sustainable building and infrastructure policy. Developers intending to use LEED may receive free professional consultation. Projects achieving LEED certification are placed at the head of the building permit review line.

The City of Santa Monica has passed an ordinance that will expedite plan checks for LEED registered projects. This expediting process may take weeks off of the approval process. Applicants must submit their LEED checklist and proof of LEED registration (if any) for the project.

The Chicago Department of Construction and Permits Green Permit Program is the first of its kind in a large U.S. jurisdiction, and its success—from 19 permits in 2005 to 71 in 2006 and a goal of over 100 this year—has helped significantly accelerate the growth of private-sector green building in the city. Today, Chicago leads the nation in the number of LEED registered projects. Chicago's Green Permit Program offers two main incentives:

- First, permits for large or complex projects can be issued in as little as six weeks from the time of construction document submission—approximately half the typical time. This time savings can translate into substantial financial benefit for developers because earlier construction starts mean earlier sales or leasing and reduced interest on construction loans.
- The program also offers a more direct financial incentive in the form of reduced fees. Developers of larger projects typically pay additional fees for the services of City plan review consultants, and up to $25,000 of these fees are waived for projects that qualify for Chicago's Green Permit Program. Whereas expedited permitting is mostly of interest to for-profit developers, the reduction of fees associated with permitting can be a major benefit to nonprofit and affordable housing developers. Even $50,000 is a nearly invisible line item in a $100 million development, but $15,000 or $20,000 is a substantial contribution to the bottom line of a proposed $10 million affordable housing project with 10 different funders.

Recommendation: The City permitting department should begin training staff in green building strategies and standards, leading to proficiency that will allow for expedited permitting and technical assistance. Currently, residential permits require 2 to 6 weeks review time – quicker than many municipalities. However, permit applications for site development, subdivisions, and commercial projects with green building strategies that are departures from conventional practice

are subject to individual reviews, without predictability for builders and developers. This often leads to prolonged review periods and can discourage builders from incorporating strategies if there is no consistent standard.

Green Building Code(s)

Sustainable design strategies are considered by Shoreline's permitting department on a case-by-case basis – no different than a conventional building permit. New, unfamiliar strategies and technologies must be researched and vetted, which often delays processing. Additionally, Shoreline does not emphasize green building beyond IBC and State requirements such as the Washington State Energy Code (which is more stringent than IECC), citing a lack of resources dedicated to code revisions and enforcement. [1]

However, resource-constrained departments such as Shoreline's can implement performance standards that do not require significant code changes and that are compatible with IBC standards. In a 2006 report issued to the ICC Industry Advisory Committee by its Task Group on Green Buildings, it concluded that there were very few, if any, serious barriers in the IBC that would inhibit green building techniques and methods as specified in the most commonly used green building guidelines in the U.S. — LEED, by the US Green Building Council (USGBC), and Green Globes, by the Green Building Initiative. A key element of that conclusion was the provisions of both the IBC and IRC that permits the use of alternative materials and methods of construction when those materials and methods of construction are demonstrated to be equivalent to that prescribed in the code in terms of quality, strength, effectiveness, fire resistance, durability and safety.

In other words, designs are in compliance with IBC as long as a proposed design is demonstrated to be as safe and durable as that which uses the more conventional materials and designs anticipated in the IBC and International Residential Code (IRC). The key to encouraging green building from the permitting side is increasing proficiency among permitting and review staff such that new green building strategies can be quickly reviewed and accepted or denied, thereby placing no undue additional burden on developers.

The ongoing development of the IECC, the National Green Building Standard (for residential construction), and ASHRAE/IESNA/USGBC 189 *Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings*, are making it increasingly possible for the full range of concerns associated with sustainable and environmentally responsible building to be addressed. With regard to the IECC, more performance-based methods will be incorporated, according to ICC. The result will be a range of thresholds, up to and including the zero net energy goal envisioned by the 2030 Challenge, which will allow individual jurisdictions to designate achievable levels of energy conservation with few, if any, code amendments. This will in turn eliminate redundant or even contradictory regulations and levels of enforcement.

Recommendation: The City of Shoreline should focus resources on increasing staff proficiency to provide timely technical assistance and green building advocacy within the City's own development initiatives and the private sector. Technical guidance via print materials is one way

[1] The International Code Council (ICC), a membership association dedicated to building safety and fire prevention, develops the codes used to construct residential and commercial buildings. Most U.S. cities, counties and states that adopt codes choose the International Codes developed by the ICC, specifically the International Building Code (IBC). Additionally, the U.S. Department of Energy continues to reference the International Energy Conservation Code (IECC) as the benchmark for conserving resources used in construction and daily living.

of providing assistance with limited resources. For example, the City of Seattle provides Client Assistance Memos for a variety of development strategies. CA Memos include design strategies and code compliance considerations. For a full list of City of Seattle CA Memos, visit http://web1.seattle.gov/DPD/CAMs/CamList.aspx. An example – Green Parking Lots – is included as Appendix 1. Made available both electronically and at permit counters, these technical resources can help promote green building without placing undue additional burden on staff.

Business Partnerships

Green Business Certification

A green-business program can be used to encourage sustainable practices within the private sector with minimal City investment. The City of Shoreline currently partners with the Environmental Coalition of South Seattle (ECOSS) to help educate Shoreline businesses regarding sustainable business practices. Through this Sustainable Business Extension Service ECOSS provides information and education on industrial innovations that will lead to energy and water conservation, and pollution prevention, in small- to medium-size businesses. According to the Shoreline Economic Development Program, businesses have been slow to take advantage of the Sustainable Business Extension Service.

In late 2007, King County awarded a grant to the Shoreline Chamber of Commerce for development of a sustainable business program. Chamber of Commerce board member Maryn Wynne, also on the board of the Shoreline Solar Project, wrote the grant proposal and is directing the partnership program.[2] The Chamber is seeking to use the grant to create a "one-stop shop" to educate businesses to be more efficient – to use less, waste less, and save money – and to be recognized for sustainability efforts.

The Chamber is organizing a committee to develop the mission and scope of the program, and to identify key stakeholders. Interested parties include CleanScapes (the City's solid waste contractor), Seattle City Light, and Puget Sound Energy. The Chamber is also working with Shoreline Community College to determine opportunities for a partnership in conjunction with the College's increased focus on alternative energy. Next steps include branding – creation of a logo and website – and creation of an implementation and administration plan.

Some other municipalities are making sustainable businesses the centerpiece of their economic development programs, including Kirkland.

Kirkland Green Business Program

The Kirkland Green Business Program is an incentive program created in partnership between the City of Kirkland, Kirkland Chamber of Commerce and Puget Sound Energy to recognize Kirkland businesses for environmentally-friendly practices.[3] The City's Tourism Marketing Plan and tourism website, www.ExploreKirkland.com, feature certified Green Businesses.

[2] Maryne Wynne: (206) 306-9233
[3] Brenda Nunes, Associated Earth Sciences: (425) 827-7701

Kirkland's Sustainable Business Program includes certifications in six categories: Green Building, Waste Reduction and Recycling, Water Conservation, Energy Efficiency, Transportation, and Pollution Prevention. Certification standards are either derived from existing standards, such as LEED and Built Green for Green Building Certification, or are simple checklists, as shown for Water Conservation in Appendix 1.

Bay Green Business Program

The Bay Area Green Business Program verifies that businesses meet higher standards of environmental performance. The program is a partnership of government agencies and utilities helps local businesses comply with all environmental regulations and take actions to conserve resources, prevent pollution, and minimize waste. More than 1,000 businesses and public agencies have been certified since 1997.

The Program was developed by Bay Area local governments in collaboration with US EPA, Cal EPA Department of Toxic Substances Control and the business community. The Association of Bay Area Governments coordinates the Program, which is implemented by Green Business Coordinators in 9 participating counties. The regional and local programs are funded by their partners, including local and regional government agencies, utilities, special districts and nonprofit organizations that promote environmental compliance, pollution prevention and resource conservation. Some funding also comes from government and non-profit foundation grants.

Santa Monica Sustainable Business Certification Program

The City of Santa Monica has based its tourism and business development initiatives on its Sustainable Business Certification program. Santa Monica's Green Map is a web-based tool that guides residents and visitors to products and services provided by certified Sustainable Businesses. In part because of this program, the business community has adopted sustainability as its guiding development principle.

Through the program, Green Businesses receive recognition through:

- Local and Regional Green Business Program websites
- City and agency newsletters
- Press coverage, promotional events and special recognition
- Window decals, certificates and promotional materials
- Green Business logo to use in advertising

Recommendation: Shoreline should continue to partner with ECOSS and seek other partnerships to enhance offerings for the Sustainable Business Program.

The City can also use existing resources to promote sustainable business practices. Puget Sound Energy and Seattle City Light can provide data that can be used to create an overall "business footprint" for Shoreline businesses. This may be used to encourage businesses to pursue sustainable business strategies and take advantage of resources in order to promote their business

(Example) Client Assistance Memo:

Seattle -- Green Parking Lots (2 pp. of 8)

Department of Planning and Development

CAM *Client Assistance Memo* 515

dpd Seattle Permits

— part of a multi-departmental City of Seattle series on getting a permit

Green Parking Lots

September 30, 2005

WHO SHOULD CONSIDER GREEN PARKING LOTS?

If you're looking for a cost-effective option for meeting landscaping and water quality requirements when building or redeveloping a parking lot, consider "going green."

WHAT ARE GREEN PARKING LOTS?

Green parking lots reduce runoff that is discharged into local water bodies by using permeable paving and natural drainage landscapes.

Alone or together, these two strategies can be used to meet water quality and landscape requirements and provide credit toward flow control requirements for parking lots.

Permeable Paving

Permeable pavements include pavers, grid systems, porous asphalt and porous concrete. Pavers may be pre-cast sections or individual units that fit together. They are available in a variety of patterns and colors and can be used to enhance the project's aesthetic. Grid or lattice systems are rigid plastic forms that are filled with gravel or soil and vegetation. Porous asphalt and porous concrete are similar to conventional asphalt and concrete in structure and form except that the fines (sand and finer material) have been removed.

When installed over a drainage storage bed, these permeable pavements allow rain to infiltrate through the voids of the permeable surface. Beneath the permeable surface, runoff storage is achieved and/or infiltration occurs where soil permits. Surfaces that infiltrate 100% of the six-month storm runoff may be eligible to be removed from area calculations for water quality requirements. See attached handout for more information on different types of permeable paving.

Natural Drainage Landscapes

Natural drainage landscapes include bio-swales, rain gardens, and bioengineered planting strips that can improve water quality and reduce runoff.

Bio-swales are open, linear channels that filter stormwater as the water flows through vegetation to the discharge point. Although their width and length vary as needed to achieve function, at a minimum they are two feet wide at the bottom and have a maximum slope of 2.5:1.

Rain gardens are shallow depressions in the landscape and are designed to hold and infiltrate runoff. They are amended with bioengineered soil and vegetated with plants that are adapted to both wet and dry conditions.

Bioengineered planting strips are similar to bio-swales but they include an infiltration component. As with rain gardens, native soil below the swale is excavated and backfilled with gravel and loamy sand and planted with shrubs and groundcover.

All systems include an overflow system such as a perforated pipe or a raised overflow device to convey excess drainage to another system or discharge point. These natural drainage landscapes can help reduce the volume of runoff generated from parking lots and filter, infiltrate and store runoff for slower discharge. Existing landscape features such as planters and landscape strips can be converted to natural drainage landscapes.

HOW DO GREEN PARKING LOTS MEET REQUIREMENTS?

The green parking lot strategies described above may help meet requirements for several City codes, including:

- Seattle Municipal Code (SMC) Ch.22.800, Stormwater, Grading, and Drainage Control Code
- SMC 23.47.016, Screening and Landscape Standards
- DPD Director's Rule (DR) 26-2000, Volume 3, Flow Control Technical Requirements Manual

www.seattle.gov/dpd

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- DPD DR 27-2000, Volume 4, Stormwater Treatment Technical Requirements Manual
- DPD DR 13-92, Landscape Standards for Compliance with the Land Use Code and SEPA Requirements

Stormwater Treatment Technical Requirements

Depending on the site, SMC 22.800-22.808 and DPD DR 27-2000 require new and redeveloped parking lots to meet water quality treatment requirements.

Landscaping Requirements

SMC 23.47.016 specifies landscaping requirements for parking lots. These requirements are articulated further in DPD DR 13-92.

Water Quality Treatment Requirements

Permeable paving can reduce the size of engineered stormwater treatment facilities by reducing the amount of runoff needing treatment. If designed to infiltrate the six-month storm, permeable pavement can be used to get a one-to-one impervious surface reduction credit for water quality treatment requirements.

Credit Toward Flow Control Requirements

DPD DR 26-2000 specifies how credit toward flow control requirements can be achieved.

Natural drainage landscapes may be used to meet both landscaping and water quality requirements. Parking lot areas that direct runoff to natural drainage landscapes may be eligible for water quality credit if they are sized to filter or infiltrate the six-month storm event. Permeable paving can be designed to meet water treatment requirements and provide credit toward flow control requirements. Refer to the codes and manuals listed above for design requirements.

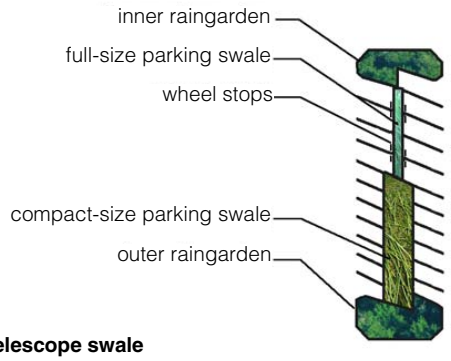
ADDITIONAL BENEFITS FROM GREEN PARKING LOTS

In addition to achieving landscaping, water quality treatment and flow control requirements, green parking lots may reduce capital costs and overall facility maintenance costs. Green parking lots also enhance the pedestrian experience for clients and customers by providing green islands in a sea of asphalt. Additional benefits include an increase in the amount of infiltration surfaces that filter and attenuate stormwater runoff flows, which can enhance the protection of nearby water bodies. The next section illustrates how these benefits can be achieved.

GREEN PARKING LOT DESIGN OPTIONS

Three innovative design options were developed for an existing 15-acre commercial parking lot to evaluate the feasibility and cost-effectiveness of green parking lots. Each of the three options uses permeable pavements and/or natural drainage landscapes. These options demonstrate that parking lots can achieve water quality treatment requirements using green strategies. Although unquantified for this project, the use of a natural drainage landscape is anticipated to reduce the total volume of stormwater from the site through some infiltration. For this case study, each green parking lot design option was compared to a conventional parking lot design that was being considered. A long-term economic analysis of the capital and maintenance costs found the green parking lot design options to be equal to or less expensive than the conventional parking lot design.

The green parking lot design options demonstrate that different combinations of porous asphalt, unit pavers, rain gardens and telescope swales can be used to meet the water quality treatment requirement. With the exception of the telescope swale, each of these elements has specific technical requirements for their design and construction that can be found in DPD DR 26-2000. The telescope swales are a strategy specifically designed to integrate into parking lots. Telescope swales are designed to have multiple sections that vary in width over the length of the swale to accommodate both compact and standard size parking spaces (see figure).



Telescope swale
Image courtesy of SvR Design Company

Source: http://www.seattle.gov/dpd/publications/cam/CAM515.pdf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