City of Snoqualmie

Sustainability Strategy

June 2009

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1.0 Background

In 2007, Snoqualmie Mayor Matt Larson signed the U.S. Conference of Mayors Climate Protection agreement, committing Snoqualmie to take action addressing climate change issues and working to make Snoqualmie a more sustainable city. In this effort, Snoqualmie joined 916 other U.S. cities, representing over 83 million citizens and over 25% of the U.S. population. To create the foundation for local sustainability efforts, Mayor Larson asked students and faculty from the University of Washington to collaborate with the city and its citizens in developing policies and programs that might foster a more sustainable and resilient community. This Sustainability Strategy is the result of that collaborative process.

The purpose of this document is to explore the desired future directions of the city, identify a range of actions that support city-wide aspirations, and establish a process to ensure that our future ideals take shape. The recommendations in this document are the result of a 9-month study by students from UW, directed by a professional urban planner/faculty in collaboration with the Mayor and the Mayors' Sustainability Advisory Team. The Advisory Team included the Mayor, Councilman Wall, two city staff, and several local citizens (see list in Acknowledgements). The actions in the Strategy are intended for integration with all city roles: leadership, education, policy, regulation, management & operations. The Strategy also addresses actions that help citizens and businesses support a more Sustainable Snoqualmie.

Our Purpose

"Join a national effort to foster sustainable and resilient cities that respond to energy and climate concerns, reduce our impact on the environment, support the local and state-wide economy, and protect resources for our children and future generations."

This document covers:

- The framework for understanding sustainability, (*chapter 1)*
- The forces driving the current importance of sustainability, (*chapter 1)*
- The purpose, principles and goals underlying the sustainability strategy, (*chapter 2)*
- The unique characteristics of Snoqualmie, (*chapter 2)*
- Descriptions of the current efforts underway and recommended future actions to foster sustainability, (*chapter 3)*
- A summary matrix of current and recommended city actions to foster sustainability, (*chapter 3),*
- Information and procedures for initiating and implementing this sustainability program, (*chapter 4)*

1.1 What is Sustainability?

Defined by the United Nations' World Commission on Environment and Development in their 1987 report, Our Common Future (the "Brundtland report") , term "sustainability" means "meeting the needs of the present without compromising the ability of future generations to meet their own needs." Based on the 2005 World Summit Outcome Document, sustainability is further defined as including the interdependent pillars of economic development, social equity, and environmental protection. These three pillars can also be understood as the "Triple Bottom Line", a term coined by John Elkington in 1994. The triple bottom line expands the traditional business focus of economic gain by integrating social and environmental considerations, emphasizing that all three elements are essential and mutually dependent

For the Snoqualmie Sustainability Strategy, our focus is on responding to issues of sustainability, including climate change, energy use and sources, human health, environmental resources, and social systems.

What is the Mayors Climate Protection Agreement?

The Mayor's Climate Protection Agreement establishes actions for local governments to take in their own communities. These 12 action items provide a starting point for Snoqualmie's Sustainability Strategy:

1. Inventory global warming emissions in City operations and in the community, set reduction targets, and create an action plan;
2. Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities;
3. Promote transportation options such as bicycle trails, commute trip reduction programs, incentives for car pooling and public transit;

The Mayors Climate Protection Agreement

…continued

4. Increase the use of clean, alternative energy by, for example, investing in "green tags", advocating for the development of renewable energy resources, recovering landfill methane for energy production, and supporting the use of waste-to-energy technology;
5. Make energy efficiency a priority through building code improvements, retrofitting city facilities with energy efficient lighting, and urging employees to conserve energy and save money;
6. Purchase only Energy Star equipment and appliances for City use;
7. Practice and promote sustainable building practices using the U.S. Green Building Council's LEED program or a similar system;
8. Increase the average fuel efficiency of municipal fleet vehicles; reduce the number of vehicles; launch an employee education program including anti-idling messages; convert diesel vehicles to bio-diesel;
9. Evaluate opportunities to increase pump efficiency in water and wastewater systems; recover wastewater treatment methane for energy production;
10. Increase recycling rates in City operations and in the community;
11. Maintain healthy urban forests; promote tree planting to increase shading and to absorb CO_2; and
12. Help educate the public, schools, other jurisdictions, professional associations, business and industry about reducing global warming pollution.

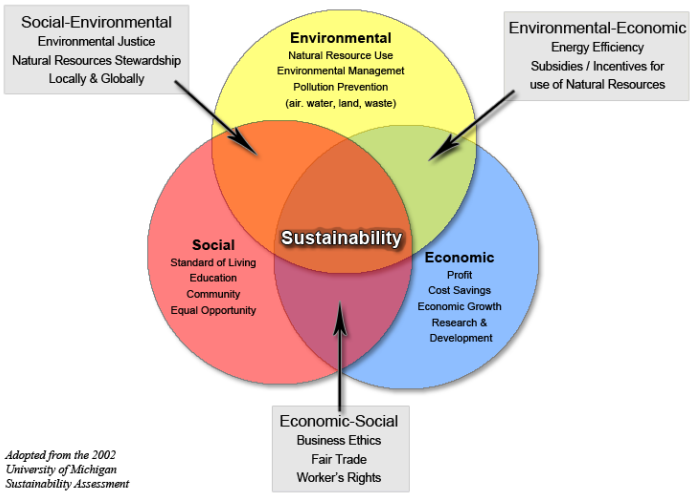
1.2 What Makes Sustainability Important Now?

Our current focus on sustainability is the result of many factors, such as population growth, globalization, national security, and climate change. The triple bottom line perspective tells us that although environmental issues are coming to the forefront in the wider global community, their impacts do not occur in a vacuum, but affect many aspects of our daily lives.

Population Growth and Consumption: The world's population is expected to grow nearly 50% by 2050 - from today's 6.7 billion to 9 to 10 billion.[1] In addition, a 2004 report by the Worldwatch Institute reveals that the 12 percent of the world's population that lives in North America and Western Europe accounts for 60 percent of private consumption spending, while the one-third living in South Asia and sub-Saharan Africa accounts for only 3.2 percent of total private consumption.[2] Both population growth and high consumption rates increase stresses on natural ecosystems, food supplies, and fuel resources.

Globalization/Production: The United States and the State of Washington are increasingly participating in, and are dependent upon, a global economy. However, global economic production is currently believed to exceed the sustainable yield of natural systems. The *Ecological Footprint* tracks this in terms of the area of biologically productive land and water needed to provide ecological resources and services – food, fiber, timber, land for building, and land to absorb carbon dioxide (CO_2) from burning fossil fuels. Since the late 1980s we have been in *overshoot* – where the Ecological Footprint exceeds Earth's biocapacity by 25%. This level of natural resource use cannot continue and we need to find new, less harmful approaches to production.[3]

The Three Spheres of Sustainability



National Security: Geological evidence suggests that world oil production will peak in the next few years, if it has not peaked already. Potential limits on availability and fluctuating prices of oil imports affect the cost of everything dependent on wheels - from the costs of driving to work, to the delivery of the clothes we buy and the production of the food we eat. Additionally, the U.S. uses nearly 21 million barrels of oil per day and imports over 65% of the oil we use. In 2005 alone, the U.S sent nearly $40 billion to the Persian Gulf region to purchase oil[4]. This level of dependence on the products of foreign nations becomes an issue of national security.

Climate Change: Through everyday activities such as burning fossil fuels (e.g. oil, coal, natural gas), agricultural practices, and clearing forests, humans have released large amounts of heat-trapping greenhouse gases into the atmosphere in a short period of time. Greenhouse gases are changing our global climate in numerous ways, the most noticeable being an increase in average global temperatures. Evidence of this rapid warming trend is found throughout the world, including retreating glaciers, thinner sea ice, decreasing snow cover, shifting ranges for animal species, and rising sea levels.

[1] US Census Bureau, Population Division, "World population 1950-2050," June 2009 update, http://www.census.gov/ipc/www/idb/worldpopgraph.php

[2] US Worldwatch Institute, "The State of Consumption Today," 2004, http://www.worldwatch.org/node/810

[3] World Wildlife Federation, "Humanity's Ecological Footprint," 2008 report, http://www.panda.org/about_our_earth/all_publications/living_planet_report/footprint/

[4] Jay Inslee and Bracken Hendricks, Apollo's Fire, Island Press, 2008, 14

Benefits: The picture painted by these global issues need not be a dark one. Many of the solutions are mutually reinforcing and can point to a brighter future. Actions like encouraging the green economy, supporting mass transit, and purchasing green energy often result in long-term economic gains, job stimulation, and sometimes very personal benefits such as more time to spend with our friends and family. These actions also come with the benefit of not causing further damage to the environmental systems we depend on, and better prepare the city for whatever the future will bring.

1.3 Will These Changes Affect Us in Washington?

While climate change is only one factor that makes sustainability important now, it is one that will have specific local effects that scientists can predict and to which local cities should be prepared to respond. A report released by the University of Washington's Climate Impacts Group identified a range of probable impacts on climate in the Northwest.[5] A few of these concerns include:

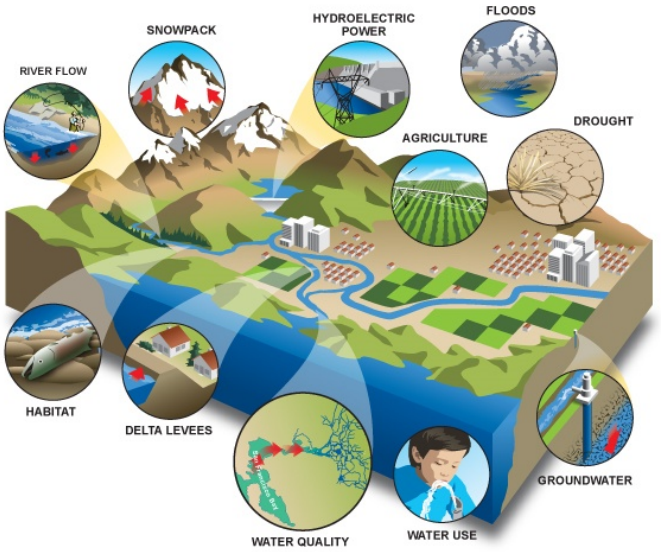
- *Less Water* - April snowpack, a major source of Washington's water supply, is projected to decrease by nearly 30% across the state by 2020, 40% by 2040, and 65% by 2080 since more winter precipitation will fall as rain. This increases the likelihood of stresses on summer water supplies.

- *Declining Energy* - Hydropower, which is 70% of the Pacific Northwest's energy production, is expected to see substantial declines during summer seasons due to reduced stream flow: 9-11% by 2020, 13-16% by 2040, and 18-21% by 2080.

- *Fewer Salmon* - Rising stream temperatures will likely reduce the quality and extent of freshwater habitat, affecting salmon populations.

- *Increased Forest Fires* - Due to increased summer temperature and decreased summer precipitation, the regional area burned by fire is projected to double by 2040 and triple by 2080.[6]

- *Increased Flood Potential* - Regional climate simulations predict increases in extreme high precipitation events in the next half-century, likely increasing localized flooding.



Climate Change Impacts
www.water.ca.gov/climatechange/factsheet.cfm

Mitigation = ways to reduce greenhouse gas emissions that cause climate change

Adaptation = ways to live with the results of climate change

[5] *University of Washington's Climate Impacts Group, "Evaluating Washington's Future in a Changing Climate," February 2009*

[6] *Relative to 1916-2006.*

1.4 What Can We Do About It?

Planners and scientists group climate change responses into two broad categories: **mitigation measures** and **adaptation measures**.

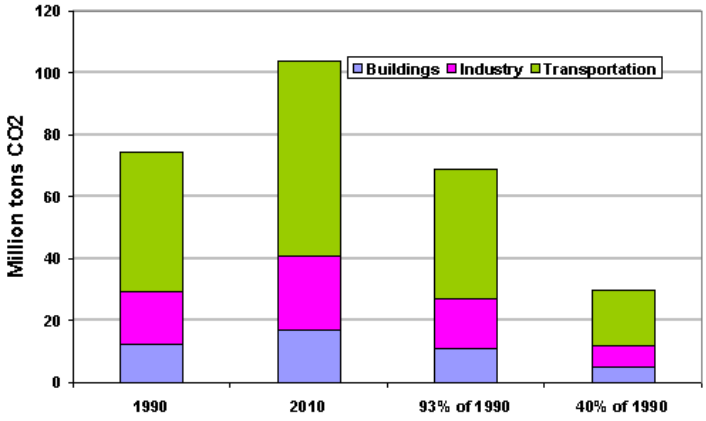
Mitigation measures to climate change are those actions that reduce greenhouse gas emissions and therefore slow the rate of climate change. Scientists are continually reevaluating the level of reduction needed to be effective and various jurisdictions have adopted differing targets. The U.S. Mayors Climate Protection Agreement established a benchmark to meet or beat the international Kyoto Protocol target, which is set to reduce greenhouse gas emissions to 7% below 1990 levels by 2012.

In Washington State, the Governor's Executive Order #07-02 set targets of reducing greenhouse gases to 1990 levels by 2020 and then continuing to reduce greenhouse gases to 25% below 1990 levels by 2035 and 50% below 1990 levels by 2050. The charts here show the various sources of carbon emissions in Washington State and illustrate where decreases will be needed to meet targets.

Clearly, carbon emissions related to transportation is the largest sector and the area of greatest opportunity for reductions.

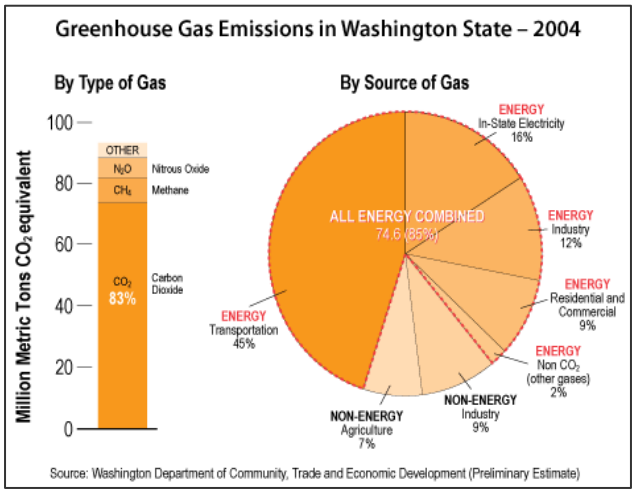
Tracking our emissions informs citizens and the government about which aspects of our society are emitting more heat-trapping gases. It also shows where our economy is dependent on imported energy sources. The State of Washington is unique in that a large proportion of energy is derived from hydropower (which does not create greenhouse gases), rather than coal-fired plants that generate substantial greenhouse gases. As a result, transportation is a key focus for policymakers.

This does not mean, however, that transportation is our only concern. Washington's hydropower is at risk from climate change due to an anticipated decrease in



Projected Carbon Emissions to 2010, Washington State

Source: James D. Kerstedder, "Greenhouse Gas Emissions in Washington State: Sources and Trends," Washington State University Cooperative Extension Energy Program for Washington State Community, Trade and Economic Development, Energy Policy Group, 1999 http://www.cted.wa.gov/energy/archive/papers/wa-ghg99.htm



Estimated Carbon Emissions 2004, Washington State

Source: Washington State Community, Trade and Economic Development. Cited by US Department of Energy, " Washington Tackles Climate Change," Conservation Update Feature Story, May-June 2007.
http://apps1.eere.energy.gov/state_energy_program/feature_detail_info.cfm/fid=65/start=2

snowpack, which would result in less water flow providing power at our dams. In addition, the state's net population is growing, so more energy maybe needed to serve future population levels.

Adaptation measures relative to climate change are those actions that protect property and the health, safety, and welfare of our citizens from the impacts of climate change. For Washington, some of the likely impacts are noted in Section 1.3 above.

Snoqualmie residents most likely will be affected by increases in the frequency and extent of flooding and decreases in freshwater supplies. Already, the city is taking measures to counteract some of these predicted impacts. This sustainability strategy is one more step in considering the future holistically, ensuring for continued economic strength, environmental beauty, and a strong sense of community for Snoqualmie.

1.5 Where Do We Start?

Section 4.0 of this document identifies estimated costs and benefits of each of the actions described in this Strategy document. This section also defines what resources are needed to implement the action, in terms of: interns, staff, or volunteers, policy decisions (City Council) operations decisions (operations managers/mayor) and funding (City Council). In this section, we highlight a "Top 5" list of those actions for each category that we believe will have the most results for the level of effort.

Hire a Student Intern or Involve the Advisory Team or Volunteers to:

1. Conduct greenhouse gas inventory (3.12.5)
2. Work with King County to reach 45% recycling (3.3.1)
3. Expand citizen education on green transportation (3.7.1)
4. Coordinate with local restaurants to contribute spent cooking oil and promote local citizen use of the bio-diesel shuttles (3.7.2)
5. Involve volunteers or the Advisory Team to work with ROA to revise CC&Rs and modification regulations for Ridge homes (3.8.5)

Assign existing staff or hire new staff to:

1. Evaluate the potential for a TDR program for floodplain properties (3.1.1)
2. Explore potentials for green business development (3.10.8)
3. Adopt a timeline for City power to go "all green" (3.2.1)
4. Incorporate sustainability into city's Comprehensive Plan update (3.5.5)
5. Offer assistance for home weatherization program (3.2.9) Plan for increased density to foster walkable and transit-supportive developments (3.5.1)

Policy, Operations & Partnership Decisions

1. Develop renewable energy demonstration project in partnership with the school district or other entities (3.2.4)
2. Adopt a policy to use SEEN matrix in city decision-making (3.12.7)
3. Promote a city "matching green" program
4. Provide permit fast-tracking for green building development or remodeling (3.8.1)
5. Adopt city policies and programs for energy efficiency (3.2.7)

Funding for Purchases, Programs, or Consultant Studies

1. Explore the potentials for green business development, particularly considering the Mill Site for an eco-industrial site or a business park focused on green business operations (3.10.8)
2. Create city-wide bike and pedestrian Master Plan connecting the Ridge system to other parts of the city, including a trail to the Falls (3.7.5)
3. Study the potential and determine costs and benefits for use of methane recovery and/or a waste to energy project for local energy production (3.3.9)
4. Develop business incubator space supporting local economic growth and green businesses (3.10.7)
5. Create a Downtown "Riverwalk" public park space and trails, including connections to the Falls to provide open space and to support economic development of the downtown businesses area (3.10.6)

2.0 Basis of the Sustainability Strategy

This section provides the foundation for the Snoqualmie Sustainability Strategy, including the overall purpose, guiding principles, and goals. This section also describes some of the unique characteristics of Snoqualmie that provide a basis for action.

2.1 Purpose

Join a national effort to foster sustainable and resilient cities that respond to energy and climate concerns, reduce our impact on the environment, support the local and state-wide economy, and protect resources for our children and future generations.

2.2 Guiding Principles

Developing this sustainability strategy required multiple steps along the way, including researching current sustainability issues, collecting data, organizing citizen participation, and articulating results. The framework for this process was consistently informed by three essential principles:

1. Sustainability is a foundation for all city policies and integral to all city roles – leadership, education, policy, regulation, monitoring, management, and operations.
2. Environmental quality, economic vitality, human health, and social equity are interrelated, mutually dependent, and are all essential for sustainability.
3. Our knowledge of sustainability and many of the related issues (climate change, oil insecurity, and economic and social vitality) is continually evolving; our strategies to address these challenges must be adaptive and responsive.

These principles will also serve as a guide to the City's implementation of the Strategy.

2.3 Goals

Discussions on sustainability revealed some focal points by which to guide local strategy discussions. Each one of these goals is inter-dependent with the others. Just as Snoqualmie citizens are linked to the rest of Puget Sound, the state, and the nation, these issues are related and intertwined. As examples, protecting local water-systems helps reduce flood risk; reducing carbon-based energy-use reduces the economic risk from fluctuating prices; and fostering individual health helps create a more resilient social community.

- Foster a resilient community that supports economic growth, individual health, and social equity
- Protect local and global water-systems and ecosystems
- Protect property and citizens from flooding and other serious climate change impacts
- Reduce carbon-based energy use and greenhouse gas emissions
- Reduce resource consumption and minimize waste

"We are tied together in the single garment of destiny, caught in an inescapable network of mutuality. And whatever affects one directly affects all indirectly"
– Martin Luther King Jr.

2.4 Unique Characteristics of Snoqualmie

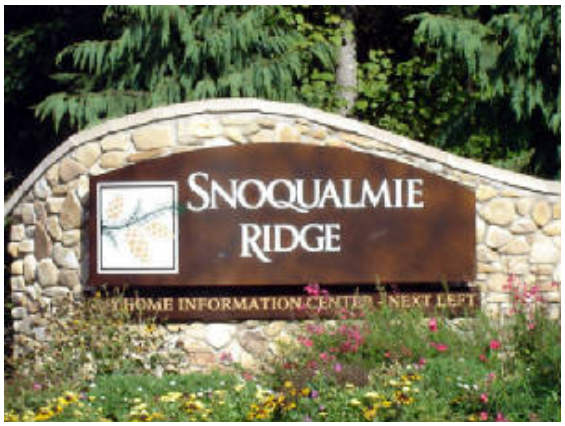
Snoqualmie's unique characteristics provide a basis for considering what needs to be done to make it a more sustainable city and what strengths it brings to that effort. Five major factors are discussed below.

Suburban Fringe Community - Located 25 miles east of Seattle, in the foothills of the Cascade Mountains, Snoqualmie is at the suburban edge of the greater Puget Sound metropolitan area. Policies established by the Washington Growth Management Act are intended to concentrate future growth into established urban areas and will likely minimize further expansion of the suburban edge beyond Snoqualmie. At this time, Snoqualmie is primarily a "bedroom community." With less than 2,000 existing jobs in the city and a population of over 9,000, clearly most of the resident population commutes beyond the city limits for work. Based on the developable acreage in Snoqualmie, new business development could provide nearly 8,000 jobs to support the local population.[1]

What this means for sustainability: The city has a high potential to reduce greenhouse gas pollution by reducing commuter vehicle miles traveled (VMT) by Snoqualmie residents – through increasing local employment and entertainment venues, and by a range of efforts to promote transportation options other than single occupancy vehicles.

Anticipated Growth - Snoqualmie is the fastest growing city in Washington. From a 1990 census population of 1,631 the city population has seen a 5-fold increase to a current population of 9,200. The population size is expected to increase another 30% to reach 12,000 by 2011, mostly by the development of 736 acres of land in Snoqualmie Ridge, Phase 2.

What this means for sustainability: With major new growth anticipated, the city has an excellent opportunity to influence the design and construction of this growth in ways that are environmentally



friendly. This includes supporting state-of-the-art green design and construction methods that reduce greenhouse gas pollution and limit the use of raw materials and chemicals in new construction.

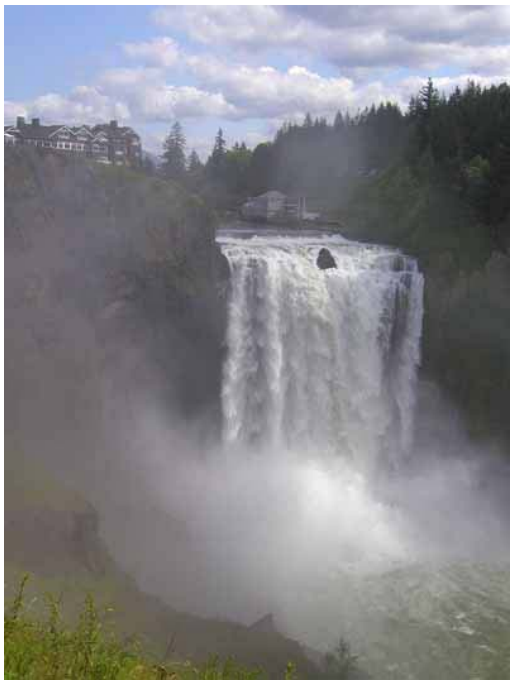
Natural Resources and Flooding - The city has protected its natural setting with over 40% of the newly developed area set aside for open space. This includes 540 total acres of public open space and trails, and 34 parks, playgrounds and athletic fields. Another natural amenity located within the city, the stunning 270-foot cascading waterfall of Snoqualmie Falls, attracts 2.2 million visitors per year. The beauty of the setting is not without its price, as the Snoqualmie River has seen major floods in recent years with Phase 4 floods in 1995 and 2006 and a Phase 3 flood in 2009. These floods affected much of the historic downtown core and surrounding older neighborhoods.

What this means for sustainability: Measures to protect the city's vast resource of protected natural areas, and reduce flooding impacts, will be increasingly important in the future with the increased rates of flooding expected under climate change. Increased educational and environmental programs to protect open space areas and continued efforts to address flooding will help to preserve both the local ecosystem and local homes and businesses while promoting flood preparedness.

[1] Data from City of Snoqualmie "Economic Development Branding and Marketing Plan," 2006

Historic/New Blend - The city's rich resource of charming historic buildings and sophisticated new amenities provides the best of both worlds. Specific programs to protect historic buildings, upgrade older buildings, and link these areas with the newer Ridge development by connecting trails and paths could benefit both areas and integrate both old and new.

What this means for sustainability: Local incentive programs and federal stimulus funds could be targeted to protecting historic areas and upgrading older buildings to meet current energy standards.



Community and Citizen Resources -

Snoqualmie households tend to have higher income levels than the King County average of $69,000, with an estimated 20% of households earning $75,000 to $100,000 and a further 50% earning $100,000 or more. Higher income levels often enable one parent to stay at home or have part time jobs, freeing up time that could be devoted to the local community. Currently, about 6% of the community is retired, and about 25% of recent survey respondents are either working part-time or not working. Snoqualmie citizens possess above-average education levels, with 90% of the population possessing some college education, and two-thirds of city-residents having a bachelor's degree or higher. In addition, many families with young children are moving to the city, attracted by refurbished and new schools and the ample open space. Currently, over 10% of the city's population are aged 6 and below, reiterating the need to make Snoqualmie sustainable for future generations.

What this means for sustainability: The city's rich resources of education, talent, income, time, and youthful energy provides a great opportunity for volunteering and citizen participation in a wide variety of social, economic and environmental actions to support sustainability.

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3.0 Sustainability Actions

Sustainability cannot be achieved by one person, one department, or even one city. It takes the collaboration of many people working together, which is why Snoqualmie has chosen to do its part in sustainable planning, along with thousands of communities across the nation and the world.

To be effective, a sustainability strategy must include actions that consider all aspects of city governance – including leadership, education, policy, regulation, monitoring, management, and operations:

Leadership: Actions speak louder than words. The city government has a vital role in modeling behavior that inspires the public and demonstrates city integrity.

Education: Knowledge is power. More powerful choices stem from knowledge that is accessible, attractive, and engaging. The city plays an important role in providing education to citizens and business owners on green practices.

Policy: One's word is one's bond. The City's adopted policy statements form a foundation to guide daily decision and action.

Regulation: Good governance means wise guidance. Mandates and requirements help ensure that city development meets standards encompassing the holistic needs of the city and its citizens.

Monitoring: What is measured matters. Tracking the results of various efforts allows reflection and continuing improvement on programs towards sustainable ends.

Management: Start with what you have. Managing parks, open space, and city-owned properties in ways the benefit the environment protects valuable resources for citizens now and in the future.

Operations: A penny saved is a penny earned. Small changes can lead to cost savings as well as greater outcomes over time, from buying gas-efficient cars for city fleets or purchasing office paper with recycled content.

However, the city cannot do it alone. As such, Strategy actions also encourage sustainable choices among Snoqualmie citizens and businesses. The Recommended Actions in this section and the following sections of this chapter are directed to activate both public and private entities to make wiser choices.

Action Categories

The following sections are categorized into topic areas that evolved from meetings with the Mayor's Sustainability Advisory Team, the public interaction process, and research on current sustainability topics. Many of the actions overlap in multiple topic areas, and can be mutually supportive of common ends within the triple bottom line. The ten topic areas addressed in this Strategy are:

- Flooding and Other Climate Change hazards
- Energy Efficiency
- Solid Waste and Sewage
- Ecosystem Protection
- Land Use
- Green Infrastructure and Water
- Mobility
- Green Buildings
- Health and Food Security
- Economics
- Social Equity
- Supporting Programs

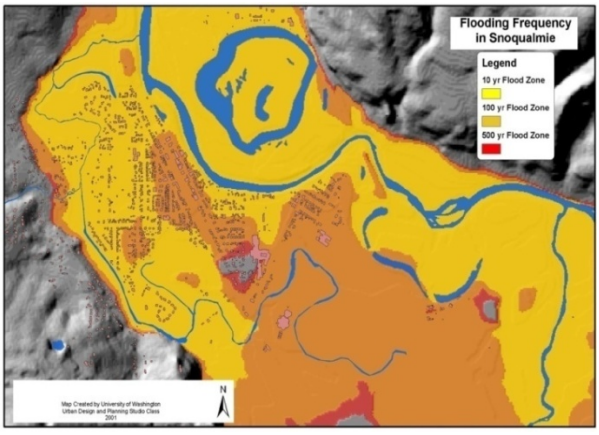
For quick reference, the actions recommended among the various topics are listed in a summary matrix in Chapter 4.

3.1 Flooding and Other Climate Change Hazards

A recent report by the University of Washington's Climate Impacts Group, *Evaluating Washington's Future in a Changing Climate*, describes how climate change will affect conditions throughout the state.[1] In this section, we look at specific hazards resulting from climate change that are likely to affect Snoqualmie residents. This section addresses the following four issues, with a particular focus on flooding, since that is currently a major issues for Snoqualmie.

- **Heat Impacts** - Air temperature is projected to increase on average 2.2 degrees (F) by 2020, 3.5 degrees by 2040 and 5.9 degrees by 2080 in Washington. Particularly for infants, elderly, and the infirm, severe heat conditions can cause death.
- **Forest Fires** - Due to increased summer temperature and decreased summer precipitation, the area burned by fire regionally is projected to double by the 2040s and triple by the 2080s. Snoqualmie's location relative to forested areas may result in increased risk from forest fires.
- **Less Water/Less Energy** - April 1 snowpack is projected to decrease by nearly 30% across the state by the 2020s, 40% by the 2040s and 65% by the 2080s, affecting regional water supplies and affecting generation of electricity from hydroelectric plants.
- **Increased Flood Potential** - Regional climate simulations predict increases in extreme high precipitation events in the next half-century, likely increasing localized flooding.

The City of Snoqualmie regularly experiences flooding affecting much of the downtown area and surrounding homes. The south, middle, and north forks of the Snoqualmie River converge just upstream from the City. Downstream of the City, the main stem of the Snoqualmie River is forced through a narrow opening before discharging over Snoqualmie Falls. Heavy rains combined with melting snow in the mountains create high flows, which cause the Snoqualmie River to back up and flood low-lying areas. Kimball Creek, a tributary to the Snoqualmie River that runs through the City, also backs up and floods its drainage area as a result of the high water level in the river.



This University of Washington Map shows the areas currently susceptible to frequent flooding, with lighter areas noted within the 100 year flood zone.

This aerial photograph shows downtown Snoqualmie flooded after a recent deluge.

[1] February 2009, section 1.3.

The Corps 205 project, which included channel widening and overbank excavation, was recently completed and is anticipated to reduce flood depths by about 1.6 feet during a 100-year flood. However, under predicted climate change scenarios, winter precipitation is expected to occur less as snow and more as rain, resulting in higher levels of runoff and increased flooding. The UW Climate Impacts Group predicts October to March runoff increases of about 10% by the 2020s, 20% by the 2040s, and up to 35% by the 2080s.

Benefits of the Floodplain

Undeveloped portions of the floodplain provide ecological benefits to the Snoqualmie environment: filtering nutrients, providing storage and conveyance of floodwaters, and wildlife habitat. Meadowbrook Farm and Three Forks Natural Area are prime examples of the benefits of protecting the floodplain and floodway. Portions of the properties provide essential local wildlife corridors and support many species of birds, mammals, and fish. In addition, there are many acres of emergent, wet meadow, scrub shrub, and forested wetlands that occur on the sites. These properties also provide a scenic resource important to the natural and rural character of Snoqualmie.

Current Local Efforts

The City of Snoqualmie has undertaken major efforts to reduce impacts from flooding. In 2007, the King County Flood Control District was established to provide a proactive, regional approach to flooding as well as funding to improve the county's nearly 500 aging and inadequate flood protection facilities. The City has already received County assistance in relocating a trailer park site and anticipates nearly $20 million in scheduled improvements on the Snoqualmie River over the next five years.

Additionally, in conjunction with King County Flood Control, the City of Snoqualmie has an extensive system in place to monitor flood conditions, issue warnings, and protect citizens and property from

Recent Major Flood Events in Snoqualmie

Flooding has occurred repeatedly in Snoqualmie. The City was included in 15 President-declared flood-related disasters between 1964 and 2006. Additional flooding occurred in January, 2009.

The Snoqualmie River Basin Flood Warning System

Phase	Threshold	Response
I Minor	6,000 cfs	County staff on alert to open Flood Warning Center
II Moderate	12,000 cfs	Flood Warning Center is opened. River levels monitored full time.
III Major	20,000 cfs	Crews sent to monitor flood control levees.
IV Extreme	38,000 cfs	Phase II-IV warnings issued to police, fire, schools, and public

Elevated Snoqualmie Home - Living areas now protected from floodwater.

flood conditions. The city also regulates new development in the floodplain or floodway through two types of permits.

Flood Improvement Permit - The City requires that any development in the floodplain or floodway (not just construction of buildings) obtain a flood improvement permit and, possibly, an elevation certificate. These are needed to ensure that projects do not cause problems on other properties or increase the flow of floodwaters.

Shoreline Substantial Development Permit – This Permit is required in the floodplain or floodway prior to beginning any development exceeding $5,718 in fair market value or any development that materially interferes with the normal public use of the water or shorelines of the state.

The City also works closely with the Federal Emergency Management Administration (FEMA) to ensure that local citizens can obtain flood insurance and to help property owners make use of available FEMA assistance programs:

Under FEMA's Flood Mitigation Assistance Program (FMAP) grants are available to develop flood mitigation plans, provide technical assistance, acquire floodplain homes, and elevate homes to reduce future losses. As of 2005 under this program, the city has acquired 21 properties, 16 in the floodway near the River and 5 in the floodplain. Additionally, 72 buildings have been elevated or retrofitted to reduce damage from flood waters.

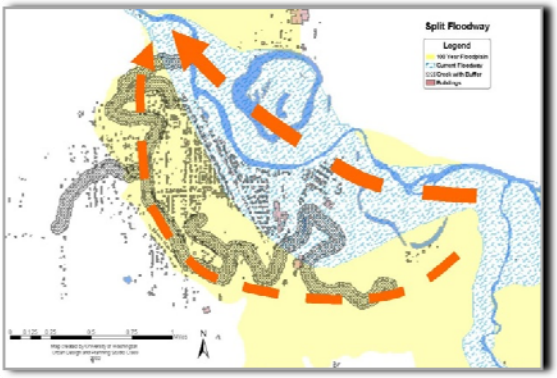
Recommended Actions

3.1.1 Continue programs flooding protection

The City has taken an active role in providing protection systems during flood events and in working with local property owners to assist them in obtaining flood insurance, assistance after disasters, and protection such as grants for elevating homes. All of these programs should continue and will be increasingly important in light of expected increases in flooding frequency and severity.

3.1.2 Continue efforts to reassess the floodway

In 2008, the city submitted hydrological studies to FEMA to support a request a revised mapping of the floodway. If approved, this revised map would remove some portions of the downtown retail district from the floodway, opening new potentials for redevelopment and expansion of downtown businesses.



Creation of a split floodway could reduce flooding impacts in the downtown area

3.1.3 Evaluate potential Kimball Creek restoration

A study by the University of Washington Institute for Hazards Mitigation evaluated the potential for Kimball Creek restoration to reduce overall flooding impacts in downtown Snoqualmie. Their conclusion was that restoration of Kimball Creek could create a split floodway, reducing the existing floodway hardship without substantially affecting Kimball Creek residents. The restored Kimball Creek would improve water quality and could provide additional natural habitat and recreational amenities to the city. Further detailed studies would be needed to assess the costs and potential impacts/benefits of this approach.

3.1.4 Evaluate potential for floodplain TDR program

Several prior studies have suggested that the city acquire properties along the River and create a trail connecting the downtown area with Snoqualmie Falls. The trail would provide an amenity for local residents and would encourage visitors to the Falls to visit the downtown and support local businesses. While the City has acquired some properties along this route using FEMA grants, additional properties could be made available under a TDR program. The transferred density could be targeted for areas around the commercial centers or near I-90 to encourage walkability and support transit use (see Land Use and Mobility sections).

3.1.5 Establish procedures for forest fires and heat waves

Evaluate the city's emergency management plan to determine how it currently addresses forest fires and extreme heat events. Revise the plan, based on best management practices, to respond to climate change hazards, including the increase risk of forest fires and the likelihood of extreme heat events. Include the development and public notification of "cool sites" for extreme heat events. Include notification and evacuation plans for forest fire events.

For measures to improve water efficiency, energy efficiency, and reduce heat island effects, see sections: 3.2 Energy Efficiency; 3.6 Green Infrastructure and Water; and 3.8 Green Buildings

3.2 Energy Efficiency

Energy is vital for the functioning of our economy and modern society. Unfortunately, many of the U.S. resources used for energy production also come with negative impacts. Using energy efficiently, and supporting its production from clean renewable sources, benefits the City of Snoqualmie with reduced greenhouse gas emissions, improved air quality and public health levels, and saved taxpayer dollars. With the large amount of growth anticipated in the city, it is particularly important that energy efficiency is practiced to reduce the impact of that growth on regional energy sources.

The report, "Growing Washington's Economy in a Carbon-Constrained World" states that *"Global climate change is the economic and environmental issue of our lifetime."*[2] Due to Washington State's development of carbon-free hydropower, our energy-related emissions are lower than other states. Currently 20% of Washington State greenhouse gas emissions are from electricity generation,[3] however this proportion might grow in the future due to population pressures and fewer hydropower development opportunities

Climate change is also likely to affect the cost and timing of energy demands. For instance, higher temperatures will likely lead to increased demand for air conditioning in summer months, even as hydropower energy sources are lower due to decreased seasonal runoff.[4] Increased seasonal energy demands across the state will likely increase prices, a cost that can be offset with wise energy planning.

All levels of government are increasingly addressing climate change and planning for its impacts. Green building is one piece of the energy puzzle; other vital pieces are energy conservation and renewable energy support, as both may reduce our carbon footprint and make us less vulnerable to market fluctuations in energy prices. Providing citizen education, demonstrating energy efficiency by the city, developing energy partnerships with other institutions, and promoting local renewables with selective financing, are just a few of the ways to make the City of Snoqualmie more green.

Energy conservation can result in short and long-term financial gain. One local example of this is when King County set a 10% reduction target for energy use of county government operations in response to high 2001 energy prices. Changes in energy-efficient lighting, heating and air conditioning modifications, and removing portable electric space heaters reduced energy use 20% (saving the equivalent energy use of 160 homes) and cut costs by over $125,000 in just 7 months. See the King County Reports under additional sources for more information on these programs.

Citizens can take many small steps to save energy. On average a whopping 46% of utility bills go to heating and cooling; simple actions like closing shades and changing furnace filters can lead to energy efficiency gains.

A quick overview of low-cost, energy-saving tips is provided by the *Energy Ideas Clearinghouse.* *http://www.energyideas.org/documents/factsheets/hometips.pdf*

A longer, but still very user-friendly, alternative is available from the U.S. Department of Energy: *Energy Savers Booklet: Tips on Saving Energy & Money at Home*. It is well-worth a gander. *http://www1.eere.energy.gov/consumer/tips/pdfs/energy_savers.pdf*

ADDITIONAL SOURCES

King County (a). "2007 King County Climate Plan – February 2007." February 2007. http://your.kingcounty.gov/solidwaste/greenbuilding/toolkit/inspiration/climate-change-plan.pdf

King County (b). "Sims announces energy, dollar savings as result of energy initiatives." Press Release. July 24, 2001 http://www.metrokc.gov/exec/news/2001/072401.htm

[2] Department of Ecology (WA), "Growing Washington Economy in a Carbon-Constrained World." December 2008, Publication 09-01-025 Hwww.ecy.wa.gov/climatechange/2008CompPlan.htm

[3] Ibid.

[4] King County (a). "2007 King County Climate Plan – February 2007." February 2007. Hhttp://your.kingcounty.gov/solidwaste/greenbuilding/toolkit/inspiration/climate-change-plan.pdfH

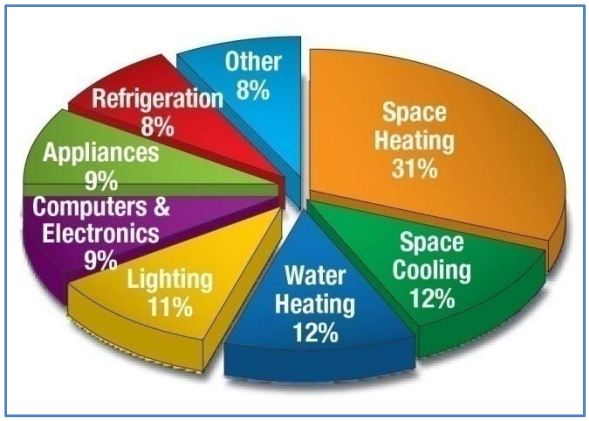
Current Local Efforts

City Hall – The New Snoqualmie City Hall focused on several innovations to reduce its energy consumption, including an emphasis on natural lighting and a passive solar building design that uses natural heating processes during the winter and releases heat during the summer. In turn, this reduces mechanized heating, ventilation, and air conditioning systems that increase energy demand. The design also includes "white roofing," which reflects more sunlight than dark roofing materials, helping to cool the building and reduce summer air conditioning levels.

Light Emitting Diodes – A LED Lighting Program is being promoted throughout the city of Snoqualmie to decrease the city's energy use, and is also planned fn the Downtown Infrastructure Improvement Project. LEDs are extremely energy efficient, lasting over 100 times longer than incandescent bulbs, and up to 10 times longer than CFLs with lower heat generation and power requirements. LED lighting is more expensive than CFLs at the outset, but energy savings over their lifetime make up the difference in cost.

Energy-Efficient Appliances -- These were installed in most of the new residential construction that has occurred in the city in the last decade. Low-flow toilets, low-flow showers, CFL/LED lighting, and insulated windows were features included in Snoqualmie Ridge housing, helping to reduce potential energy use in individual residences.

Christmas Tree Recycling -- This annual program is carried out by local city Boy Scout troops, collects Christmas trees every winter, which are used to provide non-petroleum based fuels. Trees are delivered to North Fork Enterprises off of Millpond Road for recycling, which uses the chips for fuel for energy at a nearby industrial plant. This process also keeps the trees out of landfills, where their slow decomposition would release methane, a powerful greenhouse gas.



This pie chart shows how the average American uses energy in the home. Heating and cooling consume 43% of the total house's energy, but appliances are another big contender; combined with refrigeration and computers, appliances use 27% of a houses' average energy.

US Department of Energy, "Energy Savers Booklet", October 2008. http://www1.eere.energy.gov/consumer/tips/pdfs/energy_savers.pdf

Energy Star label appliances and computers are a reliable way to discover energy savings in the home and office.

Recommended Actions

3.2.1 Adopt timeline for city power to go "all green"

Develop a plan to purchase 100% of electricity from renewable, carbon-neutral sources by a designated year (ex. By 2025). Puget Sound Energy offers customers the option to buy "Green Tag" credits, paying a green energy producer elsewhere to insert carbon-neutral energy into the regional grid. Several cities have switched to buying some or all of their energy through green tags (see box at right).

3.2.2 Promote a city "Matching Green" program

Develop and promote a Green Energy program, where the City of Snoqualmie "matches" residential purchases of Green Tags (see above). The City of Bellingham issued and publicized a Green Power challenge to residents, with a goal of getting 50 new businesses and 1,000 new residential customers to commit to green power; their strategy successfully signed up over 2,000 residents, 120 businesses and reduced annual emissions by over 37,000 metric tons per year. Snoqualmie could host a similar challenge to its residents, utilizing a green tag matching strategy.

On Sustainable Slopes Day, 2008, The Summit at Snoqualmie partnered with the Bonneville Environment Foundation to match every dollar a guest spent on green tag purchases. A similar program in Snoqualmie, with highly visible promotion, could boost green energy use by residents and the City alike.

The Bonneville Environment Foundation has created short, educational videos on energy use that the city might link to their website, to make green issues more visible throughout the city.

To check out the video, go to: http://www.b-e-f.org

The Green Spotlight: Renewables

Twelve miles away, the City of Issaquah is currently considering developing regulations guiding residential solar and wind power. Given Issaquah's close proximity, and its similar geography, local environment, incomes, and population levels, the City of Snoqualmie could coordinate regulation development with this neighbor municipality (1).

The Californian City of Hercules (population 25,000), after starting a trend of New Urbanist growth in 2005, arranged a series of fee waivers that provide an additional $1,000 in rebates to those installing solar systems. These rebates are outlined clearly and attractively on the city website (2).

Photovoltaic (PV) panels are one of the more popular forms of distributed renewable energy generation. Varying sizes produce various levels of energy. For example, the recent installation on the Lithographix warehouse in California generates 650 kWh, while small projects on schools typically generate 1.1 kWh. Olympia has emphasized "walking the talk" with solar panels on its Legislative Building, producing 20,000 kilowatt-hours of energy per year, which is used to light the Capitol dome and lantern. Even on cloudy days, the panels still generate electricity (3).

SOURCES

(1) Kagarise, Warren. "City considers encouraging solar panels, wind turbines for homes." Issaquah Press. February 24, 2009, Local Section..
http://www.issaquahpress.com/2009/02/24/city-considers-encouraging-solar-panels-wind-turbines-for-homes/
(2) City of Hercules. "Solar Rebate Program." Last updated May 14th, 2008.
http://www.ci.hercules.ca.us/index.aspx?page=109
(3) Department of Ecology, WA. "Climate Change: Walking the Talk" Webpage.
http://www.ecy.wa.gov/climatechange/washington.htm#111

3.2.3 Support local renewable energy generation

Implement programs and regulation supporting environmentally responsible, distributed power generation, where consistent with the policies of the city.

Generating energy within the city helps reduce dependence on external energy markets while lowering energy expenditures by local individuals and businesses. Supporting renewable energy generation through regulation will streamline this process and support energy entrepreneurs.

Regulation should be developed with full awareness that not all types of renewable energy may be appropriate within the city, and certain areas may be more suitable for specific types of renewable energy than others. Additional permit fee waivers can incentivize solar installations, such as those discussed in the column at right.

3.2.4 Develop renewable energy demonstration projects

Evaluate opportunities for purchasing and/or developing wind, solar, or CHP power projects on city buildings or city-owned properties.

It is a powerful symbol when the city visibly leads by example. One way for the city to act is by installing renewable energy projects either on prominent city buildings or on city sites that are suited for the type of renewable energy being generated. An example would be a small solar installation in a public park. Alternatively, a larger photovoltaic could collect more energy and result in greater long-term savings. For instance, the large roof space of the proposed building near the wastewater plant could support a number of solar panels, and hence generate a larger long-term energy source for the city. Larger arrays have a greater efficiency in the cost of energy generation per watt, whereas smaller arrays have smaller up-front costs.

The Green Spotlight: Power Purchasing

The City of Bellingham uses 100% green energy to power all of its municipal operations through the purchase of Renewable Energy Credits, or Green Tags. The purchase of green tags pays for green energy generators to deliver power to the *regional* energy pool even if your local energy provider is not giving you the energy directly. The purchase of green power for the City of Bellingham (population 75,750) costs the city about $250,000/year. Snoqualmie would likely pay less for such a policy, given the smaller number of city facilities and high energy efficiency levels. A tiered plan of implementing green power purchasing (5-year periods of increasing 33% of energy purchases through green tags) would allow for budget adjustments and give the city time to implement further energy reduction measures.

Some initiatives have benefited from various forms of promotion. The City of Bellingham received five road signs from the EPA for their green energy conversion, now posted at community gateway points.

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The Summit at Snoqualmie. “Environment: Renewable Energy” http://www.summitatsnoqualmie.com/info/winter/energy.asp

Puget Sound Energy. “PSE’s Green Power Program: Overview” webpage. http://www.pse.com/energyEnvironment/renewableenergy4/Pages/GreenPowerProgram.aspx

The Bonneville Environment Foundation. “Better Energy for a Better Environment” video. http://www.b-e-f.org/programs

Fogelson, Clare and Benjamin Rupert. Green Power Community Challenge” City of Bellingham. PowerPoint (no date) http://www.epa.gov/solar/documents/webcasts/BellinghamGreenPower05_08.pdf

3.2.5 Offset up-front costs for local renewable energy

Explore ways to cover the up-front costs of energy projects for residents and businesses.

The biggest disincentive for renewables is often the up-front cost. Some cities, such as Berkeley and Palm Desert in California, directly finance solar panel installation with loan programs at a 7% charge. Discussion with City Light employees indicated that state laws may not allow such a financing program in Washington, but up-front loans still remain an option. The city could work with the local credit union and banks to start a Revolving Loan Fund where loans would cover up-front costs of energy generation equipment. Harvard has pioneered a green revolving loan fund at the University level. A similar program could be encouraged within the city, potentially leveraging initial funding from federal grants.

3.2.6 Evaluate energy efficiency in all city government buildings

Evaluate energy efficiency of older city government building and evaluate options to increase their performance. A few of the many options to evaluate are: weatherization, insulation, thermostat timers and lighting.

3.2.7 Adopt city policies and programs to increase energy efficiency

An example would be to adopt a procurement policy requiring that all office equipment that is purchased by the City be ENERGY STAR rated. Nassau County's (NY) Energy Policy and Action Plan has such a procurement policy to reduce their energy consumption. The U.S. Department of Energy's review of ENERGY STAR Office Equipment notes that some products offer as much as 90% energy savings; an ENERGY STAR computer uses 70% less energy than other non-ENERGY STAR computer models.

Partnership Opportunities: Energy

(1) Solar Schools. Network with school officials to explore ways to encourage green energy opportunities. In 2008 the Interlake High School in Bellevue received a $20,000 grant from Puget Sound Energy to develop an on-site solar array with web-monitoring of energy generation available to assist in student learning about green energy. Although the grant application period has passed for 2009, contact could be established with the PSE representative to establish notification when this opportunity cycles around again. If grant funds are mildly decreased next year, there is a possibility to fundraise an additional amount to establish a solar installation at a local school. Thus far the program has funded 13 solar school projects throughout the Puget Sound. Additional grants many be available through the Bonneville Environmental Foundation (BEF).

SOURCES

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US Department of Energy: Energy Savers Booklet: Tips on Saving Energy & Money at Home." October 2008. http://www1.eere.energy.gov/consumer/tips/pdfs/energy_savers.pdf

Yarita, Fumiko. "Interlake High School gets solar power grant from PSE." Bellevue Reporter. July 9, 2008. http://www.pnwlocalnews.com/east_king/bel/news/24071184.html

Puget Sound Energy. "School Support: Solar Schools." Webpage. http://www.pse.com/community/educationalprograms/Pages/SolarSchools.aspx

Database of State Incentives for Renewables and Efficiency. "BEF: Solar 4r Schools" December 5, 2008. Webpage. http://www.dsireusa.org/library/includes/incentivesearch.cfm?Incentive_Code=WA22F&state=WA&currentpageid=7&search=TableState&EE=1&RE=1

3.2.8 Promote heat-load reduction strategies

Various infrastructure and building choices can add to heat island effects within cities, ratcheting up local temperatures and increasing demand for summer air conditioning. Integrating heat island reduction techniques within the city can reduce some of this effect. Some examples are using landscaping to shade new homes and developments and street designs that maximize street tree canopies to reduce local neighborhood heat build-up and associated building cooling energy needs and costs. Heat-load reduction strategies should be evaluated in conjunction with other energy-saving strategies, and should be promoted where appropriate. An example would be using light-colored, noise-reducing paving materials in new streets and repaving projects, and revise street standards accordingly to require/encourage the use of such materials.

3.2.9 Offer assistance for home weatherization

Under state and federal legislation, there are funds available for low and moderate income households to improve weatherization to reduce energy use (see funding descriptions in section 4.3). The city can apply for funds to support a local program, likely to target to older homes in the old town area.

(Also see action 3.8.4 for city-offered home energy analysis)

Partnership Opportunities: Energy

(2) Business Coalition. Work with local business groups to start a Sustainable Business coalition, where businesses who meet a city checklist on business operations (such as meeting with a PSE energy advisor, use of CFLs, participation in community composting program, etc.) receive free advertising or other incentives.

3.3 Solid Waste and Sewage

The United States produces over 200 million tons of Municipal Solid Waste (MSW) every year. According to the EPA, 15% of the MSW is burned, 57% is disposed of in landfills, and only the remaining 28% is recycled or composted. As our population increases, our country generates more trash. Accumulation of waste in landfills also has an impact on our planet's climate. Methane, a greenhouse gas that is known to be more heat absorbing than carbon dioxide, is emitted from landfills across the country. In order to sustain the health of our planet for generations to come we must manage our solid waste properly.

The City of Snoqualmie currently provides curbside collection for single and multi-family residential recyclable products through Allied Waste. Solid waste recycling is up to 32% thanks to this curbside collection.

Sewage is another form of waste that can be damaging to the environment or can be used to improve our environment, if managed properly. Snoqualmie's wastewater treatment plant and gray-water distribution system make productive use of waste water in the city.

Snoqualmie's Waste, Recycling, and Reuse Policies

Snoqualmie offers incentives to residents to reduce the amount of material going into the waste stream by providing recycling programs with a rate structure that increases according to the amount of waste material that is collected. In addition, Snoqualmie coordinates with other agencies to provide educational materials and programs on composting for City residents. Snoqualmie also requires owners of new multi-family, commercial and industrial buildings, and encourage owners of existing multi-family, commercial and industrial buildings, to provide space for the separating and storing recyclable materials. The city's final policy regarding waste, recycling, and reuse considers the re-use and recycling of demolition debris in demolition activities undertaken by the City directly or by contract.

Current Local Efforts

Solid Waste – Snoqualmie's yard waste and food scraps are picked up periodically on curbside by Allied Waste. Snoqualmie citizens may also include food soiled paper in their yard waste/food scrap bin. Hazardous waste is also handled in Snoqualmie through multiple collection events. The biannual Mount Si High School hazardous waste collection event gives citizens the opportunity to properly dispose of products like oil based paints, toxic cleaning products, fluorescent light bulbs, automotive products, aerosols and much more.

Snoqualmie also provides its citizens with an annual holiday tree recycling program. Snoqualmie and North Bend trees are picked up by local Boy Scouts from Troops 425, 466, 701, and 706, chipped at North Fork Enterprises and used for fuel and energy at a nearby industrial plant.

Sewage- Snoqualmie's water treatment facility utilizes the city's sewage by creating a class A bio-solid that could be used as an organic high quality plant fertilizer. The Class A bio-solid has not been mass produced for use of citizens yet, but samples of this product have been handed out at town hall meetings.

Snoqualmie has wisely utilized its water resources. Class A reclaimed water (processed wastewater from domestic sources like dish washing, bathing, and sewage) has been used for purposes like irrigation and gardening. Currently the city of Snoqualmie uses the city's Class A reclaimed water to irrigate parks and the Snoqualmie Ridge TPC golf course. With the development of Snoqualmie Ridge Phase 2, additional Class A reclaimed water will be generated. Expanding the city's Class A reclaimed water use has decreased Snoqualmie's overall water consumption.

Recommended Actions

3.3.1 Work with King Country Solid Waste to reach a 45% recycling rate by 2015

The City of Snoqualmie has recently made an agreement with King County Solid Waste to become one of three pilot cities for an increased recycling effort. This project will be focusing on the grassroots level for the increase of residential recycling rates. The city can hire an intern or appoint city staff to support this effort.

3.3.2 Promote residential worm bin composting

A worm bin is a sturdy wood or plastic box filled with bedding, red worms, a tight fitting lid, and holes for drainage and ventilation. If given time, a worm bin can naturally dispose of food scraps. Bedding can be made of shredded paper, newspaper, sawdust or leaves. Appropriate food scraps to feed worms include vegetables, grains, fruit, breads, coffee grounds/filters, and tea bags.[5]

3.3.3 Educate consumers on product life cycles

Creating programs that will educate the citizens of Snoqualmie on the processes and energy required to create common products can aid in decreasing an individual's ecological footprint. Once a person is aware of these facts, they are more likely to make environmentally-friendly decisions in life.

3.3.4 Require recycled paper in all city departments

Reducing our consumption of natural resources is an important step towards a greener Snoqualmie. Allowing only the use of recycled paper in all city departments will improve our environment in the long run by decreasing landfill waste, water and energy use, and air pollution. Long term economic benefits are also included in the purchasing of recycled paper.[6]

Worm Bin Composting

Renton's Solid Waste Utility implemented a pilot food waste composting program to assess the feasibility of diverting food waste from Renton's residential waste stream. In 1994-95, worm compost bins were delivered to 200 residents and their waste practices were measured on a weekly basis. For several years following, residents could obtain a worm bin from the city for the purpose of residential food waste composting. A 2005 King County worm guide provides additional information and resources; see http://www.ci.issaquah.wa.us/files/compostingwithworms.pdf

[5] Official site of the City of Renton. "Worm Bin Composting". Hhttp://rentonwa.gov/living/default.aspx?id=1826H.

Official site of the City of Renton. Comprehensive Plan: Utilities. Hhttp://rentonwa.gov/uploadedFiles/Business/EDNSP/planning/12.%20Utilities.pdfH

[6] See: City of Lake Forest Park, Comprehensive Plan, Adopted December 2005 Hhttp://www.cityoflfp.com/city/compplan/documents/compplan-final121205.pdfH ;

Humbolt State University, "100% Recycled Paper Policy: The Benefits of this Policy," Humbolt State University Strategic Plan 2004-2009. Hhttp://www.humboldt.edu/~pcw/benefits.htmlH; And

Solutions For Offices, "Benefits of switching from non-recycled paper products to 100% recycled," California Green Solutions, 2009 Hhttp://www.solutionsforoffices.com/2009/04/benefits-switching-from-non-re.htmlH

3.3.5 Use recycled materials in park furniture

Requiring the use of recycled content materials for all future park benches, landscape timbers, interpretive signs, parking blocks, bike racks, and trash/recycling containers in Snoqualmie will fulfill the needs of a typical park and will support a healthy natural environment. This will decrease our contribution to landfills and save our precious natural resources.[7]

3.3.6 Ban bottled water from all city activities and offices

Bringing our solid waste to a minimum is needed if we wish to create a sustainable society. Like most of the cities in Washington, Snoqualmie has one of the cleanest sources of water in the country. Removing the use of unnecessary products like bottled water would be another large step in decreasing our solid waste and perhaps influencing other individuals outside of the city offices. Existing stores of bottled water could be donated to local charities.

3.3.7 Expand use of Class A reclaimed water

Currently the city of Snoqualmie is using the city's Class A reclaimed water to satisfy the irrigation needs of the parks and the Snoqualmie Ridge TPC golf course. With the development of Snoqualmie Ridge Phase 2, additional Class A reclaimed water will be generated. Expanding the city's Class A reclaimed water use to its maximum will decrease Snoqualmie's water consumption while supplying the water needs of certain parts of the city.[8]

3.3.8 Promote Class A bio-solid fertilizer use

Using the city's sewage to create a class-A bio-solid is a great way to take advantage of solid waste for another use. This bio-solid can be used in gardens, replacing the use of chemical fertilizers that pose a risk to the health of our environment. Residents should be aware of the bio-solids' availability. The city can promote the use of this fertilizer through town hall meetings, public flyers, and brochures.

3.3.9 Explore potential methane recovery

Biosolids production can result in methane, a powerful greenhouse gas. Current flaring of biosolid gases still emit atmospheric GHGs. The City could explore methane recovery, which has potential added benefits, such as green energy production and reduced costs for city energy.[9]

[7] See City of Lake Forest Park Comprehensive Plan. Adopted December 2005. Pg. 125. Hhttp://www.cityoflfp.com/city/compplan/documents/compplan-final121205.pdfH

[8] See: City of Snoqualmie. Waste Water Facility. Hhttp://www.ci.snoqualmie.wa.us/Departments/PublicWorksDepartment/WasteWater/tabid/208/Default.aspxH (Accessed May 2009); and University of Massachusetts Extension Landscape, Nursery, and Urban Forestry Program. "Plant Culture & Maintenance: Recycling Gray Water for Home Gardens." 2000-2009 Hhttp://www.umassgreeninfo.org/fact_sheets/plant_culture/gray_water_for_gardens.html

[9] State & Local Climate Change Program. Climate Change Technologies: Landfill Methane Recovery. January 2000, Hhttp://yosemite.epa.gov/oar/GlobalWarming.nsf/UniqueKeyLookup/SHSU5BUR8R/$File/landfillmethanerecovery.pdfH.

3.4 Ecosystem Protection

There are many benefits to preserving green spaces within the (sub) urban context. Contact with nature can contribute to one's physical and mental well-being and the development of social capital. Green spaces offer an aesthetic environment that can improve one's quality of life by inspiring physical activity, connecting people to the place they live, and elevating one's mood.

Green spaces also promote many ecosystem services. An ecosystem service is an environmental function that is necessary to support life on earth, like pollination or maintaining fresh water and clean air. Green spaces also function as carbon sinks – places where carbon dioxide is stored so that it no longer remains in the atmosphere where it would contribute to climate change.

Clustering and Conservation

An interesting factsheet on clustering and conservation development was produced through University of Illinois Extension: Church, John, "Cluster/Conservation Development," (page last updated 2009)

http://urbanext.illinois.edu/lcr/LGIEN2000-0010.html

Current Local Efforts

Snoqualmie is currently engaged in a variety of efforts dedicated to the conservation of our natural environment.

The Snoqualmie Preservation Initiative – a series of actions intended to preserve critical forestlands, view points, and trail corridors in and around the city of Snoqualmie, while at the same time finalizing plans for the city's future growth.

The Mountains to Sound Greenway – Protected working forests, lakes, campgrounds, rivers, trails, and wildlife habitats stretch more than 100 miles along Interstate 90 in this scenic greenway.

Meadowbrook Farm – provides 460 acres of protected open space within the Snoqualmie Valley, including trails, wildlife, and native flora.

K-bog – located within the trails of Snoqualmie Ridge, is a preserved wetland ecosystem that prevents downstream flooding, sequesters large amounts of carbon, maintains clean water supplies to rivers, and houses many endangered plant and animal species.

Comprehensive Plan – The City's Comprehensive Plan also includes a policy in its land use section that works to concentrate development to preserve open space and sensitive areas.

Stream Restoration – The City has used restoration funding from King County for stream bank restoration.

Recommended Actions

3.4.1 Reduce pesticides/herbicides affecting groundwater

Snoqualmie currently does not have a policy focused on the reduction of commercial or residential pesticide and herbicide use. These chemicals can pose a serious risk to our natural ecosystems by harming non-target species and contaminating our water systems. Natural management practices can be researched and replaced by techniques or non-toxic chemicals that do not pose a risk to the environment. Bringing the use of these chemicals to an absolute minimum is necessary for a healthy Snoqualmie.

3.4.2 Sponsor local "streamkeepers" group

Sponsoring a stream monitoring group for Snoqualmie's local waterways would be a great way to build community, increase environmental awareness, and keep a healthy aquatic ecosystem. This group could consist of paid staff, volunteers, and students from the local schools (see right).

3.4.3 Partner for habitat improvement programs

Combining all members of the Snoqualmie community to promote a healthy environment is vital for a socially sustainable community and natural environment. Working with businesses, citizens, agencies, and tribes is necessary for a healthy future.

3.4.4 Expand programs to control invasive species

The preservation of Snoqualmie's native plant species is important for the stabilization of our natural environment. Snoqualmie has made efforts to control the spread of invasive plant species. Expansion of programs involving the removal of invasive plant species is the next step for an ecologically healthy Snoqualmie.

Lake Forest Park "Streamkeepers"

The Lake Forest Park "StreamKeepers" , led by a committee of 5 to 6 people, are a group of volunteers who keep an eye on stream quality and help educate residents about fostering the continuing health and improvement of the streams within the City and the McAleer/Lyon creek watersheds (1).

Clustering Development

Tacoma's comprehensive plan, like Snoqualmie's, contains a policy for the preservation of their natural environment, stating that the city shall "encourage innovative development techniques such as clustering to maximize the amount of open space and preserve habitats"(2).

(1) City of Lake Forest Park," Volunteering: Streamkeepers" http://www.cityoflfp.com/community/volunteering.html#streamkeepers

(2) City of Tacoma, Comprehensive Plan: Environmental Policy Element, December 2008 http://cms.cityoftacoma.org/Planning/Comprehensive%20Plan/8%20-%20Environmental%20Policy%2012-9-08.pdf

Partner for Habitat Improvement

Tacoma's comprehensive plan includes a policy that works to simultaneously build community and keep the city's natural environment healthy. This policy states to "Strengthen working relationships among citizens, agencies, tribes, and companies to plan and implement bay-wide habitat improvement efforts".

3.5 Land Use

One of the unique characteristics of Snoqualmie is its blend of an older downtown area with important historic resources and a substantial new development, based on current urban design principles. To make both sections of the city work well, and to support sustainability concepts, both areas need an additional focus on creating centers that include a mixture of uses and are walkable.

Creating mixed-use centers within the city is pivotal for many environmental and social goals, such as livable, walkable environments, reduced greenhouse gas emissions, increased support for public health, and the wise use of land resources.
Compact centers where live, work, shop and play activities are accessible, and concentrated together in select destinations reduce the necessity of the car to reach each activity. Areas that provide well-designed streets, buildings, and amenities that support and encourage walking have been found to result in less per-capita vehicle use. Trip reduction multiplies as the density and diversity of activity centers increases. These areas become better able to support transit and enhance the viability of carpools and vanpools by focusing origins and destinations. Reducing the number of vehicle miles traveled by car also reduces the expenditures in gas and time to individuals, and greenhouse gas (GHG) emissions as a whole.

Compact development is also associated with greater health benefits for citizens. A comprehensive report prepared in 2006 by Dr. Reid Ewing and Dr. Richard Kreutzner documented the various impacts that neighborhood design plays on physical and mental health. Well-planned compact development is associated with multiple benefits, including reduced risk of heart disease, hypertension, and obesity by encouraging daily physical activity. Reduced work commutes add time for leisure, community activity, and family engagement, which in turn may lead to increased positive mental health. In addition, the built environment may affect some sub-populations more than others*: "Inadequate pedestrian environments" are noted to disproportionately impact "women, children, low income communities, the elderly and persons with disabilities."*[10]

The Benefits of Wise Land Use

Avoiding sprawl through compact urban design also supports other local and regional goals, such as:

- Conserving agricultural, forestry, and mineral resource lands.
- Preserving priority habitat for fish and wildlife.
- Providing city infrastructure and services more efficiently.
- Decreasing energy use per capita.
- Promoting economic development and jobs in close proximity to a majority of residents in urban areas.

SOURCES

Department of Ecology (WA), "Growing Washington Economy in a Carbon-Constrained World." Dec 2008, Publication 09-01-025 www.ecy.wa.gov/climatechange/2008CompPlan.htm

Ewing, Reid and Richard Kreutzer. "Understanding the Relationship Between Public Health and the Built Environment: A Report Prepared for the LEED-ND Core Committee." May 2006 http://www.usgbc.org/ShowFile.aspx?DocumentID=1736

Mixed-Use Development

This form of development is when building or a set of buildings has more than one type of use. Mixed use commonly has commercial/retail space on the first floor and housing /office spaces above. These developments support walkability, local economic development and help activate the streetscape.

[10] Ewing, Reid and Richard Kreutzer. "Understanding the Relationship Between Public Health and the Built Environment: A Report Prepared for the LEED-ND Core Committee." May 2006 Hhttp://www.usgbc.org/ShowFile.aspx?DocumentID=1736 H

Current Local Efforts

Downtown Center – Snoqualmie has made efforts to support and maintain its existing building stock, with a downtown center that is vital for the community. As other sections of this document describe, some of the city's land use decisions have included programs to elevate houses located in the flood plain, maintaining and preserving historical landmarks such as the train depot and rail cars, while also maintaining retail that supports both those visiting the beauty of Snoqualmie Falls and those residing in the city. Some new business renovations have occurred recently within the downtown area, continuing to support residents concentrated in the city center.

New Residential Development Considerations-- Recent developments within Snoqualmie over the last decade has emphasized many provisions to support citizens in accessing amenities by foot and bike. For instance, local retail has been required near new housing, connected to a pedestrian network that de-emphasizes auto use. Parks have been distributed throughout the area, such that over 90% of the housing units are within a quarter mile of green space. Bike parking is located in commercial clusters, with bicycle and walking trails connecting various neighborhoods and numerous vegetation and street tree requirements enforced to create an environment that is inviting for residents and visitors alike.

Part of the recent mixed-use development in the City of Snoqualmie, at the corner of Center Blvd SE and Mayrand Lane SE

With the large amount of growth anticipated in the city, the city has a unique opportunity to apply additional green building practices and policies to current and future developments. These include LID, LEED, and LEED-ND, as well as other measures to reduce the impact of new development on natural resources, future energy, and water use.

Recommended Actions

3.5.1 Increase residential density

Higher density levels, at around 7 to 12 units per acres, are the minimum density levels to support compact growth. Compact growth is integral for other needs within the city of Snoqualmie, including economic sustainability, as well as transit support and walkability. Higher residential density will support existing local business and encourage other new commercial establishments.

3.5.2 Incentivize distributed commercial centers

Multiple publications on walkability record that the distance an individual is willing to walk for various services is between one-fourth to one-half mile. Developments in the city after 1990 have placed several residences outside the half-mile mark of local commercial areas, decreasing the walkability of lower-density neighborhoods. Future walkability would improve with regulations that would activate zoning changes to encourage development of small commercial nodes closer to current residents.

3.5.3 Incentivize Accessory Dwelling Units

Accessory Dwelling Units (ADUs) are one means to gradually increasing density, as well as provide more affordable housing for service-sector jobs. The City of Snoqualmie's report on Key Housing Strategies states that while Accessory Dwelling Units are "permitted outright in all single family zones", the city has "not taken any additional actions to help encourage ADUs" . The report also notes that while the regulations have been in place for over a decade, no one has ever applied for the program. As such, promoting the program and providing incentives may help residents to take advantage of the provisions and support higher density levels within the city. This might be especially appropriate in older residential districts of Snoqualmie, near the historic downtown.

3.5.4 Incentivize LEED-ND for new developments

Although the LEED ND certification system *(described right)* is not yet in its final form, its collaborative nature and informed environmental stakeholders indicate its potential for providing good guidelines in future development. In addition, it is already known among environmentally aware planners, signaling its potential to advance in the sustainability community much as the LEED rating system for buildings. Being aware of these trends places Snoqualmie in a position to innovate and advocate for its application within the city in advance.

3.5.5 Incorporate sustainability into the comprehensive plan

Sustainability is the ultimate result of innumerable decisions taken by citizens and policymakers within multiple areas – including land use. For sustainability to be achieved, it must be integrated into planning processes, and be regularly assessed to weigh what goals have been accomplished and what goals remain. A logical place to structure this

What is LEED ND?

LEED ND, or Leadership in Energy and Environmental Design for Neighborhood Development, is a system evaluating neighborhoods and development projects on their environmental responsiveness and sustainability. This system follows the LEED evaluation systems for buildings, where ratings are presented in tiers of "accredited", "silver", "gold" and "platinum". These ratings are based on assessing specific attributes that, when met, provide credits which are added up in a full assessment to determine the final project rating.

The LEED ND system is the brainchild of multiple organizations and is currently a work in progress. It began forming in 2004, where a core committee was assembled with members from the US Green Building Council (USGBC), the Congress for the New Urbanism (CNU), and the Natural Resources Defense Council developed the program, with the Urban Land Institute providing additional assistance (1).

In 2007 the pilot project was launched, with 238 accepted applicants spread across 39 states and 6 countries to test the system (2). An initial comment period on the pilot system ran from November 17, 2008 to January 5, 2009, altering an October 2008 draft through the processing of over 5,000 comments. A second comment period is planned for the spring of 2009, with the final product launch slated for the summer of 2009.

SOURCES

(1) USGBC. "LEED ND: 1st Public Comment Period Draft Rating System – Clean" October 2008. http://www.usgbc.org/DisplayPage.aspx?CMSPageID=148

(2) Berg, Nate. "LEED-ND: Creating a More Complete Vision of Neighborhood Sustainability." *Planetizen,* November 19, 2007. http://www.planetizen.com/node/28493

integration is through the City of Snoqualmie Comprehensive Plan to coordinate, and develop guidance for implementing multiple aspects of the Snoqualmie Sustainability Strategy.

3.5.6 Protect historic resources

Many of the older buildings in the old town area of Snoqualmie are important for the sense of history and interesting architectural character that they provide to the city. From a sustainability standpoint, these buildings are also important for the embedded energy they represent. The energy used to construct these buildings would be wasted if the buildings are demolished. Additionally, the energy used to demolish these buildings and to transport waste materials to a landfill would be an unnecessary source of GHG emissions. Finally, reuse of these buildings, particularly for restaurants, retail shops, and museums will provide both historic and architectural interest and a base of activity that can attract visitors and support the economic development of the community.

ADDITIONAL SOURCES

City of Snoqualmie. "Report on Key Housing Strategies" your.kingcounty.gov/ddes/gmpc/housing/hsr-Snoqualmie.doc

Great Communities Collaborative. "Policy Factsheet: Compact Development." From the Great Communities Toolkit. November 2007.http://www.greatcommunities.org/intranet/library/sites-tools/great-communities-toolkit/CompactDevl.pdf

Newberg, Sam. "Greening a City from the Top Down." Urban Land, March 2007. http://joe-urban.com/wp-content/uploads/2008/01/urban-land-march-2007-green-chicago.pdf

3.6 Green Infrastructure and Water

Green Infrastructure is a term used for designed systems that mimic natural systems and minimize negative environmental impacts from urban development. Frequently, the term refers to storm water systems using Low Impact Design (LID) methods, gray-water systems, rain water harvesting, use of pervious surfaces and plant absorption. Green Infrastructure can also include networks of parks, open space, rivers, creeks, urban forests, and native species that assist in mitigating environmental concerns. Designing with these green considerations impacts GHG mitigations, water quality, and heat island effects.

Parks with trees, natural landscapes, and native plants all assist in mitigating carbon dioxide. An acre of trees can sequester 2.6 tons of carbon annually.[11] Maintaining current forest areas and natural vegetation levels is an important factor to address GHG emissions.

The quantity and quality of water available in the future is a major issue for sustainability. Scientists predict that the snowpack will decrease substantially over the next 50 years, reducing the amount of water available to meet the needs of our growing population. To limit these effects, the city needs to take an active role in reducing water use, improving water quality, and maximizing replenishment. Green Infrastructure introduces storm water runoff back into underground aquifers where it is available for city usewhile reducing flooding, improving water quality, and protecting both aquatic and terrestrial habitat.

Green Infrastructure can offset the negative impacts of gray infrastructure. Examples of gray infrastructure are impervious services: asphalt parking lots, streets, sidewalks, buildings, and utilities. Gray infrastructure adds water and toxins into the city's system and eliminates the opportunity for natural infiltration, thus lowering the water table.

Gray Infrastructure also contributes to heat island effects because concrete, asphalt and buildings absorb energy and convert it into heat, which causes urban areas to be warmer than rural areas.[12] The EPA has found an increase from 18 to 27 degrees in temperature during the day and 9 to 18 degrees during the night in urban areas.[13] Storm water runoff in urban areas is found to be 20 to 30 degrees warmer;[14] (4); this increase in temperature puts extra stress on aquatic habitat and the ecosystem. Heat island effects cause increased energy use because of the greater need for air conditioning and heating. It is equally important to maintain natural features that provide the same benefits as Green Infrastructure (overviewed below).

Green Infrastructure

Green Infrastructure is used to maintain and protect natural ecosystems. It strives to provide the same utility as natural systems: water purification, filtration, air purification, carbon sequestering, microclimate cooling and heating and much more. It also provides social, environmental, and economic benefits to the city and the community.

[11] Nowak, David, "Benefits of Community Trees", Brooklyn Trees, USDA Forest Service General Technical Report, in review. Berdahl P. and S. 2.

[12] Bretz, P and Berdahl, S.E., "Preliminary survey of the solar reflectance of cool roofing materials," *Energy and Buildings* (1997): 149-158.

[13] Akbari, H., HEnergy Saving Potentials and Air Quality Benefits of Urban Heat Island Mitigation (PDF)H, Lawrence Berkeley National Laboratory, 2005

[14] Environmental Protection Agency, "Heat Island Effect: Basic Information". Page last updatedFebruary 9, 2009 Hwww.epa.gov/heatisland/about/index.htmH

Current Local Actions

Snoqualmie Preservation Initiative – The Snoqualmie Preservation Initiative was designed to preserve and conserve forested areas. In a collaborative effort, the City of Snoqualmie, King County, Weyerhaeuser Real Estate Company and the Cascade Land Conservancy reached an agreement to protect natural resource areas while allowing for additional development in other areas. The agreement maintains critical forestlands, view points, and trail corridors in and around the city of Snoqualmie, while finalizing plans for future growth. This program has helped to maintain the natural beauty of Snoqualmie through protecting and enhancing local and regional trail systems, and preventing unwanted development.

This initiative has saved and preserved over 9,000 acres of forest land from future development right off of I-90, helping maintain the Raging River watershed for generations to come.

Meadowbrook Farms – Meadowbrook Farms is a 460-acre open space and historic site located in Snoqualmie and North Bend. Oral tradition says that this site is the birthplace of Snoqualmie Tribe. The majority of Meadowbrook Farms has been preserved as an open meadow and wetland forest. These areas assist greatly in the natural storm water mitigation and carbon sequestering. The natural ecosystems are maintained for humans and the species that reside in the valley. The farm benefits the citizens of both communities and helps in the mitigation of GHG emissions.

Urban Forestry Program – Urban Forestry is the care, maintenance, and development of trees within the urban environment. Trees are used to improve the beauty and environment of urban living. Snoqualmie currently has 6,000 street trees that assist in storm water mitigation, reduce heat island effects, and make it a more natural environment. Street trees assist in mitigating green house gas emissions and can clean over 50 different pollutants in the air. Mature trees provide a greater benefit than younger trees so the preservation of old forest is also a high priority for Snoqualmie.

Urban Forestry enhances the urban environment through providing a human scale. Trees placed properly in the landscape can provide significant shading that helps reduce summer cooling and winter heating needs for home owners.

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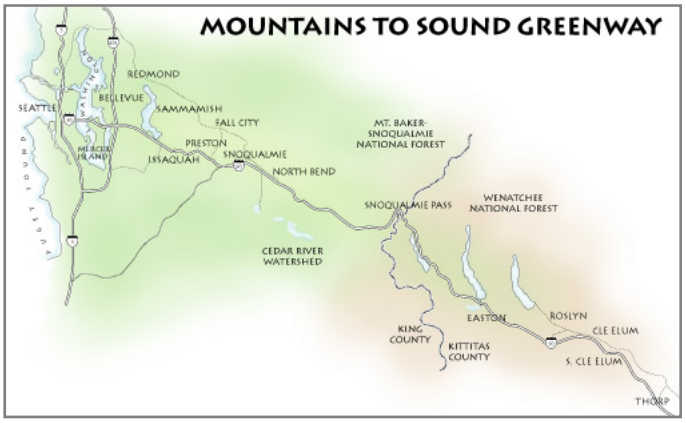
Mountain to Sound Greenway – This is a 101-mile stretch of interstate 90 that stretches from the waterfront in Seattle to the edge of the grasslands in Central Washington. Part of this stretch of road passes through Snoqualmie city limits. Snoqualmie has taken an active role in maintaining and supporting the natural vegetation.

This has been established as a trust developed in 1991 with a non-profit in Seattle managing the project. It consists of 1.4 million acres, with 750,000 acres being held by local, state, and federal agencies.

This project has won many awards for its efforts in conservation, preservation, and restoration.



Snoqualmie Point Park – This is a 8.5 acre park that has been a cooperative project between the Mountain to Sound Greenway and other trust funds. The entire driveway and parking lot utilizes porous asphalt with an underlying stone bed. The under bed is a more expensive feature of the project, but is offset by the elimination of many elements of storm-water management systems.

The park provides a dramatic view of the Greenway. Mayor Larson was the master of ceremonies for the opening of the park. This park was previously going to be developed as an office and warehouse site, which through fortune was developed as a park instead.

With the large amount of growth anticipated in the city, the city has a unique opportunity to apply LID and other green infrastructure measures to new development and reduce the impact to natural water systems.

Recommended Actions

3.6.1 Develop a plan to become part of Tree City USA

Tree City USA is a program that recognizes cities for their efforts in creating, maintaining and preserving urban forestry. The program provides assistance, direction and attention to cities' efforts.

There are many advantages to being a Tree City, and the program requirements are within reach for the City of Snoqualmie. Tree Cities have increased opportunities for citizen involvement, education, and increased street care often beutifies a municipality. The four standards of the Tree City USA program, outlined in the blue box below, set a healthy framework for urban forestry management. In addition, Snoqualmie would have increased potential to receive grants and other financial awards, as Tree Cities have added funding preference from the Arbor Day Foundation.

Snoqualmie currently needs to develop a program for joining Tree City USA. Through developing a strategy to meet the Tree City USA standards the city will enhance its civic and natural environment.

Tree City Standards

1. A Tree Board or Department
2. A Tree Care Ordinance
3. A Community Forestry Program With an Annual Budget of at Least $2 Per Capita
4. An Arbor Day Proclamation or Observance

3.6.2 Partner to educate on gardening and landscaping

Lawns and open space are resources that can be important to maintaining natural ecosystems. Edible landscapes, water mitigating plants, drought tolerant plants and low maintenance plants are choices that should be encouraged for landscape design. The city can provide information and events on better gardening and plant selection.

In Snoqualmie Ridge it will be necessary to work with the Home Owners Association on allowing for certain types of gardening practices, like gardens in the front yard. Due to orientation of some of the buildings it is necessary for gardens to be located in the front yard for the plants to receive enough sun light.

King County provides information on native plants and landscape design ideas. Through the county's website Snoqualmie can develop a unique list of plants to recommend to residents for home landscaping.
http://green.kingcounty.gov/GoNative/Index.aspx

Design Strategy: Permaculture

Permaculture looks at the whole system and sees how the parts relate when designing landscapes. It works to integrate natural elements so that it works as a system. Each element is looked at in terms of needs, output, and properties so that the landscape can work together, to minimize waste and maintenance. It works to develop a sustainable system that requires no addition inputs for survival.

3.6.3 Encourage porous paving for storm water infiltration

Storm water mitigation is an important issue for Snoqualmie. Water will become more limited over the next 50 years due to a decrease in the snow pack and the unpredictability of rain. Porous paving can help in maintaining water supplies by recharging aquifers.

Porous paving naturally mitigates storm water by allowing it to infiltrate back into the ground. The natural process cleans the water, puts it back into aquifers and slows down waterway inputs. This can save money by not putting this water into the city's system, and will also decrease heat island effects, saving costs on heating and cooling.

Snoqualmie can encourage porous paving by implementing appropriate city development strategies. By being a leader in this process it will put long term concerns at the forefront and address the city's future concerns. To do this it can provide incentive programs and for providing porous paving.

your.kingcounty.gov/solidwaste/greenbuilding/documents/Financial_incentives_greenbuilding.pdf

Example Projects

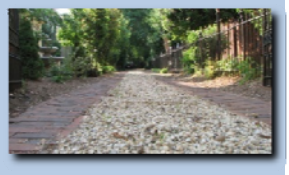
Snoqualmie Ice Cream Shop uses a gravel parking lot to reduce their storm water runoff. Snoqualmie Point Park, mentioned earlier, also uses porous asphalt paving.

High Point Seattle, Washington uses porous concrete for their sidewalks and for their road ways. There are not many examples of sites that utilize this material for roads.

Porous paving comes in many forms and is used for many reasons:

- Pavers
  - Driveways
  - Sidewalks
  - Paths
  - Alleyway

- Grass Pavers and Gravel
  - Parking Spots
  - Roads



- Concrete
  - Sidewalks
  - Bike lanes
  - Parking Lots

- Asphalt
  - Parking Lots
  - Basketball Courts

Impervious surfaces can be used for most of our gray infrastructure needs, with reduced environmental risk. Through a systems approach for storm water mitigation the city can work to achieve net zero storm water runoff.

3.6.4 Develop pilot projects for LID, rain gardens, etc.

Through the development of pilot projects the city can monitor and analyze best practices when it comes to new design ideas.LID, rain gardens, and sustainable environmental practice are site sensitive, so they need to be tested in order to see how effective they are in different environments.

Ultimately these projects are a smart choice and should be encouraged; by having quantifiable data on their performance it can provide builders, developers, and the city with a better understanding of which practices provide the best results. Many of these practices are new to the public and builders, so it is important to have this type of information available.

Some examples of these projects are turning roundabouts into rain gardens, changing street designs to implement LID techniques, putting a gray water system in a building, green roofs, rain water collection systems and many more.

3.6.5 Review building codes to remove barriers

Many of the sustainable strategies are new and can slow down the permitting process where staff reviewer s are not familiar with these techniques. The city can go through their local building codes to minimize push back for choosing sustainable practices.

By changing the code it can assist in speeding up the permitting process and providing an additional incentive for choosing Green Infrastructure. From this the city can develop information on implementing Green Infrastructure with minimal barriers.

Low Impact Design – LID

This is an innovative storm water management practice that utilizes natural process for mitigation. It addresses storm water at the beginning of the pipe on a small scale at the lot level. The goal of LID is to "mimic the sites pre-developed hydrology" through design.

Design Strategies

Rain Gardens

These are gardens that storm water runoff is diverted to for absorption and filtration. These are normally located near the source: in parking lots, next to building, etc. They require little maintenance and fertilizer.

Bio-Swales

These are landscape elements that are like a ditch that is filled with vegetation, compost or other element that will assist with water infiltration and mitigation.

Many of the other strategies have been outlined earlier in this document. There is ample information provided by the EPA on the effectiveness and benefit of these strategies. (1) www.epa.gov/nps/lid

Example

Sea Streets – Seattle, WA

This is a 3 block stretch of road that has been redesigned to take full advantage of LID strategies. 100 trees and 1,100 shrubs have been planted to assist in the mitigation process. There has been a 100 percent survival rate over the 4 years since the project was completed. This project provides a great case study to how LID works and its efficiency.

3.6.6 Educate citizens on water usage and appliances

Many residents within the community are unaware of the availability of water and energy efficient appliances for their homes. The City can develop workshops and information packets that can provide helpful knowledge to the citizens. This information will help shape their decisions about water usage and what appliances to purchase.

The county and state provide numerous incentive programs for purchasing water efficient appliances. This information can be more expressed during house open houses and on information for the developments that have these appliances. The Washington State Department of Health provides a list of water saving tips for households. The average household spends $500 a year on water and sewer bills and can save $132 a year by making simple changes to everyday life.

This information can be given through workshops and city events. There can be a partnership with schools and public works to educate students and work to develop programs that will reduce water usage in school buildings. This information can be given to the businesses and residents to encourage a reduction in use of potable water.

Water Saving Tips

- Reducing shower times by one to two minutes can save 150 gallons of water a year
- Wash pets outside on land that needs water
- Replace dripping faucets and fixtures

These are just a few of the strategies that can be found on the document created by the Washington State Department of Health:

www.doh.wa.gov/ehp/dw/Publications/WUE-append-J.pdf

Rain barrels can come in many different shapes, styles, and sizes

3.6.7 Encourage the use of rain barrels

Currently the Ridge 2 development has the ability to offer rain barrel installation for new homes. By encouraging their usage each site will be limiting the amount of storm water that will be put back into the city's sewer system. This water also contaminates rivers and streams, killing aquatic species and habitat. This saved water will benefit the resident by decreasing their water usage because this can be used for watering lawns and washing cars. It is also beneficial to the environment and ecosystems.

The county provides incentives for installing and purchasing rain barrels. The "Green Store" will provide rain barrels for purchase. Installation information will be provided with a purchase. This will provide opportunities for the city and citizens to work together on establishing rain barrel practices that will work in Snoqualmie.

These systems can also be used at pea-patches and other community garden areas, to limit the use of potable water. The city can take this active role by implementing these strategies into new buildings and reduce the sites impact on the environment.

3.7 Mobility

The way humans currently travel through space has been having a negative impact on our environment, both visually and physically. Currently, transportation produces the largest amount of green house gas (GHG) emissions (1) in King County, accounting for 60 percent of the total. By changing the way our neighborhoods and cities are designed, we can encourage the use of alternative forms of transportation and reduce our consumption on fossil fuels.

In order for Snoqualmie to meet the goals of the Puget Sound Regional Council's Plan 2040 and the Mayors Climate Protection Agreement, alternative transportation options need to be a priority in local development and planning. Areas that provide well-designed streets, bike lanes and amenities supporting and encouraging walking have been found to result in less per capita vehicle use. Compact and dense development help facilitate walkability and public transportation. Trip reduction, vanpooling and public transportation help in limiting the amount of single occupancy vehicles (SOV) that are on the road and thus reduce the amount of GHG emissions.

Snoqualmie has begun to implement many of these projects through the Evergreen Fleet Initiative, the design of the new development, and other policies for the city as a whole. It is important for Snoqualmie to limit automobile use for short trips because its urban fringe location causes people to have to drive longer distances for commuting and other trips.

With the large amount of growth anticipated in the city and its suburban fringe location that requires commuting, it is particularly important that the city place a major emphasis on developing strategies to reduce vehicle miles traveled and increase the use of alternative modes of transport. Through developing a long term strategy for green transportation, the city will be preparing itself for peak oil and beyond.

Many of the alternative modes of travel have health and social benefits associated with their use.

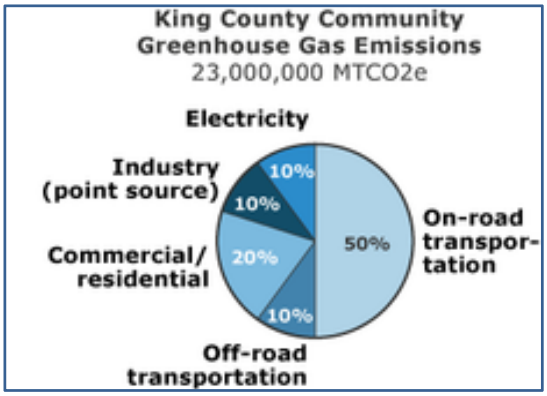
Health Benefits

- Reduces stress
- Healthier skin
- Reduces obesity rates
- Helps with disease prevention
- Longer life expectancy

Social Benefits

- Increase social capital
- Increased opportunity to meet new friends
- Become more aware of place

Non-automobile trips are also an economical choice that can lead to significant dollar savings in the long term.



Green Transportation

The pyramid at right prioritizes transportation with earth-friendly modes such as walking, bicycling, public transit and high-occupancy vehicles; biofuel vehicles are another alternative to consider.

Pedestrian Oriented Development – The master planned community of Snoqualmie Ridge implements many of the design features of a Pedestrian Oriented Development. Alley-loaded lots, traffic calming devices, street parking and green streets all provide for a safe and comfortable pedestrian experience. This development provides over 25 miles of trails through nature for local citizens while protecting critical areas by utilizing them as parks and educational opportunities. Downtown Snoqualmie also features several attributes of pedestrian-oriented design, with high density, mixed land uses, accessible bus stops, and a central parking area that allows visitors to park and then walk around the town.

Urban Village Model – Snoqualmie Ridge is built as an urban village model, with housing in closer proximity to daily amenities: school, work, grocer, shopping, open space and restaurants. It normally has medium density which encourages walking and biking because they become more practical and at times quicker. Snoqualmie has developed a business park proximal to homes, provides good jobs close by and encouraging residents to work, live and play within Snoqualmie city limits. These design strategies have been derived from New Urbanism, which encourages mixed-use buildings, compact development located near mixed-use buildings, connectivity, walkability, and green transportation. This development form conserves land and reduces sprawl, so residents may reduce their time in a car.

New Urbanism

"Giving people many choices for living an urban lifestyle in sustainable, convenient and enjoyable places, while providing the solutions to peak oil, global warming, and climate change"

10 Principles

1. Walkability
2. Connectivity
3. Mixed-Use and Diversity
4. Mixed Housing
5. Quality Architecture and Urban Design
6. Traditional Neighborhood Structure
7. Increased Density
8. Green Transportation
9. Sustainability
10. Quality of life

Pedestrian Oriented Design (POD)

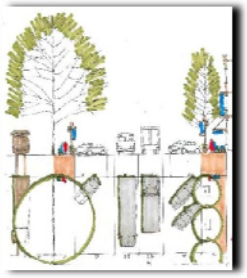
POD helps improve safety, physical fitness, social interaction and local economies. POD is executed through land design practices:

- Connectivity
- Mixed-Used
- Public Transit Orientation
- Traffic Calming
- Wide sidewalks
- Bike Lanes
- Street Trees
- Curbside Parking
- Crosswalks

High Point, located in West Seattle, is another New Urbanist development that Snoqualmie may look to for some next steps. In addition to its innovative water-saving infrastructure, the development features higher density levels in an attractive layout, providing mixed-income housing, a community garden, and mixed-use design that also supports its local jobs-housing balance. Other innovations include "Breathe Easy" homes, with anti-asthmatic features, reused and recycled building materials, and additional energy conservation designs.

Current Local Efforts

Downtown Streetscape Design – In April, 2008, Snoqualmie developed a Streetscape Design Guide for Downtown. It outlines improvements for widening sidewalks, adding trees, furniture, lights, outdoor space and pedestrian oriented crosswalks. In addition it will be adding additional public green space around the trains and a performance platform. These streets with the additions will now be labeled as "green streets". Green streets provide an environmental benefit to the city and as well as an aesthetic benefit. They help mitigate storm water, mitigate carbon dioxide and conserve natural species.



Evergreen Fleet Initiative – This is a countywide initiative that works with cities on reducing green house gas from their city fleet. Some of the strategies for reducing GHG are idling reduction, training on fuel-efficient driving practices, incentive reward programs around fuel use to fleet users, "right-size" requirements, alternative fuels procurement, green fleet purchasing policies, and much more. Snoqualmie is working to reduce greenhouse gas emissions by changing to hybrid vehicles where appropriate and implementing policy on public vehicle use.

All of these actions help in bringing Snoqualmie on a path to meet the goals of Puget Sound Regional Council's Plan 2040 and the Mayors Climate Protection Agreement.

Green Streets

Green streets combine vegetation, non-motorized infrastructure, natural drainage, and other improvements to connect homes, parks, business and public amenities. Green streets act as an important element to Green Infrastructure. They provide a natural environment to the built environment.

Examples of green street elements:

- Skinny Streets
- Street Trees
- Bio Swales
- Bike Lanes
- Porous Services

High Point Bio-swale

High Point porous path

Skinny Street

3.7.1 Expand citizen education on green transportation

In order to for citizens to use public transportation or green transportation, they need to know what is available. Through developing and distributing materials on bike and pedestrian safety, trail paths, and alternative modes of transportation beyond the Single Occupancy Vehicle the city will be encouraging others to use alternative modes. This can also help reduce the number of injuries to pedestrians. With Washington State being rated the number one bike friendly state from the League of American Bicyclist, it is important to continue to educate, so that the state can continue to be the best.

This public education can be provided in many forms:

- City meetings
- Brochures
- Bike or walking events
- Internet
- School events

Snoqualmie Valley Transportation

Provides door to door transportation connecting North Bend, Snoqualmie, Monroe, Fall City, Carnation, Preston, and Duval.

Operates Monday – Friday 6am – 8pm

Cost 25 cents for seniors and 50 cents for others

3.7.2 Support local biodiesel fuel & shuttle use

Currently the Snoqualmie Valley Transportation Fleet uses two biodiesel buses. The city can work to promote the use of the biodiesel buses to assist in reducing the amount of GHG emissions and helps reduce SOV on the road.

There is an opportunity to partner with restaurants on supplying cooking oil to be used for vehicle fuel. This way the cooking oil will not be wasted and restaurants can use this as a promotion tool.

Bellingham, Washington has produced brochures outlining the laws for bikes, on the road, which if not followed can result in a fine. It also provides information on how to drive while bicyclists are on the road. This strategy works well because it addresses both the driver and the rider, and requires both to follow traffic laws. www.cob.org/documents/pw/transportation/share-the-road-brochure.pdf

Whatcom County has initiated a program called smart trips that encourage people to use other modes of transportation than a car. www.whatcomsmarttrips.org/

Washington State Department of Transportation provides grants and funding for educational efforts on promoting bicycling, walking and public transportation. www.wsdot.wa.gov/bike/funding.htm

3.7.3 Expand CTR Programs & other incentives

CTR (Commute Trip Reduction) programs help in limiting single occupancy vehicle trips through employer-based programs. Some of the programs that are currently in affect in Washington are having businesses provide subsidized bus passes, encouraging telecommuting, establishing work schedules as four 10-hour shifts, and requiring carpooling on business trips. These actions help in reducing air pollution, oil consumption and traffic congestion.

Washington State currently requires highly populated dense areas to be engaged in CTR programs and supports local employers in implementing CTR programs. This is currently happening in nine counties in Washington, King County being one of them. These programs require collaboration between local jurisdictions, employers and Washington State Department of Transportation. Washington State Department of Transportation can provide support in implementing and planning CTR programs.

The 2007 CTR Task Force Report to the Washington State Legislature shows that these programs help in reducing single occupancy trips commuting to and from work. Washington's level is about 5% lower than the national average. Sites where CTR programs have been implemented have levels 11% below national average. The Task Force found that carpooling and public transportation are the highest utilized methods of commuting within this framework. With the population of Snoqualmie increasing it will be important to encourage high occupancy trips during high commuting time to reduce congestion and maintain air quality.

As part of the Commute Trip Reduction Program (CTR), the city conducted an employee commuter survey in 1997 and every other year thereafter. The 2005 survey showed a 28% reduction in vehicle miles traveled (VMT) per employee at the Civic Center and a 27% increase per employee VMT at the Public Works Operations facility

Kirkland, Washington has an online signup sheet for business to get involved in the CTR program. It offers many examples of programs that can be used to reduce SOV trips for work. www.ci.kirkland.wa.us/Community/Kirkland_Green/Green_Business_Program/gb-commutereduction.htm

Bellingham and **Whatcom County** Transit Authority (WTA) offer a free bus pass to any city employee who commits to riding the bus to work at least once per week. The goal is to increase bus ridership from the current level of 4% to 10% of employees. Increased bus ridership will help the city achieve a reduction in SOV to work. For more information, please contact Kim Brown at 7950.

3.7.5 Continue Evergreen Fleet Initiative

The city has begun to work on implementing many of the strategies that have been set out by the Evergreen Fleet Initiative. It will be important for the city to continue with achieving the goals of the initiative and beyond. The programs under this initiative include:

- Continue to reduce city vehicles fossil fuel consumption.
- Promote and educate staff on no idling and other simple tasks that can minimize GHG emissions.
- Continue converting larger city vehicles to smaller vehicles, when feasible, and hybrid vehicles.

These strategies will continue to improve air quality and reduce the city's GHG emissions. Additionally, hybrid vehicles can reduce city operating costs.

Recommended Actions

3.7.5 Create citywide bicycle and pedestrian Master Plan

A bicycle and pedestrian master plan will provide the city with an outline for future development of paths and trails. The plan becomes an important tool for the city to outline future capital expenses. It also lets the public know that the city is committed to alternative forms of transportation.

Through increasing the amount of infrastructure for multi modal forms of transportation, people will be encouraged to use other options than driving. This plan should consist of action/strategies that the city can use to better develop its pedestrian and bicycle access. There are currently breaks at the Mill Site and access to Issaquah via Preston Snoqualmie Falls Trail. The city should also collaborate with neighboring cities, King County, and the Mountains to Sound Greenway to assure that the city's plans are supportive of regional plans for bicycle transportation. . To implement this plan, these strategies should be given as much priority as road construction.

This process can be a chance for community/city collaboration. Develop city meetings and workshops for citizen's involvement on the development, production and implementation of the Master Plan.

Bicycle Friendly Community

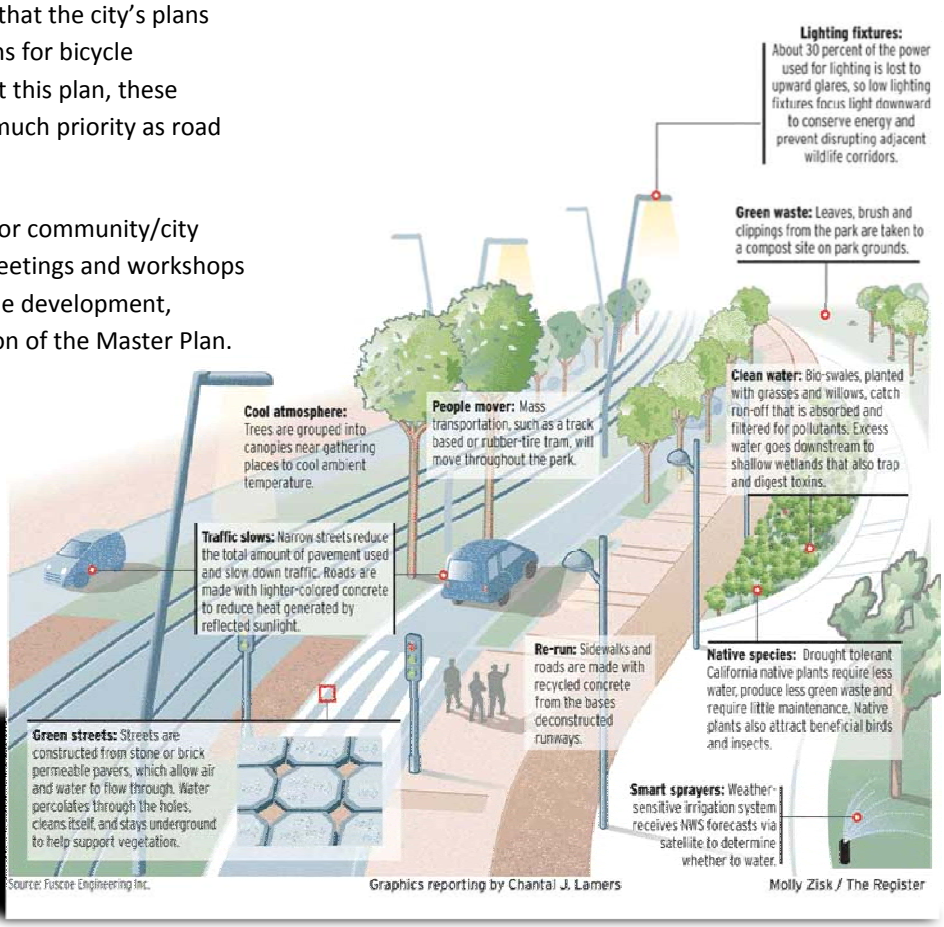
This is a program created by the League of American Bicyclist to encourage cities to educate and provides safe paths for bicycle transportation.

While developing a pedestrian and bicycle master plan the city can use the Bicycle Friendly Community programs application form as a framework for the master plans. It outlines the many different dimensions of infrastructure and application that will support and encourage bicycle use.

The Bicycle Friendly Community website (www.bicyclefriendlycommunity.org) provides additional links to workshops and examples of other cities' doing work.

Complete Streets

(California Example)



3.8 Green Buildings

Studies show that in Washington buildings account for 18 percent of dangerous greenhouse gas emissions, which represents approximately 15.8 million tons of CO2 and nearly a quarter of our emissions related to energy use. Nationally, buildings account for nearly 43% of all dangerous greenhouse gases. It is important to see that energy and emission reduction goals are greatly affected by the quality of construction and the handling of construction materials.

In order to do this, cities must take an interest in promoting energy efficiency in new and existing construction. Agencies such as the United States Green Building Council (USGBC) and the American Society of Interior Designer's (ASID) have developed systems to foster more sustainable buildings, as well as standards for remodeling existing structures to match current state and local sustainability standards. The U.S. Environmental Protection Agency and the U.S. Department of Energy support the Energy Star program as a way for homeowners to easily identify energy efficient products for their home.

Both the city and its residents will benefit from the adoption of a green building program that supports energy and emission reduction goals. Currently Washington has over 30 tax rebate programs available for commercial energy efficiency and 31 rebate programs available for private residences.[15]

Areas of Focus

Promote Use of Green Building Standards in New Construction

Promote the use of national green building standards such as the USGBC's LEED (Leadership in Energy and Environmental Design) program as standards in creating environmentally sustainable construction. The LEED standard of construction also includes guidelines promoting the use of local and reclaimed materials that cut down on the emissions generated by vehicles delivering materials to the construction site and help promote local sustainability. The LEED Program is expanding rapidly and there are now ten times the number of green certified and green certified planners as there were last year. The goal of the city should be to promote (or even require) that new buildings reach a certain level of sustainability. The construction waste must also be handled in a safe and efficient matter through programs such as Nuprecon's ReNu recycling service or Glacier Recycle, LLC.

LEED and REGREEN

The Leadership in Energy and Environmental Design (LEED) is a nationally-accepted benchmark system developed by the U.S. Green Building Council (USGBC) that provides developers and cities with the necessary tools to design efficient buildings and help reduce their impact on the environment. It is a flexible checklist that allows developers to obtain certification by relying on a point system. Certification can be awarded on Silver, Gold, and Platinum levels, depending on the number of points earned.

The American Society of Interior Designer's (ASID) partnered with the USGBC to create REGREEN. REGREEN is a checklist used to certify green remodeling or renovation.

[15] Building Washington Green.com, "Washington rebate programs for Energy Efficicency" http://www.buildingwashingtongreen.com/wa_energy_rebatetax.aspx

Current Local Efforts

New City Hall – The larger city hall will consolidate 41 city offices, currently dispersed among five city buildings and will dedicate space for council chambers. This consolidation will allow three City of Snoqualmie properties in downtown to be sold, opening prime real estate locations for retail and business services, thus supporting economic growth initiatives. The location of City Hall in downtown will help with the revitalization efforts for downtown Snoqualmie. Some of the new City Hall features include solar panels, a white roof (used to reflect the light and to heat the interior spaces), natural ventilation, an electric elevator, and a flood-proof design.

Ridge Design Standards – The city has negotiated standards for the Ridge development that require the development to meet certain standards of energy efficiency. All of the homes on the Ridge are fitted with low-flow water faucets, insulated windows and Energy Star Rated appliances. In the new Phase 2 development, the home buyers are given the option of rain barrels to add to the house.

Promote Use of Green Building Standards in Existing Structures

Promote sustainable practices within existing structures by following national design standards such as the ASID's REGREEN program created in partnership with the USGBC. The Master Builders Association has also created a Built Green Remodeling checklist that can be used as a LEED alternative or equivalent. With the majority of Snoqualmie's residences built within the last 10 years, these homes are already fairly energy efficient. Therefore, it is important to focus on creating incentives for those with older homes to consider remodeling.

Promoting Energy Efficiency in Schools

Currently the State of Washington offers 9 rebate programs aimed at promoting energy efficiency in schools. It is important to educate and partner with the schools to capitalize on the rebates that are available. This will ensure the schools are creating an environment that highlights the importance of sustainability.

Recommended Actions

3.8.1 Permit fast-tracking program

A permit fast-tracking program will allow construction companies to reduce cost by moving to the front of the permitting process if they achieve a specified level of energy efficiency. In Issaquah, Washington developers intending to use LEED may receive free professional consultation and projects achieving LEED certification are placed at the head of the building permit review line.

3.8.2 City-issued Green Building Award

This program is envisioned as an award sponsored by the city and presented to businesses that reach a specified standard of energy efficiency.

3.8.3 Required green certification for city buildings

Require all city-owned construction or renovations over a specified square footage to meet a green standard. For example, in February of 2002 Seattle passed a policy requiring all municipal projects over 5,000 sq. ft. to obtain at least a LEED Silver certification.

3.8.4 City-offered home energy analysis

This incentive would provide a free or low-cost home performance analysis conducted by a city official or a representative from the energy provider. A trained professional would come into the resident's home and identify the options he/she has in turning their home into a more energy efficient residence.

The above building is an example of a building that is energy-efficient, attractive, and amply capitalizes on natural light.

3.8.5 Revision of the Residential Owners Association's regulations

Snoqualmie can work with members of the Snoqualmie Ridge Residential Owner's Association (ROA) to see if they might propose changes to the Modification Regulations restrict changes to the exteriors of the homes located within the Ridge development. For example, a list of pre-approved solar panel designs for homes on the Ridge. Currently most changes to the front façade or yard require the homeowner to go through the ROA's Modifications Committee. Homeowners could review the restrictions and define a list of modifications that would allow changes that support sustainability. These might include allowing front yard rain barrels, gardens, and clotheslines , as well as other changes, such as solar panels on the roof.

3.8.6 Partner on sustainable construction training

Create partnerships with local banks or lenders and educators or non-profit groups to create a workshop or course relating to sustainable construction that could allow the borrower a lower interest rate on a loan used to remodel their home.

State Energy Program

The American Reinvestment Recovery act includes The Weatherization Assistance Program that will allow an average investment of up to $6,500 per home in energy efficiency upgrades and will be available for families making up to 200 percent of the federal poverty level. Also included in the ARRA is the State Energy Program, which is facilitated by the state energy offices located in each state. As stated by the Department of Energy:

"The mission of the State Energy Program is to provide leadership to maximize the benefits of energy efficiency and renewable energy through communications and outreach activities, technology deployment, and accessing new partnerships and resources. Working with DOE, state energy offices address long-term national goals to:

- Increase the energy efficiency of the U.S. economy.
- Reduce energy costs.
- Improve the reliability of electricity, fuel, and energy services delivery.
- Develop alternative and renewable energy resources.
- Promote economic growth with improved environmental quality.
- Reduce our reliance on imported oil."

In November of 2006 Babylon, NY passed a resolution that requires LEED certification for any new construction of commercial buildings, office buildings, industrial buildings, multiple residence, or senior citizen multiple residence over 4,000 square feet. If certification is achieved, the Town will refund the certification fees paid to USGBC (U.S. Green Building Council) by the developer.

3.8.7 Certification fee refund

The city could adopt a program for the city to refund all or portions of the fees required for LEED certification.

3.9 Health & Food Security

Good health is foundational for our sense of personal well-being and our ability to enjoy life to its fullest, yet we don't always have the time, means or inclination to make healthy choices. Our choices are strongly influenced by the environments where we live, work, learn and play. Getting more people physically active involves increasing awareness and motivation at the personal level, providing a built environment and resources that encourage physical activity, and adopting policies to better enable individuals and communities to engage in physical activity as part of a healthier lifestyle.

Fostering a healthy population provides many benefits to a community's sustainability. By creating walkable spaces, farmers markets, and accessible grocery stores, communities can decrease obesity and malnutrition rates. By creating jobs close to housing, cities can decrease commute times, leaving commuters with more time to exercise. The good health created by these types of measures allows people to spend their time on contributing to their community, workplace, and education rather than on unproductive sick days. It allows us to spend our money on the things that make our lives richer rather than expensive medical treatments. And, healthier people are less at risk for the potentially disastrous social outcomes of poor health such as bankruptcy and homelessness.

Focusing on health is particularly important in an era of climate change. The temperature and air quality changes associated with climate change can exacerbate the health conditions of vulnerable groups, such as the elderly, very young, poor, or those already burdened with chronic disease. For example, hotter temperatures make people with certain health conditions (e.g. diabetes and obesity) less likely to pursue physical activity crucial to management and improvement of their health conditions. High carbon dioxide concentrations in the atmosphere – independent of causing climate change – are also associated with production of allergens, such as ragweed pollen, which can contribute to asthma cases by combining with fossil fuel pollutants.

As the climate changes, our communities may face exposure to diseases that are currently rare in this region. Changes in temperature and precipitation

Bicyclist on the Preston Snoqualmie Trail

http://www.celebratebig.com/pacific-northwest/preston-snoqualmie-trail/

17% of Washington adults had no leisure time for physical activity or exercise in 2004. – Washington State Behavioral Risk Factor Surveillance System (1)

Currently, 75% of health care spending is on chronic diseases such as diabetes and health care. – US. Center for Disease Control and Prevention (2)

Studies have found that each additional hour spent in a car per day was associated with a 6% increase in the likelihood of obesity. (3)

Each additional kilometer walked per day was associated with a 4.8% reduction in the likelihood of obesity. (4)

(1) Washington State Department of Health, "Behavioral Risk Factor Surveillance System", January 26, 2009 http://www.doh.wa.gov/EHSPHL/CHS/CHS-Data/brfss/brfss_homepage.htm

(2) U.S. Center for Disease Control and Prevention, "Chronic Disease Overview", November 20, 2008, http://www.cdc.gov/NCCdphp/overview.htm

(3), (4) Frank, Andresen, Schmid, "Obesity Relationships with Community Design, Physical Activity, and Time Spent in Cars" American Journal of Preventative Medicine, 2004, http://www.act-trans.ubc.ca/documents/ajpm-aug04.pdf

are expected to alter the distribution of mosquitoes and ticks, infectious disease carriers. Additionally, as residents of low-lying and equatorial countries face the most severe impacts of climate change, the Northwest may see the arrival of "climate refugees", who will have health needs that our medical system is unaccustomed to addressing.[16]

Climate change also places a greater importance on "food security", the physical and economic access by all people at all times to enough nutritious food for change is expected to cause crop yields to fall, thus raising the cost of food and placing further stress on those who find it difficult to afford healthy food an active, healthy life.[17] Across the nation, climate is expected to cause crop yields to fall, thus raising the cost of food and placing further stress on those who find it difficult to afford healthy food now.[18] Furthermore, many of our current agricultural practices contribute to environmental degradation. In 2004, the U.S. EPA estimated that agriculture contributed approximately 7% of the U.S. greenhouse gas emissions (in carbon equivalents, or CE), primarily as methane (CH4) and nitrous oxide (N2O).[19] The U.S. food system is responsible for about 20% of U.S. energy consumption , half of which is from agricultural production, processing, and transportation. Finally, traditional agriculture can be extremely water intensive, while common organic farming methods can offer more water conservation. By working to improve our community's health now, we can make Snoqualmie a more resilient place in the future.

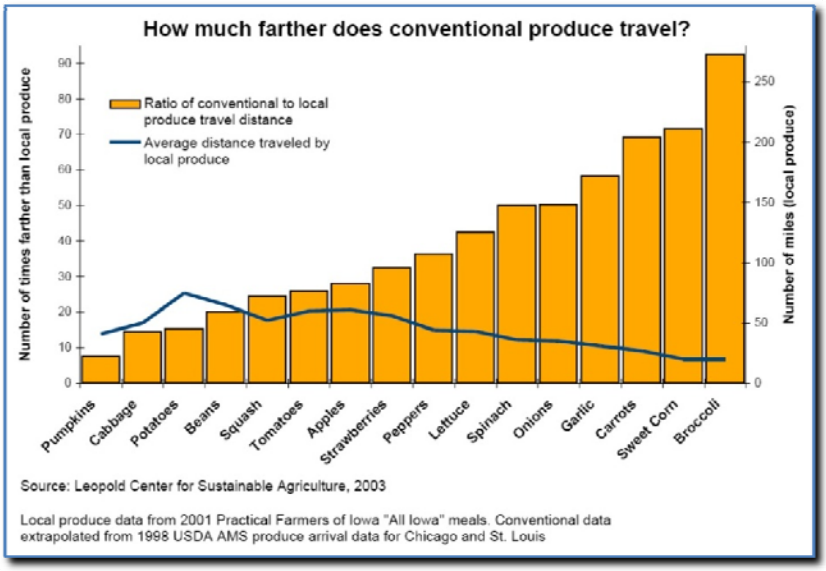
Food Facts

Poor diet, lack of physical activity, and obesity are leading causes of chronic diseases –Washington State Department of Health (6)

Studies have found that our Body Mass Index, which measures the proportion of weight and height, is significantly associated with urban form and the degree of land use mixing. (7)

(6) WA State Dept of Health, "Nutrition & Physical Activity", http://www.doh.wa.gov/cfh/NutritionPA/facts_and_figures/default.htm

(7) Frank, Andresen, Schmid, "Obesity Relationships with Community Design, Physical Activity, and Time Spent in Cars" American Journal of Preventative Medicine, 2004, http://www.act-trans.ubc.ca/documents/ajpm-aug04.pdf



While Snoqualmie is not a farming community, we can influence farming practices by considering the environmental and social impacts of our food purchasing decisions.

Some foods travel further than others to get to the local market; the chart at left displays Iowan food travel distances. Foods that have to travel long distances are associated with higher transportation-related carbon emissions. (5)

(5) Rich Pirog, Leopold Center for Sustainable Agriculture Iowa State University, "Food miles and fossil fuel use in food distribution", http://asi.ucdavis.edu/Research/Energy_Food_System_Symposium/Rich_Pirog_-_Food_miles_and_fossil_fuel_use_in_distribution.pdf

[16] Robert McClure, "State not ready for 'climate refugees': Scientists warn of migration, sickness", February 12, 2009, The Seattle P.I., http://www.seattlepi.com/local/399958_climate13.html

[17] United States Department of Agriculture, "Food Security", http://www.fns.usda.gov/fsec/

[18] Climate Impacts Group, University of Washington, Conference, February 12, 2009

[19] Washington State University Center for Sustaining Agriculture and Natural Resources, "Developing and Implementing agricultural systems and practices that maximize the potential for agriculture to mitigate global climate change," May 11, 2006, http://cff.wsu.edu/Project/index.html

Current Local Efforts

The City of Snoqualmie is pursuing several actions to ensure the health and food security of its citizens. These include the following:

Walkable Environments - Snoqualmie has promoted dense, walkable development that is intended to support transit and enhances the viability of carpool and vanpool use by focusing origins and destinations. The extensive network of bicycle and pedestrian trails makes recreational exercise opportunities more available. See the land use section for more details.

Snoqualmie Pea Patches - Growing your own organic foods is a good way to eat healthier, save money, and teach children about gardening. Two City-run and one Snoqualmie Ridge-run Pea Patches provide an opportunity for residents without their own yards to grow vegetables and flowers for personal or family use. [20]

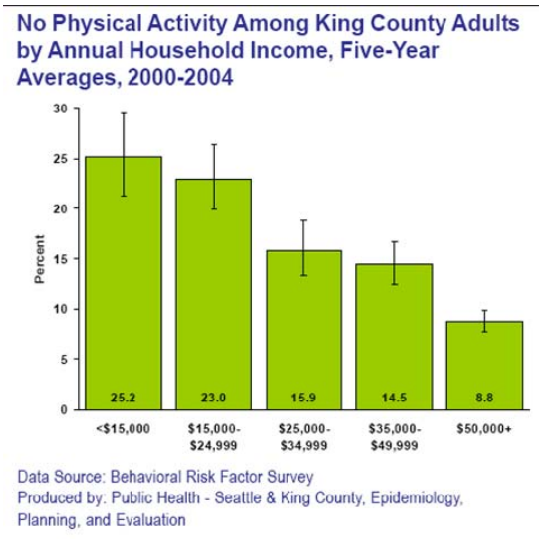
Farmers' Market - The Snoqualmie Valley is home to the North Bend Farmers' Market and several farms that are open to the public.[21]

Recommended Actions

Snoqualmie can take further steps to reduce residents' death and disability from chronic disease (heart disease, stroke, cancer, chronic lower respiratory disease diabetes, tobacco-related diseases) and increase food security. Possible actions include the following:

3.9.1 Partner with King County's Public Health teams

King County has a number of programs to improve the health of its residents. King County Public Health provides a wealth of data and programs. For example, The King County Public Health's report, "Health of King County 2006" report, provides data on the health status of the Upper Snoqualmie Valley and identifies areas of specific risk. For example, the



Somerville, MA, a Boston suburb, instituted the "Shape Up Somerville" to reduce childhood obesity. Among other measures was the creation of "walking school buses" and "bicycle trains". These activities, in which a few parents walk or bike to school and pick up school children along the way, provide a neighborhood-strengthening way to get healthy. More information can be found at: http://www.walkingschoolbus.org/.

[20] City of Snoqualmie, "Community Pea Patch Program", 2008, Hhttp://www.ci.snoqualmie.wa.us/Departments/ParksRecreationDepartment/CommunityPeaPatchProgram/tabid/143/Default.aspxH

[21] Si View Metropolitan Park District, "North Bend Farmers Market", Si View Metro Parks, 2009, Hhttp://www.siviewpark.org/farmers.phtmlH

rate of deaths from lung cancer and diabetes were higher than the county average.

Partnership opportunities may be available with the Food and Fitness Initiative Assessment team to conduct a community food assessment to identify food-related issues and assets to improve the community's food system.

3.9.2 Conduct a community health assessment

Likewise, King County Public Health may be available to conduct a collaborative community assessment to determine community health status, including measures of physical, mental and social well being, of Snoqualmie residents.

This would help Snoqualmie:

- Set a reduction goal for incidence of disease and smoking.
- Set a goal for the percentage of adults meeting the CDC recommendations for physical activity.
- Set a goal to decrease the percentage of adults classified as obese.

3.9.3 Partner with local businesses for employee health

Help businesses improve the health of their workforce by locating and sharing relevant information with them. For example, connect businesses to:

- workforce health audits
- Washington State Department of Health Worksite Wellness Resource Kits, which outlines the importance of worksite wellness programs, stresses payback on company wellness investments, and provides example program strategies, policies and environmental approaches, resources and assessment tools.
- King County Public Health's Tobacco Prevention Program Opportunity Grant, which provide small grants to businesses and non-profits to implement or plan tobacco cessation efforts.

King County Public Health's Information for property owners provides information on how to reduce smoking among their tenants and how to decrease the risks of second hand smoke (particularly in multi-family units).

3.9.4 Create new pea-patches

Evaluate creating more "pea patches", focusing promotion efforts on low-income and multi-family dwelling residents. Consider waiving the personal use requirement for low-income residents.

3.9.5 Teach nutrition

Promote low and no-cost nutrition classes in the community and at schools, such as those that have been offered by the Mount Si Senior Center in the past.

Workforce Health Audits

Workforce Health Audits provide employers with an easier to use method to identify how their workplaces enhance or hinder their employees' health. These can come in the form of simple checklists that look for:

- the presence of changing rooms
- showers
- bicycle storage
- notices about offsite physical activity/sports sponsored by the employer or other organizations
- signs/posters encouraging dietary fat reduction
- signs about smoking restrictions
- notices about smoking cessation programs
- stairwell conditions
- healthy foods in vending machines and cafeterias
- commute flexibility

An example can be found here: http://www.drjamessallis.sdsu.edu/chew82595.pdf

3.9.6 Promote food sharing programs

Support opportunities for community-members to share food with people who have less food access.

Activities could include:

- collecting surplus fruit from residents' personal trees, as in Seattle organization Solid Ground's Community Fruit Tree Harvest program.
- encouraging pea-patch gardeners to plant an extra row of vegetables, donate a portion of their harvest, or jointly manage a "donation plot". Help donating gardeners encourage others to contribute as well by offering signs to post with their garden and offering tips for desirable and easy to grow donation foods, as Seattle's Solid Ground has done on their website.

Donations could be distributed through existing programs, such as the North Bend Mount Si Helping Hand Food Bank, the Carnation Snoqualmie Tribe Food Bank, and local senior centers.

3.9.7 Re-establish the Snoqualmie Farmers Market

As Snoqualmie continues to grow, the viability of a farmers market within the city may improve. The city or the local Chamber of commerce should explore appropriate marketing, placement, timing, and citizen and City support needed to make this happen.

Solid Ground's Community Fruit Tree Harvest

Every year, thousands of pounds of fruit fall to the ground and rot, creating a public health and waste disposal problem. At the same time, thousands of residents can't afford organic produce. The Community Fruit Tree Harvest provides a win-win solution.

Solid Ground organizes volunteers, delivers fruit to food banks, meals programs, shelters and senior centers, and provides information, workshops and assistance on caring for fruit trees to tree owners.

http://www.solid-ground.org/Programs/Nutrition/Lettuce/Pages/TheCommunityFruitTreeHarvest2007.aspx

3.9.8 Foster Community Supported Agriculture

Community Supported Agriculture (CSA) consists of a community of individuals who pledge support to a farm operation to purchase his produce. The individuals benefit by receiving fresh products directly from the farm. The farmer benefits by having a secure and predictable income. With a CSA, the growers and consumers provide mutual support and share the risks and benefits of food production.[22]

CSA farms exist as close as Carnation, WA. By promoting CSA efforts, Snoqualmie can support the regional economy and ensure the availability of local healthy food.

The Harvest Celebration Farm Tour

The Harvest Celebration Farm Tour is a project of the Washington State University King County Extension, in partnership with King Conservation District and King County. The annual event promotes local farms by bringing thousands of urban dwellers to talk to farmers and walk their fields, enjoy family hay rides, run through corn mazes and eat produce fresh off the field.

http://king.wsu.edu/foodandfarms/HarvestCelebration.html

[22] United States Department of Agriculture, "Community Supported Agriculture", February 13, 2009, http://www.nal.usda.gov/afsic/pubs/csa/csa.shtml

3.10 Economy

As noted in section 2.0, Snoqualmie is primarily a "bedroom community". With less than 2,000 existing jobs in the city and a population of over 9,000, clearly most of the resident population commutes beyond the city limits for work. A city focus on developing new local jobs would benefit local cities, establish a more resilient economic base for the city, and reduce GHG emissions currently occurring through commuter trips.

Given Snoqualmie's proximity to the technological centers of Bellevue and Redmond, there may be entrepreneurial residents who could make use of technologically equipped office space. In addition to the economic advantages, residents would have less need to drive to neighboring cities for their business needs, thereby reducing carbon emissions. A healthy economy will enable the City to make the long-term capital investments necessary to create and maintain an environmentally sensitive and desirable place to live. An equitable distribution of the community's wealth will enable all residents to participate in civic life and will maximize the City's human resource potential. A sustainable framework provides a method for sustained economic growth and expansion of markets for the City's goods and services to be achieved in ways that are environmentally benign and socially just.

This can be accomplished by targeting economic development strategies to encourage businesses that:

- Reduce dependence upon fossil fuels, extracted underground metals and minerals, chemicals and toxic substances
- Reduce activities that encroach upon nature by minimizing the use of toxic substances, using byproducts of other processes or creating wastes that can be used as the raw materials for other industrial processes, and use recycled water and other materials.

These goals can be reached by helping businesses identify cost-efficiencies, seeking out businesses that make use of their own or each other's excess energy, water, and materials by-products, encouraging the growth of businesses involved in sustainable activities, and promoting local buying.

Leading the Way

By examining and altering their own practices, city governments can serve as a model for regional businesses.

Buying Local

Buying locally produced goods and services provides several benefits to the community. In addition to supporting the labor of our neighbors, it reduces the need to drive to other areas for employment or shopping, thus eliminating the amount of transportation-related carbon emissions. Promoting home-based business has the additional benefit of efficiently using the amount of developed land and reducing the overhead expenses for small businesses.

For example, a study of one neighborhood in Chicago, IL found that $100 spent at one of the neighborhood's independent businesses created $68 in additional local economic activity, while spending $100 at a chain produced only $43 worth of local impact. (1)

For more benefits of buying local, visit Sustainable Bellingham's Buy Local web page: http://www.sustainableconnections.org/thinklocal/why/

(1) Civic Economics, "The Andersonville Study of Retail Economics", October 24, 2005, http://www.civiceconomics.com/Andersonville/AndersonvilleSummary.pdf

Current Local Efforts

Chamber of Commerce – the Chamber of Commerce has initiated a Buy Local campaign offering window clings encouraging shoppers to buy locally.

Comprehensive Plan – The City is actively investigating ways to provide gateways to the downtown areas and make other land use changes to heighten the destination value of the downtown area businesses.

Modeling Sustainability – The City has already taken the lead incorporating sustainability into spending decisions. For example, it has chosen to contract with vendors who use LEED practices in new building construction, hosted economic development workshops, purchased hybrid vehicles, and other activities detailed throughout this document.

Recommended Actions

3.10.1 Start a community-wide buy local campaign

Promote a community-wide buy local campaign that encompasses all local businesses.

3.10.2 Create a local currency program

Investigate the creation of a local currency program. Over 60 communities in the United States use some form of community currency.

3.10.3 Share lessons learned with businesses

Share the City's lessons learned with the business community. Through communications with local businesses, the City can let businesses owners know what methods have proven to be successful and which have not. By sharing its own research on sustainable practices, the City can maximize information about sustainable services and products.

Bellingham's Buy Local program began in fall 2003. 69% of Bellingham residents are familiar with the Think Local First program, and 3 in 5 local households have changed their purchasing behavior to Think Local First. The program is underwritten by the City and managed by local group Sustainable Connections, which offers online business directories, coupon books, and consulting services for communities looking to start similar programs.

See http://www.sconnect.org/thinklocal

Local Currency Programs

Ithaca, NY offers Ithaca HOURS, which are accepted at 900 businesses in the community. Started in 1991, this currency uses the area's average wage as the unit by which the value of goods and services are compared. Paper money is printed and used, which has the advantage of feeling "real," and highlights local artists or landmarks. Participating businesses can choose how much of a payment they will accept in HOURS based on how much they expect to re-circulate locally.

See www.ithacahours.com

3.10.4 Create a Preferential Purchasing Policy

The City should review contracts, grants, and procurement specifications to give preference to local contractors, grantees and vendors who provide renewable-energy technology, or use it in the operation of their business, where possible. Sample preferential purchasing policies are available from Seattle and Bellingham among other places. The use of such a policy provides guidance to all departments within a city as they purchase the supplies they need.

3.10.5 Promote first floor retail downtown

By promoting first floor retail in the downtown area, Snoqualmie can make use of its existing built environment. Economic development policies that provide marketing, loan, or tax assistance to businesses that operate on first floors in the downtown area can help to transform the downtown into a walking-friendly environment. By encouraging retail development in the downtown area, Snoqualmie will also be leveraging its historic past. By providing additional retail and dining options in the Downtown, Snoqualmie can reduce the number of people who feel they must travel outside of the area for shopping and recreation. As discussed in previous sections, most of the greenhouse gasses produced in Washington a result of transportation emissions. Therefore, reducing intercity vehicular traffic would have a significant effect on Snoqualmie's production of greenhouse gases.

3.10.6 Create a Downtown Riverwalk

Snoqualmie has the opportunity to revitalize its downtown and make use of the amenities of its natural environment. Partnering with the downtown businesses to create a pathway along the river with access to the falls and the downtown businesses would provide a draw for people to patronize the downtown area. This would have the added benefits

Similarly, Humboldt, CA's Community Currency program is an effort to transition from an export-based logging economy to facilitate production and trade, encourage local self-reliance, and increased local economic autonomy. These programs can be used to "pay" volunteers as well.

See http://www.humboldtexchange.org

Environmentally Preferable Purchasing Policies

Seattle addresses environmental concerns through its Environmentally Preferable Purchasing Policy, its Buy-Recycled Program, and its Environmental Management Program.

The purchasing policy states "The City shall promote the use of environmentally preferable products in its acquisition of goods and services" and directs departments to consider life cycle effects from pollution, waste generation, energy consumption, recycled material content, depletion of natural resources, and potential impact on health and nature. For more information, visit:

http://www.seattle.gov/environment/documents/sus-purchasing-policy11-06-03.doc

Bellingham requires the purchase of environmentally preferable materials by all city departments, as long as the price of the environmentally preferable product is 120% or less than the price of the conventional product.

of drawing more tourism from Snoqualmie Falls, providing non-automotive connections around downtown, and making productive non-residential use of the riverside floodplain.

3.10.7 Develop a business incubator space

Business incubators help to develop start-up businesses with the goal of graduation and creation of local jobs. Research has shown that offering help during this early stage, when many more businesses fail than succeed, significantly increases their chance of survival from 35% to 85%.[23] These spaces offer a variety of office space needs, from workspace to consultation, to small business developers. Some communities have combined funds for historic building preservation or rehabilitation of other obsolete structures. Other communities have partnered with non-profits and allowed them some use of the space in return for maintaining the facility.

3.10.8 Explore potentials for green business development

Several sustainable businesses currently call Snoqualmie home, such as solar panel installers and top soil recycling. These can form a basis for attracting other businesses involved in sustainable industries. Additionally, the city has several major sites within its urban growth boundary that may be suited for substantial new business growth, including the vacated Mill Site and areas around I-90. A business park with special features could attract innovators and entrepreneurs to expand the city's economic base with a focus on green business. Features to consider are:

- Low cost energy from a waste-to-energy anaerobic digester at the wastewater treatment plant;
- An eco-industrial park that co-locates industries designed to use the waste product of one industry as input to another;
- A mix of incubator spaces and larger facilities to enable businesses to expand without moving out of the city.

[23] Vermont Center for Emerging Technologies, "From Innovation to Enterprise", 2007, Hhttp://www.vermonttechnologies.com/H

Chattanooga Riverwalk

In Chattanooga, TN, the city formed RiverValley Partners, a non-profit, public-private development agency to purchase and redevelop abandoned downtown properties in the floodplain. They created property-specific plans for projects that reflected sustainable development principles and the natural features of the river, and then sold the properties to private developers. To complete the revitalization, the City used the proceeds to build a park, a rowing center, and landmarks developed on a former flood way.

Find more information on the 8-mile walk at: http://www.pps.org/great_public_spaces/one?public_place_id=200

Vermont Center for Emerging Technologies

The Vermont Center for Emerging Technologies (VCET) is a leading-edge technology business incubator. The Center offers selected early-stage businesses a menu of traditional incubator services such as furnished office and laboratory space, business consultation, shared office equipment, administrative support, business education and workshops.

For more information on the VCET: http://www.vermonttechnologies.com/documents/VCET-Overview.pdf

3.11 Social Equity

As noted in Section 2.4, Snoqualmie households tend to have:

- higher income levels than the King County average,
- higher rates of at-home parents – 25% of recent survey respondents are either working part-time or not working,
- above-average education levels – 90% of with at least some college education), and
- many families with young children – over 10% of the city's population are aged 6 and below.

These characteristics suggest that local residents have a need for social connections (particularly parents of small children) and that the city has a great resource of well-educated non-working adults who could be active in city programs.

Managing community resources to meet the needs of present and future generations requires a strong social network. This social cohesion can result from ensuring that all members of the community are educated, are not struggling to meet basic necessities like food and housing, and are guaranteed full participation in civic discourse. By striving for social equity, Snoqualmie can form a vibrant community base that can plan for Snoqualmie's best interests in the long run.

As with many of the other goals in this document, actions that further social equity and community cohesion meet other objectives at the same time. For example, while increasing affordable and efficient non-automobile transportation options decreases our carbon footprint, it also makes more economic opportunities available for the 30% of the population who may not be able to drive or afford cars (such as low-income households, elders, and teens).

Likewise, working to meet health and food security goals can also meet social equity goals. When people have enough healthy food to eat, they can focus on other aspects of their lives, like participating in community life. Further, by promoting jobs available to people of all educational and social backgrounds, we give people more security and more time to build connections with their neighbors.

This section of the document focuses on actions that we can take to make sure Snoqualmie residents have the housing options they need and actions that will leverage the goodwill and strengths of Snoqualmie's citizens to help one another.

Job fair at Mt. Si High School

Ryan Piersol, "Snoqualmie Valley Job Fair Considered a Success", August 28, 2008, SnoValley Star, http://snovalleystar.com/2008/08/28/snoqualmie-valley-job-fair-considered-a-success

Snoqualmie citizens on a fund-raising walk for cystic fibrosis research

Laura Geggel, "Snoqualmie Auction to Raise Money for Cystic Fibrosis Research", August 28,2008, SnoValley Star, http://snovalleystar.com/2008/08/28/an-auction-for-a-cure#more-1088

Current Local Efforts

Partnerships with King County Housing - Snoqualmie is home to the Pickering Court affordable apartment complex, providing 30 affordable housing units.

Planned Unit Development Affordable Housing Requirements – The Snoqualmie Ridge development includes 120 apartments and 38 cottages that were built to be affordable to residents earning 80% of the area median income. The second phase of the Snoqualmie Ridge developments will require 15% of the units to be affordable to people earning 80-100% of area median income. The City wrote these requirements for affordable housing into the Master Use Plans for the new developments.

Partnerships with Habitat for Humanity – The City has partnered with Habitat for Humanity to develop housing land trusts for affordable housing. Habitat for Humanity is building 50 houses in the Snoqualmie Ridge Development. Low-income residents can purchase the houses, but not the land, from Habitat for Humanity. This ensures that the housing will stay affordable in perpetuity.

Recommended Actions

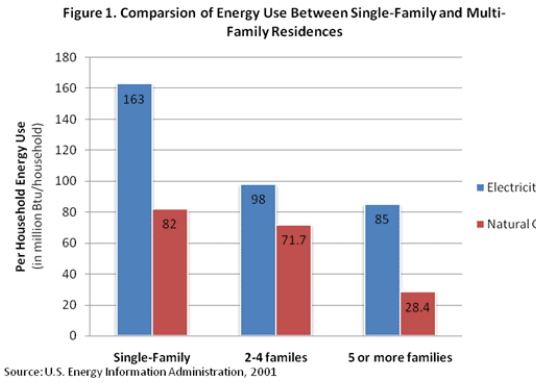
3.11.1 Promote multi-family development

By promoting increased amounts of multi-family and rental units in planned developments, the City can keep costs low for residents who can't afford single-family homes.

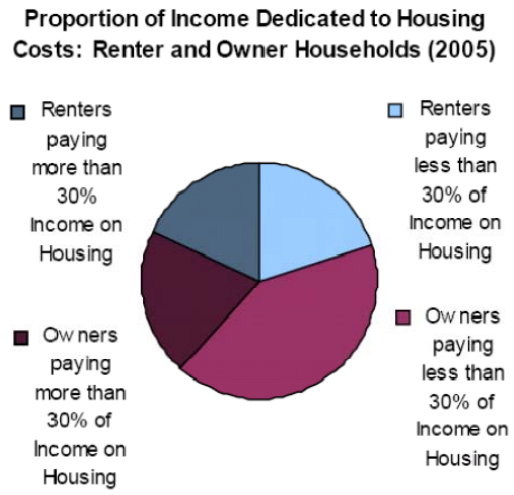
Multi-family developments have the added benefit of being less energy intensive than single family homes, due to their smaller wall and roof space, and smaller size of the units.

3.11.2 Redevelopment of existing housing stock

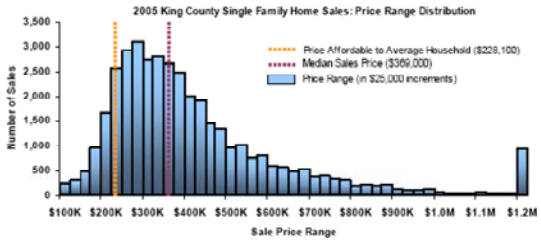
Promote the redevelopment of existing residences to maintain affordability. Programs could include:



Gulf Coast CHP Application Center, "Multi-Family Housing – Apartments", May 28, 2008, http://www.gulfcoastchp.org/Markets/Commercial/MultiFamilyHousingApartments



Kleit, Rachel, "Characterizing the Affordable Housing Problem", April 3, 2008, http://courses.washington.edu/pbafrgk/565/Day2overheads.pdf



King County Budget Office, "King County Benchamrks 2005-2007: Housing Affordability", December, 2006, http://your.kingcounty.gov/budget/benchmrk/bench06/AffHsg/AffHsg_06pg15-16.pdf

- Working with banks to provide low-interest loans (or revolving loan funds) for low-income families to rehabilitate or expand their current housing.
- Working with Habitat for Humanity to implement the housing rehabilitation strategies they have developed in Seattle, in which low-income residents contribute sweat-equity to rehabilitate older, existing homes.
- Connecting owners of property with development or redevelopment potential with Habitat for Humanity, Homestead Community Land Trust, or other housing-oriented land trust organizations.
- Capturing new opportunities for funding weatherization of existing houses offered by the federal stimulus funding administered by CTED.[24]

3.11.3 Promote volunteerism

Promoting volunteerism creates dedicated, healthier, and happier residents while increasing inclusion of diverse groups and sharing expertise to meet community needs. As a state, Washington has high rates of volunteerism – it ranks 13th in the nation.[25] Snoqualmie can help raise our ranking even higher by increasing the degree to which we support community participation.

The City can serve as a central point for connecting volunteers to volunteer activities and needy organizations. It should consider creating a volunteer database for activity leaders and tracking volunteering rates through the program. Community members who donate their time to volunteering should be publicly recognized by the City.

[24] State of Washington Community, Trade, and Economic Development "Recovery and Reinvestment at CTED", 2008, www.cted.wa.gov/recovery

[25] "Volunteer Rates Ranking" Volunteering in America, Corporation for National and Community Service, 10/22/2008, http://www.volunteeringinamerica.gov/map.cfm?mode=1

Community Housing Improvement Program

Cities like Everett, WA are taking advantage of the HUD Community Housing Improvement Program. Under this program, low-income residents can qualify for a 3% interest rate, non-compounding loan for rehabilitation work. The City provides a housing finance advisor and construction inspector to assist with the contracting. Read more at: http://www.everettwa.org/default.aspx?ID=772

Financing Options for Preservation

The Washington State Housing Finance Commission offers a directory of financing options for preservation of existing stock on its website, including information on Low-Income Housing Tax Credits, Tax-exempt bond financing, Land Acquisition Programs, EPA Smart Growth Funds, and local funders such as A Regional Coalition for Housing (ARCH), Impact Capital, and the WA Community Reinvestment Association. Info at: http://www.wshfc.org/preservation/resources.htm

Community Land Trusts

One of the largest and most influential Community Land Trusts is in Burlington, VT. With active city government support, Champlain Housing Trust (CHT) was established in 1984 to produce and preserve affordable housing for local residents. CHT's holdings have grown to 500 units of housing, including single-family homes, housing cooperatives, condominiums and rental options. All housing is affordable not just for the first residents but for all residents thereafter. Find out more at http://www.champlainhousingtrust.org/.

Promoting Volunteerism

The Corvallis Sustainability Coalition has a number of volunteerism goals, including tracking volunteer rates, eliminating socioeconomic barriers to participation, and hiring a city Volunteer Advocate.

http://www.sustainablecorvallis.org/SustainabilityActionPlanFinal12_15_0.pdf

3.12 Supporting Programs

While the majority of our recommendations fit into specific sustainability topic areas, some are cross-cutting across subject areas and would support sustainability as a general program and practice in the city. These are listed below.

3.12.1 Create "Green Hero" awards program

To promote sustainability among citizens and businesses, the city could present quarterly awards for being a "Green Leader", where individuals or businesses are recognized for their contribution to sustainability in the city. This program could be developed by a city staff member or sustainability intern, with awarded plaques or certificates, as one more way for the city to show it values taking sustainability seriously.

See Harvard's 10 ways to "Green your Scene", which talks about 10 energy-saving tips and the equivalent carbon dioxide tons you save.
http://green.harvard.edu/top-ten-2009

An alternative would be the development of a "Green LEADer" community certification program, modeled after LEED (Leadership in Energy & Environmental Design) green building certification. .LEED programs model systems where applicants are rewarded with tiered ratings (certification, silver, gold, platinum), based on points for meeting specific green criteria. In a Green LEADer program citizens would voluntarily attempt to gain personal points through a green checklist that encourages changed behavior, such as drying clothes on a clothes rack rather than on a dryer, or getting to work twice a week by carpool or public transit. The form could be compiled and posted on the city website, and people could download and try to complete the checklist to obtain certification of being a Green City LEADer. This model could expand out of the green heroes program as a second step.

3.12.2 Develop online "Green Store"

In an age where adults often feel time-strapped, the convenience of online shopping and door-stop delivery make it easier to acquire products that people might otherwise overlook. Promoting the development of a "Green Store" within the city that carries these items could be a potential boon for sustainability and for the local economy. In addition, setting up a web shopping service for the store would make a variety of goods more accessible to citizens. An option for home delivery would be especially useful for bulky items like compost bins and rain barrels. This would be targeted to local businesses and supported by a small city grant for which local businesses would apply. The grant could provide direct funds or staff assistance to identify appropriate products and set-up the web system.

The online format would provide a list of green tools, organized by topic, which links to various individual tool descriptions including:
-- Product name and picture
-- A brief description of the environmental benefits
-- Cost, delivery time, and fee.
-- (eventually) a record of how many have been sold within the city

This list should be brief and provide items that are: not commonly sold locally (compost bins); products that people don't commonly think of as being 'green' (rain barrels, standing clothes drying racks); and those items that have a prized green reputation (canvas bags, CFL bulbs).

3.12.3 Work with HOA to amend CC&Rs

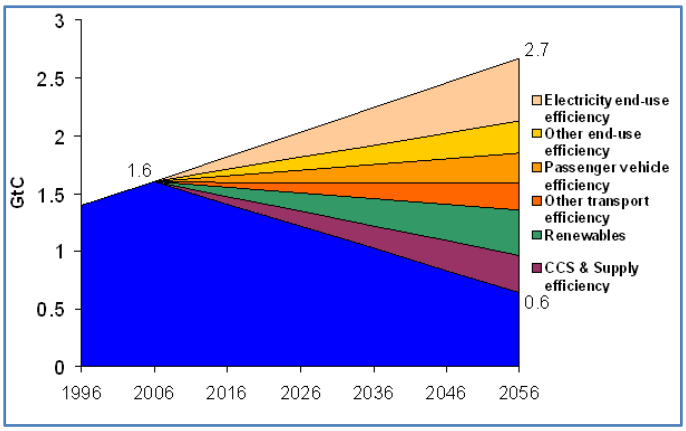
New housing developments in the city are often guided by CC&Rs that restrict property owners from making changes that are viewed as detrimental to the community. While CC&Rs provide multiple benefits for citizens, they might be adjusted slightly to better support sustainability goals. Modifications to CC&Rs might include streamlining permission for green housing alterations, such as solar panels, rain barrels, backyard gardens, compost bins, and other activities.

3.12.4 Develop Green Partnerships

There are multiple partnerships suggested in the preceding sections, regarding water use, energy practices, green purchasing, and so forth. Cohesively collecting, pursuing, and managing partnerships will advance sustainability beyond the realm of city operations and into the daily activities of citizens and businesses alike.

3.12.5 Conduct GHG inventory

The City of Snoqualmie has signed onto the Mayor's Climate Agreement, which includes a commitment to target certain greenhouse gas (GHG) emissions based on a percentage of the city's overall emissions. For the city to meet its commitment, the first step is to conduct a GHG emissions inventory, taking into account municipal operations, energy consumption, and the transportation patterns of residents. Only after this inventory is complete can the city then set its emission targets and know the true projected emission results of city programs and efforts. To ensure an accurate inventory, it is best to conduct the assessment using a credible GHG accounting system that is approved that matches the efforts of other cities around the nation and around the world. One commonly used accounting system is provided by an international non-profit organization, known as ICLEI. ICLEI requires a nominal fee for an annual membership and then provides a number of services, including software and staff training for its computer-based inventory program. The Washington Department of Community, Trade, and Economic Development is currently evaluating a number of software options for conducting city-wide GHG inventories. Their final report is due out by the end of 2009.



Worldwide Emission Reduction Strategies
Emission reduction strategies range in scale from the local to the global level. One current method is to divide total needed emissions reductions into strategic "wedges" that must individually be tackled to reach one's final goals.

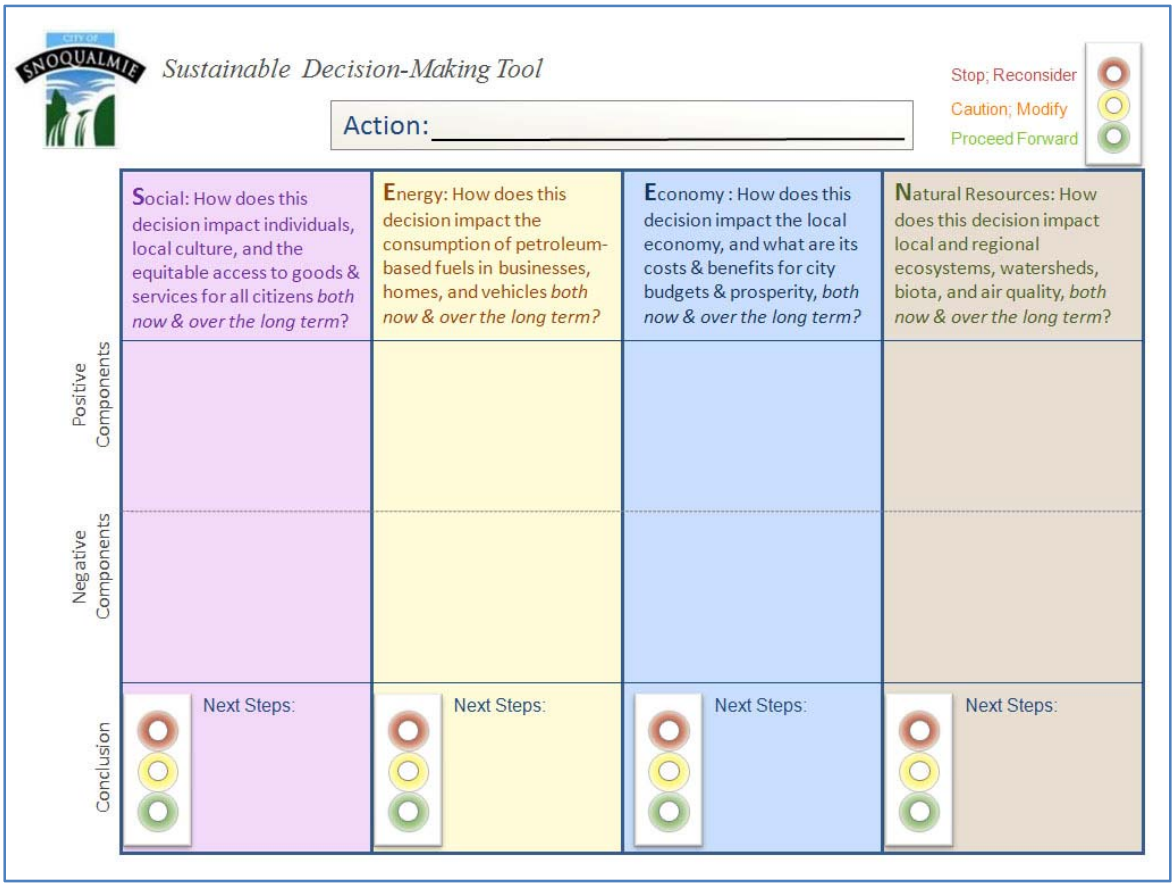
Source: Lashof, Daniel. "US Stabilization Wedges," Natrual resources Defense Council (NRDC. Scientific American, July 27, 2006. http://www.scientificamerican.com/article.cfm?id=us-stabilization-wedges

3.12.6 Create GHG Action Plan

After a GHG inventory has been completed for the City of Snoqualmie, the city should explore creating a GHG Action Plan. There are a number of examples of such plans created for other cities in Washington. If the city decides to join ICLEI, they can provide tools for creating an action plan for GHG reduction. A GHG Action plan helps the city to plan how to meet GHG reduction goals, and track the likely emissions reductions that can be achieved with new and different city programs. The GHG Action Plan is more specific than the Sustainability Strategy and is focused directly on GHG reduction strategies. It can also help prioritize actions by calculating which actions will cause the greatest reduction in GHG emissions and providing general estimates of costs or cost savings.

3.12.7 Adopt use of SEEN matrix tool in city decision-making

To bridge the gap between ideology and implementation, we recommend adopting a policy of using the SEEN tool in all Snoqualmie departments and local government operations. Presented and reviewed more in Section 4.2, the SEEN tool integrates active consideration of the triple bottom-line within the city so that no policy or act would pass without first being weighed against its social, environmental and financial implications. The tool also includes a consideration of energy issues, as these are crucial for mitigating climate change and are not clearly articulated within the other three categories. This tool would span all areas of city decision-making from choices in procurement to budget formation and from departmental decisions to City Council decisions.



SEEN: weighing Social, Energy, Economy and Natural Resource Considerations
Presented in full in Section 4.2, this tool would advance sustainability within Snoqualmie's local government and operations.

4.0 Implementation

The preceding chapters have discussed the importance of sustainability planning, reported on techniques used by other cities, and generated ideas on what Snoqualmie could do to increase its own sustainability. This chapter is designed to put the strategy in motion.

This Strategy is intended to be an action plan; its value will not be realized until the action items are implemented. The sustainability challenges faced by Snoqualmie are immediate. However, there are solutions readily at hand – and many are outlined in this Strategy document.

Section 4.1 of this chapter begins with a discussion of the costs and benefits of each recommended action. This discussion estimates the overall costs in terms of time and resources needed to accomplish the actions, and then compares them to overall benefits – based on general estimates of the extent to which they advance Snoqualmie's Sustainability.

Section 4.2 addresses the fact that our time and resources are limited. While every recommended action in this Strategy has a benefit that likely meets or exceeds its costs, we need a way to prioritize our efforts. To this end, the chapter builds on the cost/benefit information and generates a plan of action.

Section 4.3 provides tools to expand this plan's ideals to other aspects of sustainability planning. We offer a decision-making chart (the Social, Energy, Economy, and Natural Resource (SEEN) matrix) to help evaluate city policies and decisions. This tool is based on one successfully employed by the City of Olympia, and is designed to be quick to use and user-friendly.

Section 4.4, "Funding sources" identifies sources of financial assistance that Snoqualmie may be able to tap for its sustainability efforts. Improvements that Snoqualmie makes to its sustainability can have regional impacts; therefore, funding from county, State, and Federal level sources may be available. In particular, the recent Federal economic stimulus package offers potential funding for "green" city-level projects.

Finally, the chapter concludes with a discussion of how the strategy will be updated. This strategy is not intended to be a static document. As the City learns more about what works and what does not, it will need to adjust its course accordingly. Likewise, as items are completed, they will lead to new ideas on what to approach next. This section will explore ideas on how to keep the Sustainability Strategy alive, how to incorporate the strengths of community members, and how to ensure that the Strategy remains useful for directing Snoqualmie's efforts.

4.1 Costs and Benefits

With limited time and resources, we need a way to prioritize our efforts. To that end, we have provided a general estimate of the costs, benefits, and primary implementation needs for each of the action items identified in chapter 3. We assessed each action item on an estimated cost scale of low, medium, and high, using the following parameters:

- Low – under $10,000 in budget, work of an intern, policy decision, or staff work averaging only an hour or so per week.
- Medium - $10,000 to $30,000 in costs, or staff work averaging 2 to 4 hours a week over the long term, or a more intense effort that would be short term (such as 2-3 months)
- High – over $30,000 in costs, hiring a consultant, major purchases, or a staff effort involving 4 hours per week or more, especially over a long term

We also assessed each action item on estimated benefits in terms of low, medium, and high, using the following parameters:

- Low - benefits a limited portion of city population (10 to 15%) (unless this group is low income or special needs), short term benefits, or low savings in GHG or water
- Medium – Benefits a reasonable portion of city population (15 to 50%), moderate savings in GHG or water, or benefits last a year or more
- High – Benefits a majority of city population (50% or more), good to very good savings in GHG or water, or benefits are long term

Neither set of estimates is intended to be mathematically precise; rather, they are intended to provide a starting point for the City as it develops more detailed cost assessments and assigns projects to managers.

The result of the cost benefit analysis is summarized in the following matrix. The action items are organized by subject, corresponding to the subjects discussed in chapter 3. Each item further identifies the primary implementation method. Implementation methods may involve assignment to existing staff, interns, or consultants. Other items may require partnership development, dedication of funding to initiatives or resource acquisition, while others may require little more than policy or operations decisions. When items require more than one implementation approach, we have highlighted the primary implementation requirement in bold type. Finally, when our research has identified more specific information on cost, benefit, or indicators that can be used to measure implementation progress, we have noted that in the right column and provided those details in Appendix A. Appendix B lists the items grouped by the type of action or person responsible for implementation.

As a final step, we have organized the action items by their benefit and cost to suggest an order of implementation. This information is summarized in the matrix on page 4.6. First, we recommend taking on the actions that have a low cost and provide a relatively high benefit or medium benefit (In dark green and pale green, respectively). Low cost/low benefit items can also be taken on in the short term; this box is in dark yellow, as their benefits are not as pronounced. In the meantime, we recommend that the City take on the medium cost/high benefit and high cost/high benefit items as funds become available; these also are pictured in pale yellow.

Goals	Number	City Actions Proposed	Benefit	Cost	Implementation	More Info on Page
Flooding and Other Climate Change Hazards						
	3.1.1	Continue programs for flooding protection	High	Medium	Assign to existing staff	
	3.1.2	Continue efforts to reassess the floodway	High	Low	Continue staff time	
	3.1.3	Evaluate potential Kimball Creek restoration	High	Medium	Funding for a consultant	A-1
	3.1.4	Evaluate potential for floodplain TDR program	High	Medium	Assign to staff	A-1
	3.1.5	Establish procedures for forest fires & heat waves	High	Medium	Assign to staff	
Energy Efficiency						
	3.2.1	Adopt timeline for city power to go "all green"	High	Medium	Assign to existing staff	
	3.2.2	Promote a city "matching green" program	Medium	Low	Develop a partnership	A-1
	3.2.3	Support local renewable energy generation	Low	Low	Assign to existing staff	A-1
	3.2.4	Develop renewable energy demo projects	High	High	Fund an initiative	A-1
	3.2.5	Offset up-front costs for local renewable energy	High	Medium	Develop a partnership	A-2
	3.2.6	Evaluate energy efficiency in all city gov. buildings	Medium	Low	Assign to existing staff	A-3
	3.2.7	Adopt city policies/programs for energy efficiency	Low	Low	Policy/Ops decision	A-3
	3.2.8	Promote heat load reduction strategies	Low	Low	Assign to staff to research further	
	3.2.9	Offer assistance for home weatherization	High	Medium	Assign to staff to research further	
Sewage and Solid Waste						
	3.3.1	Work with King Co to reach 45% recycling	High	Low	Develop a partnership	A-4
	3.3.2	Promote residential worm bin composting	Medium	Low	Assign to intern	A-4
	3.3.3	Educate consumers on product life cycles	Low	Low	Assign to intern	
	3.3.4	Require recycled paper in all city departments	Low	Low	Policy/Ops decision	A-4
	3.3.5	Use recycled materials in park furniture	Medium	Medium	Policy/Ops decision	
	3.3.6	Ban bottled water from all city activities & offices	Medium	Low	Policy/Ops decision	
	3.3.7	Expand use of Class A reclaimed water	High	Medium	Assign to existing staff	A-4
	3.3.8	Promote Class A biosolid fertilizer use	Med	Low	Assign to existing staff	A-4
	3.3.9	Explore potential for methane recovery	High	High	Funding for consultant	

Goals	Number	City Actions Proposed	Benefit	Cost	Implementation	More Info on Page
Ecosystem Protection						
	3.4.1	Reduce pesti/herbicides affecting groundwater	Medium	Low	Assign to existing staff	A-5
	3.4.2	Sponsor local "streamkeepers" group	Medium	Low	Assign to existing staff	A-5
	3.4.3	Partner for habitat improvement programs	Medium	Low	Develop a partnership	
	3.4.4	Expand programs to control invasive species	Medium	Low	Assign to existing staff	A-5
Land Use						
	3.5.1	Increase residential density	Medium	Low	Assign to existing staff	
	3.5.2	Incentivize distributed commercial centers	Low	Low	Assign to staff to research further	A-5
	3.5.3	Incentivize Accessory Dwelling Units	Low	Low	Assign to staff	A-6
	3.5.4	Incentivize LEED-ND for new developments	High	Medium	Assign to staff to research further	
	3.5.5	Incorporate sustainability into City Comp Plan	High	Medium	Assign to staff	
	3.5.6	Protect historic resources	High	Low	Assign to staff	
Green Infrastructure & Water						
	3.6.1	Develop a plan to become part of Tree City USA	Medium	Medium	Assign to existing staff	A-6
	3.6.2	Partner to educate on gardening & landscaping	Low	Low	Assign to an intern/Advisory Team	
	3.6.3	Encourage porous paving for stormwater infiltrate.	Medium	Low	Assign to staff	
	3.6.4	Pilot projects for LID, rain gardens, etc.	Medium	Medium	Assign to staff	A-6
	3.6.5	Review building codes to remove barriers	Medium	Medium	Funding for consultant	
	3.6.6	Educate citizens on water usage and appliances	Low	Low	Assign to an Intern/Advisory Team	
	3.6.7	Encourage the use of rain barrels	Low	Low	Assign to an Intern/Advisory Team	A-6
Mobility						
	3.7.1	Expand citizen education on green transportation	Medium	Low	Assign to an Intern/Advisory Team	A-6
	3.7.2	Support local biodiesel fuel & shuttle use	Low	Low	Assign to an intern/Advisory Team	
	3.7.3	Expand CTR programs & other incentives	Medium	Low	Funding for an initiative / Partnerships	A-7
	3.7.4	Continue Evergreen Fleet Initiative	High	Medium	Assign to existing staff	A-7
	3.7.5	Create city-wide bicycle & pedestrian Master Plan	High	High	Funding for an consultant	

Goals	Number	City Actions Proposed	Benefit	Cost	Implementation	More Info on Page
Green Buildings						
	3.8.1	Permit fast tracking program	Medium	Low	Policy	A-7
	3.8.2	City-issued green building award	Low	Low	Assign to staff	A-7
	3.8.3	Require green certification for city buildings	Medium	Low	Policy	A-7
	3.8.4	City-offered home energy analysis	Medium	Medium	Staff Time or consultant	A-8
	3.8.5	Revision of the ROA's regulations	Medium	Low	Advisory Team	A-8
	3.8.6	Partner on sustainable construction training	Low	Low	Develop a partnership/Advisory Team	A-8
	3.8.7	Certification fee refund	Medium	Medium	Staff Time	A-8
Health & Food Security						
	3.9.1	Partner with King County's Public Health teams	Medium	Low	Staff time/ Partnership	
	3.9.2	Conduct a community health assessment	Medium	Low	Staff time/Partnership	A-8
	3.9.3	Partner with local businesses for employee health	Low	Low	Assign to an intern/Advisory Team	A-9
	3.9.4	Create new pea patches	Medium	Low	Assign to an intern/Advisory Team	A-9
	3.9.5	Teach nutrition	Low	Low	Develop a partnership	A-9
	3.9.6	Promote food sharing programs	Medium	Low	Intern/Advisory Team	A-9
	3.9.7	Re-establish the Snoqualmie Farmers Market	Medium	Medium	Staff time	
	3.9.8	Foster Community Supported Agriculture (CSA)	Medium	Low	Staff time	
Economics						
	3.10.1	Start a community-wide buy local campaign	Medium	Medium	Staff time	A-9
	3.10.2	Create a local currency program	Medium	Medium	Staff time with initial research by intern	A-9
	3.10.3	Share City lessons learned with businesses	Medium	Low	Staff time	A-10
	3.10.4	Create a Preferential Purchasing Policy	Medium	Low	Policy/Ops decions	A-10
	3.10.5	Promote first floor retail downtown	High	Low	Staff time	
	3.10.6	Create a Downtown Riverwalk	High	High	Funding for purchase	A-10
	3.10.7	Develop a business incubator space	High	High	Funding for purchase	A-10
	3.10.8	Explore potential for green business development	High	High	Staff time and consultant	

Goals	Number	City Actions Proposed	Benefit	Cost	Implementation	More Info on Page
Social Equity						
	3.11.1	Promote multi-family developments	High	Low	Staff time	A-10
	3.11.2	Redevelopment of existing housing stock	Medium	Medium	Staff time	A-10
	3.11.3	Promote volunteerism	Low	Low	Intern/Advisory Team	A-10
Supporting Programs						
	3.12.1	Create "Green Hero" awards program	Medium	Low	Assign to an intern/Advisory Team	A-11
	3.12.2	Develop online "Green Store"	Low	Low	Assign to existing staff/Advisory Team	A-11
	3.12.3	Work with HOA to amend CC&R's	Medium	Low	Assign to an intern/Advisory Team	
	3.12.4	Develop Green Partnerships	Medium	Low	Assign to an intern/existing staff	
	3.12.5	Conduct GHG inventory	High	Medium	Assign to an intern	A-11
	3.12.6	Create GHG action plan	High	Medium	Assign to existing staff/consultant	
	3.12.7	Adopt use of SEEN tool in city decision-making	Low	Low	Assign to existing staff	

BENEFIT / COST	LOW	MEDIUM	HIGH
LOW	3.2.3 Support local renewable energy generation 3.2.7 Adopt city policies/programs for energy efficiency 3.2.8 Promote heat-load reduction strategies 3.3.3 Educate consumers on product life cycles 3.3.4 Require recycled paper in all city departments 3.5.2 Incentivize distributed commercial centers 3.5.3 Incentivize Accessory Dwelling Units 3.6.2 Partner to educate on gardening & landscaping 3.6.6 Educate citizens on water usage and appliances 3.6.7 Encourage the use of rain barrels 3.7.2 Support local biodiesel shuttle use & fuel 3.8.2 City-issued green building award 3.8.6 Partner on sustainable construction training 3.9.3 Partner with local businesses for employee health 3.9.5 Teach Nutrition 3.11.3 Promote volunteerism 3.12.2 Develop online "Green Store" 3.12.7 Adopt use of SEEN tool in city decision-making	3.2.2 Promote a city "matching green" program 3.2.6 Evaluate energy efficiency in all city government buildings 3.3.2 Promote residential worm bin composting 3.3.6 Ban bottled water from all city activities & offices 3.3.8 Promote Class A biosolid fertilizer use 3.4.1 Reduce pesti/herbicides affecting groundwater 3.4.2 Sponsor local "streamkeepers" group 3.4.3 Partner for habitat improvement programs 3.4.5 Expand programs to control invasive species 3.5.6 Protect Historic Resources 3.6.3 Encourage porous paving for stormwater infiltrate 3.7.1 Expand citizen education on green transportation 3.7.3 Expand CTR programs & other incentives 3.8.1 Permit fast tracking for green buildings 3.8.3 Required green certification for city buildings 3.8.5 Revision of the ROA's Modifications Regulations 3.9.1 Partner with King County's Public Health teams 3.9.2 Conduct a community health assessment 3.9.4 Create new pea patches 3.9.6 Promote food sharing programs 3.9.8 Foster Community Supported Agriculture (CSA) 3.10.3 Share City lessons learned with businesses 3.10.4 Create a Preferential Purchasing Policy 3.12.3 Work with HOA to amend CC&R's 3.12.1 Create "Green Hero" awards program 3.12.4 Develop Green Partnerships	3.1.2 Continue efforts to reasses the floodway 3.3.1 Work with King Co to reach 45% recycling 3.5.1 Increase residential density 3.10.5 Promote first floor retail downtown
MEDIUM		3.1.1 Continue programs for flooding protection 3.3.5 Use recycled materials in park furniture 3.6.1 Develop a plan to become part of Tree City USA 3.6.4 Pilot projects for LID, rain gardens, etc. 3.6.5 Review buliding codes to remove barriers 3.8.4 City offered home energy analysis 3.8.7 Certification fee refund 3.9.7 Re-establish the Snoqualmie Farmers Market 3.10.1 Start a community-wide buy local campaign 3.10.2 Create a local currency program 3.11.2 Redevelopment of existing housing stock	3.1.1 Continue programs for flooding protection 3.1.3 Evaluate potential Kimball Creek Restoration 3.1.4 Evaluate potential for flooplain TDR program 3.1.5 Establish procedures for forest fires and heat waves 3.2.1 Adopt timeline for city power to go "all green" 3.2.5 Offset up-front costs for local renewables 3.2.9 Offer Assistance for home weatherization 3.3.7 Expand use of Class A reclaimed water 3.5.4 Incentivize LEED-ND for new developments 3.5.5 Incorporate sustainability into City Comp Plan 3.7.4 Continue Evergreen Fleet Initiative 3.10.7 Develop a business incubator space 3.11.1 Promote multi-family developments 3.12.5 Conduct GHG inventory 3.12.6 Create GHG action plan
HIGH			3.2.4 Develop renewable energy demo projects 3.3.9 Explore potential for methane recovery 3.7.5 Create city-wide bicycle & pedestrian Master Plan 3.8.4 City-offered home analysis 3.10.6 Create a Downtown Riverwalk 3.10.8 Explore potential for green business development

4.2 Sustainable Decision-Making Tool

One potential gap between any plan and its implementation is the fact that plans speak to larger ideologies and policies, concepts that can become disconnected from our everyday activity and decision-making. Although there are many ways bridge this gap, one is to integrate small tools for addressing each bottom line of sustainability into daily decisions by staff, Boards and Commissions, and City Council. The triple bottom line discussed in Section 1.1 posited measuring decision and development impacts against social and natural environment considerations. Energy issues often fall outside these three, yet are critically important for reasons ranging from local costs to national security –and even to global climate change. Given its increased global significance, energy warrants special considerations in decision-making.

Environmentally balanced, socially just, culturally vital, and energy responsible communities are far better equipped to weather economic storms and other ills, as they are not as dependent on finite resources for continued operation. These are sustainable communities that are resilient to impacts and self-sufficient in meeting many of their daily needs.

To create a tool to aid sustainable decision-making, we began with a document used by the city of Olympia – the SAM, or Sustainable Action Matrix. The SAM is an acronym-heavy, but user-friendly, one-page document conceived in mid-2006, used to guide various policies within the city , including a zero-waste resolution, multi-modal transportation projects, and water reclamation. The document uses a stoplight metric to rate policies within the realms of Nature, the Individual, the Community and the Economy by looking at the Strengths, Weaknesses, Opportunities and Threats (SWOT) of that policy. In applying this tool to Snoqualmie, we felt that the SWOT analysis might be premature for many decisions, and that we could reduce the overlap between their categories of the Individual and the Community.

As such, Olympia's original SAM document has been re-organized to be more applicable for the City of Snoqualmie. The matrix is divided into four columns, to include the "triple bottom line" of Social, Economic and Environmental (here called "natural resources"). To these 3 legs of sustainability, we have added Energy, because of its critical importance in terms of climate change issues. Thus, the four columns provide space for Social, Energy, Economy, and Natural Resource (SEEN) to be considered in decision making. We have also replaced the SWOT analysis with a simpler way to group the impacts – recording positive and negative components. This tool framework, to be used in decision-making, will help to make sure all policy elements have been SEEN, recognized, and balanced to the optimal degree. This tool is intended to be used for **all** aspects of city decision making – from choices in procurement to budget formation and from departmental decisions to City Council decisions. It is important that the SEEN tool be incorporated across the widest possible spectrum of choices if sustainability is to be fully integrated into **all** city government roles: leadership, education, policy, regulation, monitoring, management and operations.

The SEEN matrix tool is provided on the following page.

Sustainable Decision-Making Tool

Action: _____

Stop; Reconsider
Caution; Modify
Proceed Forward

	Social: How does this decision impact individuals, local culture, and the equitable access to goods & services for all citizens *both now & over the long term*?	**E**nergy: How does this decision impact the consumption of petroleum-based fuels in businesses, homes, and vehicles *both now & over the long term?*	**E**conomy : How does this decision impact the local economy, and what are its costs & benefits for city budgets & prosperity, *both now & over the long term?*	**N**atural Resources: How does this decision impact local and regional ecosystems, watersheds, biota, and air quality, *both now & over the long term*?
Positive Components				
Negative Components				
Conclusion	Next Steps:	Next Steps:	Next Steps:	Next Steps:

4.3 Funding Sources

Snoqualmie has a number of options for accomplishing action items included in this Strategy. Many actions are relatively low cost and could be completed by interns such as undergraduate or graduate university students in urban planning or related fields. These items are identified in Section 4.2. Other actions could be completed by local residents - adults or students - as volunteers, who are coordinated by staff, the student intern, or by members of the Mayor's Sustainability Advisory Team.

Some cities also find that sustainability programs can be self-funding over the long term. For example, some cities have hired a part-time or full-time staff responsible to identify and implement specific energy saving measures for the city. Since many of these measures also save costs, the cost savings can then be used to continue to fund the position.

Where more substantial funds are needed, these may be provided by the City general fund, partnerships with other organizations, support from energy utilities, or from State or Federal funds.

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Alternatively, Snoqualmie can utilize the momentum of existing programs with other organizations and cities in partnerships. For example, the Redmond Trip Reduction Incentive Program (R-TRIP) provides funds to individuals for choosing different commuting options, and would be worthwhile to explore, given the number of Snoqualmie citizens currently employed in Redmond.[1] Other opportunities are sometimes detailed within the text of this document, such as the Solar Schools opportunity, where the city's energy provider of PSE offers grants to individual schools to fund the installation of solar arrays on local educational facilities.

This section does not attempt to provide a full cataloging of the funding sources available. That, in itself, could be the work of the implementing staff or intern. However, we do provide an overview of the programs included in the federal economic stimulus package, since this is recent legislation and many cities are unfamiliar with it. This package, known as the American Recovery and Reinvestment Act of 2009 (ARRA), allotted more than $11 billion nationwide for these programs:

- Weatherization Assistance
- State Energy Program
- Energy Efficiency and Conservation Block Grants

Snoqualmie could make use of federal stimulus funds under the ARRA program to implement aspects of the Sustainability Strategy. The three categories for funding are described below:

1. Low Income Weatherization – This program is funded at $59 million for Washington State to provide assistance to low income households for home weatherization, resulting in savings to the household for energy costs and savings statewide in energy demand. The Act increases low income eligibility to 200% of the federal poverty level and increases the average per dwelling unit assistance level to $6,500. The contact at CTED for this program is Steve Payne at (360) 725-2950 or stevep@cted.wa.gov.

2. State Energy Program (SEP) – This program is funded at $10.6 million for Washington state, with $6.4 million of that total to be distributed to jurisdictions under 35,000 in population size and small counties with fewer than 200,000. The criteria for receiving grants under this program are to: 1) create jobs, 2) save energy or produce clean energy, 3)

[1] "Redmond Trip Reduction Incentive Program (R-TRIP)" https://www.gortrip.com/home/incentives.aspx

reduces greenhouse gas emissions, 4) implementation-ready, 4) ability to leverage other funds. Other portions of this fund are targeted to weatherization efforts (middle income) and to grants to financial institutions for credit enhancements. CTED is in the process of deciding how the funds will be invested, and will submit that proposed to the Department of Energy.. The Energy Policy Division of CTED is maintaining a list of interested applicants and will send out notices to interested applicants. A request for proposals (RFP) will be sent to all eligible small cities with fewer than 35,000 and small counties with fewer than 200,000 population upon approval of the state application by DOE. The CTED contact for this program is Heather Ballash at (360) 725-3044 or Energy_Policy @cted.wa.gov

Energy Efficiency Community Block Grants – This program is funded at $58.6 million for Washington State. These funds are targeted to programs such as: 1) developing and implementing building code revisions, 2) distributed energy /new technology programs, 3) energy efficient traffic signals and street lighting, 4) renewable technology on city buildings, 5) bike and pedestrian trails, and 6) home evaluations and retrofits. The CTED contact for this program is Heather Ballash at (360) 725-3044 or Energy_Policy @cted.wa.gov

In general, funds under the ARRA program are required to meet the following four requirements:

1. Project is ready to start - Funds can be obligated by September 2010 (September 2009 for Block Grants)
2. Projects involving public buildings must use US-produced materials
3. Projects must pay prevailing wages
4. Not more than 10% of the funds can be used for administrative costs

Projects involving the following elements are not eligible: casinos, aquariums, zoos, golf courses, swimming pools.

Actions described in Section 3.0 that may be eligible for funding under ARRA include:

1. Preparation of a city-wide carbon inventory using accepted protocols
2. Weatherization of older homes in the downtown area
3. Development of the Bike and Pedestrian Master Plan
4. Development of plans and financial incentives for a green industry business park with incubator sites – either at the existing business park or at the Mill site.
5. Establishment of a “local energy policy” officer to direct the implementation of the Strategy and to find energy savings/cost savings options for the city. This position could be self-supporting, as cost savings are realized through the implementation of energy saving programs
6. Any combination of some or all of the above under the umbrella of a “Plan Implementation” for the Sustainability Strategy

Washington State also passed recent legislation to support sustainability. Some of these bills allocate funds, while others serve to define how Washington will use ARRA funds or other federal funding sources.

SB 5649 passed during this session of the state legislature. This bill does not allocate additional funds, but defines modifications to existing programs and uses of the federal ARRA funds. To this end, the legislature established a policy goal of assisting in weatherizing twenty thousand homes and businesses in the state in each of the next five years. The bill requires that funds be used to support three pilot studies under this program , with criteria to include:

1. provide energy efficiency assistance to structures used or owned for residential, commercial, or non-profit purposes in specified urban neighborhoods;
2. use volunteer support through community-based institutions;
3. employ energy audits using recognized, cost-effective retrofit measures;
4. select and provide oversight of the retrofit work performed by contractors; and
5. work with customers to secure financing for the project.

HB 2289, Section 5 (Energy Recovery Act Account) provides $38.5 million for loans in the range of $500,000 to $1,000,000 to established industries for renewable energy and clean energy technology. Criteria for eligibility for this program include:

1. Job creation is the first and foremost criteria for selection
2. Funds cannot be used for research projects
3. Funds cannot be used for “forgivable” loans
4. Biomass or renewable energy projects are considered

This bill amends the Energy Freedom Program by allowing grants and loans for projects that will result in the availability of alternative, renewable, and efficient energy sources for homes and businesses. Grants or loans may be awarded to projects that do not require continued state assistance and that receive federal funds. The CTED must prioritize projects based on the following criteria:

1. Reduction of dependence on petroleum fuels, imported energy, and alternative, renewable, and efficient energy;
2. Reduction of air and water pollution;
3. Establishment of viable energy, biofuel, or alternative, renewable, or efficient energy production capacity in Washington;
4. Benefits to Washington's agricultural producers;
5. Benefits to the health of Washington's forests;
6. Uses of biogas;
7. Benefits to Washington's alternative, renewable, and efficient energy industry; and
8. Creation of jobs and economic benefits.

ESSB 6170, expanded in 2009, provides individuals, businesses, and local governments that are not in the light and power business to receive payments of up to $2,000 from the light and power business that serves them for the generation of electricity by a qualified renewable energy system.

The bill also provides a sales and use tax exemption in the form of a refund is allowed for 100 percent of the sales tax paid on machinery and equipment used to create energy from fuel cells, sun, wind, biomass energy, tidal and wave energy, geothermal resources, anaerobic digestion, and technology that converts otherwise lost energy from exhaust or landfill gas from July 1, 2009, to June 30, 2011. The sales tax exemption is reduced to 75 percent from July 1, 2011, to June 30, 2013. The exemption expires June 30, 2013.

4.4 Updating the Strategy

This strategy is not intended to be a static document. The issues it addresses and the solutions available are constantly evolving:

- Scientists are increasing their understanding of climate change issues constantly;
- New technological advances create new opportunities; and
- Expanding interests and resources allow us to re-evaluate our priorities.

For all of those reasons, the Strategy needs to be updated on a regular basis, generally every 2 to 3 years.

As the City begins to implement some of the actions contained in this Strategy, it will learn more about what works and what is not cost effective for the unique characteristics of Snoqualmie and will be able to adjust its course accordingly. Likewise, as items are completed, they will lead to new ideas on what to approach next.

Finally, it is important to update the Strategy on a regular basis to keep alive the momentum that was created in the process of generating this initial version.

Some of the ways to keep the momentum alive include:

- Make use of the energy and ideas of the Mayor's Sustainability Advisory Team to implement Recommended Actions or to take on their own activities;
- Educate local citizens on what they can do in their own lives and how it makes a difference;
- Use City government experiences as examples for local businesses;
- Look for partnerships with other entities, including schools, King County departments, neighboring cities, and non-profit organizations;
- Involve and energize local citizens as volunteers; and
- Track results and celebrate successes!

Appendix A:

Notes for Additional Cost/Benefit Information and Indicators

for Action Items Noted in Cost/Benefit Matrix

3.1 Flooding and Other Climate Change Hazards

3.1.3 Evaluate potential Kimball Creek Restoration

- *Costs:* Detailed hydrologic studies would be needed involving a specialized consultant.

3.1.4 Evaluate the potential for floodplain TDR program

- *Benefits:* TDR could be a less expensive and faster way to acquire lands along the river. Would benefit property owners who wanted only seasonal use of their property. Could also foster higher densities in other designated locations desired in city policy.
- *Indicators:* number of properties involved in TDR transactions, riverfront acreage acquired.

3.2 Energy Efficiency

3.2.2 Promote a city "Matching Green" program

- *Costs:* A matching green energy-purchasing program would require coordination with the city energy utility PSE, and/or the Bonneville Environment Foundation, developing the program proposal, and arranging for promotional materials for the residents. The lever that makes this more cost-comfortable and of a higher priority is that the city could put a ceiling on the matching fund amount – such as matching up to $10,000 dollars or matching up to 10% of the city's energy use. The cost ceiling will make it easier to implement for its inherent budgeting flexibility.
- *Indicators:* The number green of kilowatt hours the city buys.

3.2.3 Support local renewable energy generation

- Costs: Coordinating with fellow cities such as Issaquah on composing renewables regulation, such as with Issaquah, should not be a large initial barrier. Additional tasks may increase the time commitment but help make the program a success, such as working with PSE on creating citizen factsheets to help project costs for different local renewable options, and possibly keeping a list of installers for referral. As mentioned before, the city of Hercules has arranged permit waivers combining for a $1,000 cost reduction to those installing solar systems. This includes rebates with the filing fee, plan check fee, building permit fee and electrical permit fee in their solar rebate program. Snoqualmie could arrange similar rebate packages to incentivize solar and advertise its efforts on the city website
- *Indicators:* The number of renewable energy generation systems operating within the city, and the total generation capacity within the city.

3.2.4. Develop renewable energy demonstration projects

- *Costs:* The cost of renewable energy projects vary by size, equipment, and the amount of energy intended to be captured. Explored here are the costs of a photovoltaic (PV) or solar arrays, though that is certainly not the only renewable energy option in the city.

A US Department of Energy publication, "Get Your Power from the Sun: A Consumer's Guide states that a small 75 watt demonstration system for a park may only cost $900 installed, at a cost of 12$/watt. The net energy gain from this investment, though, is small. In contrast, a 2-kilowatt system, costing $16,000 to $20,000 (8$-$10/watt) would comparably cover the power use of a very energy-efficient house, while a 5-kilowatt system could cost $30,000 to $40,000 (6$-8$/watt) would cover most homes with conventional energy usage rates. Bigger systems tend to decrease the per-kilowatt cost of energy collection, but also require more up-front investment. However, larger arrays with greater technological sophistication could mean a quicker return on the initial cost.

There are innovative ways of financing the up-front costs of PV arrays. In addition to grant opportunities, the city could set up a website fund where individuals and businesses could donate towards solar arrays in the city. Even partnering with PSE on a small citizen mailer asking citizens to add 50 cents to their energy bill for four months would roughly cover half the cost of a 4-kilowatt system on a city building. This financing approach might alternatively be used into outfitting schools with solar arrays, a cause that might encourage some parents to donate extra for the idea of making the schools more energy efficient, or perhaps (eventually) net energy producers.

The payback time (also called "ROI" or Return On Investment) also varies by the type of system used. Most conventional solar systems require 8 to 11 years for the initial investment to be recovered (Blakers 2000), whereas high-efficiency systems may achieve payback in less than two years, though the common availability of these systems in the market is not as well-known.

To encourage citizen installation, posting a summary of research findings on the city website would help them to assess if solar arrays might suit their energy needs.

- *Indicators:* The number of renewable energy generation systems operated *by the city*, the total generation capacity *by the city*.

Sources:

- See US Department of Energy. "Get Your Power from the Sun: A Consumer's Guide." December 2003. http://www.nrel.gov/docs/fy04osti/35297.pdf
- Blakers, Andrew and Klaus Weber. "The Energy Intensity of Photovoltaic Systems." Centre for Sustainable Energy ystems, Engineering Department, Australian National University. October 2000. http://www.ecotopia.com/apollo2/pvepbtoz.htm
- Knapp, Karl, and Theresa Jester. "An Empirical Perspective on the Energy Payback Time for Photovoltaic Modules." June 2000. http://www.ecotopia.com/apollo2/knapp/PVEPBTPaper.pdf
- Nelson, Mike and Gary Shaver. "The Washington Solar Electric Industry: Sunrise or Sunset?" 2003 http://www.energy.wsu.edu/documents/renewables/sunrisesunset.pdf
- A brief overview can also be gained from a paper written by a solar power installer, Jack Hardy, in "Solar Energy Options for Western Washington." 2008. http://www.westernsolarinc.com/Inserts%20-%20Home%20Page/Solar%20Energy%20Options%20for%20Western%20Washington.pdf
- Solar Buzz. "Solar Energy Costs." 2009. http://www.solarbuzz.com/StatsCosts.htm
- Olympia Solar arrays: Department of Ecology, WA. "Climate Change: Walking the Talk" Webpage. http://www.ecy.wa.gov/climatechange/washington.htm#111
- A fun account of one person who is working on energy efficiency in their spare time: "Solar": http://www.evnut.com/solar.htm

3.2.5. Develop resources to off-set up-front costs of renewable energy installations

- *Costs:* Revolving loan funds traditionally require a substantial amount of initial financing, but once set-up they are typically self-sustaining. While experienced financial professionals will be more accustomed to handling larger amounts of funds, this action faces higher challenges because financial representatives may not be used to operating an environmentally-oriented program. In addition, city staff are less likely to be familiar with some of the technicalities of arranging it.

  However, lessons learned from operators of other green funds, such as at Harvard (student population 20,000) and other universities, help demonstrate their viability. The Harvard program

currently has $11.5 million loaned out, $4 million in savings, 153 projects, and was created for projects that:

- Reduce greenhouse gas emissions;
- Reduce energy use;
- Reduce water use;
- Reduce sewage or stormwater;
- Reduce pollutants;
- Improve operations;
- Educate occupants;
- Install renewable energy

The project itself could be initiated with a grant; a program in Yakima valley noted several grant sources that add to their available funds. See http://rcdr.biz/RLF.php.

- *Indicators:* loan fund achievements could be tracked and advertised in a similar manner above, with loans provided, savings, project numbers approved, as well as environmental benefits achieved, such as greenhouse gas emissions avoided, gallons of water saved, amount of energy saved, etc.
- *Sources*
  - For more information, see US EPA. "institutional Administration: Dedicated Revolving Loan Fund for Environmental Project." 2003. http://www.greencampus.harvard.edu/gclf/documents/EPAHarvardRevolvingLoanFund.pdf
  - A recently-compiled guide on setting up such a fund with students has been released: http://www.aashe.org/documents/resources/pdf/CERF.pdf.

3.2.6. Evaluate energy efficiency in all city government buildings

- *Costs:* Even as the city plans to more into a more energy efficient city –hall, there are still buildings operated by the city that could undergo energy audits to increase their efficiency, such as buildings in the planning and public works departments. While consultations themselves may cost little with the utility provider, they actual costs of implementing energy savings recommendations could vary. Older buildings may call for anything from double-panned windows to duct repairs. In addition, larger buildings may be harder to capture energy savings from in terms of heat loss. However, the beginning of increasing energy efficiency in the city is knowing the concerns surrounding older building stock.
- *Indicators:* The number of city buildings that have been evaluated, the energy-efficiency improvements that are in place, equivalent measures that may have been undertaken in their stead, the number of improvement options remaining, and the projected energy savings that have been achieved and are believed may still be accomplished.

3.2.7 Adopt City Policies and Programs to increase energy efficiency

- Benefits: Savings from energy-star procurement policies are highly dependent on both how much physical equipment has been purchase, and how efficiently it is managed by staff. Some potential cost savings are detailed in the EPA's Energy Star Buyers Guide, quoted in the ACEEE Online Guide to Energy-Efficient Commercial Equipment:

  > "A typical U.S. business with 100 employees may have 100 computers, 10 laser printers, 4 copiers, 4 fax machines, and 2 scanners. By purchasing ENERGY STAR-qualified equipment, this business can cut its annual electricity costs by nearly $5,000 relative to an office with equipment that does not meet ENERGY STAR labeling criteria [U.S. Environmental Protection Agency. 2001. Buyer's Guide to Purchasing ENERGY STAR Labeled Office Equipment. Washington, D.C.: U.S. Environmental Protection Agency]."

A policy on purchasing a laptop for users that are comfortable with it could also result in energy savings; laptops use much less energy than the desktop computer models. (US Department of Energy, 30)

Even small programs could potentially affect city energy use. For instance, According to Lawrence Berkeley National Laboratory, approximately half of computers are left running at night and on weekends, but small programs such as posters advising different computer patterns have resulted in substantial behavior changes (American Council). A paper from the Department of Environmental Quality notes appropriate times to turn computers off, demonstrating small areas that additional long-term energy savings could be achieved.

- *Indicators:* The ratio of energy-star qualified equipment across individual office-equipment categories (energy-star printers to non; energy star copiers to non-; energy star monitors to non-; etc); number of employees that report they are following office energy policy guidelines.
- *Sources:*
  - See American Council for an Energy-Efficient Economy. "Online Guide to Energy-Efficient Commercial Equipment" American Council for an Energy-Efficient Economy. http://www.aceee.org/ogeece/ch5_office.htm
  - See Department of Environmental Quality, Oregon. "Computers and Monitors: When Should I Turn Them Off?" Factsheet. August 2002. http://www.deq.state.or.us/lq/pubs/factsheets/sw/ComputersMonitors.pdf
  - US Department of Energy: Energy Savers Booklet: Tips on Saving Energy & Money at Home." October 2008. http://www1.eere.energy.gov/consumer/tips/pdfs/energy_savers.pdf
- LED lighting note: The City of Snoqualmie plans to eventually employ LED (Light Emitting Diodes) lighting throughout the community. LED lights consume up to 80% less electricity than conventional incandescent lights. If this program is executed successfully, it will noticeably decrease the city's energy use.
- *Indicators:* The ratio of LED lights to non-, and projected energy savings.

3.3 Sewage and Solid Waste

3.3.1 Work with King County Solid Waste to increase community recycling to 45% by 2015

- *Benefit:* Recycling creates more jobs than landfills. According to the EPA, landfills reduce property values, discourage capital investment, and discourage use of nearby facilities.
- *Indicator:* Percentage levels of residential recycling

3.3.2 Promote residential worm bin composting

- *Indicator*: pounds/kilograms of food and organic material diverted from waste stream.

3.3.4 Require recycled paper in city departments

- *Benefit:* Logging, air and water pollution caused by manufacturing virgin paper results in unnecessary environmental remediation costs that are paid by taxpayer money.
- *Benefit:* According to a 2004 study by the NRC & EPA, recycled paper production supports nearly 140,000 American jobs.
- *Indicator:* Amount of pollution and CO2 offset

3.3.7 Expand use of Class A reclaimed water

- *Indicator:* gallons of graywater used.

3.3.8 Promote Class A bio-solid fertilizer use

- *Indicator:* pounds/kilograms of bio-solid fertilizer sold/used

3.4 Ecosystem Protection

3.4.1 Reduce pesticides/herbicides affecting groundwater.

- *Indicator:* purity of groundwater

3.4.2 Sponsor local group "streamkeepers".

- *Indicators:* number of community volunteers/hours of involvement, stream health.

3.4.4 Expand programs to control invasive species

- *Indicator:* Percentage of native species in city parks, lining trails, etc.

3.5 Land Use

3.5.2. Incentivize distributed commercial centers

- *Costs/Benefits:* Land-use planning considerations of density, in general, are subject to flexible budgeting, high cost with issue avoidance, and strong benefits if appropriately directed.
    - (1) Budgeting: The costs of changing plans to incorporate higher density may be spread out over time, and thus can more easily integrate with fiscal and time budgets of planning staff. Green purchases or action items with short time frames can sometimes consume %100 of one's time in a week or month, whereas actions that require more long-term development may only require 10% of time in the work week, providing flexibility in how the issue is addressed overall.
    - (2) The costs of avoidance are high: Avoiding more compact development can negatively influence one's economic market-shed, complicate financing transit options, and increase the cost of hard infrastructure provision over time. Research has shown that streets, water mains, electrical wiring all cost money, and impervious surface installations (ie. Roads) experience higher maintenance costs in sprawling developments (and can gradually increase taxes). The book Sprawl Costs cites studies by Rutgers University that implied savings of $3,000 per residential and nonresidential unit in compact infrastructure development, savings which can be increased or decreased depending on development decisions. This does not touch on issues of congestion, health impacts, and quality-of life impacts
    - (3) Conversely, the benefits of attention are great: Density and having accessible destinations such as retail are shown to be highly influential creating a more walkable community. Aside from the avoided infrastructure and societal costs, compact development directed towards walkability has spillover benefits to citizens, including more viable marketsheds and potential health benefits for a more active citizenry. Higher density can also be achieved without towering buildings, instead designing toward smaller attractive apartments. For instance, densities of 7 to 12 units per acre can be achieved through cottage housing.
- *Indicators:* Achieved density against the 7 dwelling units per acre (dua) minimum benchmark. King County has a density benchmark of 6 dua, which it has exceeded in recent indicator assessment periods of 2002-2004. Other benchmarks that King County is tracking for land use includes:

  1) The number of different land uses, or individual attractions.
  2) The rentable square footage available within each use category
  3) The gross or total parcel area measures the total parcel area committed to particular uses and gives a sense of gross area

  These are all measured within a one kilometer/half mile distance from a central point within residential clusters. Qualifying categories of measurement include education, entertainment, sing family residential, multi-family residential, retail, and office.

- *Sources:*
  - King County Housing Alliance. "Cottage Housing in Your Community: A Guide to Drafting a Cottage Housing Ordinance." June, 2001. http://www.mrsc.org/GovDocs/S42CottageHousOrdGuide.pdf (accessed April 4, 2009)
  - Burchell, Robert, Anthony Downs, Barbara McCann, and Sahan Mukherji. Sprawl Costs: Economic Impacts of Unchecked Development.

3.5.3 Incentivize Accessory Dwelling Units (ADUs)

- *Costs:* This action is a low-cost way to increase the density of existing areas, while also providing smaller dwelling units with the added benefit of more affordable for low-income seniors, young adults, or positions in the service industry. Many cities are providing incentives for ADU development; this action may require moderate investments of research time on the part of city staff, would be very beneficial if incentive programs are successful. Some beginning incentives are detailed in a 2003-initiated Santa Cruz program, including fee waivers, provided architectural ADU prototypes, city loans with a 4.5 interest rate, and a technical assistance program. Santa Cruz's Housing and Community Development group provides full information about the variety of supportive programs, including architectural plans and models used:
- *Indicators:* The number of ADUs built within the city.
- *Sources:*
  - Regulatory Clearinghouse Breakthroughs. "Santa Cruz's Accessory Dwelling Unit Program." Volume 6, Issue 2. March 2007. http://www.huduser.org/rbc/newsletter/vol6iss2more.html
  - Housing and Community Development: http://www.ci.santa-cruz.ca.us/pl/hcd/ADU/adu.html.
  - Additional references from MRSC: http://www.mrsc.org/Subjects/Housing/ords.aspx

3.6 Green Infrastructure & Water

3.6.1 Develop a plan to become part of Tree City USA

- *Cost:* UW study reported a willingness to pay about 11% more for goods in a landscaped business district than a non landscaped district.
- *Indicator:* number of trees by species and age, and estimated pollution and CO2 offsets.

3.6.4 Develop pilot projects for LIDs, Rain Gardens, etc.

- *Costs:* The costs of all of these projects vary greatly. Green Values: Stormwater toolbox provides a cost calculator for most green infrastructure projects. It shows both initial and long term cost for these projects. http://greenvalues.cnt.org/raingardens

3.6.7 Encourage the use of rain barrels

- *Costs:* Average cost for a commercial-grade 55 gallon barrel is 60 dollars. Rain dance water barrels out of Oregon sells a complete system for 85 dollars. Some water utilities and environmental groups have promotions where rain barrels are offered for free.
- *Indicator:* Number of rain barrels

3.7 Mobility

3.7.1 Expand citizen education on green transportation

- *Costs:* Primary expenses would be staff time, curriculum development and printing. As the scope of the project is flexible, so are the budget needs. Bellingham, along with the Whatcom Council of Governments, WTA and Whatcom County, is presently supporting the implementation of the Smart Trips program.
- *Costs:* Ultimately, the Social Data Individualized Marketing Program will cost approximately $1,500,000. Funding for the first phase has been identified. Additional sources of funding will need to be secured to implement the rest of the program, it is not expected that the city fund this component.

3.7.3 Expand CTR Programs & other incentives

- *Cost:* A weighted average of these shows an overall 9.8% decrease in per capita VMT among city employees from 1999 levels
- *Indicator:* Reduce the amount of SOV work commute

3.7.4 Continue Evergreen Fleet Initiative

- *Costs:* In the case of the Toyota Prius, upfront costs are about $6000 more than a similar all-gas vehicle. Moreover, as hybrids are relatively new to the market, it is not yet clear what the difference in long-term maintenance costs and depreciation may be.
- *Benefits/Savings*—Savings and payback period will depend on vehicle use and the cost of fuel. Based on the performance of vehicle #172 (the city's oldest Prius) traveling about 10,000 miles per year and paying $3.00 per gallon, a savings of $600/year per vehicle could be realized.
    - In 2005, B-20 cost the city about 22 cents/gallon more than traditional diesel. Since that time the cost of petro-diesel as increased substantially and is frequently more expensive than biodiesel. As popularity of biodiesel grows and as the state's requirements take effect, it is likely the cost of petro-diesel and biodiesel will remain relatively similar.
    - Whatcom Transportation Authority recently established a policy that buses staging for more than two minutes should not be idled except in extremely cold weather. It is expected this practice will save more than $25,000 a year and 15,000 gallons of fuel, or about 5% of WTA's total fuel use.

3.8 Green Buildings

3.8.1 Permit fast-tracking Program

- *Information:* With the new Phase two development it is important to create this program quickly so that business that intend on building in the new (or old) business park, are aware of this before hand. City's that currently have a similar program are Kirkland and Issaquah. (see http://www.ci.issaquah.wa.us/page.asp?navid=327) Kirkland allows the use of Built Green checklist or LEED standards (ex. a 4 or 5 star Built Green Rating is equal to a silver or gold LEED rating).

3.8.2 City-issued Green Building Award

- *Costs:* While it requires a very small amount of effort to create and maintain such a program, it will not be the most effective incentive. The award will encourage residents to make more energy efficient decisions on a small scale.

3.8.3 Required green certification for city buildings

- *Information:* Adopting a green building requirement will have a significant effect on the construction and renovation of high energy using buildings. By requiring that all buildings over 4,000 or 5,000 square feet obtain at least a 4 star Built Green rating or a silver LEED rating we can ensure that we target the largest energy users. Seattle has instituted a similar requirement and has seen a large improvement in the energy efficiency in their commercial sector. Seattle Sustainable Building Policy at: http://www.seattle.gov/dpd/GreenBuilding/CapitalProjects/SeattlesPolicy/default.asp
- Costs: Because going green can add anywhere from 2-8% to the project, it is imperative that the city pass some sort of policy requiring a certain level of green building.

3.8.4 City-offered home energy analysis

- *Costs/Benefits:* Although it may require hiring a staff member, offering a home analysis to the residents of Snoqualmie can greatly increase energy efficiency in the residential sector. Most of the residents on the ridge do not have the ability to make large scale renovations to their homes. This will help the residents become aware of the small changes they can make to lower their electric bills and reduce waste. The largest downside to this plan is that the city would have to hire on a full time or part time green technician. Specific numbers found at St. Louis Park's Pilot Green Pilot Program page. http://www.stlouispark.org/remodeling_insentives.htm

3.8.5 Revision of the Residential Owners Associations' regulations

- *Costs/Benefits:* Through partnerships with the ROA we can remove some of the roadblocks that keep residents from changing the exteriors of their home. Solar panels, clothelines, and rain gardens that require approval can be allowed. The partnership would require staff time, but not a lot of money.

3.8.6 Partner on sustainable construction training

- *Benefits:* With many of those on the Ridge living in homes built within the last 10 years, major renovations will not be a priority for these homes. The major loans will most likely be utilized by those in the downtown area. The city of St. Louis has a similar program, found at: http://www.stlouispark.org/remodeling_insentives.htm

3.8.7 Certification fee refund

- *Costs:* The refund of certification fees will require could be a costly item for the city. The problem of large certification fees can be solved by using a green checklist that is not as expensive as LEED or by offering to refund a portion of the fee. The Built Green Program offers a less costly approach than LEED. Information on how much money green building saves can be found at: http://www.cape.com/ewebeditpro/items/O59F3259.pdf

3.9 Health & Food Security

3.9.2 Conduct a community health assessment

- *Indicators:* percent of adults age 18+ who are overweight or obese. Overweight is defined as having a body mass index (BMI) that is greater than or equal to 25 and less than 30, and obese is a BMI of 30 or more. Percent of adults age 18+ for whom poor physical or mental health restricted regular activities 3 three or more days in the last month & percent of adults who say they are in poor health. Data is available from Communities Count (www.communitiescount.org) and the Washington State and national

Behavioral Risk Factor Surveillance System (BRFSS).

- *Indicators:* Percent of population that is uninsured. Data available from Northwest Area Foundation's Indicator Website. Experimental data available from Small Area Health Insurance Estimates program from the US Census Bureau.
- *Indicators:* Average Level of Stress. Data available from Communities Count (www.communitiescount.org) and the King County Community Health Survey[2]

3.9.3 Partner with local businesses for employee health

- *Benefit:* Since there are not a lot of businesses in Snoqualmie, the overall impact would be limited.
- *Indicator:* Number of Snoqualmie businesses offering & promoting wellness health benefits, Number of Snoqualmie businesses completing health audits, Sick days taken by Snoqualmie business employees.

3.9.4 Create new pea patches

- *Indicator:* Total acres and number of public agricultural gardens (could also do private gardens through survey)

3.9.5 Teach nutrition

- *Indicator:* Number of enrollees in local nutrition programs.

3.9.6 Promote food sharing programs

- *Benefit:* In 2007, Community Fruit Tree Harvest volunteers harvested more than 10,000 pounds of apples, plums and pears.
- *Indicator:* Amount of fresh food received by local food programs.

3.10.1 Start a community-wide buy local campaign

- *Costs:* At least a portion of the costs of Bellingham's Buy Local campaign is offset by charging participating businesses for advertising space in the buy local directory. Additional funds are acquired at different levels from the City of Bellingham, and business 'sponsors" and "co-sponsors". In other communities, businesses offer discounts to local customers and do not get charged for advertising. [3]. Maryland programs in Wheaton and Silver Spring were funded by County grants as follows: one staff person ($62,000) and shopping guide printing for 214 businesses ($6,000).[4]
- *Benefits:* Decreases transportation-related emissions, helps local economy. In Bellingham 3 in 5 local households have changed their purchasing behavior to buy local.[5] According to an economic analysis, for every $100 spent at a locally-owned business, $45 goes back into the community and local tax base, and for every $100 spent at a non-local chain store, only $13 comes back to the local area.[6]

[2] http://www.b-sustainable.org/personal-environment/stress
[3] http://www.floridatoday.com/article/20090413/NEWS01/904130316/1086
[4] http://www.gazette.net/stories/04292009/silvnew183655_32523.shtml
[5] http://www.sustainableconnections.org/thinklocal
[6] http://www.cityoforlando.net/Elected/mayor/pressreleases/09_04_01_launch.htm

3.10 Economics

3.10.2 Create a local currency

- *Costs:* At least a portion of the costs of Ithaca's HOURS community currency is offset by charging participating businesses for advertising space in the local HOURS directory.

3.10.3 Share lessons learned with businesses

- *Costs:* Could be started by an intern, but would need staff to be continued on an on-going basis
- *Indicator:* Number of "Growing Green" certified businesses

3.10.4 Create a Preferential Purchasing Policy

- *Costs:* Bellingham found that there would be little additional costs to implementing an environmental purchasing policy, due in part to an exemption for products that are more than 120% of the cost of standard products. The most expensive portion of the proposal is likely to be 100% post consumer paper products. Bellingham estimated it would cost their city $2700 annually more than their current paper costs.
- *Indicator:* Paper – recycled content and post-consumer waste recycled content as a percentage of total paper content purchased. Could be obtained from City purchasing records?
- *Indicator:* Number of service providers and companies on a green vendors list that meet defined minimum requirements for environmentally friendly operations

3.10.6 Create a Downtown Riverwalk

- *Costs:* Costs will vary based on the size and scope of the project. For example, the River Walk, a 22-mile-long park, a rowing center, and landmarks developed on a former flood way in Chattanooga, TN was funded with $12 million from private-sector foundations and financial institutions. Of course, smaller projects would cost much less.

3.10.7 Develop a business incubator space

- *Costs:* The Vermont Center for Emerging Technologies was funded with $4 million in federal funds.
- *Benefits:* Six businesses have successfully completed the program; 10 more are currently participating. According to the National Business Incubation Society, a study conducted by the U.S. Department of Commerce Economic Development Administration (EDA) found that on a cost-to-return basis, federally funded business incubators provided significantly more economic development than did federally funded infrastructure projects such as roads, bridges, commercial buildings and water and sewer service.[7] The EDA report found incubator investment provided a 20 to 1 advantage over infrastructure investments, creating jobs at a cost of $144 to $216 per job through incubators compared to the job-creation cost of $2,920 to $6,872 through infrastructure.

[7] http://www.vermonttoday.com/apps/pbcs.dll/article?AID=/20090301/CBJ/902269977

3.11 Social Equity

3.11.1 Promote multi-family development.

- *Indicator:* Number of ADUs, multifamily units permitted

3.11.2 Redevelopment of existing housing stock

- *Indicator:* Number of housing units upgraded using federal grant money. Number of housing units receiving energy efficiency assistance from PSE.

3.11.3 Promote volunteerism

- *Costs:* May require an intern or staff time to initiate. Would then require some ongoing staff time to continue the programs.
- *Benefit:* Reduces cost of other measures if they can be transferred to volunteers.
- *Indicator*: Number of volunteer hours and distinct individuals devoted to sustainability projects per year (as compared to previous 4 years) – Currently done by Shoreline
- *Indicator:* Total number of volunteer hours and hours per capita dedicated to managing, monitoring, restoring and conserving biodiversity
- *Indicator:* Total number of volunteer events and number of volunteer events dedicated to environmental enhancement

3.12 Supporting Programs

3.12.1 Create "Green Hero" awards program.

- *Costs:* Estimation of costs and the details of the program would revolve around many criteria::
  - How often are the awards provided?
  - How many, and what do they look like? Is it a certificate, a plaque?
  - For whom? Is this for business only or does it include community members? It is only for adults or can students be nominated?
  - Who decides the "winners" of the award – does a staff member screen recommendations and the mayor make the final decision?
  - And so forth.

  A sustainability intern could conceivably initiate and manage this program. After initial organization and launch, it could take roughly 10-15 administrative hours per award-period (monthly/quarterly/yearly) to maintain, namely screening potential recipients and writing recommendations. Assuming $12/hour for an intern and 15 hours of period management, that translates to an $180 budgetary commitment per period for maintenance. If a larger yearly or a bi-annual program was created, staff time would still be unlikely to exceed 40 hours of effort, which translates to $480. Time estimates would vary depending on development & distribution of promotional materials, ordering of potential awards, degree of web tracking, and so forth. In any case, the notoriety that comes along with a program, and the benefit of green promotion in local culture, would potentially be a great boon in exchange for little effort, depending on how the program was handled and received.

  The development of a "Green LEADer" community certification program would take considerable more investment and would likely be a long-term, rather than periodic, project.

- *Indicators:* Number of green awards awarded, to whom, and for what. (Vancouver posts profiles of community leaders on their city website: http://vancouver.ca/sustainability/)

3.12.2 Develop online "Green Store"

- *Costs:* Coordinating with a local Snoqualmie business to create a "green store" section in their goods could be incentivized in various ways. The city could place a grant option for which local businesses would apply, providing either $500 – 1000 in direct funds, staffing assistance to set-up the web system, or even coordinating web designer volunteers to help initiate the system. Local businesses could then apply for the grant or program to ensure an equitable process. The web system would include a list of green tools, organized by topic, that links to various individual tool descriptions including product name, picture, price, a description of the environmental benefits, and a system to select the delivery option.
- *Indicators:* Number of items sold, and their potential cumulative environmental benefit.

3.12.5 Conduct GHG inventory

- *Costs:* CTED is currently reviewing a number of Greenhouse Gas (GHG) Inventory programs and is expected to release their recommendations for emissions assessment by the end of 2009. One system used by other cities in Washington and elsewhere is provided by ICLEI. ICLEI estimates that an inventory covering municipal operations and community emissions would require "an intern working full time for approximately 10 weeks, or 300-500 hours of entry level staff time." An estimate of $12 -- $15 hourly pay translates to $3,600 -- $7,500, not including ICLEI membership of $600/year for cities with populations under 50,000. This action is low cost, given the amount of information provided and would begin the City's compliance with the US Mayor's Climate Protection Agreement. This estimation does not include the time it would take to create a GHG action plan following assessment, but illustrates the first step of that process.
- *Indicators:* The inventory would provide the number of metric tonnes of carbon-dioxide equivalent gases emitted per year, the size of the city's carbon footprint, as well as energy consumption by source and per capita.

Appendix B:

Actions listed by Main Implementor

Hire a Student Intern or Involve Volunteers to:

- 3.3.2 Promote residential worm bin composting
- 3.3.3 Educate consumers on product life cycles
- 3.6.2 Partner to educate on gardening & landscaping
- 3.6.6 Educate citizens on water usage and appliances
- 3.6.7 Encourage the use of rain barrels
- 3.7.1 Expand citizen education on green transportation
- 3.7.2 Support local biodiesel fuel & shuttle use
- 3.8.5 Revision of the ROA's regulations
- 3.9.3 Partner with local businesses for employee health
- 3.9.4 Create new pea patches
- 3.9.6 Promote food sharing programs
- 3.10.2 Research hot to create a local currency program
- 3.11.3 Promote volunteerism
- 3.12.1 Create a program for a “Green Hero” award
- 3.12.4 Investigate and develop partnership opportunities with schools, King County and others.
- 3.12.5 Conduct greenhouse gas inventory

Funding for Purchases, Programs, or Consultant Studies

- 3.1.3 Evaluate potential Kimball Creek restoration
- 3.2.4 Develop renewable energy demonstration projects on public sites or in partnerships
- 3.3.9 Explore potential for methane recovery
- 3.6.5 Review building codes to remove barriers
- 3.7.3 Expand CTR programs & other incentives
- 3.7.5 Create city-wide bike and pedestrian Master Plan connecting the Ridge system to other parts of the city, including a trail to the Falls
- 3.10.6 Create a Downtown “Riverwalk” public park space and trails, including connections to the Falls to provide open space and to support economic development of the downtown businesses area
- 3.10.7 Develop business incubator space supporting local economic growth and green businesses

Partnership Decisions

- 3.2.2 Promote acity “matching green” program
- 3.2.5 Offset up-front costs for local renewable energy
- 3.3.1 Work with King County to reach 45% recycling levels in the community
- 3.4.3 Partner for habitat improvement programs
- 3.8.6 Partner on sustainable construction training
- 3.9.5 Teach nutrition

Policy & Operations

- 3.2.7 Adopt city policies and programs for energy efficiency
- 3.3.4 Require recycled paper in all city departments
- 3.3.5 Use recycled materials in park furniture
- 3.3.6 Ban bottled water from all city activities & offices
- 3.8.1 Provide permit fast-tracking for green building development or remodeling
- 3.8.3 Require green certification for all city buildings
- 3.10.4 Create a Preferential Purchasing Policy

Assign existing staff or hire new staff to:

- 3.1.1 Continue programs for flooding protection
- 3.1.2 Continue efforts to reassess the floodway
- 3.1.4 Evaluate potential for floodplain TDR program
- 3.1.5 Establish procedures for forest fires & heat waves
- 3.2.1 Adopt timeline for city power to go "all green"
- 3.2.3 Support local renewable energy generation
- 3.2.6 Evaluate energy efficiency in all city gov. buildings
- 3.2.8 Promote heat load reduction strategies
- 3.2.9 Offer assistance for home weatherization
- 3.3.7 Expand use of Class A reclaimed water
- 3.3.8 Promote Class A biosolid fertilizer use
- 3.4.1 Reduce pesti/herbicides affecting groundwater

Assign existing staff or hire new staff to:
(continued)

3.4.2 Sponsor local "streamkeepers" group
3.4.4 Promote Class A biosolid fertilizer use
3.5.1 Increase residential density
3.5.2 Incentivize distributed commercial centers
3.5.3 Incentivize Accessory Dwelling Units
3.5.4 Incentivize LEED-ND for new developments
3.5.5 Incorporate sustainability into city's Comprehensive Plan update
3.5.6 Protect historic resources
3.6.1 Develop a plan to become part of Tree City USA
3.6.3 Encourage porous paving for stormwater infiltrate.
3.6.4 Pilot projects for LID, rain gardens, etc.
3.7.4 Continue Evergreen Fleet Initiative
3.8.2 City-issued green building award
3.8.4 City-offered home energy analysis
3.8.7 Certification fee refund
3.9.1 Partner with King County's Public Health teams
3.9.2 Conduct a community health assessment
3.9.7 Re-establish the Snoqualmie Farmers Market
3.9.8 Foster Community Supported Agriculture (CSA)
3.10.1 Start a community-wide buy local campaign
3.10.3 Share City lessons learned with businesses
3.10.5 Promote first floor retail downtown
3.10.8 Explore potential for green business development
3.11.1 Promote multi-family developments
3.11.2 Redevelopment of existing housing stock
3.12.2 Develop online "Green Store"
3.12.4 Develop Green Partnerships
3.12.6 Create GHG action plan
3.12.7 Adopt use of SEEN tool in city decision-making