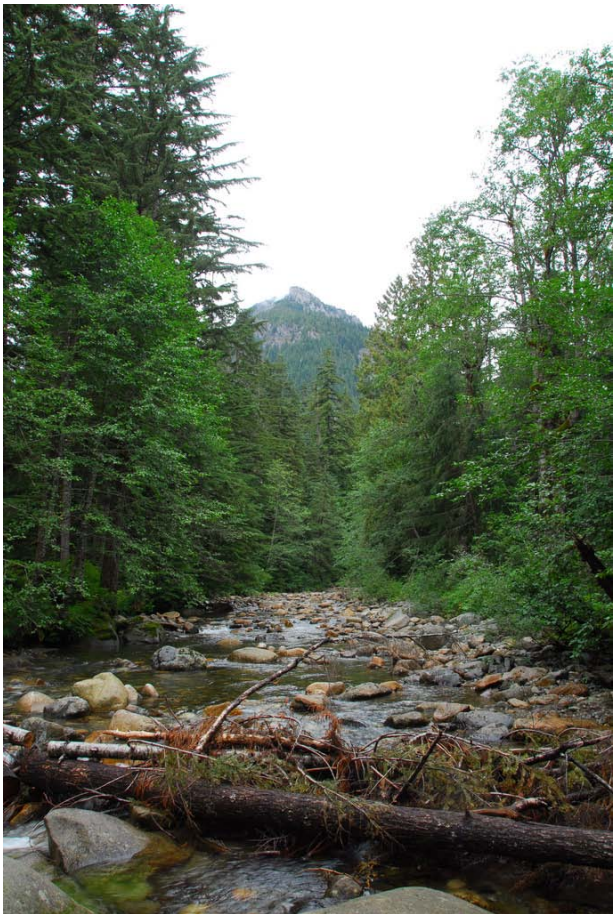
Climate Action Plan

Skagit County, Washington **PUBLIC RELEASE DRAFT**



Prepared by the Skagit County Climate Action and Sustainability Taskforce, Skagit County staff, and the Board of County Commissioners

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DRAFT FOR PUBLIC REVIEW AND COMMENT

Skagit County 2010 Climate Action Plan

DRAFT FOR PUBLIC REVIEW AND COMMENT — December 4, 2009

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Smoke plume from refineries outside Anacortes.
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Memo from the Board of Skagit County Commissioners

[to be developed]

Executive Summary

by **Dr. Jerry Whitfield**, Taskforce Member

Global climate change is the greatest challenge of our generation. Within a century, warming of the Earth's atmosphere is projected to cause extreme weather events to become frequent, to cause glaciers across the countryside to disappear, to make once-vibrant species scarce or extinct, and to increase sea level at a catastrophic rate.

Causes of Climate Pollution

Many of these changes have indeed already begun. Scientific observations show global temperatures have undeniably been increasing over the past 50 years. The main cause: carbon emissions from the burning of fossil fuels (coal, oil, and natural gas) with important contributions from the clearing of forests and agricultural practices.[1] In Washington State, transportation (46%) and electricity generation (20%) comprise the bulk of greenhouse gas emissions.[2] Even here in the Pacific Northwest, over half of our electricity is generated from fossil fuels.

Targets for Reducing Climate Pollution

Carbon dioxide is now concentrated in the atmosphere at 386 parts per million (ppm) and is increasing every year.[3] Scientists predict that if we exceed 450 ppm, we may never be able to reverse the problems we've created. Among many possibilities, physical risks include frequent and severe climate events, receding glaciers and ice sheets, rising sea levels, and food shortages. At the rate we're going, this could happen in less than sixty years.

Globally, if we are to reverse our destructive course, we must reduce our greenhouse gas emissions by at least 80% from current levels in just forty years.[4] This is probably the most challenging technical, political, and social problem the world has ever faced.

If we fail to act in a constructive and timely manner, we risk not only catastrophic changes in the weather and climate, but significant financial costs associated with regulation to force changes in behavior, and the increasing economic burden to adapt and respond to the physical effects brought on by climate change.

Taskforce Recommendations

The Skagit County Commissioners understand that Climate Change is an immediate problem that needs tackling at the local level. They have established a Taskforce to recommend suitable strategies. In creating these recommendations, the Taskforce is mindful that Skagit County government has no direct control over climate pollution from transportation and electricity generation. Statewide, such sources constitute two-thirds of the problem, and the County should strongly support state and federal mandates to tackle these major issues.

For the things we can influence, the Taskforce has devised policies and projects that will enable county government to establish a leadership role in local sustainable practices. The Taskforce's mandate was to identify ways our county, as individuals and as a local government, can:

- Use energy more efficiently and therefore use less
- Encourage the use of renewable energy

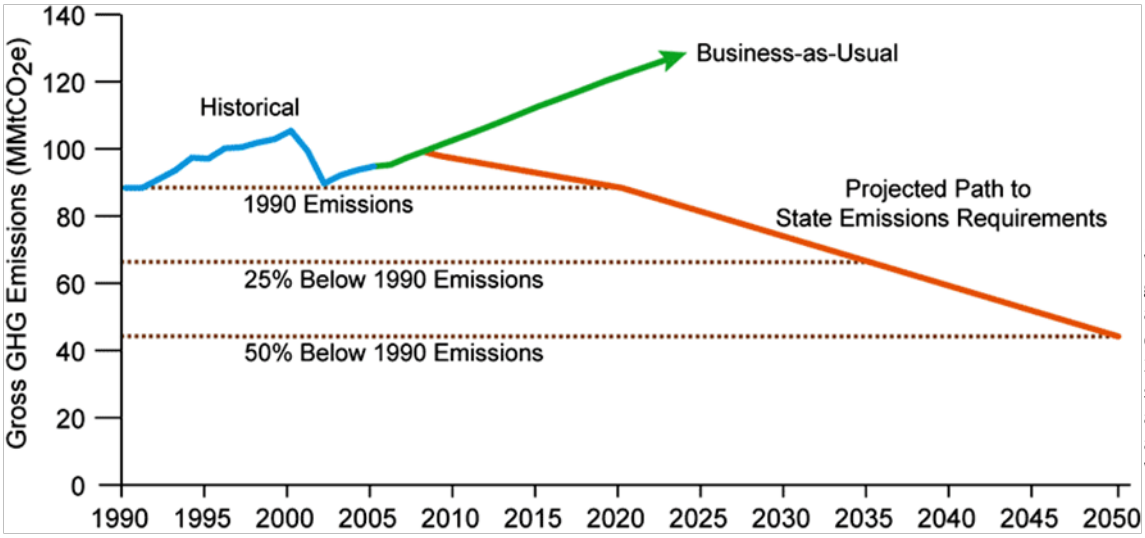


Figure 1.
Washington State's historical greenhouse gas emissions and statutory emission reduction goals for the years 2020, 2035, and 2050. The significant drop after 2000 is attributable to the closing of an aluminum plant. Source: WA DOE & CTED.

- Reduce energy use through building codes
- Provide carbon sequestration through land use policy
- Reduce commute miles through improved urban and rural planning
- Provide better mass transit opportunities and other low-carbon methods of transportation
- Reduce the purchase of products that emit significant greenhouse gas emission, or required significant emissions during manufacture
- Use best waste management practices
- Lead by example through county outreach and education regarding how and why to reduce global warming pollution in all aspects of daily living

Everyone contributes to the problem of climate pollution in a measurable way every day. Educating the public on the causes and effects of climate change and the importance of adopting new habits is essential for citizens to reduce their carbon footprints.

The policies recommended by the Taskforce can put us on the right path towards reducing climate pollution and can provide tangible benefits for the citizens of Skagit County. The Taskforce hopes to create a culture within Skagit County that takes climate change seriously. Adoption of these recommendations is likely to lead to more job opportunities and more advanced entrepreneurial activities. This effort should be one that draws the community together to conserve, protect, and diligently manage the natural resources around us in a sustainable fashion.

---

[1] Global Climate Change Impacts in the United States. US Global Change Research Program 2009.

[2] Growing Washington's Economy in a Carbon Constrained World. WA DOE & CTED. Dec 2008 Publication # 08-01-025.

[3] NOAA. Trends in Atmospheric CO2 – Mauna Loa. Earth Systems Research Laboratory. 2009.

[4] Gupta, S., D. A. Tirpak, N. Burger, J. Gupta, N. Höhne, A. I. Boncheva, G. M. Kanoan, C. Kolstad, J. A. Kruger, A. Michaelowa, S. Murase, J. Pershing, T. Saijo, A. Sari, 2007: Policies, Instruments and Co-operative Arrangements, page 776. In Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Skagit County residents rally to lower atmospheric greenhouse gas to 350 ppm at the Skagit Cool Climate Café on November 1, 2009. The Skagit County Commissioners have formed a cool climate team to see who can most reduce their household greenhouse gas emissions. Photo copyright Vince Streano. Used with permission.

Introduction

With passage of the Skagit County Climate Action Resolution in June 2008,[1] the Skagit County Board of Commissioners set in motion a broad-ranging initiative to address climate change, reduce resource consumption, and create a Sustainable Skagit County.

Specifically, the resolution:

- Directed specific county departments to pursue specific resource conservation projects
- Provided general direction to county staff to conserve electricity, fuels, and natural resources.
- Joined the ICLEI—Local Governments for Sustainability Climate Protection Campaign and the Cool Counties Climate Stabilization Initiative.
- Committed the county to inventorying its operational greenhouse gas emissions and finding ways to dramatically reduce those emissions;
- Established a citizen taskforce to assist the county in its work to combat climate change and develop a long-term plan for climate action.

A :: GHG Emission Reduction Goals

In its Fourth Assessment report in 2007, the Intergovernmental Panel on Climate Change calculated that developed countries need to reduce their greenhouse gas emissions to 25-40% below 1990 levels by 2020 and to 80-95% below 1990 levels by 2050 in order to keep global atmospheric greenhouse gas concentrations below 450 ppm of CO_2e.[2] Subsequent studies indicate that keeping atmospheric CO_2e below 350 ppm may be necessary to avoid significant climate impacts, which would require similarly more significant decreases in GHG emissions.

More than two years ago, Governor Gregoire committed Washington State as a whole to reducing statewide greenhouse gas emissions to 50% below 1990 levels by 2050.[3] Later in 2007, the Legislature codified these goals.[4]

In Resolution R20080304, the County Commissioners committed the County to a long-term goal consistent with the Cool Counties initiative—reducing regional greenhouse gas emissions to 80% below 2000 levels by 2050. This goal is substantially similar to the level of GHG reduction that the IPCC Fourth Assessment calculated necessary to stabilize GHG emissions at the 450 ppm level.

B :: Climate Taskforce

The Board of County Commissioners received 40 applications from community members interested in serving on the Climate Action and Sustainability Taskforce, and made appointments in December 2008.[5] The Board-approved work plan for the Taskforce requests policy and project recommendations that:

- Are capable of measuring progress;
- Are based on best-available science; and
- Build on the work of other communities

The Taskforce met for the first time on January 16, 2009, and divided into the five workgroups specified in the Board-approved work plan. The workgroups focused on the following subjects:

- Energy (Conservation and Renewables)
- County Purchasing
- Land Use and Transportation
- Outreach and Education
- Solid Waste and Recycling

Each workgroup included a variety of county staff members, agency officials, and business representatives. Various county staff members facilitated the workgroups as their schedules allowed. Workgroups scheduled their own meetings. The Taskforce as a whole met a few times to review progress, and finally to approve the workgroups' recommendations.

The Taskforce submitted its workgroups' final draft recommendations to staff on October 26, 2009. The final product of the Taskforce's work is provided in Part 5, Taskforce-Recommend Policies; and Part 6, Taskforce-Recommended Land Use Planning Policies.

C :: Other County Initiatives

SCOG Resource Conservation Manager Program

Nine jurisdictions (Skagit County, the Ports of Anacortes and Skagit County, Skagit PUD, the Swinomish Tribe, La Conner, and each of the cities except Mount Vernon) have partnered with the Skagit Council of Governments and Puget Sound Energy to fund a program guaranteed to save

money on utility usage by reducing consumption in internal operations.

Participating jurisdictions are now developing Resource Conservation Management Plans that include policies and procedures for the use of electricity, natural gas, propane, water, sewer, solid waste, and recycling services, and Facility Action Plans that focus on individual buildings. Skagit County's conservation plan for daily operations, included in this document as Part 4, was developed by a team of county staff appointed by the County Administrator.

Energy Savings Performance Contracting Program

Many of Skagit County Government's buildings, especially the law and justice buildings, are in serious need of upgrades and retrofits to maximize their energy efficiency. Such renovations have the potential to yield utility savings in excess of the renovation cost, but the high initial cost would ordinarily prevent the County from undertaking the project.

The Washington State Department of General Administration (GA) operates a program specifically for state agencies and local governments to retrofit government buildings for energy efficiency. The Energy Savings Performance Contracting Program manages a renovation contractor selected by the County, allows the County to obtain inexpensive credit using the State Treasurer's bonding authority, and guarantees that the amount the County expends on the project is paid back over a period of 10 years or less. Skagit County contracted with the GA for this program in June 2009 and selected its subcontractor, McKinstry, in July. The subcontractors' performance audits are nearing completion, and the County expects to be able to begin construction in 2010.

Alternative Futures Project

In fall 2008, Skagit County received a four-year grant from the U.S. Environmental Protection Agency to develop a fifty-year vision for Skagit County that addresses ongoing conflicts between agricultural, environmental, and development interests while anticipating the effects of population growth and climate change. The project will ultimately recommend changes to zoning, regulations, incentives, and other policies and programs necessary for implementation. More information is available at www.skagitcounty.net/alternativefutures.

Swinomish Climate Change Initiative

Along with the Town of La Conner, the community of Shelter Bay, and the University of Washington Climate Impacts Group, Skagit County is participating in the Swinomish Indian Tribal Community's study of a wide range of potential climate change impacts to the Swinomish reservation, including sea level rise and impacts to upland communities and forestlands. The project will ultimately produce an action plan with recommendations for adaptation measures. The County plans to use the lessons learned through this project to advance its own adaptation planning.

Other Projects & Actions

Skagit County has taken a number of other notable steps toward sustainability in the past few years, including:

- Installing a rain garden, with a grant from the Department of Ecology, to collect and filter runoff from the roof of the Continental Place building addition.
- Partnering with the Swinomish Tribe in support of their study of a wide range of potential climate change impacts to the Swinomish reservation;
- Distributing more than 7,200 compact fluorescent light bulbs to seniors and low-income households through the Assessor's Office;
- Partnering with Puget Sound Energy to support their "Powerful Choices for the Environment" program in local schools;
- Increasing countywide recycling rates to 41% of the solid waste stream, and countywide recycling and diversion rates to 53% of the solid waste stream;
- Extending the life of existing vehicles to avoid new purchases;
- Switching to hybrid gas-electric vehicles for use by the Health Department and an all-electric truck for use by facilities maintenance crews; and
- Using 20% biodiesel mix on the Guemes Ferry during a grant program that paid for the cost premium.

D :: What will this initiative cost?

In the current challenging fiscal environment, no one is more aware than the Board of Commissioners of the need to make the best use of the taxpayer dollar and to eliminate waste and overhead wherever possible. Fortunately, the measures necessary to reduce climate pollution and

ensure sustainability almost always have the happy side effect of reducing costs.

A 2007 analysis conducted by the respected consulting firm, McKinsey & Company, found that the U.S. could reduce its greenhouse gas emissions using existing technology by 4.5 gigatons by 2030 at near-zero net cost.[6] The IPCC released similar findings in 2007 that suggest a six-gigaton GHG emission reduction by 2030 with net negative cost is possible.[7]

Nearly every policy in this document will save the county money, either immediately or within a reasonable period of cost recovery. Wherever it was possible to calculate with a reasonable degree of certainty, estimated cost savings are listed below the policy.

Energy Efficiency & Conservation Block Grant

In May 2009, Skagit County received a formula allocation of $495,100 through the federal Department of Energy from the American Recovery and Reinvestment Act to fund energy efficiency, renewable energy, and waste reduction initiatives.

In November, DOE approved the following projects, several of which fund Taskforce-recommended priority projects:

Project	Amount
Small project energy retrofits	$10,000
Expand existing event recycling program	$16,000
Expand recycling at county public facilities	$39,500
Vehicle fleet review & management software	$17,000
Additional assistance to SCOG RCM program	$50,000
14x home renovation assistance program	$190,000
Fund part-time Sustainability Administrator & Coordinator positions to implement projects	$172,600
Total	**$495,100**

More information about each of these projects is available at www.skagitcounty.net/sustainability.

E :: About this Document

This Climate Action Program represents a commitment on behalf of Skagit County to execute its policies. The goals and policy headings in this document, as well as the roman text following each heading, are binding county policy. County departments are expected to carry out these policies in accordance with the schedule provided in the resolution adopting this Climate Action Program.

F :: Next Steps

With adoption of the 2010 Climate Action Plan, Skagit County has taken a substantial step forward in its program to mitigate climate pollution, both as an organization and as a region. The County's climate initiative now shifts into its second phase, implementation.

[1] Resolution R20080304 (2008).

[2] Gupta, S., D. A. Tirpak, N. Burger, J. Gupta, N. Höhne, A. I. Boncheva, G. M. Kanoan, C. Kolstad, J. A. Kruger, A. Michaelowa, S. Murase, J. Pershing, T. Saijo, A. Sari, 2007: Policies, Instruments and Co-operative Arrangements, page 776. In Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

[3] Executive Order 07-02, available at http://www.governor.wa.gov/execorders/eo_07-02.pdf

[4] E2SHB 2815 (2007-08).

[5] Resolution R20080583 (2008).

[6] McKinsey & Company, *Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost?,* Dec. 2007, at 20, available at http://www.mckinsey.com/clientservice/ccsi/greenhousegas.asp.

[7] Intergovernmental Panel on Climate Change, *Summary for Policymakers, Climate Change 2007: Synthesis Report, Nov. 2007, at 14, available at http://www.ipcc.ch/pdf/assessment-report/ar4//_syr_spm.pdf.*

Part 2: Climate Science Background

The Local and Global Effects of Climate Pollution

A :: The Atmosphere

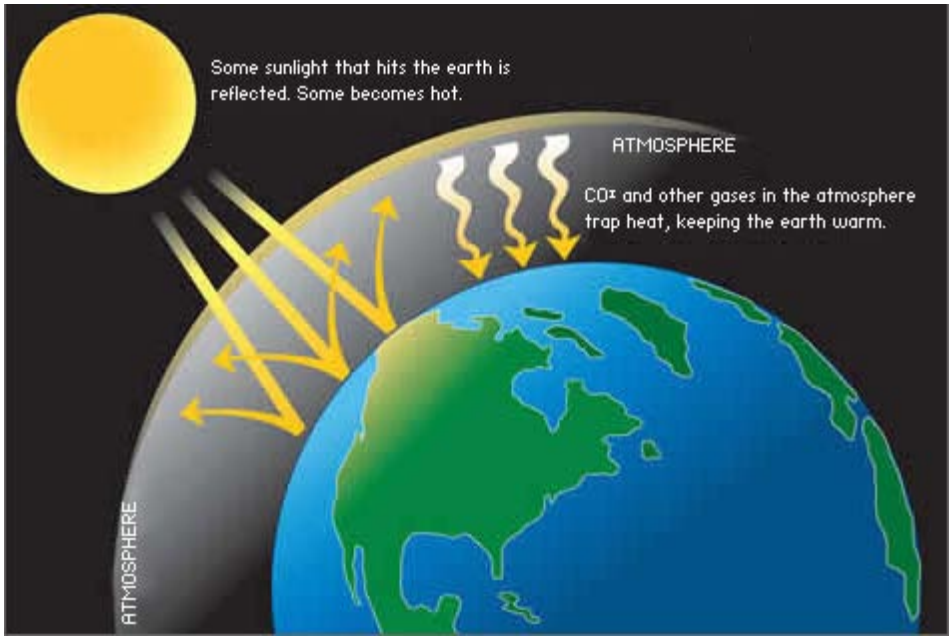
The Earth's atmosphere is naturally composed of a number of gases that act like the glass panes of a greenhouse, retaining heat to keep the temperature of the Earth stable and hospitable for life at an average temperature of 60°F. Carbon dioxide (CO_2) is the most prolific of these gases. People and animals emit CO_2 when we breathe; plants take it in during photosynthesis and release it when they decompose. Other contributing gases include methane (CH_4), nitrous oxide (NO_2), ozone (O_3), and halocarbons. Without the natural warming effect of these gases, the Earth's surface temperature would be too cold to support life (figure).

While the existence of greenhouse gases (GHG) in the atmosphere is necessary for life on Earth, human beings are changing the proportions of these gases in the atmosphere, most significantly by adding CO_2 from the burning of fossil fuels. Atmospheric CO_2 concentrations have increased from between 270-280 parts per million (ppm) in pre-industrial times to more than 380 ppm today.[1] If current emissions levels continue, the atmospheric CO_2 concentration is projected to reach 730-1020 ppm by 2100. The current atmospheric concentration of carbon dioxide exceeds by far the natural range over the last 650,000 years (180 to 300 ppm) as determined from ice core measurements.[2]

Over this same geologic time period, methane concentrations have increased from 715 parts per billion (ppb) to more than 1774 ppb, and nitrous oxide, (N_2O) concentrations have increased by 270 ppb to 319 ppb.[3] In addition to these naturally occurring gasses, humans have introduced synthetic gasses with heat-trapping capacity into the atmosphere, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Though relatively low in concentration, these gasses are of particular concern because they have a heat trapping capacity between 1,500 and 22,000 times stronger than CO_2.[4] Climate scientists have developed a common unit, called CO_2-equivalent or CO_2e, to indicate the equivalent amount of carbon dioxide in terms of its global warming potential.

Elevated concentrations of GHG in the atmosphere have had a destabilizing effect on the global climate, fueling the phenomenon commonly referred to as global warming. **The 2007 United Nations Intergovernmental Panel on Climate Change (IPCC) report states that "warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures."**[5] The IPCC is referring to the 1.3°F increase in surface temperature over the last century.[6] These increases in global temperature have accelerated recently, with 11 of the 12 warmest years on record occurring between 1995 and 2006.[7]

The climate and the atmosphere will not necessarily react in a linear fashion to increased GHG. That is to say, one cannot simply predict that for each ton of carbon dioxide emitted the Earth will warm a certain amount. The Earth's climate has a number of feedback loops and tipping points that scientists fear will accelerate global warming beyond the rate at which it is currently occurring. For example, as CO_2 emissions have increased in recent human history, the oceans and terrestrial ecosystems have been absorbing a significant portion of these gases. With continued warming, scientists anticipate a decrease in the ability of oceans and



terrestrial ecosystems to absorb GHG, causing anthropogenic CO_2 emissions to have a more substantial impact on global climate.[8] Another example of a compounding effect can be found in the polar ice caps. Ice is highly reflective and acts like a giant mirror, reflecting the sun's rays back into space. As the planet warms and some of this ice melts, a darker land or ocean surface is revealed. This darker surface will tend to absorb more heat, accelerating the speed at which the planet warms with each ton of GHG emitted.

B :: Effects of Climate Change

Global Impacts

Changes in temperature and climate will have a dramatic impact on plants and animals that are adapted to present climactic conditions. Surface temperatures are on course to increase by between 3.2 and 7.2°F by the year 2100, with temperatures in the Arctic expected to increase by twice the global average.[9] In addition to causing average temperature increases, rising levels of GHG have a secondary destabilizing effect on a number of different microclimates, conditions, and systems.

The increase in the temperature of the oceans is projected to accelerate the water cycle, thereby increasing the severity and rate of both storms and drought which, along with decreased snow pack, could disrupt ecosystems, agricultural systems and water supplies.[10]

As Figure 2a below indicates, following almost 2000 years of steady or slightly declining temperature, there has been a rapid increase in global surface temperature over the past century, which is inconsistent with the geologic record. Figure 2b shows that increasing global temperatures have already led to the widespread melting of snow and ice around the world. Melting snow and ice in Greenland and Antarctica have, in turn, contributed to a rise in sea level.[11] Rising sea levels could lead to significant environmental and ecosystem disturbances, as well as major population displacement and economic upheaval.

In addition to increased temperatures, other secondary impacts of climate change have already been observed. These impacts include:[12]

- The extent of Arctic sea ice has shrunk by 2.7% per decade since 1978;
- Significantly increased precipitation levels in eastern parts of North and South America, northern Europe and northern and central Asia between 1900 and 2005;
- More intense and longer droughts have occurred over wider areas since the 1970s, particularly in the tropics and subtropics;
- The frequency of heavy precipitation events has increased over most land areas;
- Frost has become less frequent, while heat waves have become more frequent over the past 50 years;
- An increase in the intensity of hurricanes in the North Atlantic since 1970; and
- A decrease in ocean salinity at mid- to high-latitudes and an increase in the tropics, suggesting changes in precipitation and evaporation.

Secondary impacts are more difficult to predict, as they are caused by multiple forces that vary by region. It is also important to understand that while the average global temperature has risen and will continue to rise, the net result in individual locations will vary widely.

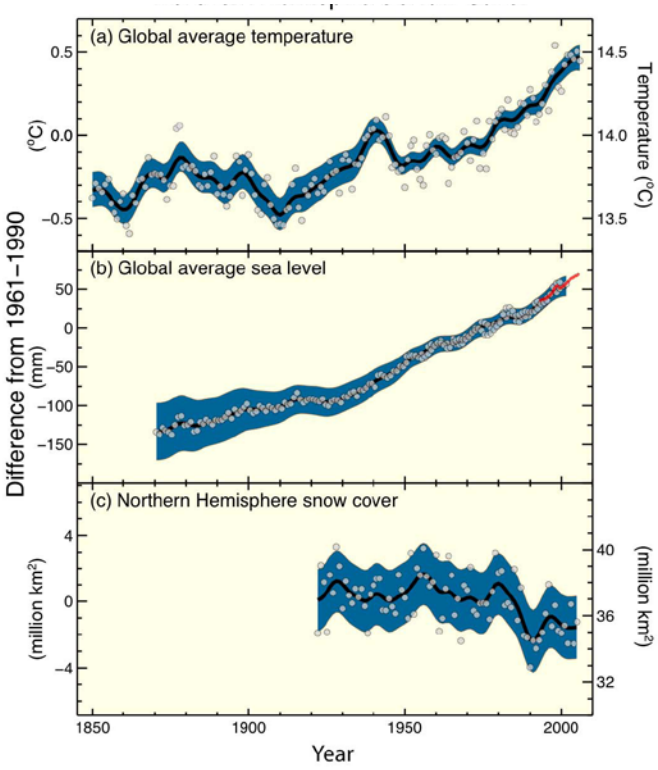


Figure 2 Changes in global temperature, sea level, and snow cover over the past century

Local Impacts

Climate change is a global problem influenced by an array of interrelated factors that have concrete consequences for the Pacific Northwest. A 2005 report by the University of Washington's Climate Impacts Group found that climate change will significantly challenge the region's natural and

built systems.[13] (All subsequent mention of climate impacts in the Northwest, aside from the studies directly cited, reference the Climate Impacts Group 2005 study.)

***Natural disasters*:** Local climate trends will reflect continued increases in both average air and water temperatures. Additionally, sea level rise is likely to occur faster than global averages, and earlier snowmelt may cause changes in river and stream flows. Sea level rise and increased seasonal flooding could incur considerable costs as these phenomena pose risks to property, infrastructure and even human life.

Locally, the Swinomish Indian Tribal Community has prepared analyses indicating significant inundation of its reservation and vital infrastructure due to sea-level rise and accompanying tidal surges. In Figure 3, the yellow areas indicate projected inundation zone, while the red hatched areas indicate the projected tidal surge zone, given a likely sea-level rise scenario.

Impact on water: Water quality and quantity are also at risk to be depleted as a result of changing temperatures. With warmer average temperatures, more winter precipitation will fall in the form of rain instead of snow, shortening the winter snowfall season and accelerating the rate at which the snow pack melts in the spring.

These snow melt patterns increase the threat for spring flooding and decrease the storage of the natural water tower in the Cascades, meaning less water will be available for agricultural irrigation, hydro-electric generation and the general needs of a growing population. As we have seen in recent years, water resources for agricultural and residential use may become scarce, especially during the summer months.

Figure 4 shows precipitation trends (above) and trends in April 1 snow pack (below). These figures show widespread increases in average annual precipitation for the period 1920 to 2000 and decreases in April 1 snow water equivalent (an important indicator for forecasting summer water supplies) for the period 1950 to 2000. The size of the dot corresponds to the magnitude of the change.

***Impact on plants and animals*:** The local native plants and animals are also at risk as temperatures rise. Scientists are reporting more species moving to higher elevations or more northerly latitudes. Increased temperatures also provide a foothold for invasive weed and insect species, as well as other non-native threats. Additionally, these trends alter the natural cycle of flowering and pollination, as well as the temperature conditions necessary for a thriving locally

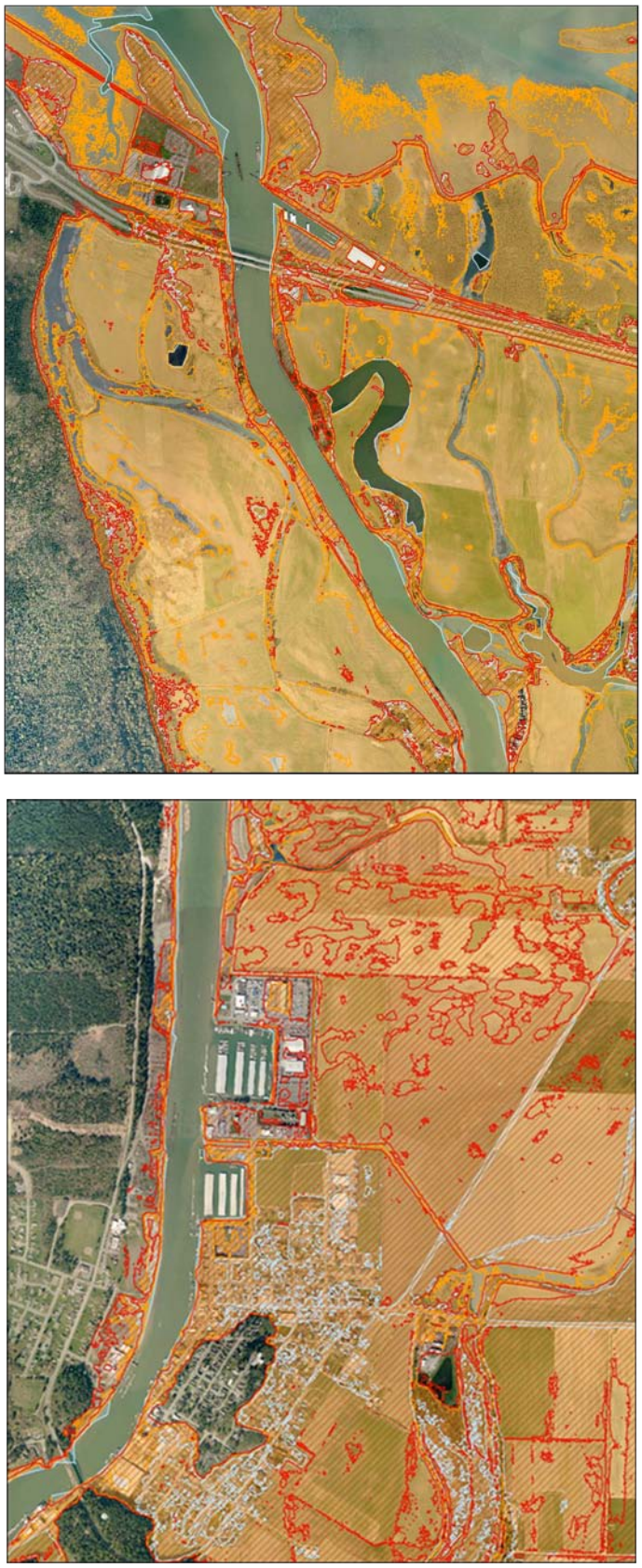


Figure 3. Projected sea-level rise impacts on SR-20 (above) and (Swinomish Village / La Conner area (below). Source: Swinomish Climate Change Initiative Impact Assessment Technical Report, October 2009.

adapted agriculture. Perennial crops in particular will be challenged.

Near-shore habitat such as coastal wetlands and salt marshes are at risk of being inundated by rising sea levels. Increased flow and salinity of water resources would also seriously affect the food web and mating conditions for fish that are of both economic and recreational interest to residents. These trends compound the challenges already posed to dwindling populations of salmon, at all stages of their lifecycle.

Changing water resources will have a particularly large impact on the five salmon species that spawn in the Skagit River. Decreasing summer water flow in the rivers will decrease the habitat and food that are available to juvenile salmon, increasing competition.[14] Additionally, warmer temperatures reduce the amount of dissolved oxygen in spawning grounds and can cause heat stress.[15] Coupled together, these factors will reduce the survival rate of juvenile salmon.

Adult salmon will face similar stresses as they adapt to cold-water habitats[16]. Additionally, warmer ocean temperatures in the Northwest will allow new species to migrate and thrive creating increased competition with salmon for food and habitat.[17]

Warming rivers could also further strain fish populations, such as the threatened Chinook salmon, that need cold water environments to flourish.[18] Disruption of cold water upwelling will further limit food resource by preventing cold, food-rich waters from surfacing in the summer.[19] These trends compound the challenges already posed to dwindling populations of salmon, at all stages of their lifecycle. It is estimated that the spawning population of salmon may be reduced up to 50% from current numbers by 2050.[20]

***Public health impact*:** Warming temperatures and increased precipitation can accelerate the breeding of mosquitoes, thus engendering diseases for which mosquitoes are vectors, such as the West Nile virus. Increased temperatures also pose a risk to human health because it increases ozone levels and air pollution toxicity, which are tied to increased rates of asthma and other pulmonary diseases. Furthermore, the anticipated increase in hotter days poses heat-stroke risks particular for the elderly, young, those already sick, and people who work outdoors.

Regional evidence: Climate change is a global problem influenced by an array of interrelated factors that have concrete consequences for the Pacific Northwest. The Regional

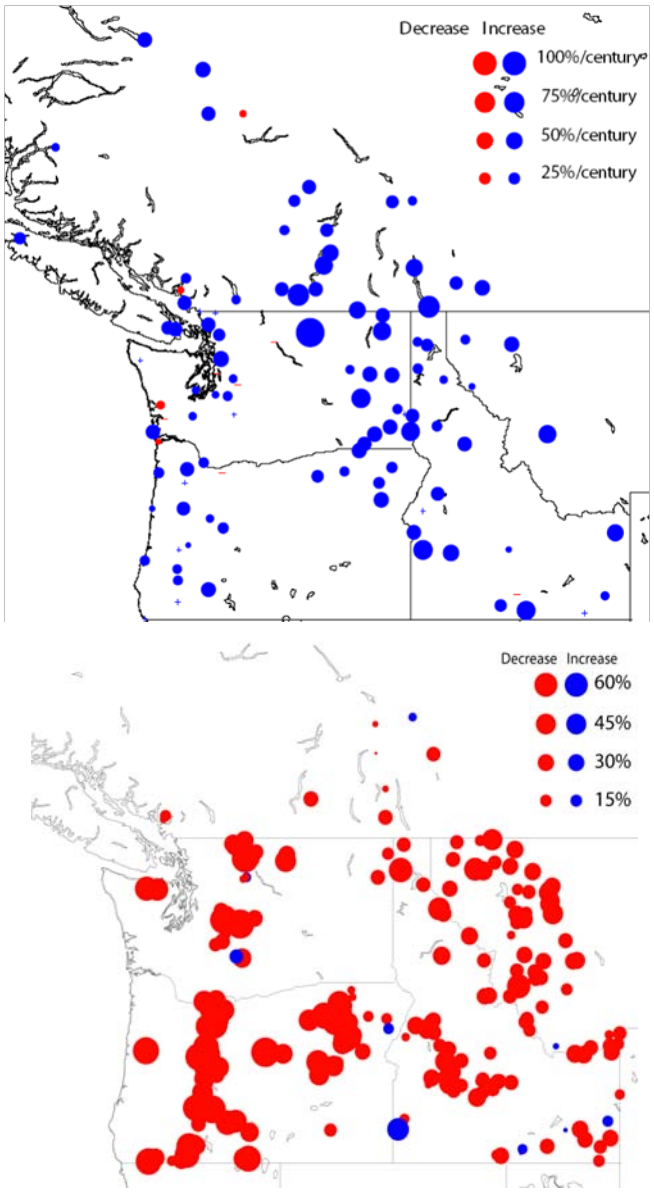


Figure 4. Precipitation trends 1920-2000; snow Apr 1 trend (1950-2000). Source: Climate Impacts Group, University of Washington

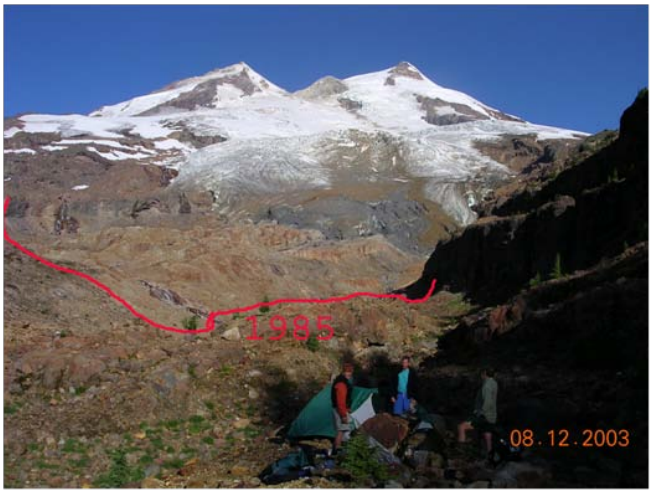


Figure 5. Eyewitness to North Cascades glacier recession. Source: North Cascades Glacier Climate Project

Integrated Sciences and Assessments (RISA) program, funded by the National Oceanic and Atmospheric Administration's Climate Program Office, was established in the mid-1990s to improve the link between climate science and society. The local RISA team, the University of Washington's Climate Impacts Group, is a valuable resource for localized climate change predictions. A 2005 report by the UW Climate Impacts Group found that climate change will significantly challenge the region's natural and built systems.[21]

The impacts of climate change are already here, and are expected to continue to escalate if the levels of heat trapping pollution continue to increase. Scientists have calculated a number of predicted increases in average temperature in the Northwest under ten different climate change study scenarios. Figure 6 below illustrates these predictions. Each scenario makes different assumptions about the levels of heat trapping pollution that humans will emit over the next one hundred years. The orange line indicates the average temperature from all of the scenarios. The yellow area indicates the temperature range that two-thirds of the scenarios fall within. The blue area indicates the full range of variability of all of the scenarios.

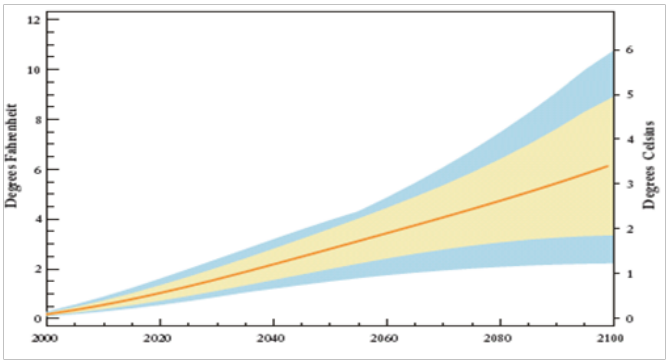


Figure 6. Northwest Warming Trends

There is very little variability in short-term predictions of the average global temperature over the next twenty to thirty years. This is due to the significant lag time inherent in the climate system: the impact of gases already in the atmosphere will determine the impacts felt in the near term. Moreover, despite the proliferation of energy saving technologies, existing power plants and vehicles will continue to be used in the short term. The short- and medium-term implications of climate change are therefore largely unalterable. However, longer-term outcomes, meaning those relating to outcomes that will be felt between 2040 and 2100, will be shaped by the actions taken today.

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[1] United Nations Intergovernmental Panel on Climate Change - IPCC (2007) "Climate Change 2007: The Physical Science Basis. Summary for Policy Makers" http://www.ipcc.ch/SPM2feb07.pdf

[2] United Nations Intergovernmental Panel on Climate Change - IPCC (2007) "Global Climate Projections. In: Climate Change 2007: The Physical Science Basis", http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Pub_Ch10.pdf

[3] United Nations Intergovernmental Panel on Climate Change - IPCC (2007). "Climate Change 2007: The Physical Science Basis. Summary for Policy Makers," http://www.ipcc.ch/SPM2feb07.pdf

[4] United Nations Intergovernmental Panel on Climate Change - IPCC (2001). "Third Assessment Report. Climate Change 2001: The Scientific Basis," http://www.ipcc.ch/pub/wg1TARtechsum.pdf

[5] United Nations Intergovernmental Panel on Climate Change - IPCC (2007). "Climate Change 2007: The Physical Science Basis. Summary for Policy Makers," http://www.ipcc.ch/SPM2feb07.pdf

[6] Ibid

[7] Ibid

[8] United Nations Intergovernmental Panel on Climate Change - IPCC (2007). "Climate Change 2007: The Physical Science Basis. Summary for Policy Makers," http://www.ipcc.ch/SPM2feb07.pdf

[9] Ibid

[10] Ibid

[11] Ibid

[12] United Nations Intergovernmental Panel on Climate Change - IPCC (2007). "Climate Change 2007: The Physical Science Basis. Summary for Policy Makers," http://www.ipcc.ch/SPM2feb07.pdf

[13] Casola, Kay, Snover et. al.(2005). "Climate Impacts on Washington's Hydropower, Water Supply, Forests, Fish, and Agriculture."Climate Impacts Group, University of Washington. www.cses.washington.edu/db/pdf/kc05whitepaper459.pdf

[14] Murvosh, Marta (2007). "Warming Shifts Odds Away From Salmon Survival." Skagit Vallley Herald. www.goskagit.com/home/article/warming_shifts_odds_away_from_salmon_survival/.

[15] Ibid.

[16] Climate Impacts Group (2004). "Climate Impacts on Pacific Northwest Salmon." Climate Impacts Group, University of Washington. cses.washington.edu/cig/pnwc/pnwsalmon.shtml.

[17] Murvosh, Marta (2007). "Warming Shifts Odds Away From Salmon Survival." Skagit Valley Herald.

[18] James Battin et al., *Projected Impacts of Climate Change on Salmon Habitat Restoration*, 104 Proc. of the Nat'l. Acad. of Sci. 6720 (2007), http://www.pnas.org/cgi/reprint/104/16/6720

[19] Ibid.

[20] Ibid.

[21] Casola, Kay, Snover et. al.(2005). "Climate Impacts on Washington's Hydropower, Water Supply, Forests, Fish, and Agriculture."Climate Impacts Group, University of Washington. www.cses.washington.edu/db/pdf/kc05whitepaper459.pdf

Part 3: Greenhouse Gas Inventory

Regional and Operational Climate Pollution Accounting

With funding from a Northwest Clean Air Agency grant, Skagit County hired Western Washington University climatology student Anna Gay in June 2009 to inventory the county's greenhouse gas emissions—at both the organizational and regional levels—using ICLEI's Clean Air and Climate Protection (CACP) software which has been used by over 350 U.S. cities and counties to calculate and reduce their GHG emissions. This inventory will serve as the baseline for forecasting emissions, calculating reduction targets, and quantifying emissions reductions associated with implemented and proposed measures.

Although the software provides Skagit County with a sophisticated and useful tool, calculating emissions with precision is difficult. The model depends upon numerous assumptions, and it is limited by the quantity and quality of available data. With this in mind, it is useful to think of any specific number generated by the model as an approximation, rather than an exact value.

The CACP software estimates emissions derived from energy consumption and waste generation within a community. The software determines emissions using specific factors (or coefficients) according to the type of fuel used. Emissions are aggregated and reported in terms of equivalent carbon dioxide units, or CO_2e. Converting all emissions to equivalent carbon dioxide units allows for the consideration of different GHG in comparable terms. For example, methane is twenty-one times more powerful than carbon dioxide in its capacity to trap heat, so the model converts one ton of methane emissions to 21 tons of CO_2e.[1]

Skagit County has chosen to develop community and municipal operations inventories based on the 2006 calendar year (this is known as a "baseline" year). In addition, we trended emissions backwards to 2000 for the purpose of establishing emissions reductions targets in accordance with the Skagit County Climate Action Resolution goal of reducing emissions to 80% below 2000 levels by 2050. Interim forecasts for 2015 are also included in this report as a benchmark against which to mark the progress of emissions reduction actions.

The inventory consists of two parts, which are analyzed separately: **municipal government emissions** and **community-wide emissions**. The municipal operations inventory includes only those sources that are under the operational or financial control of Skagit County, while the community emissions inventory includes all sources within Skagit County in both incorporated and unincorporated areas. These two categories are not cumulative. The community-wide inventory is the total, and the municipal government category is a specific subset of that total.

We evaluate these two categories independently for several reasons. The community-wide inventory explores sectors (residential, commercial, etc.), while a much finer resolution is possible in the municipal operations portion of the inventory (energy use by facility, etc.). Additionally, when attention is turned to the question of where emissions reductions are possible, there will be a different set of options for county-owned facilities than for private sector emissions.

Each of these categories is further broken down by **sources** and **sectors**. Sources are the fuel or energy that is the basis of the emissions. In this inventory, the main sources considered are electricity, natural gas, diesel, gasoline, and waste. Sectors are the portion of the community or government operations to which the emissions are attributable. In the **municipal inventory,** the sectors considered are buildings, vehicle fleet, employee commute, streetlights, solid waste, and other process fugitive emissions. In the **community inventory,** the sectors considered are residential, commercial, industrial, transportation, and waste.

All energy consumed in Skagit County (including in incorporated areas) is included in calculating Skagit County's community emissions inventory. This means that, even though the electricity used by residents is produced elsewhere, this energy and its associated emissions appear in the inventory. The decision to calculate emissions in this manner reflects the general philosophy that a community should take full ownership of the impacts associated with its energy consumption, regardless of whether the generation occurs within the geographical limits of the community.

For the same reasons, when conducting the solid waste emissions inventory, all waste generated in Skagit County was included, though it is landfilled outside the county. Even though the waste is deposited elsewhere, this energy and its associated emissions appear in the inventory.

Baseline Inventory

In the base year of 2006, Skagit County's municipal operations generated 11,512 tons of CO_2e. Figure 7 shows the breakdown of municipal operations emissions by source type.

The largest portion of these emissions was from the solid waste sector. This portion of the total includes the emissions associated with operating the transfer centers, landfill gas from waste produced by municipal operations, and methane leaked from Inman Landfill.

The county vehicle fleet was the second largest contributor of greenhouse gas emissions. Emissions from the vehicle fleet were from the combustion of diesel and gasoline fuels in county-owned vehicles and equipment. Emissions from Skagit County employees' commutes contributed similarly to overall emissions in scope and quantity.

Greenhouse gas emissions from building and facilities were also a significant portion of the total emissions. This portion of emissions includes the indirect greenhouse gas emissions from purchased energy as well as direct emissions from on site combustion of propane and natural gas. Within this sector, the majority of emissions came from purchased electricity (Figure 7).

A very small portion of total emissions were from streetlights and traffic signals and other process fugitive emissions. Streetlights and traffic signals contributed emissions associated with production of purchased electricity. Other process fugitive emissions were leaked refrigerants from fleet vehicle air conditioning. It is important to note that these emissions could not be directly measured and as a result are probably overestimated. However, since they are such a small portion of total emissions, this effect is negligible.

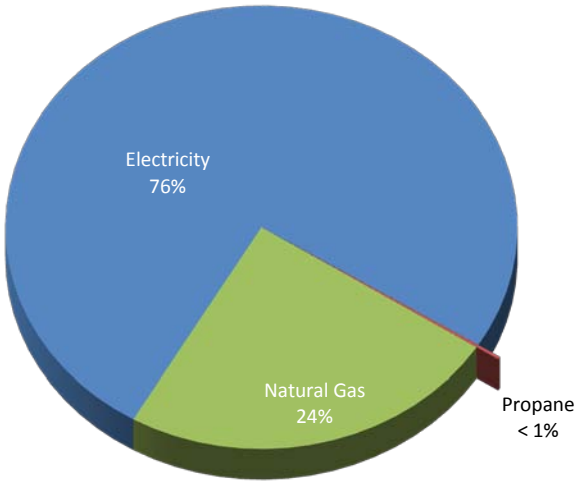

Figure 7. Skagit County's 2006 total municipal operations emissions by source type.

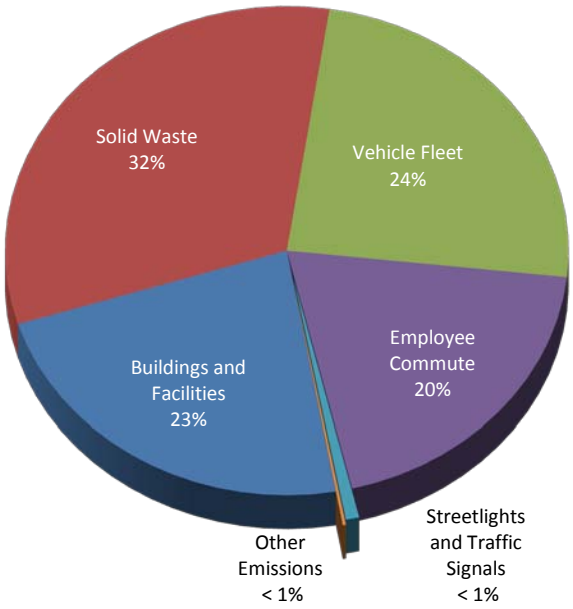

Figure 8. Skagit County's 2006 total municipal operations greenhouse gas emissions by sector.

Emissions Forecast

Based on the municipal operations emissions inventory developed for Skagit County for the base year 2006, our next step was to forecast future emissions generated by municipal operations. The 2015 and 2050 emissions forecasts represent a business-as-usual prediction of how greenhouse gas emissions may change in the future. Emissions have also been projected backwards to 2000 in order to quantify Skagit County's emissions reductions target. Emissions from Skagit County municipal operations are projected to increase approximately 20% from 2006 levels by 2015 and 148% from 2006 levels by 2050.

B :: Community Emissions

Baseline Inventory

In the base year 2006, the Skagit County community emitted approximately 1,690,664 tons of CO_2e. Figure 9 shows the breakdown of municipal emissions by source.

Transportation was the largest contributor to overall community emissions in 2006. The source of these emissions is from the direct combustion of gasoline, diesel, and biodiesel fuels.

The residential, commercial, and industrial emissions within the community were also large sources of emissions. This portion of emissions includes the indirect greenhouse gas emissions from purchased energy as well as direct emissions from on site combustion of propane and natural gas.

Electricity was the largest emissions contributor in all sectors. Although we have significant hydropower in the Pacific Northwest, 45% of our electricity is still generated from burning coal or natural gas.[2]

Natural gas contributed second most to emissions in the residential and commercial sectors, but was the smallest portion of industrial emissions. Emissions from solid waste and municipal government operations were a very small portion of total emissions.

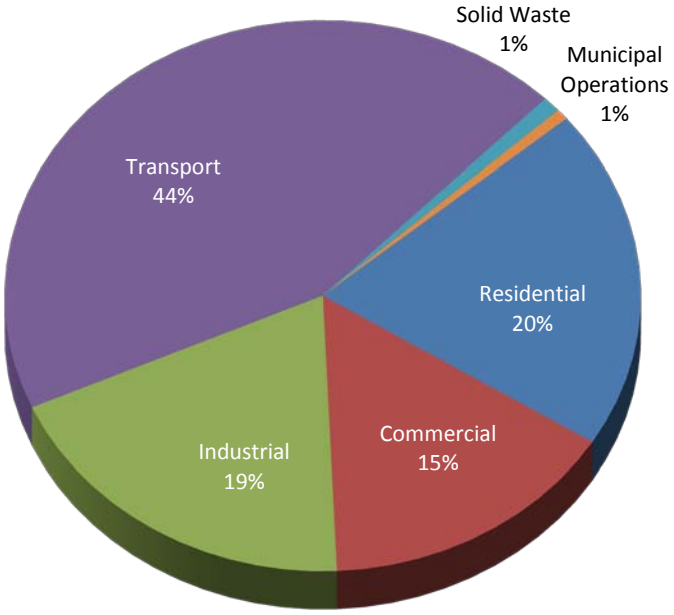

Figure 9. Skagit County's 2006 regional emissions by sector.

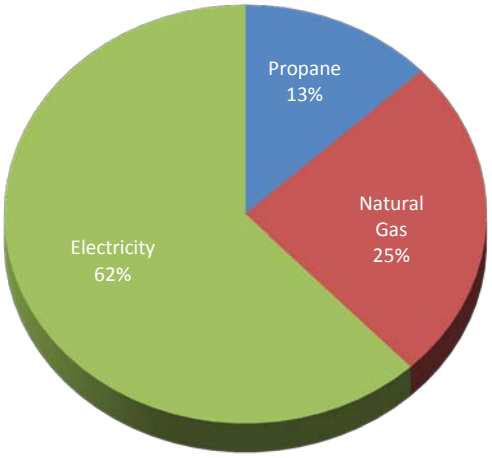

Figure 10. Skagit County's 2006 residential emissions by energy type.

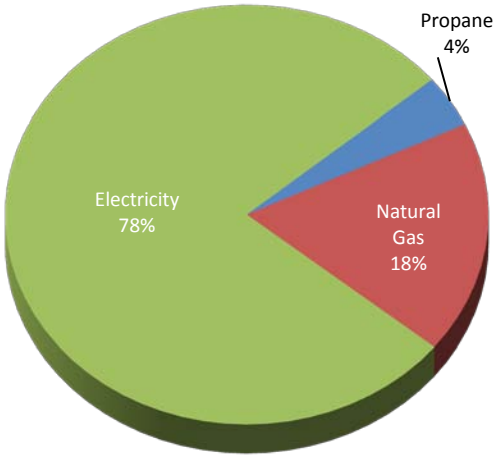

Figure 11. Skagit County's 2006 commercial emissions by energy type.

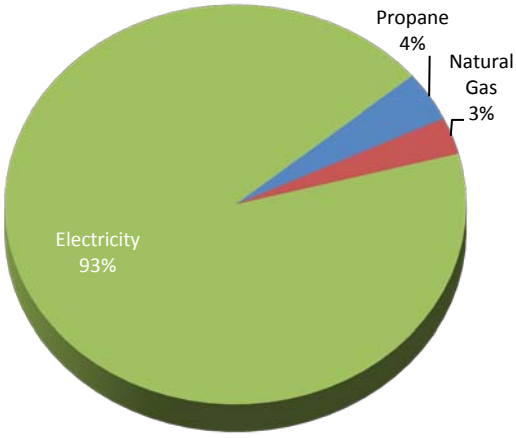

Figure 12. Skagit County's 2006 industrial emissions by energy type.

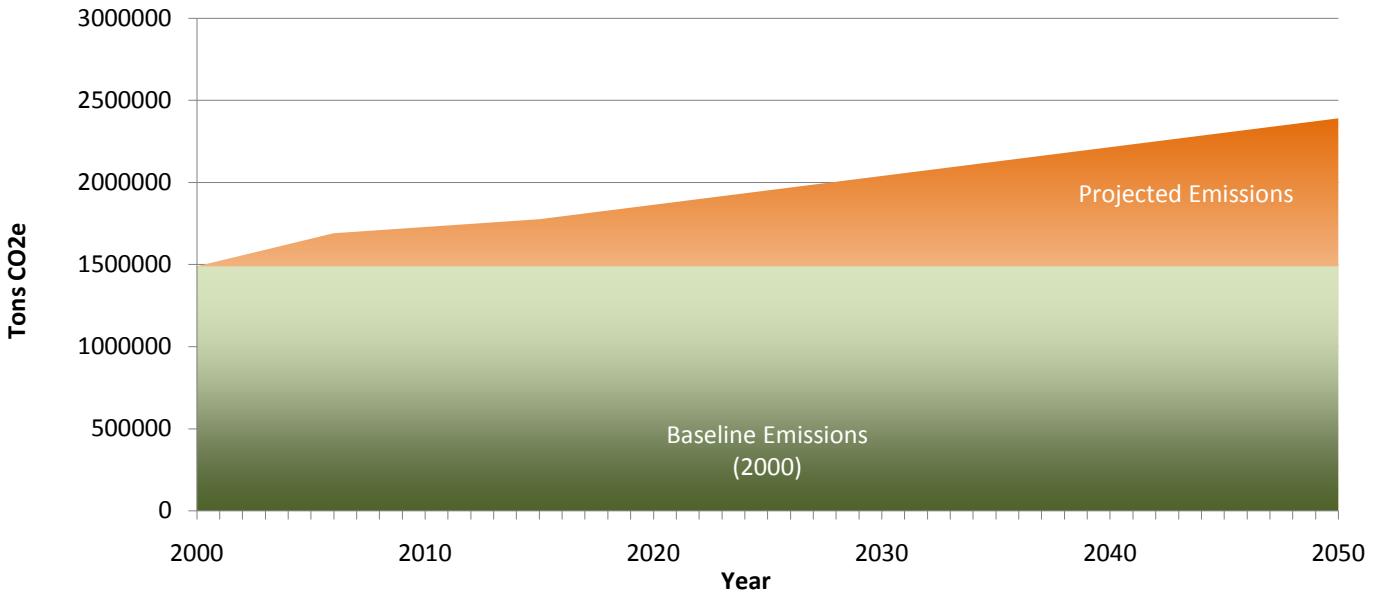

Figure 13. Skagit County's projected community emissions through 2050.

Emissions Forecast

Based on the Skagit County community emissions inventory developed for the base year 2006, our next step was to forecast future emissions generated by municipal operations. The 2015 and 2050 emissions forecasts represent a business-as-usual prediction of how greenhouse gas (GHG) emissions may change in the future. Emissions have also been projected backwards to 2000 in order to quantify Skagit County's emissions reductions target. Emissions from the Skagit County community are projected to increase approximately 5% from 2006 levels by 2015 and 40% from 2006 levels by 2050. Figure 9 shows the breakdown of projected emissions.

C :: GHG Emissions Reduction Goals

Prior to inventorying operational and regional GHG emissions, the Board of County Commissioners had already adopted **regional** GHG reduction goals consistent with internationally-recognized climate science for global emissions reductions, and with the Cool Counties Climate Stabilization Initiative:[3]

> …Skagit County commits to…reduce regional GHG emissions to 80% below 2000 levels by 2050…with recommended goals to stop increasing emissions by 2010, and to achieve a 10 percent reduction every five years thereafter through to 2050.

Such a substantial reduction may seem insurmountable and immeasurable. An interim reduction target provides a tangible goal for Skagit County's emissions reduction efforts, while being both aggressive and achievable given local circumstances.

Having now completed operational and regional GHG inventories and projected business-as-usual GHG emissions for the forecast year of 2020, the Board of County Commissioners hereby adopts the following GHG reduction targets for county operations and Skagit County as a region.

Target Year	Operations Target	% of Baseline	Regional Target	% of Baseline
2000	9,331	100%	1,489,203	100%
2010	10,592	135%	1,728,610	116%
2015	8,398	90%	1,340,283	90%
2020	7,465	80%	1,191,362	80%
2025	6,998	75%	1,116,902	75%
2050	1,866	20%	297,841	20%

Table 1. GHG emission reduction goals for operations and region.

[1] The emissions coefficients and methodology employed by the software are consistent with national and international inventory standards established by the Intergovernmental Panel on Climate Change (1996 Revised IPCC Guidelines for the Preparation of National Inventories) and the U.S. Voluntary GHG Reporting Guidelines (EIA form 1605).

[2] U.S. EPA eGRID database, available at www.epa.gov/cleanenergy/energy-and-you/how-clean.html.

[3] Resolution R20080304 (2008), at 3.

Part 4: Policies for Daily Operations

Internal Resource Conservation and Greenhouse Gas Emission Reductions

In support of Skagit County's Policy for Resource Conservation in Daily Operations (Resolution R20090167), the Board of County Commissioners hereby adopts the following policies to conserve energy and natural resources, reduce greenhouse gas emissions, and save money, while maintaining optimum working conditions and sound financial management.

It is the joint responsibility of elected officials, managers, and staff to set an example of environmental stewardship and responsible use of public dollars by conserving resources (electricity, natural gas, fuel, water, and other consumables). Skagit County will provide training and support as necessary to accomplish these conservation goals.

A :: General Policy Goals

1. Reduce energy use to 15% below 2008 levels by 2011.
2. Reduce garbage collection to 10% below 2008 levels by 2011 through waste reduction and increased recycling.
3. Reduce overall utility costs to 10% below 2008 levels by 2011 using 2008 baseline rates.
4. Avoid unnecessary utility and fuel costs.
5. Minimize waste of consumable materials
6. Promote conservation principles with all staff.
7. Conduct Resource Conservation Audits of all major County-owned and occupied facilities and Implement recommendations in resulting Facility Action Plans.
8. Publicize results of this conservation effort to both staff and the public.

B :: Facility Lighting

All staff shall:

- Take full advantage of natural light in offices, hallways, meeting rooms and work areas.
- Consider leaving artificial lights off or use multi-level lighting when natural illumination is adequate.
- When offices, meeting rooms and work areas will be unoccupied for longer than 5 minutes, switch off lights.
- Switch off lighting in hallways and common areas at the end of the workday.
- When using facilities for activities and events beyond normal work hours/days, use only the amount of lighting necessary in only the occupied areas.

Facility Operations shall:

- Consider installing daylight-sensing ballasts for lighting in areas often benefiting from natural illumination.
- Consider installation of motion sensors for rooms frequently unoccupied to ensure minimal waste of electricity on lighting.
- Night custodians should turn on lights only in the immediate area in which they are working.
- Ensure all outside lights are turned off during daylight hours, using photo sensors or timers where possible.
- Ensure outside building and parking lights are scheduled off between **8 am** and **4 pm**, and operate minimal safety lighting.

C :: Electrical Appliances and Equipment

Policies:

- For safety and energy conservation, space heaters that use 250 watts or more per hour are prohibited unless approved by the Department Head *and* Facility Operations Manager.
- Refrigerators and freezers outside of kitchen and common areas are prohibited. Staff shall combine multiple units in common areas. Mini fridges use many times as much electricity per unit of volume refrigerated as a standard fridge.
- Portable air cleaners and purifiers are prohibited. Modern HVAC systems already contain electronic air cleaners, and while most portable air cleaners do not move enough clean air to make a significant difference in indoor air quality, they do use about 2400 Wh per day, and some produce ozone, a lung irritant.
- Incandescent or halogen light bulbs that can be replaced with a compact fluorescent are prohibited.

All staff shall:

- Turn off all electrical office and personal appliances in their work areas at the end of the work day, including computers, monitors, printers, copiers, scanners, desk lights, and display lights.
- For common use print/copy/fax equipment, the custodian or a designated building occupant will be responsible for turning off at the end of the normal workday.
- Clean refrigerator and freezer heat transfer coils annually to maintain peak operating efficiency.

Facility Operations shall:

- Remove non-compliant and unauthorized space heaters.
- Remove non-compliant and unauthorized refrigerators.

D :: Solid Waste and Recycling

All staff shall:

- Practice reducing, reusing, and recycling whenever possible to minimize the amount of solid waste entering dumpsters and landfills.
- Utilize both sides of paper for copying and printing whenever possible.
- Not purchase photocopiers incapable of being connected to a computer and scanning to PDF.
- Not purchase printers incapable of printing double-sided.

Facility Operations shall:

- In each office building, provide pickup service for packaging materials and surplus office furniture and supplies for recycling or storage.
- In lunch and break rooms and bathrooms, provide collection areas for recycling of food waste and paper towel waste.
- Monitor the quantity and appropriateness of materials in the garbage and recycling dumpsters.
- Adjust dumpster size and frequency of pick-ups according to need and cost effectiveness.
- Ensure containers for recyclables are near garbage containers
- Use 'reminder sticky notes' for garbage containers that contain recyclable materials.

E :: Vehicles & Fuel

All staff shall:

- Not idle any county vehicle, nor any vehicle on county property, for more than 60 seconds.
- Reduce and consolidate vehicle trips wherever possible.
- Seek ways to reduce vehicle size and weight, and otherwise increase vehicle fuel economy.
- Share vehicles with other users, principally by reserving vehicles for only the amount of time necessary and canceling reservations as soon as possible.

F :: Heating, Ventilation, and Air Conditioning

General Guidelines

HVAC systems shall be operated in the most economical way possible to provide the indoor climate appropriate for the facility or activity, to meet indoor air quality standards, and to maximize the life of equipment.

A building/facility closure of three or more days, including weekends, shall be viewed as an opportunity for energy conservation and HVAC systems to be set for holiday scheduling.

After-hours operations of building HVAC systems must be authorized by the Facility Operations Manager.

Every opportunity to decrease HVAC system operating times should be considered by the custodian, or the Facility Operations Manager. Besides holidays, these may include inclement weather days and cancellations of meetings or activities.

Facility Operations shall maintain HVAC systems at the following set points:

	Occupied		Unoccupied	
Area	**Heat**	**Cool**	**Heat**	**Cool**
Offices	69	74	55	85
Meeting Rooms & Libraries	69	74	55	85
Staff Lounges & Cafeterias	69	74	55	85
Locker Rooms	69	74	55	85
Work & Copy Rooms	67	74	55	85
Computer Labs	67	73	55	77
Shops & Industrial Arts	67	75	55	85
Gyms	67	73	55	85

	Occupied		Unoccupied	
Area	Heat	Cool	Heat	Cool
Kitchens	65	74	55	85
Restrooms	65	75	55	85
Hallways & Common Areas	65	75	55	85
Storage Rooms	62	78	55	85

Staff shall notify Facility Operations if an HVAC system is failing to perform to these set points, and Facility Operations staff shall make every effort to ensure HVAC systems provide the temperatures listed above.

Normal Work Hours

Acceptable temperature deviation from set points is **± 2°F** by using local thermostat overrides or central control system overrides, where available. Additional variations may be allowed by the Facility Operations Manager based on specific HVAC system and facility needs. Staff shall close doors and windows when HVAC equipment is in operation.

When operable windows are available to an entire 'zone', air conditioning should not be used when the outside air temperature is cooler that the indoor air temperature.

Staff are responsible for closing windows, blinds, drapes, and shades in their individual work spaces during and at the end of each day to minimize heat gain/loss.

Nights, Weekends, and Holidays

Beyond normal work hours and days, HVAC systems will only operate for authorized meetings and activities with facility use approved by the Facility Operations Manager. HVAC systems may not operate for informal or single-person use during these periods. If offices are occupied by regularly-assigned staff, zone heating and cooling shall be used rather than for the entire building. HVAC settings for these zoned areas shall be the same as for normal work day operations.

G :: Water Heaters

Thermostats for water heaters servicing washrooms or shower facilities shall be set to not exceed 120°F.

Thermostats for dishwashing boosters and water heaters servicing kitchens shall be set to not exceed the minimum necessary to generate a water heater temperature of 180°F at the jets.

Hot water boosters for dishwashing shall be operated only when the dishwasher is in service.

H :: Domestic Water Use and Irrigation

Elected officials, managers, and staff are expected to practice water conservation at every opportunity.

Building plumbing and irrigation equipment leaks are to be reported and repaired as soon as possible.

Landscaping should use drought-tolerant and low-impact design, and native plants whenever possible to eliminate the need to irrigate once established.

Irrigation months shall be limited to April through October. During non-irrigation months, meters should be deactivated with the proper utility service. Irrigation timers shall be programmed for the most efficient watering schedule for a specified landscape and soil type. Only Facility Operations or Parks staff may operate irrigation control systems.

All outdoor watering should be scheduled to minimize evaporation, prevent disease, and protect irrigation equipment. During drought periods, irrigation must be limited to public-use areas and newly planted landscaping.

I :: Sustainability Workgroup

The County Administrator shall appoint an ongoing Sustainable Workgroup to:

- Monitor and track energy use for daily operations in County-owned and occupied buildings
- Annually review and modify these guidelines as necessary with Department Heads and Facility Operations to ensure optimum results, and report progress to BOCC
- Educate County staff to set an example of environmental stewardship and responsible use of public dollars by practicing responsible behaviors towards natural resource use in daily operations.
- Develop and implement incentives, and recommend annual awards or recognition to be given to those staff and departments most successful at reducing public dollars for natural resource use in daily operations.

The Sustainability Workgroup shall be authorized to modify these Policies for Daily Operations with the concurrence of the County Administrator.

Part 5: Taskforce-Recommended Policies

Greenhouse Gas Emission Reductions in Government and the Community

Skagit County government can make an immediate and high-profile difference in the work against global climate change by leading the Western Washington community toward dramatic emissions reductions. Although Skagit County government's greenhouse gas emissions as a proportion of the state's emissions—or even as a proportion of the region's community emissions—is quite small, Skagit County can both lead by example and leverage government resources to help the community at large reduce its substantial emissions.

The Taskforce has recommended policies and initiatives in five general areas:

- General Policies, Outreach, & Education
- Energy Conservation & Renewable Energy
- Purchasing
- Solid Waste & Recycling

The Board of County Commissioners hereby adopts the following policies and projects as recommended by the Climate Action & Sustainability Taskforce.

A :: General Policies

Education and outreach are key elements in any climate action plan. In order to reach our greenhouse gas emission reduction targets, Skagit County needs informed and supportive employees and citizens. Skagit County government must provide the tools and incentives to reduce GHG emissions in their homes, businesses, and workplaces, and promote a broad awareness of the predicted local and global effects of climate change.

Community Efforts

As Skagit County undertakes the greenhouse gas reduction recommendations in this plan, it must incorporate education into each action when appropriate. For example, if solar panels are to be installed on a public Skagit County building, they should be accompanied by a display in the lobby so staff and the visiting public are made aware of what is being achieved. As the County acquires zero-emission vehicles, signage on the vehicles should draw attention to the financial savings, emission reductions, and environmental co-benefits (e.g. reduced air pollution).

Skagit County shall also include culturally-appropriate programming where appropriate. Provide written materials and conduct media campaigns in Spanish and English when possible. Partner with tribal communities and organizations serving Skagit County's Spanish speaking population.

Policy A-1. Highlight at least six climate change or sustainability events each year.

TIMEFRAME	2010 + ongoing
LEAD AGENCY	Board of County Commissioners, coordinated by Sustainability Administrator or Sustainability Working Group
COST	Minimal

Establish by proclamation of the Skagit County Commissioners participation in at least six climate change events in conjunction with other local, state, national, and international organizations. For example: Earth Hour, National Bike/Walk to Work Day, Arbor Day tree planting, International Day of Climate Action, Earth Day. This could change from year to year. Use the county website, TV station, and other media to inform the public and promote participation.

Policy A-2. Continue support of the Skagit Cool Community Campaign.

TIMEFRAME	2010-2012
LEAD AGENCY	Sustainability Administrator
COST	$2,000 per year
RESOURCE REDUCTION	Depends on level of public participation, but potentially 500,000 lbs of CO_2e per year
CO-BENEFITS	Greater visibility for Skagit County Sustainability efforts

Skagit Cool Community Campaign, launched October 24, 2009, will continue through 2012. This neighborhood-based program challenges households to reduce their carbon footprint by 5000 pounds. A consortium of Skagit County local agencies and organizations, including Skagit County, the Padilla Bay Reserve, the City of Anacortes, Skagit Beat the Heat, and the WSU Skagit Climate Stewards are initiating the Skagit Cool Community Campaign, based on this model. It has been implemented successfully around the country, including Thurston County in early 2009.

Policy A-3. Use the media to inform local residents of ways to conserve resources and reduce greenhouse gas emissions.

TIMEFRAME	2010 + ongoing
LEAD AGENCY	Sustainability Administrator + Communications Director
COST	Minimal

Skagit County actively uses the media to raise awareness of the impacts of climate change and promote conservation in the community at large. Some ways to do this may include:

- Create a page on the Skagit County website with information on the physical effects of climate change on Skagit County and how the County is doing its part to prevent it.
- Create a page on the Skagit County website with information on ways for local residents to conserve at home.
- Create a page on the Skagit County website with information on conservation and renewable energy incentives available to residents through the federal and state governments, local utilities, etc.
- Publish a weekly feature in the Skagit Valley Herald highlighting a conservation "Tip of the Week".

Business and Industry

Policy A-4. Foster creation of an organization to assist local businesses in energy efficiency, sustainable production, waste reduction, and Low Impact Development.

TIMEFRAME	2010-2011
LEAD AGENCY	Skagit County Public Works, Solid Waste Division
COST	Minimal
RESOURCE REDUCTION	Potentially significant in reduced energy use and reduced waste produced by local businesses, and reduced transportation emissions for locally-produced goods
CO-BENEFITS	Increased awareness of local business, increased promotion of local business, increased local sales tax revenue

In Whatcom County, more than 650 businesses have joined Sustainable Connections, a "green chamber of commerce" that provides free sustainability audits, online resources, education workshops, and increased local support. Skagit County would benefit tremendously from a similar effort.

The Skagit County Sustainability Administrator shall approach the Economic Development Association of Skagit County (EDASC) to explore the possibility of creating an organization similar to Sustainable Connections in Skagit County.

Policy A-5. Conduct outreach to local businesses on ways to conserve energy, reduce carbon emissions, and utilize renewable energy.

TIMEFRAME	2010-2012
LEAD AGENCY	Sustainability Administrator
COST	Minimal
RESOURCE REDUCTION	Potentially significant
CO-BENEFITS	Increased awareness of local business, increased promotion of local business, increased sales tax revenue

Until such a time as a local equivalent or chapter of Sustainable Connections can become active in doing so, Skagit County Government shall work with EDASC, industry groups, and chambers of commerce to provide resources and information about energy audits, recycling, composting, and other sustainable practices with a focus on greenhouse gas reduction. The County shall create a web page on its website with information and links specifically for local businesses.

Policy A-6. Recognize significant efforts by local businesses to reduce greenhouse gas emissions or provide sustainable products and services.

TIMEFRAME	2010-2012
LEAD AGENCY	Sustainability Administrator
COST	Minimal

Award certificates of recognition each year to local businesses and organization that have achieved significant greenhouse gas emissions through conservation or renewable energy improvements to their business locations or are providing sustainable products and services.

The County may kick off the "Cool Skagit" Certificate of Recognition by awarding it to a deserving local business on the 40th anniversary of Earth Day in 2010.

Policy A-7. Continue to promote recycling, composting, and other sustainable practices by local businesses.

TIMEFRAME	Ongoing
LEAD AGENCY	Skagit County Public Works, Solid Waste Division
COST	No additional cost
RESOURCE REDUCTION	Indeterminate, but potentially significant
CO-BENEFITS	Reduced waste disposal costs for local businesses

Skagit County Government has for many years actively promoted recycling, composting, and other sustainable practices by local businesses. This is an extremely valuable effort and needs to continue.

Agricultural Community

Policy A-8. Provide information to farmers about energy conservation, methane capture, finding local markets, and sustainable farming practices

TIMEFRAME	Launch webpage by June 2010
LEAD AGENCY	Sustainability Administrator
COST	Minimal

Work with the Skagit Conservation District, WSU Cooperative Extension, and others to create a web page on the County web site specifically for the agricultural community with information and links regarding the above.

Schools

Policy A-9. Support the "Washington Green Schools" and "Cool Schools" programs in Skagit County schools

TIMEFRAME	2010
LEAD AGENCY	Sustainability Administrator
COST	Indeterminate

"Washington Green Schools," a new, voluntary, web-based program, developed by staff of local and state agencies, assists Washington schools in reducing their environmental and carbon footprint through audits, action plans, and certification. Schools earn points by completing six steps for each of five certification levels. For more information, see www.wagreenschools.org.

"Cool Schools" is an initiative of Puget Sound Energy and the Northwest Clean Air Agency. It is a classroom-based, student-driven program to reduce energy use in high schools. It is currently being implemented in Mount Vernon, Burlington-Edison and Anacortes High Schools. In 2009, with the support of Skagit County, the Northwest Clean Air Agency applied for, but was not awarded, a federal grant to expand the program to Skagit and Island County schools. Skagit County should look for additional opportunities to fund and expand this program.

County Operations

The success of implementing these policies and additional sustainability practices will require a transparent organizational structure with clear assignment of implementation and oversight responsibility.

Further success in reducing GHG emissions and in enhancing the sustainable and efficient use of resources will require a broad awareness and strong commitment on the part of all County staff to the goals and objectives of climate pollution control and sustainability and as well as to the Taskforce's specific policy recommendations. The organizational changes suggested below are particularly important because almost all of the Taskforce recommendations require further efforts in implementation and coordination across departments. These recommendations are intended to help tap the creativity of County staff and encourage their participation in a County-wide sustainability effort.

Policy A-10. Designate a Sustainability Administrator

TIMEFRAME	2010
LEAD AGENCY	Administrative Services
COST	1 FTE; funded by EECBG grant

This position shall be responsible for:

- Facilitating implementation of Climate Action Plan and other Sustainability Initiative policies
- Monitoring local, state, and national organizations for best practices for potential adoption by Skagit County
- Convening and facilitating operation of the County Sustainability Working Group (see below)
- Regular reporting to the Commissioners on progress in achieving Climate Action Plan objectives
- Identifying opportunities for cooperation with other Skagit County jurisdictions to promote the sustainable use of resources
- Identifying and partnering with selected business, public entities, and community organizations whose mission may include promoting sustainable practices in their areas of interest.
- Seeking grants appropriate for achieving the goals of the Climate Action Plan and Sustainability Initiative
- Coordinating with volunteer groups such as Climate Stewards and Skagit Beat the Heat to further County sustainability objectives

Policy A-11. Establish a County Sustainability Working Group

TIMEFRAME	2010
LEAD AGENCY	Sustainability Administrator
COST	Minimal staff time
RESOURCE REDUCTION	Potentially significant
CO-BENEFITS	Enhanced feedback from employees on additional potential conservation methods

County staff has essential knowledge of the policies and practices of their particular offices and, therefore, can help identify realistic opportunities for improvements to pro-

grams and practices to further climate and sustainability objectives. County government should stimulate and tap the creativity of staff in identifying these opportunities. A countywide coordinating body will help achieve these objectives. This body should also serve as the committee to facilitate the SCOG Resource Conservation Management Plan.

Where feasible and appropriate, each County department (or office) should designate a "sustainability lead" to support that department/office's efforts to control GHG, reduce waste, enhance recycling, and otherwise achieve the objectives of the Climate Action and Resource Conservation Management plans.

The designated leads would:

- Provide support for implementation of CAST and other sustainability recommendations in their office or department,
- Identify short-term and long-term opportunities for waste diversion, recycling, and sustainability in their organization, and
- Participate in and support the goals of the County Sustainability Working Group

It is important that individuals charged with this responsibility for a department or office have a personal interest in, and commitment to, reducing climate pollution and promoting sustainable practices.

Policy A-12. Provide training to employees on implementing sustainable practices in the workplace

TIMEFRAME	2010 + ongoing
LEAD AGENCY	Sustainability Administrator
COST	Minimal

As new sustainability policies are adopted, mandatory training sessions will ensure staff can understand, support, and implement changes. Set up friendly competitions between departments to see which can maximize energy consumption or emissions reductions. Use existing channels (email, staff meetings, internal newsletters) to communicate with staff regarding goals, proposed changes, and expectations.

Continue to provide quarterly training on sustainability in the work place, beginning in January 2010. Solicit Climate Stewards volunteers to assist with this recommendation.

Policy A-13. Educate county employees and encourage them to maximize energy and other resource conservation practices in their homes

TIMEFRAME	2010 + ongoing
LEAD AGENCY	Sustainability Administrator
COST	Minimal
CO-BENEFITS	Enhanced feedback from employees on additional potential conservation methods

Inform employees of conservation incentives available through Federal and State Governments, local utilities, etc. Provide carbon footprint tool for auditing household energy consumption. Encourage participation in community events such as the Skagit Cool Community Campaign.

Policy A-14. Designate a County Sustainability or Recycling Coordinator

TIMEFRAME	2010
LEAD AGENCY	Sustainability Administrator or Skagit County Public Works, Solid Waste Division
COST	1 FTE, or less through reassignment. Potentially-funded by the Solid Waste system budget or EECBG funds
RESOURCE REDUCTION	Potentially significant

Removing organics from the waste stream and increasing capture of recyclables (both traditional and orphan) are the essential and the most feasible means of achieving major reductions in the Skagit County waste stream. This is best achieved by hiring (or assigning) a County Recycling Coordinator—a position that exists in many local governments, is recommended by the County's Solid Waste Management Plan, and would complement the County's existing Recycling Educator position. The return on that staff investment, as measured by significant waste stream reductions, could be significant. That staff person is responsible to:

- Facilitate all appropriate recommendations in this plan,
- Monitor best recycling practices from other jurisdictions,
- Participate in the County Sustainability Working Group,
- Provide public information services on what, where, and how materials can be recycled and reused,
- Review existing on-line data bases and identify opportunities for additional local recycling education,
- With municipal governments, identify and clarify opportunities to encourage governmental cooperation for sustainability and climate control initiatives and actions,
- On a trial basis establish and staff a recycling "hotline."

If this position cannot be funded through grants or the solid waste system, Skagit County should propose raising the solid waste system tipping fee by $2 per ton, with the additional revenue earmarked for the recycling coordinator position and other solid waste-related sustainability programs.

Policy A-15. Regularly assess and report progress

TIMEFRAME	2010 + ongoing
LEAD AGENCY	Sustainable Administrator
COST	Staff time
CO-BENEFITS	Greater awareness of county sustainability efforts

It is critically important to periodically evaluate the County's climate change and sustainability efforts to ensure that they remain effective. Skagit County shall establish quarterly and annual reporting to the Skagit County Board of Commissioners with regard to implementation of the Climate Action Plan. Such reports should be posted to the County web site and be published in local newspapers.

B :: Energy Conservation & Renewables

Overview

Energy use is a chief contributor to greenhouse gas emissions. The majority of energy we consume is used to heat residences and businesses and power our vehicles. Despite the abundant hydropower in the Pacific Northwest, 45% of our electricity is still generated from burning coal or natural gas[1]. Moreover, every kilowatt of hydropower wasted here is a kilowatt that cannot be sold to offset a kilowatt of coal power elsewhere in the country. Reducing energy use in Skagit County is of paramount importance if we wish to reduce our carbon footprint and reduce our dependence on the use of fossil fuels, both of which are vital to creating a sustainable future.

The policies that follow reflect the need for improvement in terms of both energy conservation and renewable energy. The recommendations are divided into three areas in order of priority:

- Operations: Suggestions for making government operations more energy efficient. Also suggests ways in which to encourage the adoption of renewable energy.
- Policy: Recommendations to streamline policies and regulations to make the adoption of both energy efficiency projects and renewable energy projects easier to implement in the county.
- Initiatives: New programs and projects that encourage energy conservation and the expansion of renewable energy throughout the county.

Some of these recommendations are interrelated and may be implemented as a whole to establish a comprehensive, self-funding program that addresses energy conservation and installation of renewable energy systems in government facilities throughout the county.

County Operations

Policy B-1. Continue and expand SCOG RCM program to find energy savings from routine operations

TIMEFRAME	Ongoing
LEAD AGENCY	Facility Operations Manager Sustainability Administrator
COST	$10,000 per year pursuant to existing SCOG RCM contract
RESOURCE REDUCTION	$30,000 per year by 2012 (equivalent to a five percent reduction in electricity and natural gas resource use)

County facilities provide many opportunities for conservation and energy efficiency programs. Some of these efficiency measures require major capital expenditures while others require little or no capital expenditures. This recommendation promotes measures that require little or no capital expenditure: energy efficiencies that shall be implemented as part of on-going operations, and efficiencies that shall be implemented during the course of replacing worn out equipment.

In 2008, County government routine building and facility operations, not including vehicle usage, consumed more than 32,000 MBtus of energy at a cost of more than $670,000.

2008	Energy Consumed	Million BTUs	Financial Cost
Electricity	5,847,050 kWh	19,950	$530,727
Natural Gas	122,180 therms	12,218	$142,487
Totals		**32,168**	**$673,214**

Table 2. Skagit County 2008 energy use statistics from Utility Manager energy cost and energy use reports provided by SCOG RCM Program

Skagit County should continue and expand its participation in the SCOG RCM program (see Part 4 of this plan) to find energy savings from routine operations.

Zero-cost to low-cost conservation and energy efficiency measures encompass both behavioral changes of building occupants and operational changes made to building heating, cooling and lighting systems. Examples of behavioral changes include:

- Turning office equipment off at the end of the day
- Dressing warmer or cooler rather than turning thermostats up or down
- Turning lights off in unoccupied rooms
- Pulling down shades to reduce unwanted heat gain from the sun on a sunny day

Examples of operational changes include:

- Setting building systems to "off," or to minimal settings during periods of un-occupancy
- Minimizing outside air supply as much as possible during hot or cold periods
- Adding timers and/or motion sensors to lighting in infrequently used rooms
- Replacing inefficient lighting with efficient lighting
- Choosing the highest efficiency replacement equipment
- Using lightly colored/white materials for re-roofing projects

In implementing this policy, the Sustainability Committee should consider the following:

- Promote and reward behavioral changes of building occupants
- Prioritize and implement no/low cost energy saving operational measures as a part of routine operations
- Replace worn out equipment and facility components only with energy-efficient, sustainable equipment

Policy B-2. Perform energy audits, and retrofit County facilities to increase energy efficiency

TIMEFRAME	2010-2012
LEAD AGENCY	Facility Operations Manager Sustainability Administrator
COST	Negative cost over the 10-year loan period (after loan, savings of more than of $60,000 annually)
RESOURCE REDUCTION	Indeterminate, but substantial (more than 510,000 lbs of CO_2e annually)
CO-BENEFITS	Better lighting and climate control systems; increased occupant comfort

Much of the energy Skagit County's facilities use is either wasted to fuel inefficient equipment including poor lighting systems, or is lost due to air leaks.

Skagit County should work with the Washington General Administration program to perform energy audits to locate and correct sources of wasted energy. Facilities that consume the most energy should be priorities (Courthouse Annex Administration Building, Larry E Moeller Public Safety Building, etc). This GA program is well-proven and provides audit services, funding services, and a pre-qualified list of Energy Service Companies (ESCOs) contractors. Funding of improvements is structured so that the energy savings more than cover the cost of improvements.

All implemented energy conservation measures should be well-publicized through the media and advertising to help educate the public regarding both the measures taken and the resultant benefits. Increased public awareness of the County's savings from energy efficiency upgrades will hopefully also spur the public to take action.

Until a baseline energy-use assessment is completed, a projection of conserved energy is not possible. However, an indication of the potential energy savings may be found in the County's two largest electricity consumers – the Courthouse Annex Administration Bldg (1.7 million kWh/yr) and the Larry E Moeller Public Safety Bldg (1.35 million kWh/yr). It is not uncommon to eliminate 20% to 25% of the electricity usage after incorporating the recommendations from an energy audit. In these two cases, this represents, respectively, a reduction of 425,000 kWh and 337,500 kWh in electrical demand. This produces an annual savings of $61,000 per year.[2] The energy saved would decrease CO2 emissions by 510,000 pounds per year from these two facilities alone.[3]

Policy B-3. Establish an Energy Savings Account

TIMEFRAME	2010 + ongoing
LEAD AGENCY	Budget and Finance Department
COST	Minimal initial staff time to develop accounting system and minimal staff time to regularly update data
CO-BENEFITS	Provides funding source for future conservation projects

An Energy Savings Account shall be established to monitor and pay for energy conservation modifications and renewable energy projects. This savings account shall be funded by dollars accumulated from energy savings and conservation measures, excluding those savings from the GA Energy Savings Performance Contracting program savings dedicated to paying for the ESPC energy projects. Once the ESPC projects are paid off, the entirety of energy savings from the improvements will be added to the Energy Savings Account balance.

The Energy Savings Account ensures a continued source of funds for the implementation of future energy conservation and renewable energy projects. Over time, the revenue flow into this account will become significant, which

will enable the undertaking of more ambitious projects in the future. These future projects will result in even greater dollar savings or revenue generation, because loans will not be a requirement to fund these conservation projects and the savings will go directly into the account. In the case of renewable energy projects, a revenue stream will be generated from both incentives and electricity that is sold back to the utility.

The Skagit County Budget & Finance Department shall immediately baseline 2008 energy costs for all Skagit County government facilities to compare to future years. The year 2008 is used as it predates conservation efforts recommended by the Climate Action Resolution. The Department shall also establish an accounting system shall be set up to begin tracking changes in the County's energy budget. Because such energy use monitoring is already required by the GA ESPC program, there is almost no additional cost to implementing this policy.

Policy B-4. Invest in renewable energy

TIMEFRAME	2010 + ongoing
LEAD AGENCY	Capital Facilities
COST	Indeterminate; some systems may be rolled into GA ESPC program improvements; projects will produce a revenue stream based on energy produced
RESOURCE REDUCTION	Up to 10% of current electricity use

To provide an example for its residents and businesses, Skagit County government should begin investing in renewable energy systems on government buildings. This should be a graduated program that will begin immediately and will add more renewable power each year. The initial goal is to replace five percent of the annual energy budget with renewable energy projects and gradually increase to 10 percent in 10 years. The ultimate goal is to reach zero facility-energy usage from fossil fuels by 2030.

Projects should include solar electric, solar hot water, wind-electric, micro-hydroelectric, and biomass projects. All projects should be awarded through competitive bids and should require performance guarantees and long-term service contracts from the installing contractors. If an insufficient number of project proposals are unable to meet the target goals, one quarter of the goal can be covered with the purchase of "green power."

Facilities shall be directed to install photovoltaic (PV) systems and capitalize on the incentives recently passed by the State for community solar systems. PV systems installed under this program should provide sufficient revenue to cover the costs associated with a 15-year mortgage at a four percent interest rate. Other renewable energy sources shall also be considered and piloted. The funding for these programs will originate from the GA Energy Savings Performance Contracting program or the Energy Savings Account.

Through PSE's electricity buy-back programs, the income for the Energy Savings Account would increase with the addition of every electricity-generating, renewable-energy system that is included. Electricity-generating, renewable energy projects will provide a revenue stream of between $.08/kWh to more than $1.08/kWh dependent upon the type of renewable energy system that is built.

Policy B-5. Require County departments to consider greenhouse gas emissions in all actions and decisions

TIMEFRAME	End of 2010
LEAD AGENCY	Sustainability Administrator
COST	Minimal
RESOURCE REDUCTION	Indeterminate, but potentially substantial

Skagit County government shall develop an internal policy evaluation framework, analogous to that required under the State Environmental Policy Act, for evaluation of the GHG impact of each of its actions and decisions. Departments shall be required to provide an analysis of expected GHG emissions or reductions with every contract, resolution, and ordinance proposed for the County Commissioners' signature.

Departments shall further consider GHG emissions in deciding all those actions that need not be specifically authorized by the Board.

County Regulations

Policy B-6. Streamline County regulations that impede energy conservation and renewable energy projects

TIMEFRAME	By end of 2011; review every three years
LEAD AGENCY	Planning & Development Services
COST	Staff time
RESOURCE REDUCTION	Indeterminate
CO-BENEFITS	Significant benefit to property owners seeking to install renewable energy systems

The County shall review County codes with the goal of identifying and "streamlining" regulations that impede energy efficiency and renewable energy development.

1. The County shall streamline regulations that hinder the installation of renewable energy or energy-efficiency projects. Streamlining shall identify and eliminate un-

necessary regulations or permits. For example, a project that costs $8,000 shall not be required to undergo a permit process that costs an additional $6,000.

2. The County shall develop specific variance language in County codes for identified roadblocks to energy efficiency and renewable energy development. For example: Amend Chapter 14.10.020 of the County Code (Variances) to include an additional criterion on which variance determinations could be made:

   "(1)(f) Variances to lot setbacks, height restrictions, and other applicable provisions of the zoning code that impede implementation of energy efficiency and conservation and development of solar, wind, or biomass energy systems because of circumstances on a particular property."

3. The County shall also review County codes to streamline regulations for micro-hydro projects if such a project meets the following criteria:

   (a) Is on a Type N stream (non-fish use)

   (b) Is "run-of-the-river," requiring no impoundment

   (c) Diverts less than 10% of the flow of a stream at any given time from the river for short distance

   (d) Does not impact water quality, water rights, or critical fish and wildlife habitat

4. The County shall promote energy conservation and renewable energy projects that utilize innovative and experimental methods and materials. Project aspects that are not specifically addressed by regulation, but do not violate the intent of the codes, may be granted special exemption if certified by a licensed engineer. The County shall develop a process for streamlining approval of such projects.

Planning should seek input from green builders and energy professionals and work with an assigned attorney from the Prosecutor's office to review County codes that meet the above criteria. Together, they shall draft amendments to streamline hindering regulations, as well as develop variance language to allow greater flexibility for energy efficiency and renewable energy development. Code or planning policy changes must be approved through the ordinary land use public participation process.

Policy B-7. Reduce permit fees for energy efficiency in new construction

TIMEFRAME	2010
LEAD AGENCY	Planning & Development Services
COST	Estimated 120 hours of staff time to develop and implement a new fee structure
RESOURCE REDUCTION	Significant reductions in energy consumption (30% or more versus traditional construction) for new construction and remodeled buildings

In order to encourage construction of energy efficient building practices, the Planning & Development Services department shall prepare adjustments to their fee schedule to reduce building permit fees and mechanical permit fees for projects that meet certain criteria for energy efficiency. Fees shall be reduced based on a schedule substantially similar to the following:

1. Residential construction – The County shall reduce building permit fees by 50% if:

   (a) A home scores 50 points on the Built Green Program checklist within the energy conservation and renewable energy sections, or shows 30% reduction in home energy use from standards required by code

   (b) A home is 1,200 square feet or less and scores 40 points

   (c) The home is 800 square feet or less and scores 35 points

2. Mechanical permits – Reduce fees by 50% if systems meet Energy Star requirements for HVAC, or if appropriate, appliances.

3. Commercial and Institutional Buildings – If a project is LEED Silver certified, the County shall reduce building permit fees by 50%. To make the action revenue-neutral, building and mechanical fees for "standard" construction shall be raised to cover the reduction in fees for energy efficient construction.

The estimated total reduction in permit fee revenue from these reductions should be offset by increased permit fees for traditional construction. The permit schedule adjustments should therefore be revenue neutral.

Policy B-8. Appoint a Sustainability Advocate within the Planning Department

TIMEFRAME	2010
LEAD AGENCY	Planning & Development Services
COST	Modest cost for retraining and orienting one staff member and shifting his/her former responsibilities.

Skagit County's building and zoning policies and regulations are difficult for most county residents to navigate when trying to construct and remodel buildings, or modify their property. The process is especially difficult when projects of an unusual, creative, or innovative nature (such as installing renewable energy systems, building highly energy efficient buildings, or experimenting with natural or new building materials or methods) are undertaken.

The Director of PDS shall appoint a Sustainability Advocate within the department to encourage residents and builders to both pursue projects with sustainable goals and conserve their land and natural resources. The advocate will help simplify the permit process for projects based on green building principles, natural resource preservation, and the installation of renewable energy and energy efficiency systems. The advocate will assist citizens, with sustainability-oriented projects, in navigating county policies and regulations. This employee shall become well-versed in the options and exceptions that are available for citizens attempting to lower their carbon footprint. Projects may include alternative building, renewable energy, gray water, composting toilets, alternative transportation, or any other strategy or technology that lowers energy use and GHG emissions, and increases sustainability.

The Sustainability Advocate position shall also be proactive, identifying (with assistance from residents, energy professionals, and developers) "roadblock" regulations that hinder implementation of energy systems. This group shall work to ease or eliminate these roadblocks. The Sustainability Advocate shall also assist individuals, energy professionals, and developers in efficiently navigating the existing regulations to encourage more innovative and sustainable projects.

In addition, the Sustainability Advocate shall devote a portion of his or her time to analyzing County regulations and policies, searching for opportunities to streamline regulations and policies, and reducing the number of roadblocks impeding renewable energy or energy conservation projects. The review process shall be conducted by engaging green builders, renewable energy professionals, the County's legal staff, and others. This group shall identify significant roadblocks and then develop workable solutions. The proposed goal is that within 12 months, the top five roadblocks shall have workable solutions.

Policy B-9. Develop a Community Energy Efficiency Program for homes and businesses

TIMEFRAME	2010 + ongoing
LEAD AGENCY	Sustainability Administrator
COST	$180,000 for 12-18 months; *implementation is contingent on obtaining outside grant funding*
RESOURCE REDUCTION	Potentially significant

To make a significant reduction in GHG emissions, an energy efficiency/conservation program shall be established to address the needs of the County at large. Many County residents and businesses are aware that energy conservation will save them money in the long run and reduce their impacts on the planet. However, the high initial investment and the problems associated with figuring out how to start a project, how to finance the work needed, and knowing who the trustworthy vendors are, all prevent individuals from taking action. A Community Energy Efficiency Program (CEEP) shall provide solutions for individuals or businesses looking to lower their carbon footprint. The CEEP shall arrange for an energy audit, develop a financing package to pay for needed modifications, provide a list of vetted contractors to perform the work, and verify that the work completed was done correctly.

Skagit County Government shall solicit non-profit organizations and agencies with emissions reduction or energy conservation mandates, to submit proposals for a program that offers a community-wide energy conservation program. The solicitation shall also seek an organization that is willing to establish and run the CEEP as well as contribute funds or resources including office space, donated labor, grant monies, etc. Potential partners include Puget Sound Energy, Cascade Natural Gas, Northwest Clean Air Agency, Sustainable Connections, and interested local businesses. To help start the CEEP, the County shall provide seed funding equivalent to two full-time equivalents (FTEs). Once established, the program shall be self-sustaining from fees charged to participants.

The Bellingham-based business consortium Sustainable Connections is operating a similar "Community Energy Challenge" program that projects the following over an 18-month period (perhaps longer due to limited roll out in 2009):

- Significantly reduced energy use in 100 local businesses and 1000 residences

- A 2,100 metric ton reduction in CO_2 emissions annually
- $10 million of construction revenue
- A $25 million economic boost to the local economy

Approximately $180,000 is required to initiate this program and sustain it for the first 12 to 18 months. After this time, the program shall become self-funding through charged participation fees (approximately 4%). Initial funding may come from the Energy Efficiency Block Grant or other partners, such as PSE, Northwest Clean Air Agency, etc.

Policy B-10. Make County property available for community solar projects

TIMEFRAME	2010 + ongoing
LEAD AGENCY	Capital Facilities
COST	Staff time for negotiations with developers and review of agreements. Estimate: 25% FTE Facilities Management staff and 20 hours of attorney time. Electricity savings will eventually average about $20,000 per year.
RESOURCE REDUCTION	If 10% of the estimated solar capacity is installed on county property and the power production given back, the county should avoid about 200,000 kWh of electricity purchases annually.

Skagit County shall develop a community solar project whereby the County would allow community groups and private investors to fund the installation of photovoltaic solar panels on County property.

State incentives for solar photovoltaic (PV) systems have expanded during the past several years. Skagit County and its residents can expect tangible economic benefits in several ways. First, the incentives encourage production of PV equipment in the state. To date, the State's only PV manufacturing is in Arlington, providing jobs accessible to county residents. Secondly, PV is very capital-intensive, so numerous installations will increase the county property tax base. Finally, the incentives provide attractive new business opportunities to local renewable energy developers and investors, expanding green economic development.

The Taskforce believes that if the County encourages its residents to pursue the PV opportunity provided by State incentives, the county may see solar investment exceeding $10 million in hundreds of projects during the next few years. The amount of new PV in the County could exceed the current installations of the entire state (two megawatts), produce up to two million kilowatt-hours of renewable electricity each year, and harvest as much as one million dollars in annual incentives.

C :: Purchasing

The United States Environmental Protection Agency defines "environmentally-friendly" or "green" purchasing to mean buying "products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose." The comparison should consider multiple factors, such as:

- raw materials
- manufacturing
- production
- packaging
- distribution
- operation
- maintenance
- reuse
- disposal

The following directives are organized into two sections:

- Recommendations for high-level action to organize and inventory the County's purchasing process. These recommendations establish a foundation for the decision-making process of buying goods and services.
- Recommendations related to major product categories. These are a sample of the most commonly-purchased items and those with the potential for greatest impact.

The policies below do not direct the County to purchase any specific brand of goods or services as products and technologies change over time along with the needs and requirements of employees. Instead, the recommendations provide a foundation for making informed decisions about which products best meet the County's needs while also satisfying their environmental objectives. Finally, staff should remember that the greenest product is the one that is not purchased.

General Purchasing Policies

Policy C-1. Centralize purchasing authority

TIMEFRAME	2010-2011
LEAD AGENCY	Administrative Services Sustainability Administrator
COST	Indeterminate amount of staff time; negative financial cost
RESOURCE REDUCTION	Significant
CO-BENEFITS	Reduced staff time in client departments; reduced staff time duplicated researching products and suppliers; reduced costs from purchasing unsatisfactory products.

Skagit County currently has a decentralized purchasing structure that permits departments and individuals to purchase supplies and equipment independently and without coordination with other departments. This decentralized

structure makes it difficult to buy supplies in bulk, reduce costs, and reduce waste.

Centralization would increase purchasing power through the purchase of larger quantities. With a few exceptions, individuals and departments are responsible for purchasing their own office supplies and other materials. In doing so, purchases are made in small quantities and there lacks consistency in products purchased. By consolidating purchases, buying in bulk, and leveraging purchasing power for means of obtaining discounts, Skagit County could realize significant cost savings. This has the added benefit of reducing packaging, shipping cost, and number of delivery trips.

Staying abreast of green products information is challenging as standards change and new products constantly become available. Often, employees with full workloads lack the time to research environmentally preferable products before making a purchasing decision. By designating a single position responsible for purchasing all products or a class of products, one individual will be responsible for possessing expertise in market trends, sources of best products, and networks in the green products industry.

Centralized purchasing has the potential to trim waste and redundancies from the purchasing budget in every major product category. This translates into reductions in resource use at the product manufacture level and at the delivery level.

The desired outcome of this recommendation is a single purchasing position. However, given the existing organizational structure of Skagit County, it is possible to consider consolidating purchases by categories. For example, major purchasing groups currently within the County are fractured as follows:

- Paper and office supplies are purchased by individuals and departments; invoices are paid by Central Services. Costs are not allocated to departments based on actual usage.
- A disparate selection of cleaning supplies are purchased by Facilities, Parks & Recreation, Public Works, and many other departments.
- Copiers and fax machines are purchased by Central Services. The definition of a “printer” versus a “copier” is becoming increasingly blurred.
- Computer workstations and printers are purchased by Information Services.

To save money and reduce waste, Skagit County needs a paradigm shift in the way it purchases goods and services. Centralized purchasing, or distributed centralized purchasing, can deliver benefits now and in the future. A Green Purchasing Program will be most successful if specific individuals are empowered with the expertise to navigate the field of environmentally preferable products.

Under this policy, purchasing for all County departments and offices will be centralized and distributed to a few primary offices:

- **Central Services** shall purchase all paper, office supplies, printers, copiers, fax machines, and related consumables.
- **Facilities Management** shall purchase all cleaning, bathroom, and kitchen supplies.
- **Information Services** shall purchase all computer equipment (workstations, monitors, laptops, etc.).
- **ER&R** shall purchase all vehicles, trailers, and other heavy equipment.

To implement centralized purchasing, responsible staff will need to:

- find adequate storage facilities for volume purchases;
- deliver purchases throughout government buildings
- develop a system for requisitioning items
- develop a system for allocation of costs to departments based on actual use of supplies

These obstacles are not insurmountable, and many successful examples exist for Skagit County to follow.

Policy C-2. Develop & Adopt a Green Purchasing Policy

TIMEFRAME:	2010-2011
COST:	Indeterminate amount of staff time; potential savings of $51,000 annually
RESOURCE REDUCTION:	Potentially significant, although difficult to calculate without baseline purchasing data
CO-BENEFITS:	Environmentally preferable products reduce waste disposal, avoid contaminating streams and soil, and lessen water use. Many environmentally preferable products share environmental attributes that not only reduce waste and greenhouse gas emissions but also lessen the impact on human health. Products that are chlorine-free, low VOC-content, carcinogen-free, and low toxicity contribute to improved air quality and healthier work environments.

Skagit County’s existing Purchasing Policy lists several goals to achieve clarity and transparency of purchasing as well as quality of goods and services, but does not include a goal to

achieve more environmental purchasing. Adopting a separate Green Purchasing Policy would legitimize Skagit County's commitment to consider environmental factors when making purchasing decisions. A Green Purchasing Policy would have the additional goals of:

- Verifying senior management support for green purchasing.
- Educating individual staff members and the County as a whole about the importance of buying environmentally preferable products.
- Documenting a vision for achieving the County's environmental objectives.

The potential savings to Skagit County are large: in 2007, King County had approximately 17,000 employees and achieved a savings of $877,000 through their Environmental Purchasing Program. In the same year, Skagit County had approximately 1000 employees. By extrapolation, Skagit County could realize a potential savings of $51,000 annually.

The best policy language is dependent on the needs, structure, and operational culture within the County. The Taskforce recognizes that only employees familiar with Skagit County's current policies, operating procedures, and willingness and ability to change are capable of determining what policy language is most appropriate for the organization.

This directive includes three parts: components that should be considered for inclusion in a Green Purchasing Policy; specific actions that Skagit County can make in support of developing a Green Purchasing Policy; and references and resources for further research in developing a Green Purchasing Policy (included in the appendices to this document).

Required Components

Skagit County shall engage in a policy development process during which the topics covered in this recommendation are discussed and analyzed for their applicability within the County. The Green Purchasing Policy shall consider the following components:

1. **Describe why it is important to buy environmentally preferable products:** Skagit County must articulate and commit into policy its environmental and sustainability principles.
2. **Define environmentally preferable purchasing:** Skagit County may choose to use the US EPA definition (stated in Section A above), or they may choose to narrow the definition to meet specific environmental and sustainability objectives.
3. **Empower a green purchasing team:** The team should include purchasers for each major product category and from each department within the County, as well as end-users. The team should meet no less than four times per year and is responsible for coordinating the implementation of the Green Purchasing Policy.
4. **Identify the desired environmental attributes:** An environmental attribute is a feature of a product that makes it "green." An important attribute in the context of this Climate Action Plan is reduced greenhouse gas emissions. However, there are a number of other environmental attributes that are equally important from an overall sustainability perspective. They can be grouped into categories as items that:
   - *Minimize waste*: Biodegradable; compostable; durable; recyclable; reduced packaging.
   - *Reduce use of natural resources*: Rapidly renewable materials; recycled content; refurbished; upgradeable; water efficiency; reduced greenhouse gas emissions.
   - *Conserve energy*: energy efficiency; locally manufactured.
   - *Lessen the impact on human health*: Carcinogen-free; lead-free; low volatile organic compound (VOC) content; mercury-free.
5. **Reference existing environmental labeling and certification programs:** Third-party verifiers provide independent, unbiased certification of environmentally preferable products. There are dozens of programs but the main ones include:

   EcoLogo: As the largest third-party verifier in North America, the EcoLogo Program compares different products and services from the same categories, and develops rigorous and scientifically relevant criteria that reflect the entire lifecycle of the product. There are currently over 120 product categories with EcoLogo certification.

   Green Seal: Green Seal offers third-party life-cycle analysis and certification in over 30 categories, including construction materials and equipment, facility operations, and office products. Green Seal publishes its *Choose Green Reports that* both evaluates the envi-

ronmental impact of products and recommends those products that appear to meet its standards.

Forest Stewardship Council: FSC sets standards for "forest friendly" practices and, through independent verifiers, certifies forests that are managed consistent with its standards. Forest-based products, such as paper, that originate from FSC-certified forests are also eligible for FSC-certification.

Greenguard: Greenguard establishes acceptable indoor air standards for indoor products, environments, and buildings. Greenguard's mission is to improve public health and quality of life through programs that improve indoor air.

EPEAT: The Electronic Product Environmental Assessment Tool (EPEAT) is a system to help purchasers evaluate, compare and select desktop computers, notebooks and monitors based on their environmental attributes. EPEAT also recognizes manufacturers for efforts to reduce the environmental impact of their products.

STMC: The Standardized Test Methods Committee (STMC) promotes standardized test methods for the printer cartridge industry. The test methods are used to evaluate toner printer cartridge performance.

CFPA: The Chlorine-Free Products Association (CFPA) endorses products in the pulp and paper industry that are manufactured with advanced technologies free of chlorine chemistry.

6. **Balance environmental considerations with performance, availability, and cost requirements:** Some environmentally preferable products may have higher upfront costs than similar conventional products. The Green Purchasing Policy must state Skagit County's tolerance for these higher costs. An example from Alameda County, California says: "Nothing contained in this policy shall be construed as requiring a purchaser or contractor to procure products that do not perform adequately for their intended use, exclude adequate competition, or are not available at a reasonable price in a reasonable period of time." The phrase "reasonable price" gives purchasers some discretion about how much extra, if any, they are willing to pay.
7. **Prepare specifications that allow for consideration of environmental characteristics:** These will be specific to each product category. Specifications of major product categories are recommended in Section C.
8. **Identify initial priorities:** Start small to gain employee buy-in.
9. **Assign responsibilities and establish deadlines:** This is imperative to ensuring the Green Purchasing Policy is implemented.
10. **Create a communications plan:** See Workgroup 4 for recommendations on how this might be achieved.
11. **Develop** measurable goals and reporting requirements.
12. **Review** the policy regularly.

Required for Implementation

The following actions should be taken in conjunction with developing a Green Purchasing Policy:

1. Conduct a baseline procurement inventory:

   In order to be able to quantify both the environmental and financial benefits of a Green Purchasing Program (GPP), Skagit County will need to have an understanding of the baseline – or pre-GPP – costs and footprint.

   Using items identified as initial priorities by the green purchasing team, an inventory of the County's procurement for at least one calendar year can be used to create a baseline. This baseline will serve as a foundation for developing the GPP. Later, it will also serve as a reporting tool on the implementation of the GPP, so metrics should be chosen that monitor progress (examples are offered below). Although not all the information will be immediately available for past purchases, it is important to set up the spreadsheet with these categories, as they will be useful going forward.

   - Order number
   - Date
   - Vendor
   - Buyer
   - Item number
   - Item description
   - Unit price
   - Quantity
   - Post-consumer recycled content
   - Total recycled content
   - Unit of measure
   - Unit of weight
   - Packaging description
   - Third-party certification
   - Environmental attributes
   - Total cost of ownership
2. Identify green equivalent products:

   Once the procurement baseline inventory is conducted, Skagit County may seek out green alternatives to conventional products that balance environmental benefits with performance, availability and cost requirements. This step may assist in identifying initial priorities. This may be done through online research and networking, or more easily by requesting vendors

themselves to suggest green alternative products that serve equivalent purposes. Many vendors have a process that allows them to quickly analyze the cost differential to increase green spending in their category, while others handle such requests manually.

U.S. Communities Purchasing Alliance, a national purchasing network for the public service—of which Skagit County is a member—can assist in finding green alternative products. U.S. Communities can request their vendors to perform cost comparisons for substituted green purchases. This service is free of charge to U.S. Communities registered participants. This comparison was performed for Skagit County's janitorial supplies as a test during the research of this Climate Action Plan, and the results show an overall cost savings with improved environmental performance.

3. Join the Responsible Purchasing Network.

   The Responsible Purchasing Network (RPN) is an international network of buyers dedicated to socially responsible and environmentally sustainable purchasing. Benefits of membership include:

   - Access to purchasing tools, including category-specific Purchasing Guides
   - Consulting services
   - Training
   - Networking opportunities

   Washington State members include King County, Snohomish County, and Pierce County, in addition to a number of State departments and agencies. Members pledge that their organization "will strive to use its purchasing power to maximize environmental stewardship, protect human health, and support local and global sustainability."

4. Use existing purchasing networks to find environmentally preferable products:

   Purchasing cooperatives are designed to reduce administrative burden while leveraging volume to negotiate preferred pricing. Skagit County currently participates in two such purchasing programs: the Washington State Purchasing Cooperative, and U.S. Communities Government Purchasing Alliance. Both of these programs offer conventional goods and services, but more importantly also offer categories that list only environmentally preferable products. Skagit County must strive to make better use of the green categories of either program:

   - The Washington State Purchasing Cooperative Green or Recycled Content
   - US Communities Going Green Program

5. Further sustainability goals through contracts:

   Skagit County can encourage its vendors and contractors to help the County meet its green goals. By using specific language in contracts and Requests For Proposals (RFPs), Skagit County is in a position to influence businesses to adopt green practices as well. Some examples include:

   - Require all bids and proposals from vendors to be submitted on double-sided, recycled paper.
   - Include criteria in RFPs that require vendors to describe their efforts to green their business practices, independent from the product or service in question. Proposals can then be judged against these criteria and contracts awarded to the more environmentally responsible vendor where practicable.
   - Request vendors to suggest green alternative products, where available.

6. Monitor and report:

   Once a Green Purchasing Policy is in place, Skagit County must monitor the implementation of the program and report on its progress. The metrics for measuring progress were discussed earlier in the baseline inventory. Reporting on the progress of the GPP is critical to its success. Reporting can be done in a combination of ways:

   - An **annual report** is a transparent method for documenting the progress of County departments in the implementation of the GPP. King County is an example of this.
   - **Annual employee performance reviews** is a method for linking the Green Purchasing Program to each employee's job responsibilities. Employees are assessed on their success in delivering on the goals and objectives of the GPP.
   - **Share success** stories with County employees and the broader public. Highlight best practices as well as opportunities for growth. Dissemination of this information can inspire and encourage purchasers to comply with the GPP.

Policies by Product Category

Policy C-3. Purchase remanufactured toner cartridges for laser printers, fax machines, and ink jets

TIMEFRAME	2010
LEAD AGENCY	Appropriate Purchasing Staff
COST	30%-60% savings over cost of new cartridges
RESOURCE REDUCTION	A typical OEM toner cartridge consumes 5-9 pounds of virgin material in the production process and is composed of 40% plastic and 40% metal. Cartridge remanufacturers in the United States reuse over 35,000 tons of plastic and save over 400,000 barrels of oil each year. Since cartridges may be remanufactured more than once, resource intensity is reduced further with each additional remanufacture.

Remanufactured toner and ink jet cartridges ("remans") reduce waste, save natural resources, and cut costs by reusing empty cores and parts rather than disposing single-use products from original equip-ment manufacturers (OEMs). Remanufactured cartridges are available for laser monochrome and color as well as ink jets. Monochrome laser remans are the most applicable for widespread adoption by institutional purchasers. There are an estimated 2,000 cartridge remanufacturers in the United States who produce over 27 million remans each year. Remans are available from most national office supply vendors as well as local vendors throughout the country.

Remans are suitable for use in most printers, copiers and other machines using laser cartridges. Reman products offer equivalent quality, performance, and yield compared to OEM standards. During remanufacture, cartridges are disassembled and cleaned. Worn, defective, and high-usage parts are replaced. Units are refilled with toner, reassembled, tested for quality, and resold. While **it is a myth that remanufactured cartridges void a printer's warranty** (federal laws forbid making use of a specific product a condition of warranty)[4], remans should meet the Standardized Test Methods Committee (STMC) specification in order to guarantee product quality and performance. Cartridges supplied under contract must meet original equipment manufacturer's (OEM) standards and provide full performance guarantees.

Purchasing staff should consider ordering through the U.S. Communities Purchasing Network Going Green Program, or through Washington State Purchasing Cooperative's Green or Recycled Content page. Alternately, Skagit County may request suppliers to auto-substitute remans any time an order is placed for new cartridges and to train purchasers on the use of this auto-substitute feature.

Purchasing staff should also require spent cartridges be remanufactured and all components recycled when their useful life is over, to reduce the landfill disposal of hazardous material.

Policy C-4. Purchase Environmentally-Preferable Paper

TIMEFRAME	2010
LEAD AGENCY	Appropriate Purchasing Staff
COST	While recycled paper is 8-36% more expensive than virgin paper, the price premium can be offset through efficiencies such as double-sided printing and bulk purchasing
RESOURCE REDUCTION	Indeterminate without baseline purchasing data. See www.papercalculator.org to calculate the environmental effects of different papers across their full lifecycle. Every ton of paper recycled saves more than 3.3 cubic yards of landfill space.

Paper is a major source of pollution. Key impacts during the paper life cycle include: hazardous releases of chlorinated compounds in the pulping process, high volumes of water use and contamination, pungent and toxic air pollutants, high volumes of solid waste, high energy demands and greenhouse gas emissions, and damage to arboreal and aquatic habitats. Energy consumption, emissions, and deforestation related to paper manufacturing contribute directly to the larger issue of global climate change.

1. Skagit County shall develop a paper purchasing policy as a component of the Green Purchasing Policy. The model Paper Purchasing Policy drafted by the Environmental Paper Network and Responsible Purchasing Network offers an example of such a policy. This model policy covers how to increase paper efficiency, choose the right paper, work with suppliers, get staff onboard, and recycle.

2. Skagit County shall incorporate sustainable practices in the procurement, use, and disposal of all paper products. Sustainable practices include, but are not limited to:

   - Reducing paper consumption.
   - Considering fiber source and type, paper processing methods, and recyclability in paper purchase decisions in addition to price, performance quality, and end-use application.
   - Reusing and recycling paper products.

   Minimum specifications for copy paper shall include:

   - 30% post-consumer recycled content
   - Chlorine-free certification

- Chain of custody certification for virgin content
- Requirement that vendors offer tree-free alternatives.

While recycled-content papers are widely available and of equal quality to virgin papers, they are typically between 8-36% more expensive than virgin papers. However, price premiums can be offset through paper efficiencies such as double-sided printing, group or bulk purchasing, and savings accrued from in-house recycling programs. Moreover, the savings generated from purchasing remanufactured toner cartridges more than offsets the higher cost of recycled paper.

Policy C-5. Follow Integrated Pest Management practices when purchasing landscaping supplies for all County land.

TIMEFRAME	2010
LEAD AGENCY	Appropriate Purchasing Staff; Facilities; Parks & Rec
COST	Minimal staff time; reduced cost of pesticides
RESOURCE REDUCTION	Reduced toxic chemical use in our environment
CO-BENEFITS	Safer environment for staff and park users

Integrated Pest Management (IPM) is a comprehensive approach to pest (including weed and disease) management. IPM stresses the prevention of pest problems through design and maintenance practices, and uses a range of pest management techniques, including biological, cultural, and mechanical, with chemical controls as a last resort. Skagit County would benefit from adopting a strategy that would eliminate use of the most hazardous pesticides, reduce overall pesticide use on public lands managed by the county, and also encourage all local municipalities to do the same.

In January 2004, U.S. District Judge John Coughenour granted an injunction in *Washington Toxics Coalition, et al., v. EPA* that restricts the use of more than 30 pesticides near salmon-bearing streams. Local governments have a unique role in modeling compliance with the court injunction and in going beyond the ruling to take actions that will protect salmon from pesticides. For the purposes of the injunction, "Salmon-Supporting Waters" are defined as "the area below the ordinary high water mark of all streams, lakes, estuaries, and other water bodies where salmon are ordinarily found at some time of the year." For excellent maps of these streams go to the Washington State Department of Agriculture website and search by county. For a list of pesticides affected by the court order, please see the appendix.

Skagit County shall:

1. Phase out the use of the most hazardous pesticides and maintain landscapes with healthier alternatives. Use the Washington Toxics Coalition recommendations to prioritize the phase-out of chemicals, based on the level of threat they pose to human health and the environment. The following pesticides should not be purchased: fertilizer/herbicide and fertilizer/insecticide combinations such as fertilizers containing 2, 4-D or related phenoxy herbicide weed control additives, shrub bed pre-emergents containing dichlobenil (Casaron, etc.), or Dursban.
2. Phase in IPM. Choose native and pest-resistant plants, design and maintain landscapes so they don't need herbicides, and use safer means to treat pest problems that occur. If required, chemical treatments shall be chosen based on least non-target toxicity and hazard. Chemical treatments should be avoided if alternative maintenance activities can reduce pest populations.
3. Maintain monitoring logs of insect and disease problems. Document problems prior to treatment, record treatment method used, and report degree of success.
4. Aim to decrease total use of pesticides by 50% in the first year (2010), and achieve an additional 30% reduction in 2011.
5. Set a goal to reduce energy consumption in landscaping activities by 10% in the first year.
6. Prohibit pesticide and fertilizer application within 20 yards for ground applications of bodies of water with exemptions for products unlikely to pollute water.
7. Require contractors working on behalf of Skagit County to observe IPM guidelines.
8. Use incentives and education to encourage staff involvement.

Policy C-6. Use best environmental practices, including third-party certification, for the purchase of cleaning supplies.

TIMEFRAME	2010
LEAD AGENCY	Appropriate Purchasing Staff
COST	Negative cost when purchased in bulk
CO-BENEFITS	Employees will enjoy reduced exposure to toxic substances, improved air quality, and fewer allergens and other asthma triggers from the environment.

Most cleaning supply purchases for Skagit County are currently purchased by the Facilities Department and the Parks and Recreation Department. An effort to streamline

and use less toxic cleaners was initiated by the former Facilities Operations Manager.

Skagit County shall ensure clean facilities by using products responsibly; including environmentally preferred cleaning products, equipment, tools, processes, standards, task schedules and frequencies that contribute towards implementing of a total green cleaning program. All County employees must be aware of their responsibility in implementing the policy through appropriate training.

Skagit County shall:

1. Use products that meet EPA standards with high post-consumer recycled content.
2. Use cleaning products that meet standards comparable to GC-37 and/or products with low-volatile organic compounds (VOC) whenever applicable and available.
3. Conserve water, energy and other resources while providing a clean, safe and sanitary environment.
4. Use products that are diluted and/or dispensed to appropriate levels, from a concentrated delivery system.
5. Train employees regularly on products, equipment and supplies.
6. Use supplies and products correctly.
7. Do not use aerosol products.
8. Educate building occupants of their responsibilities and cooperation that compliment the green cleaning and maintenance process.
9. Responsible Purchasing Network's product database includes over 1,600 Green Seal and/or Eco Logo certified products from 229 manufacturers.
10. US Communities Going Green Program offers competitively bid contracts on environmentally preferable cleaning supplies, available to registered participants.

Policy C-7. Purchase environmentally-preferable paint.

TIMEFRAME	Immediate + ongoing
LEAD AGENCY	Appropriate Purchasing Staff
COST	Minimal
RESOURCE REDUCTION	Recycled paint manufacturing conserves resources by reusing waste materials
CO-BENEFITS	Latex recycled low-VOC and zero-VOC paints mitigate disposal challenges and reduce human health and environmental risks

A wide range of problems is associated with paint, including energy conservation, air and water quality, hazardous substances and waste. Some volatile organic compounds (VOCs), common in paint products, are known to cause human health problems, including damage to the liver, kidney, and central nervous system over long-term exposure. Heavy metals, which occur in small levels in paint, may cause liver and blood damage. Due partly to these hazardous materials, paint disposal and use is a concern to human and environmental health.

Skagit County shall:

1. Purchase zero-VOC paint whenever possible, and always at least low-VOC paint.
2. Ensure the paint product is certified by a third-party verifier. Environmental certifications include:
   - Green Seal GS-43
   - EcoLogo
   - Scientific Certification Systems Interior Advantage Gold Program
   - GREENGUARD Environmental Institute certification

Policy C-8. Purchase EPEAT-compliant computer desktops, notebooks, and monitors.

TIMEFRAME	Immediate + ongoing
LEAD AGENCY	Information Systems
COST	Minimal
RESOURCE REDUCTION	The purchase of one computer processing unit and one LCD display registered under either ENERGY STAR or EPEAT programs will save 458 metric tons of CO_2e
CO-BENEFITS	Multiple

Electronic equipment can have significant environmental impacts throughout their entire life cycle, from production and use, to disposal. Acquiring environmentally preferable equipment can reduce energy consumption, reduce pollution from energy production, and reduce general and environmentally sensitive waste.

Skagit County currently has a Power Management Plan, developed by the Information Services department in March 2009, which recommends that all electronic components procured by Information Services be reviewed for their compliance with Energy Star. Energy Star is an international standard for rating consumer products based on their energy efficiency. While Energy Star will help reduce Skagit County's energy consumption, it does not address the environmental lifecycle impacts of electronic equipment.

Another certification program, EPEAT - the Electronic Product Environmental Assessment Tool – assists in identifying environmentally preferable products that have been de-

signed to have environmental benefits throughout their lifecycle. The standard includes 51 separate criteria (23 mandatory and 28 optional) in the areas of energy efficiency (Energy Star mandatory), toxics reduction (mandatory), end-of-life management (product takeback mandatory), recycled content and recyclability, product longevity, corporate responsibility, and packaging. Products qualify as Bronze, Silver, or Gold by meeting increasing percentages of the optional criteria.

Skagit County shall require EPEAT Bronze registration as the minimum standard that all electronic components must meet, where EPEAT ratings exist. All purchasers are encouraged to make EPEAT Silver registration the required standard for electronic components in specific purchase contracts, with Gold registered products preferred. For a list of purchasing resources and model policy language, see the EPEAT website at www.epeat.net/procurement.aspx.

The co-benefits of purchasing EPEAT models can be calculated using the Electronics Environmental Benefits Calculator, developed by the University of Tennessee, Center for Clean Products. The purchase of one CPU and one LCD monitor at the EPEAT Bronze level results in the following benefits over the lifetime of the product:

- Energy savings of 6520 kWh, equivalent to one US household in a year;
- Primary materials reductions of 1380 kg, equivalent to the weight of 11 refrigerators;
- Hazardous waste reductions of 5.23 kg, equivalent to the weight of 3 bricks;
- Air emissions reductions of 27 metric tons; and
- Cost savings of $616.39.

Policy C-9. Review and assess vehicle fleet to improve overall performance and reduce GHG emissions

TIMEFRAME	2010
LEAD AGENCY	ER&R Coordinator
COST	$3-8,000 (fully funded by EECBG grant) Estimated $88,000 annual operating cost savings
RESOURCE REDUCTION	Estimated 13% reduction in greenhouse gas emissions

Skagit County has a fleet size of approximately 300 units, with nearly half of those units being passenger vehicles. A fleet assessment and review, contracted to an independent third party, can make specific recommendations to improve fleet efficiency, thereby reducing greenhouse gas emissions and saving money.

Skagit County shall hire a fleet consultant, or become a member of a recognized not-for-profit fleet program that offers customized consulting services to members. In particular, the following topics should be considered:

- Vehicle replacement strategy
- Rental rates
- Vehicle utilization and availability
- Fuel efficiency
- Greenhouse gas emissions

Examples of organizations that provide fleet services include:

- E3Fleet, administered by the Fraser Basin Council
- Hennessey Fleet Consulting, based in Bothell, WA
- Evergreen Fleets, administered by the Puget Sound Clean Air Agency

The Township of Langley, which has a fleet size of 130 units (similar to the passenger fleet size of Skagit County), achieved a 13% reduction in greenhouse gas emissions and fuel use, and a savings of $88,000 in annual operating costs, after implementing the recommendations from a similar fleet assessment.

D :: Solid Waste

In Skagit County, the County shares control of decision making regarding solid waste issues with the cities through the Solid Waste Governance Board. Where necessary, staff shall bring the directives in this section before the Governance Board for approval before implementation.

Under state law, Skagit County has no direct control over curbside garbage and recycling services provided to county residents, either inside or outside city boundaries. Businesses that transport solid waste are instead regulated by the Washington Utilities and Transportation Commission.

However, Skagit County can exert influence over the solid waste system through the Comprehensive Solid Waste Management Plan (CSWMP), which is due for revision. Working with the Solid Waste Advisory Council (SWAC) the County could implement several of these directives through that process.

Skagit County should also take advantage of the upcoming CWSMP revision to set new goals for waste reduction and recycling. Recent efforts in comprehensive recycling and plastic bans by many different jurisdictions, including the

Seattle, San Francisco, Olympia, Portland, and Boulder County, have set new standards and revolutionary targets for solid waste handling. The Washington State Department of Ecology has initiated a "Beyond Waste" program with a 30-year goal of *eliminating* waste where possible and using any remaining wastes as resources. Skagit County should embrace new aggressive targets that account for these accomplishments.

Reduce Waste Generation

"Reduce" is the first and most important element of the Waste Hierarchy . Processing of waste materials is inherently inefficient. Collection, processing, and disposal of waste all consume energy in some form and generate varying quantities of carbon dioxide equivalents, besides being expensive, and using natural resources "wastefully". Getting at the beginning of the problem will reduce costs, environmental impacts, green house gas emissions, and energy use associated with handling materials un-necessarily. Just as "an ounce of prevention is worth a pound of cure", avoiding the generation of wastes is more efficient than finding secondary uses for them or recycling them. Although re-using and recycling are very important, dealing with our waste resources at those secondary levels (i.e. uses for which they were not originally intended) incurs unavoidable inefficiencies. Reducing excess consumption and waste generation prevents such inefficiencies.

Reducing waste is an activity that can be engaged by each and every individual, agency, and business in Skagit County. Such activities not only reduce our carbon impact from waste handling systems, they also prevent greenhouse gas emission from production of excess items that are not truly needed. A mind-shift is all that is necessary for this activity, simply by evaluating our consumption (purchases & other "stuff" accumulation) against three questions:

- Is this really needed for use in a significant way for a significant amount of time?
- Can it be borrowed or rented or purchased used?
- Where will it end up? i.e. Does this item have use beyond my needs (can it be resold, donated, or otherwise re-used), and can it be recycled?

Policy D-1. Reduce, then eliminate, use of polystyrene (Styrofoam) food containers countywide

TIMEFRAME	2010-2014
LEAD AGENCY	Sustainability Administrator
COST	Staff time
RESOURCE REDUCTION	Substantial reduction in landfilled waste
CO-BENEFITS	Extended life of landfills; significant health benefits for humans, marine life, and other animals and birds

Styrofoam food container use is observably higher in Skagit County than in other areas. It is unusual to take leftovers or take-out from a restaurant in Skagit County in anything but polystyrene clamshells. Other uses include shipping peanuts, foam component packing, coffee cups, food containers grocery stores as well as restaurants and fast food stores.

Styrofoam is environmentally harmful in its production and almost always ends up in the waste stream and landfill, bringing with it all the associated collection and environmental costs. The Earth Resource Foundation explains:

> the biggest environmental health concern associated with polystyrene is danger associated with Styrene, the basic building block of polystyrene. Styrene is used extensively in the manufacture of plastics, rubber, and resins. About 90,000 workers, including those who make boats, tubs and showers, are potentially exposed to styrene. Acute health effects are generally irritation of the skin, eyes, and upper respiratory tract, and gastrointestinal effects. Chronic exposure affects the central nervous system showing symptoms such as depression, headache, fatigue, and weakness, and can cause minor effects on kidney function and blood. Styrene is classified as a possible human carcinogen by the EPA and by the International Agency for Research on Cancer (IARC). … A 1986 EPA report on solid waste named the polystyrene manufacturing process as the 5th largest creator of hazardous waste.[5]

Additional environmental impacts are created due to the material's longevity.

> Polystyrene exists in our environment for hundreds or thousands of years because it does not biodegrade. Instead, it "photodegrades," meaning sunlight breaks it into progressively smaller pieces, literally too small to measure by any available means.
>
> Similar in size to and more abundant than plankton, tiny pieces of polystyrene are consumed by filter feeders, which in turn are eaten by animals higher on the food chain, such as fish, birds and sea mammals, leading to bioaccumulation.

A U.S. Environmental Protection Agency National Human Adipose Tissue Survey for 1986 identified styrene residues in 100 percent of all samples of human fat tissue. According to a Foundation for Achievements in Science and Education fact sheet, "Longterm exposure to small quantities of styrene can cause neurotoxic (fatigue, nervousness, difficulty sleeping), hematological (low platelet and hemoglobin values), cytogenetic (chromosomal and lymphatic abnormalities), and carcinogenic effects."

Due to human littering, urban runoff and redistribution by storms and wind, ultra-light polystyrene cups, clamshells, packing peanuts and other products end up in waterways and the ocean. All sorts of floating plastics, including tiny broken-up bits of polystyrene, cover areas in the Pacific Ocean roughly the size of Texas."[6]

While there is at least one company currently known to recycle large Styrofoam blocks, no current market exists for smaller items such as clamshells and foam cups. There are, however, numerous and increasing reasonable packaging alternatives for these items that are much more benign and which can be reused, recycled, or composted.[7]

Skagit County shall reduce and then eliminate use of polystyrene containers through a multi-faceted approach to be implemented over several years:

1. County staff and volunteers should meet with a sample of restaurants, cafeteria, and institutions to discuss their current use of Styrofoam packaging products. Based on that sample and drawing from best waste reduction practices from other jurisdictions, prepare an informational package for distribution to those types of businesses. The packet would address a) the environmental costs of Styrofoam and b) sources and costs of alternative packaging. Assess progress in reducing use.
2. Implement a public information campaign that encourages customers to bring take-out containers to restaurants or request alternative containers when they are offered Styrofoam.
3. Once there is a local experience with alternative packaging, prepare a County-wide ban on Styrofoam container use, drawing on similar ordinances in place in California,[8] New York,[9] Seattle,[10] and elsewhere. Portland was one of the first and provided incentives for McDonald's to replace Styrofoam clamshells.[11]
4. Draft an interlocal agreement with all other Skagit County municipalities, and potentially neighboring counties, to implement the proposed ban simultaneously.
5. County staff should work with statewide efforts to implement product stewardship activities aimed at reducing use of packing.

Policy D-2. Prohibit marine use of open-cell expanded polystyrene (EPS) in Skagit County.

TIMEFRAME	2010-2012
LEAD AGENCY	Planning & Development Services
COST	Staff time
CO-BENEFITS	Improved fisheries and aquatic ecology from reduced hazards to fish and animals from these materials.

Another common use of polystyrene with detrimental impact to the environment includes large blocks for inexpensive floating docks. These blocks, if not properly fully encased slowly degrade and shed tiny beads of polystyrene that are consumed by fish, affecting their health. NOAA, in its Best Management Practices for Small Docks and Piers[12] recommends not using open-cell expanded polystyrene (EPS) ("beadboard" or Styrofoam) because of their "deleterious impacts". Polystyrene foam is often dumped into the environment as litter. This material is notorious for breaking up into pieces that choke animals and clog their digestive systems.[13]

Skagit County Planning and Development Services Department shall work with other agencies with jurisdiction to prohibit use of EPS on docks in Skagit County waters. They will also implement a program to require retrofit of any EPS docks or floats currently in place.

Policy D-3. Reduce in-County use of single-use beverage containers.

TIMEFRAME	2010-2014
LEAD AGENCY	Sustainability Administrator
COST	Staff time
RESOURCE REDUCTION	Reduced disposal costs and recycling costs associated with collection and processing; reduced petroleum and chemical use for production of the plastics
CO-BENEFITS	Reduction of potential health impacts associated with exposure to production chemicals

Consumer adoption of the single-use bottle has been a marketing phenomenon and an environmental disaster. Consider these statistics:[14]

- In 2006, 4.47 billion tons of plastic bottles were sold in the United States.
- 1.11 billion tons were recycled, a 24.7% recapture rate

- Approximately 3.7 billion tons of these bottles went to the landfills or incinerators
- By comparison, in 1991, 1.1 billion tons were sent to landfills

The environmental cost is huge: The non-profit Container Recycling Institute estimates that 18 million barrels of crude oil equivalent were consumed in 2005 to replace the two million tons of PET bottles that were wasted instead of recycled.[15]

Skagit County shall:

- Increase public awareness of the extent of the problem and its environmental impact
- Encourage consumers to choose municipal water and reusable containers
- Improve capture of single-use bottles at public events
- Support proposals for a state-wide ban on single use bottles or an environmental impact fee on their purchase.

Increase Capture of Recyclables

There are significant costs associated with the collection, transfer, storage, disposal, and use of solid waste. Substantial economic, environmental, and resource conservation benefits may be realized by reducing the quantity of solid waste. Section 1 (above) addresses organic waste, a significant fraction of the waste stream in our community. Taking organics out of the waste stream, or preventing them from getting in there in the first place, can, by itself, reduce the amount of solid waste by as much as 45%.[16] Thus, it is one of the most important targets for waste stream reduction.

Even after removing organics from the County waste stream, a substantial amount of solid waste remains. We can characterize much of the remaining waste as follows:

- **"Traditional" Recyclables.** The cans, bottles, containers, paper, and cardboard that are included in many extant recycling operations.
- **"Orphan" Recyclables.** These are materials that are theoretically useable but for which there is an inconsistent or inadequate infrastructure to allow their full diversion and exploitation.
- **Garbage.** Residual materials that cannot be recycled or have no further use. (We expect the quantity of residuals (e.g.) to be reduced through public and industrial efforts at regional, state and national levels to restrict their sale and use, identify substitute environmentally benign products, and increase product stewardship practices.

These recyclables typically account for 30% of an undiverted waste stream.[17] Recommendations related to these two fractions are discussed in this section, while materials from construction and demolition are discussed later.

Skagit County shall increase the capture of traditional recyclables and provide systems or incentives for continually expanding the capture of "orphan" recyclables.

These categories are, as a goal, in flux. As we move more materials from "garbage" into specialized, "orphan" collection systems and these systems demonstrate their economic viability, they become part of the traditional recycling system. Garbage quantities are reduced, as re-use and recycling quantities increase.

Additionally, market forces keep individual recycling streams in flux:

- What is "recyclable" is constantly changing because products and product packing changes–in part because of market pressures to make products and packaging more easily recycled.
- What is "recyclable" changes because collection/sorting/processing systems change.
- What is "recyclable" changes because technology and innovation identify additional uses for both traditional and once-orphan recyclables.

While it may seem an aggressive goal given current levels of recycling (estimated at 32%[18]) in Skagit County, communities across the country are currently achieving very high rates of recycling (upwards of 75%[19]) and are expected to approach zero waste within a decade or so. We believe we can achieve similar or better sustainability rates by reducing waste generation rates, increasing traditional and orphan recycle rates, reaching high organics diversion, and climate-sensitive purchasing policies in public and private sectors.

Policy D-4. Conduct a waste characterization study to inform effective recycling efforts

TIMEFRAME:	2010-2011
LEAD AGENCY	Skagit County Public Works, Solid Waste Division
COST:	$50,000
CO-BENEFITS:	Information supports other waste reduction activities

The most current waste characterization of Skagit County's waste was performed in 1992 and is likely grossly outdated.

In order to effectively direct future diversion efforts, accurate knowledge of the actual waste materials disposed through the Skagit transfer stations is needed.

County should hire a knowledgeable consultant or engineering firm with the capability of performing such a study. The study should be directed to investigate quantities and types of waste disposed on a variety of days of the week, and in at least 3 seasons. Waste should include self-haul as well as hauler collected materials and should be based on actual weights rather than estimated volumes.

The study should be implemented within 3 months of adoption of this recommendation. Because of the potential for different behaviors and material disposal during different seasons, a minimum of mid-spring, summer, and late-fall audits should be performed. The study should be completed within 1-year of assignment of the task/contract.

Information gathered from this study could be utilized by start-up green businesses in Skagit County who may devise a use or recycling market for some type of material currently sent to landfill. Sources of significant potentially useful wastes may be able to be traced back and contacted with assistance for utilization of such materials.

Policy D-5. Provide incentives, education, and information to promote traditional recycling by residents and businesses

TIMEFRAME	2010
LEAD AGENCY	Skagit County Public Works, Solid Waste Division
COST	Indeterminate
RESOURCE REDUCTION	Significant but undetermined
CO-BENEFITS	Reduced landfilling of useful materials

Residential customers' choices to reduce waste and to recycle can be influenced significantly by:

- Rate structures for garbage and recycling services that provide incentives to reduce waste and increase recycling. These rate structures should be coupled with repeated reminders that differential rates exist.[20]
- Access to reliable easily accessible information identifying recyclables; and
- Awareness of the community costs and benefits of recycling.

All of Skagit County should move towards a collection system that requires separation of garbage, organics, and designated recyclables in order to achieve the highest diversion rates. Other methods including education and increased access to infrastructure should come first as a transitional arrangement in the interim.

Rates

Rate structures should have strong incentives for reducing waste—and residents must be aware of the savings associated with such reduction. While the County does not set rates, the CSWMP has set a requirement of "incentive rate" for curbside recycling in areas west of Highway 9. This type of incentivizing has been shown to impact recycling rates. Skagit County should propose revisions to the CSWMP, due to be revised in 2010, to further incentivize curbside recycling throughout the County.

Furthermore, where curbside pickup is available, the County should encourage haulers to implement a system by which collection drivers or other workers do quick reviews of bins and leave ready-made notes indicating that alternative disposal is preferred. As waste reduction choices increase, the County should consider moving to stronger incentives and later to bans on mixing recyclables, organics, and true waste.

Haulers for the various cities and unincorporated county, should periodically review the collection rate structure to identify the possibility of increasing incentives for waste reduction and separation of recyclables and compostables. Even without resetting prices, the haulers should provide periodically inform all customers of garbage volume options (e.g., reduced can size, reduced frequency of pickup) as well as the benefits of recycling.

Information

In addition to establishing and communicating incentives for waste reduction, an effective waste reduction and recycling program requires residents' access to clear, reliable information on what can be recycled in the curbside recycling systems and at commercial or public drop-off locations. A Consumer's Union survey found that:

> The most common reasons for throwing items away instead of recycling them were that people didn't think the item could be recycled or they didn't have enough information to do so. But, just about everything that comes into the home can be recycled.[21]

Even well-informed people and committed recyclers do not know what is and is not recyclable at any point in time, and it is not easy to find out. This results from several factors:

- What is or is not recyclable varies over short periods of time, as recycling companies adapt to market changes

or as the companies change their ways of describing what is and is not recyclable.

- Local jurisdictions and recycling programs do not have a consistent set of recyclables.
- Many consumers identify recyclables as limited to what their hauler will accept.
- The standard symbols on plastics use what appear to be "recycling" symbols but which in fact are indications of resin content not related to whether the product is recyclable at any given location.

More and better information about which materials are recyclable, and which are not, is likely to significantly increase recycling rates.

The primary responsibility for providing the correct and up-to-date information for curbside residential and commercial accounts rests with the collection companies. Many recyclables (or re-usables) are not handled by these curbside or contract haulers, however. The general public frequently begins with a particular material in hand and asks the question "Is this recyclable?" The strategy adopted by many communities is establishment of a reliable, accurate, and up-to-date consumer and business-oriented recycling information system. For example, Seattle Public Utilities[22] has a user-friendly system that leads users, with particular materials in mind, to quickly identify where and how to recycle, or if the material is not recyclable, what disposal steps to follow.

The County should, also, review available recycling information systems in the County and test their accuracy and utility. This includes a review of recycling information available on the County website to ensure its ease-of-use and accuracy. The County should consider undertaking a survey of county residents to assess residential understanding of waste reduction and recycling enhancement options. Following that, the County could coordinate focus groups to identify and assess alternatives for improving awareness such as establishing a local recycling hotline.

Policy D-6. Implement efficient recycling and waste reduction at all County facilities

TIMEFRAME	2010
LEAD AGENCY	Sustainability Administrator & Working Group
COST	$37,500 for new bins (fully funded by EECBG grant); reduced ongoing garbage collection expenses
RESOURCE REDUCTION	Indeterminate
CO-BENEFITS	Staff may use recycling techniques at home as well

Skagit County offices, departments, and facilities are of course significant generators of waste, recyclables, and organic waste. The County government has an opportunity and a public responsibility to implement efficient and effective–even exemplary--recycling, organics diversion, and waste reduction programs. This would of course have a direct and significant benefit (given the size of County employment) in reducing waste going to the landfill and the increasing composting of organics. In addition, it would demonstrate the County's commitment to sustainable practices and provide credibility in County efforts to promote greater recycling by the municipalities, residents, business, and industry.

Skagit County shall: Mandate establishment of a County-approved recycling system in every County facility. Establish a minimal system for tracking data and reporting on capture of recycles and organics. Publish data and highlight progress in County staff communications as a means of encouraging participation as well as in identifying targets of opportunity for program improvement.

The county can expect reduced garbage collection costs through adjustment of container size, or collection frequency, or both. Quantifying this would require estimates by county staff based on inventory of all County facilities and their staffing and usage patterns.

Policy D-7. Promote or provide additional recycling services in East County

TIMEFRAME	2010 + ongoing
LEAD AGENCY	Public Works, Solid Waste Division
COST	Negligible
RESOURCE REDUCTION	Indeterminate
CO-BENEFITS	Costs of removing illegal dumps and environmental costs of inappropriate disposition of recyclables would be reduced.

There are limited services or facilities for recycling east of Highway 9. East county residents or commercial facilities who seek to recycle may drop off standard recyclables at the transfer facilities at Sauk and Clear Lake. That leaves a broach swath of the county without convenient drop off

locations. Skagit County should find ways to improve access to recycling in East County, either through unmanned drop boxes at public facilities or through partnerships others, such as Sedro-Woolley's recycling drop-off location, which is conveniently located west of the towns but closer to SR20 than any of the existing County facilities. To the extent possible, Skagit County should make access to these sites available around the clock.

Policy D-8. Provide recycling at all County public events and support public event recycling in all cities

TIMEFRAME	2010 + ongoing
LEAD AGENCY	Public Works, Solid Waste Division
COST	$16,000 for additional bins, transport units, and storage (fully funded by EECBG grant)
RESOURCE REDUCTION	Substantial, but not easily estimated
CO-BENEFITS	Greater public awareness of organics recycling; favorable impressions of county-sponsored public events

Washington State law requires communities to ensure that all public events–in communities that have established residential and commercial recycling programs–implement a recycling program for the event. Public events frequently generate a substantial amount of recyclables and food waste. This, of course, varies with the size and nature of the event. A modest sized soccer tournament (200 teams) will generate 8 yards of recyclables (beverage containers, cans, and cardboard.) In addition, four yards of food and associated compostable waste could be generated at that such event. Absent a recycling and organic capture program, all those materials will end up being transported to the landfill.

The elements of an effective event recycling program are known and have been demonstrated here in the County. This is primarily because of County leadership and material support and interest on the part of a few event sponsors. Although required by law, many municipal events do not require sponsors to provide for recycling programs. And there are County events that have not provided these services or not done so effectively. The Skagit County Fair is an example of inadequate recycling. But it is also has the potential for being an example of effective recycling and organic capture. In addition, it could be the best local opportunity for public education in the reasons for recycling and organic capture.

Skagit County shall:

- Require all County-sponsored events to be certified "zero-waste" events.
- Make the Skagit County Fair a "show case" event for recycling and capture of organics.
- Expand support of public event recycling through recycle bin lending and technical assistance in drafting and implementing an event recycling plan.
- Work with municipal governments to require that event sponsors provide a comprehensive recycling and organics diversion plan as a part of their event permitting process.
- Identify & publish best practices based on review of public event recycling in other jurisdictions.
- Identify most effective recycle bins and collectors for use in public events and at County facilities.

Consumables (compostable collection bags) would be minor and could easily be absorbed by the County. For County-sponsored events, there will be recycling and organics collection costs, but these will be more than offset by reduced garbage collection costs. If volunteers are not available, there may be staffing costs for handling recyclables and organics at the event. These will not be significant, but could be estimated for each event

Policy D-9. Investigate and implement ways to support significant increases in the capture of "orphan recyclables"

TIMEFRAME	2010
LEAD AGENCY	Public Works, Solid Waste Division
COST	Minimal staff time
RESOURCE REDUCTION	Potentially large diversion of solid waste with concomitant reduction in landfilling of valuable materials
CO-BENEFITS	Multiple (see below)

A "recyclable" can be any product or material for which there is a re-use or viable market that justifies the cost of its collection, transport, and processing. The market value of materials in the traditional recycling stream–cans, certain plastic containers, paper, cardboard, etc–for the most part warrants private investment in the required collection, transport, processing, and marketing facilities. In Skagit County, we collect traditional recyclables with some success, and are continually seeking ways (several cited in the CAST recommendations) to expand the types and amounts of materials that are recyclable.

A substantial amount of potentially recyclable materials that are not included in current public or private collection systems due to cost of collection and separation, could be with appropriate investment in the required systems infrastructure. Many of these "orphan" recyclables could have

market value and be removed from the waste stream with investment in collection, sorting, and marketing.

One method cited by industry as a means to support capture of "orphan" recyclables is the use of long-term collection contracts that justify private investment in the necessary separation and handling equipment and storage capacity. Better identification and quantification of "orphan" recyclables would help determine the extent to which increased infra-structure investment could yield better or more efficient capture of these materials.

Skagit County shall implement a number of programs to capture materials that are not currently adequately recycled:

- Survey or interview representative industrial, agricultural, and commercial entities to determine the type, nature, and approximate quantities of materials that are disposed in significant quantities and which might have value on the recycling market. Define alternatives for capture, sorting, and marketing of those potential recyclables.
- With the foregoing information, investigate the feasibility of cost effective County actions to stimulate private investment in the capture and processing of a broad range of materials that are not currently captured--or only captured to a limited extent.
- Review and adapt for Skagit County, an "E-Waste" recycling program for electronics, computers, televisions, etc.[23] Snohomish County's program might be used as an example.[24]
- Include plans for increasing recycling in design of the new transfer station: easier drop off areas for recyclables (below grade rather than stair accessed containers); allow room for to expand for collection of other recyclables; focus on user-friendly elements for recycling.
- Improve capture of traditional recyclables at the County Transfer stations by improving ease of use, and improve signage.

This policy may facilitate development of new green businesses to utilize materials not now captured; extends the life of our landfill; increases public awareness of what is potentially and actually recyclable; and enhances communication with agriculture, business, and industry on issues of sustainability and waste reduction.

Policy D-10. Provide garbage vouchers for low-income residents.

TIMEFRAME	2010 + ongoing
LEAD AGENCY	Public Works, Solid Waste Division
COST	Minimal staff time; voucher cost depends on number distributed
RESOURCE REDUCTION	Possible increase in recycling
CO-BENEFITS	Reduced illegal dumping, improved water quality, increased housing values in low-income areas.

Garbage collection and recycling is a function that protects all the citizens of Skagit County and our environment. While government provides food vouchers to those on restricted incomes who cannot afford basic services, we don't regularly provide free or reduced rates for garbage disposal. If a family cannot afford food, they are unlikely to have the money to pay for garbage collection or disposal. This situation may lead to improperly disposed garbage that can create health hazards, and create unsightly conditions lowering surrounding housing values.

Skagit County shall initiate a limited pilot program to assess demand and eligibility for such vouchers. The Board of Commissioners shall reevaluate the severity of need and availability of funding after one year.

Use Green Construction and De-Construction Practices

A great deal of un-necessary organic, and other, waste is generated through traditional construction and demolition practices. Construction and demolition (C&D) wastes have their own characterization and are often treated differently from normal household waste primarily because they are usually much dryer due to lack of food wastes. C&D waste includes:

- treated wood
- dry wall
- roofing
- tar paper
- tile
- concrete
- asphalt
- wood
- vinyl
- pipes
- insulation
- linoleum
- carpet
- window glass
- siding
- light fixtures
- flooring
- cement board
- ceiling panels
- scrap wiring
- window framing
- ceramic fixtures
- plumbing piping
- asbestos siding
- lead painted wood
- wood or steel doors
- dimensional lumber
- plastic wrapping

As is evident, much of this material is re-usable or recyclable. Unfortunately, because the building industry is very competitive and labor is a large component, oftentimes processes to sort and divert these materials to appropriate destinations are not attempted. It is common for builders

and demolition crews in Skagit County to crush and dump all of the generated wastes into one large roll-off container to be hauled to the transfer station on its way to a landfill.

Excess new materials are usually easier to handle because they are typically not painted or mixed with other products and a new market is arising to use these materials for home-owner remodeling projects[25] or for contractors to save and use the materials on the next job. The largest mass of new scrap material is typically small pieces of sheet rock. These are very heavy and not useable on future projects due to their size. There are many ways to re-use, recycle, or even embed unavoidable waste materials into a structure that can avoid landfilling. Similar barriers to the tear out of old materials apply to recycling of these materials. Project owners can prevail on crews to dramatically minimize the waste generated by a project, but it takes education of that owner to know how it should be done, as well as communication, up front agreement on costs, and determination on the part of the owner.

The recognized impact of buildings on our environment has led to the formation of the U.S. Green Building Council[26]. They have compiled data, training materials, and a system called LEED (Leadership in Energy and Environmental Design) for all aspects of construction of new buildings and renovation of existing ones. Following the LEED guidelines and certification process creates 'green buildings' that can reduce energy use between 24% and 50%, can reduce carbon dioxide equivalent emissions by 33% to 39%, water use by 40%, and solid waste by 70%.[27] These levels are reached by builders and homeowners[28] following required guidelines in various categories. Each requirement allows a certain amount of credit. Builders who achieve high levels of credits in each of the categories are given certifications for the LEED status of that structure. A few of the waste related categories include:

- Credit 1.1: Building Reuse—Maintain Existing Walls, Floors and Roof
- Credit 1.2: Building Reuse—Maintain Existing Interior Nonstructural Elements
- Credit 2: Construction Waste Management
- Credit 3: Materials Reuse
- Credit 4: Recycled Content

Because of the proven effectiveness of this system (especially its impact on solid wastes), and ease of using an existing well-developed program, rather than creating a new system, we recommend that Skagit County use and encourage LEED certification and guidelines for all structures in the county. The following recommendations are intended to increase the re-use and recycling of materials generated by construction, demolition, and modification of any structure in Skagit County.

Policy D-11. Reduce Construction and Demolition (C&D) waste disposed in landfill.

TIMEFRAME	2010
LEAD AGENCY	Public Works, Solid Waste Division
COST	Staff time, up to ½ FTE for five years
RESOURCE REDUCTION	Multiple (see below)
CO-BENEFITS	Multiple (see below)

One of the most important tools at this point in Skagit County's sustainability endeavors is education. The information about how to recycle C&D materials, how to reduce waste generation, and how to salvage usable materials for a growing salvage market, is available.

The difficulty is getting the information to the people who make the decisions about where materials go, and giving them the tools to understand the impact of old practices on the environment, their operational costs, product quality, and on their market. This should be, therefore, a two-pronged effort. We have to educate the contractors—from generals to individual trades-people; and we have to educate the owners —the clients to whom the contractors answer.

Skagit County shall implement multiple activities to reduce C&D material in the waste stream, including:

- Work with trade groups, such as the Skagit-Island Counties Builders Associations (SICBA), to encourage outreach and training programs in LEED processes.
- Collaborate with SICBA to create a de-construction or Reduce-Reuse-Recycle-Re-buy program for builders.
- Provide a County recognition program for contractors who Reduce-Reuse-Recycle-Re-buy.
- Include information on all recyclable C&D materials in each Building Permit packet. Include contact information and locations to recycle all of the various materials.
- Examine options for greater control over proper disposal of C&D.
- Increase awareness of recycling opportunities for wallboard and other scrap and de-construction materials.

US EPA estimated the amount of construction and demolition waste generated in 1996 to be 136 million tons[29] or 2.8 pounds per person per day. Unfortunately, this is very outdated information. Between 1996 and 2007 there was unprecedented residential and commercial building in our County that peaked in 2007 or later depending upon location. Taking Skagit County's population of 123,000 and applying a highly conservative increase to 3.2 pounds per person, the amount of C&D waste generated could be estimated at about 72,000 tons per year in Skagit County. While a significant portion of this material (by weight) might be concrete (which hopefully is not being landfilled) the sheer volume and the very heterogeneous nature of this material (a significant portion of which could be recycled and re-used) justifies efforts to reduce its destination at landfill.[30]

The cost of staffing these outreach programs as well as investigating the best approach to disseminating Green Building information will vary dramatically depending upon the focus and effort put forth. We recommend at least ½ FTE for up to 5 years with re-evaluation on a yearly basis to determine effectiveness of the efforts to date.

Emphasis on waste reduction tends to spread into waste generation activities such as material ordering. Activities such as use of an edge piece rather than a whole new sheet, for instance, are likely to reduce material use and, therefore, cost of construction. Although increased labor costs are typically used as arguments against these techniques, data of excess labor costs for crews who were used to the activities (rather than learning new processes) were not found. Salvage opportunities and emphasis typically leads to valuing of the history of an area. Skagit County's history is fascinating and glorious. Increased appreciation of our historical structures would not only advance a sense of pride and community, but may also lead to fewer old structures being torn down, with commensurately less waste generated. The recent funding for restoration of old barns[31] is a good example of the raised awareness and appreciation of these structures in the County.

Policy D-12. Lead by example in environmental building practices

TIMEFRAME	2010
LEAD AGENCY	Capital Facilities Department
COST	Indeterminate increased construction costs; reduced operating costs (8-9%), increased building value (7.5%), and improved return on investment (6.6%)[32]
RESOURCE REDUCTION	Estimated reduced energy use (24%-50%), reduced carbon dioxide emissions (33% to 39%), water use (40%), and solid waste (70%).
CO-BENEFITS	Improved occupants' health due to improved lighting and air quality primarily

Skagit County owns and manages many highly-visible structures typically considered 'public' buildings. The recently completed administrative annex on Continental Place is an excellent example of a green building and is already being used for outreach on various low impact development techniques such as the rain garden along the sidewalk. This type of "Lead by Example" activity provides citizens with familiarity with low impact concepts, and real cost impact numbers, as well as the designated function of the building. Because these techniques are now better understood than in the recent past, they are quickly becoming recognized as the responsible approach to utilizing public funds. Green buildings use less energy to operate, require fewer inputs for landscaping, and provide healthier spaces for people due to increased natural light and reduced toxics use, as well as being sited appropriately. While, all of those things may cost, in today's dollars, slightly more than traditional building practices, they will cost less to operate, use less resources, and cost less in sickness, in future dollars that in the long term are always higher.

Skagit County shall seek LEED-silver certification for any new County building, including the new County Transfer Station and the new County jail. Additionally, Skagit County shall require de-construction of any County building slated for demolition.

Policy D-13. Eliminate permit fees for de-construction and proper recycling a structure slated for demolition

TIMEFRAME	2010
LEAD AGENCY	Planning & Development Services
COST	Negligible
RESOURCE REDUCTION	Significant
CO-BENEFITS	Reduced air pollution compared to traditional demolition practices.

The County has a mechanism to educate and mandate proper waste management practices with respect to structures. Any structure slated for significant remodeling or demolition as well as construction requires a demolition

permit issued by the Planning Department of the County, and a $100 fee.

Demolition is a dirty, dust-generating activity. De-construction, typically, utilizes careful techniques in order to preserve the integrity of the materials salvaged. Much less dust is generated with its associated health impacts for laborers and neighbors. Additionally, costs for de-construction have been found to be similar to costs for traditional demolition. [33]

Skagit County shall eliminate the fee for a demolition permit for a building that is to be deconstructed with documented recycling and re-use of materials.

Skagit County shall produce a document with instructions on de-construction (reference existing resources such as SICBA BuiltGreen program, US Green Building Council, the Bellingham Re-Store, or US EPA studies.[34]

Policy D-14. Adopt recycling and waste design standards in County building permitting process

TIMEFRAME	2010
LEAD AGENCY	Planning & Development Services
COST	Minimal
RESOURCE REDUCTION	Indeterminate
CO-BENEFITS	Enhanced contractor and public awareness of the importance and possibility of recycling and waste reduction

One barrier to success of recycling in residential (particularly in multi-family buildings) and commercial buildings is the lack of a well-designed and appropriately located space for placement of recycling, organics, and garbage bins. If these are not taken into account in the building's design, retrofitting them to accommodate these services may be costly, making recycling and garbage services difficult or impossible to provide.

Although unincorporated Skagit County doesn't yet have significant demand for multifamily dwellings, that may change with increased development in the Bayview Ridge Urban Growth Area.

Skagit County shall develop and implement design standards for commercial buildings to include space / enclosure for recycling and garbage bins utilizing LEED guidelines.

This policy will have the added benefit of improving building aesthetics by providing designed spaces for recycling and garbage infrastructure. Requiring planning early on will improve efficiency of access/use of surrounding areas such as parking lots.

Divert Organics from Landfills

Keeping organics out of landfills[35] is essential to reducing GHG emissions and controlling harmful atmospheric warming. In landfills organic materials decompose anaerobically (without oxygen) resulting in methane being emitted[36]. As a greenhouse gas, methane is 21 times more powerful than carbon dioxide at trapping heat inside the atmosphere. "Municipal solid waste landfills are the second largest source of human-related methane emissions in the United States, accounting for approximately 23 percent of these emissions in 2007."[37]

Because, in part, of the harmful atmospheric consequences of methane emissions from landfills, many communities and landfill operators have adopted landfill systems that collect methane and use it to generate electricity or to produce natural gas for other uses. Indeed, Skagit County utilizes one of these "modern" landfills. Skagit County's garbage is hauled by rail from the transfer station on Ovenell Road to the Roosevelt Regional Landfill[38] in eastern Washington—a one-way journey of approximately 300 miles.

The Roosevelt and similar landfills are a significant improvement over the traditional "dump and bury" landfill. However on three accounts they still have major environmental deficiencies. The modern landfill system:

- Reduces, but does not eliminate, the release of methane into the atmosphere. Methane is generated almost immediately, typically even before receipt of the waste at a landfill. Collection and out-of-County transport allows waste to become anaerobic which releases methane during that entire journey. Furthermore, landfill gas collection systems are typically not activated or effective on a landfill "cell" until that cell is fully closed. This often takes place two to five years after initial waste placement. And, depending upon the composition of the organic material, most of the methane is estimated to be generated within the first 2-years of placement.[39]
- Costs more, due to high siting, construction, operation, and transport costs, than more immediate and proximate diversion to local composting operations or anaerobic digesters.
- Wastes valuable locally-produced organic matter that could be used locally to:
  - Improve the water holding capacity of soils, thus reducing the amount of water needed to grow plants;

- Provide nutrients such as nitrogen, phosphorus, potassium and many micronutrients that are otherwise mined or produced synthetically from petroleum using lots of energy;
- Improve the cation exchange capacity of the soil which enables soil to hold nutrients near the roots of plants and also reduces the amount of additional fertilizers (often synthetic) needed to grow crops;
- Reduce erosion;
- Filter contaminants from stormwater, thus protecting surface water quality;
- Improve soils and soil productivity; or
- Generate electricity through methane capture in anaerobic digesters (anaerobic digesters not only use the methane for power generation, but they also create an organic residual for composting or livestock bedding)

All of these benefits are lost when organic materials such as grass clippings, paper, food waste, wood, and other materials are landfilled. These carbon-based materials create other gases besides methane as they decompose. In a landfill without landfill gas collection, all of these gasses may leak out and travel through the soil to emerge in basements or through seeps creating dangerous conditions for humans and animals.

Landfills are difficult and expensive to site and are often located hundreds of miles from the source of the organic wastes placed in them. Transport of these typically heavy materials is costly, and utilizes petroleum fuels that emit carbon dioxide and other toxic emissions during the trip. Removing these materials from the flow of waste to the landfills, not only yields the benefits described above but extends the life of the existing landfills and minimizes the environmental impact and high cost of siting and building additional landfills once the current ones are filled.

Policy D-15. Divert food waste from landfill to compost or anaerobic digestion

TIMEFRAME	2010-2012
LEAD AGENCY	Skagit County Public Works, Solid Waste Division
COST	Time from existing staff
RESOURCE REDUCTION	4,864 metric tons of CO_2e
CO-BENEFITS	Reduction in volume and putrescibility of residual garbage that allows for less frequent pickup and associated costs

Waste Management currently allows curbside food waste collection in its yard waste collection bins wherever yard waste collection is available. This service is relatively new, minimally advertised and minimally utilized. EPA estimates that diverting food waste to composting from landfilling is among the top three most effective waste management actions for reducing GHG emissions.[40] Skagit County shall:

- Encourage cities to adopt residential and commercial food waste collection and recycling within their jurisdictions.
- Advertise availability and benefits of curbside food and yard waste collection. Implement business recognition program for participating food waste generators.
- Work toward requiring greenwaste/foodwaste collection in UGAs and other areas of sufficient density, e.g. LAMIRDs.
- Coordinate a quarterly consulting panel in each city to persuade groups of invited restaurant owners and chefs to pursue food waste composting as an efficient method of waste reduction in their kitchens where food waste pickup is commercially available.
- Provide incentives, including information, technical support, and coordination to encourage food waste diversion by restaurants, markets, schools, businesses, institutions, and residences.
- Expand current event recycling program to use community-based social marketing techniques to promote food waste recycling at public events.
- Require all County-sponsored public events in Skagit County to collect their organics (food waste and food soiled paper) and to provide grease recycling for vendors. Certify all County sponsored events “Zero-Waste.”
- Encourage “Full Circle” composting programs in county schools. Provide training for Skagit teachers on “how to teach around a composting program.” Provide compost operation and use troubleshooting assistance to county schools.

Policy D-16. Prohibit yard waste in garbage delivered to Skagit County Recycling and Transfer Stations

TIMEFRAME	Phase 1 – immediately. Phase 2 – by January 1, 2012.
LEAD AGENCY	Skagit County Public Works, Solid Waste Division
COST	Time from existing staff; potential increased revenue from surcharge
RESOURCE REDUCTION	Significant reduction in landfilled organics; significant reduction in GHG from uncomposted yard waste

Large yard waste piles that are not composted can go anaerobic in the center during decomposition, generating methane similar to landfills. Improperly-managed yard waste piles can also leach nutrients such as nitrogen and phosphorus that are associated with surface water degradation, and also residuals of pesticides or other chemicals that were originally applied to the vegetation. A typical disposal method in rural Skagit County is to dump green waste in gullies and on property edges in violation of water pollution laws.

While treatment of yard waste varies from place to place in the U.S.,[41] in 2004, 23 states had some type of yard waste landfill ban in place. A Delaware report concludes, "states or counties with landfill bans receive significantly less yard waste on a per capita basis than those without bans."[42]

King County provides yard waste recycling at certain transfer stations for $82.50 per ton, but if garbage is mixed with yard waste, the higher garbage rate plus tax and surcharge of $102.05/ton is charged.[43] Snohomish County similarly provides incentives for separation of yard waste, which can be disposed of for $45/ton, compared with the mixed garbage rate of $105.00 per ton.[44]

Phase 1: Education and Facilitation

Many people do not understand the environmental impact of dumping yard wastes. Skagit County shall publicize the locations of yard waste disposal sites in flyers, on the County website, and in area newspapers. Encourage and fund Skagit Health Department to enforce illegal dumping of yard wastes especially in gullies, near surface water bodies, and in flood plain areas.

Skagit Soils is a yard waste and food waste composting facility located a few blocks from the Transfer Station. Skagit Soils charges the County $34.50/ton for organics from the Transfer Station, while their public drop-off rate is $40/ton. The County charges the basic garbage rate of $83/ton for yard waste at the Transfer Station. However, Skagit Soils' operating hours are less convenient than the Transfer Station's. Currently, the Transfer Station provides no incentive to separate yard waste from garbage when Skagit Soils is closed.

Skagit County shall adjust its yard waste rate to closely approximate Skagit Soils' public drop-off rate and provide a strong incentive for the public to separate yard waste from garbage.

Phase 2: Impose surcharge on disposal of waste combined with garbage

No later than 2012, Skagit County shall impose an additional surcharge of at least $20 per ton on self-haulers disposing of yard waste with garbage. Knowledge of this impending deadline should help the educational program's effectiveness.

Policy D-17. Implement east county Master Composter-Recycler program while supporting current west county program

TIMEFRAME:	2010-2011
LEAD AGENCY	Public Works, Solid Waste Division
COST:	Minimal
CO-BENEFITS:	Increases county staff interaction with East County residents

Skagit County is a diverse area with a number of cultures and experiences. A noticeable difference exists between East / Upriver communities and West County areas and cities. East County is more rural with fewer people, much more land, with more extreme climate, and fewer services. Because there are fewer options for waste disposal, a program like the Master Composter-Recycler program could be expected to be even more effective if available in that area. Relatively few East County residents currently participate in the Master Composter-Recycler program, probably because of the distance involved as the trainings are typically held at the Padilla Bay Interpretive Reserve in Bayview.

Properly-managed home composting systems can reduce the volume of waste hauled out of its 'waste-shed' which maintains nutrients where they were generated. Education about composting is paramount to offset impacts from 'piling' and also tend to result in heightened awareness of the qualities of 'good' compost as well as leading to increased use of organics on residential soils.

Skagit County shall increase outreach for the MCR program to East County residents, and provide classes in locations closer to interested East County participants.

Policy D-18. Implement effective food waste and composting program at Skagit County jail

TIMEFRAME:	2010
LEAD AGENCY	Sheriff's Office Corrections Division; Capital Facilities Dept
COST:	Net negative cost expected
RESOURCE REDUCTION:	Programs implemented by Washington State Department of Corrections estimate a reduced disposal cost of $348,000 in 2008 composting and recycling.[45] This department reported 1.9 million pounds of food waste and biosolids composted in 2008. Six facilities compost their own food waste or divert it to a local composting facility.

The single largest food handling facility in the County is the Skagit County jail. This facility serves up to 200 people three meals per day, 365 days per year.[46] This facility is far undersized and currently operating at 240% capacity. A new jail is planned for a nearby location in Mount Vernon. This project is still in the planning stage. This advantageous timing enables incorporation of design elements to provide the infrastructure necessary to provide collection of food waste, composting, pulping, dehydrating or other volume reduction technology, as well as sending the organics to a commercial composting facility. There are many successful programs[47] such as the Sustainability Plan portion of the Washington State Corrections Green Prison program.[48] Programs include food waste and recyclables separation, and on- and off-site composting, with prison operated farms and greenhouses utilizing the compost. Such programs and staff are available for inspiration and peer-to-peer education.

Skagit County shall:

- Begin collecting food waste separately from other trash in the county jail. When disposable packaging must be used, switch to compostable versions.
- Design the new jail to facilitate recycling and food waste collection and composting, relying on existing programs in place at other prisons within Washington State.

Use Recycled Organics for Environmental Benefit

As important as it is to remove organics from landfilling, for that activity to be sustainable, the products created with the diverted materials must be valued and used. In the case of organic materials that are diverted to composting or anaerobic digestion, the compost or solid residual provides important environmental benefits when used.[49]

Building healthy markets for compost use reduces the cost of diversion by offsetting process operations costs with product sales, and encourages use of compost on Skagit County soils. Benefits of this use include:

- Improved water quality from storm water impacts,[50]
- Reduced surface water run-off quantity,[51]
- Reduces the amount of water needed for irrigation (increases the water holding capacity of the soil),
- Reduces the need for synthetic fertilizers (increases the cation exchange capacity of soil),
- Protects against soil erosion,[52]
- Reduces compaction (reduces bulk density),
- Improves overall health of plants,[53]
- Reduces the need for chemical pesticides,
- Increases the biomass of plants, which increases carbon sequestration.

These soil improvements yield financial as well as environmental savings: Reduced water use reduces irrigation costs (price of water as well as irrigation equipment and fuel use); Reduced fertilizer use saves money and decreases carbon impacts from producing those fertilizers; Reduced soil erosion improves water quality, enhances plant growth, and reduces chemical inputs needed for plant growth. Compost improves plants resistance to soil pathogens which reduces the cost and environmental impact of frequent pesticide application.

Policy D-19. Use compost on all county landscaping

TIMEFRAME	2010-2012 + ongoing
LEAD AGENCY	Facilities Management
COST	Minimal upfront costs; potentially significant savings
RESOURCE REDUCTION	Significant water savings
CO-BENEFITS	Improved plant health and appearance; reduced fertilizer or pesticides cost; reduced labor for weeding

The way County-owned properties are managed is seen as a statement by County leadership. "Walking the talk" of sustainable property management sets an example for visitors and citizens. Additionally, implementing soil quality Best Management Practices (BMPs), provides County staff with direct experience overcoming the challenges, costs, and benefits of these practices which can then be used to educate citizens. Covering bare soil areas with locally produced recycled organic materials (compost, and/or mulch) should reduce irrigation water use, reduce erosion, and reduce plant root damage associated with 'cracking' soils, among the many other benefits of improved soil quality.

Skagit County shall implement the Soil Quality and Depth BMP[54] for all new landscape beds and cover any bare soils in existing beds using locally produced compost or mulch and utilizing recognized horticultural practices. Promote these activities with signage explaining the benefits, and flyers explaining 'How To' and 'Benefits' as well as local sources for recycled organic soil amendment products.

Emphasis should be put on signage and creating at least one east (east of Concrete) and one central (between Sedro-Woolley and Concrete) County "soil cover" demonstration gardens. Utilize native plantings, local compost / mulch use, rain garden, and a vegetated roof over a kiosk if possible. Provide training opportunities for yard service companies on use of organics to reduce chemical dependency.

Skagit County shall begin applications in spring 2010. Any beds not covered in the spring should be covered by Fall 2010. Begin siting and plan development for two demonstration gardens within 12-months of adoption of this recommendation. Construction should be completed within two years.

For the landscape implementation, based on assumptions that could be easily scaled to actual data: Assume 10 buildings, surrounded by ½ acre of irrigated landscaping per building, with a typical irrigation rate from May through September of 1-inch per week. A 50% watering reduction leads to an irrigation rate of 1-inch every other week which would reduce water usage by nearly 68,000 gallons per week or 1.36 million gallons per year. At $1.71/ccf,[55] that would save approximately $3,104 per year in water usage alone.

Costs for the landscape implementation are based on the same scalable assumptions as above. The cost for local compost is expected to be on the order of $22/cubic yard delivered. At a two-inch application rate, 1,340 cubic yards would cost approximately $29,480 delivered. This does not include labor required for application. Additional costs for signage.

Policy D-20. Use, and encourage use of, compost and mulch products for erosion control.

TIMEFRAME	Phased in over 2010-2014
LEAD AGENCY	Public Works; Planning & Development Services
COST	Indeterminate, but expected to be less than responding to washed-out culverts, slide-filled ditches, and plugged catch basins
RESOURCE REDUCTION	Reduced use of plastic fencing, sheeting
CO-BENEFITS	Multiple

The County contains approximately 800 miles of roadway,[56] and is primarily responsible for roadside maintenance. Routine maintenance performed by the Public Works Department includes grading roadways and shoulders, ditching, and brush mowing, among other items[57]. Most of these roadsides include ditches that collect stormwater that ultimately ends up in one of the County's rivers (Sauk, Suiattle, Skagit, and Samish) and from there to Puget Sound. Water quality along these roads may affect water quality in the rivers and Bays of Skagit County. WSDOT has used compost and researched its impact on erosion and revegetation[58] extensively in Washington State. They have found important reductions in earth movement and improved water quality from runoff from slopes treated with compost and have become the State's largest single purchaser of compost. Excellent guidance documents and specifications are available from WSDOT for use on County projects. Specifications for numerous erosion control measures utilizing compost blankets, compost socks and berms, and mulching are available on USEPA NPDES website.[59] These techniques provide multiple benefits over typical constructed plastic silt fencing in that the structures do not need to be removed when the project is constructed. There is no plastic debris to dispose of, and the compost can simply be spread out around the area. There is no negative climate impact involving production of plasticized products.

This task, first, would require identification of areas of stripped, erodible roadsides and County owned lands that would benefit from this treatment. Training of the roadside maintenance personnel and adoption of WSDOT specifications and guidelines should occur simultaneously. Erosion prone areas that might have been handled through repetitive ditching, or hydro seeding, should be investigated for soil bioengineering techniques.

The Planning Department should, then, adopt specifications for compost blankets, compost berms, and socks that have documented benefits to the environment and provide incentives for contractors to use these Low-Impact Development tools in their Temporary Erosion & Sedimentation

Plans and activities. Any County contracts let for such work would require these Best Management Practices.

Policy D-21. Work with WSU Research Station to promote composting as an agricultural waste management practice

TIMEFRAME	2010
LEAD AGENCY	Administrative Services
COST	Minimal staff time
CO-BENEFITS	Multiple

Much of Skagit County is involved in agriculture either growing plant crops or raising animals to produce wholesale or retail products. Depending upon the endeavor, varying volumes and types of organic waste materials are generated in this process. Washington State University's Northwestern Washington Research & Extension Center[60] (NWREC) plays a vital role in supporting the agricultural interests through research, educational activities, and demonstrating new and beneficial techniques. NWREC has traditionally been focused on the growing and producing side of these interests. NWREC, also produces organic waste materials from its research plots and fields.

Establishing a full scale composting operation to demonstrate effective on-site waste management practices would not only provide information to the implementing team, but would provide a 'lead by example' opportunity for agricultural interests to consider implementation of such practices on their own land. The County is not directly involved with the NWREC, but could provide some research support to encourage construction, operation, and utilization of such a facility for research into use of recycled organics produced at the facility. Funding could be provided through purchase of compost from this facility for County projects. The County could allow county land to be used for research sites for projects proposed by NWREC researchers.

The County should approach the NWREC director to discuss the potential for collaboration to encourage operation of a demonstration project. The potential for the County to assist in funding or other cost sharing or with equipment or labor should be explored. Arrange with NWREC researchers to publicize and implement their findings through County avenues. Utilize recommendations provided through research performed at this facility.

Improved specific research to compost use questions performed within the County could revolutionize many aspects of water quality, soil quality, and other agricultural issues. Increased interaction between the County and the Center could result in higher visibility for the Center and better access for county citizens to valuable information being learned there. A demonstration agricultural composting facility could increase the amount of agricultural organic wastes that are managed properly, which could also improve water quality. Improvement of water quality in Skagit County will impact water quality on shellfish beds in Puget Sound, another agricultural entity that would be supported by this activity.

Hazardous, Toxic, and Special Wastes

A separate, but related and important category of waste includes materials considered hazardous, toxic and/or 'special' wastes.[61] These materials are covered under their own sections of regulation in Washington state because of their threat to human health and the environment aside from Climate impact. Many of these materials are the wastes generated from use of petroleum derived chemicals or synthesized chemicals that generate great quantities of green house gasses during their production. As such reduction of the use of such materials is of great importance.

Unfortunately, many of these materials are used at a level removed from individual control and knowledge. Part of this is because the toxic and hazardous materials are often embedded into other more complicated items such as electronics, lighting fixtures, and textiles. This lack of control is recognized by the Washington State Climate Action Team in their final recommendations document[62] which conscribes the issue of Hazardous waste almost entirely to Product Stewardship recommendations. This is an important lead to follow and encourage. There are, however, activities within Skagit County besides supporting Product Stewardship actions, that can be implemented to improve the quantity and variability of materials disposed of properly.

Policy D-22. Adjust limits at Hazardous Waste Collection Stations to increase collection

TIMEFRAME	2010
LEAD AGENCY	Skagit County Public Works, Solid Waste Division
COST	Minimal increased disposal cost
CO-BENEFITS	Reduced incentive for illegal dumping; increased collection means reduced possibility of accidental spillage into waterways

Skagit County currently operates a Hazardous Waste collection center at the Skagit County Transfer Station on Ovenell Road. This is an important service that should be expanded. It is in the interest of the County to have as much material – oil, tires, paint, etc.—collected here as possible and to make it as easy and user-friendly to the public as possible in order to prevent these materials from ending up in

ditches or waterways. Limitations on this service regarding quantities per visit, etc. are counter-productive and leave people without a convenient way to dispose of these materials properly.

Skagit County shall adjust limits on quantities of materials disposed to facilitate greater disposal for individuals that may store materials to reduce trips. This change shall be publicized in County publications, on the County website, and on appropriate signage.

Increasing the quantity of materials accepted may allow minor marketing of particular materials—such as sale of used oil to refineries for cleaning and resale. Increased quantities also may increase the ability of the County to negotiate with disposal companies for the materials.

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[1] U.S. EPA eGRID database, available at www.epa.gov/cleanenergy/energy-and-you/how-clean.html.

[2] This figure is based on a reduction rate of $.08/kWh.

[3] The Pacific Northwest generates 53% of its electricity by burning coal and natural gas.

[4] See the Magnuson-Moss Warranty Improvement Act, 15 USC 50 § 2302. Such a warranty provision might also violate anti-trust laws.

[5] Earth Resource Foundation. Polystyrene Foam Report. http://www.earthresource.org/campaigns/capp/capp-.html

[6] Rose, E./founder FoamFreeSeattle.org. 2007. "Saying no to Styrofoam" PCC Sound Consumer Newsletter. / http://www.pccnaturalmarkets.com/sc/0704/sc0704-.html

[7] Biodegradable Products Institute. www.bpiworld.org

[8] http://earth911.com/blog/2009/05/18/california-towns-outlaw-polystyrene-take-out-containers/

[9] http://greenbrooklyn.com/-ban-heads-to-albany/2007/08/28/

[10] http://seattletimes.nwsource.com/html/localnews/2008078617_grocerybags29m.html

[11] http://www.king5.com/localnews/environment/stories/NW_070908ENV_mcdonalds_portland__TP.3cbd3497.html

[12] NOAA. Management of Small Docks and Piers Best Management Practices. coastalmanagement.noaa.gov/initiatives/media/bmp.pdf

[13] Earth Resource Foundation. Polystyrene Foam Report. www.earthresource.org/campaigns/capp/capp-.html

[14] Container Recycling Institute. "Plastic Bottle Sales and Wasting in the U.S." webpage. Accessed 10-25-09: www.container-recycling.org/facts/plastic/data/saleswaste.htm

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[15] Ibid.

[16] Based on calculation from King County Waste Characterization Study, 2007.

[17] Calculated from data provided by Anna Gay / Skagit County, referenced from King County Waste Characterization Study, 2007: http://your.kingcounty.gov/solidwaste/about/documents/waste-characterization-study-2007.pdf data received via e-mail, 9-11-09.

[18] Estimate provided by Anna Gay/Skagit County, via e-mail. 9-3-09.

[19] City of San Francisco, CA SF environment webpage. downloaded 9-20-09

[20] For example, the Massachusetts, pay-as-you-throw pricing increased in some community increased recycling between 20 and 27 percent while decreasing residential trash generation rate. (Massachusetts Department of Environmental Protection)

[21] Consumer Reports, October 2009, page 24

[22] Seattle Public Utilities webpage "Ask Evelyn", downloaded 9-22-09: http://www.seattle.gov/UTIL/Services/Recycling/LookupTool/index.htm

[23] US EPA e-cycling webpage, downloaded 9-22-09: http://www.epa.gov/waste/conserve/materials/ecycling/index.htm

[24] Snohomish County Public Works E-CYCLE program webpage. downloaded 9-22-09

[25] Skagit Valley Herald. 2009. "---" Sept __, 2009.

[26] U.S.G.B.C. website: http://www.usgbc.org

[27] USGBC "Building Impacts: Why Build Green?" PowerPoint presentation. Downloaded 9-20-09.

[28] LEED is not yet fully implemented for individual residences. There are guidelines available through the BuiltGreen program for "Single Family New Construction" and "Remodelers" including self certification checklists. Available at: www.builtgreen.net/checklists.html

[29] US EPA.. "Characterization of Building-Related Construction and Demolition Debris in the United States". Publication #EPA530-R-98-010. Downloaded on 9-20-09.

[30] An argument for diversion that has not been discussed thus far considers the cost of siting a new landfill once the current destination is filled. While this may be many years, that cost will be significant and, by all estimates, will require higher tipping fees and will generate additional environmental impacts.

[31] Washington State Heritage Barn Register. Downloaded 9-20-09 from: www.dahp.wa.gov/pages/HistoricSites/HeritageBarnRegister.htm

[32] USGBC "Building Impacts: Why Build Green?" PowerPoint presentation. Downloaded 9-20-09. www.usgbc.org/DisplayPage.aspx?CMSPageID=1720

[33] US EPA Waste Information Resources webpage. "Home Deconstruction Proves Cost Competitive and Yields Reusable Material" www.epa.gov/osw/inforesources/news/2007news/08-decon.htm . Downloaded 9-20-09.

[34] NAHB Research Center. 1997. "Deconstruction - Building Disassembly and Material Salvage: The Riverdale Case Study" Assistance Number: CX 8244809. Downloaded 9-20-09 from: www.epa.gov/osw/conserve/rrr/imr/cdm/pubs/river.pdf

[35] "Municipal solid waste landfills are the second largest source of human-related methane emissions in the United States, accounting for approximately 23 percent of these emissions in 2007." www.epa.gov/outreach/lmop/overview.htm

[36] Food & Agriculture Organization of the United Nations. "Renewable biological systems for alternative sustainable energy production" Chapter 4 – Methane Production. FAO Agricultural Services Bulletin – 128. Downloaded from: www.fao.org/docrep/W7241E/w7241e0f.htm on 9-17-09.

[37] U.S.EPA Landfill Methane Outreach Program (LMOP) webpage. accessed 9-17-09: http://www.epa.gov/outreach/lmop/overview.htm

[38] Allied Waste / Roosevelt Regional Landfill website. Accessed 10-25-09: http://www.rabanco.com/regional_landfill/default.aspx

[39] Per Dr. Sally Brown, University of Washington, speaking at March 6, 2009 SWANA Organic Waste Management workshop.

[40] USEPA. "Estimating GHG Reductions From State Actions to Improve Municipal Solid Waste (MSW) Management Practices". Downloaded 9-17-09 from: www.epa.gov/climatechange/wycd/waste/downloads/StateWasteWeb8-7-03.pdf .

[41] "Some facilities rejected only truckloads full of yard waste, others rejected loads containing more than some minimal amount of yard waste in a mixed load". Per DSM Environmental Services, Inc. 2004. "Analysis of the Impact of a Yard Waste Ban On Landfill Quantities and Household Costs - FINAL REPORT" pp.64. Accessed 10-20-09.

[42] Ibid. pg. E.3.

[43] King County Solid Waste Division, Yard Waste web page. Accessed 10-20-09: http://your.kingcounty.gov/solidwaste/garbage-recycling/yardwaste.asp

[44] Snohomish County Solid Waste Disposal Sites brochure. Accessed 10-20-09: www.co.snohomish.wa.us/documents/Departments/Public_Works/SolidWaste/Information/Brochures/wasteacceptbro0609.pdf

[45] WSDOC Sustainability Progress Report 2008. Downloaded 9-17-09: www.doc.wa.gov/goals/sustainability/docs/FY08SustainabilityProgressReport-Final.pdf pgs 47-55.

[46] See Skagit County Jail website. Downloaded 9-17-09:

[47] Tenneseean.com. Published August 9, 2009 "Nashville prison composting saves money and the Earth"

[48] Washington State Department of Corrections Sustainable Prisons website downloaded 9-17-09: blogs.evergreen.edu/sustainableprisons/

[49] Soils For Salmon website, downloaded 9-18-09: www.soilsforsalmon.org/how.htm

[50] Ecology. "Guidelines and Resources For Implementing Soil Quality and Depth BMP T5.13", in WDOE Stormwater Management Manual for Western Washington, 2009 Edition. Available: www.soilsforsalmon.org/pdf/Soil_BMP_Manual.pdf

[51] J.G. Press. 2007 "Building Soils For Storm Water Compliance And Successful Landscapes" BioCycle. March 2007, Vol. 48, No. 3, p. 48. www.jgpress.com/archives/_free/001271.html

[52] Salisbury, S./WSDOT presentation. "WSDOT Experiences Using Compost on Roadside Applications" Oct. 11, 2006. Available at: www.ciwmb.ca.gov/organics/Erosion/Workshops/2006BMPCT/Sacramento/Salisbury.pdf

[53] Mays, D.A., Terman, G.L., Duggan, J.C. 1973. "Municipal Compost: Effects on Crop Yields and Soil Properties" J Environ Qual 2:89-92.

[54] WS Department of Ecology. "Guidelines and Resources For Implementing Soil Quality and Depth BMP T5.13", in WDOE Stormwater Management Manual for Western Washington, 2009 Edition. Available: http://www.soilsforsalmon.org/pdf/Soil_BMP_Manual.pdf

[55] Skagit County PUD #1 rate schedule downloaded 9-18-09: http://www.skagitpud.org/imageuploads/Media-464.pdf

[56] Skagit County website. "About Us" webpage. Downloaded 9-18-09: http://www.skagitcounty.net/common/asp/default.asp?d=Home&c=General&p=about.htm

[57] Skagit County website, "Public Works Road Maintenance" page. Downloaded 9-18-09:

[58] WSDOT. Research Report, Research Project WA-RD 491.1. "Soil Bioengineering for Slopes" Downloaded 9-18-09: http://www.wsdot.wa.gov/publications/fulltext/Roadside/ResearchReport.pdf

[59] USEPA NPDES website. Downloaded 9-18-09:

[60] WSU Northwestern Washington Research & Extension Center webpage. Accessed 9-18-09: http://mtvernon.wsu.edu/

[61] "Special waste" means any state-only dangerous waste that is solid only (nonliquid, nonaqueous, nongaseous), that is: Corrosive waste (WAC 173-303-090 (6)(b)(ii)), toxic waste that has Category D toxicity (WAC 173-303-100(5)), PCB waste (WAC 173-303-9904 under State Sources), or persistent waste that is not EHW* (WAC 173-303-100(6)). Any solid waste that is regu-

lated by the United States EPA as hazardous waste cannot be a special waste. Per WAC 173-303-040. *EHW= Extremely Hazardous Waste.

[62] Climate Action Team Recommendations. November 2008. "Leading the Way - Implementing Practical Solutions to the Climate Change Challenge"

Part 6: Taskforce-Recommended Land Use Planning Policies

Reducing Regional Greenhouse Gas Emissions through Land Use Planning

Skagit County Code defines a distinct public participation process for adoption of land use comprehensive plan amendments and development regulations, through which the code and policy amendments specified below have not yet been vetted. The Board of County Commissioners hereby directs the Planning & Development Services Department to take appropriate steps to implement these recommendations; where necessary, the Department should use the recommendations as the basis for planning policy or code update proposals to the Planning Commission.

Overview

The County Commissioners charged the Climate Action and Sustainability Taskforce with developing GHG reduction policies for the 2012 Skagit County Comprehensive Plan update. Some of these recommendations, however, may be implemented sooner. By coordinating County, tribe, municipality, and State efforts, Skagit County can shift ways of thinking and living, make a substantial impact on reducing GHG emissions, and transform our region into a national leader in climate pollution reduction.

These recommendations are divided into three sections:

- ***Resource Management,*** to enhance the carbon sequestering potential of the County's forests, farms and open spaces
- ***Green Community Design,*** to locate and move both people and goods in a carbon-efficient manner and provide regional tools for compact, livable communities of mixed uses.
- ***Implementation Measures*** related to land use planning and implementation, followed by recommendations for advocacy to higher governmental authorities.

Implementation, Time, and Costs

Many of the following recommended policies reduce GHG emissions and increase quality of life. Costs are difficult to ascertain but are balanced with large benefits for the common good. For example, increasing transit decreases individuals' transportation costs and carbon emissions. The following recommendations also have many additive benefits including natural resource preservation, biodiversity maintenance, clean water protection, business opportunities, obesity and illness deterrents, pollution reduction, increased safety, and a greater tax base as Skagit County becomes a more desirable place to locate. Skagit County will experience significantly larger costs if it does not implement these recommendations.

A :: Resource Management

Maximizing Carbon Sequestration in Natural Resource Lands and Open Space

Land use changes, including deforestation and the expansion of agriculture, are estimated to be responsible for somewhere between 12 and 42% of global GHG emissions. There are two ways to reduce these emissions: either avoid land use changes that create emissions, or change other land uses to absorb more emissions than they create. Skagit County's resource lands have the ability to do both.

While it is difficult to quantify the impact of land use changes, the following table illustrates where the largest benefits can be made, particularly in the area of carbon storage (and conversely, where to best avoid increasing carbon emissions through avoiding land use changes). This is carbon storage only and does not account for the higher carbon footprint of average domestic use over agriculture. It also does not account for net carbon emissions of these land uses. So, for example, while low-density development (rural lots) may physically sequester more carbon per acre than high-density development, they also emit many more tons of carbon per person due to commuting. Transportation is the highest carbon emission in the Pacific Northwest.

Land Use	Storage
Forest	170
Mixed forest/agriculture	80
Agriculture (annual crops)	8
Low-density development	22
Landscaped high-density development	12

Table 3. Comparison of forest carbon storage to other uses (metric tons of CO_2e per acre). Source: Pacific Northwest Research Station, Science Findings, June 2009.

Much of Skagit County's land is natural resource land, including forestry, agriculture, open space, conservation land, and critical areas such as wetlands and wildlife habitat. Our large land base, particularly that in forestry, provides a large amount of sequestration for carbon emissions generated elsewhere. Skagit County should maximize this "carbon sink" function of our natural resource lands by supporting and encouraging management practices that retain or improve storage.

The recommendations that follow make reference to "ecosystem services." Ecosystem services are resources and processes that provide benefits to humanity, including clean drinking water and waste decomposition.[1] Ecosystem services are distinct from other ecosystem products and functions because there is a great human demand for these natural assets. The economic value of these services is well recognized and a market has developed to quantify the benefits. Residents of Skagit County who own natural resource lands therefore, may greatly benefit from maintaining or enhancing their natural resource property.

Coordination of Natural Resource Goals

Skagit County should establish a Resource Advisory Committee to offer advice on both carbon issues and other relevant resource issues. The Committee shall combine forestry interests, agricultural interests, and conservation/environmental interests.

Skagit County should assess the potential for increasing carbon sequestration on resource lands, and measure the results of other carbon sequestration programs, with an eye toward setting a goal for reducing carbon emissions on lands with Open Space tax classification – i.e. reduce carbon footprints by 30% on lands with this tax benefit. This is a near-term implementation measure that should coordinate the County's climate change efforts across potential carbon sinks. It is consistent with the Skagit County Comprehensive Plan policies regarding the advisory boards for both agriculture and forestry.

Forests

In this section, the word "forest" refers to both public and private forests in industrial, secondary, rural resource and rural reserve zoning. These recommendations address commercial and other working forests as well as forests set aside or managed for conservation purposes. Urban forests and smaller forested areas are covered by the Open Space section of this document.

Background

Through photosynthesis, forests naturally sequester and store atmospheric carbon in trees, vegetation, roots, woody debris and soil. Carbon-managed forests can be actively managed for timber and/or other conservation uses such as fresh water sources, parks, and fish and wildlife. Once a forest is cleared and developed, much of the sequestered carbon is released back into the air. To exacerbate the problem, the cleared land is often transformed for other uses such as housing developments. As roads are added to access the built area and commutes expand, more and more carbon is emitted.

Forests can sequester between two and twenty-one times more carbon than other land uses. Due to Skagit County's large forest acreage and therefore large carbon sink, avoiding forest conversion is the number one way Skagit can remove heat-trapping carbon from the air.

Implementation Measures

Skagit County should maintain our forested lands in forest zoning, and take other steps to increase carbon storage above the current baseline**.** Skagit County should continue to deny rezones of secondary, industrial, and rural resource forest areas, as changes may lead to increased development or long-term deforestation of these properties, which would reduce their value for carbon storage. Specifically, Skagit County should:

1. Seek ways to cluster legally allowed development rights on smaller portions of forested property and permanently conserve the remaining land as a working or conservation forest.
2. Explore, and if feasible enable, a transfer of development rights program to retire development rights on secondary forests, rural resource, and rural reserve forests where pressure of conversion is greatest.
3. Seek funding sources to buy forest development rights and establish a program similar to the Farmland Legacy Program.
4. Work with forest groups, conservation groups, and the Department of Natural Resources to aggressively pursue State and Federal programs to purchase and retire development rights on key areas of forest land that are threatened with development in the next 20 years.
5. Identify barriers to the sale or transfer of development rights on forestlands.

6. Identify and preserve the most important forested areas as well as existing forest resource lands, as identified by collaborative efforts from the forestry industry, conservation groups, and comprehensive planning initiatives.
7. Assess the potential for increasing carbon sequestration on County-owned forest lands, and measure the results of these programs.
8. Work with appropriate groups to seek and develop ecosystem service compensation programs that encourage forest landowners to maintain their forest footprint and increase the level of carbon storage in their forests for long durations.
9. The Skagit County Resource Manager shall track progress and opportunities in the carbon trading and offset programs as well as markets.[2] This shall enable Skagit County to take advantage of new opportunities when they are more fully developed.
10. The Skagit County Resource Manager shall work with appropriate groups to provide incentives to forest landowners to certify their forests under "sustainable" forest programs that add carbon storage to forests. The Skagit County Resource Manager shall find ways for smaller forest owners to participate in these programs through initiatives such as "group certification."

Resources

- Kline, J.D. Keeping land in forest: In: Forests, carbon and climate change, a synthesis of science findings. Portland OR: Oregon Forest Resources Institute: 93-116
- Pacific Northwest Research Station, Science Findings: issue 113. June 2009. Land Use Planning: A time-tested approach for addressing climate change.
- US Forest Service Site. Climate Change Resource Center. http://www.fs.fed.us/ccrc
- Department of Natural Resources, Forest Sector Work Group, Climate Change Mitigation, final report 2008, www.dnr.wa.gov/Publications/Forest_Sector_Workgroup_Final_Report_v.2.pdf

Agriculture

Agriculture produces GHG emissions including methane, nitrous oxide, and CO_2. In the United States, experts estimate that seven to twenty-five percent of carbon emissions result from agricultural activities.[3] Because energy is needed for every step in the industrial food process, modern agriculture uses about 17% of all commercial energy in the United States.[4]

In Puget Sound, sources of methane emissions include ruminants and manure; nitrous oxide emissions include manure legumes and fertilizer use; CO_2 emissions include fossil fuel use, soil tillage, deforestation, biomass burning, and land use transformations from carbon sinks to cultivated agriculture.

Scientists also estimate that about 80 percent of global carbon is stored in soils, but much is released as a result of human land use. This implies that there is great potential to sequester and retain carbon in soil. It is less clear, however, what the economic potential is for increasing soil carbon.

Although a majority of agricultural lands (in particularly those with annual crop rotations) do not currently act entirely as large carbon sinks, they do absorb some amounts of carbon. The development of these lands for the use of development, however, would expend and emit large amount of carbon per acre. It is important, therefore, to maintain the agricultural land base that currently exists.

Implementation Measures

Skagit County should work with the agricultural community to explore ways to turn net-carbon-emitting agricultural lands into carbon sinks, without jeopardizing the profitable agricultural industry. Specifically, Skagit County should:

1. Maintain the footprint of permeable surface through zoning measures.
2. Avoid conversion of agricultural land to non-permeable surface uses.
3. Increase incentives for the maintenance or restoration of perennial forage, woodlots, CREP, and critical areas of wetlands and ponds on farms, which function as carbon sinks, help with water storage, and provide other ecosystem services.
4. Support programs that increase the sale of local foods to reduce transport emissions.
5. Explore economic incentives to encourage farmers increase soil carbon storage, e.g. no-till techniques.
6. Work with agricultural groups to explore economic incentives that may encourage farmers to increase soil carbon storage, including:
   (a) Tax benefits or other subsidies
   (b) Ecosystem services providing funding, jobs and new options to agricultural industry

(c) Assistance in reducing diesel in tilling

(d) Assistance in reducing fertilizer use and increasing use of natural crop management

(e) Enable use of anaerobic digesters

(f) Enable dairy waste diggers with multiple dairies

7. Fund demonstration projects and highlight best practices; specifically, the County should:

   (a) Work with college, extension agencies and the conservation district to highlight actions that may be effective such as: reduced fertilizer use, examining cropping frequency, dealing with crop residue in a carbon-friendly manner, reducing bare fallow land, reducing enteric emissions, employing carbon-neutral manure management, managing for intensive grazing or rotational grazing, reduced tilling or no-till crop production, and directing seed practices.

   (b) Explore perennial crops, suitable for the Skagit, that are net carbon sinks and are considered carbon-neutral when consumed for generation of electricity. Consider funding demonstration projects of these and calculate net carbon benefit versus other land uses.

   (c) Initiate a media campaign to illustrate the county's leadership in climate change mitigation in the agricultural industry.

   (d) Promote best practices in festivals and tours.

8. Explore ways to increase the net carbon sink potential of agricultural lands currently protected by conservation easements through Farmland Legacy. Skagit County shall also protect the agricultural land base to also protect the available carbon sinks.

Resources

- John Antle and Bruce McCarl, "The Economics of Carbon Sequestration in Agricultural Soils," International Yearbook of Environmental and Resource Economics, Volume VI, May 2001, available at *www.climate.montana.edu/pdf/Elgarch.pdf.*

Open Space, Green Spaces, and Wildlife Habitat

Open Space, Green Spaces, and Wildlife Habitats are lands in both urban and rural areas that are used for a variety of purposes including wildlife habitat, recreation, non-motorized transportation, preserves, scenic beauty, maintenance of air and water quality, science and education.

Open space is highly valued by Skagit County communities as it is proven to provide a higher quality of life. Open spaces containing grass, plants, trees, waterways, wetlands, and undisturbed soils, also sequester carbon at a far greater rate than developed areas, and serve as important, protective natural habitats for wildlife and plants.

Many open space initiatives suggest the planting of native trees and shrubs. Trees absorb large amounts of soil water, reducing storm water runoff. Trees reduce carbon emissions further by providing shade and acting as wind breaks thereby reducing the need for air conditioning in summer and the need for heating in the cool months.

Wildlife corridors are also essential as temperatures rise and wildlife and plants move. Identifying and conserving wildlife corridors now, will lessen future disruption and conflict, and will provide areas for carbon sequestration.

Skagit County shall maintain and restore open space and wildlife habitat on both public and private lands to increase carbon sequestration.

Implementation Measures

1. Skagit County shall develop and implement goals that involve open space and wildlife habitat corridors in all County planning including the UGA Open Space Plan, the Transportation System Plan, and the Shorelines Master Programs.

2. The Resource Advisory Committee shall work with natural resource and conservation groups as well as County and State agencies to identify and provide continuous linkages of wildlife habitat in natural corridors, shorelines and marine, forest and mountain areas.

3. Increase tree planting requirements or incentives for all public and private projects, including transportation projects that incorporate the use of trees. Corridors including freeways, highways, and arterials shall be tree-lined appropriately and not left barren. This shall provide a carbon sponge and will increase the attractiveness of the area and will provide a gateway to the County, its neighborhoods and business districts.

4. Landscaping in public areas shall require the use of at least 50% native plants. Public areas are to include public access areas, County buildings, parks, transportation corridors/projects, community resource areas, schools, commercial lands, municipalities, road medians, and rights of ways.

5. Regulations shall be adopted and incentives strengthened to increase the number of climate resilient native trees on private property.

B :: Green Community Design

Overview

The distances traveled for work, shopping, school, and getting home, are consistently growing longer. Transportation produces over half of the carbon emissions released in Washington State. A concerted effort is needed to address the need for shortened commutes and to reduce vehicle-miles traveled by a variety of means. Although separated conceptually and by agency in traditional American practice, there is no practical way to divorce land use and transportation. Each integrally affects the other. The following recommendations, therefore, address both topics.

In general, concentrating development in the cities will produce fewer harmful effects than development outside the cities. For this reason, the County, in coordination with the cities, must re-emphasize the need for future development to occur within the cities, and much of the responsibility for reducing GHG emissions in Skagit County falls on the ensuring that the vast majority of future development occurs within our cities.

Skagit County is largely rural in character, whereas many of the recommendations that follow apply largely to urban development. This comprehensive combination of policies and measures will make our communities safer, more convenient, and more attractive, for all. These measures will have other broad and desirable effects. They will:

- Combat the epidemic of obesity and its attendant illnesses by making physical activity part of daily routines
- Preserve the rural character of the County outside Urban Growth Areas
- Reduce pollution, congestion, and traffic deaths
- Reduce the cost of roads and other infrastructure such as water, sewer, and other utilities
- Reduce the current drain on household budgets arising from cars[5]
- Reduce the amount of dirty, poisonous, and flood-like runoff from roads and parking lots into streams, lakes and ground water
- Prepare our communities for the ever-rising gas prices resulting from peak oil

Zoning

The Washington State Growth Management Act requires counties to "provide sufficient capacity of land suitable for development within their jurisdictions to accommodate their allocated housing and employment growth."[6] This requirement does not, however, reflect current climate change science regarding either the magnitude or the urgency needed to achieve goals to reduce our carbon footprint. The legislature, counties, and cities need to work together to find innovative ways to accommodate growth in a denser and more carbon-friendly manner without impacting resource lands that serve as vital carbon sinks.

Since 1982, land in the United States has been developed at more than two times the rate of population growth.[7] Many current land use practices lead to sprawl and GHG emissions, pollution, runoff, and congestion. Buildings in the United

Figure 14. Transit-oriented developments, such as this one near Maine Street Station in Brunswick, Maine, are attractive and functional.

States produce an increasing share of GHG emissions, and according to the U.S. Department of Energy, now account for 40% of emissions.[8]

Many poor practices are subsidized while beneficial practices are penalized. In consideration of the trend toward disproportionate land consumption for new growth and its associated high rate of GHG emissions, the County should adopt new and revised criteria for new expansions to maintain and enhance the carbon sink functions of land outside the current growth boundaries. Most of the following recommendations are intended for adoption by cities. Others cross over into the rural unincorporated area where there are pockets of commercial development or rural schools. The County has the opportunity to lead by example and assist cities in achieving the presented goals.

Built Green and LEED are two national standards for energy efficiency and sustainability in new construction and remodeling. In practice, Built Green is used more in residential projects while LEED is used more in commercial projects. Both organizations offer comprehensive means to rate newly proposed subdivisions or other large-scale residential development: the Built Green Communities Checklist and LEED for Neighborhood Development.

Skagit County should collaborate with cities to maintain existing Urban Growth Boundaries and implement infill/densification within UGAs in a manner that:

- Adheres to principles of sustainability and reduction of carbon emissions
- Promotes more livable, pedestrian/bike-friendly, transit-oriented communities
- Preserves carbon sink potential of surrounding rural and natural resources areas.

Skagit County should apply sustainable, carbon-minimizing standards and principles to management of Urban Growth Areas, development requirements, and development densities. Planning and Development Services should introduce policies for public review in 2010. Skagit County should revise policies in the following ways:

1. UGA management: Revise policies and parameters for review of UGA expansion. This shall include required plans for achieving sustainability targets and requirements, urban infill plans that reflect sustainable mixed-use principles, and reviews of urban planning goals/policies for implementation of sustainable principles.
2. Urban/rural development standards: Where applicable to types of development, provide incentives for achieving a high level of compliance with Built Green and LEED standards. Also establish a minimum compliance target. Analyze LEED and Built Green standards shall to decide whether they provide sufficient carbon reductions; adopt stronger standards if they do not. In the analysis, examine emissions produced from the production and transportation of building materials as well as daily operation of buildings. Incorporate Low-Impact Development standards for rain gardens, green roofs, pervious pavements, landscaping requirements for native plants, as well as limits on impervious expansion.
3. Parking: Revise and reduce parking requirements and standards to encourage greater pedestrian/non-motorized access, reduce off-street parking, limit or restrict vehicle movement and access, and confine parking to designated areas. Provide exemptions for carpool vehicles and disabled travelers. Also designate "vehicle access zones" where needed.[9] Eliminate surplus or unused parking areas. Work in coordination with local cities to eliminate free public parking in urban areas, and aggressively revise and increase parking fees for existing available parking. Again, provide exemptions and preferential rates for carpools, vanpools, and disabled travelers.
4. Urban zoning/design standards: Transition to sustainable alternative design standards that promote greater mixed-use densities and options for commercial and residential development in urbanized areas; eliminate zoning barriers to sustainable practices, energy-efficient development, and revise design standards to promote use of sustainable or other alternative practices including height exceptions for reasonable implementation of urban-scale wind power and lot coverage requirements. Revise setback requirements to allow the placement of buildings, pedestrian walkways, and thoroughfares.
5. Work with cities and the State to restructure tax base and development fees to encourage sustainable infill which will discourage low-density development.
6. Work with cities to encourage the consolidation of municipal boundaries in the interest of equitable sharing of tax base for support in achieving mutual sustainability goals and reducing the need for UGA expansion.
7. Traffic: Implement "complete streets," development principles, and standards, to encourage user-friendly development in urban areas with particular attention to

mixed-use non-motorized thoroughfares (European "plaza" model). Implement Transit-Oriented Development (TOD) principles and standards to reduce traffic volume and promote more efficient urban access and circulation.

8. Rural development: Implement overlay zoning controls for protection of rural areas from urban edge development; remove density bonuses for development in rural areas, or otherwise revise the application of CaRD practices. Consider extended application of Local Improvement Districts, impact fees, or other measures to fund services in rural areas (water, sewer, police, fire, emergency, school transportation, road improvements, parks) to properly allocate costs to associated development and end *de facto* subsidies of (and incentives for) rural services by urban areas.
9. Perform audits of uses and carbon footprints on public property.

Countywide Planning Policies

Under the Growth Management Act, Countywide Planning Policies ("CPPs") are "written policy statement or statements used solely for establishing a countywide framework from which county and city comprehensive plans are developed and adopted."[10] Countywide Planning Policies are mandatory on both the county and its cities, which must amend their comprehensive plans, development regulations, and general practices accordingly.

Skagit County should make changes to the CPPs to include goals and techniques for reducing vehicle miles traveled sufficient to meet or exceed the county's regional greenhouse gas emissions goals. Due to the urgency of climate change, Skagit County should adopt such changes by December 2010.

Amend CPP Section 1.2 to provide:

Cities and towns and their urban growth areas, and non-municipal urban growth areas designated pursuant to CPP 1.1, shall include areas and densities sufficient to accommodate as a target ~~80%~~ 90% of the county's 20 year population projection. The County shall continuously monitor the number of residential building permits that it and the cities issue, and will not issue building permits for residential construction if to do so would contravene the foregoing sentence.

Adopt a new CPP Section 2.11 to provide:

Permits for development under Sections 2.3, 2.4 2.5, 2.7, 2.8, and 2.9 will not be granted unless the construction and operation of the facility for which a permit is requested would not lead to an increase in GHG emissions from vehicles traveling to or from such facility or from other causes. Mitigation will be required if the facility does not produce a reduction in GHG emissions in accordance with the County's regional GHG reduction goals.

Amend CPP Section 3.1 to provide:

Multi-purpose transportation routes and facilities shall be designed (if it is new construction) and reconfigured (if existing) to reduce present and future traffic volumes in accordance with the County's regional GHG reduction goals. Amend CPP Section 3.2 to provide:

Primary arterial access points and other intersections shall be designed to ensure maximum safety for bicyclists and pedestrians as well as motorists, while minimizing flow disruptions for all users.

Amend CPP Section 3.3 to provide:

New transportation routes and improvements to existing routes, including the addition of lanes, will not be developed unless they can be shown to produce a net reduction in emissions in accordance with the county's regional GHG reduction goals. Adopt "lane diets" whenever possible.[11]

Amend CPP Section 3.4 to provide:

The Transportation Element of the Comprehensive Plan shall be designed to facilitate the flow of people, goods and services so as to strengthen the local and regional economy; conform with the Land Use Element of the Comprehensive Plan County's regional GHG reduction goals be based upon an inventory of the existing Skagit County transportation network and needs; and encourage the conservation of energy.

Amend CPP Section 3.5 to provide:

Comprehensive Plan provisions for the location and improvement of existing and future transportation networks and public transportation shall be developed in a manner consistent with the goals, policies, and land use map of the Comprehensive Plan County's regional GHG reduction goals.

Amend CPP Section 3.7 to provide:

The Senior Citizen and Handicapped transportation system shall be provided with an adequate budget to provide for those who, by age (both children and seniors) and disability, are unable to transport themselves.

Amend CPP Section 3.8 to provide:

Level of service (LOS) standards and safety standards shall be established for bicycles, pedestrians, buses, and trains and the LOS standards for cars abandoned. The standards will coordinate and link with the urban growth areas and urban areas to optimize land use and transportation by means other than cars over the long term. New development shall mitigate transportation and greenhouse gas emission impacts concurrently with the development and occupancy of the project in accordance with the County's regional GHG reduction goals.

Amend CPP Section 3.11 to provide:

The regional transportation system shall be designed to minimize air pollution and GHG emissions by promoting the use of alternative transportation modes, reducing vehicular traffic, maintaining acceptable traffic flow, and siting of facilities.

Adopt a new CPP Section 3.13 to provide:

The transportation network shall be developed in a way to assure the safety, convenience, connectedness and completeness of facilities for bicyclists, pedestrians, buses and trains. This shall include connectivity among the various modes of transportation. For example, there it will include good pedestrian and bicycling facilities leading to bus stops and bus terminals, pedestrian passages through and to parking lots, and bicycle parking at all destinations.[12]

Adopt a new CPP Section 3.14 to provide:

Design and construction of new, refurbished, and reconstructed roads shall be performed to "Complete Streets" standards.

"Complete Streets" means roads and streets that are safe, convenient and attractive for users of all modes (motorists, bicyclists, pedestrians and transit riders) and users of all ages (children, adults and seniors). [13, 14, 15] This will mesh with the need (and the funding) for Safe Routes to School. Elements include:

- For bicyclists: a connected network of bike lanes, trails, parking at destinations. Designated bike lanes may not be necessary on quiet roads and streets, where there are adequate margins, or if there is a wide car lane (13-14 feet). Where streets and roads are busy and vehicles are traveling at high speeds, protective barriers between cars and bicycles may be necessary.[16]
- For pedestrians:
  - A connected network of trails and sidewalks. In rural areas an adequate road margin will often be sufficient.
  - Appropriately marked and designed crosswalks that are frequent and short enough to ensure safe, convenient, and attractive walking areas.
- For transit:
  - Bus pullouts on busy streets and roads.
  - Bus shelters where stops must accommodate many passengers.
  - Sidewalks or other safe, convenient and attractive facilities for pedestrians to reach bus stops.
  - Preference through means of bus-only lanes, and precedence at intersections.

Adopt a new CPP Section 3.15 to provide:

Skagit County, in collaboration with the cities, school districts, ports, tribes and other relevant local jurisdictions shall develop a Bicycle/Pedestrian Master Plan and designate either a County official or a Skagit Council of Governments official to be the Bicycle/Pedestrian coordinator.[17]

Adopt a new CPP Section 3.16 to provide:

Jurisdictions shall eliminate or reduce the subsidy for car trips, vehicle miles traveled, and GHG emissions caused by mandatory minimum off-street parking rules. Possible measures include:

Amending zoning rules so that off-street parking requirements for new developments of all kinds is reduced or eliminated

Requiring commercial, industrial, and government establishments to charge parking fees, either universally or in specified areas

Rezoning developed parcels to permit new development along streets in place of current parking lots.

Amend CPP Section 12.5 to provide:

Lands designated for urban growth by this Comprehensive Plan shall have an urban level of regional public facilities and services prior to or concurrent with development, including fixed transit service routes within one-half mile of the proposed development, with frequent service. Hours of service shall be convenient for passengers and shall connect with developments by means of

safe, convenient, and attractive bicycle and pedestrian facilities.

C :: Implementation

Specific Measures

Skagit County can take some immediate steps to make our communities more sustainable without the need to revise land use plans or policies. Skagit County should:

1. Collaborate with cities to provide incentives to build mixed-use neighborhoods and higher residential, commercial and industrial densities.

   The County's role could be, for example, to partner with cities on infrastructure projects to support such development, reducing the cost and increasing the funding capacity of the project. This has occurred on a limited level with the use of economic development funds.

2. Seek joint funding opportunities to retrofit streets using "Complete Streets" principles.

3. Encourage and improve shared transportation mode, including buses, carpools, vanpools, trains, using the County's role on the Skagit Transit Board. For example, Skagit County could:

   - Invest in a commute trip reduction program.[18]
   - Set a goal of increasing the share of carpools used for commuting to 5 percent by 2012 and to 25 percent by 2020.
   - Increase the number of vanpools in Skagit by 20 by 2012 and by 80 more by 2020.
   - Expand promotion of Skagit Transit's (or the regional) online Rideshare program.[19]
   - Increase frequency of bus service on in the core area to every 15 minutes.
   - Develop a guaranteed-ride home program for transit users.
   - Promote employer incentives such as shuttles, and paying employees to take transit or to bicycle so that the employer has fewer parking spaces to provide.
   - Use GPS technology to provide real-time arrival information on bus routes.
   - Adopt a system of rideshare stops on the model of the system now in use in San Juan County.
   - Advocate for fast trains and more frequent trains.

4. Use ICLEI's Density-VMT Calculator as a planning tool.

5. Become a Bicycle-Friendly Community Using League of American Bicyclists' criteria[20]

6. Develop a uniform signage system across jurisdictions for trails and bicycle routes.[21]

7. Implement green landscape design and maintenance at public facilities to increase the number of climate-resilient, carbon-sequestering species, and reduce the need for carbon emitting maintenance of landscaping.

   - Use rain gardens and other Low Impact Development techniques to infiltrate and clean storm water runoff close to its source.
   - Decrease areas of mowed, fertilized lawn, and other associated lawn maintenances.
   - Increase the use of native cover on all county lands.

8. Create a baseline dataset for forest cover on County parks and city-owned land. To minimize costs, use existing remote sensing technology s work in conjunction with ongoing programs. Such a database could be useful in carbon offset programs.

9. Establish a numeric goal for more tree cover on their owned properties. For example, using the baseline information developed in item three, the goal may entail 100,000 more trees by 2012.

10. Maintain and add trees on streets and County rights-of-way in the more densely-developed portions of unincorporated Skagit County. The County should collaborate with cities to create a network of street trees in their unincorporated Urban Growth Areas.

11. Work with the Washington State Department of Transportation to initiate a highway planting program.

Advocacy Measures

1. Urge WashDOT to finish its statewide web-based trip planner.

   The trip planner would allow users to see all the public transportation options for a given trip, with schedules, fares and connections, to include public transit buses, private services like Greyhound and the Airporter, ferries and trains.

2. Skagit County should advocate for reform of Washington's sales tax system.

Under current law in Washington State, the share of sales tax revenue that each jurisdiction receives is based on the overall revenue from commercial establishments within the jurisdiction's boundaries. This means that there is competition among cities and between cities both individually and collectively and the county to have sales tax generating businesses within their respective boundaries. If a business is located in an unincorporated area, the cities have a strong incentive to annex. This competition for money means also a competition for sprawl, with commercial destinations likely to be more spread out. This in turn leads to greater emissions of greenhouse gases.

An alternative system would have the revenue allocated among jurisdictions based on a population and the kinds and levels of services that the jurisdiction is required to supply.

3. Advocate for a stable, long-term source of federal and state funding for regional and interstate public transportation.

   Just as there are local roads and streets, state highways, and the federal highway and Interstate systems, there is a role for all three levels of government in the sphere of public transportation.

4. Advocate for removal of subsidies for car trips and vehicle miles traveled, including:

   - Subsidies for the price of gasoline.[22]
   - Subsidies for road construction and maintenance arising because the taxes associated with the ownership and operation of vehicles do not pay the full financial cost of the roads, much less the ecological cost of mining and manufacturing the road-building materials and building the roads themselves.[23]
   - The failure of the road and trip pricing regime to pay the full cost of car crashes, estimated by the Washington State DOT to be $5.6 billion per year in Washington State alone.[24]

[1] Daily, Gretchen et al. Ecosystem services: Benefits supplied to human societies by natural ecosystems. Issues in Ecology 2, 2-16 (1997), www.esa.org/science_resources/issues/FileEnglish/issue2.pdf; see also Collins, Sally and Larry, Elizabeth. Caring for our natural areas: An ecosystem services perspective, USDA (2007), www.fs.fed.us/ecosystemservices/pdf/collins_larry.pdf.

[2] A forestry offset is a project that adds to the amount of carbon storage in forests. The offsets are then sold to greenhouse gas emitters.

[3] Intergovernmental Panel on Climate Change Special Report on Emissions Scenarios retrieved 26 June 2007.

[4] Miller, G. Tyler Jr. Living in the environment. Brooks/Cole Publication, Canada 2007, attra.ncat.org/attra-pub/PDF/carbonsequestration.pdf.

[5] Median-income Skagit households ($54,000 combined income) spend an average of $8,500 per year on their cars. This burden is only slightly less than the cost of housing. Washington State Office of Financial Management: Median Household Income Table, www.ofm.wa.gov/economy/hhinc/; Surface Transportation Policy Project : Driven to Spend: Pumping Dollars out of Our Households and Communities, www.transact.org/report.asp?id=236.

[6] RCW 36.70A.115.

[7] See www.rnrf.org/policyprinciples.html.

[8] U. S. Department of Energy, Buildings Energy Data Book, 2008, buildingsdatabook.eren.doe.gov/TableView.aspx?table=1.4.1.

[9] Vehicle Access zones include parking that is not attached to individual business/activities.

[10] RCW 36.70A.210.

[11] Lane diets consist of a reduction in either the number of lanes or in the width of the lanes, with the result that space is opened up for other uses. This addresses bike lanes (or enough space in the margin for bicycles or separated trails), sidewalks, as well as sustainable margins protecting the sidewalks. Lane diet also makes crossing streets easier for pedestrians. Many roads and streets are wider than needed to accommodate car traffic. The speed for maximum throughput of vehicles in urban conditions is 25-30 miles per hour. This is because cars can safely follow one another more closely at this speed than at higher speeds. (Presentation by Dan Burden, April, 2006) With such speeds prevailing, a single lane can handle 18,000 cars per hour, well more than the demands that are expected, for example, on College Way in the vicinity of the new Wal-Mart Superstore.

[12] Communities with better connecting streets (fewer cul-de-sacs and shorter blocks) are easier to serve with transit, have lower vehicle miles traveled, experience better health because of more physical activity (walking and bicycling), and have faster emergency service. A connected street system should not be confused with adding lanes to existing streets. In most cases, adding lanes simply increases the vehicle miles travelled and contributes more GHG emissions. Adding a single lane-mile of road in congested areas adds at least 100,000 tons of greenhouse gasses over 50 years, thus effectively undoing carbon savings from other actions. Sightline Institute, Increases in greenhouse-gas emissions from highway widening projects, Oct., 2007, www.sightline.org/research/energy/res_pubs/analysis-ghg-roads.pdf

[13] The USDOT's Design Guidance for Accommodating Bicycle and Pedestrian Travel (2000) should also be taken into account. The main principle is providing space for pedestrians and bicyclists first, and leaving the rest for cars. Up to 20% of the overall budget for the project would be devoted to facilities for bicycles, pedestrians and buses before it was considered excessive.

[14] Under Senate Bill 5482 adopted in 2009, cities, counties and the state must each adopt a program of upgrading or adjusting sensors at traffic lights so that they detect bicycles.

[15] In Anacortes, the City has begun addressing gaps in the network of sidewalks with great seriousness. City staff continuously updates its sidewalk database, and the City offers residents the services of City staff to build or repair sidewalks if the homeowner supplies the materials.

[16] For example, the State Department of Transportation recently added "Jersey" barriers to protect access for bicyclists and pedestrians to the protected pathway across Berentson Bridge on SR 20, which is only on the north side of the bridge.

[17] The Active Community Task Force has commenced work on a Bicycle Master Plan. Note also the Active Community Task Force's "gap lists" for bike routes in the County and for sidewalks in Mount Vernon. The League of American Bicyclists' Bicycle Friendly Cities program describes how to show that a community is serious about integrating bicycling into the transportation system. In Washington State, Seattle, Bellingham, Olympia, Bainbridge Island, Liberty Lake, Port Townsend and Redmond have all won designations as Bicycle Friendly Cities under this program. The Whatcom Council of Governments has won an award as a Bicycle Friendly Business. See www.bikeleague.org/programs/bicyclefriendlyamerica/communities.

[18] Relatively few trips are commute trips (24% of men's trips, 16% of women's trips). Since many of the non-work trips are for the purpose of transporting children, there is a high premium on making it safe, convenient and attractive for children to get where they need to go by walking, biking or taking the bus. Surface Transportation Policy Project, High Mileage Moms – The Report, July 24, 2002, www.transact.org/report.asp?id=184

[19] Taking a carpool with one other person reduces a person's overall energy use (and emissions) from transportation by 4.2%. International Council for Local Environmental Initiatives (ICLEI), National Conversation on Climate Action – Citizens' Guide, Apr. 22, 2009, p. 4, www.iclei.org/fileadmin/template/project_templates/ncca/files/National_Conversation_on_Climate_Action_Citizens_Guide_Non-editable.pdf

[20] www.bikeleague.org/programs/bicyclefriendlyamerica/communities

[21] The Active Communities Task Force, an advisory committee to the Skagit RTPO and MPO, has made a beginning, working with WSDOT and Skagit County Public Works.

[22] In 1998, the International Center for Technology Assessment estimated the subsidies for a gallon of gasoline, which at the time cost about $1.00 in the United States, averaged $9.00. International Center for Technology Assessment, The Real Price of Gasoline, 1998, www.icta.org/doc/Real Price of Gasoline.pdf.

[23] Tim McGee, The Hidden Costs of Roads, February 2, 2008, www.treehugger.com/files/2008/02/the_hidden_cost_1.php

[24] Sightline Institute and Transportation Choices Coalition, The True Cost of Car Crashes, Washington Transportation Facts, Fact Sheet #1, washington.chenw.org/RIgroup/documents/sprawl-health-carcrashes.pdf

Appendices

Appendix A: Glossary

Adaptation
Action to adjust to the effects of climate change. Compare to *mitigation*.

Carbon footprint
Shorthand for an estimate of the total GHG emissions caused by, or associated with, a person, product, activity, or organization. Usually expressed in units of CO_2e. An average American's carbon footprint is 20 tons of CO_2e per year, higher than any other country.[1]

CO_2
Carbon dioxide, a colorless, odorless gas consisting of one atom of carbon and two atoms of oxygen. CO_2 is created during combustion of carbon-based fuels and absorbed by most plants in photosynthesis. CO_2 currently exists at a global average concentration of 385 parts per million by volume in Earth's atmosphere.

CO_2e
Carbon dioxide equivalent. A measure used to compare the effect of a greenhouse gas in terms of an equivalent amount of carbon dioxide.

GHG
Greenhouse gas. While carbon dioxide is the most prolific greenhouse gas, there are many other more minor gases that contribute more heavily to global climate change. See *CO_2e*.

Gigaton
A unit of measure equal to one billion metric tons. A metric ton is approximately 2,205 pounds.

kW/h
Kilowatt-hour. A unit of energy equivalent to 3.6 megajoules.

IPCC
Intergovernmental Panel on Climate Change. The IPCC is a scientific intergovernmental body set up by the World Meteorological Organization and by the United Nations Environment Programme. Visit the IPCC website at www.ipcc.ch.

Mitigation
Action to reduce the emission of greenhouse gases. Compare to *adaptation*.

PPM
Parts per million.

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[1] National carbon dioxide emissions per capita, Vital Climate Change Graphics, United Nations Environment Programme and GRID-Arendal (2005).

Appendix B: Climate Action & Sustainability Taskforce Member Biographies

John Day is a long time Skagit County resident who has devoted much of his time to understanding the disproportionate impact that rising energy costs have on low-income households. For 29 years, John has worked with the Skagit County Housing Authority's Low-Income Home Weatherization and Repair Program. In his time there, he has provided energy conservation, home repair, and other services to low-income Skagit County residents. For the last 15 years, he has served as Weatherization Coordinator. Through this experience, he has gained a deep understanding of the opportunities that exist to significantly reduce energy costs while at the same time reduce overall residential energy demand.

Figure 15. Recycling Educator Callie Martin and Taskforce member Ed Gastellum discuss policy with County Commissioner Sharon Dillon.

Molly Doran is a native of Canada but moved to Wyoming as a young adult. Prior to moving to the Skagit in 2002, Molly was the Associate Operations, Diversity, and New International Programs Director of the National Outdoor Leadership School (NOLS) in Lander Wyoming. Over a 20-year period, she ran NOLS schools in Kenya, Chile, Canada, and Alaska. She has taught outdoor and environmental education in a wide range of countries. Molly is currently the Executive Director of Skagit Land Trust, a nonprofit organization that conserves important natural and resource lands throughout Skagit County and one of the earliest land trusts accredited by the National Land Trust Accreditation Commission. Molly serves on the advisory board of the Sustainable Development Institute. She holds an M.A., ABS in Managing and Consulting from Leadership Institute of Seattle/Bastyr University and a B.E.S. in Environmental Studies & Geomorphology from the University of Waterloo, Canada. She currently lives in Bow with her husband Andrew Cline and two sons, Mehari and Zerihun.

A Skagit Valley resident for almost 20 years, **Ed Gastellum** has spent 34 years focused on protecting America's natural and cultural heritage as a National Park Service employee. Gastellum has served in management positions as Superintendent at Hubbell Trading Post National Historic Site and the Petrified Forest National Park in Arizona. Over the last 12 years, Gastellum has also held the position of assistant superintendent of the North Cascades National Park Complex. In his time spent with the Park Service, Gastellum focused on energy conservation and reducing human impacts on greenhouse gas emissions. In Hozomeen, Ed helped implement a photovoltaic system for a housing complex that produced its own electricity and sold back excess power to the grid. Ed and his wife Carolyn live in Anacortes and are involved in many community organizations including Skagit Land Trust, the Padilla Bay Foundation, and Evergreen Islands.

Teresa Hansen was born in Tacoma and raised in Graham, and has lived in Seattle, Federal Way, and Des Moines. She is a graduate of the University of Washington–Tacoma with a degree in Liberal Studies with an emphasis on East Asian Cultures. She owned and operated her own successful building materials manufacturers representative agency for over 15 years serving customers and clients across North America and Japan. Her participation in the home building industry as a builder and in product sales provided her the opportunity to learn and promote green building techniques. She currently lives in Burlington with her husband Steve.

Figure 16. Taskforce member Kevin Maas and his brother Daryl greet Governor Christine Gregoire and Senator Mary Margaret Haugen at the opening of their manure digester facility.

Kevin Maas was raised in Skagit County and earned an MBA in Sustainable Business from Bainbridge Graduate Institute in 2007. In 2007, Kevin and his brother, Daryl Mass, founded Farm Power Northwest LLC, a company that

combines sustainable agriculture and renewable energy to produce local renewable energy and reduce greenhouse gas emissions from local dairy farms. Farm Power is based around the use of anaerobic manure digesters that harvest methane gas from manure. Kevin believes that in order to maintain the Puget Sound's unique balance between economic growth and outdoor quality of life, farming must be made economically profitable and environmentally sustainable.

As a Skagit County resident since 1980, **Jane Mayer** believes that Skagit holds a unique position in dealing with the agricultural and fishing interests that sustain the area and provide valuable resources both locally and internationally. Since serving with the Red Cross during Hurricane Wilma in 2005, Jane has become more aware of the deleterious effects of climate change. Jane has a Masters Degree in Nursing and has served with the Swinomish and Upper Skagit tribes for many years. Jane is also working on implementing a diabetes prevention project for both Whatcom and Skagit County tribes.

Figure 17. Taskforce members Ian Woofenden, Eric Shen, and Tamara Thomas at the opening of the Maas brothers' manure digester.

Eric Shen has devoted his career to the field of energy generation. Initially, he was involved with the design and construction of various nuclear power generating facilities located throughout the United States. Later, he led engineering teams that conducted research on energy technology projects, such as fusion power development, space based nuclear power, and advance breeder reactor fuels development. A graduate mechanical engineer from Colorado State University and a registered professional engineer in Washington State, Eric is currently a member of WSU Climate Stewards and Skagit Beat the Heat, both of which are focused on slowing global warming and preparing and adapting our communities for the uncertainties to come. Recent projects he has been involved with include co-teaching a six-week class on climate change at the Anacortes Senior College and Skagit Valley College, leading a team that installed a demonstration photovoltaic system at Anacortes High School, and working with the team that published a book on climate change—*Living Well, Living Green in Skagit & Whatcom Counties*. Eric has resided in Washington State for thirty years.

Linda Talman is a science educator, educational consultant, and professional development provider. She currently teaches at La Conner School District. Linda has a BA in English Literature from the State University of New York at Buffalo and a Masters in Science Education from Western Washington University. She is an active member of the Washington State Science Assessment Leadership Team. Linda lives in La Conner, where she serves on the town Planning Commission.

Tamara Thomas was raised in Edmonds and has lived in Woodinville, Tacoma, Pullman, and now Mount Vernon. She graduated from Washington State University with a BA in Political Science, from the University of Washington with a Master's in Geotechnical Engineering with a focus on contaminated soils, and again from Washington State University with a Master's in Soil Chemistry. She is a licensed environmental engineer in Washington State. She worked in the engineering and contaminated soils industry for over 20 years and has owned and managed her own successful compost and organic recycling consulting firm, Terre-Source LLC, for over seven years to "get to the beginning of the problem" by solving environmental problems through prevention. Taking on the remodel and reconstruction of a 1920s farm house in Mount Vernon, where she lives with her partner, Tom Mayes, has provided her the opportunity to research and utilize green building techniques especially recycling, salvage, and energy efficiency systems.

For the last 17 years, **Nicolette Thornton** has worked in the horticulture field in various capacities. Currently, she is the retail store manager at Charley's Greenhouse & Garden in Mount Vernon. She also has her own business as an organic Garden Coach doing business as Garden Enhancement. Thornton takes pride in educating customers and Skagit County residents in organic garden management and ways in which to reduce pesticide use in residential gardening. Nicolette volunteers on the Concrete Parks Committee, where she is planning to help develop a community garden. After growing up in the interior of Alaska and Western Washington, Nicolette earned a degree in Environmental Horticulture from Lake Washington Technical College in Kirkland, and spent most of her adult years in the North Seattle area until

moving to Skagit County in 2006. She and her family now live in East Skagit County.

A strong believer in volunteerism, **Danielle Wensauer** is pleased to use her skills and knowledge to contribute to her adopted community of Mount Vernon. An environmental assessment specialist by profession, Danielle is sating her passion for "active transportation" by pursuing graduate studies in urban planning. You're likely to find Danielle commuting around town by bike, foot, skis, or dogsled. Indeed, she believes that multi-modal transportation infrastructure is the cornerstone of a livable region. Danielle was born and raised in Vancouver, British Columbia, and speaks five languages. She moved to Skagit County in 2008 and frequently enjoys one of the best parts of living here: the availability of local organic food.

Jerry Whitfield was born in London and raised in the UK. He received a degree in Aeronautical Engineering from Southampton University and a PhD in Aero Acoustics from Cambridge University. He specialized in jet engines during his early career with Rolls Royce Aero Engines and General Electric (UK), and after a move to Seattle with Boeing. In 1984 he left Boeing to develop the first wood pellet stove. Over the next 25 years Jerry built a company to design, manufacture, and market pellet stoves nationally and internationally. He was the recognized leader in developing wood pellet technology for residential heating across North America. His company had grown to 150 employees when he sold it to Lennox Industries to pursue his lifelong interest in developing BioEnergy projects. He joined Biomass Investment Group, based in Florida, which was developing a commercial power plant based upon a high yielding dedicated energy crop. He was a director of the company and served as its Chief Operating Officer until 2007. He is currently pursuing other energy concepts linked to energy crops grown on conventional farms. He has also developed a small commercial coffee roaster for the growing gourmet coffee industry which he manufacturers in Burlington. He has lived on Samish Island with his wife Carol for the last 20 years, where they have raised three daughters.

Susan Wood has been a Fidalgo Island resident since 1987 and sees climate change as one of the biggest challenges facing our country. Since 1988, Wood has served as an educator at the Padilla Bay National Estuarine Research Reserve in Bay View. She has taught hundreds of thousands of school children, teachers, families, and adults about estuaries, watersheds, and coastal issues. For the past five years, Wood has also worked on climate change issues and education at Padilla Bay. She is a member of the state Network for Climate Education and is also a member of the Department of Ecology's Sustainability Team. Wood is also involved at the federal level with the National Estuarine Research Reserve System Climate Change Education Work Group. Wood has a BA in Environmental Studies from St. Olaf College and a MEd in Environmental Education from Slippery Rock University.

Ian Woofenden has lived off-grid with wind electricity, solar electricity, solar hot water, and wood heat on Guemes Island for the last 28 years. He focuses on educational work in the renewable energy industry, including work as senior editor for Home Power magazine; northwest & Costa Rica Coordinator for Solar Energy International; wind electricity instructor for Solar Energy International, Cape & Islands Self Reliance, and other non-profit and private institutions. Ian is co-author (with Dan Chiras) of the book *Power from the Wind*, and author of *Wind Power for Dummies*. Ian is an occasional member of wind generator installation crews, and finds work as an independent consultant and salesperson for residential and small commercial renewable energy systems.

Appendix C: Table of Taskforce-Recommended Policies with Budget Implications

The following table includes all taskforce-recommended policies with costs that are not insignificant.

Title	Lead	Time	Net Cost	New Expense?	Grant Funded?
Policy A-2. Continue support of the Skagit Cool Community Campaign.	SA	2010-2	$2000/yr	Yes	No
Policy A-10. Designate a Sustainability Administrator	AS	2010	1 FTE	Yes	Yes
Policy A-14. Designate a County Sustainability or Recycling Coordinator	SW	2010	1 FTE	Yes	—
Policy B-1. Continue and expand SCOG RCM program to find energy savings from routine operations	SA	2010-2	$10,000/yr	No	No
Policy B-2. Perform energy audits, and retrofit County facilities to increase energy efficiency [savings diverted to Energy Savings Acct]	CF	2010-2	-$60,000/yr	N/A	No
Policy B-4. Invest in renewable energy	CF	2010+	$0	Yes	No
Policy B-9. Develop a Community Energy Efficiency Program for homes and businesses	SA	2010+	$180,000	Yes	Yes
Policy C-1. Centralize purchasing authority	AS	2010-1	Negative, but indeterminate	Yes	No
Policy C-2. Develop & Adopt a Green Purchasing Policy	AS	2010-1	-$51,000/yr	Yes	No
Policy C-3. Purchase remanufactured toner cartridges for laser printers, fax machines, and ink jets [balances paper purchases]	AS	2010	-30-60%	Yes	No
Policy C-4. Purchase Environmentally-Preferable Paper	AS	2010	8-36%	Yes	No
Policy C-9. Review and assess vehicle fleet to improve overall performance and reduce GHG emissions	SA	2010	-$88,000/yr	Yes	Yes
Policy D-4. Conduct a waste characterization study to inform effective recycling efforts [funded by Solid Waste system fees]	SW	2010-1	$50,000	Yes	No
Policy D-6. Implement efficient recycling and waste reduction at all County facilities	SA	2010	$37,500	Yes	Yes
Policy D-8. Provide recycling at all County public events and support public event recycling in all cities	SW	2010+	$16,000	Yes	Yes
Policy D-10. Provide garbage vouchers for low-income residents.	SW	2010+	Indeterminate	Yes	No
Policy D-13. Eliminate permit fees for de-construction and proper recycling a structure slated for demolition [$100 per permit]	PDS	2010	Minimal	Yes	No
Policy D-18. Implement effective food waste and composting program at Skagit County jail	SO	2010	Significant and negative	Yes	No
Policy D-22. Adjust limits at Hazardous Waste Collection Stations to increase collection	SW	2010	Minimal	Yes	No
Total Savings From New Unfunded Requests					**at least $137,000/yr**

AS = Administrative Services
PDS = Planning & Development Services
CF = Capital Facilities
SA = Sustainability Administrator
SW = Public Works Solid Waste Division
FM = Facilities Management
SO = Sheriff's Office

Appendix D: Employee Energy Use Survey

[to be included]

Data Tables

Table 1. Baseline greenhouse gas emissions from Skagit County government operations in 2006 in tons of CO_2e

Sector	Tons of CO_2e
Buildings and Facilities	2,426
Streetlights and Traffic Signals	81
Solid Waste	3,421
Vehicle Fleet	2,575
Employee Commute	2,070
Other Process Fugitive Emissions	19
Refrigerants	0
Total	**10,592**

Table 2. Projected emissions by sector from Skagit County government operations 2000-2050 in tons of CO_2e

Sector	2000	2006	2015	2050
Buildings and Facilities	2,137	2,426	2,922	6,028
Streetlights and Traffic Signals	71	81	98	201
Solid Waste	3,014	3,421	4,121	8,500
Vehicle Fleet	2,269	2,575	3,102	6,398
Employee Commute	1,824	2,070	2,494	5,143
Other Process Fugitive Emissions	17	19	23	47
Refrigerants	0	0	0	0
Totals	**9,331**	**10,592**	**12,759**	**26,317**

Table 3. Baseline emissions for the Skagit County community in 2006 in tons of CO_2e

Sector	2006 Emissions
Residential	338,725
Commercial	259,841
Industrial	322,015
Transportation	743,687
Solid Waste	15,804
Municipal Operations	10,592
Total	**1,690,664**

Table 4. Baseline and projected greenhouse gas emissions for the Skagit County community 2000-2050 in tons of CO_2e

Sector	2000	2006	2015	2050
Residential	258,455	338,725	367,606	490,813
Commercial	183,674	259,841	314,039	637,274
Industrial	235,636	322,015	347,208	476,128
Transport	788,910	743,687	713,719	700,506
Solid Waste	13,197	15,804	20,711	59,275
Totals	**1.5 m**	**1.7 m**	**1.8 m**	**2.4 m**

Table 5. Projected emissions and reductions required to meet Skagit County's 80%-below-2000-levels greenhouse gas emissions reduction target by 2050, in tons of CO_2e

Time Period	Community	Government
CO_2e emissions in 2000 (tons)	1,479,871	9,331
Business-as-usual projection of CO_2e emissions in 2050	2,363,997	26,317
2050 Reduction Target	**1,183,897**	**7,465**

Government Analysis

Emissions Coefficients

EPA eGrid 2006 emissions coefficients were not available yet, so used most recent year (2005) per recommendation by Xico Manarolla, ICLEI Program Officer, ICLEI USA, email xico.manarolla@iclei.org

Emissions coefficients can be found in the 2008 LGOP, Appendix G.

Fleet Vehicles

Records of annual fuel use, fuel costs, and vehicle department assignments provided by Jim Martin, Accounting Tech III, Skagit County Public Works (360) 336-9400, ext 3166, jimm@co.skagit.wa.us.

We entered vehicles model year 2006 and newer in the 2005 category because it is the most current available in CACP.

For vehicles for which mileage records for unavailable, we assumed that annual VMT (AVMT) was the same as a similar vehicle (either same model or similar vehicle type). We calculated AVMT as follows:

Estimated 2006 miles = (recorded mileage on record ÷ # days on record)*days used in 2006

Shared Vehicles

For vehicles that were used by more that one department in 2006, we calculated AVMT for each department as follows:

- Vehicle #233 was evenly split between Operations (Jan-June) and Planning (July-Dec) so we allocated half of fuel use and cost to each department.
- Vehicle #117 was shared between three departments, so we divided annual fuel use and cost as follows:
  ER&R (Jan-Sept): 9/12
  Projects (Oct-Nov): 2/12
  Coroner (December): 1/12
- Vehicle #112 was shared between Fairgrounds (Jan-May) and Commissioners (June-Dec), so we allocated 5/12 of the annual fuel use and cost to Fairground and 7/12 to Commissioners.
- Vehicle #294 was shared between Fairgrounds (Jan-Sept) and Parks (Skagit Valley Playfields, Oct-Dec) so we allocated 9/12 of annual fuel use and cost to Fairgrounds, and 3/12 to Parks.

Vehicles Missing Fuel Records

Fuel records were unavailable for the following vehicles, so we estimated fuel consumption from vehicle miles traveled in 2006 using CACP. We calculated fuel costs for these vehicles using annual average prices for gasoline and diesel from EIA. (Gasoline average $2.7121/gal in Washington during 2006, diesel average $2.8846 on the west coast in 2006.)

- Vehicle #1020: 3777 VMT
- Vehicle #280: 11 VMT
- Vehicle #8084: 2834 VMT
- Vehicle #253: 2473 VMT

No fuel or operation records were available for the following equipment, so we could not assign VMT, fuel usage, or costs: #717, #473, #725, #699, #698, and #683.

Unassigned fuel is defined as fuel that Skagit County purchased and dispensed to Skagit County vehicles or equipment in 2006, but no ID# was recorded for the transaction. This fuel cannot be assigned to a particular vehicle or department. Unassigned gasoline was entered as a Passenger Cars Alternate Method records and unassigned Diesel was entered as a Light Trucks Alternate Method record. Unassigned fuel was calculated as follows:

Unassigned gasoline = total gasoline dispensed (gal) - total assigned gasoline dispensed (gal)

Unassigned diesel = total diesel dispensed (gal) - total assigned diesel dispensed (gal)

Unassigned fuel costs may not be indicative of total costs because fuel was purchased from multiple sources in 2006. Assigned fuel cannot be identified by location (county vs. on county dispensary) and commercial fuel purchases are not included in the total cost of fuel dispensed by county. Therefore, the cost of unassigned fuel may be higher than represented.

Unassigned fuel costs were calculated as follows:

Unassigned fuel cost $ = total cost of fuel dispensed by county - total cost of assigned fuel (county and commercial dist. centers)

Employee Commute

These calculations assume that commuting habits of Skagit County Employees in 2006 were similar to the reported habits in the 2009 Employee Commute Survey. It was also assumed that annual VMT was directly correlated to the number of full time employees and that employees worked 50 weeks out of the year.

We designated vehicle classes for gasoline passenger cars, gasoline light trucks, gasoline heavy duty vehicles, diesel passenger cars, diesel light trucks, and diesel heavy duty vehicles. We included motorcycles with passenger cars for all CACP entries.

We collected employee commute data was collected using Survey Monkey, an online survey site, between August 27 and September 4, 2009, collecting 391 responses, though it is important to note that some respondents skipped some questions so not all questions yielded 391 responses. Additionally, we did not include data from three respondents in the final results because the answers were nonsensical.

We calculated total annual vehicle miles traveled (AVMT) by commuting employees in 2006 as follows:

$$2009\ reported\ employee\ AVMT = Commute\ VMT\ (one\ way) * \frac{2}{day} * \frac{work\ days}{week} * 50\frac{weeks}{year}$$

$$2006\ Total\ Employee\ AVMT = \frac{2009\ reported\ employee\ AVMT}{number\ of\ employees\ who\ responded\ to\ survey} * FTE\ in\ 2006$$

$$VMT\ per\ vehicle\ class\ 2006 = \frac{2009\ AVMT\ by\ vehicle\ class}{respondents\ in\ vehicle\ class} * 2006\ total\ employee\ AVMT$$

The number of current employees provided by Sheron Curtin, Skagit County Human Resources, 360-366-9300 x5479, sheronc@co.skagit.wa.us.

Solid Waste

We calculated waste volume using the conversion:

1 US gallon = 0.00495113169 cubic yards

Waste shares were adapted from the Local Government Operations Protocol 2008 Table 9.3 Default US Waste Characterization (1960-present) as follows:

Paper product waste share = newspaper + office paper + corrugated cardboard + coated paper

Food = only food waste

Plant debris = Grass + leave + branches

Wood or textiles = lumber + textiles

All other = 100%-subtotal of the above categories

We estimated solid waste data from county operations by conducting a garbage survey of all county operations waste bins in August 2009 (except 201 Kincaid, see note below).

Annual waste per bin = Bin size (yd^3) * Average fullness at pick-up * 600 lbs/yd * #weekly pick-ups *5 2 weeks/year

Annual waste tonnage calculations assume that each cubic yard of garbage weighs 600 lbs/yd^3 per recommendation by Xico Manarolla, ICLEI Program Officer, ICLEI USA, xico.manarolla@iclei.org.

For all addresses except 201 Kincaid Street (courthouse), we estimated average container fullness by visiting each site the afternoon before pickup for three weeks. Waste fullness for 201 Kincaid was not observable because facility garbage was taken to bin at night by cleaning crew. Instead, we based average bin fullness on observances by staff that bin was 80-100% full at each pickup, making average fullness 90%.

Per recommendation by Xico Manarolla, Program Officer, ICLEI USA, we assumed that waste tonnage is directly proportional to the number of fulltime employees. We calculated the amount of waste generated from county operations for 2006 based on 2009 solid waste tonnages and a 2.3% reduction in full time employees between 2006 and 2009.

Streetlights and Traffic Signals

Metered usage records were unavailable for most streetlights. We calculated annual electricity consumption for unmetered lights using the following equation:

Annual use=Bulb wattage*11 hours/days*365 days/year

This assumes that each streetlight is on 11 hours per day (based on LGOP estimation that streetlights operate between 10-13 hours per day source: LGOP section 6.2.2). Puget Sound Electricity bills unmetered and metered lights at varying flat rates as an aggregate monthly cost. Because we could not establish costs associated with individual lights, we entered the costs of streetlights into CACP as one aggregate record.

Streetlight inventory and installed wattages provided by Given Kutz, Traffic Engineering, Skagit County Public Works, 360.336.9400 x 3149, givenk@co.skagit.wa.us.

For metered streetlights, electricity usage data were provided by Ric Boge, Resource Conservation Manager, Skagit Council of Governments, 360-416-7871, ricboge@scog.net.

Propane

We determined propane usage from county operations from invoices in the County's Cayenta Financial Management application from propane suppliers. Skagit County purchased propane from Skagit Farmer's Supply and AmeriGas in 2006. We assumed that all propane purchased in 2006 was consumed in 2006. All propane costs include taxes.

Electricity

We obtained information on electricity use from Ric Boge, Resource Conservation Manager, Skagit Council of Governments, via the Utility Manager software from data provided by Puget Sound Energy. All electricity costs include taxes.

Natural Gas

We obtained information on natural gas use from Ric Boge, Resource Conservation Manager, Skagit Council of Governments, via the Utility Manager software from data provided by Cascade Natural Gas. All natural gas costs include taxes.

Fugitive Emissions

We calculated fugitive emissions from mobile sources by assuming all passenger vehicles (269 total) were air-conditioned and used HFC-134A as coolant. We also assumed that the remaining non-passenger vehicles were not

air-conditioned and therefore did not contribute greenhouse gases from fugitive emissions. We calculated by the alternate method (LGOP 7.4.2) using default emissions factors (high end of capacity per LGOP recommendations). This likely resulted in an overestimation of greenhouse gas emissions from vehicle refrigerants. However, these emissions are such a small portion of total emissions that this will have little impact on the inventory as a whole. See Figure 18 and Figure 19 for equations used to calculate fugitive emissions.

Vehicle Departments

Records of vehicle use by department were provided by Jim Martin, Accounting Tech III, Skagit County Public Works, jimm@co.skagit.wa.us, 360-336-9400, ext 3166.

Methane Recovery Factor

We assumed the methane recovery factor at Roosevelt Landfill to be 80% based on the Anacortes Greenhouse Gas Inventory & Proposed Climate Action Plan, 2006, p. 16.

Stationary Fugitive Emissions

Stationary fugitive emissions were calculated using by the alternate method (LGOP 7.4.2). Leakage factor was assumed to be 20% per year per recommendation by Justus Stewart, Program Associate, ICLEI USA, justus.stewart@iclei.org.

CO_2e emissions = equipment full charge x 0.20 x GWP

Global Warming Potential

Halotron (HFC-1236) GWP = 76
Halon 1221 GWP = 1300
R-22 GWP = 1700
Source: EPA Ozone-Depleting Substances List.

We included no emissions from ABC Drychem fire extinguishers because the charged chemical (monoammonium phosphate) has negligible Global Warming Potential.

Fire equipment inventory provided by Kelley Kendrick, Administrative/Small Works Coordinator, Skagit County Facility Management, 360-419-3481, kelleyrk@co.skagit.wa.us.

Estimates of R-22 coolant in inventory in 2006 provided by Ross Bailey, Facilities Operations Supervisor, Skagit County, rossb@co.skagit.wa.us, 336-9470.

Inman Landfill Emissions

We calculated CH_4 and CO_2 emissions from Inman Landfill using the EPA LandGEM calculator and waste volume records from the Inman Landfill Annual Report. We assumed that the efficiency of Inman's methane flare was 90% based on average methane flare efficiencies (source: Criteria set out in the Clean Development Mechanism tool to determine project emissions from flaring gases containing). We also assumed that ~2% of CO_2 present in the landfill gas stream was emitted by the flare (source: Environment Agency Guidance on Landfill Gas Flaring Version 2.1).

Forecasting and Backcasting

The CACP Government Analysis Module does not yet contain a forecasting calculator. We based government emissions forecast on the growth rate of number of fulltime employees, generally considered to be the best forecast indicator for emissions from government operations. Data on full time employees from 1995-2009 was provided by Sheron Curtin, Skagit County Human Resources, sheronc@co.skagit.wa.us, 360-366-9300 x5479. We calculated the rate of change in number of fulltime-equivalent (FTE) employees as follows:

annual % Δ FTE = ∑(% Δ FTE from years 1996-2009) ÷ 13

The annual rate of change in number of full time employees is 2.09%; we therefore calculated emissions forecasts and backcasts the assumption that emissions increased or decreased by 2.06% per year from 2006 levels.

We projected future emissions using the following equation, where t is the projected year:

$Emissions_t$ = 2006 emissions (tons CO2e) x $(1.0206^{(t-2006)})$

We calculate emissions from the year 2000 using:

$Emissions_{2000}$ = 2006 emissions (tons CO2e) x $((1-2.06)^{(6)})$

Community Analysis

Emissions Coefficients

EPA eGrid 2006 emissions coefficients were not available yet, so used most recent year (2005) per recommendation by Xico Manarolla, ICLEI Program Officer, ICLEI USA, xico.manarolla@iclei.org

Emissions coefficients can be found in the 2008 LGOP, Appendix G. Emissions coefficients were not available beyond 2005 so 2005 coefficients were used in all community forecasts.

Propane

Propane usage data were not available at the county scale, so we estimated from statewide propane data. We assumed the commercial and industrial sectors consumed 6.7% of the statewide total in their respective sectors. This estimate is based on the assumption that commercial and

industrial customers in Skagit County consume the same proportion of total statewide propane and residential customers do. Total residential propane usage in Skagit County estimated County Residential Propane Model (CRPM) version 3.0. Total statewide propane usage was estimated using the Propane Database and Forecasting Model (PDFM) version 6.0.

We estimated estimate propane usage as follows:

2006 % of state total = Skagit County residential consumption statewide residential consumption

2006 Skagit County industrial use = .067 x statewide commercial consumption

2006 Skagit County industrial use = .067 x statewide commercial consumption

Natural Gas

Total natural gas consumption for all sectors was provided by Paul Schmidt, Senior Rate Analyst, Cascade Natural Gas Corporation, paul.schmidt@cngc.com, (206) 381-6825.

Electricity

Total electricity consumed in each sector provided by Jessica Geenen, Green Community Manager, Puget Sound Energy, 425-457-5884 or jessica.geenen@pse.com.

Commercial and Industrial Employees

The number of employees and establishments was taken from the Washington State Employment Security Department Covered Employment by Industry Annual Report 2006.

The industrial sector consists of the agriculture, forestry, fishing and hunting, mining, utilities, construction, and manufacturing fields; the commercial sector includes all other fields.

Other Community Emissions

Emissions data from large producers in the county were provided by the Northwest Clean Air Agency's 2006 Emissions Inventory available at www.nwcleanair.org.

Community Growth Rates

Transportation

Estimates of 2008 total AVMT in the community were generated by John Everett using the Highway Performance Monitoring System. We assumed that Skagit County AVMT decreased at the statewide rate of 1.65% annually. John Everett, Senior Transportation Planner, Skagit Council of Governments, 360.416.6678, JohnEverett@scog.net. Source: WA State Greenhouse Gas Reference Projections 1990-2020, table C3, available at www.ecy.wa.gov/climatechange.

Households

The household growth rate was calculated using the trended household predictions Washington State Office of Financial Management 2002 Household Projections available at ofm.wa.gov/pop/illustrative/illustrativehhppoh.xls.

Forecasts beyond 2010 were not yet available, so emissions forecasts assume that the 2005-2010 growth rate continued to 2050.

We calculated annual growth rates as follows:

2000-2005 growth= [(Predicted households 2005-predicted households 2000)/predicted households 2000]/5 years

2005-2010 growth= [(Predicted households 2010-predicted households 2005)/predicted households 2000]/5 years

Electricity

We assumed that Skagit County electricity consumption in all sectors would increase at the same rate as the rest of the state. It was also assumed that 2010-2020 growth rates would continue through 2050. We assumed that the 2005-2010 growth rates were the same as the 2000-2005 growth rates. The following growth rates were used in forecasting:

Electricity projected growth rates	2005-2010	2010-2020
Residential	0.90%	0.90%
Commercial	2.30%	2.30%
Industrial	0.90%	0.90%

Source: Washington CAT GHG Inventory and Reference Case Projections, Table A4.

Natural Gas

We assumed that Skagit County natural gas consumption in all sectors would increase at the same rate as the rest of the state. We also assumed that 2010-2020 growth rates would continue through 2050, and used the following growth rates:

Natural Gas Projected Growth Rates	1990-2004	2005-2010	2010-2015	2015-2020
Residential	4.00%	1.90%	1.30%	1.00%
Commercial	1.70%	-0.40%	1.70%	1.00%
Industrial	-1.10%	1.50%	2.10%	2.40%

Source: Washington CAT GHG Inventory and Reference Case Projections, Table B2.

Propane (Liquefied Petroleum Gas)

We assumed the Skagit County propane consumption in all sectors would increase at the same rates at the rest of the United States. We also assumed that the 2007-2030 growth rates would continue though 2050, and used the following growth rates:

Liquefied Petroleum Gases (propane)	2006	2007-2030
Residential	0.49	0.2%
Commercial	0.09	0.3%
Industrial	2.33	-1.5%

Source: Report #:DOE/EIA-0383(2009) Table 2.

Solid Waste

We assumed that 2002-2020 growth rates would continue through 2050, and used the following growth rates in forecasting:

Year	Population	Waste Generated (TYP)	Recycled (TPY)	Additional Diversion (TPY)	Amount Disposed (TPY)
2002	107,900	194,400	62,200	42,300	89,900
2003	110,200	203,000	65,000	44,200	93,400
2004	112,400	207,100	66,300	45,100	95,700
2005	114,600	211,200	67,600	46,000	97,600
2006	116,800	215,200	68,900	46,800	99,500
2007	119,000	219,200	70,100	47,700	101,400
2008	121,200	223,300	71,500	48,600	103,200
2009	123,300	227,100	72,700	49,400	105,000
2010	125,500	231,200	74,000	50,300	106,900
2015	137,700	253,700	81,200	55,200	117,300
2020	150,500	277,100	88,700	60,300	128,100

Source: Skagit County Comprehensive Solid Waste Management Plan, Table 2.6.

Commercial and Industrial Employment and Establishments

We assumed that employment in all sectors would increase or decrease at the projected statewide rate through 2050:

Projected employment growth rates	2007-2012	2012-2017
All Industries	0.50%	1.50%

Source: Washington Office of Financial Management

We assumed that changes in the number of establishments would continue to increase or decrease at the 2000-2006 rate, and used the following rates in forecasting:

Sector	Number of Establishments	Annual % Change	Total Employees	Annual % Change
Industrial				
2000	749	3.82%	7017	6.28%
2006	1022		12519	
Commercial				
2000	2784	0.74%	35619	-2.00%
2006	2936		31240	

Data source: Washington Workplace Explorer

Equation 7.13 | **Estimating Emissions of Each Type of Refrigerant**

For each type of refrigerant:

Total Annual Emissions = $[(C_N \times k) + (C \times x \times T) + (C_D \times y \times (1 - z))] \div 1{,}000$

(metric tons) (kg) (%) (kg) (%) (years) (kg) (%) (%) (kg/metric ton)

Where:

C_N = quantity of refrigerant charged into the new equipment [1]

C = total full charge (capacity) of the equipment

T = time in years equipment was in use (e.g., 0.5 if used only during half the year and then disposed)

C_D = total full charge (capacity) of equipment being disposed of [2]

k = installation emission factor [1]

x = operating emission factor

y = refrigerant remaining at disposal [2]

z = recovery efficiency [2]

[1] Omitted if no equipment was installed during the reporting year or the installed equipment was pre-charged by the manufacturer

[2] Omitted if no equipment was disposed of during the reporting year

Figure 18. LGOP equation 7.13 used to calculate fugitive emissions.

Table 7.2 Default Emissions for Mobile Refrigeration / Air Conditioning Equipment

Type of Equipment	Capacity (kg)	Installation Emission Factor k (% of capacity)	Operating Emission Factor x (% of capacity / year)	Refrigerant Remaining at Disposal y (% of capacity)	Recovery Efficiency z (% of remaining)
Transport Refrigeration	3 - 8	1 %	50 %	50 %	70 %
Mobile Air Conditioning	0.5 – 1.5	0.5 %	20 %	50 %	50 %

Source: IPCC, *Guidelines for National Greenhouse Gas Inventories* (2006), Volume 3: Industrial Processes and Product Use, Table 7.9.

Note: Emission factors above are the most conservative of the range provided by the IPCC. The ranges in capacity are provided for reference. You should use the actual capacity of your equipment. If you do not know your actual capacity, you should use the high end of the range provided (e.g., use 2,000 kg for chillers).

Figure 19. Default emissions factor for mobile refrigeration and air conditioning equipment.

Vehicles by Department

Department	Est. 2006 VMT	Number of Vehicles	Vehicles Assigned to Department
ARIS	33051	4	149, 184, 1005, 1023
Assessor	39798	6	145, 147, 152, 880, 2519, 8016
Commissioners	---	1	112
Coroner	12406	3	117, 191, 192
Courthouse Pool	535744	14	101, 102, 159, 162, 189, 1001, 1007, 1008, 1012, 1013, 1014, 1015, 1019, 1022
Development and Review	---	4	233, 239, 1595, 2017
Emergency Management	27521	2	2521, 2522
ER&R Administration	6501	2	115, 117
ER&R Shop	42903	7	662, 663, 212, 281, 286, 296, 211
Facilities	3641	1	213
Fairgrounds	6803	7	423, 112, 272, 294, 295, 703, 723
Ferry	18662	3	232, 236, 280
Fire	57227	5	1501, 1504, 2033, 681, 2032
Health	58281	6	148, 1011, 1016, 1021, 2009, 2034
Info Services	8413	2	164, 168
Mapping	1311	1	2010
Operations	42083	98	247, 311, 313, 314, 330, 335, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 386, 392, 393, 394, 400, 401, 430, 431, 432, 433, 434, 435, 436, 440, 441, 442, 450, 461, 462, 463, 464, 465, 470, 492, 497, 499, 506,513, 514, 517, 518, 519, 521, 525, 526, 533, 535, 680, 683, 698, 699, 710,2024, 2026, 201, 202, 203, 204, 209, 210, 233, 240, 241, 242, 244, 245, 246, 252, 273, 284, 288, 297, 299, 303, 1503, 2001, 2002, 2003, 2011, 2012, 2015, 2016, 2021, 2022, 2023,2028, 2029, 2030, 2035, 2036, 2037,2525
Parks	176568	18	422, 429, 100, 156, 170, 190, 206, 285, 292, 293, 304, 306, 721, 725, 2006, 2007, 2031, 2038
Parks-H Miller Steelhead	---	5	425, 2020, 713, 719, 722
Parks-Skagit Valley Playfields	---	7	420, 294, 700, 720, 724, 701, 717
Planning and Permitting	132981	10	143, 151, 234, 1004, 1006, 1010, 1017, 1018, 1024, 2004
Projects	20304	5	117, 157, 225, 231, 2524
Prosecutor	8481	1	105
Public Works	48924	8	237, 1590 2013, 2027, 2520, 2523
Records	3220	1	258
Senior Services	17576	2	186, 1009
Sheriff-Admin	21294	3	8020, 8064, 8079
Sheriff-Animal Control	20830	1	8024
Sheriff-Investigation	40555	8	891, 893, 8021, 8023, 8058, 8059, 8078, 8094
Sheriff-Jail	11228	5	832, 855, 885, 8007, 8022
Sheriff-Juvenile Probation	9780	3	187, 831, 894
Sheriff-La Conner	63006	5	8025, 8026, 8027, 8031, 8050
Sheriff-Patrol	802724	51	772, 803, 870, 8028, 8029, 8032, 8033, 8034, 8035, 8036, 8037, 8038, 8039, 8043, 8044, 8045, 8046, 8047, 8048, 8051, 8053, 8054, 8055, 8056, 8057, 8062, 8063, 8065, 8066, 8067, 8068, 8069, 8070, 8071, 8072, 8073, 8074, 8075, 8076, 8080, 8081, 8082, 8083, 8084, 8086, 8087, 8088, 8089, 8090, 8091, 8093
Sheriff-Traffic	103876	8	771, 8040, 8041, 8049, 8060, 8061, 8077, 8092
Solid Waste	53946	17	472, 473, 474, 496, 512, 754, 756, 757, 758, 193, 214, 243, 249, 305, 1002, 752, 755
Surface Water	26591	3	1502, 1555, 2014
Weed Control	9583	2	248, 2453
TOTAL	**246,5813**	**329**	

Appendix F: Purchasing Resources

Policy Development

Skagit County will find the information necessary to begin its Green Purchasing policy development process in the following references and resources:

- **ICLEI Resource Guide for Environmentally Preferable Purchasing 2009** is available through Skagit Count's ICLEI membership and accessible through a secure website. The guide focuses on overcoming obstacles to the incorporation of EPP practices into municipal procurement and highlights important considerations that will assist in the successful creation of a municipal EPP program.
- **Environmental Purchasing Policies 101**, produced by the Center for a New American Dream, is an overview of 80 environmentally preferable purchasing policies from across North America. The report includes extensive examples of the actual policy language others are using to outline their environmental purchasing objectives. Important policy components are discussed in this report. www.gogreencommunities.org/Library/PDF/CommEnvironmentCoop.pdf
- **King County's Environmental Purchasing Program** is widely considered to be one of the best in the country. They offer sample policy and contract language to help other agencies to purchase recycled and other environmentally-preferable products whenever practicable. www.kingcounty.gov/operations/procurement/Services/Environmental_Purchasing/Policies.aspx
- **The Responsible Purchasing Network** is an international network of buyers dedicated to socially responsible and environmentally sustainable purchasing. Membership programs and consulting services provide institutional purchasers with cutting edge procurement tools and resources designed to save money, conserve resources, reduce waste, and improve efficiency. The Purchasing Guides, available online to members only, may be of particular interest to Skagit County. www.responsiblepurchasing.org
- **U.S. Communities' Going Green Program** offers a number of resources to help agencies move toward a green purchasing program, from checklists and sample policies, to calculators and helpful information. www.gogreencommunities.org/Resources/Default.aspx

Pesticides Affected by the Court Order

As a result of the decision in *Washington Toxics Coalition, et al., v. EPA*, the following pesticides require buffer zones. For more information about these pesticides, please visit www.pesticideinfo.org.

Insecticides		Herbicides	Fungicides & Fumigants
azinphos-methyl	fenamiphos	bensulide	chlorothalonil
captan	fenbutatin-oxide lindane	bromoxynil	1,3-dichloropropene
carbaryl	malathion	2,4-D	fenbutatin-ox
carbofuran	methidathion	diuron	
chlorpyrifos	methomyl	metolachlor	
coumaphos	methyl parathion	metrobuzin	
diazinon	naled	oxyflurafen	
diflubenzuron	oxyflurafen	pendimethalin	
dimethoate	phorate	prometryn	
disulfoton	propargite	tebuthiuron	
ethoprop		triclopyr BEE	
		trifluralin	