
2012 Annual Report of King County's **Climate Change, Energy, Green Building and Environmental Purchasing** Programs





Contents

Introduction	2
Goal Area 1: Transportation and Land Use	6
Goal Area 2: Energy and Green Building	16
Goal Area 3: Forests and Agriculture	24
Goal Area 4: Consumption and Materials Management	30
Goal Area 5: Preparing for Climate Change Impacts.	38
Appendix	44



Introduction

INTRODUCTION

King County places a high priority on reducing the environmental footprint of County operations and supporting efforts in the broader community to improve environmental sustainability. The county is also committed to monitoring environmental outcomes relative to established goals and targets, being transparent about results, and using this information to inform course corrections.

King County code (KCC 18.50.010) requires annual reporting on the County's climate change, energy, green building and environmental purchasing programs. This report is intended to satisfy this reporting requirement and provide performance information relative to the goals and targets and related challenges, opportunities and recommendations.

The County's over arching climate goal is to partner with its residents, businesses, local governments and other partners to reduce countywide GHG emissions by at least 80 percent below 2007 levels by 2050. In 2012, the King County Executive and King County Council collaborated to develop and adopt a Strategic Climate Action Plan (SCAP). The SCAP synthesizes and focuses King County's most critical goals, objectives, and strategies to reduce greenhouse gas (GHG) emissions and prepare for the impacts of climate change.

The SCAP reflects King County's long standing commitment to environmental sustainability and economic prosperity. It builds upon diverse climate change and sustainability related commitments and is organized around five goal areas: transportation and land use, energy and green building, forests and agriculture, consumption and materials management, and preparing for climate change impacts.

Beginning with this 2012 report, progress is being reported using the framework of the five major goal areas for the SCAP, and summarizing information by County operations and service to the broader community. Using this framework helps organize reporting on these diverse but related topics.

2012 PERFORMANCE SNAPSHOT – HOW ARE WE DOING?

- Overarching GHG Emissions Reduction Targets¹:** At the community scale, some critical sources of GHG emissions – for example emissions associated with transportation and building energy use – have started to decline on a per person basis. However, total GHG emissions in King County continue to rise. For County operations, total annual GHG emissions related to energy (fossil fuels and electricity) have decreased 3.9 percent between 2007 and 2012. During this period, facility related GHG emissions have fallen by 17.7 percent; however, GHG emissions from County vehicles have increased by approximately 2.7 percent. While we are making progress in some areas, this inventory information underscores the need to redouble efforts to meet the County's ambitious goals. At the same time, updated GHG emissions inventory information on the role of production and consumption of goods and services is pointing to additional actions we can take to reduce emissions. Recent partnerships, like the King County-Cities Climate Collaboration and Sustainable Cities Roundtable, are helping to build capacity for communities throughout King County to reduce GHG emissions.
- Transportation and Land Use:** In 2012, King County Metro Transit had more than 115 million annual bus boardings, and transit ridership on all public transportation services in King County hit an all-time record high of 143.3 million boardings. With respect to transit vehicle energy use, fuel use by passenger capacity has decreased by more than 15 percent. However, Metro is facing a \$75 million annual budget shortfall and without new revenue will need to cut approximately 17 percent of its transit system (600,000 service hours) starting in the fall of 2014.
- Energy and Green Building:** The 2012 year was a milestone year for King County's energy and green building efforts. By year end, about 53 percent (more than 2 trillion BTUs) of King County government's total energy requirements were met by generating or using renewable energy. This accomplishment exceeds the County's renewable energy target. At the same time, King County achieved an 8.1 percent normalized energy use reduction for facilities between 2007 and 2012, just short of the 2012 target of a 10 percent reduction. The county, in partnership with cities and the building community, advanced work on regional green building codes. County departments continued to strengthen application of green building requirements across a wide range of capital projects.
- Forests and Agriculture:** 2012 was a year of continued progress in preserving lands with Open Space and Forest Land designations and forest and conservation easements, as well as in increasing King County Parks' lands for which Forest Stewardship Plans have been developed and are being implemented. As of the writing of this report, King County has reached a tentative agreement to permanently protect an additional 43,000 acres of working forest in southeast King County, surpassing its goal of protecting 200,000 acres. In a 2012 report on farmland protection around Puget Sound, the American Farmland Trust rated King County's Agricultural Program as "outstanding" but also cited a broad need to do more to protect disappearing farms.
- Consumption and Materials Management:** During 2012 King County residents and businesses continued to recycle in significant amounts and reduce overall waste production, meeting or exceeding established targets. The new Food: Too Good to Waste outreach program has significant potential to push progress towards the County's longer term recycling targets. Construction debris recycling also continues at a high-rate both on private and King County owned projects. County staff are doing well at reducing paper use but there will need to be a bigger push to completely switchover to the purchase of 100 percent recycled content copy paper.

1 This report focuses on reporting progress related to the five goal areas of the SCAP. For additional details about progress towards King County's community level and operations related targets, please see King County's Greenhouse Gas Emissions Inventories (community level) at <http://www.kingcounty.gov/environment/climate/climate-change-resources/emissions-inventories.aspx> and the KingStat Climate Protection webpage (government operations) at <http://your.kingcounty.gov/dnpr/measures/performance/en-climate-protection.aspx>.

- **Preparing for Climate Change Impacts:** The County has developed programs and projects to help reduce the impacts of floods, support farm and forest owner action to address climate change impacts, and begin to prepare the region for the effects of climate change on stormwater, public health, and emergency response. However, much work remains to tackle the significant impacts of climate change in King County. While innovative partnerships are helping support some of the County's climate change preparedness work, the magnitude of climate change impacts facing the County should drive additional focus on climate change preparedness.

These are just a few of the highlights provided in this report. The "Strategic Climate Action Plan – 2012 Progress Report" snapshot on the next page provides a visual overview of progress towards the five goal areas of the SCAP, followed by a more detailed assessment for each goal area. We hope you will explore the rich detail it provides of where the County is at related to its environmental sustainability and climate change related commitments.

STRATEGIC CLIMATE ACTION PLAN 2012 PROGRESS REPORT

Key to table:

Meeting or approaching goal

Opportunity to improve

Significant work necessary

Goal Area	County Services – Goal	County Operations - Goal
Overarching Climate Change Targets	King County shall partner with its residents, businesses, local governments and other partners to reduce countywide greenhouse-gas emissions by at least 80 percent below 2007 levels by 2050.	King County shall reduce total greenhouse-gas emissions from government operations, compared to a 2007 baseline, by at least 15 percent by 2015, 25 percent by 2020, and 50 percent by 2030
Transportation and Land Use	King County will reduce the need for driving and provide and encourage the use of sustainable transportation choices such as public transit, alternative technology vehicles, ridesharing, walking and bicycling	King County will increase the efficiency of its vehicle fleets and minimize their greenhouse-gas emissions.
Energy	King County will help reduce energy use by its residents, business and other partners and will support development of increasing amounts of local renewable energy.	King County will reduce energy used in government operations.
Forests and Agriculture	King County will support healthy, productive farms and privately owned forests that maximize biological carbon storage, promote public health, and are resilient to changing climate conditions.	King County will acquire, manage and restore its parks and other natural lands in ways that maximize biological carbon storage and are resilient to changing climate conditions.
Consumption and Materials Management	King County will encourage and support behaviors, purchasing, and waste management strategies that account for and minimize the life-cycle impacts of consumption and materials.	King County will minimize operational resource use, maximize reuse and recycling, and choose products and services that have low environmental impacts.
Preparing for Climate Change Impacts	King County will work with local cities and other partners to prepare for the effects of climate change on the environment, human health and the economy.	King County will plan and prepare for the likely impacts of climate change on County-owned facilities, infrastructure and natural resources.

* This progress report is a simplified assessment as it relates to the goals of King County's 2012 Strategic Climate Action Plan. While it provides a general indication of progress, see each chapter of the 2012 Sustainability Report for performance details, accomplishments, and related challenges and opportunities.



Goal Area 1: Transportation and Land Use

BACKGROUND

Transportation accounts for nearly half of all greenhouse gas (GHG) emissions produced in King County. Managing growth and providing transportation options in our region can increase the use of public transportation, reduce GHG emissions from single occupancy vehicle usage and traffic congestion, and create more walkable, transit-supportive urban communities. In 2010, the Puget Sound Regional Council (PSRC) laid out regional transportation and environmental goals in the Transportation 2040 Plan. To meet the goals of the Transportation 2040 Plan public transportation must serve the travel needs of approximately twice as many people in 2040 as in 2010. To serve that many additional people, the region needs to provide a wide range of transportation options including bus, vanpool, carpool, carshare, bikeshare, bicycling and walking.

King County government influences transportation-related GHG emissions by providing public transit, vanpool and ridesharing services and supporting walking and bicycling alternatives – choices that eliminate or shorten private vehicle trips, mitigate traffic congestion, and support efficient land use. King County's Metro Transit is the region's largest transit system with over 115 million annual bus boardings on more than 210 routes. The County also has an extensive Regional Trails System with over 175 miles of trails which provides recreational and transportation options. King County's growth management and land-use regulations encourage efficient land-use patterns which provide opportunities for walking and bicycling. King County also operates an extensive vehicle fleet that supports government operations. The County is continually working to reduce GHG emissions and is phasing in more fuel efficient and alternative fueled vehicles. King County's Strategic Plan (KCSP) and Strategic Climate Action Plan (SCAP) set the direction for our actions on climate change. These plans include strategies to focus transportation resources to support density and growth and to enhance bicycle and pedestrian infrastructure as alternative transportation options. Progress toward these strategies will also serve the County's Strategic Climate Action Plan, transportation and land use goals.

2012 saw progress toward the long term goals of the SCAP and County Strategic Plan in a number of areas. Metro ridership has nearly recovered to pre-recession levels with the agency's second highest annual ridership ever at 115 million boardings. Overall ridership in the county, including Sound Transit and City of Seattle services, set a record with over 143 million rides on all public transportation services. Ridership growth is attributed to a combination of growing employment, higher gas prices, new tolls on State Route 520, and service improvements such as RapidRide. Metro has also become more efficient through efforts such as service restructures and increased use of ORCA cards. Assuming continuation of these trends, Metro expects ridership to climb in 2013, though this increase will be offset somewhat by the recent cessation of the downtown Seattle Ride Free Area. In addition, other programs and actions such as additions of vans and electric cars to the Commuter Van Program and bike facility investments will all support a continued decrease in the drive-alone rate. Meanwhile, significant advancements in fuel efficiency and switches to new technologies are beginning to drive down net fuel consumption for King County buses, fleets, and commuters.

Metro's continued ridership growth is dependent upon securing stable funding. Since 2008, Metro has had a revenue shortage caused by the weak economy and heavy reliance on sales tax. Metro has worked to close the budget gap and preserve service but after temporary funding runs out in mid-2014, Metro will once again be facing deep service cuts. Without a new, stable funding source, Metro is facing the need to cut up to 17 percent of services, starting in fall 2014.

COUNTY SERVICES

Climate Action Plan Goal S.1

King County will reduce the need for driving and provide and encourage the use of sustainable transportation choices such as public transit, alternative technology vehicles, ridesharing, walking and bicycling.

Performance Measure 1

Annual passenger boardings on Metro Transit services

Metro measures its success in meeting the goals of PSRC's Transportation 2040 plan and King County's climate and sustainability goals by the following target, which identifies three milestones to track growth in annual boardings between 2010 and 2040.

Target 1:

Consistent with the PSRC's Transportation 2040 regional transportation plan's projection that boardings on transit services in the region will double by 2040, King County

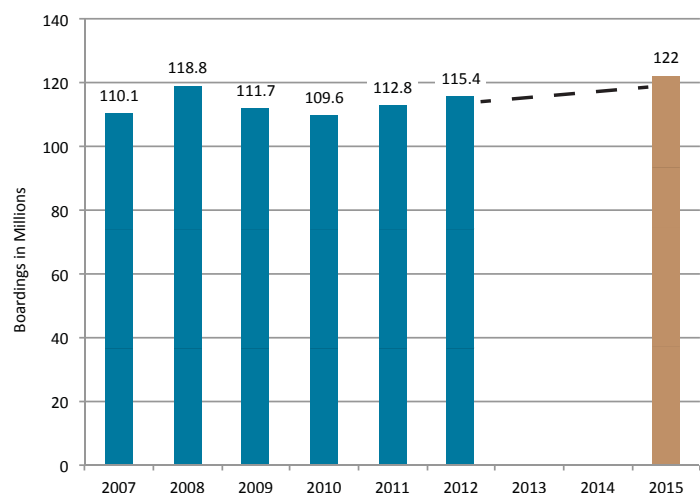
Metro will strive to achieve the following targets:

- 122 million passenger boardings by 2015
- 137 million passenger boardings by 2020
- 214 million passenger boardings by 2040

2012 Status:

Ridership on all public transportation services in King County is on the rise.. Metro's 2012 ridership, which accounted for 80 percent of all boardings in King County, was up 2.3 percent to 115.4 million. Ridership on all services in King County including Sound Transit, Seattle services and passenger-only ferries set a record at 143.3 million boardings—a 3.3 percent increase over 2011. If the current ridership trends continue,

Annual Passenger Boardings



it appears that Metro is on track to meet the 2015 goal for annual passenger boardings. However, Metro's ability to meet its ridership goal is dependent upon securing funding to avoid service cuts in 2014. Without additional funding, Metro will be forced to cut up to 17 percent of its system – 600,000 hours.

Performance Measure 2:

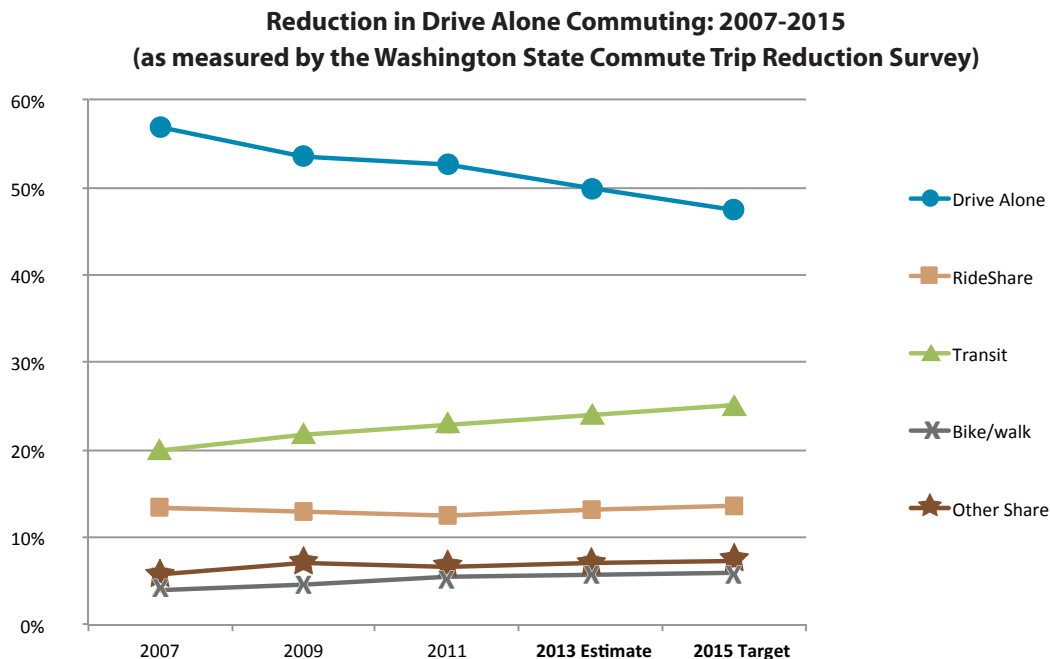
Percentage of commuters in King County using different transportation modes including driving alone, transit, biking, and walking, as measured by the Washington State Commute Trip Reduction Survey

Target 2:

Achieve a reduction in the drive-alone rate of 10 percent below 2011 levels by 2015; the Washington State Commute Trip Reduction Board will define additional targets for 2020 during the 2014 Washington legislative session.²

2012 Status:

King County worksites are making significant progress towards this target. Between 2007 and 2011, there has been a seven percent reduction in the drive-alone rate. During the same time period, the transit mode share has increased by nearly three percent to almost a quarter of trips.



2012 Key Accomplishments

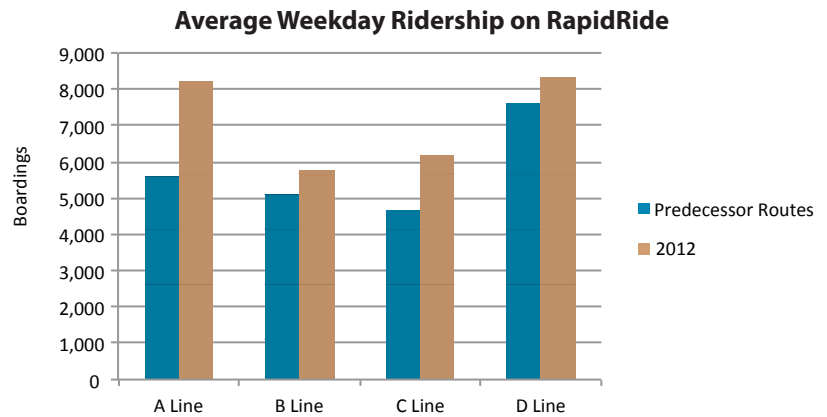
Bus Ridership in Regional Growth Centers

Metro bus service focuses on urban centers and exemplifies how transit and efficient land use are mutually reinforcing. In spring 2012, Metro provided 10,712 bus trips each weekday to, from, through, or between regional growth centers or manufacturing/industrial centers (as designated in the region's growth plan). This made up 96 percent of Metro's daily directly-operated, non-custom, scheduled trips—so virtually all of Metro's transit trips serve one of these centers.

RapidRide

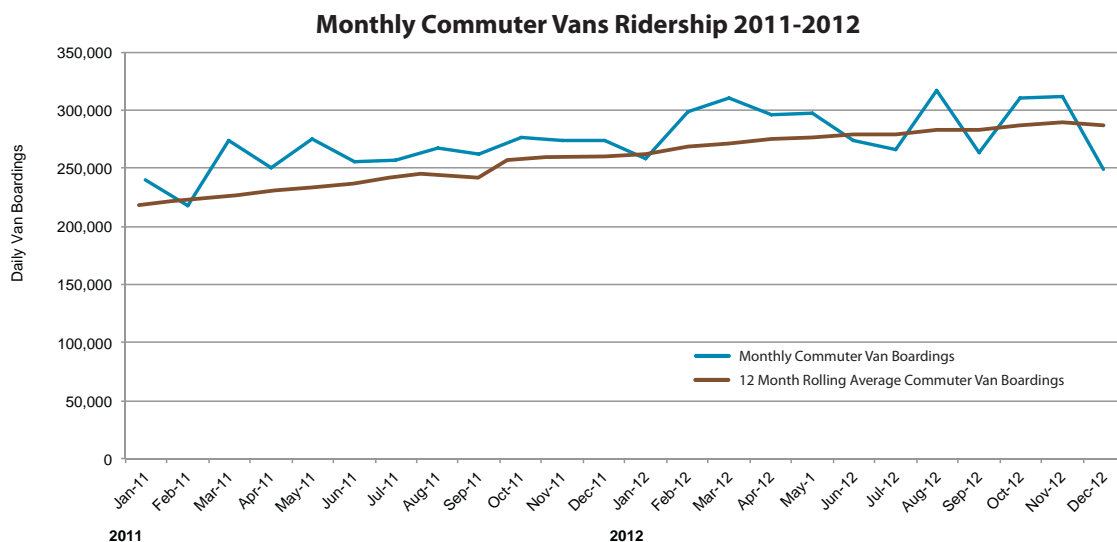
The C and D lines became the latest additions to the RapidRide network when they launched in fall of 2012. With four of the six RapidRide lines now in service, as of December 2012, combined weekday ridership on these corridors

has increased by 24 percent, with the individual lines ranging from a nine percent - 47 percent increase in comparison to the bus routes that RapidRide replaced. Relative to system-wide growth of 2.3 percent in 2012, this ridership growth is attributable to RapidRide's high service frequency, increased reliability, enhanced passenger amenities at the stations and on the buses, and network connection improvements.



Commuter Van Program

Metro's Commuter Van Program is the largest publicly owned and operated rideshare commuter van program in the country. In 2012, the program provided more than 3.5 million passenger trips, reduced more than 20 thousand metric tons of carbon dioxide (CO₂) and eliminated almost 50 million vehicle miles traveled from Puget Sound roads— significant traffic and GHG emission reduction achievements. Between 2011 and 2012, the number of vans in service grew four percent to 1,283 and passenger trips increased 11 percent, reducing greenhouse gas emissions by 9 percent.



In addition 20 new all-electric Nissan Leafs were added to the metropool. These vehicles save an additional 800 gallons of gas per month over traditional gas-powered vanpools and eliminate 213 tons of tailpipe emissions.

Commute Trip Reduction

The Commute Trip Reduction (CTR) program continues to increase transit's mode share and is a key element of the region's transportation strategy. Metro and local partners have a strong outreach effort and partnership with major institutions, cities, employers, and other organizations to encourage alternatives



New all-electric, emission-free Metropool Nissan LEAF

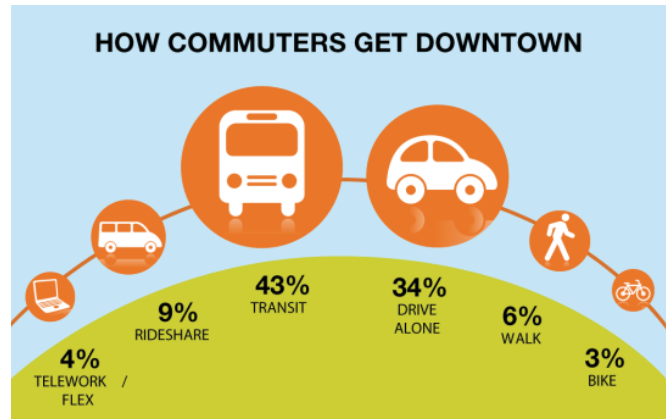
to driving alone to work. Employer transit benefit programs have become ever more important to Metro's business model: over 50 percent of Metro's fare revenue comes directly from employers. Through these efforts, employees at the 521 CTR-affected worksites (regulated by the state's CTR law) in King County made 2.2 million fewer solo commute trips in 2011 than in 2007 (a 7.1 percent reduction) and used 3.6 million fewer gallons of gas annually. (2012 CTR data was not available at the time of publication of this report.)

Commute Seattle

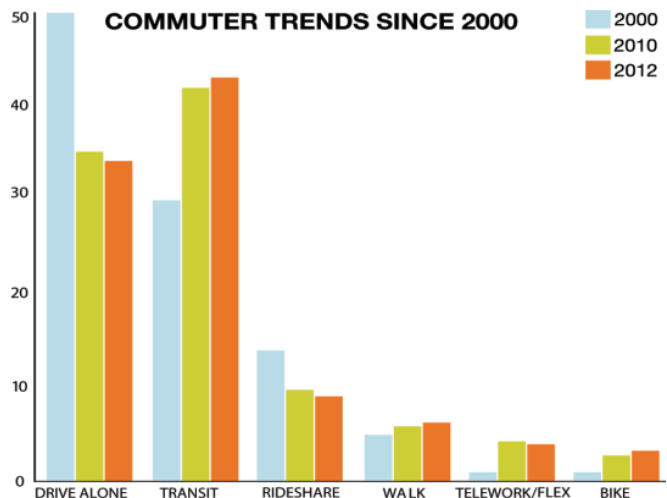
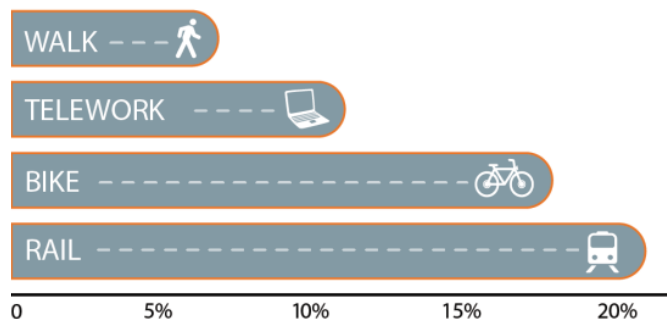
Commute Seattle, a partnership between King County, the City of Seattle and the Downtown Seattle Association, tracks commuting trends in Seattle's city center. 2012 witnessed an all-time low for drive-alone commuting (34 percent), and increases in use of transit (43 percent), biking and walking (nine percent), and telework (four percent). These improvements were attributed to a variety of factors including growing Link light rail ridership, increased South Lake Union Streetcar service, King County Metro's enhanced bus network productivity, and Seattle's bike facility investments such as the Dexter Avenue buffered bike lanes.

CTR and Regional Growth Centers

CTR worksites located within the 17 Regional Growth Centers in King County consistently outperformed sites located outside the Regional Growth Centers. While worksites outside Regional Growth Centers in King County made progress and did see reductions in both their drive alone rate and vehicle miles traveled per employee, sites within the Regional Growth Centers actually exceeded both CTR reduction goals. Transit ridership at the CTR sites in the Regional Growth Centers is significantly higher than at sites outside the Regional Growth Centers. Those sites in Regional Growth Centers posted 31 percent transit modeshare as compared to 10 percent at sites outside the Regional Growth Centers.



FASTEST GROWING COMMUTE MODES 2010 to 2012



Source: Commute Seattle website:
www.commuteseattle.com/2012survey

CTR Performance 2007-2011 (Goal: 10 percent reduction in Drive Alone Rate)

Performance of CTR worksites in 2011-2012 Regional Growth Centers vs. those not in Centers.		In RGC	Not in RGC
All King County worksites	Drive alone rate	40.2%	64.2%
	% change	-10.8%	-3.3%
City of Bellevue	Drive alone rate	54.7%	70.3%
	% change	-2.8%	+5.6%
City of SeaTac	Drive alone rate	53.7%	72.6%
	% change	-22.0%	-13.5%

In Motion

In 2012 Metro implemented In Motion programs in the West Seattle and Ballard/Crown Hill neighborhoods. In Motion is a community-based transportation demand management program designed to change behavior by increasing local residents' awareness of travel options and providing incentives for changing travel behavior. These programs were designed to help residents learn about and navigate the new C and D RapidRide lines and the associated service restructures. In Motion reached more than 23,000 households, and more than 4,200 individuals actively engaged in reducing drive alone travel, a nearly 20 percent participation rate. During the fall campaign period, participants reported driving more than 470,000 fewer miles and avoiding over 220 tons of CO₂ emissions. Average bus use among participants increased by 11.7 percent.

COUNTY OPERATIONS

Climate Action Plan Goal O.1:

King County will increase the efficiency of its vehicle fleets and minimize their GHG emissions.

Performance Measure 1:

Energy use by county vehicles

Target 1:

In its vehicle operations, King County shall reduce normalized net energy use, compared to a 2007 baseline, by at least 10 percent by 2015.

2012 Status:

Net vehicle fleet energy consumption increased by one percent between 2007 and 2012. Metro Transit accounted for most of this increase with fuel usage up by five percent as transit service hours increased, while other divisions and departments reduced their fuel usage.

Total fuel use by the County's general fleet declined 9 percent between 2007 and 2012 due to the replacement of older cars and trucks with more fuel efficient vehicles, including hybrids; rightsizing vehicles and engines; reducing the overall size of the fleet; retention and reassignment of some of the most fuel efficient vehicles, and;

expansion of the Daily Rental (Motor Pool) Dispatch system and enabling car-pooling and trip planning on the computerized reservation system. In addition, fuel consumption by the Solid Waste Fleet declined approximately 21 percent largely due to decreased waste hauling because of the economic downturn, efforts to reduce waste and fewer hauling trips resulting from new garbage compactors at County transfer stations.

2012 Key Accomplishments

Hybrid Fleet Expansion

King County Metro Transit took delivery of 30 40-foot and 99 60-foot articulated hybrid buses during 2012. By the end of 2012, nearly 50 percent of Metro's bus fleet was composed of diesel-electric hybrid buses. The new diesel-electric hybrid buses replaced diesel buses and are approximately 27-30 percent more energy and GHG efficient than the diesel buses that were replaced.

Carrying More People More Efficiently

The average fuel efficiency (miles per gallon) of Metro's bus fleet has remained relatively steady in recent years. This is mainly because even though older diesel buses have been replaced by newer, more fuel-efficient diesel-electric hybrids, 40-foot, high-floor coaches have been replaced by 60-foot low-floor articulated coaches that consume more fuel on a per-vehicle basis, offsetting the hybrids' efficiency gains.

Fortunately the 60-foot buses carry about one third more passengers than the 40-foot coaches greatly increasing overall ridership capacity necessary to achieve Metro's ridership growth targets. When evaluated in terms of passenger capacity rather than vehicle miles, fleet fuel efficiency improved by more than 15 percent.

Consistent Fleet Standards

All King County Fleet Managers collaborated on the development and implementation of uniform standards for light duty vehicles in order to minimize life cycle costs. The standards for the various types of business needs include service intervals, optimum and maximum life cycle and new vehicle purchases. The goal is to provide the most cost effective solution for providing the large variety of county services.

Employee Outreach and Commute Trip Reduction Programs

As part of ongoing efforts to educate employees, Fleet Administration Division staff, along with Commute Trip Reduction staff, visited seven primary county work sites to promote eco-driver concepts and employee commute options. Some simple changes in driving habits can reduce fuel consumption by as much as 15 percent.

King County's Employee Transportation Program continues to improve employee commute mode data collection with regard to accuracy. ORCA cards issued to county employees for the first time in 2012 exemplify our new tools to more accurately measure employee transit trips. ORCA cards capture actual trips taken, providing a more accurate way of assessing transit use by county employees. In addition, participation in biennial CTR surveys have increased, capturing more complete data on bike, walk, vanpool, carpool, ferry, and telework commute modes, improving management of the Employee Transportation Program.



New 60-foot articulated hybrid RapidRide coach acquired in 2012 - carrying more people per trip

Project Profile:

Metro's 2012 Service Changes

Metro made significant changes to bus services in 2012, consistent with the agency's new Strategic Plan and Service Guidelines. These changes were designed to improve the overall efficiency and productivity of the transit system by shifting resources from areas of lower to higher transit demand. In total, nearly 90 bus routes were modified in some way. Approximately one quarter of the system hours were involved, changing the transit network for many riders but also improving efficiency of the overall network by increasing the number of rides per hour of service provided while also addressing service quality issues such as overloads and lateness.

For example, more than 25 low performing routes were reduced or eliminated in June and September 2012, with the service hours from those routes reinvested in higher productivity routes. These network changes sought to provide more frequent bus routes to reduce wait times and make transfers more convenient. Metro also launched RapidRide C and D lines that offer new amenities, improved connections and more reliable and frequent all-day service to West Seattle, Ballard, Queen Anne and Uptown—some of Seattle's most livable and rapidly urbanizing neighborhoods. The Seattle ride free area was eliminated, and services were restructured around the county. Several lightly used bus routes were converted to Dial a Ride Transit (DART) routes, served by vans that are much more fuel efficient than buses. In addition to enhancing efficiency, the improved transit network is expected to carry an additional 600,000 annual rides and to increase the productivity of Metro's system.



Involving the public in planning 2012 Service Changes resulted in over 10,000 comments

Trail Expansion

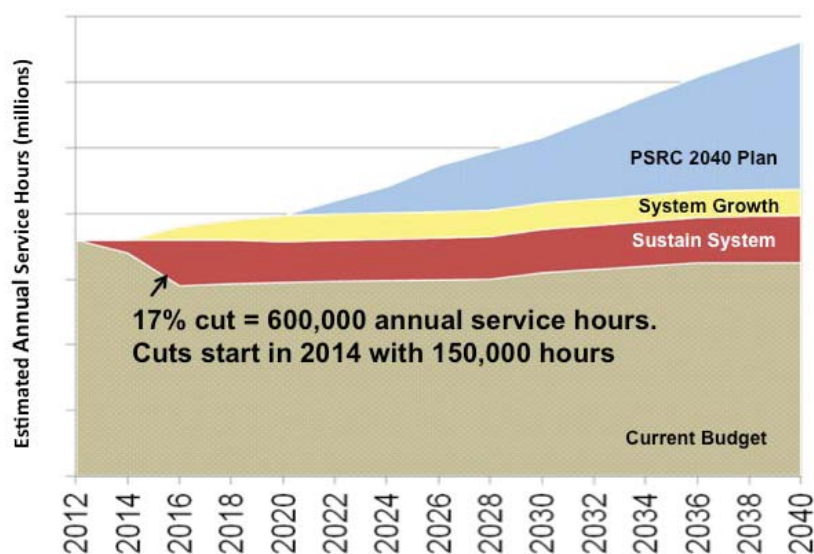
King County's Regional Trails System expanded and improved in 2012. In addition to acquiring 46.5 acres of land for trails, the Parks Division replaced the Tolt River Bridge on the Snoqualmie Valley Trail and is paving a 2.2-mile segment of the East Lake Sammamish Trail in Issaquah (expected completion in spring 2013). Planning and design work continues on a 2.6-mile segment of the East Lake Sammamish Trail in Sammamish and the Renton and Des Moines segments of the 16-mile Lake to Sound Trail.

CHALLENGES & OPPORTUNITIES

Funding Shortfalls

To be consistent with our region's long range transportation plan, Metro will need to provide approximately twice as much public transportation service in 2040 as it did in 2010. The region's long-term transportation plan –PSRC's Transportation 2040 –the source of King County's transit service targets (shown in blue on the graph below) is based on this premise. No funding has been identified for this growth in transit service, nor have revenues been identified

Metro Transit Service Needs



to fund the immediate service priorities identified in King County Metro's Service Guidelines. These needs (shown in yellow) would require approximately 10 percent more service than Metro provided in 2012. In fact, rather than expand transit service, Metro is facing a 600,000 hour cut in annual service, representing approximately 17 percent of the existing system shown in red.

This reduction is due to an annual budget shortfall of \$75 million attributable to falling sales tax revenues –Metro's largest source of funding –during the recession between 2008 and 2010. Sales tax has subsequently grown in recent years but is still below 2008 revenues. Without

additional and stable long-term funding, Metro Transit will be unable to sustain the current system, let alone meet regional goals for increasing passenger boardings.

The Congestion Reduction Charge provides an estimated \$50 million over two years, through mid-2014. When the temporary funding expires, Metro's annual \$75 million budget shortfall includes \$60 million for operations and \$15 million for replacement bus purchases. If new funding does not become available, Metro's 2013-2014 budget assumes that deep service cuts will begin in fall 2014 and continue in 2015.

LOOKING FORWARD

Updating and Expanding Transportation Equipment

In addition to tackling Metro's funding challenge, the County faces the pressing need to expand types and quantities of transportation equipment. There is not a "one size fits all" solution to the variety of business needs and vehicle and equipment solutions for our county fleets. While electric vehicles may work in certain circumstances, the vast expanse of the county service area prohibits the widespread use because of current technology limitations. The County will continue to search for the best solutions to effectively meet their specific business needs.

For Metro Transit, the vision for a future fleet is one driven by clean electric energy. As a transition toward this vision, King County Metro will utilize electric trolleys and hybrid electric diesel buses. Both of these allow an easy transition toward a truly all electric transit bus as the battery propulsion technology matures. A healthy Metro Transit is a key strategy if the region is to achieve its economic and sustainability goals. Four specific projects that will address these goals are:

- **Trolley Fleet Replacement** - Metro expects to award a contract in summer 2013 for the purchase of a new fleet of 155 electric trolley buses. The replacement trolley buses will have off-wire capability provided by an on-board electric energy system and will be approximately 30 percent more efficient than current DC powered vehicles. The result will be a zero emission trolley bus system that can operate without interruptions due to construction projects, significantly reducing fuel consumption and GHG emissions relative to the existing trolley fleet that often can not be used on weekends.

- **Diesel Bus Replacement** - Metro is continuing to acquire diesel-electric hybrid buses to replace the aging diesel fleet. A total of 103 low floor hybrid coaches will be delivered in 2013 and early 2014. These hybrid buses are up to 30 percent more fuel efficient than the diesels being replaced.
- **Battery Bus Pilot Project** - Metro is at the forefront of public transportation technology with its all electric, zero-emissions heavy duty transit bus pilot program. Initial bids received for the five million dollar federally-funded battery-powered bus project in 2012 were rejected due to technological limitations on travel range and charging, but will be re-bid in 2013 for expected delivery in 2014. If successful, battery-powered buses may become the transit fleet of the future.
- **Electric Vehicle Subcomponents** - Metro is initiating the use of electric subcomponents on transit vehicles by replacing components such as cooling fans. In addition to benefits such as better reliability, lower emissions, easier maintenance, and improved bus performance, electric engine fan cooling systems are expected to improve fuel efficiency on coaches by up to five percent.

As Metro moves ahead to upgrade the fleet, Metro will use the adopted Strategic Plan for Public Transportation to guide potential investments in new services. Demand for Metro's services is growing even as the funding picture remains uncertain. Metro will strive to configure its services to attract the maximum gains in ridership to ultimately reduce CO₂ emissions in King County.

- **Future Transportation System** – Metro's Rapid Ride lines are an overwhelming success and an example of the high frequency, all day services that Metro is envisioning as the backbone of a highly productive future transit network. The continued expansion of these and other high frequency lines, the integration with the regions light rail and street car networks, pose long term integration issues. Metro is currently developing a long-term plan that will establish the role Metro and its services provides as part of a regional transportation solution.
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Goal Area 2:

Energy and Green Building

BACKGROUND

Energy use in residential, commercial and industrial buildings accounts for approximately 50 percent of community scale GHG emissions generated in King County. King County has long recognized that GHG emissions can be reduced, natural resources conserved and costs minimized through the incorporation of green and sustainable practices. This includes the efficient design, construction and operation of buildings; efforts to meet energy needs with local renewable resources; and taking advantage of opportunities to produce energy (including renewable energy), where practical. Energy continues to be a major cost to the County, and reducing this expense will contribute to the County's ability to maintain critical services.

King County has set in place aggressive energy efficiency goals in both the 2008 Green Building and Sustainable Development Ordinance (Ordinance 16147), the 2010 Energy Plan (Ordinance 13368) and expanded upon these goals in the 2012 SCAP. In addition, King County's Strategic Plan includes an objective to minimize King County's operational environmental footprint. Advancing our energy, green building and sustainable development goals serves as substantive progress toward achieving the objectives and strategies in our countywide Strategic Plan.

2012 was a milestone for reporting on facility energy reduction and renewable energy production targets set forth in the 2010 Energy Plan, and the SCAP set in place longer-term energy reduction goals, which will drive the County to make continued investments and efforts to reduce energy use. King County has a long history of making energy efficiency investments, and the efforts undertaken in 2012 demonstrated an expansion of efforts and continued successes on the energy front, along with on-going challenges.

On a communitywide level, King County GreenTools continues to collaborate with regional residential, construction and city stakeholders to increase green building activity in the private sector. The King County GreenTools Program has provided substantial support through technical assistance to city jurisdictions and non-profit partners, in addition to convening these groups through the Regional Code Collaboration and Roundtable lecture series.

COUNTY SERVICES

Climate Action Plan Goal S.2

King County will help reduce energy use by county residents and by business and other partners and will support development of increasing amounts of local renewable energy.

Performance Measure 1

Percentage of energy produced, used, or procured by the County that is renewable energy

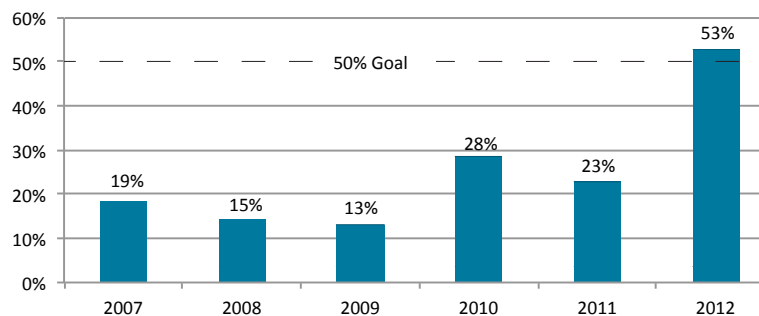
Target 1:

Produce, use or procure renewable energy equal to at least 50 percent of total county net energy requirements on an ongoing basis.

2012 Status:

By the end of 2012, the County was exceeding its 50 percent renewable energy goal, with an estimated 53 percent and 2,154,779 MMBtu of the County's energy needs being produced, used or procured through renewable sources.

Year-end Renewable Energy Generation and Use



Key contributors to the County's success included the South Treatment Plant biogas scrubbing system and the Cedar Hills Landfill BioEnergy Washington Plant (BEW) overcoming challenges and returning to full operation.

Performance Measure 2

Percentage of residential housing development in King County that is Built Green or LEED-certified

Target 2:

A target will be developed as part of the 2013 King County Green Building and Sustainable Development Ordinance update.

2012 Status:

In 2012, 14 percent of new single-family homes were Built Green 3-5 Star while multi-family Built Green units made up 13 percent of new residential construction.

2012 Key Accomplishments

Harvard University Bright Ideas Award

The GreenTools Program received the prestigious Harvard University Bright Ideas Award from the Ash Center for Democratic Governance and Innovation at the John F. Kennedy School of Government, for the GreenTools Sustainable Cities Program. This award is given to programs that demonstrate a creative range of solutions to urban and rural challenges, with an emphasis on environmental challenges. The GreenTools program delivered twelve Sustainable Cities Roundtables, five technical trainings and three tours, in addition to a program in partnership with several cities to present at the Living Future unConference in Portland, Oregon.

House of the Immediate Future

In support of equity and social justice in King County, GreenTools partnered with Habitat for Humanity Seattle, South King County Chapter to support further development of the House of the Immediate Future Project. More than 60 local green building and housing experts focused on four major topics – Construction, Energy, Program and Site – prioritizing replicable solutions for near-term Habitat for Humanity projects. The House of the Immediate Future was constructed as a demonstration of green building technology at the Seattle Center for its 50th anniversary of the 1962 World's Fair celebration. More than 5,000 attendees toured the project. The 1,400 square foot home was moved to a new affordable housing development in the Columbia City neighborhood of Seattle. The GreenTools Program worked closely with designers on procurement of recycled content materials, salvaged wood, and flooring, and provided technical assistance on designing for disassembly.



House of the Immediate Future

New Built Green “Emerald Star” Residential Certification

King County provided technical and motivational support toward development of Built Green's new certification system, called “Emerald Star”. The new rating system exceeds prior Built Green certification levels, and was designed to be a carbon-neutral prescription for building single family and townhomes in the Pacific Northwest.

Regional Code Collaboration

Policy initiatives in 2012 and 2013 include a regional code collaboration (RCC) among King County and cities of Friday Harbor, Issaquah, Kirkland, Mountlake Terrace, Issaquah, Redmond, Renton, Seattle, Shoreline, Snoqualmie and Tacoma. The jurisdictions are working together to address a “greening” of the codes while leveraging resources and capacity. The codes will encourage, and in some circumstances incentivize, LEED, Built Green and Living Building systems. The RCC has also developed a Living Building Challenge Demonstration Ordinance to reduce barriers and enhance opportunities for Living Buildings in the greater Puget Sound Region. The ordinance will go through jurisdictional councils for approval between summer of 2013 and winter of 2014.

Cedar Hills Gas-To-Energy

The Cedar Hills Landfill BioEnergy Washington (BEW) Plant overcame significant technical hurdles and was in full operation by September, with record-breaking production by year-end. The plant generates “high BTU” methane (i.e. natural gas) that is injected into the regional natural gas pipeline, along with generating electricity to operate the facility. The High BTU landfill gas scrubbing process generates much more usable energy than a more typical landfill gas-to-electricity generation operation. Based on the current output of the BEW natural gas and electricity generation operation, the plant is one of the largest landfill gas to energy projects in the country, on a British Thermal Unit (BTU) output basis.

Rainier Biogas Dairy Digester

In the community, King County's efforts to work with the Enumclaw community on the establishment of a dairy waste digester have begun to prove fruitful. The Rainier Biogas dairy digester operation began operation in December. It is converting dairy methane to electricity, and is currently producing approximately 600 kilowatts (kw) of methane-generated electrical energy on an ongoing basis. The project has been in the works for a number of years and has been financially supported in partnership with King County.



Rainier Biogas dairy waste digester

COUNTY OPERATIONS

Climate Action Plan Goal O.2

King County will reduce the amount of energy used in government operations.

Performance Measure 1

Energy use at county facilities

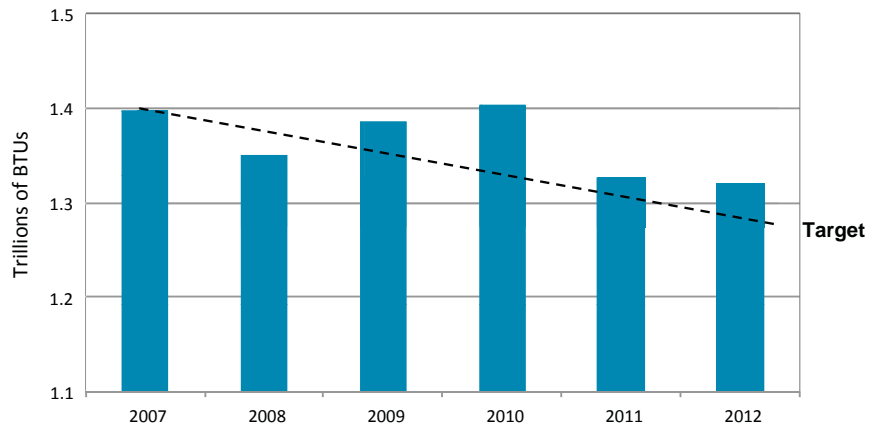
Target 1:

King County will reduce normalized net energy use from government operations in its buildings and facilities, as compared to a 2007 baseline, by at least 10 percent by 2012, 15 percent by 2015, and 20 percent by 2020.

2012 Status:

King County achieved an 8.1 percent normalized energy use reduction between 2007 and 2012, just short of the target of a 10 percent reduction. Despite falling short of this goal, many County divisions demonstrated notable energy reductions. The Transit Division has been capturing steady reductions over time, reflecting their on-going capital investments in more efficient lighting and mechanical systems. The County continues its investments to reduce energy use, and is focused on continuing a push towards meeting the 10 percent reduction target in 2013 and continuing progress toward the 15 percent energy use reduction target by 2015.

**King County Government Operations
Normalized Energy Use in Facilities**



2012 Key Accomplishments

Green Building and Sustainable Development Ordinance Compliance

Green building activity by King County agencies in 2012 consisted of five LEED certified projects and 166 projects using the King County Sustainable Infrastructure Scorecard – a County developed rating system for all projects not eligible for LEED certification. This reporting represents close to 93 percent of all capital projects, which is an improvement over the 90 percent compliance in 2011.

Green Building Technical Assistance

The GreenTools Program, through the Solid Waste Division, provided increased technical assistance to other county divisions, including informative eco-charrettes, LEED and Scorecard certification, research on sustainable products and materials, commissioning, specification review, analysis of green stormwater infrastructure, and assistance with building reuse and historic preservation. The technical assistance improves on greater green building and operations efforts resulting in energy efficiencies and a reduced operational footprint.



Maleng Regional Justice Center

The GreenTools Program assisted the Facilities Management Division in commissioning planning work for the Maleng Regional Justice Center Remodeling for Southeast District Court Relocation. Actual commissioning will be completed in late June 2013.

Energy Efficiency Facility Renovations

Many King County facilities tackled energy saving retrofits in 2012. Two examples include:

- **Cedar Hills Landfill Truck Wash** - Before leaving the Cedar Hills Landfill, every truck that has been on the landfill goes through an under-carriage wash designed to remove mud and other debris. In 2012, two pumps were downsized from 100 horsepower to 60 horsepower. Since renovations, the average kilowatt-hours used per month for the motors have been reduced by 59 percent.
- **East Base Air Compressor Replacement** - This project replaced two old inefficient and “once-through” water cooled air compressors with new high efficiency air cooled units. An estimated 114,600 kWh will be saved each year. In addition, 141,000 gallons of water that was used to cool the old compressors will be saved, which would otherwise be added to the waste water system - thereby reducing the amount of waste water to be treated.

Energy Challenge

To support the push towards a 10 percent energy reduction by the end of 2012 and to help build a conservation ethic, an Energy Challenge was set in place during the last quarter of the year. This effort educated and engaged employees in actions they could take to reduce energy use both in the workplace and at home. The Energy Challenge was seen as providing a backbone of basic energy conservation knowledge to employees, which will be expanded upon through ongoing efforts and future energy engagement challenges and activities. Energy events in some of the County's administrative buildings included hands-on energy displays, and were attended by hundreds of county employees.



An Energy Challenge sign

Partnership with Built Green

It is estimated that by the end of 2017, residential construction units will exceed pre-recession conditions and 35 percent of all new construction could be Built Green, LEED, Evergreen or Living Building certified. In an effort to increase the amount of projects using green building rating systems King County GreenTools has partnered with the Master Builders Association's Built Green program for many years. Built Green is one of the only regional rating systems



in the country to have certifications for retrofits, whole house remodels and new construction. Partnership efforts in 2012 included an annual conference providing education to developers and builders, marketing assistance, and the development of a carbon neutral standard called Emerald Star.

Energy Audits

Auditing of facilities is on-going and it is helping to identify conservation opportunities. Significant audits completed in 2012 include Metro Transit energy audits at South Base, Component Supply Center and South Facilities Maintenance. These audits provide strategies to reduce energy use at these facilities.

Project Profile:

Transit Facility Lighting Retrofits

The Transit Division has realized significant energy reductions through efficient lighting retrofits. Comprehensive lighting retrofits include a variety of technologies, including T-8, induction and light emitting diode (LED) lamps. Transit has leveraged utility incentives and replaced lamps throughout their operations, including at maintenance facilities, the bus tunnel and administrative buildings. Through 2012, savings from the projects exceeded 645,000 kWh of electricity per year. The estimated cost savings is \$40,713 per year.

Eastside Harvest House

An exemplary private development and one of the most sustainable homes in the NW region, Eastside Harvest House takes advantage of abundant resources – sun, rain, good farming soils and climate. With a comprehensive, deep green design approach, this single family residence treads lightly on its semi-urban lot with a large permaculture garden, solar power and solar hot water, and rainwater collected for interior and exterior uses. The project used two rating systems; Built Green 5-Star: 886 points (achieving the second highest score ever awarded) and LEED Homes Platinum: 121 points (tied for second highest score in the nation). Green features include a 98 percent C&D recycling rate, 100 percent FSC certified wood, 100 percent storm water retention and a 17W PV array including 40 solar hot water tubes. The project was also a success story in permitting by the City of Kirkland utilizing an online, paper free, digital system and receipt of original permitting sets within 10 days. King County GreenTools provided outreach and education on this project through tours and development of a case study.



Eastside Harvest House includes permitted potable rain water system - the first in King County

CHALLENGES & OPPORTUNITIES

Energy Conservation Goal

The County is continuing to make investments and take actions toward meeting its 10 percent energy reduction goal. Along with meeting the goal, county divisions are assessing and planning the actions that will be needed to achieve the 15 percent and 20 percent reduction goals, so that cost effective investments can be budgeted and made in time to meet the 2015 and 2020 goals, respectively. As energy efficiency goals increase, the County will need to make significant investments to capture longer-term, deeper energy improvements. Such investments may include window replacements and building shell improvements, mechanical system replacements, and renewable energy retrofits to supplement the quicker payback, low-hanging fruit of lighting and small scale equipment upgrades. These kinds of investments take more planning and have a longer, though often substantial, payback period. The active use of life cycle cost assessments as required by the Green Building Ordinance will help show the overall value of these improvements.

Green Building and Sustainable Development Ordinance

In 2012, the internal King County Green Building Team began a comprehensive update of the Green Building and Sustainable Development Ordinance (GBO) to develop the content of a renewed ordinance to be adopted by the end of 2013. The team conducted extensive research of local and national green building policies and procedures, and discussed the need for improvements in the current policy with other county agencies, jurisdictions, and community stakeholders. The GBO renewal provides an opportunity to advance green building and sustainable practices, improve implementation strategies, and encourage innovative thinking. This process builds upon the leadership and extensive accomplishments that the County has achieved so far. Energy and emission reduction targets included in the adopted SCAP are reiterated in the draft GBO renewal to streamline sustainability policies.

In 2013, the program will focus on promoting two new high performance rating systems; Built Green Emerald Star and Living Building Challenge. The target is 12 units of Built Green Emerald Star and 12 units of Living Buildings. The program will also partner with Washington State Commerce and the Cascadia Green Building Council to increase the amount of Built Green, LEED and Evergreen certified housing units in King County.

LOOKING FORWARD

Continued Growth in Renewables Production

The SCAP extends King County's commitment to produce, use or procure renewable energy to at least 50 percent of total county net energy requirements on an ongoing basis. In 2013, the County is anticipating continued progress beyond the 50 percent renewables goal. This is a reflection of sustained output from the Cedar Hills BEW plant, as well as the cogeneration system at West Point Treatment Plant going back online after years of being out of commission. West Point will generate an estimated 20,000 MWh which is enough electricity to power 3,900 homes each year, as well as provide heat for the West Point operations, with a corresponding carbon emissions reduction of 15,000 metric tons. The project, which received \$8.2 million in grant funding from the federal EPA, will sell the electricity to Seattle City Light.

Continuous Improvement in Data Collection, Assessment, and Planning Investments in Energy Efficiency

The county continues to refine its efforts to track and report on energy progress, as an integral piece that guides how to work toward energy reduction goals. With facility energy data now updated monthly, the county is in the process of refining county government vehicle fuel tracking and reporting. The goal is to provide regular vehicle fuel data feedback on an on-going basis. The county is also in the process of developing an energy investment framework. This framework will make financial resources available, to be used by the county's divisions to make cost-effective resource reduction investments, and pay for project costs from the resulting savings.

Green Building Ordinance and Data Collection

Two key drivers of the County's ability to drive and document the benefits of green building will come on line in 2013. First, it is expected that by the end of 2013, the Executive will transmit for adoption by the King County Council an updated Green Building and Sustainable Development Ordinance. Then, the integration of various division capital project management systems and Performance, Strategy and Budget's (PSB's) countywide capital Project Information Center (PIC) database to include green building performance measurement criteria will streamline reporting requirements and increase the ability for comprehensive data collection, analysis and use in optimizing design decisions in future projects.

Upcoming Projects

A number of green building and energy efficiency projects that were in design or construction in 2012:

- **Community Solar** - In an effort to encourage solar energy generation activity within the County, the King County Council approved an agreement for the establishment of the Vashon Solar project. This effort is intended to engage the Vashon community in investing in a photovoltaic solar project sited at the Vashon Transfer Station. Unfortunately, as of the end of 2012, the project was put on hold by community leaders due to difficulties raising funds to build the project.
 - **Factoria Recycling and Transfer Station** - The Factoria Recycling and Transfer Station is approaching the 100 percent design phase. The facility is projected to achieve LEED Gold. Energy efficiency and water conservation are high priorities in design for the new facility that will accommodate flexibility in future waste management and resource recovery services.
 - **King County Downtown Correctional Facility** - This facility is close to completing design of energy savings upgrades and replacements of HVAC equipment. Improvements are projected to save 617,550 kWh of electricity per year and 85,123 therms of natural gas per year.
 - **South Park Bridge** - South Park Bridge Replacement Project's energy efficient moveable bridge design features and energy efficient bridge tender facilities are just a couple of green building features that contribute to the project's overall projected energy savings. GHG emissions reductions from this project are estimated at 36 tons annually for operations, and approximately 14-24 tons per day for transportation related emissions reductions.
 - **Metro's North Base** - Projects that will significantly reduce energy consumption include efficient new HVAC systems and lighting upgrades in the base building as well as new ventilation fans in the below grade bus garage. The HVAC, lighting, and ventilation fan replacement projects are contracted to receive energy incentive rebates totaling over \$700,000 and are estimated to reduce energy use by over 2.5 million kWh per year, saving more than \$150,000 annually. In addition to the energy saving projects, 37 existing plumbing fixtures are being replaced with high efficiency fixtures. These upgrades, partially funded with incentive payments by the Saving Water Partnership, will significantly reduce costly annual water usage and wastewater generation.
-



Goal Area 3: Forests and Agriculture

BACKGROUND

King County's forests and farms have significant environmental, social, and economic benefits. Forests and farms offer important recreational opportunities, improve air quality, and provide food, water and cover for endangered salmon, wildlife and people. These same forests and farms provide employment in wood, paper, recreation, tourism, fishing and agricultural industries. Healthy forests and sustainable farms can also help reduce local climate change impacts while reducing local sources of GHG emissions.

This goal area directly ties to the KCSP objective "reduce climate pollution" as well as the objective to "encourage sustainable agriculture and forestry". It also directly relates to King County's Open Space Plan (2010), which provides the policy framework for the County's acquisition, development, stewardship, management, and funding of King County's open space system.

King County has taken significant action to encourage sustainable land management practices and to help permanently protect privately owned forest and agricultural lands through support of tax incentives, conservation easements, preservation programs, and public education and outreach. The County is also demonstrating leadership through careful stewardship of county owned lands.

2012 was a year of continued progress in adding acreage in Open Space and Forest Land designations and forest and conservation easements, as well as increasing County Parks lands for which Forest Stewardship Plans have been developed. In a report on farmland protection around Puget Sound, the American Farmland Trust rated King County's 2012 Agricultural Program as "outstanding" but also cited a broad need to do more to protect disappearing farms.

COUNTY SERVICES

Climate Action Plan Goal S.3

King County will support healthy, productive farms and privately owned forests that maximize biological carbon storage, promote public health, and are resilient to changing climate conditions.

Performance Measure 1

Privately owned rural³ acreage that has stewardship plans or is enrolled in Open Space (RCW 84.34) and Forest Land (RCW 84.33) designated current use taxation incentive programs

Target 1:

500 additional acres per year of privately owned rural acreage that has stewardship plans or is enrolled in current use taxation incentive programs

2012 Status:

In 2012, 720 new acres were enrolled in Open Space and Forest Land designated current use taxation incentive programs, exceeding the annual target. There are now a total of 65,400 rural acres enrolled in these programs, which provide significant property tax incentives to encourage landowners to voluntarily conserve, protect and manage open space and forest land.

Performance Measure 2

Privately owned forest lands permanently conserved through easements that remove the development rights

Target 2:

200,000 forest acres permanently conserved through easements that remove the development rights by 2016

2012 Status:

On track; in 2012, 565 new acres of private working forest lands were permanently conserved. There are now more than 142,000 acres of forest land protected through King County's Transfer of Development Rights (TDR) program. Since 2004, public TDR transactions have protected more than 96,000 acres and private transactions have protected nearly 46,000 acres. As of the writing of this report in early 2013, King County has reached agreement with the Hancock Timber Resource Group to protect an additional 43,000 acres of the White River Forest near Enumclaw in southeastern King County. In addition to these TDR conservation easements, King County has also purchased in-fee nearly 15,000 additional acres of forest lands, bringing the total to over 200,000 acres of forest lands permanently conserved.

Performance Measure 3

King County agricultural lands permanently conserved through easements that remove the development rights

Target 3:

In 2013, the Water and Land Resources Division (WLRD) will collaborate with the King County Agriculture Commission to establish a target for the number of acres preserved in Farmland Preservation Program. They will also develop targets for increased agricultural production.

3 For this report, **rural** refers to all rural and agriculture-zoned land in King County, including on Vashon Island but excluding the Forest Production District. An additional 200,000 acres of commercial timberlands in the Forest Production District are designated Forest Land for current use taxation.

2012 Status:

The Farmland Preservation Program (FPP) began in 1979 when the voters of King County approved an initiative authorizing the County to preserve rapidly diminishing farmland by purchasing the right to develop it. During the 1980s, King County acquired the development rights on 12,600 acres of high quality farmland within its boundaries. The County continued to purchase development rights on select properties and by the end of 2012 approximately 13,429 acres were permanently protected through this program. WLRD also supports farming in King County by assisting with drainage, flood risk reduction, marketing, cost share for resource improvement practices, and other issues affecting the productivity of farms. The division will continue to evaluate how best to encourage increased agricultural production and add to the acreage affected.

2012 Key Accomplishments

Forest Stewardship Courses and Workshops

Over 100 forest landowners expanded their forest management skills in county-sponsored trainings and seminars in 2012. Opportunities ranged from coached forest stewardship planning classes, to forestry economic development forums, to demonstrations of silvicultural techniques, wildlife habitat enhancement, and timber harvest planning.

Firewise Communities

Well-managed forests with sufficient growing space for trees are not only healthier and more drought tolerant, they are less susceptible to wildfire. The County promotes Firewise practices for healthy forests – such as allowing for sufficient growing space for trees and creating fire-adapted space around homes. As of 2012, homeowners in 14 King County communities covering more than 7,000 acres completed Firewise community fire safety plans for their homes and wooded areas.

Farmers Markets

In 2012, there were 40 active farmers markets in King County with sales of approximately \$33 million, a nine percent increase in sales between 2011 and 2012. King County supported this success through the ongoing Farmers Market Forum and the 2011/12 Farmers Market Access Project (FMAP) – which has expanded the ability for farmers and markets to accept electronic food benefit cards from shoppers.

COUNTY OPERATIONS

Climate Action Plan Goal O.3:

King County will acquire, manage and restore its parks and other natural lands in ways that maximize biological carbon storage and are resilient to changing climate conditions.

Performance Measure 1

Percentage of King County Parks forested sites over 200 acres in size that have developed and are implementing Forest Stewardship Plans

Target 1:

100 percent by 2025

2012 Status:

On track; 19 percent of King County Parks forested sites over 200 acres are now implementing Forest Stewardship Plans, including the McGarvey Park and Taylor Mountain forests, highlighted in the 2012 key accomplishments section on the next page.

Performance Measure 2

Number of native trees and shrubs planted in restoration of King County Parks forest lands

Target 2:

A combined total of 30,000 native trees and shrubs per year

2012 Status:

On track, but data is incomplete. In 2012, 19,500 trees were planted on Parks forest lands, however the number of shrubs planted is not available. Shrub totals will be reported in future years. These totals do not include plantings that King County helped support but that did not occur in King County Parks. In 2012 an additional 69,402 trees and shrubs were planted by WLRD as part of river safety improvements and habitat restoration projects.

2012 Key Accomplishments

McGarvey Park Forest Stewardship Plan

The McGarvey Park forest stewardship plan was adopted in 2011. In the summer of 2012, 77-acres of dying red alder and poor quality bigleaf maple were selectively harvested at this 400-acre open space site east of Renton. All mature conifers were retained on site and the site will be replanted with new conifers in early 2013. The long term goal is to maintain forest health through adaptive practices that promote plant and ecosystem diversity.

Taylor Mountain Forest

During the summer of 2012, 66-acres of poor quality red alder and big leaf maple were selectively harvested along with Douglas-fir trees infected with root rot in the Taylor Mountain Forest. King County acquired the 1,884-acre forest in 1997 as a working forest site and has conducted three commercial timber harvests to date totaling 205 acres. Ongoing selective harvests will preserve forest health and promote biodiversity.

Loop Biosolids

One way that King County supports healthy, productive farms and forests that help maximize biological carbon storage is by making and land-applying Loop biosolids, an organic product extracted during the wastewater treatment process. As a soil amendment and replacement for synthetic fertilizer, Loop returns nutrient and carbon rich organic matter to the soil, both improving soil health and growing bigger plants faster. King County estimates that in 2012 approximately 41,000 metric tons of carbon dioxide equivalent (MTCO₂e) of GHG emissions were reduced through land application of Loop biosolids. As a result of the Loop program - in conjunction with its energy efficiency and renewable energy efforts - King County's Wastewater Treatment Division is now almost 70 percent of the way to being GHG neutral in its operations.

CHALLENGES & OPPORTUNITIES

Parks and Open Space Levy

King County has proposed a Parks levy beginning in 2014 that would provide funding for additional open space lands, natural areas and resource and ecological lands, among other Parks Division functions.

Developing New Partnerships

For the past ten years, King County Parks has successfully developed corporate and community partnerships that help improve parks, trails, and recreation amenities. From volunteer habitat restoration work parties to protecting new

open space lands, the division continues to develop diverse types of partnerships. On the horizon are exciting new partnership opportunities that will allow more forest restoration to be done – for example King County is exploring a potential partnership with Forterra's Carbon Capturing Companies Program - and collaborative efforts that would help accelerate progress towards King County's forest restoration and GHG emissions reduction commitments.

Program Profiles:

Jubilee Farm Protection

In September 2012 the King County TDR Program and PCC Farmland Trust partnered to permanently protect 110 acres of Jubilee Farm in the Snoqualmie Valley (the other 100 acres of the 210 acre farm were already protected in the Farmland Preservation Program). Jubilee Farm is one of the region's largest and longest-running Community Supported Agriculture (CSA) operations.



Jubilee Farm

Forest Restoration Volunteer Program

More than 7,500 volunteers gave some 53,000 hours of service in 2012. During 375 events, volunteers helped build trails and restore storm damage while planting 21,540 native trees and shrubs and removing 47.5 tons of invasive weeds from 15 acres of natural areas.



Volunteers at Skyway Park in South King County – tackling the weeds to save the trees!

LOOKING FORWARD

Prioritizing Forest Stewardship

Between 2010 and 2012, the Parks Division conducted a forest health assessment of its 24,000 acres of forested parklands. The data from this assessment provides guidance that will help direct the stewardship and management of the division's forests and allow for more efficient and productive use of limited restoration and stewardship resources.

Updating Performance Measures and Targets

In updating King County's 2015 SCAP, staff from the Water and Land Resource and the Parks divisions will improve the usability and value of the Forests and Agriculture Goal Area performance measures. For example, King County will need to adopt next step targets for forest conservation as well as consider new targets related to restoration and afforestation.

Adapting to Climate Change

Across the country, ecologists and foresters are recognizing that climate change is already having impacts on the nation's species and ecosystems. As King County moves forward with its forest stewardship and restoration efforts, it will become increasingly important to address local shifts in climate and to integrate climate change considerations – such as managing for resilience – into its forest management efforts.



Goal Area 4:

Consumption and Materials Management

BACKGROUND

The purchase, use, and disposal of goods and services by King County residents, businesses, and governments are associated with significant GHG emissions. Emissions can occur at all stages of a product's life cycle, from resource extraction, farming, manufacturing, processing, transportation, sale, use, and disposal. In 2012, the County published two complementary GHG emissions inventories: one measuring emissions produced within the County (plus electricity and air travel), and one measuring emissions from goods and services consumed within the County. This 'consumption-based inventory' showed annual emissions of over 55 million metric tons of carbon dioxide equivalent (MTCO₂e) – more than twice as many as the 'geographic' based approach.

King County's Strategic Plan encourages County employees to reduce their environmental impact and promotes desirable environmental practices by individuals and businesses. Purchasing goods and services accounts for 270,000 MTCO₂e, or about 42 percent, of the County's operations-related GHG emissions of 643,000 MTCO₂e. These impacts can be reduced by purchasing "environmentally preferable products" that have a lesser or reduced effect on the environment because, for example, they contain recycled content, are less toxic, resource efficient or are more durable than conventional products. The purchase and reuse of these products avoids resource extraction and consumption, and ultimately disposal, of new materials which decreases GHG emissions.

King County provides an extensive number of services that support county residents and businesses in choosing sustainable products, reducing the amount they purchase, reusing goods when possible, and recycling after use. The County operates a system of transfer stations that offer a variety of recycling options, partners with cities who contract for residential and commercial collection in many areas of the county, sponsors programs that increase recycled content in goods consumed within the county, and conducts outreach campaigns to promote best practices. Internally, the Environmentally Preferable Purchasing Program provides county personnel with information and technical

assistance to help them identify, evaluate, and purchase economical and effective environmentally preferable products and services, while the GreenTools program works with King County projects on deconstruction, salvage and reuse, construction debris recycling, and specification of green building materials.

During 2012 King County residents and businesses continued to recycle in significant amounts and reduce overall waste production, meeting or exceeding targets. The new Food: Too Good to Waste outreach program has significant potential to push progress towards the County's recycling targets. Construction debris recycling also continues at a high-rate both on private and King County owned projects and the County assisted with a significant amount of deconstruction projects. County staff are doing well at reducing paper use but there will need to be a bigger push to completely switchover to the purchase of 100 percent recycled content copy paper.

COUNTY SERVICES

Climate Action Plan Goal S.4

King County will encourage and support behaviors, purchasing, and waste management strategies that account for and minimize the life-cycle impacts of consumption and materials.

Performance Measure 1

Recycling rates in King County solid waste service area

Target 1:

By 2020, 70 percent recycling rate of all municipal solid waste

2012 Status:

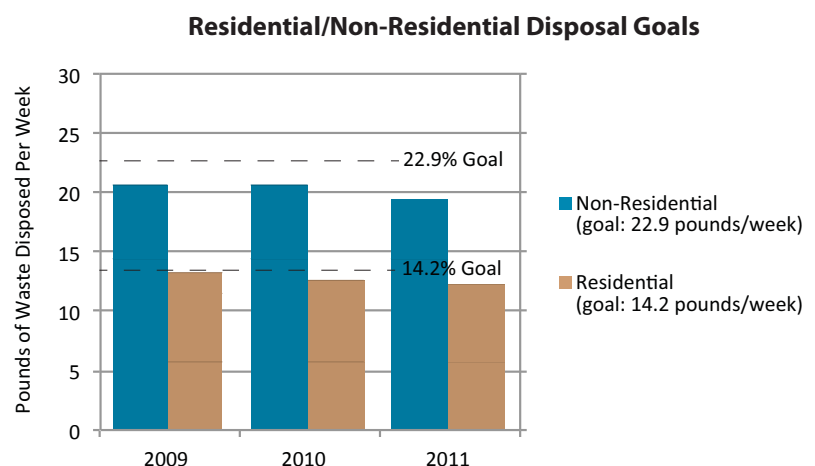
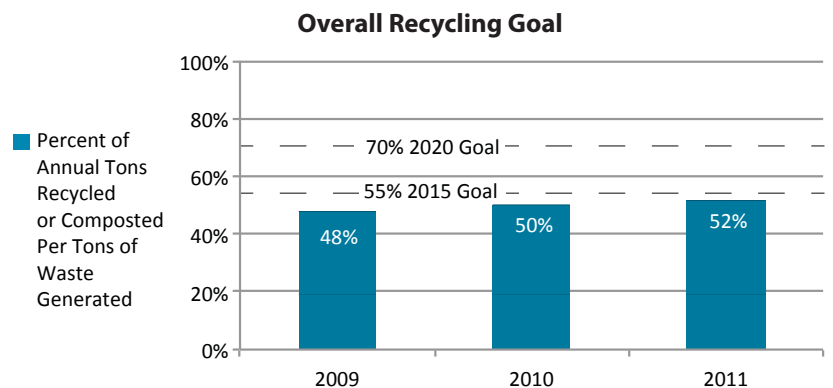
Overall recycling rates continued to rise a modest 2 percent over the previous year, up to 52 percent in 2011. 2012 data is not available at printing due to State reporting requirements and timelines. This rise is positive and can be attributed to a variety of factors including County outreach programs, several of which are outlined in this report, but also to ongoing efforts by the private sector to collect and process waste, and, more fundamentally, the daily consumption and disposal habits of the population based primarily on economic factors.

Target 2:

By 2030, zero waste (no landfilling) of resources that have economic value for reuse, resale or recycling.

2012 Status:

Zero Waste of Resources (ZWR) is a materials management philosophy to



minimize disposal of material that can be put back into the economy as a feedstock and re-consumed, providing jobs and purpose for an end user. ZWR does not mean zero garbage as there will always be some portion of the waste stream that requires waste management. The Solid Waste Division tracks this target in two ways:

- Residential/Non-Residential Waste Prevention Goals –In 2011, 21.9 pounds of waste per week were generated per capita. This is a reduction compared to the previous reporting period and is trending toward meeting the Comprehensive Solid Waste Management Plan goal of 20.4 pounds per week in 2020. Waste generated per employee in 2011 was 53.6 pounds per week which is also a reduction compared to the previous reporting period but this surpasses the Comprehensive Solid Waste Management Plan goal of 58 pounds per week.
- Residential/Non-Residential Disposal Goals - In 2011, 13.6 pounds of waste per week was disposed per capita which is a reduction compared to the previous reporting period and surpasses the Comprehensive Solid Waste Management Plan goal of 14.2 pounds per week in 2020. Waste per week per employee in 2011 was 19.5 pounds which is also a reduction compared to the previous reporting period and surpasses the Comprehensive Solid Waste Management Plan goal of 22.9 pounds per week.

2012 Key Accomplishments

Two campaigns, led by the Solid Waste Division, showed results in 2012:

Recycle More: It's Easy To Do

The Recycle More: It's Easy to Do campaign is a regional education campaign focused on increasing residential recycling rates, particularly in areas of the county with lower recycling rates. In 2012, over 875,000 tons of recyclable materials were collected from residents and businesses and more than 9,000 tons were received at county transfer facilities.



Food: Too Good To Waste

Organics and food waste comprise the largest category of waste being disposed of in King County

and have a significant impact on the climate in their production, consumption, and disposal. On average, single-family households dispose of 42 pounds of food scraps and compostable paper per month. Over the last two years, a new program called Food: Too Good to Waste was designed in collaboration with the U.S. Environmental Protection Agency, King County, and more than 25 other state, city, and county government partners.



**TOO GOOD
TO WASTE**

King County was one of the first partners in the U.S. to initiate a pilot project to help prevent the disposal of edible food waste. In November 2012, the division partnered with Fall City Elementary School and invited 110 students and their families to measure and track food wastes in their homes and to learn new strategies to reduce that waste. Over the five-week pilot study, 15 students and their families reduced their weekly food waste by more than 28 percent (more than 1 pound each week). Lessons learned from this pilot will be used to launch a county-wide public education outreach effort in 2013.

COUNTY OPERATIONS

Climate Action Plan Goal O.4:

King County will minimize operational resource use, maximize reuse and recycling, and choose products and services that have low environmental impacts.

Performance Measure 1

Total amount of copy paper purchased

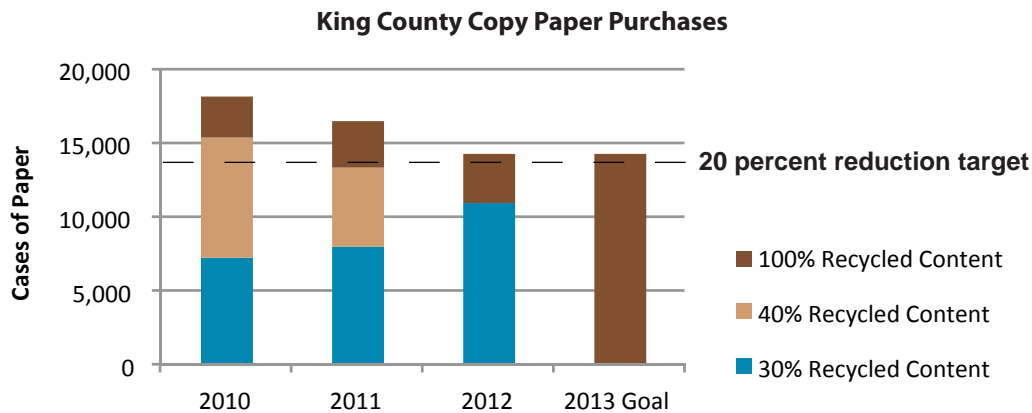
Target 1:

20 percent reduction in copy paper usage by 2013 compared to 2010

2012 Status:

The 2013 target has been met, one year ahead of schedule (KCC 18.20.040). In 2012, King County agencies purchased 14,343 cases of white, recycled content copy paper. This represents a 12.46 percent reduction over 2011 consumption. Overall, use is down over 20 percent (20.93 percent) since 2010.

The County has achieved savings of \$218,975 over the past two years, due to these waste reduction efforts, including default double-sided copying, electronic documents in lieu of paper copies and other paper conservation strategies.



Performance Measure 2:

Percentage of 100 percent recycled content copy paper purchased

Target 2:

100 percent compliance by all county agencies

2012 Status:

Approximately 25 percent (24.3 percent) of copy paper purchases comply with the goal to use only 100 percent recycled content copy paper. This number is steadily rising, up from 18.4 percent last year. The remaining 75 percent of purchases contain 30 percent post-consumer recycled fiber.

2012 Key Accomplishments

Materials Diversion on County Projects

On average, of those projects that reported in 2012, King County capital projects diverted 77 percent of construction materials from landfills. This is slightly lower than the 79 percent average in 2011. Three examples are soil and sod reuse on Metro Transit's North Base Green Roof Project, the NE Novelty Hill road project and the McElhoe Pearson restoration project.

- **North Base Bus Garage Green Roof** - This project reused 3,000 cubic yards of soil on-site and sent two acres of sod to the King County Cedar



Removing sod at North Base

Hills landfill for landscaping and drainage improvements. In addition to this being a collaborative effort between two agencies, the County and its contractors saved money. The general contractor saved over \$16,000 by not paying disposal fees for the sod and the County saved trucking expenses and new soil costs of \$122,000.

- **NE Novelty Hill Road Project** - This King County Road Services Division (RSD) project is making roadway improvements along a four-mile corridor which includes construction of new roundabouts at three intersections. Over 700 logs cleared from the site were reused in the project as large woody debris and shredded wood mulch as a cover measure, thousands of tons of yard waste derivative were used as compost, and brick and ground asphalt were used as fill material for the new 800 foot long road approach on 195th Ave. N.E. In addition, prefabricated items are being used for four culverts and the girders for Evans Creek Bridge to further reduce waste production on-site
- **Mcelhoe Pearson Restoration Project** - This project includes eight acres of restored floodplain habitat for juvenile salmon. Instead of purchasing new material, the project reused over 2,700 tons of rock that came from two nearby construction sites, large woody debris from a nearby stockyard, and 114 cubic yards of wood mulch from onsite was recycled. In addition, construction equipment was fueled by bio-diesel and bio-degradable erosion control fabric was used.

Relocation of Department of Permitting and Environmental Review (DPER)

The Facilities Management Division (FMD) relocated DPER to a new leased space in Snoqualmie that used sustainable materials such as: Low-VOC wall and floor finishes; a sealed and polished concrete slab for the Permit Center's finish floor (low maintenance, long life and reduced material use); salvaged casework; maple counters from locally salvaged gym flooring, salvaged furniture; linoleum flooring; and bamboo plywood pendant lighting. In addition, materials with high recycled content include: a kitchen bar countertop made using pre-consumer waste aluminum flake, solid surface scrap, and recycled acrylic; steel wall framing; and kitchen chairs made from recycled plastic soda bottles. The specified workstations, storage, and chairs achieved multiple certifications including: BIFMA (Business and Institutional Furniture Manufacturers Association) level 2; Cradle to Cradle Silver; and Green Guard. The workstations are: made from 54 percent recycled materials; 69 percent recyclable at the end of the stations' useful life; designed for minimal material use, easily reconfigured and durable; and are made in the USA.

Salvage and Deconstruction Assistance Program & Flood Hazard Reduction Home Buyouts

The GreenTools programs provided salvage and deconstruction assistance (including on site building assessments) to over 30 King County projects. Most notably, the River and Floodplain Management Section of WLRD removed 23 homes, estimated at a total of 47,000 square feet, as part of an ongoing project to reduce flood damages by removing at-risk homes from floodplain areas. Many of these homes were removed using salvage and deconstruction methods instead of traditional demolition, resulting in an estimated savings of \$40,000 for the program in 2012. Aside from financial savings, deconstruction makes materials available to be salvaged and reused, reducing the need for new materials to be produced.

Electronics Recycling

King County received designation as an "e-Stewards Enterprise" in 2011 through the Basel Action Network's (BAN) standard for responsible recycling and reuse of electronic equipment. The County recycles all of its electronic waste, or "e-waste" with a certified e-Stewards® recycler per policy (KCC 18.20). E-waste is of particular concern if disposed of improperly because it contains a variety of heavy metals and other toxins that can leach into the environment. In 2012, 85,938 pounds of electronic equipment, 10,376 pounds of cathode ray tube monitors, 1,945 LCD monitors, 13,060 pounds of televisions and 2,632 pounds of batteries were recycled locally.



Recycled Asphalt Shingles (RAS) in Paving

Asphalt roofing shingles represent a key waste diversion opportunity. They can be processed into a ground product and used for road applications such as hot mix asphalt (HMA) pavement and cold patch. The absence of a state specification for this application has been a significant barrier to recycling asphalt shingles from re-roofing projects locally. Beginning in 2012, a new Washington State Department of Transportation (WSDOT) General Special Provision allowed RAS in paving, removing this long standing barrier.



Bow Lake pavement containing RAS

In 2012, the Solid Waste Division (SWD) used nearly 4,000 tons of HMA containing RAS at the new Bow Lake Recycling and Transfer Station site, and nearly 10,000 tons more will be placed in the final construction of the project in 2013. The SWD also maintains an asphalt work order contract, under which HMA containing RAS has been used at two transfer stations and on several roads at the Cedar Hills Regional Landfill over the past year. The King County Regional Aquatics Center used RAS for surface repairs in the parking lot. And most recently, King County Metro Transit re-paved an 800-foot long stretch of its SODO busway with HMA containing RAS, to test how the material performs under bus traffic. Metro will monitor performance in 2013.

Bridge Priority Maintenance Program

The Bridge Priority Maintenance Program, managed by the Road Services Division completed a Sustainable Infrastructure Scorecard at a Platinum level including green building and operations efforts. Approximately 14,000 pounds of road debris and wash-water is collected and treated back at their maintenance facility. After treatment, clean soil is re-used for planting purposes and treated water is discharge back into the watershed. This process minimizes the amount of debris going to the landfill, provides for the re-use of clean soils and composted organic debris, and ensures the proper disposal of road trash and contaminants. Vegetable based oil is used in equipment to replace hydraulic fluids, minimizing the potential impact to the surrounding sensitive environments. In addition, energy efficient equipment is used to conduct the repairs and maintenance activities.

Wilderness Rim FMA Demos – Phase 2

In 2012 WLRD demolished two frequently flooded homes in the Wilderness Rim neighborhood with funding from a FEMA Flood Mitigation Assistance (FMA) grant. The land is now open space. Before demolition, approximately two tons of materials were salvaged from the homes by the companies ReStore and Second Use Building Materials, Inc. Items such as lights, interior and exterior doors, windows, sinks and appliances were salvaged. During demolition, the crews sorted building materials as practical. Concrete and asphalt were sent to vendors that recycle and as little as possible was sent to the landfill. Some of the trucks used by demolition crews used propane and vegetable oil in heavy equipment.

CHALLENGES & OPPORTUNITIES

Collaborative Efforts to Achieve Zero Waste

Achieving a 70 percent recycling rate and zero waste of resources will take a collaborative effort on the part of the County, the cities, and the private solid waste and recycling companies. It is likely that a combination of efforts will be required to encourage the desired behaviors:

- Making sure that adequate public and/or private infrastructure is in place (e.g., building new transfer stations; Materials Recycling Facilities (MRF) capacity/capabilities)
- Continued education and promotion
- Incentives, such as grants and recycling fees at transfer stations
- Mandates or bans on disposal of certain materials such as those with a high value or are easily recyclable

100 Percent Paper Compliance

Achieving 100 percent compliance of the purchase of 100 percent recycled content copy paper is a challenge. 100 percent recycled content costs approximately 15 to 20 percent more than 30 percent recycled content paper. The County does save money due to its waste reduction efforts, which offsets the additional cost of the higher recycled percentage of paper. In addition to costs savings, 100 percent recycled content paper saves resources. The Environmental Defense Fund Paper Calculator estimates that if the County converted the remaining purchases to 100 percent recycled content copy paper, instead of 30 percent content, the resulting environmental impact would conserve the equivalent of 4,560 trees, 2.13 million gallons of water and approximately 197 tons of CO₂ annually.

Funding Challenges and Trade-Offs

YouthSource, the youth training program which provided green building specific deconstruction services and training was a valuable partnership with the Department of Adult and Juvenile Detention (DAJD), WLRD and SWD related to the Flood Hazard Reduction Home Buyouts Program. Young adults gained skills in salvaging materials from homes in flood plain areas slated for demolition. Unfortunately, the YouthSource program lost its funding in the fall of 2012, eliminating the opportunity to continue the training until new funding can be secured.

Green Building and Sustainable Development Ordinance

The Green Building and Sustainable Development Ordinance renewal provides an opportunity to improve on material management. Minimum requirements for C&D diversion rates are included for capital projects that will support the county's goal of reaching zero waste of resources by 2030. In addition, the new green building policy will include reporting criteria to track use of environmentally preferred products and C&D diversion performance. Better data collection will help identify where improvements need to be made.

LOOKING FORWARD

There are many efforts planned for 2013 and beyond to increase waste diversion and ensure compliance with internal policies, including:

Food Waste Reduction

SWD will use the lessons learned from the "Food: Too Good to Waste" pilot to launch a county-wide public education outreach effort.

Recycled Paper Compliance

Additional strategies will be put in place to increase the purchase of 100 percent recycled content paper by county agencies, including quarterly compliance reporting by departments.

Furniture Reuse

A collaborative continuous improvement project to increase the redistribution of surplus county furniture is planned for 2013. Staff from FMD, SWD and Surplus will develop a 90-day plan to increase the reuse and recycling of furniture which has been stored at a variety of locations, due to moves and locations. Several non-profits, in addition to school districts will benefit from these donations.

In-House Training

The King County GreenTools Program, through the SWD, will offer trainings and resources related to using cement substitutes and alternative fuel in construction equipment, to help reduce King County's operations environmental footprint. According to the County's GHG emissions inventory, these efforts could address the top two contributors of GHG emissions.



Goal Area 5:

Preparing for Climate Change Impacts

BACKGROUND

Across the globe, climate change-related impacts are wreaking havoc; sea levels are rising, heat waves and droughts are occurring more frequently and for longer periods, glaciers are melting, and weather-related natural disasters such as Hurricane Katrina and Hurricane Sandy are causing diverse environmental, public health and economic impacts. In King County, decreasing mountain snowpack, increasing flooding, and rising sea levels are evidence that the climate system is changing. King County faces significant environmental and economic challenges stemming from climate change, including stressed and changing ecosystems, costly impacts on public and private property, and new public health risks.

County efforts to prepare for climate change directly tie to the KCSP objective “prepare for the effects of climate change on the environment, human health, and the economy”. It also relates to diverse County policies focused on preparing for climate change impacts, as summarized in King County’s Comprehensive Plan. Plan policies E-216 through E-226 focus on county efforts to partner with others to address the impacts of climate change and to reduce the impacts of climate change on public and private infrastructure, the natural environment, and public health.

The County has developed programs and projects to help reduce the impacts of floods, support farm and forest owner action to address climate change impacts, and begin to prepare the region for the effects of climate change on stormwater, public health, and emergency response. These efforts promote equity and social justice by helping those who are most vulnerable to climate change impacts. King County is also working to plan and prepare for the likely impacts of climate change on County-owned facilities, infrastructure and natural resources.

2012 was a significant year in laying the foundation to prepare for climate change. Baseline data collected in 2012 will assist in creating useful performance measures. Many divisions began incorporating climate change into planning and additional research is providing more context and information for taking action. Despite the importance of a solid foundation, 2012 was a small step in the overall picture as much work remains to tackle the significant impacts of climate change in King County.

COUNTY SERVICES

Climate Action Plan Goal S.5

King County will work with local cities and other partners to prepare for the effects of climate change on the environment, human health and the economy.

Performance Measure 1

Number of King County homes at risk of flooding or river channel migration

Target 1:

A target is being developed as part of the King County Flood Hazard Management Plan Update, which is scheduled to be adopted by the King County Council and the King County Flood Control District Board of Supervisors in the fall of 2013.

2012 Status:

In 2012 there were 3,820 homes in King County that were within mapped 100 year river floodplains, channel migration zones or historic river channel meander belts. 2012 was the first year that this performance measure was tracked. Of these 3,820 homes, 171 are classified by FEMA as repetitive loss structures based on the frequency and magnitude of flood insurance claims. Efforts such as the purchase or elevation of repetitively damaged homes will help decrease the number of structures at risk. However, there is the potential for the number of homes at risk to increase in some King County cities where regulations may allow for development in flood and channel migration hazard areas. Over the long term, climate change could also affect the number of homes in flood areas. In the last five years, King County has mitigated 54 FEMA repetitive loss structures, elevated 50 homes and 2 barns, and supported the construction of 26 farm pads while completing 68 flood risk reduction construction projects.

2012 Key Accomplishments

Extreme Heat and Public Health Research

The University of Washington's Northwest Center for Public Health Practice finalized research on climate-related health risks that result from extreme heat events to forecast the impacts of future heat events on local communities. Results of the research were shared with Seattle-King County Department of Public Health and the Office of Emergency Management. This research will help inform emergency response strategies for vulnerable populations during heat events.

Emergency Management

As part of the update to the King County Regional Hazard Mitigation Plan (RHMP), climate change is being factored into hazard and vulnerability assessments. Each hazard in the plan – such as flooding, severe weather and fire – will include a section on how it may be affected by climate change. The hazard assessments and particular vulnerabilities identified in the RHMP will ultimately be used to inform other aspects of emergency management planning, such as the Comprehensive Emergency Management Plan.

Environmental, Health and Economic Indicators of Climate Change

In 2012, as part of outreach efforts and to inform its own projects, King County began reporting on climate-related shifts affecting King County's physical environment and economy. In the area of public health, the heat research conducted by the University of Washington's Northwest Center for Public Health Practice was utilized. In the future indicators based on these and other available data will be used to assess the severity of local climate change-influenced impacts, including effects on community resilience.

COUNTY OPERATIONS

Goal O.5:

King County will plan and prepare for the likely impacts of climate change on County-owned facilities, infrastructure and natural resources.

Performance Measure 1

Number of key facilities and natural resource assets and programs assessed for vulnerability to climate change impacts

Target 1:

A target will be established as part of the 2015 SCAP update.

2012 Status:

King County will plan and prepare for the likely impacts of climate change on County-owned facilities, infrastructure and natural resources.

Performance Measure 2

Number of key facilities and natural resource assets and programs vulnerable to climate change impacts that implement a plan for reducing likely impacts

Target 1:

A target will be established as part of the 2015 SCAP update.

2012 Status:

King County is working to document key facilities and programs that are vulnerable to climate change impacts and develop targets for reducing likely impacts. Performance measures and targets related to this work will be formalized as part of the 2015 SCAP update.

2012 Key Accomplishments

Education and Training

As King County agencies take action, it is critical that they share successes, challenges and lessons learned. In 2011 and 2012, the Department of Natural Resources and Parks hosted a monthly education series on climate change impacts and case studies of action on diverse topics such as sea level rise, salmon recovery, flooding, stormwater, and impacts to public health. More than 500 internal and external partners participated in these events and an online archive of related materials is available for ongoing education.

Sea Level Rise Impacts to Wastewater Treatment Infrastructure

In 2012, the King County Wastewater Treatment Division (WTD) completed Phase 1 of a Hydraulic Analysis of Sea-Level Rise Impacts study to identify facilities at risk for saltwater inflow from sea level rise, existing and predicted high tides, and storm surges. The study found that 20 facilities are at risk of saltwater inflow from sea-level rise by 2050. WTD is looking for cost-effective measures to adapt to sea-level rise through its capital improvement and asset management programs.

Project Profiles: Manage Flood Risks

In 2012, the King County Flood Control District mapped flood hazards on the Sammamish River and the coastal shoreline, completed five levee repair projects, six projects that raised the elevation of homes, barns or farm pads, and also constructed six new farm pads that help protect farm animals and equipment during flood events. Sixty acres of flood plain on the Tolt, Snoqualmie, Cedar, and White rivers were also acquired; public ownership of this land and removal of structures will reduce flood risks and preclude development in these flood prone areas - helping alleviate flood impacts and costs along these river systems.

Bridge Replacements

By the end of 2012, the King County Road Services Division had replaced 15 short span bridges with wider span structures and replaced 42 small culverts with large box culverts. Since these replacements began in 2007, the new infrastructure has increased size and capacity to withstand impacts of major flooding events and to permit debris and floodwater to pass underneath without backing up river levels. In many cases these wider structures also allow for the movement of a variety of wildlife along the river's edge during normal flows and elevated flood events thereby protecting wildlife connectivity between critical habitats.



Snoqualmie River Erosion Control Project, City of Snoqualmie



Wide Span Bandaret Bridge, SE May Valley Road at Issaquah Creek

Coastal Wetland Restoration

The Water and Land Resource Division is beginning to consider climate change impacts in habitat assessments, environmental review of land use, and in species and habitat recovery efforts. For example, as part of the Dockton Heights and Cove Creek shoreline restoration projects on Vashon Island, saltwater wetlands are being constructed to include topographic variability to ensure proper function at multiple tidal elevations, which also provides resiliency as sea level rises.

CHALLENGES & OPPORTUNITIES

The Challenge of Unprecedented Changes

The rate and magnitude of climate change impacts facing the King County region is daunting. Changes already observed such as increasing temperatures, decreasing snowpack, and acidifying waters in the Puget Sound are cause for alarm. There is reason to be optimistic that global sources of GHG emissions will be curtailed and the most serious impacts will be averted, but if they are not, the region will need to respond to increasingly drastic changes and impacts to its environment, economy, and public health.

Opportunities for New Partners

Scientists, governments, businesses and the public are recognizing that the era of human caused climate change has arrived, and are taking new steps to reduce these impacts. King County is exploring new collaborative partnerships with, for example, King County's cities, the federal government, and non-profit foundations and organizations. For example, in 2012 King County partnered with scientists at the University of Washington and the US Army Corps of Engineers to apply for new climate related funding from the National Oceanic and Atmospheric Administration. This project, if funded, will assess the vulnerability and preparedness of urban King County to changing flood risk under future climate conditions. Additionally, as other partners take action there are increasingly useful case studies that King County will be able to use and learn from for its own preparedness efforts.

Creating Resilience

Many actions that help reduce GHG emissions – such as King County's efforts to provide transportation choices, support development of local, renewable energy, and encourage healthy forests – also foster communities that are more resilient in the face of climate change related risks and impacts. For example, in the case of severe weather, healthy forests can help reduce the impacts of stormwater runoff and flooding while transportation and energy alternatives can allow for decreased community impacts and faster recovery. King County is working to help implement preparedness strategies that have the dual climate change benefits of reducing GHG emissions and also supporting resilient, healthy communities.

LOOKING FORWARD

Mainstreaming Climate Change Preparedness

As King County and partners learn about these issues and develop solutions, the County is working to incorporate climate change considerations early into program and project designs. The goal is that these efforts are less “retrofits” and more everyday business. Although climate change preparedness is an emerging field an early focus on prevention can be the most effective and efficient solution. This is why King County is committed to planning and preparing for the likely impacts of climate change on County-owned facilities, infrastructure and natural resources.

Measuring Success

As King County works to implement climate change preparedness actions, it will be critical to measure their effectiveness. However, measuring effectiveness of prevention focused actions is challenging, especially in light of the uncertainty of climate change impacts. The performance measures related to this goal area of the SCAP, in conjunction with the new environmental, health and economic impacts of climate change indicators, are the early stages of effective climate change preparedness performance management. Several related efforts – King County’s participation as a pilot STAR (Sustainability Tools for Assessing and Rating Communities) community, the King County Flood Hazard Management Plan Update, and the 2015 SCAP update - mean that there will be significant near term progress towards measuring the impacts of these efforts.



Appendix

King County Ordinance 2012-0049 requires this report include information about all expenses associated with the climate change program and a cost-benefit analysis of the program.

Approach and Cost of Climate Change Program

The 2012 King County Comprehensive Plan includes policies directing King County to reduce greenhouse gas (GHG) emissions, prepare for climate change impacts, assess this work, and collaborate with others on solutions. King County's Strategic Plan includes the objective to "reduce climate pollution and prepare for the impacts of climate change on the environment, human health, and economy". In 2012, King County adopted its Strategic Climate Action Plan (SCAP), which was prepared for submission to the County Council by Executive Dow Constantine in response to Ordinance 17270. The plan synthesizes and focuses King County's most critical goals, objectives, and strategies to reduce greenhouse gas emissions and prepare for the effects of climate change. The Comprehensive Plan, Strategic Plan, and SCAP guide King County's efforts as they relate to climate change.

The County's climate change efforts are led out of the Department of Natural Resources and Parks (DNRP). The 2012 expenditures for the two staff positions focused on climate change was \$182,427 including salary and benefits.

The actions needed to carry out climate-related Comprehensive Plan, Strategic Plan and SCAP goals and objectives intersect with the roles and work of multiple departments and divisions in King County. In order to integrate actions and pool technical resources across County agencies, the climate program staff work closely with several climate focused teams supporting development and implementation of County directives related to climate change. The interdisciplinary climate teams bring together additional County staff focused on complementary tasks, such as those implementing the Energy Plan, the Green Building and Sustainable Development Program, the Environmental Purchasing Program, and those in Forestry and Agriculture Programs.

The County also pools resources for climate-related technical assessments (e.g., GHG emissions inventories), public outreach, and program development with cities through the Sustainable Cities Roundtable, King County-Cities Climate Collaboration, and through professional associations like Climate Communities and ICLEI-Local Governments for Sustainability. Membership in these types of organizations gives King County staff ready access to information on local government approaches to reducing climate pollution and preparing for climate changes, federal and state grant programs, and changing regulatory requirements. Dues for these organizations were approximately \$25,000 in 2012.

Benefits of Climate Change Program

Supporting implementation of a climate change-related projects and programs, such as those highlighted in this report, have direct climate-related benefits, as well as other benefits, such as reducing water pollution, creating new local green jobs, and enhancing residents' quality of life. Specific financial benefits include:

- **Helping Secure Revenue to Support Related County Projects and Programs.** For example, King County was awarded a \$6.2 million Energy Efficiency and Conservation Block Grant from the Department of Energy (completed in 2012) which prioritized projects that reduce GHG emissions. King County used the grant to support 23 projects, such as energy efficiency retrofits of County facilities, electric vehicle infrastructure installations and planning efforts, and paying for energy efficiency components of affordable housing projects. Climate program staff were directly responsible for helping secure, administer and implement these and other revenue and grant sources.
- **Increasing Efficiency of County Operations.** Significant cost savings and new revenue sources have been achieved through climate related projects that reduce GHG emissions by minimizing energy, waste and resource expenditures and by creating new resources such as renewable energy. For example, the County achieved savings of roughly \$200,000 between 2010 and 2012 through its operational paper waste reduction efforts.
- **Mitigating Future Climate Change Impacts.** A key benefit relates to minimizing and avoiding climate change risks by integrating climate change science into the planning and design of diverse projects and programs. For example, the Wastewater Treatment Division has been integrating data about sea level rise into wastewater infrastructure design and operations. While it is hard to quantify the financial value of making these forward making decisions, it is likely significant. For example, the Washington State Department of Ecology's "Impacts of Climate Change on Washington's Economy" concluded that if GHG emissions are not reduced, and proactive steps to minimize impacts are not taken, the annual Washington state price tag of climate change impacts will be at least \$3.8 billion by 2020.

There are other, less-quantifiable benefits related to climate solutions: County Council and Executive leadership on the issue, improving relations with King County cities through regional collaboration, improving the quality of life and health of our residents, helping residents and businesses save money on energy and resource costs, supporting community and business environmental and climate efforts, and achieving other environmental sustainability related objectives. The overall conclusion is that the financial and environmental benefits of this program outweigh its costs.
