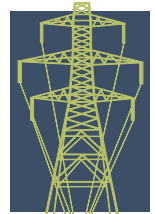


KING COUNTY

TOWARD A SUSTAINABLE, PROSPEROUS

2011 Annual Report of
King County's Climate Change,
Energy, Green Building, and
Environmental Purchasing Programs



June 2012



King County

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TOWARD A SUSTAINABLE, PROSPEROUS KING COUNTY

2011 Annual Report of King County's Climate Change, Energy, Green Building, and Environmental Purchasing Programs

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TOWARD A SUSTAINABLE, PROSPEROUS KING COUNTY

2011 Annual Report of King County's
Climate Change, Energy, Green Building, and Environmental Purchasing Programs

Background

The programs described in this report – climate change, energy, green building and environmental purchasing – help to meet core objectives of the King County Strategic Plan to reduce climate pollution, prepare for the impacts of climate change, reduce the environmental footprint of government operations, and improve the financial sustainability of county government.

King County provides environmentally sustainable services such as transit, farm and forest land protection, salmon recovery, flood control, recycling, parks and regional trails. As highlighted in this report, the County's role extends to climate change response, energy efficiency and renewable energy, green building and sustainable development and environmental purchasing.

This report, prepared in accordance with King County Code 18.50.010, provides a single point of reference for the public and decision makers about progress towards related environmental goals, challenges and opportunities with these programs, and priorities looking forward.

2011 Key accomplishments

The following are examples of major 2011 accomplishments in King County's climate change, energy, green building and environmental purchasing programs. Information about other 2011 project and program highlights that support the County's environmental sustainability goals can be found throughout this report.

- King County Metro provided transit service to more than 100 million passengers, who traveled more than 543 million miles. Transit reduces communitywide greenhouse gas (GHG) emissions by replacing private vehicle trips, reducing traffic congestion and supporting efficient land use.
- King County Parks and the Water and Land Resources Division continued to acquire, protect, restore and provide stewardship for natural lands that now include more than 26,000 acres. Forests on these lands reduce the severity of local climate change impacts and naturally sequester carbon dioxide.
- The Facilities Management Division completed energy efficiency improvements that have resulted in a 19 percent reduction from 2007 levels.

- Metro Transit saved nearly 80,000 gallons of fuel by replacing older diesel buses with more energy efficient hybrid buses.
- King County agencies worked on 10 Leadership in Energy and Environmental Design (LEED) projects, 202 projects using the Sustainable Infrastructure Scorecard, and diverted from the landfill an average of 80 percent of construction and demolition material generated by these projects.
- Green building tools and training were provided to project managers, including the Green Operations and Maintenance manual and training in Life Cycle Cost Assessment.
- King County purchased more than \$60 million of environmentally preferable products, with cost and durability savings of more than \$1.5 million, compared to conventional products.
- County government's electronic waste is now recycled only through e-Steward-certified vendors, ensuring sustainable practices for more than 68,000 pounds of electronic equipment, almost 7,000 pounds of cathode ray tube monitors and 6,300 pounds of batteries.
- King County became the first local government in the nation to account for GHG emissions associated with the local consumption of goods and services, such as food and electronics.

2011 Performance snapshot

It is important to look at the County's 2011 accomplishments in the context of broader performance information. This includes data about greenhouse gas emissions, energy usage, and renewable energy at both the community level and from government operations. Additional performance information about green building and environmental purchasing is included in these chapters of the report.

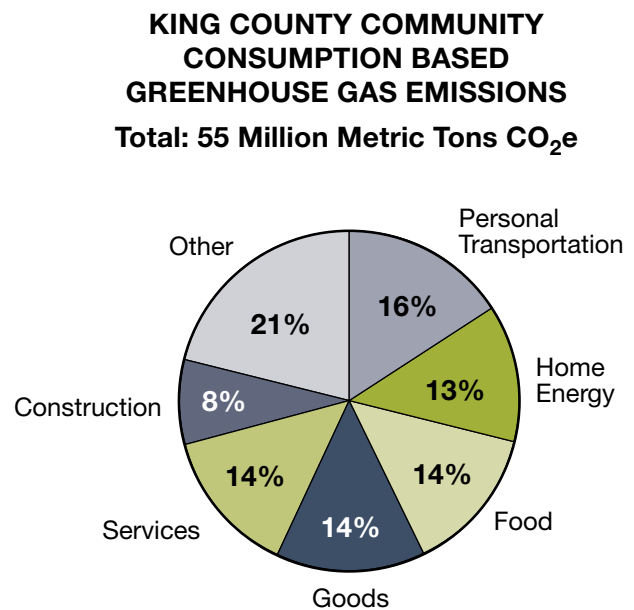
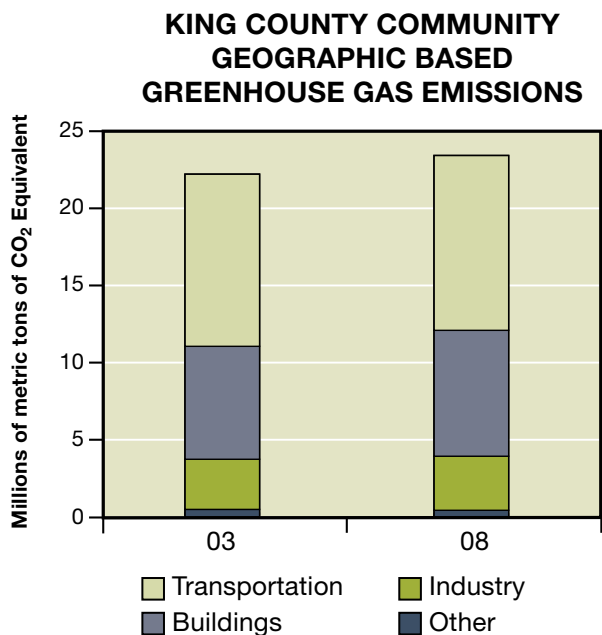
GOVERNMENT OPERATIONS

- Normalized facility energy use related to King County government operations was reduced by 5.2 percent between 2007 and 2011, and King County is on track to meeting its 10 percent normalized energy use reduction target by 2012.
- 2011 normalized energy use by County vehicles ranged from 0.6 percent below to 6.2 percent above 2007 levels, depending on the type of normalization method used. The 2010 King County Energy Plan target is to achieve a 10 percent normalized net reduction in energy use by County vehicles by 2015. The increased energy usage by County vehicles is largely attributed to increasing transit service, which has a net positive impact on community level energy usage.

- King County government used, procured or produced approximately 23 percent of its energy from renewable sources in 2011. The County is expected to exceed its 50 percent renewable energy target in 2012 once the Cedar Hills Regional Landfill gas processing plant, run by BioEnergy Washington, and a West Point wastewater treatment electricity co-generation project are fully operational.
- King County's *Executive Recommended 2012 Comprehensive Plan* includes updated operational greenhouse gas emissions reduction targets including to reduce emissions by at least 15 percent below 2007 levels by 2015. Between 2007 and 2011, energy related GHG emissions from non-transit sources such as buildings decreased by roughly 4 percent. However, energy related emissions from overall government operations, including transit, increased 1 percent between 2007 and 2011. Significant additional action will be required to achieve the 2015 target.

COMMUNITY LEVEL

- In the 2008 *King County Comprehensive Plan*, King County adopted the goal to, in collaboration with other local governments and partners, reduce countywide emissions by 80 percent below 2007 levels by 2050. Between 2003 and 2008, local sources of per-person greenhouse gas emissions decreased slightly, largely due to reduced driving and the increased vehicle fuel efficiency. However, overall, local sources of GHG emissions increased 5.5 percent between 2003 and 2008 and the region is not on track to meet King County's long-term target (see bar graph below left).
- In 2012, for the first time, King County quantified performance information about greenhouse gas emissions associated with consumption in King County, including from production of goods, food and services imported from outside the region. These emissions totaled 55 million metric tons of carbon dioxide equivalent – more than twice the local sources of emissions that occurred inside the county's borders in 2008 (see pie chart below right).



Challenges and opportunities

King County has adopted and is striving to meet aggressive targets for GHG emissions reductions, energy efficiency and renewable energy, green building and environmental purchasing. Achieving these goals will require up-front investments, which can be challenging given the reality of tight budgets. At the same time, King County is working to meet the needs of a growing population and has important priorities to maintain or expand services, such as public transit, which can sometimes increase the County's operational environmental footprint.

Despite these challenges, King County is committed to minimizing its environmental impacts and supporting smart land use, transportation, green building and related efforts in the region. In terms of government operations, the County is taking important steps to share resources across agencies to support internal efforts – for example by sharing training, technical expertise, and developing countywide approaches to implementing energy efficiency projects and reinvesting energy and resource cost savings. At the community scale, County actions can help continue and accelerate the recent trend of decreasing per person sources of GHG emissions.

In addition to the challenge of achieving the County's goals, the scale of related environmental changes facing the region is daunting. Climate change impacts such as increasing river flooding, decreasing summer river flows and rising sea levels have the potential to cause severe and costly impacts to public and private property, ecosystems and public health.

These new impacts are challenging to plan and prepare for, but promising new partnerships – for example through the King County-Cities Climate Collaboration – are indications that the region is stepping up. Other new partnerships, for example through King County's Community Solar program, are the type of partnerships that will need to occur for the region to meet its environmental goals.

Additional exciting opportunities are emerging. In 2011 King County became the first local government in the nation to account for GHG emissions associated with the local consumption of goods and services, such as food and electronics. This more-comprehensive picture of our environmental footprint quantifies – and helps King County and its partners – target future climate solutions. For example, in 2012 the Solid Waste Division is implementing a “reducing wasted food” pilot project that could potentially serve as a model for broader food-related efforts.

A key near-term challenge within the County's energy program is to ensure that two significant new renewable energy projects become fully operational in 2012: The Cedar Hills Regional Landfill renewable energy project and the West Point wastewater treatment plant electricity co-generation project.

Advances in green building and sustainable infrastructure are tied to integrating sustainability considerations into early phases of project planning and design, so that projects can be developed to have a lower overall impact. Even with future population growth, green building practices can help curb emissions through renewable energy, energy and water efficiency, sustainable material use, diverting demolition material, innovative and adaptable design, promotion of alternative transportation, passive ventilation, daylighting and efficient building envelopes. There is a good opportunity to further integrate early planning objectives in the near term, as the Green Building and Sustainable Development Ordinance will be revised and updated in 2013.

It has become increasingly clear to environmental purchasing experts that it can be difficult to assess the true environmental preferability of the diverse range of products the County purchases. However, opportunities are expanding to help develop environmental standards and certifications that not only inform the County's purchases but also resident and business choices.

Looking forward

- King County will implement the 2012 Climate Motion, which outlined near-term actions to reduce GHG emissions, and complete development of a Strategic Climate Action Agenda to developed using the organizing framework of the King County Strategic Plan.
- King County will continue to partner with cities through the King County-Cities Climate Collaboration and work with these and other regional partners through the Growth Management Planning Council to support development and adoption of regional GHG emissions reduction targets.
- The County will establish new mechanisms for assessing lifecycle energy and resource costs, financing the capital costs of efficiency investments, documenting savings and supporting reinvestment efforts.
- County divisions will prioritize adopting a green operations and maintenance manual to implement operation practices that will save money and reduce the County's environmental footprint.
- The County will follow recommendations from the 2012 GHG emissions study on King County emissions as they relate to County purchasing of goods and services and implement targeted approaches to further reductions in GHG in purchasing.
- The County will update its environmental purchasing policy to align with overall environmental sustainability goals and other policies.



Background

Human sources of climate pollution, such as carbon dioxide and methane, are causing unprecedented and severe changes in global and local climate systems. This is the collective opinion of the world's leading scientists, including the National Academies and the Intergovernmental Panel on Climate Change.

In King County, decreasing mountain snowpack, increasing flooding, and rising sea levels are all evidence that the climate system is changing and is causing significant impacts in the region. The County faces significant environmental and economic challenges stemming from climate change; these challenges include stressed and rapidly changing ecosystems, costly impacts on public and private property and new public health risks.

King County Executive Dow Constantine and the County Council are leaders in responding to these challenges. Environmental sustainability is a key goal of King County, as identified in the 2010 Strategic Plan. A key objective of this goal is to “reduce climate pollution and prepare for the impacts of climate change on the environment, human health and the economy.”

In support of this commitment, the County took action in 2011 and early 2012 to strengthen its efforts to respond to climate change. Efforts include unanimous adoption of the 2012 Climate Motion which outlines the County's near-term commitments to help it meet long-term climate goals, strengthening climate change-related policies as part of the 2012 Comprehensive Plan update, and beginning work on a new Strategic Climate Action Plan that will focus and guide climate change-related priorities.

Performance indicators

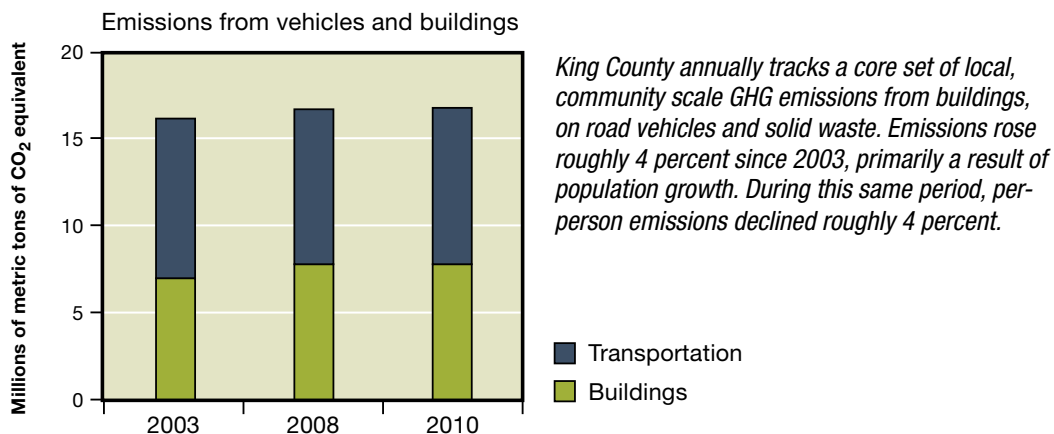
Several performance indicators are tracking government and regional efforts to respond to climate change. Key indicators include King County community wide sources of GHG emissions (see the Executive Summary), as well as the indicators presented in this section focused on government sources of GHGs, “core” GHGs from buildings, vehicles and solid waste, and local impacts of climate change.

KING COUNTY GOVERNMENT OPERATIONS DIRECT GREENHOUSE GAS EMISSIONS

The 2012 Executive Transmitted Comprehensive Plan includes a near-term goal that King County reduce total GHG emissions from government operations, compared to a 2007 baseline, by at least 15 percent by 2015. Preliminary data for 2011 indicates that overall energy related GHG emissions from government operations are up roughly 1 percent since 2007. However, emissions from non-transit sources such as buildings have decreased by 4 percent since 2007. This reduction is a sign of progress and related to implementation of the 2010 Energy Plan.

The overall rise in operational GHG emissions is largely attributed to increasing transit service. GHG emissions from bus diesel usage account for more than half of all energy related GHG emissions, and have increased by approximately 5 percent since 2007. However, because transit reduces communitywide GHG emissions by replacing private vehicle trips, reducing traffic congestion and supporting efficient land use and community design, transit has a net beneficial impact on reducing community scale GHG emissions. Metro estimates that King County transit service reduced community emissions by more than twice the direct emissions footprint of the transit vehicle fleet.

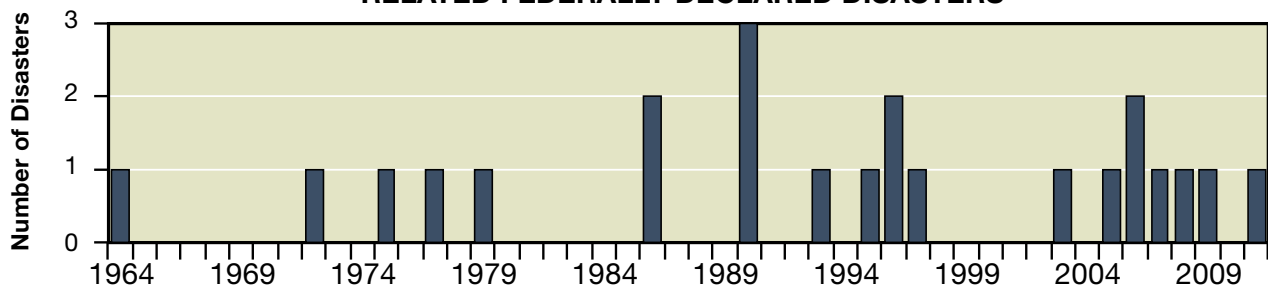
KING COUNTY CORE GREENHOUSE GAS EMISSIONS



KING COUNTY CLIMATE CHANGE IMPACTS INDEX

Important climate change related shifts in King County's climate and the physical environment have been observed in recent years. For example, between 1962 and 2008 a strong trend of decreasing summertime water in King County rivers was observed at all 10 long-term, unregulated, local river gaging stations. During this same period, there was also some evidence that severe storms and floods were occurring more frequently. King County is tracking the severity of a variety of climate change related impacts with its "[King County Climate Change Impacts Index](#)."

KING COUNTY FLOOD, SEVERE STORM AND COASTAL STORM RELATED FEDERALLY DECLARED DISASTERS



Weather-related federally declared disasters in King County have been occurring more frequently over the last decade, and are related to climate change-related risks such as increasing flood impacts. Note that the frequency of natural disasters in King County is affected by many factors beyond climate change - such as where people live and work and how prepared for storms they are.

2011 Key accomplishments

REDUCING GHG EMISSIONS IN COUNTY GOVERNMENT OPERATIONS

King County is reducing operational sources of GHG emissions by implementing its 2010 Energy Plan, the Green Building and Sustainable Development Policy, and the Environmental Purchasing Program. See the following chapters of this report for 2011 accomplishments in these focus areas.

REDUCING GHG EMISSIONS IN THE KING COUNTY COMMUNITY AS A WHOLE

In addition to reducing its own operational environmental footprint, King County is taking important action to support resident, business and local government efforts to reduce climate pollution and prepare for the impacts of climate change:

Transit

- In 2011, [*King County Metro*](#) provided transit service to more than 100 million passengers, who traveled more than 543 million miles. Transit reduces communitywide GHG emissions by replacing private vehicle trips, reducing traffic congestion, and supporting efficient land use.
- After its first year of operation, the new bus rapid transit [*RapidRide A Line*](#) between Federal Way and Tukwila delivered more than 30 percent additional daily bus rides than the regular Metro route it replaced, while ridership on the RapidRide B Line between Bellevue and Redmond increased 10 percent in its first three months.
- King County partners with employers throughout the County to support their employee Commute Trip Reduction programs. Between 2007 and 2011, [*Commute Trip Reduction*](#) worksites in King County experienced a 7.1 percent reduction in “drive alone” rate that resulted in 2.2 million fewer solo vehicle trips annually.



New RapidRide bus

Bike, Walk and Van - alternative transportation options

- Parks' 2011 enhancements of the [*Regional Trail System*](#) included redeveloping two miles of the Burke-Gilman Trail through Lake Forest Park, completing 1.2 miles of the East Lake Sammamish Trail segment through Redmond, and upgrading a segment of the Foothills Trail near Enumclaw. Based on bicycle and pedestrian counts at peak hours, it is estimated that more than 20 million trips are made annually on regional trails, including an estimated five million trips along five key corridors directly managed by King County Parks.



Newly redeveloped Burke-Gilman Trail

- **Metro offered outreach, technology improvements and incentives to support use of alternative transportation options**, including the www.RideShareOnline.com website, which saw a 77 percent increase in active registrations. The InMotion program provided direct alternative transportation outreach, encouragement and resources to an estimate 23,000 households, while the SHIFT your commute program into gear trained 98 east King County Commute Trip Reduction coordinators on how to encourage and support alternative transportation use at their worksites.
- ***Public Health – Seattle & King County* supported seven King County cities in adopting policies to improve biking and walking for more than 359,000 residents** through efforts such as comprehensive bicycle and pedestrian plans and complete streets ordinances. Public Health also partnered with school districts to implement “Safe Routes to School” programs serving 124,000 King County students, and bicycle and pedestrian trainings now completed for fourth- and fifth-grade students in five King County school districts.

Recycling and Waste Reduction

- ***The Solid Waste Division’s Waste Prevention and Recycling Program* uses education, incentives, pilot programs and partnerships to reduce the generation of waste and to increase recycling.** In 2010, about 832,000 tons of recyclable and compostable materials were collected in King County, which is up 2 percent since 2009. Recycling helps reduce GHGs created by mining, farming or manufacturing new products. Using an Environmental Protection Agency model, recycling in King County is estimated to reduced GHG emissions by an estimated 1.62 million metric tons annually – the equivalent of removing 280,000 passenger cars from the road.



Mattress recycling

- An innovative example of **improving recycling is the *LinkUp Program*, which is working to expand markets for recyclable and reusable materials** and eliminate market barriers such as a lack of recycling infrastructure and poor end-markets. In 2011, LinkUp focused on enhancing asphalt shingle, carpet and mattress recycling. For example, LinkUp hosted a Mattress Recycling Summit that brought together partners to learn about mattress recycling opportunities. Since mattress recycling became available in King County, mattresses delivered directly to the Cedar Hills Regional Landfill have decreased by approximately 60 percent.
- Another innovative effort focused on **improving recycling and sustainability best practices is the *EcoConsumer* public outreach program.** This program includes the regular EcoConsumer column in the Seattle Times as well as numerous TV and radio appearances. Nearly 30 public presentations were made in 2011.

PREPARING FOR CLIMATE CHANGE IMPACTS

- The [*King County Flood Control District*](#) is improving floodplain management to minimize the impacts of flooding. In 2011, the district completed three flood protection infrastructure projects, helped raise the elevation of seven homes, facilitated relocating five chronically flooded houses to higher ground, and demolished six other chronically flooded houses on land that King County had previously purchased.
- [*King County Parks*](#) and the [*Water and Land Resources Division \(WLRD\)*](#) continued to acquire, protect, restore and provide stewardship for natural lands. These lands reduce the severity of local climate change impacts and also naturally sequester carbon dioxide. In 2011, King County acquired more than 780 acres of natural lands. Additionally, Parks volunteers provided more than 58,000 hours of service, planting more than 23,000 native plants and removing invasive weeds, while WLRD planted nearly 60,000 plants. The County also supported private stewardship efforts. For example, 720 privately owned acres were enrolled into King Conservation District farm or rural stewardship plans.



A Flood Control District-funded levee project

OUTREACH, EDUCATION, COLLABORATION, TRAINING

- In 2011, Executive Constantine kicked off the [*King County-Cities Climate Collaboration*](#), a partnership between the County and its cities to enhance climate change and sustainability efforts. County and city staff are partnering on climate change-related projects and programs, including outreach, coordination, solutions and funding.
- In 2011, through the Responding to [*Climate Change Brownbag series*](#) and the [*GreenTools Sustainable Cities Roundtables*](#), King County led more than 25 educational events that reached hundreds of city and County staff on climate-related project and program successes and challenges.
- The Wastewater Treatment Division used its new biosolids brand [*Loop*](#) as a tool to communicate the benefits of safely and sustainably returning carbon and nutrients to the land through biosolids. Loop is a natural soil amendment made from solids extracted during the wastewater treatment process that has been produced for nearly 40 years.



Climate Collaboration, left to right: Redmond Mayor John Marchione, King County Executive Dow Constantine, Mercer Island Councilmember Mike Grady

Challenges and opportunities

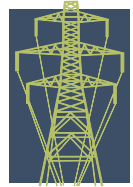
The scope and scale of climate change impacts facing the region are daunting. King County residents, businesses and local governments face diverse and increasingly severe impacts from rising sea levels, decreased snowpack and increased flooding.

Beyond the scale of the direct impacts that King County faces, a key challenge will be to sustain the level of action and commitment to achieve King County's greenhouse emissions-reduction target of at least 80 percent below 2007 levels by 2050 — the amount scientists tell us is necessary on a global scale to avoid some of the most catastrophic impacts of climate change.

Despite these challenges, exciting opportunities are emerging. The recent [*GHG Emissions in King County*](#) report highlights opportunities for new climate solutions. For example, in 2012 the Solid Waste Division will implement a pilot project to reducing wasted food that could potentially serve as a model for broader food-related efforts.

Looking forward

Near-term actions and commitments related to achieving King County's climate change goals are outlined in the 2012 King County Climate Motion and the 2012 Strategic Climate Action Plan. Implementing the priorities and strategies identified by these plans is the key recommendation for King County through 2013.



Background

King County has a long history of energy efficiency and energy smart action. The King County Council adopted the County's Energy Plan in October 2010 (Ordinance 13368), recommitting the County to aggressive goals for energy savings and renewable energy use.

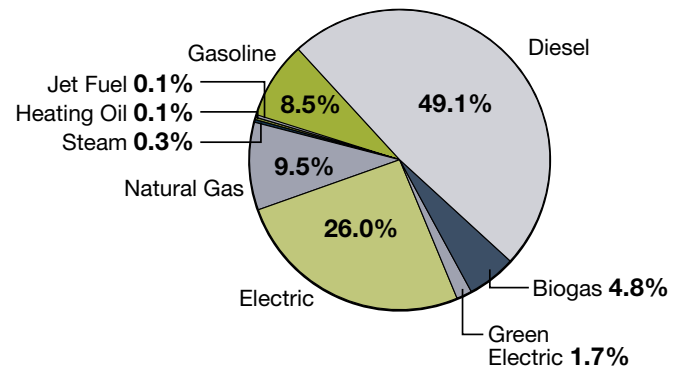
The Energy Plan directs all departments and divisions to save energy and to obtain as much of their energy as practical from renewable resources. Divisions are responsible for using the Energy Plan strategies to develop specific plans to achieve the County's goals. An interdepartmental Energy Task Force coordinates and supports these plans and reports progress to the Executive and County Council. During the 2012 update of the King County Comprehensive Plan, new mid- and long-term goals for energy efficiency and renewable energy were proposed to help guide and drive longer-term investments.

King County government's energy portfolio is composed predominantly of diesel fuel, most of which is used by transit vehicles, and electricity, for which the largest single use is wastewater processing. Overall, County government used 3.54 trillion British Thermal Units (BTUs)¹ in 2011. This is equivalent to the energy use of roughly 50,000 homes.

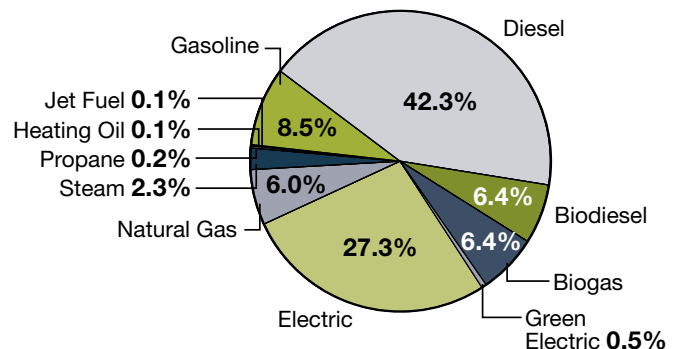
Departments and their divisions continue to implement key energy strategies, such as conducting facility energy assessments, setting priorities for making energy-saving improvements and pursuing utility incentives or other financing for energy projects.

The County continues to undertake energy projects, the number and benefits of which continue to increase. However, the positive impact of these actions has been somewhat masked by the addition of facilities and services.

2011 KING COUNTY ENERGY SOURCES



2007 KING COUNTY ENERGY SOURCES



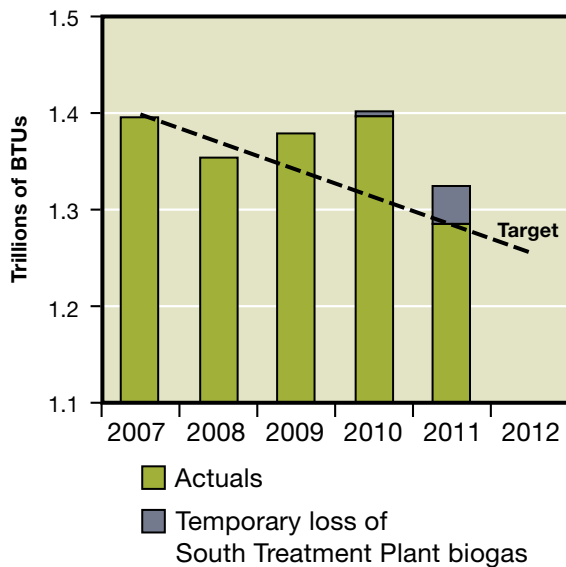
¹ The energy of one BTU is equivalent to approximately what is given off by burning one match.

Performance indicators

The County has three primary near-term energy performance targets:

1. Achieve a 10 percent normalized net reduction in energy use in County buildings and facilities by 2012.
2. Achieve a 10 percent normalized net reduction in energy use by County vehicles by 2015.
3. Produce, use or procure renewable energy equal to 50 percent of total County energy requirements by 2012.

KING COUNTY GOVERNMENT OPERATIONS NORMALIZED ENERGY USE IN FACILITIES

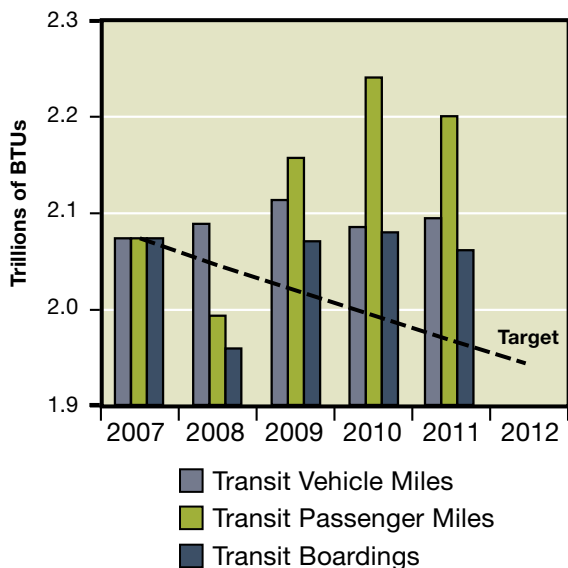


The graphs on this page track progress from 2007 through 2011 for the three primary near-term quantitative targets from the 2010 Energy Plan.

Facilities

Normalized facility energy use for 2011 has been reduced 5.2 percent from the baseline year. The interim target for 2011 is 8 percent below the 2007 baseline. The biogas scrubbing system at the South Treatment plant experienced a major failure from December, 2010 through May, 2011. Without biogas for heating the digesters, the natural gas fired cogeneration turbines were used as a heat source. The extra energy necessary for this operation is displayed above. Without the scrubber failure, energy use would have been 7.9 percent below the 2007 baseline.

KING COUNTY GOVERNMENT OPERATIONS NORMALIZED VEHICLE ENERGY USE



Normalized non-transit fleet energy use is included in and consistent across the three normalization methods shown.

Vehicles

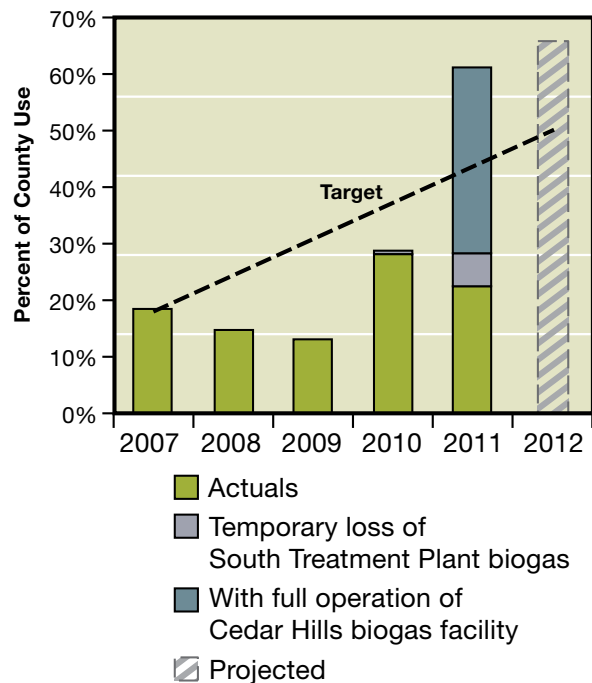
More than 80 percent of the energy used in King County vehicles occurs within Metro Transit. Normalized vehicle energy use for all other County fleets has been reduced by 1.8 percent from 2007 levels. Metro Transit normalizes energy usage by three means: vehicle miles, passenger miles, and boardings which are consistent with national transit standards. These three normalization methods on county vehicle energy use are shown in the graph. 2011 normalized vehicle energy use for the County ranges between 0.6 percent below and 6.2 percent above 2007 levels, depending on the DOT normalization method. The interim target for 2011 is 5 percent below baseline. The increased energy usage by County vehicles is largely attributed to increasing transit service, which has a net positive impact on community level energy usage.

Renewable energy

Renewable energy production increased with the startup of the Cedar Hills Regional Landfill gas processing plant, run by BioEnergy Washington, to sell scrubbed biogas to Puget Sound Energy.

The County energy portfolio is currently at approximately 23 percent renewable energy. The County is expected to exceed its 50 percent target once the Cedar Hills facility and a West Point electricity co-generation project are fully operational.

KING COUNTY GOVERNMENT OPERATIONS RENEWABLE ENERGY USE AND PRODUCTION



2011 Key accomplishments

ENERGY EFFICIENCY IMPROVEMENTS:

- The Facilities Management Division (FMD) has made energy-efficiency improvements resulting in a normalized energy reduction of 19 percent from 2007 levels. Total energy costs have been reduced by more than \$1.7 million for the period 2008-2011, mostly as a result of conversion from steam to natural gas heating in the downtown Courthouse and Correctional Facility. The first two of three phases of improvements at the Maleng Regional Justice Center (MRJC) have resulted in energy reductions of 38 percent. Green power purchases at the MRJC and Chinook Building keep the division's power portfolio at 16 percent renewable energy, though this figure has declined slightly from prior years due to the successful energy projects at the MRJC. All told, these actions have resulted in reductions in CO₂ emissions of 49 percent since 2007.
- Weyerhaeuser King County Aquatic Center (WKCAC) energy efficiency improvements began in 2009 with new equipment to condition the pool space and were completed in 2011 with the installation of energy efficient lighting in the natatorium. The WKCAC has reduced energy consumption by 16 percent and has collected rebates of \$55,570 from Puget Sound Energy.



New energy efficient heat exchanger, water piping and controls at the Maleng Regional Justice Center (MRJC)

- **Home insulation noise program:** King County International Airport is a strong community partner in mitigating aircraft noise impacts on adjacent communities. Based on the Federal Aviation Administration's Part 150 Land Use and Noise Compatibility Study, the Airport has secured Airport Improvement Program Grants to support its Home Insulation Program. Qualified homes receive specially designed windows and doors, as well as ventilation and insulation to reduce aircraft noise impacts. A positive secondary benefit of the Home Insulation Noise Program continues to be the improved energy efficiency of the homes. The program is estimated to have saved more than 4.5 billion BTUs of energy in 2011, or an average of \$250 per household per year. The noise sensitive communities include Georgetown, Beacon Hill and North Tukwila. The Sound Insulation Program is scheduled to be completed in 2014.



New forty-foot, low-floor Daimler/Orion hybrid buses can get up to 5.7mpg



Electric fleet vehicles

FLEET IMPROVEMENTS

- **Transit fleet replacement:** In 2011, Metro Transit placed 90 new 40-foot hybrid buses into service, saving approximately 59,508 gallons of diesel than the buses they replaced. Metro also introduced 18 new 60-foot hybrids, and replaced 60 older 60-foot articulated diesel buses with 70 new hybrid buses that cumulatively consumed approximately 20,000 gallons less per year than the diesel buses they replaced.
- **Electric vehicles and infrastructure:** King County Department of Transportation purchased 25 electric vehicles and installed 36 electric vehicle charging stations at its Rideshare Van Distribution Center, Burien Transit Center Park & Ride, and King Street Center. The County plans to install up to 13 more charging stations in 2012 and continues to collaborate with regional partners to promote this emerging technology.
- **Other operational transportation initiatives:** Additional energy-saving transportation options including decentralizing the online vehicle reservation system, a pilot Eco-driver training program, and purchasing additional alternative fuel light- and medium-duty vehicles to support County operations are being pursued.

Challenges and opportunities

Saving energy remains a top priority for King County's diverse governmental operations. Significant progress in facilities and operations was made in 2011, as the County is close to meeting its reduction goals. As for renewable targets, the County continues to pursue aggressive and proactive efforts to help achieve its 2012 renewable energy targets. With the Cedar Hills and West Point co-generation projects scheduled to be fully operational in 2012, the County's renewable energy production should exceed the stated goals.

The County continues its efforts to achieve 2015 vehicle energy reduction targets but this continues to be a challenge given the fact that 81 percent of the vehicle energy use is attributed to Metro Transit. There are several contributing factors to Metro's increased fuel consumption, chief among these is the conversion of the fleet to larger buses to accommodate and increase ridership. Additionally, numerous other factors contributed to this such as, loss of engine performance due to aging, additional energy consuming features on new buses and conversion of electric trolleybuses to diesel coaches.

Financial support, technical and management resources, willingness to try different approaches and ongoing management support are required by all divisions to achieve the targets.

King County must continue to focus on reducing energy consumption in its operational practices; using creative financial mechanisms such as utility incentives, energy savings performance contracting and low-interest federal bonds to implement energy reduction efforts during these challenging fiscal times and to keep the County on track.

Looking forward

King County continues to push for continuous improvements in energy efficiency in all areas of County operations. Below are some of the key areas of focus in 2012.

- **Employee education:** The 2010 Energy Plan provides key strategies to identify energy-saving changes in operations and prioritize capital investments that will provide the greatest benefit. The County plans to implement an energy efficiency training series for operations and project managers in 2012, and begin a countywide resource conservation effort to improve employees' awareness of the goals, strategies and the impact of individual actions on the environment and bottom line.
- **Data systems:** Managers are expected to support operations staff in monitoring energy use and optimizing operations based on detailed knowledge of facility energy use. In 2012, the County will review existing data systems, processes, and uses to assess energy data system needs. The Energy Task Force will develop a data plan with the goal of aggregating energy and resource data into one system, and provide staff with the training and expectations on using this important information. In order to accomplish this effort, the system investment and supporting resources must be made a high priority.
- **Community collaboration:** The County will continue to participate in local, regional and national efforts, and collaborate with communities on adding more electric vehicle charging stations, installing community solar installations and supporting district energy opportunities.
- **Financial mechanisms:** The County will further explore establishing mechanisms for financing the upfront capital costs of energy efficiency investments, documenting savings through energy accounting and creating incentives for agencies to reinvest savings in further energy-saving projects. These steps are key to continuous improvement. Additionally, integrating these energy expectations into the budget process helps to ensure budgets are aligned with the key strategies to improve energy efficiency. 2012 budget direction to agencies will include direction for inclusion of specific proposals to meet energy efficiency targets. Finally, developing future year energy cost forecasts and a mechanism to update them annually are also key initiatives. To continue this effort, sections must apply this same approach to project and operational efforts.

For more information, visit [*King County's Energy Program*](#).



Background

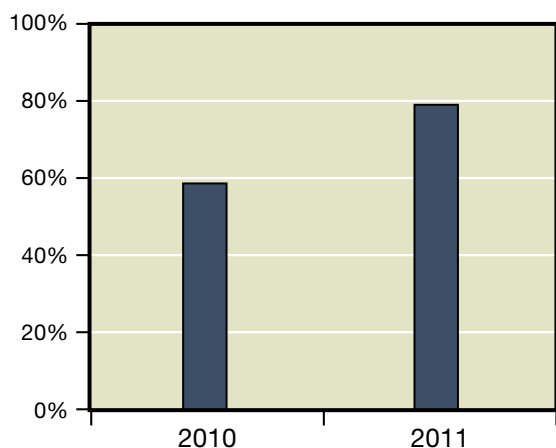
The intent of the [Green Building and Sustainable Development Ordinance 16147](#) is to ensure that the design, construction, maintenance and operation of any King County-owned or financed capital project is consistent with the latest green building and sustainable development practices.

The ordinance requires eligible County projects to be LEED Gold certified, or to apply the King County Sustainable Infrastructure Scorecard. The Green Building Team, comprised of representatives from King County departments, is charged with helping countywide projects achieve the highest possible standards of green building.

The ordinance also directs the GreenTools Program to provide technical support for the County's green building team, as well as to cities and county residents, as appropriate.

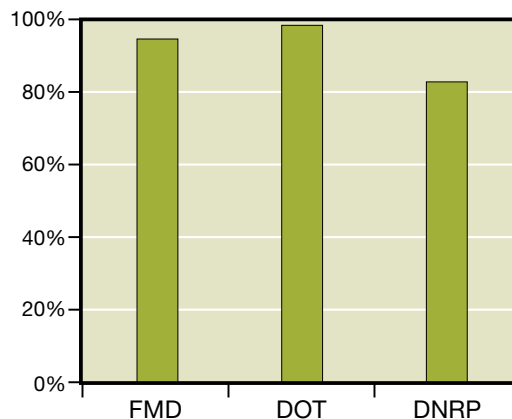
Performance indicators

DEMOLITION DIVERSION RATE FROM KING COUNTY CAPITAL PROJECTS



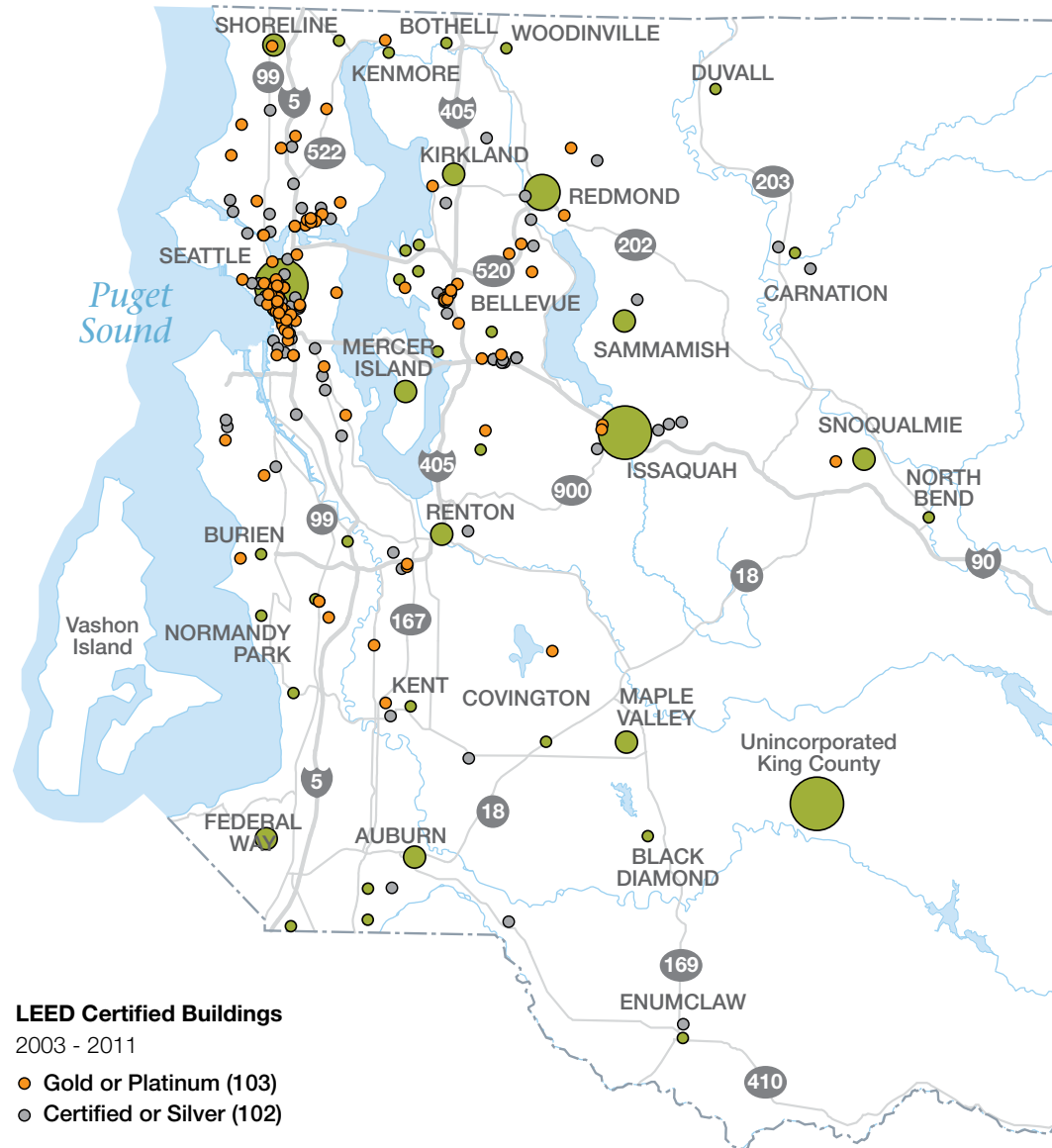
On average, King County capital projects that included construction and demolition data diverted 79 percent of construction materials from landfills in 2011.

COMPLETED LEED AND KING COUNTY SUSTAINABLE INFRASTRUCTURE SCORECARDS BY DEPARTMENT



On average in 2011, departments submitted scorecards for more than 90 percent of projects.

KING COUNTY Green Building Program



LEED Certified Buildings

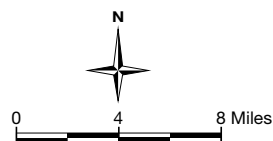
2003 - 2011

- Gold or Platinum (103)
- Certified or Silver (102)

3- to 5-Star BuiltGreen™ certified single-family and multi-family homes

2000 - 2011

- 1-100 BuiltGreen™ Homes
- 101-1000 BuiltGreen™ Homes
- 1001-2000 BuiltGreen™ Homes
- Over 2000 BuiltGreen™ Homes



King County

Department of
Natural Resources and Park
Solid Waste Division
Green Building Program

2011 Key accomplishments

INTERNAL KING COUNTY

Green Building Team assists countywide green building and operations efforts

In 2011, three distinct green building tools were created or updated to assist County staff. First, the [*King County Green Operations and Maintenance \(O&M\) Guidelines*](#) were completed, which will establish a standard for greening operations and maintenance at all King County facilities. This tool will provide guidance and support to O&M staff in developing sustainable practices. Next, a GHG emissions calculator was created in collaboration with the Climate Change Team as a tool for project managers to quantify GHG emission savings from green building efforts. This will support project managers in reducing a project's environmental footprint. Finally, nearly 100 staff were trained to use an updated life-cycle-cost analysis tool, which helps project managers consider cost effective design alternatives. A variety of additional technical trainings were offered at no cost to ensure project managers have skills and information on the latest green building and operations techniques and innovative technologies.

The [*2011 King County Green Building Summit and Excellence in Building Green Awards*](#) ceremony was held at the Brightwater Environmental Education and Community Center, with participation from 11 County divisions. More than three dozen employees were honored by Executive Constantine for their work maintaining the County's position as a national leader in cost-effective and sustainable building practices.

Green building activity by King County agencies in 2011 consisted of 10 LEED projects and 202 projects using the King County Sustainable Infrastructure Scorecard, bringing the inventory of completed Sustainable Infrastructure Scorecards to 251. On average, King County capital projects diverted 79 percent of construction materials from landfills. Salvage and deconstruction assistance, including on-site building assessments, was provided on 31 different King County projects.

"One of my top priorities and a key goal in our King County Strategic Plan is protecting our environment and quality of life for future generations. We need to continue to push the envelope on saving energy and resources in all areas of County operations, design and construction."

- Executive Dow Constantine



Executive Constantine awarded a team from the Road Services Division a 2011 Excellence in Building Green Award for their work on the Southwest 98th Street pedestrian improvements projects.

These are just a few examples of King County green building projects. You can see additional green building accomplishments at the [County's Green Building Team website](#).



*Low-impact, eco-friendly cargo camping structure
Rendering courtesy of Hybrid Architecture*

- **Little Footprint Big Forest** – (left) A Parks and Recreation Division challenge to design an overnight camping structure re-using a surplus cargo container, for use at County open space and forested lands that have minimal roads or utilities.

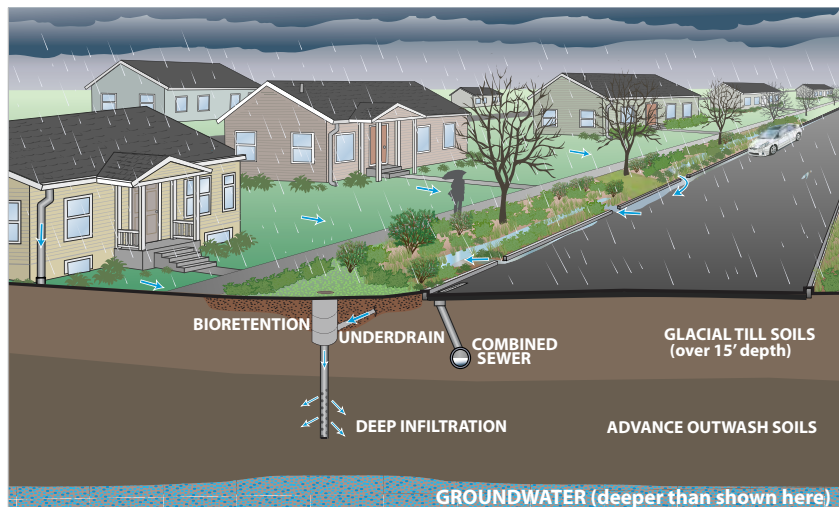
- **Rehabilitation of the Alpha Taxiway** – Recycled more than 40,000 tons of taxiway concrete and asphalt material from the King County International Airport.
- **Public Health Centers** – In collaboration with community partners and the County's Facilities Management Division, Public Health will be designing new public health centers. Using LEAN and green principles, center designs are smaller, energy efficient and use sustainable products in construction.



Renovation of Metro Transit's North Base includes green roof and energy efficiency upgrades

- **Transit North Base** – (left) Improvements to an existing two-acre green roof, along with retrofits of transit base heating, ventilating and air conditioning systems to improve energy efficiency.
- **Renton Consolidated Office and Repair Facility** – The "J" Building will undergo a roof replacement project and energy efficiency improvements to the existing 15,000 square foot facility. The goal is to achieve LEED Gold certification. Construction began in April 2012.

- **Barton Combined Sewer Overflow (CSO)** – (below) Construction of green stormwater infrastructure facilities such as bioretention swales will achieve CSO control and provide up to two million gallons of volume reduction and 14.6 million gallons of peak flow reduction per day.



Green stormwater infrastructure features

KING COUNTY COMMUNITY

The DNRP's green building program – [GreenTools](#) – supports internal King County agencies, cities, the building community and the public in designing buildings and structures that have fewer impacts on the environment, are energy efficient and use recycled materials. In 2011, GreenTools won Public Sector Leadership Awards from Cascadia Green Building Council and Built Green of King and Snohomish Counties.

[Sustainable Cities Program](#)

In 2011, GreenTools delivered 12 roundtables, five technical trainings, two tours and the GreenTools Government Confluence, which was held in conjunction with the 2011 Built Green Conference and was a programming highlight. At this event, the winner of the Little Footprint Big Forest contest cargo-container design competition was announced to an audience of 155 conference attendees. Also at this event, several cities signed the King County-Cities Climate Collaboration pledge, adding momentum to this new partnership focused on climate change solutions. At the end of 2011, King County and nine cities had formally committed to collaborate on this work.



*GreenTools Government Confluence
co-hosted by City of Issaquah*

Construction and Demolition Recycling Program supports green jobs

A deconstruction crew lead was hired under the Department of Community and Human Services' YouthSource program. The crew lead manages a rotating deconstruction crew of three to seven young adults between the ages of 18 and 24 who are working to earn their GED or diploma credentials. Each group of program participants goes through safety and equipment training, as well as training in basic work practices. The crew then works together to entirely remove a house, diverting the majority of materials for reuse and recycling. This federally-funded work training program provides crew services to King County at no cost to the project. The crew takes about a month to deconstruct a 1,500-square foot house, and was kept busy in 2011, removing four houses located on floodplains for the Water and Land Resources Division.



*YouthSource crew removing
drywall as part of a residential
deconstruction project.*



GreenTools launched the [CleanBin](#) Program in 2011 to recognize jobsites that demonstrated best practices for separating construction and demolition (C&D) garbage from recyclable materials. This means, at a minimum, always having two containers at the job

site – one for materials that can be effectively recycled, and another container for the C&D materials for which there are not currently reuse or recycling markets. Two jobsites in King County were recognized in 2011:

- **St. Elizabeth Hospital** – This project, managed by Sellen Construction, had an overall diversion rate of 99 percent.
- **zHome** – This project was managed by Ichijo USA Co., LTD with an overall diversion rate of 92 percent.

Green building assistance provided to innovative projects

In collaboration with WLRD and WTD the Solid Waste Division awarded the final green building grants and provided technical support to two developments completed in 2011. Located next to one another in Issaquah, the [zHome](#) and [YWCA Village](#) developments are each significant for different reasons. The GreenTools program worked with community



YWCA Family Village and zHome delivers equitable access to green building for Issaquah residents.

partners to develop the nation's first zero-energy, carbon neutral multifamily community in the zHome development - the highest 5-Star rated Built Green project ever certified. It received the Forest Stewardship Council's Project of the Year award, and was King County's first Salmon Safe and EPA Water Sense certified project. The YWCA Village provides 146 units of affordable housing in a transit-oriented, low impact development that features green materials and numerous energy efficiency measures. The residential buildings in the YWCA Village earned Built Green 5-Star certification, while the commercial buildings and community center were awarded LEED Gold.

In further support of equity and social justice in King County, GreenTools has joined with Habitat for Humanity and Miller Hull Partnership on the Immediate House of the Future project. The project kicked off in 2011 with a workshop attended by over 60 local experts who focused on four major topics: construction, energy, program and site, and prioritizing repeatable solutions for near-term Habitat for Humanity projects. The Immediate House of the Future is also a recipient of King County's final LEED grant funds. It will be completed in 2012 on the grounds of the Seattle Center before moving to its final home in the Hope VI neighborhood of Rainier Vista.

In 2011, two more recipients of the County's green building grants earned green certification. Pond Lily, a wet lab at the Mercer Slough Environmental Education Center, received five-star certification from Built Green. In 2011, LEED grant recipient Kenmore City Hall received LEED Gold Certification.

Challenges and opportunities

An ongoing challenge is the need for better quantitative data. To effectively monitor progress and performance measures, County agencies need a streamlined and consistent database that contains comprehensive project tracking information.

King County can continue its national leadership in public sector green building and operation efforts with the renewal of Green Building and Sustainable Development Ordinance in 2013. Developing policy content will begin in 2012.

Green building practices should continue to be mainstreamed into County actions, such as the countywide capital project program, budget direction and the Project Information Center database. Division database systems can be modified to include or expand their sustainability criteria for more efficient tracking.

Looking forward

- Division management should continue to actively support and incentivize project managers to implement sustainability practices to the greatest extent possible in all their capital and operating projects.
- Continue to develop a framework for documenting and reinvesting energy, resource, and financial savings resulting from division-led initiatives that reduce the county's environmental footprint, which can help to incentivize continuous improvement.
- County divisions should prioritize adopting a Green O&M Manual to implement operation practices that will save King County funding.
- Link operations and capital budgets in one fund to better evaluate life cycle cost alternatives and pursue truly sustainable buildings and infrastructure.
- Look forward and plan for more innovative green building or operations projects such as pursuing the [*Living Building Challenge*](#).

For more information, visit [*King County's Green Building Program*](#).



ENVIRONMENTAL PURCHASING PROGRAM

Background

King County's Environmentally Preferable Products Purchasing Policy (KCC 18.20), originally established in 1989, was updated in 2011 to include revisions for paper reduction and purchase of 100 percent recycled paper, electronics recycling and reporting requirements and directs County agencies to buy environmentally preferable products "whenever practicable."

"Environmentally preferable purchasing" (EPP) is defined by the Environmental Protection Agency as products and services "having a lesser or reduced effect on human health and the environment when compared with competing products that serve the same purpose. This comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, or disposal of the product."

The Department of Executive Services' Environmental Purchasing Program is responsible for implementing this policy and offers County employees information and technical assistance to help them find economical and effective alternative products that meet environmental requirements.

In the past year, King County agencies purchased \$60 million worth of environmentally preferable products, saving \$1.54 million compared to the cost of conventional products. The savings are typically found in reduced initial purchase cost and avoided replacement cost due to durability. Oftentimes, there are even more savings through less maintenance, reduced energy and water use, or reduced greenhouse-gas emissions. These savings are quantified to the greatest extent possible, and are included in this report.

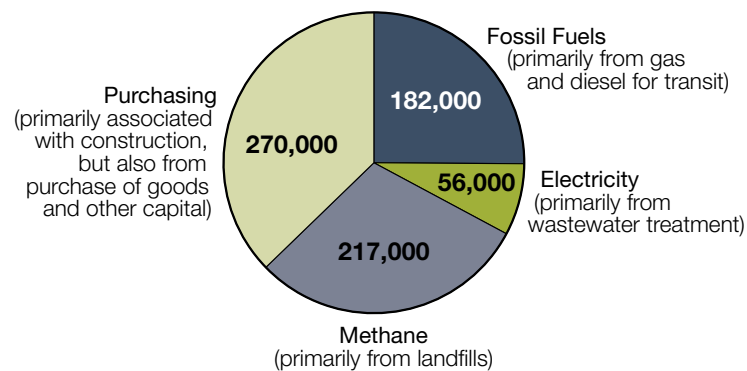
Performance indicators

GREENHOUSE GAS EMISSIONS – OPERATIONS

Purchasing goods and services, most significantly construction and other services, account for 270,000 metric tons of King County emissions, or approximately 30 percent of the County's direct emissions. The new study, "Greenhouse Gas Emissions in King County" changes the way the County looks at its carbon footprint and will help inform future environmental purchasing decisions.

GREENHOUSE GAS EMISSIONS FROM KING COUNTY GOVERNMENT OPERATIONS

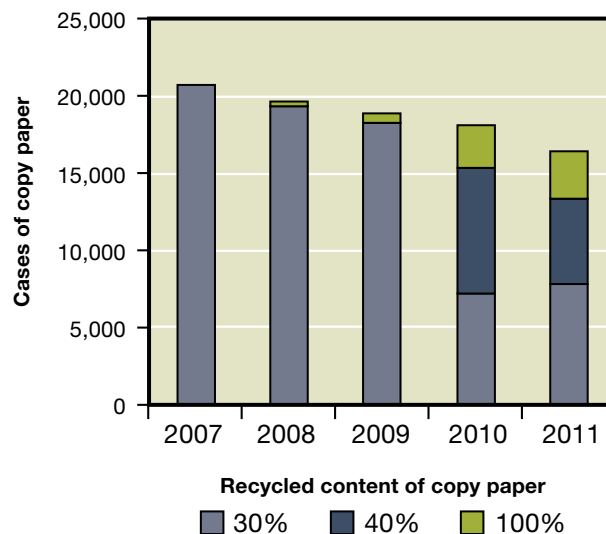
Total: 725,000 (in Metric Tons CO₂E)



COPY PAPER

Purchases of copy paper by County agencies were reduced by 9.5 percent between 2010 and 2011 while the purchase of 100 percent recycled paper increased by 12.5 percent.

KING COUNTY COPY PAPER PURCHASES



2011 Key accomplishments

COPY PAPER



Ordinance 17074, which took effect in January 2012, requires a 20 percent reduction in paper consumption by 2013 over 2010 figures, plus double-sided printing and increased use of 100 percent recycled content copy paper. This new policy and a new paper contract in 2011 will help spur the purchase of more 100 percent recycled-content copy paper. The County achieved savings of \$118,265 last year by purchasing fewer cases of paper, and receiving better pricing under the new copy paper contract.

The paper policy is supported by both the King County Executive and County Council, and it will help County agencies meet the strategic goals for environmental sustainability. If County agencies convert their remaining purchases of copy paper to 100 percent recycled content, an estimated 6,026 more trees would be left standing, greenhouse gas emissions would be slashed by 306 tons and 2.75 million gallons of wastewater and 88 tons of solid waste would not be produced annually by paper manufacturers. These figures are provided by the Paper Calculator, an estimating tool provided by the nonprofit Environmental Paper Network.

ELECTRONICS RECYCLING



Electronics recycling operation

In 2011, King County became just the second county in the nation to earn the “e-Stewards Enterprise” designation from the Basel Action Network’s (BAN) standard for responsible recycling and reuse of electronic equipment. This designation signifies that all County agencies recycle electronic waste, such as computer monitors, TVs and cell phones in an environmentally responsible manner. Electronic waste, or “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.



Last year, the County Council passed legislation (Ordinance 17085) requiring BAN’s e-Stewards® certification, or equivalent, of contracting vendors, to ensure that e-waste recycling is held to the highest environmental standards. The current contractor is a certified e-Stewards® recycler, reaching this elite status in 2011. County agencies recycled 68,099 pounds of electronic equipment, 6,820 pounds of cathode ray tube monitors and 1,253 LCD monitors, 14,447 pounds of televisions and 6,356 pounds of batteries through this contract in 2011.

LIGHTING

The Energy Task Force completed the 2012 lighting implementation plan in response to [*Ordinance 16769*](#) that was issued to ensure compliance with new 2012 federal energy-efficiency lighting standards. The plan is a guide for King County agencies on creating plans to replace or retrofit lighting fixtures with more energy-efficient lamps and ballasts, to take advantage of utility rebates ahead of federal phase-out laws, and to shield outdoor lighting to prevent outdoor light pollution from County facilities. The plan also summarizes efforts to acquire energy-efficient lamps with reduced mercury, and recycle lamps containing mercury.

County agencies, including Facilities Management Division, Transit Division and Parks and Recreation, have completed several projects at various facilities, including at the Component Supply Center and the Weyerhaeuser King County Aquatic Center upgrading to more efficient fluorescent lamps and lighting controls. The Airport, Marine and Transit divisions installed light-emitting diodes (LEDs) for over 320 taxiway lights and 13 signs, a trial light at Pier 50, and bus headlamps, respectively. LEDs are long lasting and energy efficient, which far outweigh their initial cost. Many more energy efficient lighting upgrades and the use of LEDs, are planned for 2012 at several maintenance facilities.



Taxiway LED lights



Pier 50 LED lighting

King County Procurement and Contract Services worked with the State of Washington on a new contract for lamps and ballasts, awarded in June 2011, meeting the new 2012 federal energy-efficiency requirements. In addition to price, the bids were evaluated on several non-cost environmental factors, including long-life lamps and reduced mercury and lead, referencing mercury limits set by the European Union's Restriction of Hazardous Substances Directive, as there are no current federal limits.



Lighting upgrades to the paint booth at the Component Supply Center

King County has been recycling mercury-containing fluorescent lamps from its own facilities since 2000. In the past year, King County recycled thousands of lamps, including 40,938 compact, straight and u-tube fluorescent lamps; 2,806 high-intensity discharge lamps and 3,717 pounds of ballasts.

OUTREACH

King County exchanges practical information with other environmentally preferable purchasing practitioners and offers its experience in support of the planning, policy-development, and procurement-education activities of local jurisdictions and other organizations. In 2011, program personnel participated in the following activities:

- National Association of Counties (NACo) Green Government Initiative - Appointed to serve on Green Purchasing Task Force;
- Underwriters Laboratories (UL) Environment – Participated in the annual UL council meeting in Chicago as one of the few government officials invited, to discuss the future of environmental standard setting, certification and transparency;
- Green Products Roundtable – Participated in a two-day workshop as an invited government participant to discuss tools to bring clarity to the green products marketplace;
- NACo webinar “Green Purchasing 2.0: No Compromising on Cost and Performance” – panel speaker;
- Municipal Collaboration for Sustainable Purchasing (Canada) Peer Exchange Teleconference – speaker on metrics and reporting systems for sustainable purchasing;
- City and County of Denver – Sustainable adviser for EPP and networking;
- Buyer staff trainings – Training sessions for environmental purchasing policy and program; and
- Responsible Purchasing Network Steering Committee.



Challenges and opportunities

A major challenge to expanding the purchase of additional categories of environmentally preferable products is the lack of consensus-based standards and independent, third-party certifications for many products. “Greenwashing,” or false claims of environmental preferability, of products available in the marketplace, is another issue that must be considered.

King County addresses these challenges by participating in the public process for consensus-based standards and referencing these environmental standards and third-party certifications, where applicable, when specifying many products such as paper, “green” cleaners, energy efficient equipment and sustainable carpet. Every year, County agencies purchase more “green” certified products, such as EPEAT® registered computers, Green Seal certified cleaners, Energy Star equipment and Forest Stewardship Council-certified paper.

In addition, continued support and priority for EPP is needed to ensure that the County’s sustainability goals are met and that it is integrated fully with other environmental programs. Consistent messaging at all levels of management and continued work with other jurisdictions and national organizations are opportunities to expand the program and learn about other successful policies and programs.

Looking forward

- Implement paper and electronics recycling legislation passed in 2011;
- Use recommendations from the 2012 GHG emissions study on King County geographical emissions as they relate to County purchasing of goods and services and implement targeted approaches to further reductions in GHG’s in purchasing;
- Establish a contract for sustainable flooring products and installation - work with the City of Seattle and U.S. Communities on a national contract for carpet and other flooring;
- Continue partnerships with Responsible Purchasing Network and NACo Green Purchasing Taskforce, including acquiring a summer intern to assist with green purchasing efforts; and
- Update EPP policy to align with overall environmental sustainability goals and other policies.

For more information, visit [*King County’s Environmental Purchasing Program*](#).

PROJECT PROFILE: SOLID WASTE RECYCLING & TRANSFER STATION

Reducing Footprint, Expanding Services, Saving Energy and Building Green

Transfer stations are the public face of the solid waste system. In 2011, transfer facilities received 796,188 tons of garbage through 738,566 customer visits. The [*King County Solid Waste Division \(SWD\)*](#) is in the midst of modernizing its half-century-old transfer station network to meet the needs of its customers, while addressing potential impacts of climate change. The new transfer stations will play an important role in increasing regional recycling. Using an E.P.A. model, it is estimated that recycling and composting in King County reduce GHG emissions by approximately 1.62 million metric tons annually – the equivalent of removing 280,000 passenger cars from the road.

The SWD has continuously illustrated cutting-edge environmentally sustainable practices. For example, the Shoreline Recycling and Transfer Station was King County's first LEED Platinum project and the first industrial project in the world to earn LEED Platinum certification. Through sustainable design, the facility exceeded community expectations by offering more recycling services and improving the site's ecology – with projections of reducing annual water needs by 57 percent and energy costs by 50 percent. This project is a model for the community to experience LEED buildings in an industrial context while acting as a living laboratory of innovation.

Improvements to the Houghton Transfer Station were completed in early 2011, improving safety and efficiency with less impact to neighbors, and awarded "Project of the Year" by the American Public Works Association. Almost \$300,000 in savings came from reusing onsite materials and less demolition and disposal costs. Houghton was the pilot project for the County's Sustainable



Francis Gaspay, Project Manager, receives 'Project of the Year Award' by American Public Works Association for Houghton Transfer Station Improvements Project

Infrastructure Scorecard, achieving a Gold rating level, and serving as a tool to effectively document and communicate sustainable components between the contractor and consultants.

The Bow Lake Recycling and Transfer Station handles more than a third of King County's solid waste. The new facility is one of the region's most sustainable waste-handling facilities, and will be ready to accept garbage in 2012. It is slated to achieve LEED Gold, designed to use 63 percent less energy and 59 percent less water. Efficiencies will cut truck trips to the landfill by one third.



Bow Lake Recycling and Transfer Station

This station will be the first to house a material processing and recyclable collection facility along with waste transfer operations. Recyclable materials will be separated for shipment to off-site recycling facilities.

Three new facilities are being designed and planned. The objective is to site transfer stations strategically to benefit customers, incorporate equity and social justice, minimize negative environmental impacts, optimize energy efficiency and reduce GHG emissions.

“We have made sustainability a central goal for the redevelopment of our transfer stations,” says Kevin Kiernan, King County Solid Waste Division Director. “Not only will the new stations save energy and water and provide a safer and healthier work environment, but they will also achieve dramatically reduced operating costs.”

PROJECT PROFILE: METROPOOL

All electric | Zero Emission



Metro Transit Rideshare operates the largest public commuter van program in the country with over 1,200 vans in revenue service. In 2011 the program provided over 3.1 million passenger trips, reduced over 20,000 metric tons of CO2 and eliminated 49.9 million vehicles miles.

Metropool launched as a pilot program in 2011 with 20 all electric, zero emission (EV) Nissan LEAFs. Employers in support of this project installed Level 2 (240 volt) charging stations that allow the Metropool vehicle to be fully charged in approximately seven hours if the battery is completely empty. The volunteer driver can also choose to charge the vehicle at home as the program encourages unlimited personal use to the groups' approved drivers to promote EV use.

The first Metropools began operation in partnership with Seattle Children's and Amgen. Another travels to the Fairmont Hotel in Seattle. Driver Joanne Day says, "We LOVE the LEAF. Can't say enough great things about it and Metropool! It's such a fun car to drive. We wanted to create a Metropool to have the positive impact of taking multiple cars off the road and switch to the zero emission LEAF, but now that we're driving it We love it for so many more reasons."

The Department of Transportation is installing 49 Level 2 charging stations as public infrastructure so EV drivers become comfortable with charging outside their home, travel further and decrease “range anxiety.” The stations target a variety of users, including commuters during the day, event and retail parking into the evening and overnight residential use. Some of these charging stations support five King County Fleet and several Metropool EVs at King Street Center, Fauntleroy Ferry Dock and some Park & Rides.

Metro Transit introduced Metropool to its customers to improve the community's environment. Customers have embraced the new service and thank us for another “Great mode of transportation.”



PROJECT PROFILE: BRIGHTWATER

A new clean-water treatment facility



Brightwater Treatment Plant

In addition to providing enough wastewater treatment capacity to protect public health, the environment and the economy in our growing region over the next several decades, the Brightwater Treatment Plant incorporates numerous sustainable design and building practices into the new facility.

Building Brightwater reduced impervious surface on the 114-acre site by about 50 percent. Alongside the new plant is an innovative stormwater treatment system that includes multiple stages of filtration through wetlands and improves the quality of stormwater flowing to Little Bear Creek.

Facilities were built using recycled or green building materials such as flyash concrete, and design features maximize the use of natural light in work spaces. There is also substantial native landscape planting around facility buildings, as well as an adjacent Environmental Education and Community Center on site pursuing LEED's Platinum level for design.

Brightwater features 70 acres of open space and enhanced habitat, including 43 acres on the north portion of the site that has been transformed from an underused, environmentally damaged site into a community amenity with open space and trails and improved habitat.

King County planted more than 22,000 plants including 5,000 seedling trees using only native plant species that have been grown and purchased through the King County Plant Salvage and Parks Nurseries, and reused more than 200 trees and root wads cleared from the site during an earlier road expansion project in stream and pond salmon habitat reconstruction.

Crews also daylighted creeks, restored habitat and constructed more than four acres of additional enhanced emergent and forested wetland habitat

The Brightwater design team was led by King County staff and made up of both staff and consultants including world-renowned team members. Hargreaves Associates provided site planning and landscape architecture design. Mithun, a local architecture firm and international leader in environmentally sustainable architecture, designed Brightwater's facilities as well as the Environmental Education/Community Center. Together, King County and our consultants created a world class facility that will protect the Puget Sound region for generations to come.



Brightwater Environmental Education and Community Center



Brightwater habitat restoration

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 2008 King County Comprehensive Plan established a long-term GHG emissions reduction goal and includes policies calling for actions to assess and reduce climate pollution and prepare for the impacts of climate change. The King County Strategic Plan's Environmental Sustainability goal and objectives also include a focus on reducing climate pollution and preparing for the impacts of climate change on the environment, human health, and economy. The County's climate change program is led out of the Department of Natural Resources and Parks (DNRP), where there are currently one full time and one term limited staff position. The 2012 budget for these two positions is \$190,275 including salary and benefits.

The actions needed to carry out climate-related Comprehensive Plan policies and Strategic Plan 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, these DNRP Climate Program staff work closely with 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 implementing the Energy Plan, the Green Building and Sustainable Development Policy and the Environmental Purchasing Program.

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 \$15,000 in 2011.

Benefits of climate change program

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

- **Helping secure additional revenue to support related County projects and programs.** Examples include two grants that run through 2012: In partnership with the National Wildlife Federation, King County was awarded a \$135,346 grant from the United States Forest Service to implement the Urban and Community Forestry Climate Preparedness and Response project, developing tools for private landowners to learn about the relationship between climate change and their forests and to connect them to resources to support forest stewardship. Additionally, King County was awarded a \$6.2 million Energy Efficiency and Conservation Block Grant from the Department of Energy which prioritizes projects that reduce GHG emissions. King County is using this 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 related staff were directly responsible for helping secure, administer and implement these and other external revenue 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 Facilities Management Division (FMD) has implemented various energy efficiency projects that reduced their GHG emissions by almost half from 2007 to 2011. With these projects, FMD's energy costs were also reduced by more than \$1.7 million annually between 2008 and 2011. Similar accomplishments and cost savings have been accomplished by other King County divisions.
- **Mitigating future climate change impacts.** A key benefit of the Climate Change Program 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 sea level rise data 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 the climate change program: 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 significantly outweigh its costs.

