2011-0308

Toward A Sustainable, Prosperous King County

2010 Annual Report of King County's Climate Change, Energy, Green Building and Environmental Purchasing Programs

King County

June 2011

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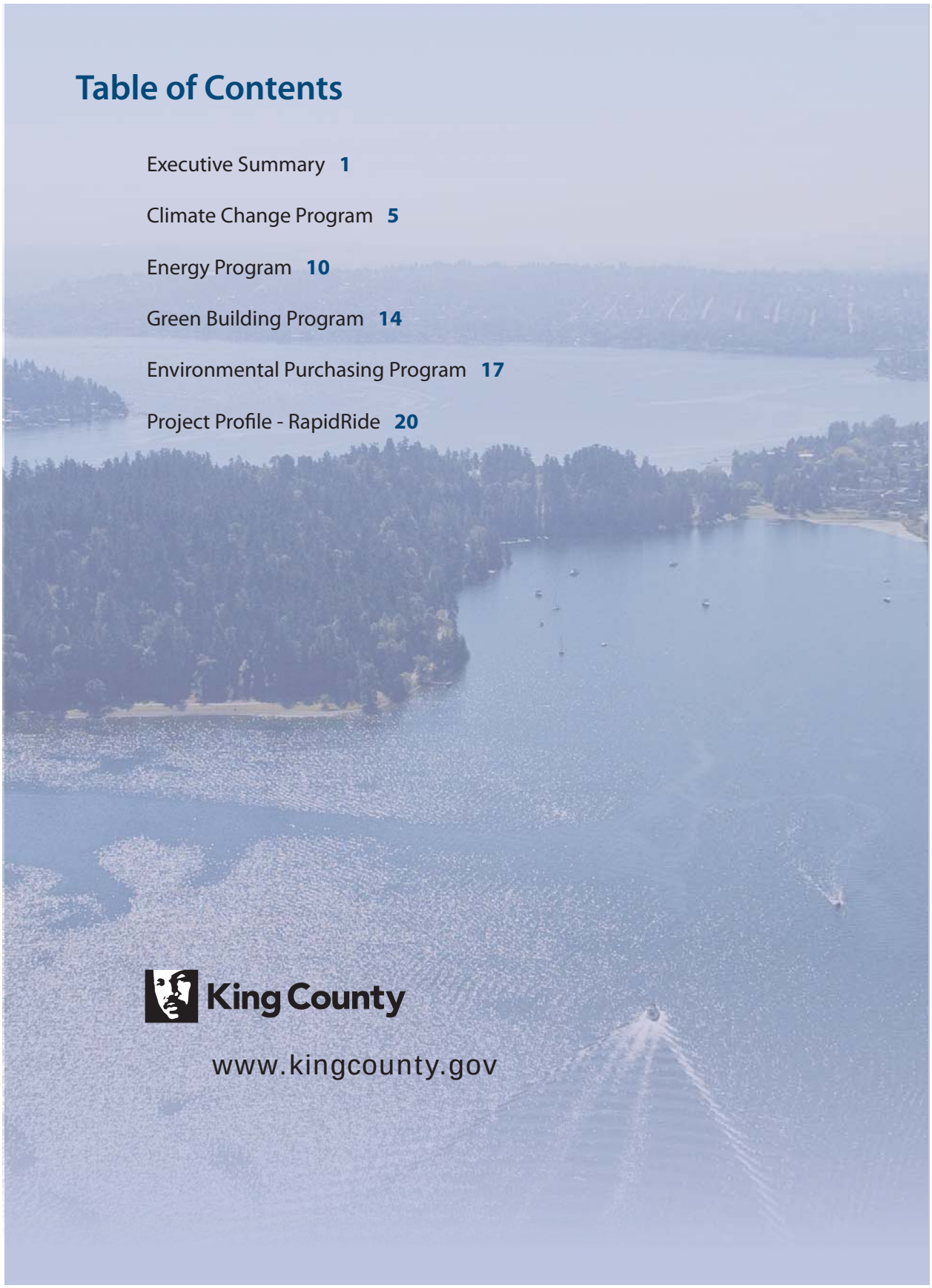


King County

www.kingcounty.gov

Toward A Sustainable, Prosperous King County

2010 Annual Report

Executive Summary

The programs described in this report—**climate change, energy, green building and environmental purchasing**—are core elements of King County's overall strategy to reduce the environmental footprint of its own operations and support efforts in the broader community to reduce greenhouse-gas emissions and improve environmental sustainability.

These programs are tightly linked to and guided by the Environmental Sustainability goals, objectives, and strategies in the 2010 King County Strategic Plan, and build on initiatives that King County leaders have launched over many years.

The County's climate change, energy, green building and environmental purchasing programs are interdependent and mutually beneficial. For example, reduction of the County's greenhouse-gas emissions is dependent on actions to reduce energy use. The County's green building standards lead to reduced resource use and emissions. Until now, however, each initiative has had separate and sometimes redundant reporting requirements.

The 2010 Energy Plan recommended that annual reporting on energy, climate, and green building be integrated, streamlined, and structured to better inform future policy choices and capital investments. With this report, the County is transitioning to integrated reporting for these three programs plus environmental purchasing. This approach will provide a single point of reference for the public and decision-makers about these related topics. Integrated reporting will also make it easier for decision-makers and staff to see linkages and synergies and to coordinate their work.

The 2010 Strategic Plan calls for building a culture of performance, and this report includes recommendations based on the County's performance and experiences in the programs discussed. In future years, the recommendations will be linked to more detailed performance measures being developed for the environmental sustainability strategies in the Strategic Plan.

Key Accomplishments

The following is a sampling of major 2010 accomplishments in the climate, energy, green building, and environmental purchasing programs. Information about other projects and programs that support the County's environmental sustainability efforts can be found by following the website links at the end of each section.

- ✦ King County Metro Transit implemented the RapidRide A Line. Designed to keep people moving throughout the day on an

11-mile corridor that links five cities and major destinations in south King County, this service has surpassed expectations, with increased ridership and customer satisfaction.

- The County continued to "green" its fleet with the purchase of 93 hybrid buses, saving $4.7 million annually in fuel costs and reducing greenhouse-gas emissions by 18,000 tons of carbon dioxide.
- The King County Executive proposed and the Council adopted the 2010 King County Energy Plan.
- Renewable energy production increased dramatically with the startup of Cedar Hills Landfill gas processing by Bio Energy Washington for sale to Puget Sound Energy, putting the County on track to meet its 2012 goal for renewable energy.

- The King County Solid Waste Division continued to provide education, incentives, pilot programs and partnerships to reduce the generation of waste and to increase recycling, reducing community greenhouse-gas emissions by an estimated 817,000 metric tons.
- King County Parks achieved milestones on the design, development, funding, and construction of several key trails in its Regional Trails System, including the East Lake Sammamish, Burke-Gilman, and Lakes-to-Sound trails.
- The Facilities Management Division made major energy-efficiency improvements in large and high-use facilities, resulting in gross energy savings in FMD-managed facilities of more than 7 percent from 2007 levels.
- Eleven building projects pursued LEED certification and 135 capital projects that are not eligible for LEED used the County's Sustainable Infrastructure Scorecard.
- King County agencies purchased $41 million worth of environmentally preferable products, saving $1 million compared to the cost of conventional products.

Performance Snapshot

While each of these accomplishments has multiple environmental benefits, it is important to look at the County's 2010 actions in the context of broader performance indicators.

- King County is making progress in reducing greenhouse-gas emissions from County operations, with energy-related emissions from non-transit sources decreasing 13.1 percent between 2000 and 2010.
- Emissions associated with transit service increased by 10.3 percent as the transit system grew to meet rider demand. Continued investments in bus replacement will help to reduce per-rider energy use and associated emissions.
- Countywide, greenhouse-gas emissions from all sources increased 5.5 percent between 2003 and 2008. While this reflects a stabilization of per capita greenhouse-gas emissions, a significant reduction in emissions will be needed to meet the long-term goal of an 80-percent reduction by 2050.

- Despite impressive progress in many facilities and operations, gross energy use in County buildings and facilities overall was reduced by 3 percent between 2007 and 2010. Meeting the 2010 Energy Plan goal of reducing building energy use 10 percent by 2012 will require a concerted investment of resources and attention to implementing the strategies outlined in the 2010 Energy Plan in all areas of County operations.
- King County made significant progress toward meeting the 2010 Energy Plan's renewable energy goal and is on track to produce or use at least 50 percent renewable energy by 2012.

Key Challenges and Opportunities

A key challenge is the sheer magnitude of change necessary to achieve King County's adopted emissions-reduction target of 80 percent over the next 40 years. Reducing emissions from both County operations and the community at that level will require significant changes to government operations, transportation systems, and the broader fossil fuel-based economy.

King County's climate change efforts are evolving beyond an internal focus to also include broader community education, technical assistance, and incentives in key areas such as green building, sustainable consumption, recycling and composting, forest stewardship, electric vehicles, and alternative transportation solutions. Major updates to the Countywide Planning Policies and King County Comprehensive Plan, coupled with growing collaboration between cities and the County on climate change and sustainability efforts, create an opportunity to develop more effective goals and strategies for reducing community-scale emissions.

Continuous improvement in energy efficiency will require financial support for upfront investments in energy efficiency, technical and management resources, management support, and active engagement of operations staff in all divisions to achieve the targets. The County's current financial situation limits its ability to finance capital investments that would result in increased energy efficiency, reduced greenhouse-gas emissions and operational savings. Creative financial mechanisms, such as utility incentives, Energy Savings Performance Contracting, and low-interest federal bonds for energy programs may enable divisions with limited capital to make facility improvements. Funding constraints also can limit the operating resources for training, energy-saving maintenance, and other support needed to put into practice relatively new approaches, like use of the Sustainable Infrastructure Scorecard for capital projects.

Environmentally preferable products must perform as well and be as fiscally responsible as the products they are replacing, in addition to being environmentally beneficial. However, clear standards for "green" products are limited.

The phase-in of new federal lighting requirements will necessitate capital investments to replace lighting in older facilities, but will create operational savings through reduced energy use.

Key Recommendations

- Pursue a focused suite of near-term actions intended to further reduce greenhouse-gas emissions from County operations and at the community scale and prepare for climate change impacts. *These actions are outlined in a Climate Motion transmitted to the County Council in April 2011.*
- Collaborate with cities through forums like the GreenTools Sustainable Cities Roundtable to support local climate change and sustainability projects and programs and to develop a countywide greenhouse-gas

emissions target and a practical framework for monitoring results. *This work is being pursued in 2011 as part of the King County-Cities Climate Pledge and updates to Countywide Planning Policies and the King County Comprehensive Plan.*

- Seek continuous improvements in energy efficiency for all areas of County operations consistent with the strategies in the 2010 Energy Plan. *Department and division managers are expected to encourage and support efforts by operations staff to monitor energy use and optimize operations.*
- Establish new mechanisms for financing the upfront capital costs of energy efficiency investments, documenting savings, and incentivizing reinvestment of energy savings. *The County's Executive Office is developing this reinvestment framework in 2011.*
- Establish mid- and long-term goals for energy efficiency and renewable energy to guide longer-term investments and advance the County's progress in meeting greenhouse-gas emissions reduction targets. *These goals will be developed in tandem with community-scale greenhouse-gas emissions reductions targets in 2011 and 2012.*
- Pursue LEED Certification of existing buildings and continue to train staff in use of the Sustainable Infrastructure Scorecard, with the goal of making use of the Scorecard a regular and consistent element of capital project development. *Training and outreach in these areas in coordination with agency capital programs and the Capital Project Management Work Group is underway.*
- Promote development of consensus-based standards for environmental purchasing and provide guidelines and training to County agencies for lighting replacements needed to meet updated federal standards. *Guidance for lighting replacement has been developed is now being disseminated by the County's Energy Task Force.*
- Link sustainability performance measures with accountability expectations for directors, managers, supervisors and project managers. *This work is taking place as part of development of a performance measurement framework for the King County Strategic Plan.*

Organization of this Report

For each of the program elements (climate, energy, green building and environmental purchasing), this report includes background, a summary of key performance indicators, key accomplishments, challenges and opportunities, and recommendations. The report concludes with a profile of RapidRide, a project that exemplifies the interrelationships and mutual benefits of investments to reduce energy use, greenhouse-gas emissions, and environmental impacts at both the County operations and community levels.

Climate Change Program

Background

Human sources of climate pollution, such as carbon dioxide and methane, are causing unprecedented and severe changes in global and local climate systems[1]. This is the consensus view of the world's leading scientists, including the National Academies and the Intergovernmental Panel on Climate Change.

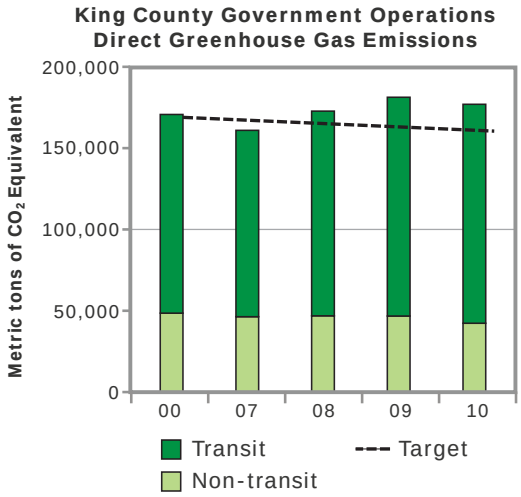
In King County, decreasing mountain snowpack, increasing flooding, and rising sea levels are evidence that the climate system is changing. The County faces significant environmental and economic challenges stemming from climate change, including stressed and rapidly changing ecosystems, costly impacts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

The King County Council and Executive have been leaders in responding to these challenges. They have recognized that the County must minimize its own climate pollution footprint, prepare for climate change impacts, and support related efforts by people, cities, and businesses in King County. In October 2006, the Council passed Motion 12362, which directed the County to develop a climate-change plan and report annually on progress[2].

Performance Indicators

The King County Comprehensive Plan[3] includes greenhouse-gas emissions reduction targets for both County government operations and the county as a whole. These targets are also included in, or support, related King County policies, including the Climate Motion 12362 (2006), the Chicago Climate Exchange Ordinance 15556 (2006) and the 2010 King County Strategic Plan.

Status



- Direct emissions from non-transit sources decreased by 13.1 percent between 2000 and 2010. Emissions associated with transit service increased by 10.3 percent[4] as the transit system grew to meet rider demand. The data presented is submitted to the Chicago Climate Exchange and audited by the Financial Industry Regulatory Authority. (Ironically, some of the actions that will best support

1 www.kingcounty.gov/environment/climate/impacts-of-climate-change.aspx

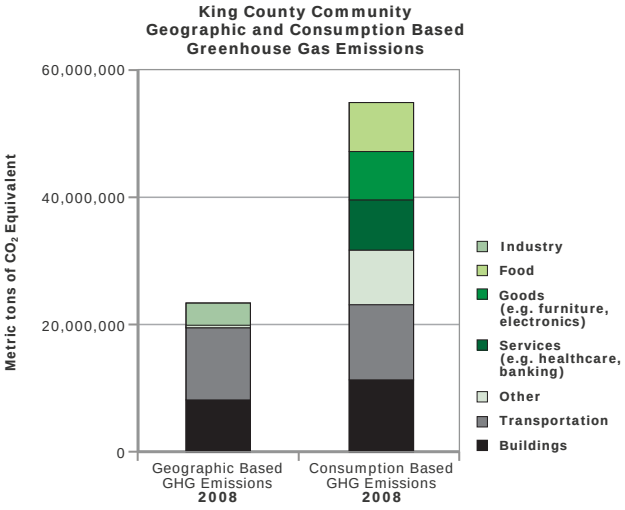
2 The 2007 plan and annual reports for 2008 and 2009 are available at www.kingcounty.gov/environment/climate/king-county.aspx

3 www.kingcounty.gov/property/permits/codes/growth/CompPlan/2008_2010update.aspx

4 For details on these results, visit the KingStat Environmental Indicators website: http://your.kingcounty.gov/dnrp/measures/indicators/at-ghg-emissions.aspx

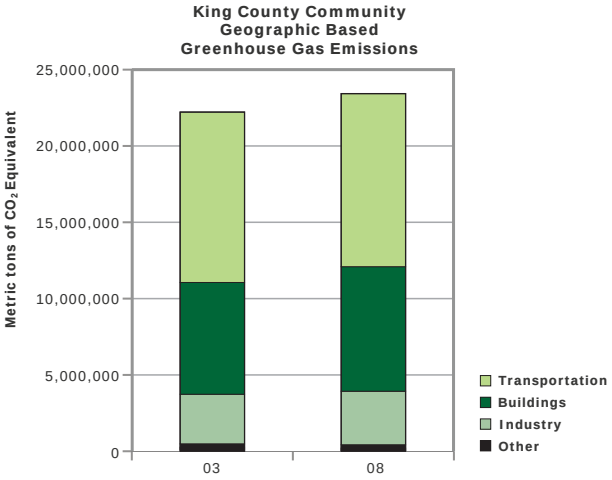
county residents in reducing greenhouse-gas emissions will actually increase County government's operational emissions.) Continued investments in bus replacement will help to reduce per-rider energy use and associated emissions.

- King County, in partnership with the City of Seattle and Puget Sound Clear Air Agency conducted a new countywide assessment that quantified year 2008 greenhouse-gas emissions associated with goods and services consumed locally, regardless of where they were produced. Significant additional sources of emissions were quantified as part of this research that highlight new opportunities for climate solutions in diverse areas such as food choices, product stewardship, and environmentally preferable purchasing. The results are shown in the chart below.



The geographic and consumption based methodologies presented are not directly comparable. For example, the geographic-based buildings category includes only energy-related emissions, while the consumption-based buildings category also includes sources such as those associated with construction.

- In the county as a whole, greenhouse-gas emissions increased 5.5 percent between 2003 and 2008, compared to a goal of reducing emissions to 80 percent below 2007 levels by 2050. This increase was driven by population growth; per capita emissions stabilized during this period. (See chart in next column.)



2010 Key Accomplishments

In County government operations

- King County is striving to reduce operational sources of climate pollution by implementing the Energy Plan, Green Building and Sustainable Development Policy, and Environmental Purchasing Program. See the following sections of this report for accomplishments in 2010.

In the King County community as a whole

- **Metro Transit's Commuter Van Program**[5] is a public transportation choice that recovers 100 percent of capital and operating costs and 25 percent of administrative costs from rider fares. Each van carries 7 or 8 passengers, eliminating single-occupant vehicle trips and reducing congestion and pollution. In 2010, 1,068 commuter vans provided 2.85 million trips and saved more than 46 million vehicle miles traveled, 2.77 million gallons of gas, and approximately 494,000 metric tons of greenhouse-gas emissions. The program will be enhancing its impact by introducing the 100-percent electric, no-gas Nissan Leaf into the commuter van fleet;

5 www.rideshareonline.com

expanding options to serve schools, churches, community groups and special needs; and working with employers to promote alternative commute options.

- Metro Transit implemented the RapidRide A Line. Designed to keep people moving throughout the day on an 11-mile corridor that links five cities and major destinations in south King County, this service has surpassed expectations. Ridership increased by about 25 percent, meaning Metro is halfway toward achieving its five-year ridership goal of a 50-percent increase. Overall satisfaction with service on the corridor is at an all-time high with 84 percent of riders giving the A Line a thumbs-up.
- Metro Transit provided 109.6 million passenger trips in 2010, and conducted a number of programs to promote transit ridership. The agency fielded In Motion programs in three communities, motivating more than 1,000 people to pledge to change their travel choices. These programs resulted in more than 11,153 trips and 11,757 gallons of gas being saved. Metro's Commute Trip Reduction program continued to provide information and resources to commute trip reduction coordinators at businesses throughout King County. These coordinators play a critical role in the fight against traffic congestion and climate change by helping their employees make smart—and green—commutes.

- **The Solid Waste Division's Waste Prevention and Recycling program**[6] uses education, incentives, pilot programs and partnerships to reduce the generation of waste and to increase recycling. About 732,000 tons of recyclable and compostable materials are collected annually in King County, reducing greenhouse-gas emissions by an estimated 817,000 metric tons—the equivalent of removing roughly 160,000 passenger cars from the road.

- **King County Parks** achieved milestones in the design, development, funding, and construction of key trails in its Regional Trails System, including the East Lake Sammamish, Burke-Gilman, and Lakes-to-Sound trails. The 1.2-mile High Point segment of the Issaquah-Preston Trail opened in December 2010. A 2010 survey of Burke-Gilman and Sammamish River trail users found that these two trails alone support as many as 2 million non-motor-powered trips per year.

Preparing for climate change impacts

- **The Water and Land Resources Division** assessed the impacts of climate change on river flows and flooding in King County[7], analyzing precipitation and river-flow data and reviewing climate and hydrologic projections from the University of Washington. The research found some evidence that large storms and floods are occurring more frequently. It also found a significant trend of decreasing summer stream volumes, especially in the months of August and September. These observed trends are consistent with climate change projections and are expected to worsen.

6 http://your.kingcounty.gov/solidwaste/index.asp

7 http://green.kingcounty.gov/WLR/Waterres/StreamsData/reports/Climate-change-impacts.aspx

- **The King County Flood Control District** is improving floodplain management to minimize the impacts of local floods. In 2010, the district completed nine flood protection infrastructure projects on the Cedar, Green, Snoqualmie, and Skykomish river systems. The district permanently removed repeatedly flooded structures and obtained critical land for levee construction, acquiring 72 acres on 47 parcels at a total cost of $9.5 million. It also acquired the chronically flooded Snoqualmie Mobile Home Park and moved its residents to safer housing outside of the floodplain.
- King County continues to acquire, protect, restore and provide stewardship for natural lands. In 2010, the Parks Division acquired more than 700 acres, including a 250-acre site on Maury Island and a 55-acre expansion of Cougar Mountain Park. With the help of more than 8,550 volunteers, Parks restored 20 acres at sites including the Tolt-MacDonald Park and Chinook Bend Natural Area. Additionally, the Water and Land Resources Division planted more than 29,000 native trees, 8,000 shrubs and 17,000 native plants. These healthy natural lands reduce the severity of local climate change impacts such as flooding and ecosystem changes, improve habitat, and also naturally sequester carbon dioxide.

Challenges and Opportunities

One challenge facing the County is that climate change impacts, such as rising sea levels and increasing flooding, will become increasingly severe. Some of these changes can be difficult to plan for, although a proactive approach will likely save significant resources over the long term.

Projects or programs that reduce climate pollution can be easier to accomplish, because they often yield multiple and immediate benefits, such as reducing energy and resource costs, creating new resources and revenue, minimizing other environmental impacts such as air and water pollution, or improving public health. However, even these programs are a challenge to fund within current financial constraints. This is especially true when the financial benefits don't accrue back to King County government, as in efforts that support community green building or public transportation options.

A key challenge is the sheer magnitude of change necessary to achieve King County's adopted emissions-reduction target of 80 percent over the next 40 years—the amount scientists tell us is necessary to avoid some of the most catastrophic impacts of climate change. Reducing emissions from both County operations and the community at that level will require significant changes to government operations and the broader fossil fuel-based economy.

Yet exciting opportunities are emerging as well. Community support for action continues to increase. King County's climate change efforts are evolving beyond an internal focus to also offer the broader community education, technical assistance, and incentives in key areas such as green building, recycling and composting, forest stewardship, electric vehicles, and alternative transportation solutions. Many cities in King County are working together to develop regional emissions-reduction targets and are partnering on solutions through efforts such as the King County-Cities Climate Collaboration. And new

data about the full environmental impacts of local consumption is pointing to opportunities for climate solutions in such diverse areas as food choices, product stewardship, and environmentally preferable purchasing.

Recommendations

- The County should pursue a focused suite of near-term actions to further reduce greenhouse-gas emissions from County operations and prepare for climate change, and ensure that these actions are well-integrated with the upcoming 2012 King County Comprehensive Plan Update. In April 2011, the Executive proposed new legislation, Council Motion 0208, that will better link transportation and land-use planning, seek federal funds to expand RapidRide service, improve efficiency of County buildings and vehicles, account for the operational and countywide sources of emissions, protect essential infrastructure from climate change impacts, work with cities to develop a countywide target for emissions reduction, and more. These and other near-term actions to reduce greenhouse-gas emissions are the next steps to achieve the County's climate change goals.
- Collaborating with cities through forums like the GreenTools Sustainable Cities Roundtable to support local climate change and sustainability projects and programs, including developing countywide greenhouse-gas emissions target and a practical framework for monitoring results, should be a key focus for 2011 and 2012.

For more information about King County's Climate Change Program visit www.kingcounty.gov/climate

Energy Program

Background

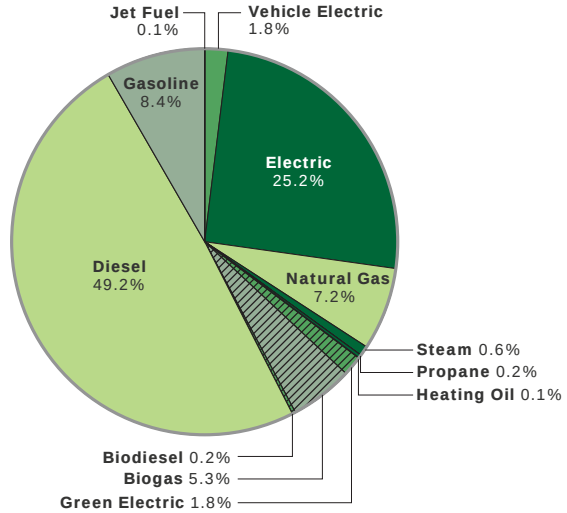
The King County Council adopted the County's Energy Plan in October 2010[8], building on a 30-year history of progressive energy policy that began with adoption of the Energy Management Plan for King County in 1981. The 2010 Energy Plan again commits the County to aggressive goals for energy savings and renewable energy.

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 developing specific plans to achieve the County's goals. An interdepartmental Energy Task Force coordinates and supports these plans and reports to the County Executive and Council.

The County's Energy Task Force was reconstituted in 2008[9]. As a first priority task, it created a central database and began gathering energy data annually, establishing 2007 as the baseline year from which to measure the County's energy consumption and savings as well as production and use of renewable energy.

The chart in the next column shows the mix of energy resources used by County government. The predominant energy sources are 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 3.5 trillion BTUs[10] in 2010.

King County Government Operations Energy Resource Mix, 2010



The task force also oversaw the inter-departmental adoption of strategies for saving energy and obtaining a greater share of energy from renewable resources. The King County Comprehensive Plan was updated in 2008 to reflect these strategies.

Several departments and their divisions, notably Facilities Management, conducted organization-wide facility energy assessments and set priorities for making energy-saving improvements. The divisions and the Energy Task Force obtained financing for energy projects from County capital budgets, utility energy savings incentives, and $6.1 million in federal stimulus grants in 2009. This combination of funding sources is supporting most current energy-focused improvements.

8 Ordinance 13368

9 Authorized by FES 9-2 (AEP) in 1998.

10 British thermal unit—a unit of energy, used to describe the energy content of fuels

Although the County has regularly undertaken energy projects for years, the number and impacts of these projects have increased dramatically since 2008 as a result of the actions described above. Since 2007, annual County energy use has been reduced by more than 36 billion BTUs (1 percent of County use), and renewable energy production is up by more than 337 billion BTUs (10 percent of County use). These trends must continue for the County to reach its aggressive targets, and the Council's approval of the Energy Plan sets a course for this to occur.

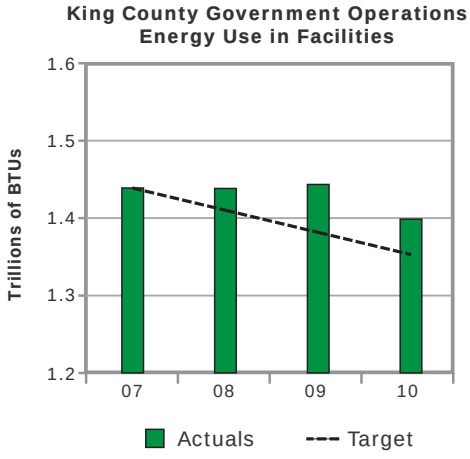
Performance Key Indicators

The County has three primary near-term energy performance targets set in the 2010 Energy Plan:

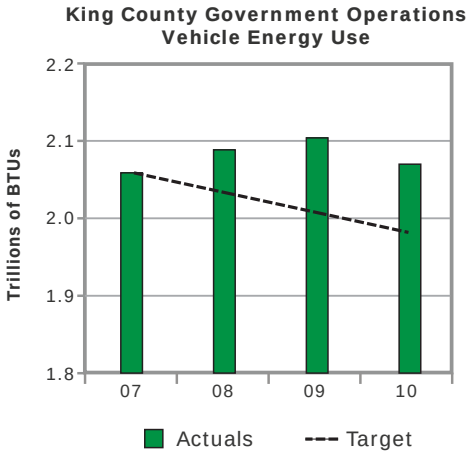
1. Achieve a 10-percent normalized net reduction in energy use in County buildings and facilities by 2012.
2. Achieve a 10-percent normalized net reduction in energy use by County vehicles by 2015.
3. Produce, use or procure renewable energy equal to 50 percent of total County energy requirements by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

The following graphs track progress from 2007 through 2010 for the three primary near-term (2012) quantitative targets.

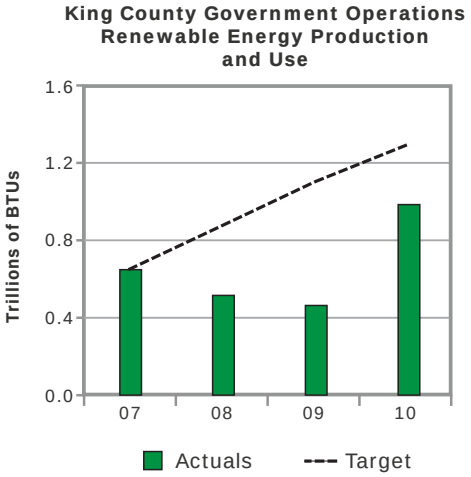
Facility energy use has declined since 2007, and in 2010 was 3 percent below use in that baseline year. The interim target for 2010 was nominally 6 percent below the 2007 baseline.



Vehicle energy use has declined since 2009 after rising for two years, but remains 1 percent greater than 2007. The interim target for 2010 is 4 percent below baseline.



Renewable energy production has increased dramatically with the startup of Cedar Hills gas processing by Bio Energy Washington for sale to Puget Sound Energy. In less than a half year, County renewable energy production increased by 337 billion BTUs, and is now at 57 percent of the 2012 goal.



2010 Key Accomplishments

- A collaborative effort by the County Council, County Executive and Energy Task Force resulted in approval of the 2010 Energy Plan and two related ordinances, on lighting energy efficiency[11] and capital project energy

11 Ordinance 16769

efficiency[12]. These directives created the foundation for progressive energy strategies going forward.

- **The Facilities Management Division** (FMD) made major energy-efficiency improvements in large and high-use facilities, resulting in gross energy savings in FMD-managed facilities of more than 7 percent from 2007 levels, even with the additions of the Chinook building in August 2007 and the Earlington building in November 2008. Much of this work occurred in 2010. Overall, FMD reduced total energy costs by more than 16 percent in 2010, mostly as a result of conversion from steam to natural gas heating in the downtown Courthouse and Correctional Facility, improvements at the Maleng Regional Justice Center, and operations and maintenance savings divisionwide. These improvements have also reduced the division's greenhouse-gas emissions by more than 48 percent. FMD continues to make capital improvements and changes in operations and maintenance to increase energy efficiency.

FMD Energy Projects—Capital and Operations

Description	Project Cost	Utility rebate	Savings $/yr	GHG Mt/yr
The CH & KCCF steam conversion	$6,100,000	$271000	$680,000	3,000
Operational savings MRJC	0	0	$25,000	320
MRJC demand side phase 1	$1,100,000	$815,000	$105,000	763

- The County used Qualified Energy Conservation Bonds (QECBs) and utility rebates to offset some project costs. For example, the Earlington Building was made more efficient by replacing the electric boiler with a natural-gas heating system, installing lighting controls, and adding roof insulation. The project's $4.2 million cost was offset by $230,000 in utility rebates and $250,000 in savings from the use of QECBs.

- **The Department of Natural Resources and Parks Solid Waste Division's Cedar Hills landfill** secured a long-term agreement to sell its landfill gas, a qualified renewable energy supply, to Bio Energy Washington (BEW). BEW's facility at Cedar Hills began processing the landfill gas and selling pipeline-quality gas as a substitute for fossil fuel-generated natural gas to Puget Sound Energy in 2009. Since BEW's facility at Cedar Hills began full operation in October 2010, the production of renewable energy supplied through County operations more than doubled to the equivalent of 28 percent of total County energy use in 2010. Assuming that its partner, BEW, is able to maintain gas processing at expected levels, the County expects to meet its 2012 goal of 50-percent equivalent renewable energy.

- **The Department of Transportation** joined with three other local government agencies to convert 13 Toyota Prius hybrid sedans to plug-in hybrid electric vehicles (PHEVs). The department also collaborated with Idaho National Laboratory (INL), GridPoint (a vehicle-to-grid data management company) and local utility companies to assess the real-world performance and capabilities of PHEVs and demand-charging technologies. The County gained invaluable knowledge from this experience. The program was part of a larger national study carried out by INL, but the collaboration of the local PHEV user group was probably the first of its kind in the nation.

12 Ordinance 16927

Challenges and Opportunities

Saving energy will remain a great challenge for King County's diverse governmental operations. Despite impressive progress in many facilities and operations, gross energy use in County facilities overall was reduced by only 3 percent between 2007 and 2010; the target reduction for 2012 is 10 percent. Financial support, technical and management resources, willingness to try different approaches, and ongoing management support will be required by all divisions to achieve the targets. Adding to this challenge, some divisions will need to consume more energy in the future, when County goals require more services. Examples include Metro increasing bus deployment, and the Wastewater Treatment Division increasing both volume and treatment quality of effluent.

The County has opportunities to save money while reducing its environmental impacts through better energy management, and also has significant untapped renewable resources. The County likely has the potential to achieve its targets through energy-saving operations and maintenance changes in many facilities if appropriate resources are deployed. Several divisions have already met their three-year targets using an O&M optimization-centered approach; in each case, sustained and focused effort by technical staff familiar with the major energy uses was the key to success. Although budget constraints may force the County to defer some energy-saving projects, creative financial mechanisms such as utility incentives, energy savings performance contracting, and low-interest federal bonds could help make projects feasible.

Recommendations

- The County should continue to push for continuous improvements in energy efficiency in all areas of County operations. The 2010 Energy Plan provides a blueprint for monitoring energy use and conducting energy audits to identify energy-saving changes in operations and prioritize capital investments that will provide the greatest benefit. The Energy Task Force should provide workshops for operations staff focused on putting Energy Plan strategies into daily practice. Department and division managers are expected to encourage and support efforts by operations staff to monitor energy use and optimize operations based on their detailed knowledge of facilities and energy use.
- Establishment of mechanisms for financing the upfront capital costs of energy efficiency investments, an accounting framework for documenting savings, and incentives for agencies to reinvest savings in further energy-saving projects would remove a key barrier to continuous improvement. The County's Executive Office is developing this reinvestment framework in 2011.
- The 2010 King County Energy Plan includes near-term (2012) goals for reducing energy use and increasing use and production of renewable energy. The Energy Task Force should continue its work to develop mid- and long-term goals informed by goals being developed for reducing greenhouse-gas emissions.
- The County should continue to actively participate in local, regional and national initiatives focused on energy and climate change mitigation, such as Seattle District 2030[13], an initiative to increase sustainable building practices in the city center. Conversations with constituents, professional peers and other stakeholder groups will provide direction and models for moving toward the County's energy goals.

For more information about King County's Energy Program visit www.kingcounty.gov/environment/climate/king-county/2010-energy-plan.aspx

13 www.clerk.seattle.gov/~public/meetingrecords/2011/regional20110405_6.pdf

Green Building Program

Background

King County established green building policies by adopting Ordinance 15118 in 2005 and strengthened these with the Green Building and Sustainable Development Ordinance 16147 in 2008. The legislation requires the use of green building and sustainable development practices in all County capital projects. The intent is to ensure that the design, construction, maintenance and operations of all King County-owned or -financed capital projects are consistent with the latest green building and sustainable development practices. Eligible County projects must achieve a minimum certification level of Gold under the Leadership in Energy and Environmental Design (LEED) standard, or apply the County's Sustainable Infrastructure Scorecard where LEED is not applicable or appropriate.

The interdepartmental Green Building Team supports and promotes the implementation of the Green Building and Sustainable Development Ordinance, helping County projects achieve the highest possible standards of green building.

In 2008, residential and commercial buildings in King County were responsible for the production of 8.2 million metric tons carbon dioxide equivalent (MMTCO2e), or 35 percent of the total emissions that occurred locally. The greenhouse-gas impacts from other infrastructure projects, such as bridges and roads, are also large. Additional environmental impacts include contaminated stormwater runoff from hard surfaces, which are continually being created, and burdens on existing landfill space from construction and demolition debris. Green building techniques, coupled with upgrades and proper maintenance of existing buildings, can help reduce these impacts.

The Green Building Team is close to completing the third year of implementing the Green Building and Sustainable Development Ordinance. The team developed the Sustainable Infrastructure Scorecard and Guidelines, trained capital project staff members on how to use the Scorecard, provided technical training on green building practices to County staff members, and established annual reporting to showcase the green building efforts.

Performance Indicators

The King County Green Building and Sustainable Development Ordinance requires eligible County capital projects to use the LEED rating system or the Sustainable Infrastructure Scorecard.

Status

In 2010, 11 projects reported using the LEED rating system, and 135 projects reported using the Sustainable Infrastructure Scorecard. Projects are at different stages in design and construction. Final rating levels will be reported at the time projects are completed.

2010 Key Accomplishments

- Many County projects recycled or reused materials on site, diverting them from landfills. On average, 59 percent of construction materials were recycled. Four projects reported that they had planned or achieved

diversion rates of 95 percent or higher. Collectively, the County diverted more than 31,000 tons of construction material from landfills.

- **Brightwater Education and Community Meeting Center** is pursing LEED Gold for New Construction. Features include natural ventilation and daylighting, radiant floor heating from waste-treatment plant energy, use of reclaimed water, a green roof, and public education efforts. To date, the Brightwater Treatment System capital project has recycled 3,312 tons of construction waste and reused more than 370,000 tons of material in construction. The project will avoid an estimated 12,543 MTCO2e in greenhouse-gas emissions during construction.
- **May Creek Bridge** was rebuilt, replacing creosote-treated timber along the stream with a wider bridge that improved the movement of water. The new structure was built with precast concrete materials that reduced site disturbance during construction. The use of fly ash as a cement substitute in the concrete mix reduced carbon dioxide emissions by approximately 12,483 pounds. The reduction in construction and materials-related greenhouse-gas emissions for the project totaled approximately 229 MTCO2e.

- **Bow Lake Recycling and Transfer Station** is pursuing LEED Gold certification. The project, which is expected to save more than 40 percent of domestic water compared to a conventional project, will collect approximately 1.8 million gallons of rainwater annually for use in the transfer station operation, and will save an estimated 172 MTCO2e per year in greenhouse-gas emissions. Project specifications require that 50 percent of the lumber used will be certified by the Forest Stewardship Council. In the second phase of construction, 16.1 kW of photovoltaic panels will be installed on the roof.
- **Lower Boise Creek Channel Restoration** diverted 95 percent of construction and demolition materials from landfills, used alternative fuels in construction equipment, preserved existing native vegetation, and used locally sourced materials. Ten thousand cubic yards of soil and rock were reused on site, and 200 cubic yards of large rock were provided to the Pautzky Levee Setback and Floodplain Restoration Project.
- **Black River Building** achieved LEED Silver certification for Existing Buildings Operations and Maintenance. The building adopted high-performance operating and maintenance guidelines for sustainable purchasing, recycling and waste management, site and landscaping, the building exterior, green cleaning, and facility improvements.

Challenges and Opportunities

The highlights listed above illustrate County agencies' commitment to sustainable practices in building and infrastructure projects. With ongoing support and a commitment to making sustainable development a priority in all capital projects, such practices can become the norm.

Green building efforts should be given a priority in the budget development of a project. The County has executed successful examples, and at the same time maximized its limited resources. For instance, the County can help make sustainable operating and maintenance practices standard by encouraging LEED certification of existing buildings. To reduce greenhouse-gas emissions, divisions may wish to add renewable energy features to facilities when practical. Based on outcomes from installation of solar electric

power systems at the Road Services Renton shops, and Solid Waste Division's Shoreline and Bow Lake transfer stations, the County should consider more such installations at County facilities as the cost of solar energy declines and when innovative ownership or financing arrangements makes this option cost-effective.

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 all necessary project tracking information.

Recommendations

- The County should pursue LEED certification of existing buildings and continue to train staff in use of the Sustainable Infrastructure Score Card, with the goal of making use of the Score Card a regular and consistent element of capital project development. In 2011, the Green Building Team is focusing on staff training, completing the Green O&M Guidelines manual, promoting life-cycle analysis as part of the alternatives analysis process, developing streamlined reporting, and generally promoting the incorporation of sustainable practices into the County's building projects.
- County divisions should pursue opportunities to develop more detailed agreements with contractors and consider additional technical review of proposals to increase the environmental benefits of projects, as needed.
- Proactive coordination with key stakeholders from the beginning of projects is recommended. The 98th Street Pedestrian Improvement Project exemplifies this approach. Issues and concerns were identified and addressed through stakeholder coordination and public outreach meetings. Solutions and agreements were incorporated early in the design process. As a result, all partners achieved their objectives and were satisfied.
- The Capital Project Management Work Group should incorporate reporting protocols and criteria for data into its work to ensure the availability of consistent data.
- The County should maintain high expectations, involvement with dedicated stakeholders, and project continuity—all essential for achieving green building objectives and meeting the goals of the King County Strategic Plan, Climate Agenda, Energy Plan, and related initiatives.

For more information about King County's Green Building Program visit http://your.kingcounty.gov/solidwaste/greenbuilding/county-green-building.asp

Environmental Purchasing Program

Background

King County's Environmental Purchasing Policy (KCC 10.16) reflects its long-term commitment to the purchase of environmentally preferable products. Overburdened landfills and the need to create markets for newly collected recyclables prompted King County to adopt a recycled product procurement policy in 1989. The policy was expanded in 1995 and later revised to require agencies to consider other environmental attributes of products to reduce the overall impact of purchases on human health and the environment.

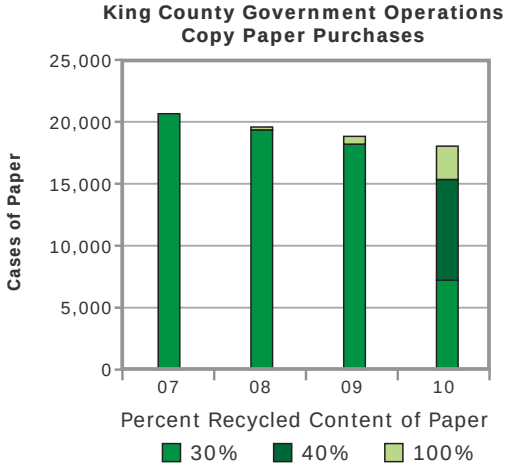
The Environmental Purchasing Program, part of the Department of Executive Services, offers County employees information and technical assistance to help them purchase environmentally preferable products and services that are both economical and effective. Environmentally preferable procurement considers multiple attributes such as toxicity, durability, emissions, recycled content and conservation of resources in addition to price, performance and availability. The program helps agencies understand policy requirements and communicates specifications, contracts, and other practical information between county agencies, vendors, and users.

In the past year, King County agencies purchased $41 million worth of environmentally preferable products, saving $1 million compared to the cost of conventional products. The savings calculation is based on purchase cost only and does not include maintenance, energy or greenhouse-gas emissions savings. Sometimes, the product simply costs less. In other cases, savings come from avoided purchase costs because the alternative product is more durable. Recycled paper was used for all major government functions, including bus schedules, tax statements, court forms, pet license notifications, business cards, and reports. Other environmentally preferable purchases include remanufactured toner cartridges, green cleaners, re-refined antifreeze and motor-oil, alternative fuel and hybrid vehicles, bio-based oils, lead-free wheel weights, recycled plastic lumber, compost, shredded wood-waste and tire-retreading services.

Performance Indicators

For 20 years, County policy has required that all paper purchased have a minimum 30 percent recycled content.

Status



County agencies have significantly increased their use of 40- and 100-percent recycled content copy paper over the past year and have decreased their copy paper consumption by 12 percent over the past three years.

These measures are estimated to save nearly 7,400 trees from harvest, reduce greenhouse-gas emissions by 375 tons, and avoid 3.4 million gallons of wastewater and 100 tons of solid waste annually that would otherwise be produced by paper manufacturers, according to the Paper Calculator, an estimating tool provided by the nonprofit Environmental Paper Network.

An ordinance (2011-0129) that would take effect in 2012 will require an additional 20-percent reduction in paper consumption and increased use of 100-percent recycled content copy paper.

2010 Key Accomplishments

- **Green Fleets:** King County has been a leader in investing in new technologies, from alternative fuel vehicles in the 1990s, to hybrids in the last decade, and starting in 2011 with all-electric passenger cars. Metro Transit became an early adopter of hybrid buses with a major purchase in 2004, and continued to expand its fleet with the purchase of 93 hybrids in 2010. County agencies

purchased 80 alternative-fuel vehicles and 45 hybrid passenger cars in 2010. The Fleet Administration Division also purchased eight propane-powered vehicles and two specialty hybrid trucks that use electricity from the battery, rather than gas from the idling engine, to operate many functions. Although these products have an initial higher cost, a number of county-owned hybrids are documenting a 30 percent reduction in fuel use. The County has received federal grants to support green vehicle purchases.

- **Green Cleaners:** Various county facilities are being cleaned using Green Seal™-certified cleaners, including downtown office buildings, correctional facilities, public health clinics, transit bases and the Downtown Seattle Transit Tunnel.

Concentrated cleaners, which are then diluted with water as appropriate for the application, yield many benefits, especially to worker health and safety as there is reduced exposure to toxic chemicals. Additionally, Facilities Management Division and Metro Transit reported a reduction in purchase cost and in the quantity of chemicals used over the years because they used less product overall. Transit went from stocking 30 different products to using just two main multi-purpose cleaners. FMD has reduced its usage by 60 percent mainly by switching to an advanced dilution system.

Challenges and Opportunities

Environmentally preferable products must perform as well and be as fiscally responsible as the products that they are replacing, in addition to being environmentally beneficial. An array of "green" products are available, and it can be difficult for users to evaluate the claims, choices, costs, and how they can be used in place of familiar products. Often, there are no standards for these products and no clear labeling of their environmental attributes.

King County's Environmental Purchasing Program works closely with County agencies and other jurisdictions to share ideas and policies, pilot test products, and incorporate environmental specifications into contracts. The County strives to buy products certified by independent third parties to assure that what we are buying is truly environmentally preferable. Every year, County agencies are purchasing more "green" certified products as standards become available for environmentally preferable products, such as EPEAT registered computers, Green Seal™ certified cleaners, Energy Star™ equipment and FSC certified paper.

The program continues to work with the Responsible Purchasing Network (RPN), a nonprofit organization dedicated to leveraging green purchasing resources, and others to promote consensus-based standards. King County is a founding member and steering committee member of the RPN. In 2011, the program will be advising Underwriters Laboratories (UL) Environment, a nonprofit, on its standards and certification goals at its national conference in Chicago. The program also participates in conferences to share experiences and lessons learned.

Recommendations

- The Environmental Purchasing Program will continue to work with the RPN and others to promote consensus-based standards for environmental purchasing.
- The Environmental Purchasing Program should provide guidelines and updated contract specifications for the replacement of lamps and ballasts to meet new federal requirements, and provide training for County employees on ways to reduce the County's purchasing impact on the environment and minimize its operational costs. This guidance has been developed is now being disseminated by the County's Energy Task Force.
- The Transit and Fleet divisions should continue to build green vehicle fleets.
- The County should continue to obtain and leverage grant funding to build the infrastructure for charging electric vehicles.
- The Environmental Purchasing Program should support implementation of the proposed motion that calls on the County to transition to the use of 100-percent recycled content copy paper in 2012 and carry out a campaign to reduce paper use by an additional 20 percent by 2013.

For more information about King County's Environmental Purchasing Program visit www.kingcounty.gov/procurement/green

PROJECT PROFILE

RapidRide takes the environmental benefits of public transportation to a new level

Metro Transit incorporated green features into all aspects of its new RapidRide service: the buses, the shelters, operations, and maintenance. It is an outstanding example of a County project that combines many best environmental practices to reduce operational and community energy use, greenhouse-gas emissions, and environmental impacts.

RapidRide is Metro's version of bus rapid transit. The idea is to provide frequent, fast and comfortable service throughout the day along busy corridors linking major destinations. The A Line operates along an 11-mile stretch of Pacific Highway South and serves five cities, Highline Community College, Seattle-Tacoma International Airport, and two Link light rail stations.

RapidRide is designed to keep buses moving, resulting in increased fuel efficiency and less idling time and emissions. Stops and stations are spaced about one-half mile apart. Riders can use ORCA card readers at stations to pre-pay and board through any of the buses' three doors, and low-floor coaches let riders get on and off quickly. As RapidRide buses approach intersections, a transit signal priority system extends green lights and changes red lights to green faster. Roadway improvements, such as the HOV lanes on the A Line corridor and the "queue jumps" and bus bulbs planned for future lines, help keep buses from getting stalled in traffic.

RapidRide service is frequent: A Line buses come every 10 minutes during peak periods and every 15 minutes at other times between 4:15 a.m. and 10 p.m. Real-time signs at RapidRide stations display the next-bus arrival time for waiting customers.

Metro used the King County Sustainable Infrastructure Scorecard to incorporate green building elements into the distinctive RapidRide shelters. They are designed to last; the prefabricated steel frames have an estimated life of more than 35 years. Construction debris from the A Line and from all future RapidRide lines will be recycled, diverting material from landfills. Metro's award-winning green cleaning program uses Green Seal™-certified products to keep the shelters clean. The stations and stops have energy-efficient lighting that enhances the comfort and safety of waiting customers. Some stations offer spaces for bike parking to accommodate bicyclists.

The red and yellow RapidRide coaches are high-capacity hybrid diesel-electrics. Like all Metro buses, they have bike racks mounted on front.

As important as all these features are, RapidRide's biggest contribution to the region's environment may be that it is tempting more people to try public transportation. Brad Dunning became a regular rider because of the A Line's frequent service throughout the day and its connection to Link light rail. Together, the A Line and Link give him a fast commute from his south King County home to his Seattle grocery store job, even though he doesn't travel during a peak period.

Another passenger, Desiree Dew, told us RapidRide is great both for her commute to Sea-Tac Airport and for daily errands. "My work starts at 11:30, and I can get up at 10 and count on a bus coming in time to get me there," she said. "And on my way home I can stop at the grocery store and get right back on a bus."

After six months of operation, the A Line had delivered over 20 percent more bus rides daily than the regular Metro route it replaced. That's nearly halfway toward Metro's five-year ridership goal.

Metro will be bringing the environmental benefits of RapidRide to other parts of King County as it starts five more RapidRide lines between now and 2013. These are the B Line (Bellevue-Redmond), C Line (West Seattle-downtown Seattle), D Line (Ballard-Uptown-downtown Seattle), E Line (Aurora Avenue between Shoreline and downtown Seattle, and F Line (Burien-Renton).

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