

Putting the Tools in Green

Department of Community and Human Services

Leadership and collaboration in:

- statewide sustainable practices
- building durability
- resource conservation
- tree canopy preservation
- transit oriented development



Planning a sustainable future



Pushing the envelope on green building



Putting green best practices to work for vulnerable populations

Smoke-free environments



Creating a green ripple effect

Permeable Pavement



Bringing green building home

Weatherization
–to keep low-income residents warm



Universal Design to keep seniors in their homes



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King County

Cost-conscious, Sustainable and High-quality Facilities

Facilities Management Division

Projects certified under Leadership in Energy and Environmental Design (LEED):

- Kent Pullen Regional Communication & Emergency Coordination Center – LEED NC Certified
- King Street Center – LEED EB Gold
- 9th and Jefferson – LEED CS Gold
- Black River Building – LEED EBOM Silver
- Chinook Building – pending

Black River Building – LEED EBOM Silver Certified

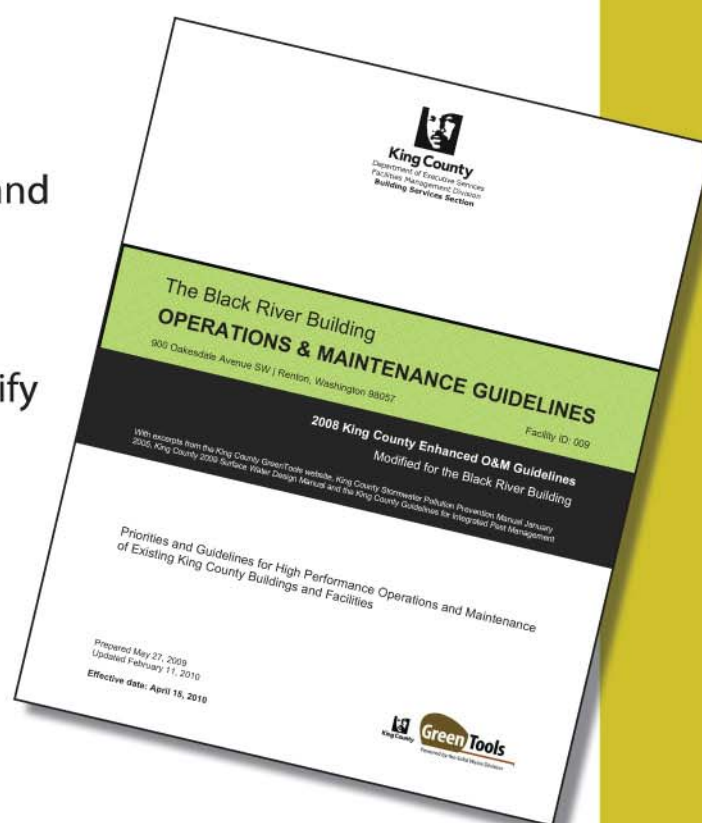
Water efficiency efforts

- Upgraded irrigation controller
- Added weather station and modified watering schedule which reduced irrigation water use by 79%
- Upgraded 17 flushometers to low consumption solar powered
- Upgraded 12 manual faucets to water efficient hydro powered automatic faucets to reduce water use by 20% from LEED baseline
- Monitoring water use to quantify reduction



Energy efficiencies efforts

- Achieving Energy Star Certification
- Performed energy audit to identify energy conservation measures and recommendations
- In process of installing 50 occupancy sensors
- Monitoring use to quantify reduction. Created high



Additional efforts

- Performance O&M guidelines for sustainable purchasing, recycling and waste management, site and landscaping, building exterior, green cleaning and facility improvements.

Benefits

- From the baseline date of 12/31/2007 to 8/31/2010, GHG emissions have reduced by 87 MtCO₂e/year.
- Approximately 200 pounds of construction materials was recycled.
- Purchased 100% Green Power for 2 years from Puget Sound Energy. Cost savings included \$15,250 saved in electricity in 2010, with estimated \$107,550 after lighting upgrade.

Energy Service Company projects –

McKinstry analyzed the buildings' energy use, made improvements, and guarantee the savings.

- King County Courthouse
- King County Correctional Facility
- Earlington Building (Elections)
- Maleng Regional Justice Center



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King County

Your Big Green Backyard?

King County Parks and Recreation

King County Aquatic Center (KCAC)

The KCAC is a legacy venue of the 1990 Seattle Goodwill Games. This 2,500-seat facility maintains an active competition schedule, hosting over 50 national and international events annually. Recent energy efficiency projects have saved money and resulted in improved experiences for visitors.



- **PoolPak Replacement:** PoolPaks regulate water temperature and act as dehumidifiers. Replacing the 20-year-old units with new energy efficient models has saved approximately \$50,000.
- **Lighting and Control System Upgrade:** Seventy energy efficient lights and a new control system were installed, qualifying for a \$55,000 rebate from PSE.
- **Scoreboard Replacement:** A new scoreboard was installed using energy-efficient LED lights.
- **HVAC System Upgrade:** A glycol loop was installed, which reclaims and reuses heat within the facility.



CONGRATULATIONS

to HyBrid Architecture's

REtain



King County

Little Footprint Big Forest design winner

Little Footprint / Big Forest

King County Parks is creating unique camping opportunities close to home. In 2012, enjoy the great outdoors in a camping structure that integrates the principals of conservation, sustainability, forest stewardship and reduced maintenance.

- **Cargo Containers:** Donated shipping containers provide the shell.
- **Sustainable Design:** Integrates recycled woods, low emission paints and solar power.

- **Low Energy Standards:** Insulation must meet a minimum standard of R-5.
- **Groundbreaking:** Spring 2012... stay tuned!

East Lake Sammamish Trail (ELST)

King County Parks is completing the 11-mile ELST, a missing link in a 44-mile seamless, non-motorized transportation/recreation corridor that includes the Burke Gilman, Sammamish River, Marymoor Connector, and Issaquah Preston trails. Ongoing paving of the existing trail began in May 2011.

- **Alternative Transportation:** ELST provides access to recreation, employment and retail centers in Redmond, Sammamish and Issaquah.
- **Habitat Restoration:** Includes planting 510 trees, 2,770 shrubs and seeding 1.6 acres.
- **Recycled Construction Materials:** 4,100 lineal feet of split rail fence; 1,200 lf of chain link fence and 650 cubic yards of gravel.

EastLake Sammamish Trail



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King County

Planning for Healthy Communities

Public Health - Seattle & King County

Environmental Health Services

Environmental Health Services staff and other health department staff worked with the King County Board of Health to develop the "Planning for Healthy Communities Guidelines" which were adopted into the Board's new Guidelines and Recommendations section. The Guidelines can be used to support land use and transportation planning decisions to create environments that allow people to be physically active, eat healthy food, and live in safe and healthy places. The Guidelines were used to assist a team of King County, Seattle, Bellevue, Suburban Cities Association, and the utility districts representatives to integrate health issues into an update of the King County Countywide Planning Policies which provide a framework for the city and county comprehensive plans.



Chronic Disease and Prevention Division

Chronic Disease and Prevention Division received a 25 million dollar grant called Communities Putting Prevention to Work (CPPW) that is a national initiative to prevent chronic disease and promote health through policy, systems and environment changes. The initiative is tackling obesity and tobacco use. The Tobacco Prevention Program has worked with local affordable non-profit housing provider's to develop and implement smoke-free housing policies for 4,000 units in 2011. 10,000 units are expected to be smoke-free by March 2012.



Collaborated with local affordable housing funders and green building programs to encourage smoke-free housing and healthy eating and work with two green rating programs, the State Evergreen Sustainable Development Standard and BuiltGreen to add 7 optional points for smoke-free housing and optional points for healthy food access.

Environmental Health

Environmental Health in partnership with the WA Department of Health received grant funding from CDC to develop a comprehensive approach to addressing multiple hazards in homes and prevent diseases and injury from housing-related hazards. Efforts include development of a strategic plan to identify and create model housing practices and policies, piloting model practices with the City of Seattle, and implementation of a new surveillance data system.



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King County

Connecting People, Nature, and Places

Road Services Division



Road Services Division Sustainable Infrastructure Projects:

Our corridors are not always paved for vehicular traffic and often serve as public amenities.

SW 98th Street Pedestrian Improvements



Road Services Division Sustainable Infrastructure Projects: Preserve and Enhance our Natural Resources

Our projects open new reaches for fish spawning habitat when we replace old culvert pipes blocking fish migration and create new fish passable stream channels.

Rock Creek Culvert Replacement Project

Road Services Division Sustainable Infrastructure Projects: Recycle, Reuse, and Reclaim Existing Materials.

Turning Recycled Asphalt Roofing Shingles into new pavement overlays reduces waste and saves oil.

SE 416th Street: Recycled Asphalt Shingle Overlay Project



Road Services Division Sustainable Infrastructure Projects: Revive old ideas in new ways to keep people and goods moving.

Rebuilding intersections with roundabouts improves traffic flow, reduces fuel consumption, improves air quality, and reduces energy use.

SE 403th Street at 124th Ave SE



Rain Garden at South 272nd Street and Military Road South

Road Services Division Sustainable Infrastructure Projects: Rethink old ideas and consider stormwater a resource.

Low impact development projects rethink traditional ideas and treats stormwater as a resource used to create new green space.

Road Services Division Sustainable Infrastructure Projects: South Park Bridge Replacement Project

Revitalizing neighborhoods and river fronts. Creating new social amenities



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King County

Expanding Services, Saving Energy and Building Green

The King County Solid Waste Division operates one landfill and eight transfer stations.

New Bow Lake Recycling and Transfer Station

The Bow Lake station handles a third of the County's solid waste.

Features:

- Sustainable building design features with the goal of attaining LEED® Gold certification.
- Reduces energy usage by 63%; cuts carbon dioxide emissions by 172.5 metric tons
- Collects approximately 1.8 million gallons of rainwater, uses efficient fixtures and landscaping to reduce receiving floor and truck wash-down annual water usage by 40%.
- Innovative use of recycled asphalt shingles in asphalt paving
- 50% of lumber will be certified by the Forest Stewardship Council
- 280,000-gallon underground stormwater detention vault will mitigate impacts of run-off from impervious surfaces



New Factoria Recycling and Transfer Station

Among the many improvements planned for the new replacement station is a recyclables collection area where materials such as yard waste, appliances, wood waste and scrap metal will be collected.

Features:

- A modernized Household Hazardous Waste collection facility
- Sustainable building elements with the goal of meeting LEED® Gold
- Refuse compaction capability will increase efficiency of the transfer operation and reduce GHG emissions.

Improved Houghton Recycling and Transfer Station

While this major reconstruction effort took place, the station remained in operation to serve customers.

Features:

- First county project to use pilot Sustainable Infrastructure Scorecard. Achieved Gold rating level and provided thorough credit documentation.
- Recycled aluminum rubber screening wall depicting a natural forest image to control litter and screen views of station operations
- Improving lighting at the station so as not to intrude on facility neighbors
- Improving erosion control
- Installation of a sound barrier wall to reduce noise pollution
- Pedestrian pathway improvements to enhance pedestrian safety in the area



We'll Get You There

Metro Transit

Energy Efficiency and Greenhouse Gas Reduction

Trolleys:

Metro operates one of 5 electric trolley systems in the US, serving about 20% of Metro's ridership, consisting of 14 routes covering 70 miles. Trolleys use 45% less energy and 2,077% less CO2 than diesel hybrids.



HVAC replacement:

Metro is replacing HVAC systems at four large transit bases, reducing energy consumption and GHG emissions by 25% to 30% over baseline. All of these projects employ Air Quality monitors to lower the need to condition makeup air.



East Base Air Compressor:

Metro is replacing two water-cooled air compressors with new high efficiency air cooled units saving an estimated 114,597 kilowatt hours and 31,000 gallons of cooling water each year.

Materials Reuse and Recycling



RapidRide: RapidRide shelters are pre-fabricated from durable steel frames that will be refurbished every eight years, with an estimated life of 35 to 40 years. Replacement shelters get reused for other routes.

North Base Green Roof: Planned replacement of this 2 acre green roof includes on site reuse of 3,000 cubic yards of soil and drain rock as well as removal and replanting of 20 trees and shrubs. Another 1,200 cubic yards of material will be recycled and 100 shrubs from the site will be replanted by King County offsite.



Atlantic Central Operations Building:

99.5% of all demolition and construction waste was diverted from landfills for reuse or recycling. 38% of total building materials (by cost) are recycled content.

Low Impact Development

Brickyard Park and Ride Expansion: Metro employed innovative techniques in storm-water retention and re-infiltration to groundwater through the use of pervious hard surfacing materials. Wetlands were restored and trees removed from the project site were re-used by other County departments to aid in stream restoration.



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King County

We Build GREEN

Water and Land Resources Division

- Over 1,000 acres protected by either conservation easement or fee-simple purchase in 2010
- Planted over 46,000 trees and shrubs along streams, rivers and wetlands
- Restored over 34 acres of streamside buffer
- Helped construct 31 farm pads to keep livestock dry and safe during floods, often using fill recycled from other WLRD projects
- Inspected 52 schools for hazardous materials
- Decreased the cumulative area of known regulated noxious weed infestations by 22% from 2009



Project highlight– Lower Boise Creek Channel Restoration

- Utilized King County Sustainable Infrastructure Scorecard and achieved Platinum Level
- Diverted 95 percent of construction and demolition materials from landfills
- Used alternative fuels in construction equipment
- Preserved existing native vegetation
- 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 Pautzke Levee Setback and Floodplain Restoration Project



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King County

Green Electricity and Power Use Reduction Technology

Wastewater Treatment Division

Air Blowers

Wastewater Treatment Division has recognized the benefit the micro turbine. This technology was expected to reduce power consumption for air-handling systems by around 30 percent. In fact, the current installed units have demonstrated power use reduction of up to 50 percent.

The effects of these projects are:

- Annual kWh savings: 1,686,722 kWh
- Annual cost savings: \$141,346
- Incentive payments via public utility: \$1,033,726
- Annual CO2 emissions reduction of 1169 metric tons.

In 2009, the **South Plant Energy Efficient Pre-Aeration Blowers** project replaced three multi-stage centrifugal blowers with two high-speed micro-turbine blowers.

The **West Point Energy Efficient Pre-Aeration Blowers** project is currently in construction and is expected to be completed in 2012. Four multi-stage centrifugal blowers are being replaced with two high-speed micro-turbine blowers.

The South Plant Energy Efficient Agitation Blowers project is at 30 percent design phase and is expected to be completed in 2013. Six multi-stage centrifugal blowers are being replaced with two high-speed micro-turbine blowers.



West Point CoGeneration

Wastewater Treatment Division's West Point Treatment Plant has been using digester gas, to power equipment since 1966. In 2012, a 4.6 Mega-Watt (MW) cogeneration system will be commissioned that is powered by digester gas.

The cogeneration system will:

- produce 'green' electricity equal to 30 percent of the plant's electricity consumption
- produce hot water for plant process systems
- annual reduction of 15,000 metric tons of CO2 emissions.



West Point Office Annex

Wastewater Treatment Division is incorporating green building practices in its West Point Office Annex project. providing code-compliant, functional office space for staff.

The design incorporates 'green' building materials and energy efficient design. Energy use will be reduced by using high-rated insulation and heating the building with the existing hot water loop.

Landscaping utilizes vegetation consistent with existing plantings, including drought-resistant species to minimize maintenance, over 60 percent of the plantings are native species.



King County