2010 King County Energy Plan

October 2010

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Introduction

King County has long recognized that it can reduce operating costs and emissions of greenhouse gases and other pollutants by reducing its energy use, meeting more of its energy needs with local renewable resources, and taking advantage of opportunities to produce energy (including renewable energy), where practical. Energy continues to be a major cost to the County, and reducing this expense will contribute to the County's ability to maintain critical services.

The actions the County takes to reduce energy use, particularly the burning of fossil fuels, are tightly linked to making progress toward the County's long-term climate goal of reducing greenhouse-gas emissions by 80 percent between 2007 and 2050. King County must also recognize the depletion and impact of fossil fuels and the benefits of energy independence and commit itself to continuous improvement in the ways it produces and uses energy in the next 20 years.

The 2010 King County Strategic Plan calls for the County to minimize the environmental and carbon "footprint" of County operations through

- incorporating sustainable development practices into design, construction, and operation of County facilities
- measuring and managing energy use
- investing in alternative fuels and technologies
- converting waste-to-energy
- empowering employees to identify new ways to reduce energy use and save money.

This 2010 King County Energy Plan (Energy Plan) provides a detailed roadmap for implementing the King County Strategic Plan, building on the County's past efforts to improve energy efficiency, and expanding the use and production of renewable and greenhouse gas-neutral energy.

While it is important for King County government to make the best use of its energy assets and opportunities, its operational use of energy represents only a fraction of the energy used in the county as a whole. King County's decisions about transportation, land use, and promotion of new technologies in the energy arena set the stage for community-level reductions in both energy use and greenhouse-gas emissions. The King County Strategic Plan recognizes this broader role for County government, making recommendations to encourage and support a growing and diverse economy, expand transportation choices, and partner with regional organizations, other jurisdictions, and the private sector to promote innovation. This Energy Plan outlines specific strategies the County can use to encourage actions in the broader community that reduce energy use and associated greenhouse-gas emissions as well as promote a green energy economy in this region.

The field of energy technology is advancing rapidly. The Energy Plan will be updated every five years to reflect and incorporate advances as well as changes in availability and cost of fuels—both traditional and alternative—and innovations in sustainable development practices. Energy Plan updates should also be informed by the County's actual performance in meeting goals and performance indicators for improving energy efficiency, using and producing alternative energy, and reducing greenhouse-gas emissions. In addition, a progress report on the implementation of the Energy Plan will be transmitted to the County Council annually.

Key Objectives of the 2010 Energy Plan

The 2010 Energy Plan focuses on the following key objectives for reducing energy use and greenhouse-gas emissions in King County. Strategies for achieving each objective are outlined later in this plan.

1. ***Reduce energy use through continuous improvements in facility and equipment efficiency, procurement, construction practices, and resource conservation***
   Conservation and low- or no-cost facility improvements are usually the lowest-cost energy resource. King County is committed to a culture of continuous improvement; efforts to improve efficiency and save money must be carried out in all areas of County operations. Energy audits and regular review of energy use provide critical data that can inform decisions and direct actions to change operations, procure supplies and equipment, and retrofit facilities to save energy and money.

2. ***Increase transit use and provide transportation choices that reduce overall energy use and emissions in the county, while improving the efficiency of King County's fleet***
   King County can impact community-level energy usage by increasing ridership on public transportation, linking land use and transportation planning, and supporting a range of sustainable transportation options, including bicycling, carpools, vanpools, and walking. In providing transportation services, King County should operate an energy-efficient fleet incorporating the latest vehicle technologies with low or no emissions.

3. ***Be a leader in early adoption and promotion of innovative technology for buildings and vehicles with a focus on electric vehicles***
   The County can help to build a green economy and reduce both operational and community-level energy use by helping to develop, test, and support early adoption of innovative energy technologies, including the establishment of energy networks for electric vehicles. Embracing new technology has and will continue to be a critical strategy component in meeting the County's ambitious energy goals.

4. ***Increase production and use of renewable energy***
   King County is a major regional producer of renewable energy through energy-capture programs at its landfill and wastewater treatment plants. The County's contribution of renewable energy to the region is as environmentally beneficial as buying and using renewable energy—and can provide revenue to the County.

5. ***King County will pursue sustainable funding strategies for energy efficiency, renewable energy projects, waste-to-energy projects and greenhouse-gas-reduction efforts.***
   Completing the objectives and strategies in this plan and meeting the County's energy targets will require a commitment to pursuing multiple funding strategies. Grants, loans, and utility rebates provide essential seed money for up-front investments in energy efficiency projects, and the County should seek them aggressively. However, they are not reliable on a long-term basis. The County should also develop a long-term, sustainable framework for validating savings from energy efficiency investments and using a portion of savings to support future investments.

History

The County has adopted a number of policies mandating energy conservation and efficiency over the past three decades, starting with Ordinance 5770 in 1981. (See Appendix A for a list of relevant policies and codes.) Over the past three decades, King County has actively worked to save energy in accordance with these policies. Most of the County's conservation projects during this period were financed using County capital or operating funds and were managed by County staff. Local electric utilities have provided critical support for the conservation efforts by offering incentives.

The County's energy efficiency projects have had a large impact on energy consumption. For example, between 2000 and 2007, 60 substantial electricity conservation or efficiency projects were completed, costing a total of approximately $6.7 million, earning utility incentives of $2.3 million (34 percent of cost), and saving 24.8 million kilowatt-hours and $1.3 million in energy costs per year in all the years since.

The County increased its emphasis on energy efficiency in 2006, when the County Executive issued the Executive Order on Renewable Energy and Related Economic Development and the Metropolitan King County Council passed Motion 12362 with similar provisions. The County produced the 2007 Energy Plan pursuant to these directives. Since the 2007 plan was prepared, the County has initiated 46 large energy-saving projects that are projected to yield a total of more than $3.9 million in utility incentives and over $2 million per year in energy-cost savings.

King County has also consistently led local governments in testing and early adoption of new energy-saving and renewable energy technologies, and has supported market adoption of successful technologies. Examples include purchasing the first fleet of efficient hybrid-electric transit buses and capturing renewable energy from sewage digester gas to displace traditional fuels. Embracing new technology has and will continue to be a critical strategy for meeting the County's ambitious energy goals.

The 2010 King County Energy Plan reflects updates to the goals, strategies, and implementation plans based on the County's experience executing the 2007 Energy Plan as well as changes in energy technology, the economy and other factors.

Energy Profile and Trends

Operationally, the Transit Division is the largest King County user of energy, accounting for 53 percent of total energy use, with diesel representing 43 percent of that amount. The next three largest energy users are the Wastewater Treatment, Fleet, and Solid Waste divisions. Approximately one quarter of the energy they use is electricity. (See Figure 1 and Appendix C for more information on King County's energy profile.)

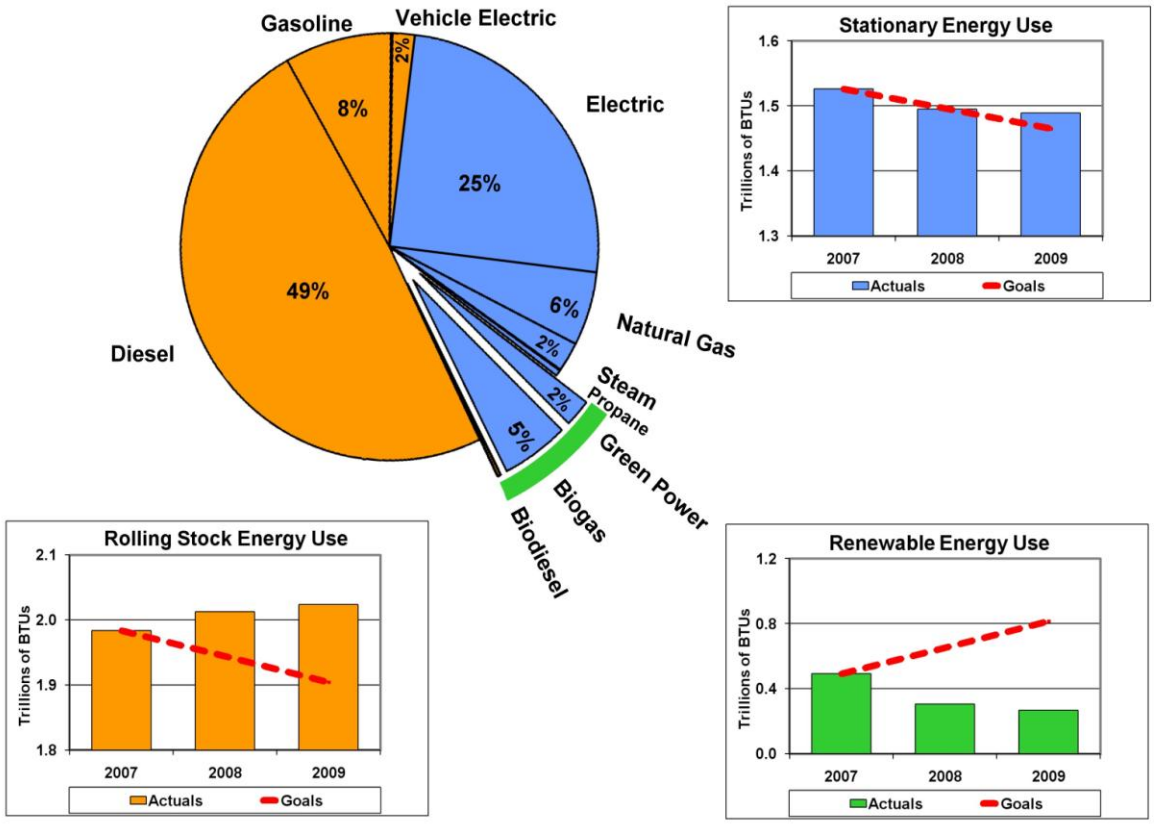
The 2007 Energy Plan included the following targets:

- Achieve a 10-percent normalized net reduction in energy use countywide by 2012
- Procure 50 percent of King County non-transit energy from renewable sources by 2012
- For the Transit Division, procure 35 percent from renewable sources by 2015, and 50 percent by 2020.

The County is on track to achieve a 10-percent reduction in energy use by 2012 in buildings and facilities. In the "rolling stock" sector, which includes transit and fleet vehicles, growth in transit service has resulted in an overall increase in transit energy use. In general, such increases in public transportation energy usage are offset by community-level reductions in private vehicle energy usage, and so are considered beneficial. The County has been actively working with the American Public Transportation Association to develop standardized energy efficiency goals for transit systems that more accurately capture the community-level energy efficiency benefits of increasing transit ridership.

With regard to the County's renewable energy goals, some divisions have made significant progress toward the goal of obtaining 50 percent of their energy from renewable resources by 2012. Both the Facilities Management Division (FMD) and Road Services Division (RSD) are purchasing "green power" (renewable electric power), in accordance with the 2007 Energy Plan goal. Road Services has purchased green power for maintenance building facilities and outlying buildings since 2007, while FMD has purchased green power for 44 percent of electric loads in the facilities it operates since 2009. However, the county as a whole has not met this goal due to financial constraints and limited available technologies. Given the large volume of diesel fuel used for transit vehicles, the current incremental cost of using biodiesel rather than conventional diesel is high enough that meeting the 50 percent goal would necessitate transit service cuts. Further, the curtailment of biodiesel use by the Transit Division masks gains in renewable energy use in stationary buildings and facilities. These general trends are illustrated in Figure 1.

Figure 1
King County 2009 Energy Use



Revised Energy Targets

This revised Energy Plan has three main targets for achieving progress from the 2007 base year in the near term (2012). These targets define the most important outcomes the County must achieve to continue its history of leadership in local government energy policy. The targets also provide direction and flexibility for County divisions to reduce energy use and increase energy efficiency, as well as produce and procure renewable energy, in ways that minimize both costs and environmental impacts. As King County considers energy technologies, it must evaluate them from a multi-criteria framework of environmental impacts, ensuring that production or use of resources does not create new and significant environmental problems. Ultimately, King County must strive to have a renewable resource portfolio aggregating the highest returns on our most limiting inputs.

It should be noted that the past renewable energy target focused only on *use* of renewable fuels, and failed to take into account the environmental and economic benefits of using the waste byproducts of certain operations, such as wastewater treatment and waste disposal, to produce renewable energy.

The following are near-term targets:

- Achieve a 10-percent normalized[1] net reduction in energy use in County buildings and facilities by 2012, and a 10-percent normalized net reduction in energy use by County vehicles by 2015
- Produce, use or procure renewable energy equal to 50 percent of total County energy requirements by 2012
- Maximize the cost-effective conversion of waste to energy.

In practical terms, meeting the target reduction in energy use for County vehicles (including transit) given current or expanded transit service levels means that when conventional diesel buses are scheduled for replacement, the County would need to purchase hybrid diesel-electric coaches with lower fuel demand, subject to budget limitations and availability of grant funding.

Looking to the Future

The long-term energy and climate challenges facing the Pacific Northwest and King County are significant, requiring a shared vision that incorporates innovation, flexibility, and leadership. Reductions in fuel use in County operations and by the community as a whole are essential to meeting goals for reducing greenhouse-gas emissions. It is critical that long-term energy efficiency goals be informed by, and integrated with, both operational and community-level greenhouse-gas emissions-reduction targets.

The King County Growth Management Planning Council (GMPC) has initiated work to update Countywide Planning Policies to be consistent with Multi-County Planning policies by early 2011. The current scope of these revisions includes direction to establish county-level greenhouse-gas emissions reduction targets and energy-efficiency goals based on current science, state emissions reduction targets, and long-range plans for land use and transportation. Collaborative work to establish a countywide greenhouse-gas emissions reduction target is expected to take place in 2011. Once the GMPC makes its recommendations for climate and energy policies, the King County Energy Task Force, an interdepartmental committee that leads the County's energy plan implementation, will define medium- and long-term energy goals consistent with the Countywide Planning Policies. These recommendations should inform the next major King County Comprehensive Plan update in 2012 and the Energy Plan update in 2015.

[1] Normalization of energy use is common practice in conservation, to remove confounding factors in energy accounting and provide more meaning to the value of energy use. Essentially, energy normalization provides a measure of the energy use per unit of service value delivered (units of energy / units of service delivered). This function is typically unique to each organization or enterprise. The Energy Task Force will agree on appropriate normalization factors for various energy end uses and functions. Normalization is intended to reveal actual energy use reductions under varying conditions, but should not diminish or slow progress toward the goal of reducing net County energy use.

Organization to Implement the Plan

Execution of the Energy Plan will be a countywide effort; all departments and divisions are called on to save energy and to obtain more of the energy they need from renewable resources.

County divisions will continue to develop and execute energy strategies and plans that are consistent with this Energy Plan. The interdepartmental Energy Task Force will review and coordinate these plans to ensure that they comply with County goals, will encourage collaboration and resource-sharing among departments, and will coordinate reporting to the County Executive and County Council. The task force includes representatives from County departments that use most of the energy the County government consumes, including the Department of Executive Services, the Department of Transportation, and the Department of Natural Resources and Parks, as well as others when appropriate. The directors of these departments are executive sponsors of the task force, which was authorized by Executive Order FES 9-2 (AEP) in 1998.

Specific chartered goals of the Energy Task Force are detailed in Appendix B.

Objective One: Reduce energy use through continuous improvements in facility and equipment efficiency, procurement and construction practices, and resource conservation in County operations

The 2010 King County Strategic Plan calls for continuous improvements in the efficiency of all areas of County operations, including energy use. King County must embrace a culture of continuous improvement to save money and reduce its energy use and related environmental impacts (including climate change).

Evaluating the energy efficiency of major buildings and facilities and comparing performance against best practices provides critical information for determining where energy efficiency investments should be made. When designing capital projects, the County will consider opportunities for long-term energy savings and reductions in greenhouse-gas emissions and will pursue these options when they are cost-effective. County agencies will monitor ongoing energy use in order to validate savings, identify opportunities for adjusting operations to achieve additional savings, and evaluate the County's progress toward meeting energy-efficiency goals.

Strategy 1
Conduct and/or update efficiency audits of all major County buildings by 2012 and create a prioritized action plan for reducing energy use at each building or facility

These audits will identify both operating measures and equipment replacement measures to conserve energy.

Operational and maintenance assessments will focus on low-cost opportunities to optimize the performance of existing systems. These audits will analyze historical energy data for trends, perform daytime and nighttime walk-throughs as needed, and analyze set points, control strategies, and equipment performance in relationship to system design

and occupancy needs to identify opportunities to reduce the building's operating costs and/or environmental footprint.

Equipment assessments will investigate equipment and systems in buildings and facilities for opportunities to save energy and/or reduce greenhouse-gas emissions through cost-effective equipment replacement.

Energy conservation measures will be prioritized and may be implemented using division operating or capital funds where cost-effective; energy savings performance contracting may also be used.

Strategy 2
Develop specific energy management plans for large, energy-intensive and/or special-purpose County facilities

Examples of these types of facilities are the wastewater treatment plants, the King County Correctional Facility, and the Cedar Hills Landfill. Plans for these facilities will focus on practical energy-saving measures within the framework of least-cost management. They will include specific approaches for each facility's use and, where appropriate, the production and sale of energy.

The Energy Task Force will identify facilities requiring specialized energy management plans and will work with facility staff to identify operating parameters and best practices to be incorporated into the Energy Plan. All energy management plans for special-purpose facilities will be completed no later than June 30, 2011.

Strategy 3
Review and analyze other local government energy plans to ensure that King County is continuously aware of best practices in energy efficiency and greenhouse-gas reduction

Local governments across the country are embracing new technologies and reforms to achieve energy efficiency, reduce greenhouse-gas emissions, and develop a green energy economy. King County is an active member of ICLEI - Local Governments for Sustainability and Climate Communities, which are sharing approaches for reducing climate impacts and educating federal policymakers about the essential role of local governments in addressing climate change. King County will seek out best practices from other local jurisdictions and share our successes with other local governments.

Strategy 4
Ensure that the design, construction, maintenance and operation of any capital project owned or financed by King County is consistent with the latest green building and sustainable design and construction practices

Ordinance 01647, Green Building and Sustainable Development, requires that the County seek LEED Gold certification for LEED-eligible construction. For capital projects that are not LEED-eligible, the ordinance requires that agencies incorporate sustainable development practices into development, design, and operation. Buildings seeking a LEED rating and/or applying other appropriate sustainable design and construction practices shall place special emphasis on energy efficiency. As a goal, project teams

should plan to construct buildings that use at least 20 percent less energy than required by local building energy codes. For non-LEED-eligible projects, project managers should use a sustainable infrastructure scorecard developed by the County's Green Building Team as a tool for evaluating project alternatives.

Strategy 5
Pursue energy-efficient procurement strategies

King County, as a purchaser of goods and services and an initiator of capital projects, has the opportunity to support and stimulate our region's green economy. The County will incorporate energy-efficient technologies and products into its procurement strategies.

Strategy 6
Implement Ordinance 16927 for efficiency and greenhouse-gas reduction in CIP projects

Consistent with Ordinance 16927, the County will consider energy efficiency and greenhouse-gas reduction alternatives during the preliminary design phase of capital improvement projects. Furthermore, the County will establish procedures to ensure that it is taking advantage of financial incentives available from utility companies and is tracking the energy savings and rebates from those projects.

Strategy 7
Incorporate energy efficiency and resource-use guidelines into the Green Operations and Maintenance Guidelines, including "LEED for Existing Buildings" methods as appropriate

The King County Green Building Team will establish operating guidelines concerning energy efficiency and resource use for County-occupied facilities, with assistance and review from the Energy Task Force. The guidelines will cover topics such as heating and cooling temperatures, building HVAC schedules, building envelope maintenance, plumbing fixtures and system guidelines, lighting expectations, plug load management including computer power management settings, operation of office equipment, and use of personal appliances. (Specific operating requirements for specialty facilities are addressed in Strategy 2.)

To the extent practical, the County should incorporate energy saving and efficiency enhancement methods and measures into the Green Operations and Maintenance Guidelines developed under the Green Building and Sustainable Development Ordinance 16147 (2008). These methods and measures should be informed by the LEED for Existing Buildings: Operations and Maintenance program. The Green Building Team and Energy Task Force will review and update the guidelines periodically.

Strategy 8
Reduce the use of inefficient lighting and prepare for product changes as a result of 2009 federal lighting standards

In 2009, the federal government passed laws requiring increased efficiency standards for many types of lighting equipment, beginning in 2012.

Ordinance 16769 called for development of an implementation plan for the cost-effective replacement of lighting that does not meet the new federal energy standards. Review of the applicable federal statutes indicates that these standards will result in phased-in changes in the selection of available lighting products (some lighting fixtures will no longer be available). The County will need to plan for lighting replacements considering the phased implementation of these new federal standards.

This strategy will include the following specific actions:

- The Energy Task Force will produce guidelines for phased replacement of lighting with new lighting products as federal product standards are enacted and implemented. These guidelines will be prepared by June 30, 2011.

- The County Finance Business Operations Division will produce standards for purchasing lighting that minimizes replacement costs while ensuring compliance with federal lighting-efficiency standards as they are phased in.

Ordinance 16769 also called for a report on the disposal of lights and related toxic metals. The Energy Task Force has prepared a report summarizing activities conducted by the Solid Waste Division to educate citizens on the proper disposal of fluorescent lighting; an analysis of a policy to establish mercury and lead content standards for all new lighting products purchased by King County; and a summary of "lamp take-back" activities. This report is attached as Appendix D.

Finally, Ordinance 16769 called for development of a plan and recommendations for reducing outdoor light pollution. This work will be coordinated with scoping for the 2012 King County Comprehensive Plan update, which will take place in second half of 2010. The Energy Task Force will work with the divisions that are most reliant on outdoor lighting to develop a report and recommendations to the County Council by June 30, 2011.

Strategy 9
Conduct a countywide campaign to encourage employees to adopt energy conservation measures at work

The practices of people who occupy, operate, and maintain our buildings affect how much energy a facility consumes. By educating and motivating employees to use energy resources wisely, the County can reduce waste and generate savings. Changes in employee behavior have been shown to cut resource use by up to 10 percent from a typical building baseline. The County will also seek to reduce emissions that result from employee travel by encouraging employees to use public transportation, telecommuting, flex scheduling, and other green practices.

Strategy 10
Maintain accurate records of energy use for the entire County's operations to set baselines, benchmark energy use, inform actions, and measure County progress toward achieving targets in the Energy Plan

Energy accounting is the foundation for identifying energy waste, planning energy-saving projects, and measuring and validating the results of those efforts. King County has

implemented a consolidated countywide database of utility and other energy costs and consumption. (See attached energy data in Appendix C.) The database is based on the widely used energy accounting package Utility Manager. This package was provided by Puget Sound Energy to support its Resource Conservation Manager program, in which the County participated. This energy accounting system aggregates information from more than 1,000 utility accounts, as well as information about liquid fuels, allowing the County to benchmark energy and resource consumption data for its facilities, buildings and equipment, including rolling stock. King County has also significantly enhanced the data analysis and presentation tools in Utility Manager to assist in planning and tracking energy conservation projects and tracking greenhouse-gas emissions. Such detailed energy tracking is essential for King County to take the strategic actions needed to manage its energy consumption and save energy and money as a result. As a part of this strategy, the County has and will continue to do the following:

- Establish facility baselines and goals and provide regular feedback to departments on project and program progress toward energy plan targets so that departments can take necessary actions to meet targets.
- Prioritize energy-related actions that will help to meet the Energy Plan's targets and quantify expected savings from proposed actions.
- Identify and take action to remedy consumption anomalies that may relate to operational issues such as leaks or failed controllers.
- Track consumption patterns to verify the success of implemented savings programs.
- Make accurate projections of energy use to help create budgets and forecasts, noting that accuracy of these projections will be largely influenced by fuel prices and economic conditions.
- Where appropriate, provide data from the County's energy accounting system to the Environmental Protection Agency's Energy Star Portfolio manager to benchmark County building performance. This applies particularly to buildings located in Seattle, where periodic energy benchmarking will become mandatory in 2011. Some King County buildings are already Energy Star certified. The County should also assess the costs and benefits of certifying other selected qualified buildings under the Energy Star program.

Strategy 11
Annually assess and report greenhouse-gas emissions from all direct energy usage in County operations

The County will annually evaluate greenhouse-gas emissions from direct energy usage in County operations and report to the Council as part of performance measurement reporting associated with the County's Strategic Plan. This information will also be made available to the public via the County's climate website. The County currently uses the emissions inventory protocols of the Chicago Climate Exchange, but will likely transition to national Climate Registry protocols and reporting in 2011, subject to budget approval. This information will help to track actual emissions reductions against targets in the King

County Comprehensive Plan, evaluate the outcomes of investments to increase energy efficiency and reduce greenhouse-gas emissions, and inform adjustments to future goals as the County updates its Comprehensive Plan in 2012.

More detailed information on the County's operational emissions will also enhance the County's ability to benchmark its emissions against those of other local governments with similar operations. The County will share information with its regional partners in order to evaluate comparative performance and achievement of regional targets and identify innovative approaches to measurement and tracking of energy usage.

Strategy 12

Institutionalize regular reviews of energy usage, energy sources, and energy audits and use these to evaluate progress in meeting goals and to inform adjustments in operations

Periodic reports will be shared with division management and facility managers to help them achieve their energy-reduction targets. Annual progress reports on achieving the strategies and targets outlined in the Energy Plan will be transmitted to the County Council.

Strategy 13

Integrate and streamline reporting requirements related to energy efficiency, green building, and greenhouse-gas emissions to maximize their value for evaluating performance, informing policy choices and capital investments, and providing useful information to the public

Many County ordinances and policies related to green building, energy efficiency, and climate change include related but separate reporting requirements. These data collection and reporting efforts could add more value if they were integrated and tied back to a performance measurement framework that is linked to policy and budget decisions. Information should be formatted in a way that is more accessible to the public. As part of implementing Ordinance 16897, King County Strategic Plan, the County is developing a comprehensive performance measurement framework. The Executive should develop an integrated set of performance measures for evaluating and reporting on improvements in County energy efficiency, reductions in greenhouse-gas emissions, and the performance of green building investments relative to intended outcomes. Performance indicators and reporting to the County Council should be structured in a way that maximizes its value in informing future program and project investments and providing useful information to the public. Once this framework is in place, existing reporting requirements should be modified or streamlined consistent with this framework.

Objective Two: Increase transit use and provide transportation choices that reduce overall King County energy use and emissions while improving fleet efficiency

King County seeks to reduce energy usage from private vehicles by increasing ridership on public transportation and by providing a range of sustainable transportation options. King County also seeks to operate an energy-efficient fleet that incorporates the latest low- or no-emissions vehicle technologies, and to optimize energy usage through practices that reduce idling, route vehicles efficiently, and avoid unnecessary trips.

Strategy 1
Reduce County energy use and direct emissions from vehicles through both the purchase of fuel-efficient vehicles and operational strategies

The County's public transportation fleet and non-revenue vehicles are the largest consumers of energy at King County through their use of diesel fuel and gasoline. The County will seek, subject to budget, operational, and maintenance limitations, to utilize the most energy-efficient commercially viable vehicles for its fleet. King County will also seek to deploy these vehicles in an energy-efficient manner through vehicle routing, idling, and operator practices.

Strategy 2
Increase and promote transit ridership

Approaches for increasing the use of public transit include emphasizing route productivity, utility to the public, and equity in planning transit investments, and increasing the public's awareness of public transportation options. Regional policy discussions are underway for prioritizing and allocating future transit investments and services.

Initiatives for increasing awareness of, and access to transit services could include marketing transit service to the public, sharing Metro data with the nonprofit and private sectors, supporting employers in their efforts to increase employee transit use, and coordinating fare structures and payment methods among regional transit agencies. The County will continue to leverage partnerships with jurisdictions, employers and community groups to increase awareness and to change travel behavior to be more energy efficient.

These and other approaches and programs will be considered during upcoming updates to major policy documents that guide County transportation actions, including the Countywide Planning Policies in 2011, the next major update to the King County Comprehensive Plan in 2012, and future updates to the King County Strategic Plan and King County Energy Plan.

Strategy 3
Provide transportation choices that reduce overall King County energy and emissions

The provision of a range of transportation choices and transportation connections including public transportation, vanpools, ridesharing, and bicycling, walking and other

modes can lead to reductions in overall energy consumption for residents of King County. Tactics include incentives to promote cycling, enhancing park-and-ride lots, and supporting individuals interested in utilizing ridesharing and vanpools. The delivery of new services such as RapidRide and the integration of King County Metro's countywide bus network with regional bus and rail services are expected to expand mobility options and increase the transit mode share, especially during peak commute hours when vehicle emissions are at their highest.

Strategy 4

Develop measures to comprehensively account for energy savings and emissions reductions associated with increased transit use by the community

As King County expands transit, its own operational fuel use and associated emissions actually increase. However, these increases in King County's energy usage for expanded public transportation are offset by community-level reductions in private vehicle fuel usage, and so are considered beneficial. It is important to have measures of fuel use that capture not only King County's operational efficiency, but also the associated reduction in fuel use and greenhouse-gas emissions by transit riders who are not driving their private vehicles.

The county has actively worked with the American Public Transportation Association (APTA) to develop standardized climate change measures for transit systems that more accurately capture the community-level reductions in fuel use and greenhouse-gas emissions associated with increasing transit ridership. In 2009, APTA published standards for the measurement of transit emissions and the calculation of displaced emissions. King County currently reports according to this standardized format. APTA has also worked with the Climate Registry, which has adopted the APTA methodology for reporting emissions and displaced emissions. Finally, the County is actively involved with ICLEI in developing a community reporting protocol for emissions, which will be released in late 2011. The County is representing the transit industry on the ICLEI Community Protocol Steering Committee and will advocate for a similar reporting protocol that captures fuel use and emissions avoided by expansion of transit service.

The county's participation in these national efforts to develop new approaches for accounting for community-level emissions and energy use associated with transit should help inform efforts by the Growth Management Planning Council to develop county-level measures and targets for greenhouse-gas emissions and energy efficiency.

Objective Three: Be a leader in early adoption and promotion of innovative technology for buildings and vehicles, with a focus on electric vehicles

The County can help build a green economy and reduce both operational and community-level energy use by helping develop, test, and support early adoption of innovative energy technologies, including the establishment of energy networks for electric vehicles. King County has consistently led local governments in testing and early adoption of new energy-saving and renewable-energy technologies for both buildings and vehicles. Embracing new technology has and will continue to be a critical strategy for meeting the County's ambitious energy goals.

Strategy 1
Reduce the County's direct emissions from vehicles through the purchase of fuel-efficient vehicles, including electric vehicles

The County will continue its leadership in fleet efficiency, as demonstrated in the hybrid bus programs, by purchasing electric vehicles for the van and motor pool programs (35 Nissan Leafs in 2011). The County will also explore other potential applications for electric vehicles.

Strategy 2
Collaborate with private industry, community groups, utilities and other agencies to build an electric vehicle network for use by the community

This strategy includes the installation of 50 charging stations in 2011 in addition to King County's existing 39 stations. These charging stations will be located throughout King County. Their exact locations will be determined by working with regional partners, public utilities, and private developers who have evaluated demand and installation cost. The County will also staff New Energy Solutions, sponsoring research and workshops to advance regional information about the electrification of the transportation sector**.**

Strategy 3
Pursue grants and loans for electrification or other innovative technologies for use in public fleets and buildings

The County will continue to pursue local, state, and federal grants, including the federal Energy Efficiency Block Grant program (EECBG) if it is renewed, to advance the placement of electric-vehicle charging stations throughout our region, starting at park-and-ride lots. The County will also use this funding source for energy-efficiency projects, including electric-vehicle charging stations. The County also will pursue low-cost loans, such as the Qualified Energy Conservation Bond program, when appropriate.

Strategy 4
Consider energy efficiency in trolley fleet replacement

Metro Transit has a fleet of 159 electric trolley buses that utilize hydroelectric energy, and are now in need of replacement. Metro is evaluating electric trolley and diesel-electric hybrid technologies as replacement options for the trolley bus fleet. Energy costs, greenhouse-gas emissions, and air quality are among the factors being considered in the evaluation, which will be completed in late spring of 2011.

Strategy 5
Apply and encourage new and innovative technologies and renewable energy where practical to reduce energy use and impacts in County facilities and our communities

County operations and facilities will continue to be regularly reviewed to identify opportunities for reducing energy use through cost-effective use of advancing technology. For example, many facilities have upgraded and expanded their energy management control systems to reduce energy use and optimize control of heating ventilation and air-conditioning (HVAC) systems. Sensors are now being widely applied to improve facilities' performance and energy efficiency while meeting operating needs.

Strategy 6
Develop applications for renewable energy in County facilities where practical and efficient and help to facilitate community development of renewable energy projects

Renewable solar energy technology is increasingly being applied by the County, especially where the cost of electricity provided by a utility is high and the amount of energy use in the application is modest. Examples include compaction trash receptacles, lighting for bus shelters, bus-stop indicators, schedule holders and traffic signage at selected transit stations. Some solar energy installations are actually generating surplus electricity that the County is selling back to utilities. King County should seek grants and incentives to support application of renewable energy technologies, and should help to facilitate community development of renewable energy production through tax credit and other incentive programs where practical.

Objective Four: Increase production and procurement of renewable energy and development of waste-to-energy applications

The King County Comprehensive Plan, proposed King County Strategic Plan, Renewable Energy Order, and Council Motion 12362 all direct the County to maximize the conversion and use of waste for energy. King County is a major regional producer of renewable energy through energy-capture programs at its landfill and its wastewater treatment plants. The County's contribution of renewable energy to the region is as environmentally beneficial as buying and using renewable energy—and can provide revenue to the County.

Historically, most renewable energy used in King County has been produced by the County itself, in "waste-to-energy" systems that recover valuable resources from sewage. Generation of biogas from sewage projects alone has consistently provided energy equivalent to between 5 and 8 percent of the County's total energy used. DNRP's Wastewater Treatment Division (WTD) has focused on renewable energy efforts for many years. This strategy began in 1966 when the West Point Wastewater Treatment Plant was constructed using pumps powered by its own digester gas. These pumps have saved an enormous amount of electricity since that time—more than 83 million kilowatt-hours. Since this pioneering initial effort, WTD has been a leader in waste-to-energy projects. Cogeneration (combined heat and electric power plants), installed at West Point in 1985 and at the Renton treatment facility in 2005, are the most notable developments.

In addition, the Renton facility installed gas refining capability in 1985, allowing the sale of cleaned and concentrated digester gas to utilities.

The Solid Waste Division recently developed a facility at the County's Cedar Hills Landfill that is producing more energy than any other County facility; landfill gas from this facility is classified as a renewable resource. The pipeline-quality gas output from Cedar Hills is estimated to be more than 1.4 trillion BTUs of gas per year for 20 years. This is equivalent to 40 percent of all the County's energy requirements in 2009.

Strategy 1

The County will continue to maximize opportunities for waste-to-energy projects at its major facilities such as its wastewater treatment plants and its landfill

WTD is currently rebuilding its cogeneration power plant at West Point, with a new 2.5 average megawatt plant that is scheduled to come on line in 2012, and will sell the renewable electric power to Seattle City Light. WTD's Renton treatment facility is currently reassessing its application of biogas to ensure that the gas is being applied for best utility and value. Sale of landfill gas and environmental credits from the County's Cedar Hills landfill will greatly expand the County's contribution to the region's renewable energy supply while providing revenue. Together, these gas-energy plants maximize the productive use of available waste methane gas to generate plant heat and produce natural gas and valuable renewable electric power for sale.

Strategy 2

The County will continue to research opportunities to apply renewable energy in the County's new construction, retrofit construction and stand-alone energy projects, and will seek to develop or support private developments of renewable energy applications where benefits exceed costs

For example, solar power is a proven approach to renewable energy generation. Although in the Pacific Northwest sunlight is more limited than in many regions of the country, some solar projects are already cost-effective in King County, especially with new State of Washington production incentives and other grants. To date, the County's solar energy installations have included security lighting on bus shelters, supplemental lighting of roads, and partial power at solid waste transfer stations. Solar energy and other renewable energy supplies will continue to be regularly evaluated countywide for use in new and retrofit construction and in site-specific applications.

Strategy 3

The County will continue to research and develop environmentally acceptable and cost-effective ways for government, private industry and communities to further increase the energy generated from waste products where consistent with County energy and environmental strategies

For example, King County is participating in development of a rural dairy biogas project that would produce energy while reducing impacts on water quality and offering farmers a more sustainable option for disposing of manure. When evaluating partnership projects and considering long-term commitments and investments, the County should consider life-cycle energy savings, costs and revenues, and environmental impacts of such projects

versus other alternatives. King County's preference is to pursue waste-to-energy projects that can be certified as renewable under state law.

Strategy 4
County divisions will transition to purchasing renewable energy as funding becomes available

As noted earlier in this plan, both FMD and RSD are purchasing certified renewable electricity in accordance with earlier Energy Plan goals. The relatively large purchases by these agencies have allowed the County to secure a substantial discount on renewable electricity premiums. Perhaps most important, FMD has more than offset the cost premiums associated with the use of renewable electricity by implementing large energy-efficiency projects first—demonstrating that increasing efficiency and increasing the share of our energy that comes from renewable sources are compatible goals. Such purchases will not only increase the County's use of renewable energy but will further stimulate the market to increase the availability of these resource choices.

Strategy 5
Support development of eco-industrial districts

Eco-industrial districts can be thought of as a type of industrial ecology that helps create sustainable communities by using waste byproducts, maximizing resources, and promoting the creation of green jobs. Businesses that participate in eco-industrial districts make a commitment to apply sustainable practices. Eco-industrial districts can vary in size, from a few properties to a large industrial community. Manufacturers are typically located close to one another so the waste products from one firm can be an input resource for a neighboring firm. In addition to using byproducts, eco-industrial districts typically share services such as training resources, common infrastructure, site/facility management, green building standards, common areas, recreational facilities, etc. Ideally, eco-industrial districts are part of larger livable communities served by public transit with nearby affordable workforce housing and recreational amenities.

King County manages regional services including solid waste and wastewater treatment, and has resources—traditionally thought of as waste byproducts—to offer private industry. These include heat from wastewater trunk lines, treated wastewater effluent, mixed municipal waste and solid waste recyclables. Eco-industrial districts offer opportunities for advancing energy efficiency and sharing energy resources, as well as our regional vision for land and resource conservation, recreational amenities, and transit access.

County Council Motion 13327 requests that King County partner with other jurisdictions, non-profit organizations, labor and businesses to develop Eco-industrial districts and sustainable communities.

Objective Five: Pursue sustainable funding strategies for energy efficiency, renewable energy projects, waste-to-energy projects and greenhouse gas reduction efforts.

To complete the objectives and strategies in this plan and meet the County's energy targets, the County must make a commitment to pursuing multiple funding strategies. Grants, loans, and utility rebates provide essential seed money for up-front investments in energy-efficiency projects, and the County should seek them aggressively. However, they are not reliable on a long-term basis. The County should also develop a long-term, sustainable framework for validating savings from energy-efficiency investments, and using a portion of savings to support future investments.

Strategy 1
Aggressively pursue grant funding to supplement County funds for energy efficiency and/or greenhouse-gas emissions-reduction efforts

Utilities in King County provide incentive grants for design, purchase, and installation of equipment that will save energy. Consistent with Ordinance 16927, King County will strive to take full advantage of financial incentives available from utility companies and will track the energy savings and rebates from those projects.

Strategy 2
Reinvesting in sustainable energy and climate mitigation projects

Energy conservation and efficiency and waste reduction save the County money. Energy production can also reduce County energy expenditures and even generate revenue. By quantifying, verifying and reinvesting these savings and revenues directly into the organizations where the activities take place, the County could provide strong incentives to continuously improve energy and resource management. By directly rewarding divisions for their efforts, the County could create additional opportunities and motivation for them to reinvest funds in projects that improve the efficiency and sustainability of their operations and facilities, consistent with this plan and County goals.

King County will evaluate options for reinvesting in sustainable energy and climate-change mitigation projects. This could include creating separate accounts to track verified savings at the project and program level, giving agencies the opportunity to apply savings to new energy efficiency and climate-change mitigation projects as part of their annual budget proposals, and/or setting specific thresholds for reinvestment in future capital projects versus applying savings to offset operating costs. The County will also evaluate trade-offs between additional energy efficiency investments and other investments, such as increases in transit service, which may increase energy usage but reduce overall community usage.

Strategy 3
Advocate for federal resources to support ongoing local investments in energy efficiency and green jobs.

Federal resources are essential to support the County's ongoing energy-related work. As stated in Motion 13322, King County supports full funding for the Energy Efficiency

Community Block Grant program in federal fiscal year 2012 as part of King County's 2011 federal legislative agenda. The County will monitor and evaluate the outcomes of EECBG-funded projects so that it can demonstrate the extent to which these investments decrease energy use, curb greenhouse-gas emissions, and create jobs. The County also supports extension and expansion of the QECB (Qualified Energy Conservation Bond) program, which provides low-cost financing for energy projects.

Appendices

Appendix A – King County Energy and Climate Change Related Policies and Codes

King County Comprehensive Plan, Chapter 8, Section III. Energy and Telecommunications
http://www.kingcounty.gov/property/permits/codes/growth/CompPlan/2008.aspx

King County Code – Title 18 Energy Management
http:www.kingcounty.gov/council/legislation/kc_code.aspx

Motion 12362 - County to Reduce Greenhouse Gases
http://mkcclegisearch.kingcounty.gov/custom/king/legislation.htm

Ordinance 15988 Promotion of Energy Efficiency and Clean Vehicle Technology
http://mkcclegisearch.kingcounty.gov/custom/king/legislation.htm

Ordinance 16147 – Requiring Use of Green Building Practices
http://mkcclegisearch.kingcounty.gov/custom/king/legislation.htm

Motion 12744 – Motion to Control County Efforts on global Warming
http://mkcclegisearch.kingcounty.gov/custom/king/legislation.htm

Motion 12795 - Motion Use of Bio-Fuels in Transit
http://mkcclegisearch.kingcounty.gov/custom/king/legislation.htm

Motion 12921 – Motion Endorsing Electric Vehicles
http://mkcclegisearch.kingcounty.gov/custom/king/legislation.htm

Appendix B – Energy Task Force Charter (2008)

A countywide task force is convened to carry out the Energy Plan and ensure a consistent and continued focus on energy efficiency and use of renewable energy resources. This task force will be authorized and overseen by the Director or designee from the Departments of Natural Resources and Parks (DNRP), Transportation (DOT), and Executive Services (DES). A small staff with expertise in energy and sustainability representing each of these departments will be drafted as the working Energy Task Force (ETF) and will implement the Plan, including the following:

a. Coordinate intra-County efforts regarding energy issues;

b. Finalize the Energy Plan with updates and modifications from time to time as determined necessary by the ETF, and incorporate policies as part of the Comprehensive Plan;

c. Monitor compliance with the Plan and the Renewable Energy Order;

d. Support and coordinate the development and sustained use of aggregated county-wide energy and carbon databases and energy baseline data as a basis for measuring facilities' performance and progress to goals;

e. Develop and implement a program for strategic county-wide energy efficiency improvement including behavioral, O&M, and capital measures to achieve conservation goals;

f. Monitor the implementation of energy efficiency and conservation measures and benchmarks within County facilities and operations;

g. Review annual reports regarding energy use by the Departments of Natural Resources and Parks and Transportation provide to the Executive;

h. Ensure County energy policies and practice are coordinated with policies on greenhouse gas mitigation, green building and other sustainability initiatives;

i. Adopt work plans to study and increase renewable energy use;

j. Advise the Executive on energy matters and recommend new energy initiatives;

k. Monitor energy policy, development and supply markets for their effect on present and future energy costs. Advise Departments and the Executive on best acquisition/sales practices;

l. Monitor new energy technology development and recommend pilot tests, participation in trials, education, early adoption, etc., as appropriate;

m. Develop partnership arrangements with other local jurisdictions and/or private businesses as appropriate to improve energy use and acquisition strategies, reducing waste and costs while improving energy market positions.

Appendix C – King County Energy-Use Profiles

In the designated baseline year, 2007, King County used approximately 3.45 trillion BTUs of energy. The major categories of energy consumption are transit vehicles (52 percent), wastewater treatment, buildings, County vehicles, and solid waste processing.

More detailed information follows (all figures are approximate):

- The Transit division used 1.8 trillion BTUs (204 billion BTUs from biodiesel) to provide more than 110 million passenger trips, or 348 BTUs per passenger trip.

- DNRP's Wastewater division used 780 billion BTUs, or 12 BTUs per gallon, to process the County's wastewater.

- County buildings used 668 billion BTUs, or a countywide average of 121,000 BTUs per square foot per year. (These figures exclude Public Health, the Sheriff's Office and the Transit, Wastewater, Solid Waste, and Fleet Administration divisions, whose energy use was not predominately in buildings.)

- Facilities Management managed some of the buildings counted above, accounting for 60 percent of the total floor space. Annual energy use in these buildings was 314 billion BTUs, or 95,000 BTUs per square foot per year.

- Road Services used 34 billion BTUs, or the equivalent of 146,000 BTUs per square foot per year, primarily in building and road lighting systems. Nearly all of this energy—97 percent—was green power purchased from Puget Sound Energy.

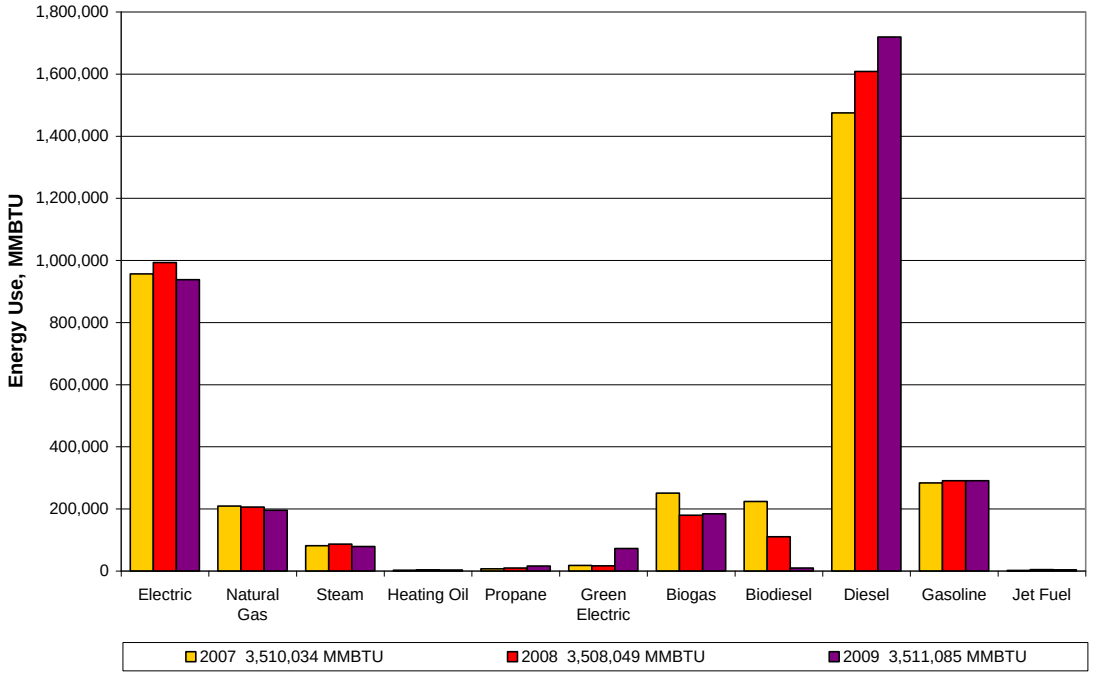
- King County International Airport used 27,766 million BTUs, or 61,000 BTUs per spare foot per year, largely in buildings.

- County vehicles managed by Fleet Administration used 206 billion BTUs of liquid fuels (8 billion BTUs from biodiesel) to travel 18 million vehicle miles, or 11,196 BTUs per mile.

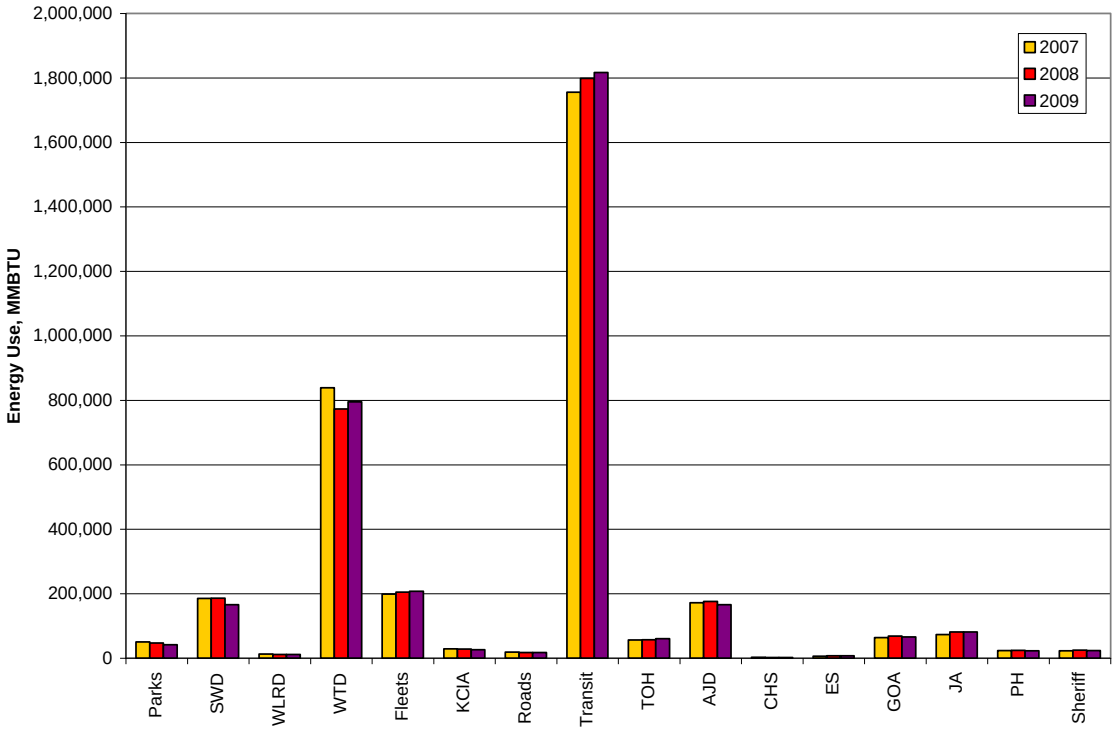
- DNRP's Solid Waste division consumed 182 billion BTUs, or about 90 BTUs per pound, to process solid waste.

  Graphic and tabular format details of the 2007 energy use baseline are provided on the following pages. More are available in electronic format from DRNP's Energy Group.

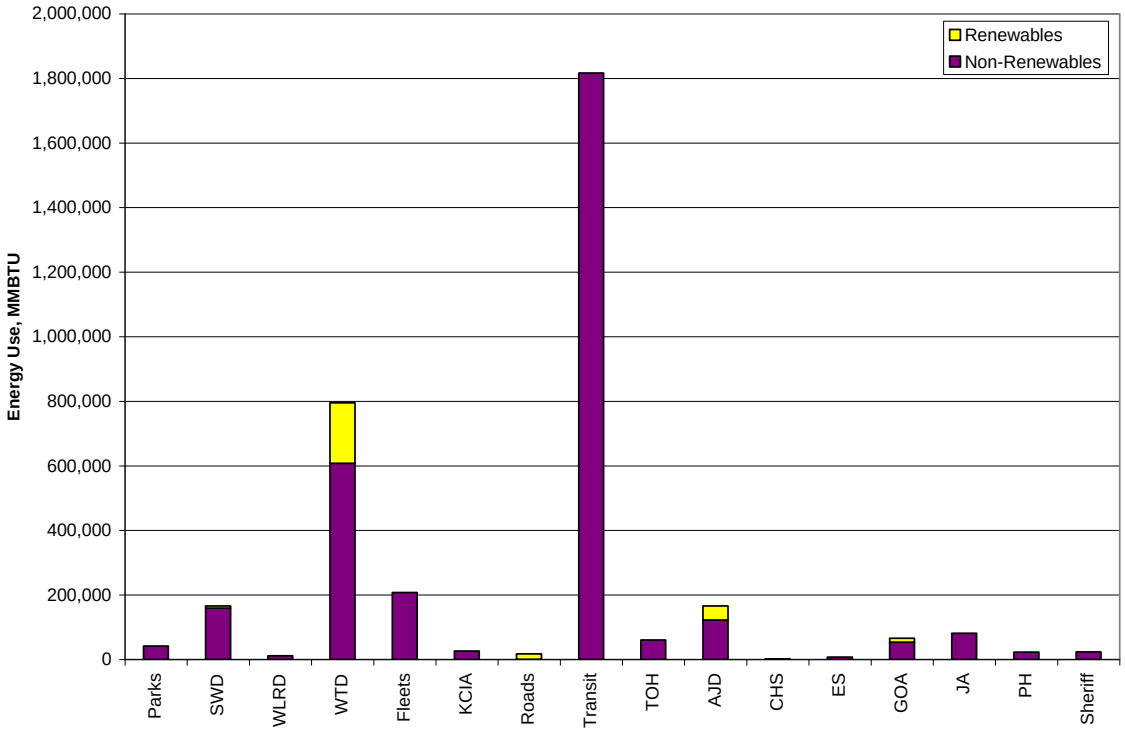
King County Energy Use



King County Divisional Energy Use



King County 2008 Divisional Energy Use



2009

	2009 Fuel Sources	Utility Manager Database: Electric kWh	Natural Gas Therms	Steam Mlbs	Propane Gallons	Heating Oil Gallons	Gasoline Gallons	Diesel Gallons	Jet Fuel Gallons	Renewable Energies: Electric kWh	Biodiesel Gallons	Biogas MMBTU
DNRP	Parks & Recreation Division	7,260,716	167,492	0	0	3,251	0	0	0			
DNRP	Solid Waste Division	8,556,755	0	0	0	19,346	37,211	956,874	0		50,273	
DNRP	Water & Land Resources Division	1,487,504	64,269	0	0	0	0	0	0			
DNRP	Wastewater Treatment Division	157,280,855	144,446	0	174,040	0	55	318,899	0		21,816	184,039
DNRP	DNRP Subtotal	174,585,830	376,207	0	174,040	22,597	37,266	1,275,773	0	0	72,090	184,039
DOT	Fleet Administration	221,711	14,349	0	0	0	1,285,962	440,163	0		44	
DOT	King County Airport	4,380,132	81,967	0	0	0	19,889	6,358	0			
DOT	Road Services		6,653	0	0	0	0	0	0	4,915,747		
DOT	Metro Transit	35,023,068	769,171	208	0	0	1,082,424	11,619,193	0		0	
DOT	Metro Transit TOH	17,731,032	0	0								
DOT	DOT Subtotal	57,355,943	872,140	208	0	0	2,388,274	12,065,714	0	4,915,747	44	0
DES	Adult & Juvenile Detention	9,249,345	480,708	36,052						12,742,350		
DES	Community and Human Services	210,543	13,936	0								
DES	Executive Services	997,919	40,943	0								
DES	General Office Administration	12,808,720	66,913	2,760						3,498,950		
DES	Judicial Administration	13,699,660	20,700	27,352								
DES	FMD Subtotal	36,966,187	623,200	66,164	0	0	0	0	0	16,241,300	0	0
DES	Public Health	3,441,961	33,116	0	0	0	47,845	16,823	0			
DES	Sheriff's Office	2,494,269	54,190	0	0	0	44,922	2,053	30,249			
DES	Subtotal	5,936,230	87,306	0	0	0	92,767	18,876	30,249			
	TOTAL	274,844,190	1,958,853	66,372	174,040	22,597	2,518,307	13,360,363	30,249	21,157,047	72,134	184,039

	$ 2009 Fuel Cost	Utility Manager Database: Electric kWh	Natural Gas Therms	Steam Mlbs	Totals
DNRP	Parks & Recreation Division	$679,346	$204,786	$0	$884,132
DNRP	Solid Waste Division	$700,912	$0	$0	$700,912
DNRP	Water & Land Resources Division	$75,155	$76,574	$0	$151,729
DNRP	Wastewater Treatment Division	$9,539,981	$158,204	$0	$9,698,185
DNRP	DNRP Subtotal	$10,995,394	$439,564	$0	$11,434,958
DOT	Fleet Administration	$11,438	$17,799	$0	$29,237
DOT	King County Airport	$239,682	$96,697	$0	$336,379
DOT	Road Services	$729,019	$9,436	$0	$738,455
DOT	Metro Transit	$2,105,713	$874,148	$6,135	$2,985,996
DOT	Metro Transit TOH	$943,680	$0	$0	$943,680
DOT	DOT Subtotal	4,029,532	998,080	6,135	$5,033,747
DES	Adult & Juvenile Detention	$1,603,932	$472,649	$985,691	$3,062,272
DES	Community and Human Services	$11,804	$16,540	$0	$28,344
DES	Executive Services	$79,125	$49,911	$0	$129,036
DES	General Office Administration	$984,999	$79,974	$80,095	$1,145,068
DES	Judicial Administration	$892,684	$27,260	$746,574	$1,666,518
DES	FMD Subtotal	$3,572,544	$646,334	$1,812,360	$6,031,238
DES	Public Health	$265,350	$41,230	$0	$306,580
DES	Sheriff's Office	$214,348	$62,744	$0	$277,092
DES	Subtotal	$479,698	$103,974	$0	$583,672
	TOTAL	$19,077,168	$2,187,952	$1,818,495	$23,083,615

	2009 Energy	Utility Manager Database: Electric MMBTU	Natural Gas MMBTU	Steam MMBTU	Propane MMBTU	Heating Oil MMBTU	Gasoline MMBTU	Diesel MMBTU	Jet Fuel MMBTU	Renewable Energies: Electric MMBTU	Biodiesel MMBTU	Biogas MMBTU
DNRP	Parks & Recreation Division	24,774	16,749	0	0	428	0	0	0	0	0	0
DNRP	Solid Waste Division	29,196	0	0	0	2,550	4,294	123,150	0	0	6,611	0
DNRP	Water & Land Resources Division	5,075	6,427	0	0	0	0	0	0	0	0	0
DNRP	Wastewater Treatment Division	536,642	14,445	0	15,925	0	6	41,042	0	0	2,869	184,039
DNRP	DNRP Subtotal	595,687	37,621	0	15,925	2,978	4,300	164,192	0	0	9,479	184,039
DOT	Fleet Administration	756	1,435	0	0	0	148,400	56,649	0	0	6	0
DOT	King County Airport	14,945	8,197	0	0	0	2,295	818	0	0	0	0
DOT	Road Services	0	665	0	0	0	0	0	0	16,773	0	0
DOT	Metro Transit	119,499	76,917	247	0	0	124,912	1,495,390	0	0	0	0
DOT	Metro Transit TOH	60,498	0	0	0	0	0	0	0	0	0	0
DOT	DOT Subtotal	195,698	87,214	247	0	0	275,607	1,552,857	0	16,773	6	0
DES	Adult & Juvenile Detention	31,559	48,071	42,830	0	0	0	0	0	43,477	0	0
DES	Community and Human Services	718	1,394	0	0	0	0	0	0	0	0	0
DES	Executive Services	3,405	4,094	0	0	0	0	0	0	0	0	0
DES	General Office Administration	43,703	6,691	3,279	0	0	0	0	0	11,938	0	0
DES	Judicial Administration	46,743	2,070	32,494	0	0	0	0	0	0	0	0
DES	FMD Subtotal	126,129	62,320	78,603	0	0	0	0	0	55,415	0	0
DES	Public Health	11,744	3,312	0	0	0	5,521	2,165	0	0	0	0
DES	Sheriff's Office	8,510	5,419	0	0	0	5,184	264	3,875	0	0	0
DES	Subtotal	20,254	8,731	0	0	0	10,705	2,429	3,875	0	0	0
	TOTAL	937,768	195,885	78,850	15,925	2,978	290,613	1,719,479	3,875	72,188	9,485	184,039

	$ 2009 Cost per MMBTU	Utility Manager Database: Electric	Natural Gas	Steam
DNRP	Parks & Recreation Division	$27.42	$12.23	
DNRP	Solid Waste Division	$24.01		
DNRP	Water & Land Resources Division	$14.81	$11.91	
DNRP	Wastewater Treatment Division	$17.78	$10.95	
DNRP	DNRP Subtotal	$18.46	$11.68	
DOT	Fleet Administration	$15.12	$12.40	
DOT	King County Airport	$16.04	$11.80	
DOT	Road Services		$14.18	
DOT	Metro Transit	$17.62	$11.36	$24.83
DOT	Metro Transit TOH	$15.60		
DOT	DOT Subtotal	$20.59	$11.44	$24.83
DES	Adult & Juvenile Detention	$50.82	$9.83	$23.01
DES	Community and Human Services	$16.43	$11.87	
DES	Executive Services	$23.24	$12.19	
DES	General Office Administration	$22.54	$11.95	$24.43
DES	Judicial Administration	$19.10	$13.17	$22.98
DES	FMD Subtotal	$28.32	$10.37	$23.06
DES	Public Health	$22.59	$12.45	
DES	Sheriff's Office	$25.19	$11.58	
DES	Subtotal	$23.68	$11.91	
	TOTAL	$20.34	$11.17	$23.06

	2009 Energy	ENERGY TOTALS, MMBTU: Non-Renewable	Renewable	% Renewable	TOTAL	% of Total	Normalization: Basis	Units	Use	Units
DNRP	Parks & Recreation Division	41,951	0	0.0%	41,951	1.2%	217,842	Sq-ft	193	Kbtu/sq-ft
DNRP	Solid Waste Division	159,189	6,611	4.0%	165,800	4.7%	871,018.0	Tons SW	95.2	Btu/lb
DNRP	Water & Land Resources Division	11,502	0	0.0%	11,502	0.3%	43,025	Sq-ft	267	Kbtu/sq-ft**
DNRP	Wastewater Treatment Division	608,060	186,907	23.5%	794,968	22.6%	61,164	Million Gal	13.0	Btu/gal
DNRP	DNRP Subtotal	820,703	193,518	19.1%	1,014,221	28.9%				
DOT	Fleet Administration	207,240	6	0.0%	207,246	5.9%		Vehicle-miles	#DIV/0!	Btu/mile
DOT	King County Airport	26,255	0	0.0%	26,255	0.7%	518,832	Sq-ft	51	Kbtu/sq-ft
DOT	Road Services	665	16,773	96.2%	17,438	0.5%	110,802	Sq-ft	157	Kbtu/sq-ft**
DOT	Metro Transit	1,816,965	0	0.0%	1,816,965	51.7%	49,634,803	Miles	36,607	Btu/mile
DOT	Metro transit TOH	60,498	0	0.0%	60,498	1.7%				
DOT	DOT Subtotal	2,111,624	16,778	0.8%	2,128,402	60.6%				
DES	Adult & Juvenile Detention	122,459	43,477	26.2%	165,936	4.7%	1,166,686	Sq-Ft	142	Kbtu/sq-ft
DES	Community and Human Services	2,112	0	0.0%	2,112	0.1%	8,260	Sq-Ft	256	Kbtu/sq-ft
DES	Executive Services	7,499	0	0.0%	7,499	0.2%	84,450	Sq-Ft	89	Kbtu/sq-ft
DES	General Office Administration	53,674	11,938	18.2%	65,612	1.9%	1,331,552	Sq-Ft	49	Kbtu/sq-ft
DES	Judicial Administration	81,307	0	0.0%	81,307	2.3%	722,222	Sq-Ft	113	Kbtu/sq-ft
DES	FMD Subtotal	267,051	55,415	17.2%	322,467	9.2%				
DES	Public Health	22,742	0	0.0%	22,742	0.6%	130,399	Sq-Ft	174	Kbtu/sq-ft**
DES	Sheriff's Office	23,253	0	0.0%	23,253	0.7%	87,228	Sq-Ft	267	Kbtu/sq-ft**
DES	Subtotal	45,995	0	0.0%	45,995	1.3%				
	TOTAL	3,245,373	265,712	7.6%	3,511,085	100.0%				
	Transit Only	1,877,463	0	0.0%	1,877,463	53.5%				
	Non-Transit	1,367,910	265,712	16.3%	1,633,622	46.5%				

Appendix D – Report on Recycling and Disposal of Lighting and Toxics Management

King County Ordinance 16769 requested information from the Solid Waste Division (SWD) of the Department of Natural Resources and Parks related to disposal of fluorescent lighting, as follows:

- A summary of the current and planned activities of the solid waste division related to educating citizens on the proper disposal of spent compact fluorescent light bulbs and linear tubes.
- An analysis of a policy to establish mercury and lead content standards for all new lighting products purchased by King County; including a recommended content standard and a financial analysis of the costs to the County of such a standard.
- A summary of activities related to working with the state to solicit vendors for the state lamp and ballast contract who will take back spent lamps, preferably at no additional cost.

Current and Future Plans to Educate Citizens about Proper Disposal

1. During 2010, SWD will continue to promote proper recycling of spent fluorescent bulbs and tubes through its private sector network of 68 recycling sites called the Take it Back Network This program includes a website (www.takeitbacknetwork.org), brochure, and direct mail advertising that promote proper recycling and list the location of 68 recycling sites in King County.

2. The King County Master Recycler Composters program will provide education about recycling fluorescent bulbs and tubes at selected events in King County including Issaquah Salmon Days, the SeaTac International Festival, Renton River Days and farmers markets.

3. SWD will promote fluorescent bulb and tube recycling at the household hazardous waste collection facilities, through direct mail advertising to residents, and through its website postings and post cards, among other outreach efforts.

4. The division also works with the garbage haulers in King County to educate residents about proper recycling of fluorescent lighting through its annual collection calendars and information on their websites.

Analysis of a Policy to Establish Mercury and Lead Content Standards

In 2011, rulemaking activities will begin for ESSB 5543 (Recycling Mercury-containing Lights), which passed during the 2010 legislative session and creates a convenient statewide recycling program for mercury-containing lighting from Washington residents starting in 2013. The rulemaking process will be an opportunity to engage other local government agencies in Washington and educate their residents about proper recycling of mercury-containing lighting.

Below is an analysis of a policy to establish mercury and lead content standards for all new lighting products purchased by King County, including a recommended content standard and a financial analysis of the costs to the County of such a standard.

The amount of mercury and lead in lighting products varies by lamp type and manufacturer. It varies by lamp type because of the functional properties and characteristics of the various types. It varies by manufacturer because of the techniques and quality-control mechanisms used to dose or insert mercury into the lamps.

Background

The European Union (EU), through its Restriction of Hazardous Substances (RoHS) Directive, has been the most active government entity setting mercury limits on lamps. The EU has a 5 mg mercury limit for most compact fluorescent lamps (CFLs) and a 5-10 mg mercury limit for linear fluorescent lamps. New and lower mercury limits have recently been developed and will take effect in 2012. Most CFLs and some linear fluorescent lamps will have a 3.5 mg maximum per lamp. The EU is also phasing out lead solder under RoHS, and U.S. manufacturers are eliminating lead solder to comply.

The U.S. government has no federal limits on mercury in lamps, and only a few limits exist at the state and local levels.

Lead and mercury content standards are one component of model lighting procurement policies used by federal, state, county, city and university programs across the United States. Model policies include provisions on energy conservation and efficiency; persistent, bioaccumulative and toxic chemicals (PBTs) including lead and mercury; supplier mercury content disclosure; and lamp recycling. Content standards have been established in California, Maine and Oregon.

In King County, many lighting products are purchased through a State of Washington contract (#00802) for lamps and ballasts with Consolidated Electrical Distributors (CED), a multi-state contract negotiated through the Western States Contracting Alliance (WSCA) for industrial supplies and equipment with Grainger (#11305) and through retail stores.

Currently, Washington State Department of Ecology (Ecology) staff is evaluating both of these contracts. Ecology is considering replacing the current state contract (#00802), which expires March 27, 2011, with a new contract through WSCA that would allow the vendor to offer only its most energy-efficient, low-mercury, lead-free, long-lasting lighting equipment. This contract adopts the State of Oregon environmental specifications which are the most comprehensive specifications in the nation. Ecology is also working with the West Coast Environmentally Preferable Purchasing Collaborative to add environmental specifications to the current Grainger (#11305) contract, which will improve the quality of lamps procured through this contract by requiring energy-efficient, low-mercury, lead-free, and long-lasting equipment. These changes will result in the purchase of additional environmentally preferable lighting products in King County and allow purchasing agents in the County to buy these products at discounted prices.

Standards

As a result of the anticipated contract changes, King County may not need a separate mercury and lead content standard. The Solid Waste Division will continue to monitor this issue and the development of the contracts. If a separate King County standard is needed, SWD would recommend the following:

> King County shall adopt rules establishing mercury and lead content standards for lighting purchased on or after January 1, 2012. The standards shall be based on the most stringent lamp mercury and lead content standards established in other states, and shall be revised as needed to reflect the promulgation of new state standards. If one or more categories of lamps are not covered by other state mercury and lead content standards, King County may adopt standards minimizing the mercury content of lamps within such categories, including adoption of a no-mercury standard when non-mercury alternatives are available at comparable costs.

Summary of Activities Related to Working with the State to Solicit Vendors

The State of Washington currently holds separate contracts for the procurement of lamps and ballasts and for the recycling and disposal of spent lamps. King County staff discussed the possibility of adding recycling and disposal services to the existing contracts for procurement of lamps and ballasts with Ecology staff and found there are no plans to combine the contracts but they may consider listing recycling vendors as a part of the procurement contract.