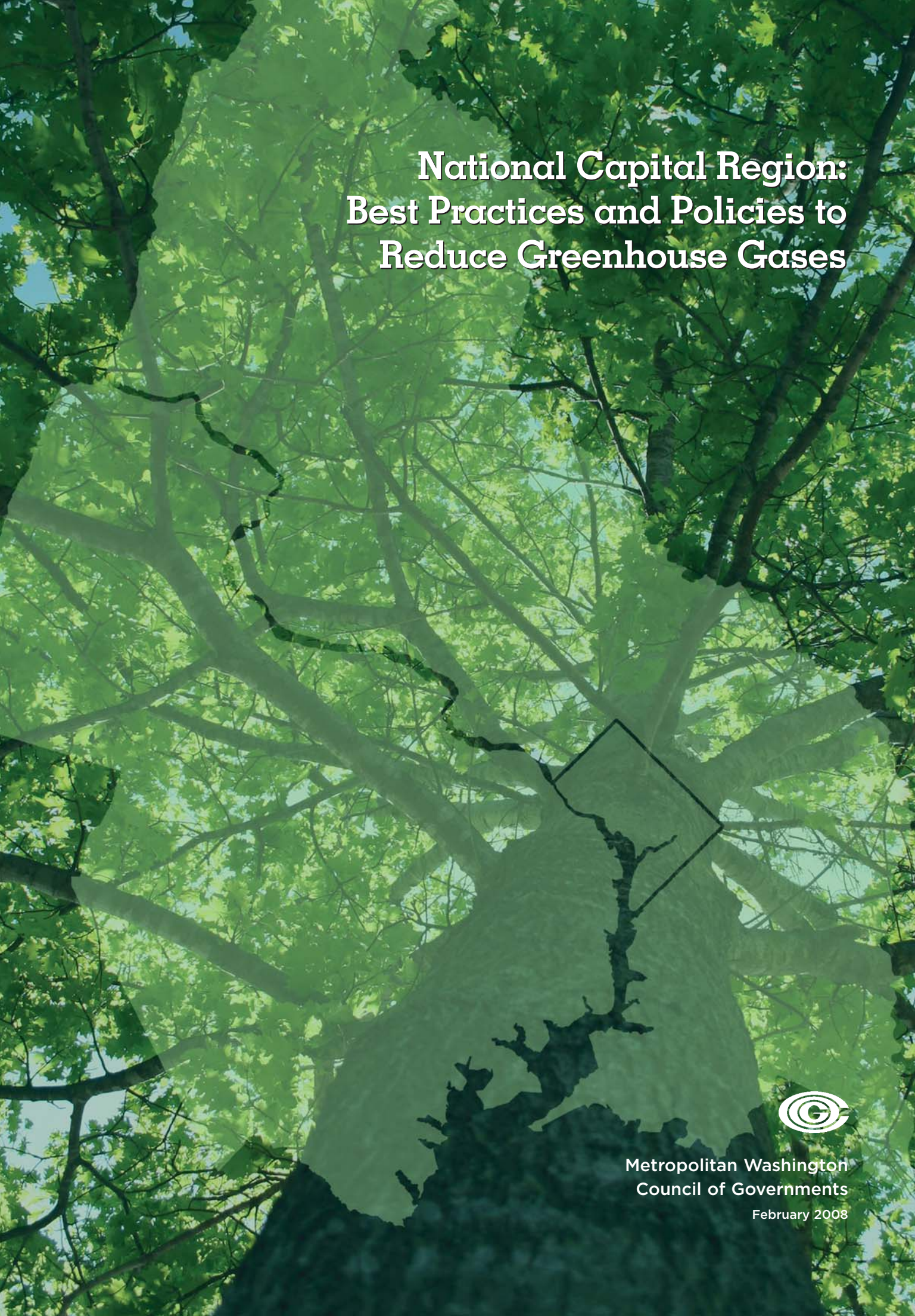


National Capital Region: Best Practices and Policies to Reduce Greenhouse Gases

Metropolitan Washington
Council of Governments

February 2008

National Capital Region: Best Practices and Policies to Reduce Greenhouse Gases

Local governments in the metropolitan Washington region lead the nation in adopting programs that reduce their communities' contributions to climate change. By enacting cost effective measures that promote energy efficiency and transit-oriented development, local governments can play a key role in addressing climate change, even though state, federal and international solutions are critical.

Many of the communities in the region have signed agreements such as Cities for Climate Protection, Cool Counties, or the Mayors' Agreement, to set greenhouse gas reduction goals. The Metropolitan Washington Council of Governments provides technical assistance to help them achieve their goals. In April 2007, COG galvanized a new regional effort to reduce greenhouse gases by creating a Climate Change Steering Committee to help guide the effort.

In 2007 COG's Institute for Regional Excellence (IRE) students formed a Climate Change Team to survey of the area's local governments regarding their initiatives to reduce their contributions to greenhouse gases. The IRE Climate Change Team survey documents a range of innovative programs, many of which are regional in scope and supported by COG. This catalogue builds on the team's survey findings, among them:

- Over ⅔ of local governments in the region purchase renewable energy to power government operations, with wind energy being the most popular energy alternative
- Over ½ of the jurisdictions adopt energy efficiency measures, including lighting retrofits for compact fluorescents and LED bulbs, upgrading to Energy Star applicances during scheduled replacements, and installing energy management control systems to turn off energy when not in use
- Nearly 90% of the communities in the region have embarked on transit oriented development and over 80% have "walkable community" initiatives
- About 70% of communities have green space protection and green infrastructure programs
- Some jurisdictions enourage residents and businesses to switch to green energy through programs such as "Clean Energy Rewards"
- All communities in the region have recycling programs

This collection of Best Practices describes programs adopted by localities in the National Capital Region and are available as tools to communities seeking more sustainable options for growth and development.

Contents

Energy Efficiency

Green Building Programs

Case Study

GREAT SENECA CREEK ELEMENTARY SCHOOL

Great Seneca Creek Elementary School is the first public school in Maryland to pursue and achieve LEED certification. It achieved "gold" rating in April 2007. Great Seneca Creek is part of Montgomery County Public School's (MCPS) Green Building Program's Opening in September 2007, the 82,500-square-foot facility is equipped with a geothermal mechanical system that harvests the constant temperature of the earth for heating or cooling the building. This is expected to reduce energy use by more than 35 percent, for an estimated $60,000 in annual energy savings. Its energy efficient design is expected to earn an ENERGY STAR rating for schools this fall. The building's plumbing uses no-flush technology and low-flow water fixtures that will reduce drinking water demand by at least 43 percent, compared to other buildings of its type, an estimated savings of 360,000 gallons of water each year. Great Seneca is also piloting a healthy, high performance green cleaning program, where several cleaning products have been replaced by a healthier, more environmentally friendlier alternative. Montgomery County legislates that all public buildings beginning design in FY 2008 will be required to achieve a LEED certification, including schools. Tours of Great Seneca Creek can be arranged.

www.Schools2Green.org

Program Description: Local governments have committed to reducing energy demand associated with operation of existing and new buildings by implementing Green Building Programs. Depending on the energy efficiency and renewable energy components of these programs, Green Buildings will decrease demand for electricity and displace power generation from coal, oil or gas-fired sources that would normally supply power to the Metropolitan Washington region, thereby reducing greenhouse gases and other air pollutants. Systems that can be used to certify a green building include LEED (Leadership in Energy and Environmental Design), Green Globes, EarthCraft, Green Communities, and ENERGY STAR. In December 2007, COG adopted a regional green building policy. A key component of the policy is identification of LEED as the region's preferred green building rating system for commercial construction and high-rise residential projects. In addition, local governments are leading, embracing LEED standards in municipal buildings and other public buildings.

Building construction and operation requires vast amounts of resources. A study by the World Watch Institute suggests that these activities account for one-sixth of the world's fresh water withdrawals, one quarter of its wood harvest, and 40 percent of its material and energy flows.

Benefits: Annual energy savings of 1,000 to 6,000 MWh for a commercial building can be readily achieved, resulting in approximately 4,000 metric tons CO_2, equivalent to removing nearly 1,000 cars from the road.

Participating Jurisdictions/Agencies:
District of Columbia—**www.dc.gov**
City of Gaithersburg, MD—**www.gaithersburgmd.gov**
Montgomery County, MD—**www.montgomerycountymd.gov**
Prince George's County, MD—**www.goprincegeorgescounty.com**
City of Rockville, MD—**www.rockvillemd.gov**
City of Takoma Park, MD—**www.takomaparkmd.gov**
City of Alexandria, VA—**www.alexandriava.gov**
Arlington County, VA—**www.arlingtonva.us**
Fairfax County, VA—**www.fairfaxcounty.gov**
Prince William County, VA—**www.pwcgov.org**

Washington Suburban Sanitary Commission (WSSC)—**www.wsscwater.com**

For more Information:
COG Green Building Report—**www.mwcog.org/store/item.asp?PUBLICATION_ID=304**

ENERGY STAR

Program Description: EPA's ENERGY STAR Program is a voluntary partnership between organizations, businesses, consumers, and government, united in the pursuit of a common goal to protect the environment for future generations by adopting energy-efficient products and practices today. This program encompasses ENERGY STAR homes, office buildings, schools, hospitals, government buildings and products.

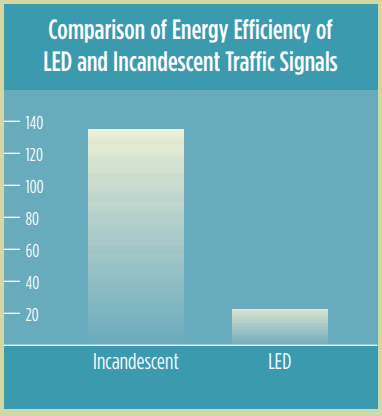
Benefits: Superior energy performance of buildings and consumer products. Purchasing more energy efficient technologies will lower energy bills and reduce overall energy consumption. For example, purchase of an ENERGY STAR refrigerator can reduce annual energy consumption by 100-200 kwh/year, equivalent to approximately 175 pounds of CO_2.

Participating Jurisdictions:
District of Columbia—**www.dc.gov**
Montgomery County, MD—**www.montgomerycountymd.gov**
City of Takoma Park, MD—**www.takomaparkmd.gov**
City of Alexandria, VA—**www.alexandriava.gov**
Arlington County, VA—**www.arlingtonva.us**
Fairfax County, VA—**www.fairfaxcounty.gov**
Loudoun County, VA—**www.loudoun.gov**

Contact: www.energystar.gov

School Districts:
Washington, DC
www.k12.dc.us
Alexandria, VA
www.acps.k12.va.us
Loudoun County, VA
www.loudoun.k12.va.us

LED Traffic Signal Retrofit Program



Program Description: Light Emitting Diode (LED) traffic signals have become an effective alternative to traditional incandescent signals. State and local governments in the region have committed to replacing 70,000 existing traffic signals with more energy efficient LED technology. This will decrease demand for electricity and subsequent power generation from coal, oil, or gas-fired sources, thereby reducing emissions of greenhouse gases and other pollutants.

Benefits: The two main advantages of LED signals are very low power consumption (10 W to 22 W) and very long life, as high as 7 to 10 years. When compared with the typical energy needs of an incandescent bulb, which is 135 Watts, the savings resulting from the low energy usage of LED signals can be as high as 93%. The long life of LED signals means low maintenance costs, which makes LED signals a worthwhile investment. For the 70,000 units being replaced in the region, greenhouse gas emissions will be reduced by 42,000 metric tons CO_2, equivalent to removing 9,300 vehicles from the road.

Participating Jurisdictions/Agencies:
Montgomery County, MD—**www.montgomerycountymd.gov**
City of Alexandria, VA—**www.alexandriava.gov**
Arlington County, VA—**www.arlingtonva.us**
City of Falls Church , VA—**www.fallschurchva.gov**

District Department of Transportation (DDOT)—**ddot.dc.gov**
Maryland Department of Transportation (MDOT)—**www.mdot.state.md.us**
Virginia Department of Transportation (VDOT)—**www.virginiadot.org**

Energy Audit

...an energy audit seeks to prioritize the energy uses according to the greatest to least cost effective opportunities for energy savings...

Program Description: Perform an energy audit of government buildings and operations (including fleets) to establish a performance baseline from which to measure future benefits from energy efficiency measures. Local governments in the metropolitan Washington region are managing and analyzing data from utility bills to establish a baseline assessment of energy use. Energy managers use a variety of software tools to set up databases on energy consumption for municipal facilities. Beyond simply identifying the sources of energy use, an energy audit seeks to prioritize the energy uses according to the greatest to least cost effective opportunities for energy savings by reducing waste and improving energy efficiency.

Benefits:

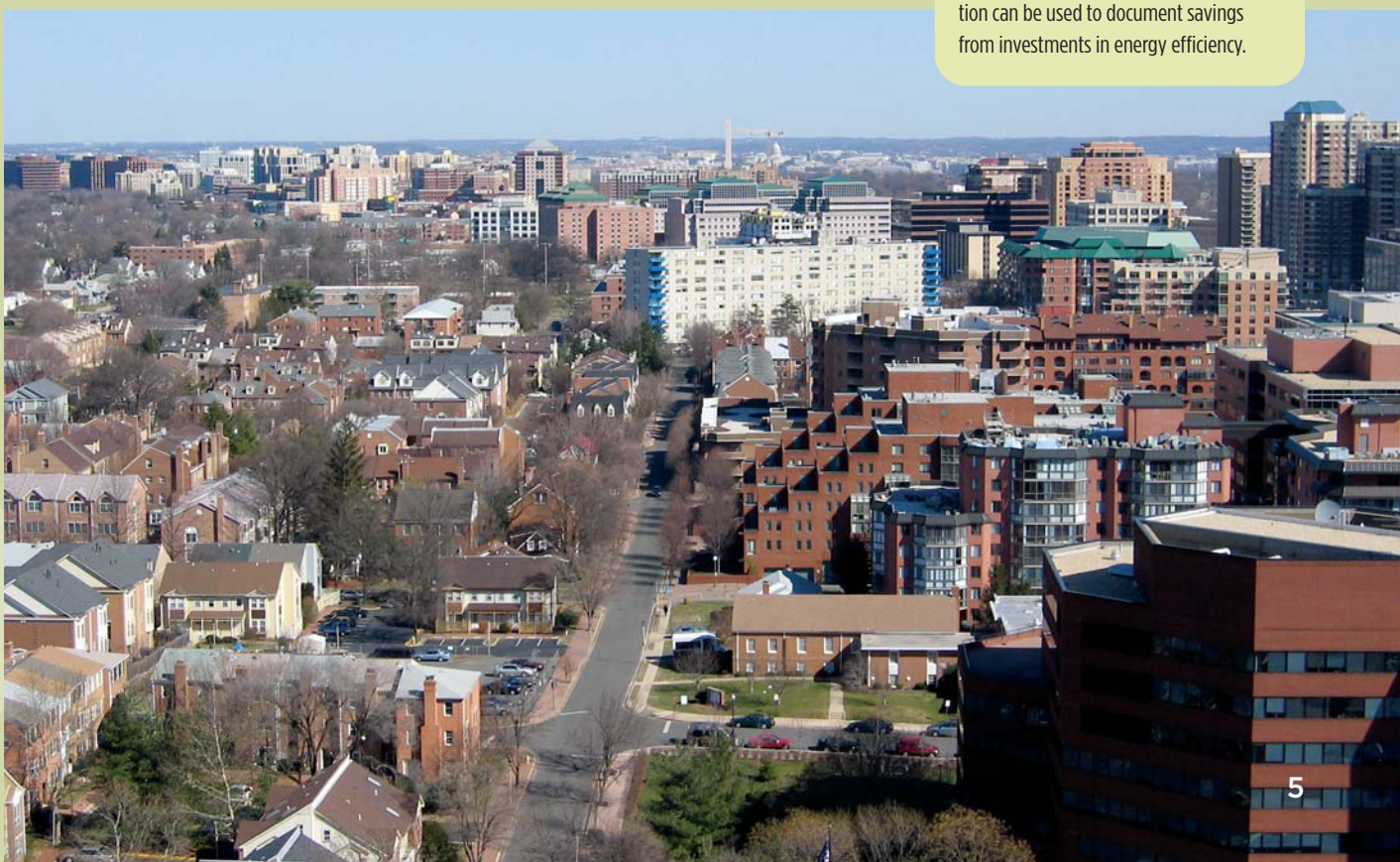
- Identify and document the most cost effective measures to reduce energy use by monitoring electricity use and tracking fuel use
- Identify sources of waste
- Provide baseline to document reductions from energy efficiency programs

Participating Jurisdictions:
District of Columbia—**www.dc.gov**
City of Greenbelt, MD—**www.greenbeltmd.gov**
Arlington County, VA—**www.arlingtonva.us**
City of Falls Church , VA—**www.fallschurchva.gov**
Loudoun County, VA—**www.loudoun.gov**
Prince William County, VA—**www.pwcgov.org**

School Districts:
Loudoun County Public Schools
www.loudoun.k12.va.us

Case Study

ARLINGTON COUNTY, VIRGINIA
Arlington County uses 3years of historical data to establish an energy baseline for its facilities. Loudoun County Public Schools have been maintaining energy consumption data for its facilities since the early 1990s. Historical baseline data on electricity, diesel, gasoline, and natural gas consumption can be used to document savings from investments in energy efficiency.



Renewables

Wind Energy Purchase

Case Study

RENEWABLE ENERGY CERTIFICATES

Renewable energy certificates represent exclusive proof that 1 Megawatt-hour of energy was generated from a renewable energy source and placed on the electric grid. RECs, also known as green certificates, green tags, or tradable renewable certificates, represent the environmental attributes of the power produced from renewable energy projects. Customers can buy green certificates whether or not they have access to green power through their local utility or a competitive electricity marketer. And they can purchase green certificates without having to switch electricity suppliers.

Program Description: One of the recommendations of COG's Strategic Energy Plan is to increase the share of regional energy provided by alternative and renewable sources. Since 2004, local governments in the region have been expanding their purchase of wind power to satisfy a portion of the electricity demand. The government agencies purchase wind energy directly from an electricity supplier or purchase renewable energy certificates (RECs) that assure that such wind energy is placed on the electric grid.

The current renewable energy purchase program is expected to involve purchase of 104,000 MWh of power or wind energy RECs annually. Local governments committed to purchase wind power to help improve air quality in the region.

Many companies and individuals that have opted to purchase Green Power to satisfy their energy demands.

Benefits: Zero-emission wind power displaces emissions from fossil-fueled power plants that supply power to the metropolitan Washington region, thereby reducing pollution and diverisfying energy sources. The region's current wind purchase commitments reduce greenhouse gas emissions by approximately 65,000 metric tons CO_2 annually, equivalent to removing 14,000 cars from the road.

Participating Jurisdictions/Agencies:
District of Columbia—**www.ddoe.dc.gov/ddoe/site/default.asp**
Montgomery County, MD—**www.montgomerycountymd.gov/deptmpl.asp?url=/Content/dep/index.asp**
Prince George's County, MD—**www.co.pg.md.us/Government/agencyIndex/DER/index.asp**
Arlington County, VA—**www.arlingtonva.us/departments/EnvironmentalServices/epo/EnvironmentalServicesEpoEnergyEfficiency.aspx**
Fairfax County, VA—**www.fairfaxcounty.gov/living/environment/eip**
Prince William County, VA—**www.pwcgov.org**

Washington Suburban Sanitary Commission (WSSC)—**www.wsscwater.com**

For More Information: http://www.mwcog.org/store/item.asp?PUBLICATION-ID=272

Since 2004, local governments in the region have been expanding their purchase of wind power to satisfy a portion of the electricity demand.

Clean Energy Rewards

Montgomery County has estimated that its Clean Energy Rewards Program will provide incentives for 31,900 MWh of clean energy.

Program Description: Under this program, Montgomery County Government will provide rewards (incentives) to residents, small businesses, and community organizations purchasing clean energy products certified by the County Department of Environmental Protection (DEP). The authority for this program is granted in the Montgomery County Code Section 18A-11, as amended, and Executive Regulation No. 2-06AM. Based on the program's funding of $361,000 for FY 2007, Montgomery County has estimated that its Clean Energy Rewards Program will provide incentives for 31,900 MWh of clean energy.

Montgomery County is implementing this measure to reduce consumption of electric power generated from coal, oil, and/or natural gas fired sources by consumers, thereby reducing NOx emissions from these sources.

Benefits: At current funding levels, this program could reduce greenhouse gas emissions by approximately 20,000 metric tons of CO_2 annually, equivalent to removing 3,400 cars from the road.

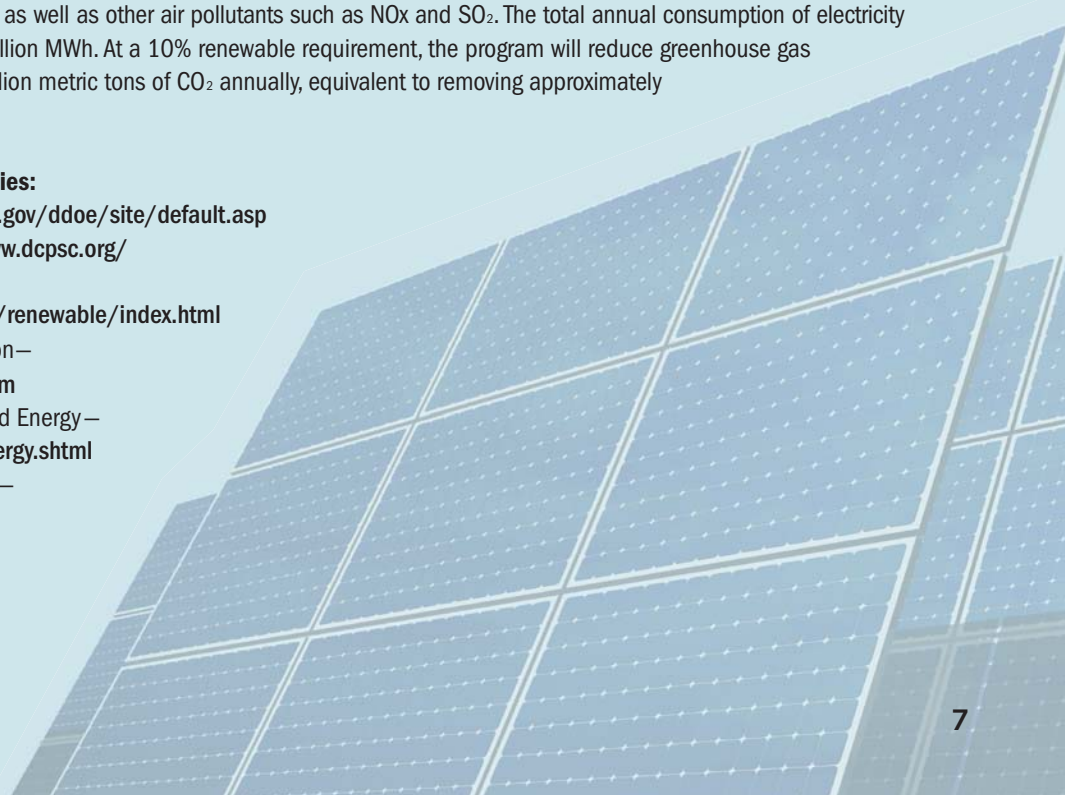
Participating Jurisdictions/Agencies:
Montgomery County, MD—**www.montgomerycountymd.gov/deptmpl.asp?url=/Content/dep/index.asp**

Renewable Portfolio Standards (RPS)

Program Description: States in the region have adopted Renewable Energy Portfolio Standards, which establish a minimum percentage of electricity supply that must be derived from renewable energy sources. Examples of renewable energy sources are: solar energy; wind; qualifying biomass; methane; geothermal; ocean; fuel cells; hydroelectric power other than pumped storage generation; and waste-to-energy. This program displaces power generation from coal, oil, and/or gas-fired sources with zero-emission renewable energy sources. The DC Renewable Energy Portfolio Standard (RPS) Act of 2004 adopted a mandatory 11 percent RPS; the State of Maryland has a mandatory RPS of 9.5%. The Commonwealth of Virginia has a voluntary RPS of 12 percent.

Benefits: The increased supply of renewable energy will displace fossil fuel generated power in the PJM Interconnection area, thus reducing greenhouse gas emissions as well as other air pollutants such as NOx and SO_2. The total annual consumption of electricity in the region is approximately 57 million MWh. At a 10% renewable requirement, the program will reduce greenhouse gas emissions by approximately 3.5 million metric tons of CO_2 annually, equivalent to removing approximately 750,000 cars from the road.

Participating Jurisdictions/Agencies:
District of Columbia—**www.ddoe.dc.gov/ddoe/site/default.asp**
DC Public Service Commission—**www.dcpsc.org/**
Maryland Energy Administration—
www.energy.state.md.us/programs/renewable/index.html
Maryland Public Service Commission—
www.psc.state.md.us/psc/index.htm
Virginia Dept. of Mines, Minerals and Energy—
www.dmme.virginia.gov/divisionenergy.shtml
Virginia Public Utilities Commission—
www.scc.virginia.gov/division.htm



Clean Alternative Fuel Vehicles

Clean Alternative Fuel Vehicles

Case Study #1

DC FLEET MANAGEMENT

The District's Fleet Management Administration plays a pivotal role in achieving DPW's environmental goals, in part by investing in cleaner-burning alternative fuels. The District has a large alternative-fuel powered fleet, consisting of 329 alternative fueled vehicles, representing 10 percent of the fleet. Although most of the clean fuel vehicles in the fleet are classified as light-duty equipment, the city has added more AFVs to the medium and heavy fleet including two heavy-duty natural gas-powered trash compactors to the fleet.

Program Description: The Metropolitan Washington Alternative Fuels Clean Cities Partnership is a public-private partnership committed to assisting local governments in acquiring alternative fuel vehicles and establishing the necessary fueling infrastructure. Under this program, local governments seek to reduce fuel consumption and incorporate cleaner vehicle technology into their existing fleets. Although there are no federal mandates, metropolitan Washington local governments own over 1000 clean, advanced fuel vehicles. The alternative fuel vehicles use compressed natural gas (CNG), ethanol, electricity (some with hybrid technology,) ultra low sulfur diesel, and biodiesel in heavy, medium and light duty vehicles.

Benefits: Purchasing clean fuel vehicles helps to reduce consumption of petroleum-based fuel, will lower demand for foreign energy, and will reduce emissions of greenhouse gas and other air pollutants. Purchasing 100 clean fuel vehicles has the potential to reduce emissions of greenhouse gases by approximately 250 metric tons per year, equivalent to planting 2 acres of forest.

Participating Jurisdictions/Agencies:
District of Columbia—**www.dc.gov**
City of Greenbelt, MD—**www.greenbeltmd.gov**
Montgomery County, MD—**www.montgomerycountymd.gov**
Prince George's County, MD—**www.goprincegeorgescounty.com**
City of Alexandria, VA—**www.alexandriava.gov**
Arlington County, VA—**www.arlingtonva.us**
Fairfax County, VA—**www.fairfaxcounty.gov**

District of Columbia Water and Sewer Authority—**www.dcwasa.com**
Washington Metropolitan Area Transit Authority—**www.wmata.com**

Case Study #2

ARLINGTON'S GREEN FLEET

Arlington was the first local government on the East Coast to purchase energy-efficient hybrid-electric vehicles. Over 40 percent of Arlington's fleet of 1,346 vehicles now relies on fuels that are cleaner, improve air quality, and reduce reliance on foreign sources of petroleum products:

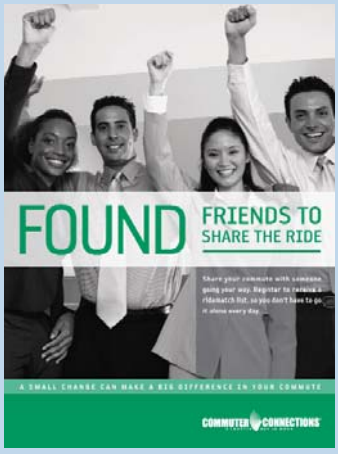
Biodiesel – 471 large trucks and school buses.

Ethanol (E85) – 75 midsize, cars, trucks and vans

Hybrid-electric – 60 cars and SUVs

Transportation Options

Public Transit



Program Description: The Washington, DC Metropolitan region has a vast network of transit options. From Metrorail and Metrobus, to local bus transit, to commuter rail and commuter bus, commuters have a variety of commute options available. Employers can encourage public transit by:

- Commuter Connections can help employees determine which transit option works best for them. Information can be obtained through the Commuter Connections web site (**www.commuterconnections.org**) or by calling 800-745-RIDE.
- Identify employees' home locations served by public transit.
- Keep current transit schedules on hand and posted.
- Arrange meetings with public transit operators and assist in developing transit support programs (*Guaranteed Ride Home*, *SmartBenefits*, etc.) and transit use monitoring programs.
- Arrange for the implementation of *SmartBenefits* for your employees. Employees are permitted to receive tax-free, transit or vanpool benefits in lieu of compensation. *SmartBenefits* is a web-based program that allows employers to load the dollar value of an employee's Metrochek benefit directly to a SmarTrip® card. Contact WMATA to offer this SmartBenefits program at (202)962-2768.

Benefits: Implementing a Smart Benefits program will reduce trips by 5-20% depending on transit accessibility.

Participating Jurisdictions:	**Contact:**
District of Columbia	800-745-RIDE
City of College Park, MD	800-486-RIDE
Frederick County, MD	301-600-RIDE
Montgomery County, MD	301-770-POOL
Prince George's County, MD	800-486-RIDE
City of Rockville, MD	301-770-POOL
City of Alexandria, VA	703-838-3800
Arlington County, VA	703-228-RIDE
City of Falls Church, VA	703-324-1111
Loudoun County, VA	703-771-5665

Ridesharing

Removing one commuter from driving alone to work removes 2 vehicle trips and 31 miles of vehicle travel per day.

Program Description: Ridesharing means two or more persons traveling together in an automobile or van. Ridesharing services enable commuters to find other individuals who share similar commute routes and work hours.

Uses: A commuter survey can be used to help determine employees' commute patterns and assist in having them receive a free commuter matchlist of all alternative commute options available in the region through Commuter Connections at **www.commuterconnections.org** or by calling 800-745-RIDE.

Another ridematching method is matching employees by zip codes. Upon request, Commuter Connections can provide data to identify potential carpool and vanpool partners.

Benefits: Ridesharing benefits include fuel cost savings, wear and tear on roads, reducing traffic congestion, HOV lane access, overall expense saving by minimized driving, reduced pollution and greenhouse gas emissions. *Ridesharing with a guaranteed ride home component will reduce trips 0.5-3%.*

Participating Jurisdictions:	**Contact:**
District of Columbia	800-745-RIDE
Frederick County, MD	301-600-RIDE
Montgomery County, MD	301-770-POOL
Prince George's County, MD	800-486-RIDE
City of Rockville, MD	301-770-POOL
City of Alexandria, VA	703-838-3800
Arlington County, VA	703-228-RIDE
City of Falls Church, VA	703-324-1111
Loudoun County, VA	703-771-5665

Teleworking

Case Study #1

City of Rockville

Rockville implemented its telework program for several reasons. The program is an employee benefit. It reduces parking demand at City Hall. "We also wanted to be helpful on clean air and reducing Rockville traffic congestion," explains Mary Kate Cole, a personnel administrator for Rockville. "The Metropolitan Washington Council of Governments adopted a resolution in April 2000 that set a goal for employers to have 20 percent of their workforce teleworking by 2005," recalls Cole. "The City received a grant from MWCOG to help launch the program."

Case Study #2

Fairfax County Government

Fairfax County implemented a pilot telework program in 1995. As a result of a successful pilot which lasted approximately one year, the County decided to implement the program County-wide to all departments. In 2002 the then and current chairman of the Fairfax County board of supervisors, Gerry Connolly, was also the chairman of COG. As the chairman of COG he made telework his primary initiative for COG and established a 20% participation goal for all of the jurisdictions of COG. He asked that all jurisdictions meet a goal of having 20% of eligible employees participating in the telework program by the end of 2005. In Fairfax, the Board of Supervisors directed the county executive to enhance the county's existing telework program to meet the regional goal.

Program Description: Teleworking, also known as telecommuting, means allows wage and salary employees to occasionally work at home, at a telework center or an employer's satellite office during an entire work day instead of traveling to their regular work place. Communication is accomplished by phone, e-mail, fax, modem, and teleconferencing. Regionally, more than 450,000 workers are going to work simply by picking up the phone or turning on their computers.

Uses: Be knowledgeable about your jurisdiction's program policy and guidelines or identify the individual who is and refer employees to him/her. Identify and list employees who have tasks that can be accomplished while working at home, or at alternative sites. If your jurisdiction has multiple sites, your other locations may serve as alternate work sites. If employees are to telework from home, determine if they have the necessary equipment set the customary performance objectives and goals.

Have employees keep some work related items at home or perhaps in their vehicle to address business continuity in the event of a disaster. Examples include reading, writing, or editing documents.

Contact Commuter Connections at **www.commuterconnections.org** or at 800-745-RIDE with further questions or additional information you may need to either start or expand a telework program.

Benefits: Teleworking pays real dividends by reducing traffic congestion and air pollution, increasing the area's economic vitality, and bolstering overall quality of life. *For every 10% of employees that telework an average of 1.5 days per week, trips will be reduced from 2-3%.*

Participating Jurisdictions:	**Contact:**
Frederick County, MD	301-600-RIDE
Montgomery County, VA	301-770-POOL
Prince George's County, MD	800-486-RIDE
City of Rockville, MD	301-770-POOL
City of Alexandria, VA	703-838-3800
Arlington County, VA	703-228-RIDE
Fairfax County, VA	703-324-1111
City of Falls Church, VA	703-324-1111
Loudoun County, VA	703-771-5665
Prince William County, VA	800-730-6664

Land Use and Transit

Transit-Oriented Development

Program Description: State and local governments in the Washington region promote transit-oriented development (TOD) by investing funds in transit station area planning initiatives and assisting with improvements that facilitate transit access. Local governments also promote TOD through developer incentives in local zoning and permitting processes.

Tools:

- density credits for developers
- reduced parking requirements
- linking development capacity to the provision of parks, street improvements or other community benefits
- Tax Increment Financing, which can capture the increased land value of transit access for reinvestment into the surrounding community.

Benefits: Increasing the amount of housing and jobs accessible by transit allows more people to choose alternatives to the automobile. This in turn reduces automobile emissions, which contribute significantly to greenhouse gases.

For More Information:
The TPB Transportation/Land-Use Connections (TLC) Program—**www.mwcog.org/tlc**

The Center for Transit-Oriented Development—**www.reconnectingamerica.org/public/tod**)

Case Study

TRANSPORTATION/LAND-USE CONNECTIONS (TLC) PROGRAM

The Washington Region is already nationally known for successes in concentrating mixed-use development in regional activity centers, especially those served by transit, though challenges still remain in addressing community-level challenges. Accordingly, in fall 2006 the TPB launched the Transportation/Land-Use Connections (TLC) Program. This program provides support to local governments in the Metropolitan Washington region as they work to improve transportation/ land use coordination. Through the program, the TPB provides communities with up to $20,000 worth of technical assistance to catalyze or enhance planning efforts. Any member jurisdiction of the TPB is eligible to apply.

Walkable Communities

Description: In designing "complete streets" and networks that serve pedestrians, bicycles, transit, and cars it is important to broaden options and address safety and access for all to encourage use of all forms of transportation. Projects that expand mobility choices include street construction, pedestrian improvements at transit stations and include broader planning and design efforts efforts aimed at coordination of the transportation network.

Uses: Several jurisdictions in the Washington region have programs that focus investment on improvements to pedestrian accommodation and safety, and streetscape design standards that emphasize pedestrian safety and access.

- Pedestrian/Bicycle Accommodation
- Streetscape Design

Benefits: Combined with land-use planning that places community destinations like shopping and public services in close proximity and provides accessible transit, safe and convenient accommodation for pedestrians leads to fewer trips by car.

For More Information:
The TPB Transportation/Land-Use Connections (TLC) Program—**www.mwcog.org/tlc**
The National Center for Bicycling and Walking—**www.bikewalk.org**

Concentrated Mixed-Use Development

Program Description: Encouraging a mix of housing, employment, services, and civic uses (parks, schools, etc.) at different scales is important. Localities in the Washington region facilitate mixed-use development through comprehensive planning of activity centers and use of various tools and regulatory authority to steer growth.

Tools:

- density credits for developers
- reduced parking requirements
- linking development capacity to the provision of parks, street improvements or other community benefits
- Tax Increment Financing, can capture the increased land value of transit access for reinvestment into the surrounding community.

Benefits: Reduces vehile miles traveled, air pollution and greenhouse gases

For More Information:
The TPB Transportation/Land-Use Connections (TLC) Program—**www.mwcog.org/tlc**
Metropolitan Washington Regional Activity Centers and Clusters—
www.mwcog.org/store/item.asp?PUBLICATION_ID=299

Low Impact Development – LID

Program description: Low impact development, or LID, is a term that covers small-scale, decentralized stormwater management techniques. The goal of LID is to maintain or replicate the pre-development stormwater runoff patterns through creative site design. Some of these techniques, most notably green roofs, help reduce the heat island effect and moderate building temperatures, reducing energy demands for temperature control.

Uses: LID is principally intended for use in protecting water quality by reducing stormwater runoff peaks and filtering pollutants. Its widespread use, particularly the use of green roofs in highly urbanized areas, can reduce the heat island effect and reduce the energy requirements for cooling.

Benefits: Reduction in energy consumption for cooling purposes. In a study done for the city of Toronto, Canada, energy savings were estimated to be 4.15 kWh/m^2/year. Another study done for Multnomah County, Oregon estimated a reduction in cooling energy usage to be 0.63 kWh/ft^2/year.

Participating Jurisdictions:
District of Columbia
Montgomery County, MD
Prince George's County, MD
Arlington County, VA
Fairfax County, VA
Prince William County, VA

For More Information:
EPA Smart Growth Office—**http://www.epa.gov/dced/**
Low Impact Development Center—**http://www.lowimpactdevelopment.org/**
Green Roofs for Healthy Cities—**http://greenroofs.org/**

Recycling, Landfill and Waste to Energy

Recycling and Reuse

Program Description: Local governments in the region provide both curbside and dropoff center recycling service for residents. Typical materials include newspaper, cardboard, mixed paper, glass bottles and jars, aluminum cans, steel cans, and plastic bottles. Additionally, most jurisdictions require businesses and apartments to recycle materials.

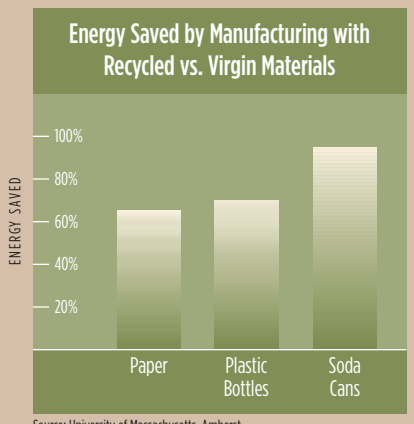
Uses: Recycling and reuse decreases the reliance on landfills and waste-to-energy plants for disposal and provides raw materials to the manufacturing industry.

Did You Know?

NATIONAL RECYCLING EFFORTS

Current national recycling efforts reduce greenhouse gas emissions by 49.9 million metric tons of carbon equivalent, which is equivalent to the annual GHG emissions from 39.6 million passenger cars.

SOURCE: **U.S.EPA**



Source: University of Massachusetts, Amherst

Benefits: Recycling material reduces greenhouse gases in the atmosphere by removing emissions from waste disposal facilities and by eliminating the need to mine raw materials.

- Waste in landfills produces methane, a greenhouse gas 21 times more potent than carbon dioxide.
- Waste sent to a waste-to-energy plant produces carbon dioxide as a by-product.
- Recycling saves energy by providing manufacturing feedstock that eliminates the need to mine new raw materials. Mining often requires the use of fossil fuels to extract virgin materials.
- Reuse of products yields even more significant savings as new products do not have to be manufactured

Participating Jurisdictions: All jurisdictions in the Metropolitan Washington Council of Governments region have a recycling program.

For More Information: **Visit** GoRecycle.org for local government contacts.

Methane Capture and Electricity

Case Study

FAIRFAX COUNTY I-95 LANDFILL

Captured gas is used to generate 6 megawatts of electricity—enough for about 5,000 homes. The gas is also sent to the nearby Noman Cole Wastewater Treatment Plant where it is used as a medium BTU fuel in the sludge combustion process. Radiant heaters are also in place to burn LFG to heat a shop building.

Program Description: As waste decomposes in landfills, some of it goes through a rotting process that produces methane gas. Municipal solid waste (MSW) landfills are the largest human-generated source of methane emissions in the United States. Landfills have systems with varying degrees of sophistication to capture the methane.

Uses: Landfill gas (LFG) consists of methane and carbon dioxide. LFG is collected, dried and utilized as a fuel source for modified diesel engine generators or turbines. The electrical power is both consumed on-site and transmitted to the power grid where it is sold in various markets.

Benefits:

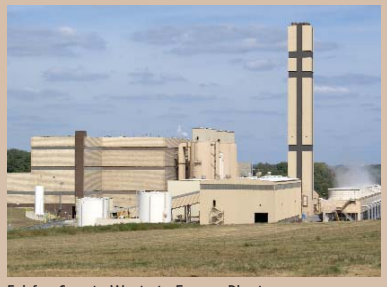
- Landfill gas for energy systems reduce emissions of carbon dioxide and methane. Additionally, energy produced with LFG as a primary fuel source offsets the use of non-renewable resources such as coal, natural gas, and oil. Lastly, these projects help reduce local air pollution and create jobs.

- Methane also has a short (10-year) atmospheric life. Because methane is both potent and short-lived, reducing methane emissions from MSW landfills is one of the best ways to achieve a near-term beneficial impact in mitigating global climate change. (U.S. EPA)

Participating Jurisdictions:	**Contacts:**
Montgomery County, MD—**www.montgomerycountymd.gov** Gude Landfill and Oaks Landfill (under development)	240-777-6400
Prince George's County, MD—**www.co.pg.md.us** Brown Station Road Landfill and Sandy Hill Landfill	301-883-5969
Fairfax County, VA—**www.fairfaxcounty.gov** I-95 Landfill	703-690-1703
Prince William County, VA—**www.pwcgov.org** Independent Hill Landfill	703-792-5750

Landfill gas recovery (methane) system in Fairfax County at the landfill

Waste-to-Energy Facilities



Fairfax County Waste to Energy Plant

Program Description: Waste-to-energy facilities, also known as resource recovery or energy-from-waste facilities, utilize a mass burn technology that incinerates municipal solid waste at very high temperatures and capture emissions with advanced pollution control technology. The heat generated in the process turns large steam turbines which create electricity.

Uses: The region's local governments host three waste-to-energy facilities in Montgomery County, Fairfax County and in the City of Alexandria (plant shared with Arlington County). All were built by the jurisdictions in partnership with Covanta Energy, the plants' operator, to process waste as an alternative to landfill disposal. While all the counties have active recycling programs, about 55%-65% of the total waste stream from these four jurisdictions still goes to disposal facilities. The plants reduce the volume of material by 90% to an ash that goes to landfill disposal. The plants also remove metals from the waste stream for recycling.

Benefits: Studies done using the U.S. EPA Decision Support Tool have determined that three different plant operations avoid the production of greenhouse gasses:

- Electricity produced by waste-to-energy plants displaces power produced from traditional fossil-fuel power plants resulting in a net saving in the emissions of carbon dioxide.
- Metals separated from waste at the plants for recycling result in a significant savings in energy and greenhouse gas emissions due to a reduced need to mine virgin materials.
- When waste is processed at an waste-to-energy plant instead of a landfill, methane emissions from the landfill are avoided. Not all methane can be captured from landfills.

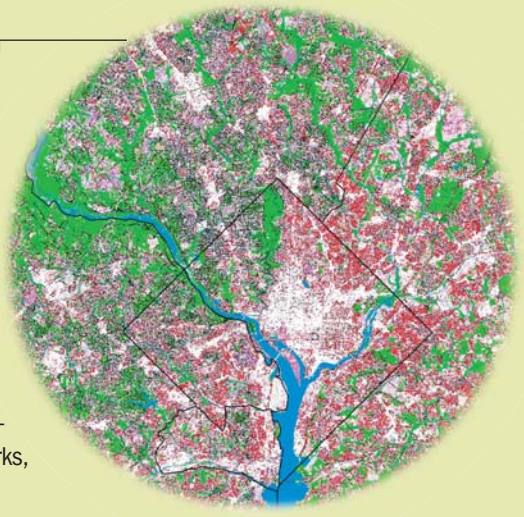
Did You Know?

Nationally, producing electricity in waste combustion facilities avoids 5 Million Metric Ton of Carbon Equivalent (MMTCE) that otherwise would have been produced by fossil fuel electrical energy generation and avoids 6 MMTCE of GHG emissions that would be produced if the trash were landfilled.

SOURCE: Air & Waste Manage. Assoc. "The Impact of Municipal Solid Waste Management on Greenhouse Gas Emissions in the United States" 2002)

Participating Jurisdictions:	**Contacts:**
City of Alexandria, VA—**www.alexandriava.gov**	703-838-4966
Arlington County, VA—**www.arlingtonva.us**	703-228-6570
Fairfax County, VA—**www.fairfaxcounty.gov**	703-690-1703
Montgomery County, MD—**www.montgomerycountymd.gov**	240-777-6400

Green Infrastructure Demonstration Project



Program Description: The Metropolitan Washington Green Infrastructure Demonstration Project aims to heighten the awareness and importance of parks, open space, and recreation areas as a fundamental component to the daily quality of life. This regional green space planning project is a partnership between the Metropolitan Washington Council of Governments and the National Park Service–National Capital Region.

The first challenge of this effort was how to implement green infrastructure ideals in a rapidly developing landscape. Increased growth and development by very conservative estimates are consuming 28 acres a day. This has put tremendous pressure on all "undeveloped lands" including agriculture, open space, parks, and even recreational areas.

The Green Infrastructure Project uses Geographic Information Systems (GIS) to create a series of regional map products. The maps cover the 3000 square mile Washington region and document impervious surface areas, agricultural lands, and include an interactive time series map presenting increase in developed lands from 1986-2000. Forums and workshops with experts have led to 'Best Practices Concepts' that will aid in maintaining and enhancing green infrastructure and keep the region working toward a more healthy balance between the built environment and green space.

Key Partners in the Green Infrastructure Demonstration Project

American Forests
Casey Trees
Center for Chesapeake Communities
Chesapeake Bay Program
Chesapeake Chapter of the American Horticultural Therapy Association
Congressman Jim Moran
Friends of the Potomac
Greater Washington National Parks Fund
Maryland and Virginia Local Government including the offices of Forestry, Planning, Parks and Public Works
Maryland Department of Natural Resources
Maryland National Park and Planning Commission
Metropolitan Washington Council of Governments (COG)
National Capital Planning Commission
National Park Service
Natural Resource Conservation Service
Northern Virginia Regional Commission
The Chesapeake Bay Foundation
The DC Department of Parks and Recreation
The DC Urban Forestry Administration
The Environmental Law Institute
The Native Plant Society (local chapters)
The Virginia Department of Agriculture
The Wilderness Society
U.S. EPA
U.S. Geological Survey
USDA Urban and Community Forestry
Washington Parks and People

Benefits: The Metropolitan Washington Green Infrastructure Demonstration project has created tools to alert communities to the necessity for and promotion of thoughtful development practices that protect the natural environment and enhance existing parks, recreational areas, and open spaces. Specific goals include:

- Use of green roof technology to filter stormwater discharges and improve air quality
- Increase neighborhood tree canopy and reduce impervious surfaces
- Maintain wildlife habitat, aquatic resources, forests and meadows

Participating Jurisdictions/Agencies

District of Columbia Green Infrastructure Collaborative—**www.dcgreenmap.org/**

Montgomery County, MD: Green Infrastructure Plan—
www.mc-mncppc.org/green_infrastructure/index.shtm

Prince George's County, MD: Green Infrastructure Plan—
www.mncppc.org/county/greeninfrastructure_final.htm

Arlington County, VA: Urban Forest Master Plan—
www.arlingtonva.us/departments/ParksRecreation/scripts/parks/UFMP_Final.pdf

Loudoun County, VA: Green Infrastructure Plan—
www.greenerloudoun.wordpress.com/2008/02/07/loudouns-green-infrastructure/

Prince William, VA: County Park Open Space Plan—
www.pwcgov.org/docLibrary/PDF/004948.pdf

For More Information:
Green Infrastructure Web Page: **www.mwcog.org/environment/green/**

Urban Forest Canopy

Program Description: Local governments are increasingly recognizing the need to develop a forest canopy baseline to understand and measure the economic and environmental benefits their urban forests provide. Though many trees are planted, a substantial percentage do not survive to maturity. Additionally, the attrition of forests region-wide is far outpacing planting and preservation efforts combined. A proven method of understanding forest cover loss is to assess regional forest canopy cover using established remote sensing and GIS-based evaluation techniques. The Chesapeake Bay Program's Forestry Working Group has developed Urban Tree Canopy Goals as a guide for local governments. Through the collective work of local governments in the Chesapeake Bay watershed, a bay-wide canopy goal may be developed to begin discussions and ultimately develop measures on how to maintain and improve forest canopy cover region-wide. Characterization of the current condition of the urban forest will serve as a key first step to establishing a regional urban tree canopy goal and will help to guide current efforts to increase tree planting and preservation efforts that will, in time, result in a healthy and sustained urban tree canopy.

Benefits: Benefits of urban forests include temperature modification over pavement and rooftops, filtration of both air and water-borne particulate pollutants and improving microclimates at the street level. Urban forests also aid in the interception, detention, suspension and filtration of rainwater and subsequent stormwater runoff, as well as providing leaf litter to streams and other water bodies and shade to our neighborhoods and parks making them more pleasant places to live.

Participating Jurisdictions/Agencies

District of Columbia: Urban Tree Canopy Goal—**www.dcgreenmap.org/utc/index.html**

City of Bowie, MD: Forest Mitigation Policy—**www.cityofbowie.org/green/initiatives/bowie_init.htm**

Laurel, Maryland, MD: Rapid Ecosystem Analysis—**www.dcgreenmap.org/utc/resources/laurel_md_rea.pdf**

Montgomery County, MD: Forest Preservation Strategy—**www.montgomerycountymd.gov/content/dep/Forest/strategy.pdf**

Arlington County, VA: Virginia's Urban Forest Master Plan—**www.arlingtonva.us/departments/ParksRecreation/scripts/parks/ UFMP_Final.pdf**

Fairfax County, VA: Tree Canopy Goal— **www.fairfaxcounty.gov/news/2007/229.htm**

City of Falls Church, VA: Chesapeake Bay Overlay District—**www.fallschurchva.gov/government/developmentServices/aborist.html**

Town of Leesburg, VA: Urban Forestry Management Plan—**www.leesburgva.org/Services/planning/doc/UFMPL_06-02-28.pdf**

Casey Trees: Urban Forest in the District of Columbia—**www.caseytrees.org/DCs_urbanforest_GISarticle.pdf**

American Forests: Urban Ecosystem Analysis—**www.americanforests.org/downloads/rea/AF_WashingtonDC2.pdf**

Local Government Efforts Underway

City of Greenbelt: Developing an Urban Tree Canopy Goal

City of Rockville/Parks and Facilities: Developing an Urban Tree Canopy Goal

City of Alexandria: Currently developing an urban forest master plan to achieve a canopy of over 40%

For More Information:

Chesapeake Bay Program: Urban Tree Canopy Goals:
www.chesapeakebay.net/pubs/Guidelines_for_Urban_Tree_Canopy_Goals_11_2004.pdf

Protecting the Forests of the Chesapeake Bay Watershed:
archive.chesapeakebay.net/info/pressreleases/ec2006/Directive%2006-1%20Forests%20color.pdf

Maryland DNR: Tree Canopy Goals:
www.dnr.state.md.us/forests/programs/urban/urbantreecanopygoals.asp

Alternative Financing

Cooperative Purchasing

Program Description: COG initiated its Cooperative Purchasing Program in 1971 with the basic objective of reducing costs through volume buying. By taking advantage of the combined purchasing power of participating jurisdictions (estimated at more than $2 billion annually), volume buying works to the advantage of the jurisdictions and their taxpayers. Commodities that have been successfulyl purchased in bulk with standard specifications include heating fuel, gasoline, diesel fuel, and antifreeze. Services such as the pick-up and disposal of hazardous waste or used oil have been successfully handled through cooperative purchases.

Benefits: Through the COG Chief Purchasing Officers Committee, participating agencies, school boards, authorities, and commissions combine bidding requirements for more than 20 different purchases, resulting in larger volume and better unit pricing.

Participating Jurisdictions:
District of Columbia—**www.dc.gov**
Arlington County, VA—**www.arlingtonva.us**
Montgomery County, MD—**www.montgomerycountymd.gov**
Prince George's County, MD—**www.goprincegeorgescounty.com**
City of Fairfax, VA—**www.fairfaxva.gov**
Prince William County, VA—**www.pwcgov.org**

Washington Suburban Sanitary Commission (WSSC)—**www.wsscwater.com**

For More Information: http://www.mwcog.org/purchasing/

Energy Performance Contracting

Description: State and local governments can finance improvements in energy efficiency by entering into energy performance contracts with energy service companies (ESCOs). ESCOs provide up-front financing to supply the funding needed to invest in facility upgrades. The investments result in a guaranteed energy savings, and a portion of the associated financial savings is used to repay the initial investment. Local jurisdictions may also be able to use rider clauses on existing state contracts to secure such energy services.

Benefits: Energy performance contracting enables jurisdictions to rapidly implement projects to improve building efficiency with limited or no upfront capital outlays. Reduced building energy consumption has the potential to reduce emissions of greenhouse gases and other air pollutants. Annual energy savings of 1,000 to 6,000 MWh for a government building can be readily achieved, resulting in approximately 4,000 metric tons CO_2, equivalent to removing nearly 1,000 cars from the road.

For More Information:
www.energy.state.md.us/programs/government/epc/index.html
www.eere.energy.gov/buildings/info/plan/financing/contracts.html
www.pepcoenergy.com/AboutUs/default.aspx

Case Study

PRINCE GEORGE'S COUNTY ENERGY AUDIT/PERFORMANCE CONTRACT

Prince George's County is working with Pepco and Johnson Controls to audit county facilities, establish an energy consumption baseline, and identify projects that will improve overall building efficiency. The energy audit was completed by the end of 2007, and projects to install new more efficient technology (lighting and HVAC) will begin in February 2008. The program was initiated to help the county meet the goals of the Green Building Steering Committee. County goals are to reduce energy usage per square foot by 25% by 2020.

Reverse Auction

Program Description: A reverse auction (also called procurement auction, e-auction, sourcing event, e-sourcing or eRA) is a tool used in industrial business-to-business procurement in which the primary objective is to drive purchase prices downward. In an ordinary auction (also known as a forward auction), buyers compete to obtain a good or service. In a reverse auction, sellers compete to obtain business. In the Washington region, participating jurisdictions used a reverse auction to procure natural gas over a three year period, saving millions of dollars. The auction was coordinated by the Government of the District of Columbia's Office of Contracting and Procurement (OCP) in conjunction with COG's Cooperative Purchasing Program.

Benefits: Reverse auctions can be used to lower the costs of goods procured by local governments. It may be possible to use reverse auctions to procure more efficient equipment or zero emission energy sources.

Participating Jurisdictions/Agencies:
District of Columbia—**www.dc.gov**
University of the District of Columbia—**www.udc.edu**
Montgomery County, MD—**www.montgomerycountymd.gov**
Prince George's County, MD—**www.goprincegeorgescounty.com**
City of Alexandria, VA—**www.alexandriava.gov**
Alexandria Sanitation Authority—**www.alexsan.org**
Fairfax County, VA—**www.fairfaxcounty.gov**
Fairfax Water—**www.fcwa.org**
City of Falls Church , VA—**www.fallschurchva.gov**
The Town of Leesburg, VA—**www.leesburgva.org**
Loudoun County, VA—**www.loudoun.gov**
Prince William County, VA—**www.pwcgov.org**
Prince William County Service Authority—**www.pwcsa.org**
The Upper Occoquan Sewage Authority—**www.fairfaxcounty.gov**
Washington Convention Center—**www.dcconvention.com**

School systems:
Alexandria, VA: **www.acps.k12.va.us**
Arlington County, VA: **www.arlington.k12.va.us**
Charles County, VA: **www.ccboe.com**
Fairfax County, VA: **www.fcps.edu**
Loudoun County, VA: **www.loudoun.k12.va.us**
Prince William County, VA: **www.pwcs.edu**
City of Manassas, VA: **www.manassas.k12.va.us**

For More Information:
http://www.mwcog.org/purchasing/

Outreach and Education

Clean Air Partners

Program Description: Clean Air Partners is a non-profit, public-private partnership chartered by COG and the Baltimore Metropolitan Council in 1997 committed to improving air quality in the metropolitan Washington-Baltimore region through voluntary actions by organizations such as local governments, businesses and individuals. Hundreds of employers join Clean Air Partners to start a workplace-based public outreach program, to spread the work to improve health and the quality of life in the region by reducing air pollution and greenhouse gases. The program is based on daily air quality forecasts and the Air Quality Action Guide for simple steps to improve air quality.

Uses: When unhealthy air pollution levels are likely, Clean Air Partners notifies participants by e-mail. Announcements are also made via local news broadcasts and daily updates on this Web site. Employers are asked to inform employees and customers about forecasted Code Orange and Red days and suggest voluntary actions individuals can take to reduce the release of pollution-forming agents. Participants are also encouraged to modify their company operations when Code Orange and Red Days are in effect.

Benefits: Reduced Vehicle Miles Traveled through actions such as teleworking, carpooling, use of mass transit.

For More Information: www.cleanairpartners.net

Clean Air Partners Board Members

American Lung Association of Maryland
Amicus Green Building Center
Annapolis Regional Transportation ManagementAssociation
Baltimore Metropolitan Council
Center for Chesapeake Communities
City of Greenbelt
Commuter Connections
Constellation Energy
DC Department of the Environment
District Department of Transportation
Fairfax County
Greater Washington Board of Trade
Johns Hopkins University
Lockheed Martin
MD Department of Environment
MD Department of Transportation
Mirant – Mid Atlantic
MWCOG
Northrop Grumman Corporation
Northwest Hospital
Pepco Holdings, Inc.
Prince George's County
VA Department of Environmental Quality
VA Department of Transportation
VA Dept of Rail & Public Transportation
Washington Gas

Wise Water Use Program

Program Description: The *Water, Use it Wisely* campaign is a year round water conservation program to educate and encourage citizens in the National Capital Region to use their drinking water wisely. The campaign offers homeowners and businesses simple water savings tips and techniques through school-based education, public and private outreach events, business partnerships, as well as through paid and PSA media advertisement.

Benefits: Through the campaign, it is expected that citizens in the region will become more aware of their drinking water resources, their water suppliers, and the importance of using their drinking water resources wisely. In the long-term, it is expected that during times of drought citizen response will greatly enhance the water utilities ability to manage such conditions. By using water smartly now, we reduce waste of our water resources and possibly delay the construction of costly infrastructure needed to meet increased demand.

Participating Jurisdictions/Agencies:

Metropolitan Washington Council of Governments
Loudoun County Sanitation Authority
Fairfax Water
Washington Suburban Sanitary Commission
DC Water and Sewer Authority
Prince William County Service Authority
Washington Aqueduct Division
Arlington County Water, Sewer and Streets
City of Falls Church Dept. of Public Works
Town of Purcellville Dept. of Public Works
City of Fairfax Dept. of Public Utilities
Town of Leesburg Dept. of Public Works
City of Rockville Dept. of Public Works
Frederick County Dept. of Public Works
State of Maryland
State of Virginia
US Environmental Protection Agency

See **www.mwcog.org/environment/water/watersupply/wisewater.asp** for individual jurisdictions/agencies weblinks

Index

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