SUPERIOR GOVERNMENT SERVICE WITH THE SMALLEST POSSIBLE ENVIRONMENTAL FOOTPRINT

FY2018
Montgomery County
Green Government Report

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AWARDS AND RECOGNITIONS

▶ **Ten National Association of Counties (NACo) Achievement Awards for sustainability initiatives since FY14, including awards for Microgrids and Continuous Energy Improvement Program in 2018.**

▶ **Six consecutive Alliance for Workplace Excellence Eco-Leadership awards.**

▶ **Smart Energy Community Designation from the Maryland Energy Administration.**

▶ **ENERGY STAR 2017 designation earned for Health and Human Services Administrative Offices.**

MESSAGE FROM MONTGOMERY COUNTY EXECUTIVE MARC ELRICH

Marc Elrich, County Executive

It is my pleasure to present the Annual Green Government Report, which overviews our County's progress at the forefront of sustainability and innovation. The collective efforts of our County departments to embed green into our culture is essential to an effective and sustainable government. In addition to being good stewards of our planet, the County's investments in clean energy, energy efficiency and other resource saving measures detailed in this report are projected to save the taxpayer tens of millions of dollars over the next two decades.

While in County Council, I authored a resolution, along with several of my colleagues, calling for major reductions in greenhouse gas emissions. We committed to pursuing an 80 percent reduction by 2027 and a complete elimination by 2035. To achieve this ambitious and unprecedented goal, the County must lead by example. We will not ask the private sector to implement deep actions that greatly reduce GHG and other environmental impacts if we have not done the same.

Investments in energy-efficiency and renewable energy reduces County operating costs and creates opportunities to grow green businesses. Widespread adoption of advanced lighting in our streetlights and buildings, not only makes our communities more attractive, but also is highly energy efficient, saving electricity and reducing greenhouse gas emissions. Additionally, electric vehicle charging infrastructure is expanding to support electrification of the County fleet while providing additional charging options for our employees and community members.

Equally important is the incorporation of renewable energy and other advanced low-carbon technologies into public facilities, reducing their greenhouse gas emissions, and in some cases enabling them to run independently of the utility, bolstering our ability to deliver crucial public services when needed most.

Montgomery County, via a nationally recognized public private partnership, with Schneider Electric and Duke Energy Renewables, recently installed microgrids at its Public Safety Headquarters and Montgomery County Correctional Facility at no upfront cost to the County. These projects offset substantial facility investment needs. I look forward to expanding these efforts and strengthening the resiliency of public services and our overall community.

I would like to express my gratitude to our Department of General Services for their work on this report; and I commend all County departments for their initiatives to green our government operations.

MESSAGE FROM DEPARTMENT OF GENERAL SERVICES DIRECTOR DAVID E. DISE

David E. Dise, Director

I n its support of Montgomery County's demonstrated commitment to reducing the government's environmental impact, the Department of General Services (DGS) delivers superior service to all County departments and the public, by applying best practices in building design, facility maintenance, fleet management, and promoting a culture of awareness throughout government operations. While DGS is proud to lead County government sustainability efforts, we don't do it in isolation, and this report isn't about DGS; it's about how all County departments embrace the County Executive's vision and commitment that we lead by example. This report is about how the coordinated effort of all County departments results in environmental achievements that are precedent-setting and among leading initiatives in the United States.

The DGS Office of Energy and Sustainability (OES) serves as driving force to incorporate sustainability and resiliency throughout County operations. OES has coordinated complex, leading initiatives that benefit County residents and the environment by establishing the highest standards for sustainability; launching innovative cost saving initiatives; using renewable energy; conserving energy in county buildings and fleet, and planning for future progressive greener government strategies. Sustainability is core to all government functions including facility construction, fleet operations and management, building management and maintenance, print services and building construction.

Over the past year, staff from the Executive's office, DGS and the Office of the County Attorney continued to represent the public's interests with utilities and regulators such as the Maryland Public Service Commission. These issues impact the environment as well as the affordability and reliability of energy to the County government and the community.

On behalf of all County departments and offices, DGS looks forward to continuing efforts to help expand our achievements and demonstrate leadership that benefits the County and region.

I am pleased that Montgomery County continues to deliver excellence in government services while greening our community.

Office of Energy and Sustainability Team Members

Eric Coffman, *Chief*

Michael Yambrach, *Capital Projects Manager*

Chris Weatherly, *Energy Program Manager*
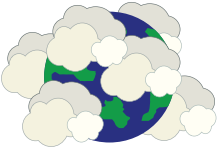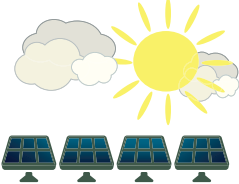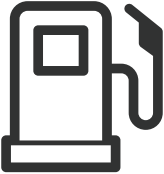
Odohi Ettah, *Energy Engineer*

Sharon Ossi, *Sustainability Specialist*

Valerie Myers, *Utility Database Manager*

Cindy Myers, *Utility Database Specialist*

THE YEAR IN REVIEW

This report highlights the progress and accomplishments of Montgomery County's green government initiatives through Fiscal Year (FY) 2018. For more details, as well as our latest green government news, please visit **www.montgomerycountymd.gov/dgs-oes.**
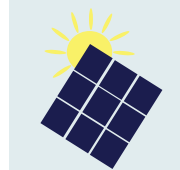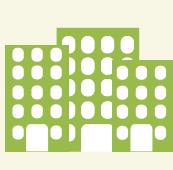
THE CHALLENGE	OUR TARGETS	OUR ACCOMPLISHMENTS	
Greenhouse gas levels are currently over 400 parts per million (ppm). Climate scientists say the levels need to be reduced to 350 ppm to avoid the most severe impacts of climate change. (Source: United Nations Intergovernmental Panel on Climate Change)	Reduce greenhouse gas emissions 80% below current levels by 2027.[1]	**Achieved Carbon Neutrality**	As of FY2016, Montgomery County has achieved carbon neutrality for County government buildings and fleet operations.
Electricity generation is the second largest source of greenhouse gas emissions in the U.S. (Source: https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions)	Generate emissions-free electricity by installing 6 megawatts of solar on County facilities.	**Installed 7.6 megawatts**	of solar projects on County facilities. Planning installation of additional solar projects.
Buildings account for 41% of U.S. energy consumption and 39% of CO_2 emissions. (Source: U.S. Green Building Council)	Improve energy efficiency of buildings to maximize savings and greenhouse gas emissions reductions.	**Saved $1.5 million**	on utilities and reduced greenhouse gas emissions by 8,200 metric tons through energy efficiency upgrades to buildings since FY2013.
In 2017, the U.S. used 392 million gallons of petroleum a day for vehicles. (Source: https://www.eia.gov/tools/faqs/faq.php?id=23&t=10)	Reduce petroleum consumption of vehicles in the County's fleet 20% below FY2014 levels by 2020.	**Saved 190,160 gallons**	of fuel representing a 3.5% reduction in petroleum use compared to FY2014 levels.
In 2014, Marylanders sent 5.98 lbs of waste to landfills each day – 1.58 lbs more than the average person in the U.S. (Source: Maryland Department of Legislative Services)	Divert 70% of waste from landfills.	**~61% waste diverted**	through recycling.[2]

1 On 12/5/17, Montgomery County Council passed the Emergency Climate Mobilization resolution, which accelerates the greenhouse gas reduction goals to reduce greenhouse gas (GHG) emissions 80% by 2027 and 100% by 2035. As of FY2016, Montgomery County's combined energy efficiency, renewable energy investment and energy purchases have resulted in a carbon neutral government.

2 Includes all Montgomery County businesses, residences, and government facilities. 5% source reduction credit is added to the recycling rate.

FINANCIAL STEWARDSHIP

Not only has Montgomery County shown leadership in environmental sustainability, we also strive for excellence in stewardship of financial resources. DGS, including staff from OES, the Division of Building Design and Construction, and the Division of Facilities Management, have cumulatively saved more than $8.5 million from FY2013–FY2018 through the efforts listed below. With the addition of solar energy systems, energy efficiency projects, and water saving projects planned through FY2021, we expect to save more than $75 million over the next 20 years.

Billing Recovery	**FY2018 Savings $305,925** **Cumulative Savings $970,436** Analyzed utility bill information and recovered funds from billing mistakes and contractor use during building construction. Billing error recovery from electric, gas, and water/sewer utilities.	**Sub-Meter Installation**	**FY2018 Savings $140,172** **Cumulative Savings $527,665** Installed water sub-meters on the cooling towers of several facilities. Sub-meters show the amount of water lost to evaporation and result in reduced sewer charges.
Grants & Incentives	**FY2018 Grants $222,234** **Cumulative Grants $2,765,784** Received grants and incentives for energy saving projects in County facilities.	**Solar**	**FY2018 Savings $306,165** **Cumulative Savings $751,180** Secured solar power purchase agreements from solar panels installed on County facilities.
Energy Efficiency	**FY2018 Savings $242,296** **Cumulative Savings $1,541,450** Saved on utility costs from energy savings projects in County facilities.	**Demand Response**	**FY2018 Savings $26,352** **Cumulative Savings $242,424** Participated in demand response, where the County takes action to reduce energy demand in select buildings during periods of peak energy demand, usually on the hottest summer days.
Energy Purchasing	**FY2018 Savings >$1.3 million** **Cumulative Savings >$1.85 million** Negotiated electricity supply contract to save costs on electricity in County facilities in FY2018 and FY2019. Savings for FY2019 are expected to be an additional $1.3 million.		

*Cumulative savings includes FY2013 through FY2018

superior government service with the smallest possible environmental footprint

ENERGY AND CLIMATE

In the 2009 Climate Protection Plan, Montgomery County set a goal to reduce greenhouse gas emissions to 80% below the baseline FY2005 levels across the community. In December 2017, Montgomery County Council passed the Emergency Climate Mobilization resolution (Resolution No. 18-974) that accelerates the greenhouse gas emissions reduction goals. The new goal is set to reduce greenhouse gas emissions by 80% by 2027 and 100% by 2035. As of FY2016, Montgomery County government achieved carbon neutrality for County government facilities and fleet vehicle operations.

MONTGOMERY COUNTY GOVERNMENT OPERATIONS HAVE BEEN CARBON NEUTRAL SINCE FY2016

SOCIAL COST OF CARBON

The social cost of carbon is a measurement, in dollars, of the global environmental, health and economic impact of emitting a ton of carbon dioxide into the atmosphere. Montgomery County is one of the first communities to incorporate the social cost of carbon into government decision-making and accountability. The County includes the social cost of carbon as a factor in determining the return on investment of proposed energy efficiency improvements for County facilities. More details about the County's energy efficiency projects, including the project cost, grants and incentives, utility savings, and social cost of carbon avoided annually are available in the tables following the report. In addition, the County tracks the social cost of carbon emitted through government operations. Between FY2011 and FY2018, the social cost of carbon emitted each year from Montgomery County government operations has decreased from $2,940,000 to $0.[3] This reduction is due to a combination of energy efficiency, local clean energy generation initiatives, and renewable energy credits. In the long term the County will continue to ramp up local renewable energy generation and energy efficiency to reduce the need for renewable energy credits. These improvements will improve services, benefit local environmental quality and expand local clean energy industries.

3   Social cost of carbon assessment is required by Bill 5-14. SCOC values determined using calculations provided by the U.S. Environmental Protection Agency.

ENERGY EFFICIENCY AND PERFORMANCE ANALYSIS

Montgomery County uses the latest technology, innovative financing, and data analysis to maximize the energy efficiency of its buildings. County staff closely monitors utility bill data of more than 400 buildings to identify opportunities to improve energy efficiency through cost efficient upgrades of lighting fixtures, heating and cooling systems, and plumbing fixtures. Using EnergyCAP software, staff pulls data directly from utilities for analysis, also eliminating paper waste, increasing data accuracy, and providing stakeholders with timely and accurate energy data. Staff then investigates and resolves specific issues discovered through utility bill analysis, along with tracking and analyzing long term trends. Factors, including energy usage per square foot and cost, are consistently tracked to identify buildings with the greatest opportunity for energy savings projects. In addition, DGS uses building controls to make adjustments in response to changing weather conditions and customer needs, saving energy without compromising comfort.

$1.5 million — amount Montgomery County has saved on utilities from FY2013–FY2018 by improving the energy and water efficiency of its existing facilities.

>$65 million — amount the County expects to save over the next two decades as a result of energy and water efficiency projects.

ENERGY PERFORMANCE BENCHMARKING

For the past four years, DGS benchmarked and disclosed data for the 14 applicable Montgomery County Government buildings 50,000 square feet or greater. OES applied for and received an ENERGY STAR 2017 label on Health and Human Services (HHS) Administrative Offices at 401 Hungerford Drive and plans to submit an application for the HHS Piccard Drive Office Building. The data on all benchmarked facilities is available to the public through the Department of Environmental Protection's (DEP) **MyGreenMontgomery.org** website.

SIGNATURE INITIATIVE

CONTINUOUS ENERGY IMPROVEMENT PROGRAM

In FY 2017, the County began the Continuous Energy Improvement program to identify energy savings opportunities in individual facilities. The program combines the latest technology and staff expertise into a comprehensive in-house energy management unit that continually identifies and implements the most cost effective and beneficial energy saving opportunities across County facilities. The process includes:

- analysis of utility bills, 15-minute interval energy use data, and building automation system data to target opportunities for reduced energy and water use;
- energy sweeps, or site visits, conducted by staff to collect more detailed information and look for opportunities for savings related to HVAC equipment, lighting, water usage, and operations;
- identification of low and no cost solutions to yield energy savings as well as suggestions for future investments for additional energy and water savings.

Staff conducted detailed audits of 10 high priority facilities and began implementing solutions in FY2018. Moving forward, the Continuous Energy Improvement program will target 20 facilities per year with energy sweeps. The program is expected to yield thousands in annual savings per facility while also reducing greenhouse gas emissions. In 2018, the program received a National Association of Counties (NACo) Achievement Award.

ENERGY PERFORMANCE CONTRACTING

Montgomery County is implementing a multi-year plan to invest more than $120 million in facilities through energy performance contracting. The County uses several Energy Performance Contracting companies (EPC) to recommend upgrades that reduce energy and water use, implement measures and guarantee cost savings on utilities. Energy performance contracting enables the County to redirect electricity, heating, and cooling expenses to pay for facility improvements without impacting the County's overall budget. EPC projects typically involve a combination of lighting upgrades, heating and cooling upgrades, control systems improvements, building envelope improvements, and water use reduction measures.

THE FIRST COUNTY EPC PROJECT AT HHS ADMINISTRATIVE BUILDING SHOWS A 19% REDUCTION IN ENERGY CONSUMPTION FROM FY2013 TO FY2018.

Montgomery County developed an Energy Project Portfolio Selection tool to prioritize energy projects over the next few years via an energy workgroup of cross division collaboration. The tool is a facility evaluation matrix based on multiple factors including energy consumption, energy costs, facility work orders, and maintenance spend to identify buildings with the greatest opportunity for energy savings. The buildings are grouped into categories of building project types. The Energy Workgroup is working on an overall strategy to identify timing and funding for these energy projects. Over the next few years more than two dozen facilities will be evaluated for these upgrades, including many County libraries, community recreation centers, and swim centers. The County is implementing several projects that are expected to be completed between FY2019 and FY2021.

SIGNATURE INITIATIVE

PARKING GARAGE LED LIGHTING UPGRADES

Electricity Costs for Completed Parking Garage LED Upgrades

*Data based on the first six garages with upgrades completed between July and October.
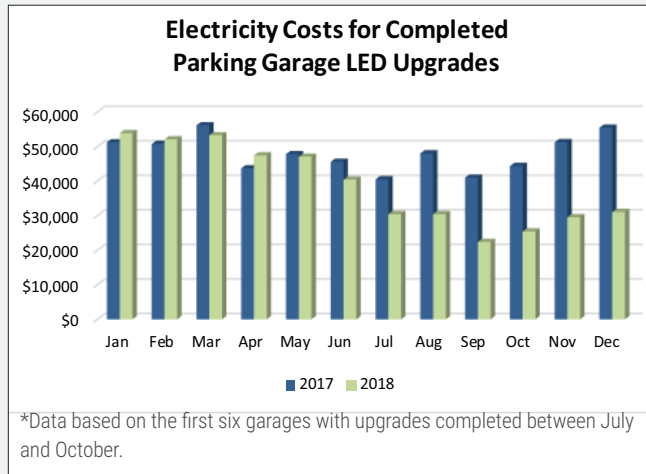
The Montgomery County Department of Transportation (DOT) is replacing lighting fixtures in all garages and parking lots with light emitting diode (LED) fixtures. From FY2018 to FY2020, DOT plans to replace every high-intensity discharge (HID), fluorescent and even exit light, including interior lights, as well as deck, stairwell, lobby and exterior lights. Phase 1 of the project, completed in 2018, replaced lighting fixtures in nine garages with 4,300 LED fixtures. Phases 2 and 3 will be carried out over the next two years, replacing over 7,700 additional lighting fixtures with LEDs and completing the replacement of all 12,000 parking facility lights. The first six completed garages show cost savings of over 40% in the first few months after the upgrades.

At completion of Phase 3, seven garages will be completely relamped. The other 14 garages previously had interim upgrades with weathertight fluorescent fixtures which saved the County $1.2 million per year. These fluorescent fixtures will also be updated yielding more savings. The entire project is expected to amount to more than $750,000 per year in savings from LED upgrades in Montgomery County parking garages. All fixtures will be programmed to dim when no motion is detected, and daylight harvesting will be utilized in all above ground facilities with open walls, anticipated to increase savings by approximately $100,000 per year.

Pepco incentives have been awarded for six garages in Bethesda to complete lighting upgrades with additional small incentives for the other Bethesda and Silver Spring garages. Total project rebates exceed $300,000.

OTHER ENERGY EFFICIENCY PROJECTS

State energy representatives touring Strathmore Concert Hall with County and Strathmore team after lighting was upgraded to LED.

The County continues to improve the efficiency of building equipment through planned replacements or other projects that provide a fast payback on investment. Many of these projects involve replacing compact florescent

and halogen lights with highly efficient LED lights in County facilities, parking garages and streetlights. These replacements show major energy savings and greenhouse gas emissions reduction. Currently, the County is installing LEDs at Brookville Maintenance Facility and Bethesda Depot. The project at Brookville Maintenance Facility is expected to save $18,000 with over 100 metric tons reduction in greenhouse gas emissions annually.

The Department of Technology Services (DTS) implements initiatives to eliminate the use of unneeded electricity for computers (PCs). Powering down PCs when not in use (e.g. nights, weekends), can help reduce the energy-related operating expenses of IT and reduce carbon emissions. By powering down PCs during periods of inactivity, ENERGY STAR® estimates that firms can save $25 to $75 per PC, per year. Across the County, power management will save upwards of $100,000.

DTS is also deploying Smart Strips for additional energy savings. The Smart Strip itself uses very little energy, and protects against the risk of allowing waves from one electronic device to cause malfunctions or interference in another. The Smart Strips have a control outlet and automatic outlets which switch off or on when the master control outlet is off, asleep, or on, automatically turning off peripherals when not in use to save electricity.

Percent of Montgomery County Government Facilities' Energy Supply that comes from Wind

FY 2014 — 20% Clean Energy Purchased
FY 2015 — 50% Clean Energy Purchased
FY 2016 — 100% Clean Energy Purchased
FY 2017 — 100% Clean Energy Purchased
FY 2018 — 100% Clean Energy Purchased

* Disclosure required by Bill 9-14

CLEAN ENERGY PURCHASE

Since FY2016, Montgomery County government has purchased 100% of its annual electricity consumption from clean sources, specifically energy generated by wind turbines. The County also purchases credits to offset greenhouse gas emissions from its facilities.
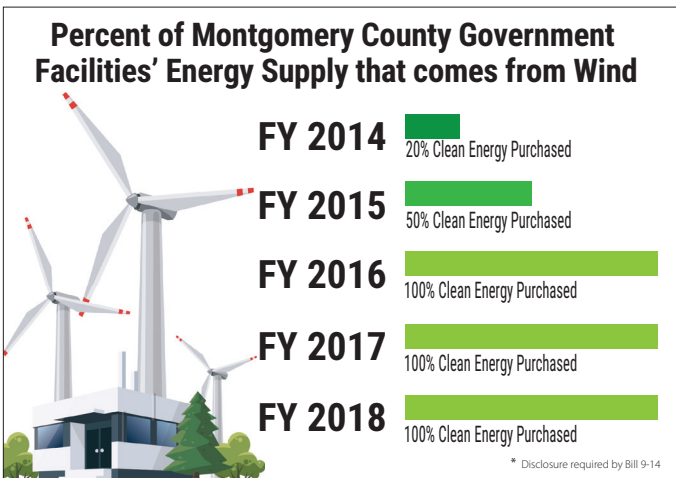
In addition, since 2004, Montgomery County has led a coalition of County agencies and municipalities to purchase electricity supply generated from wind energy. Current participants include Montgomery County Government, Montgomery County Public Schools, Montgomery College, the Maryland National Capital Park and Planning Commission, Chevy Chase Village Section 5, City of Takoma Park, Town of Kensington, and Town of Somerset. The County also facilitates purchase for the Washington Suburban Sanitary Commission (WSSC) and for the Cities of Rockville and Gaithersburg who report separately.

The County-led purchase currently ranks fourth among local governments and 27th among all national purchasers (including Fortune 500 companies) tracked by the U.S. Environmental Protection Agency's Green Power Partnership.

27th largest clean energy purchase among all national purchasers

4th largest clean energy purchase among local governments
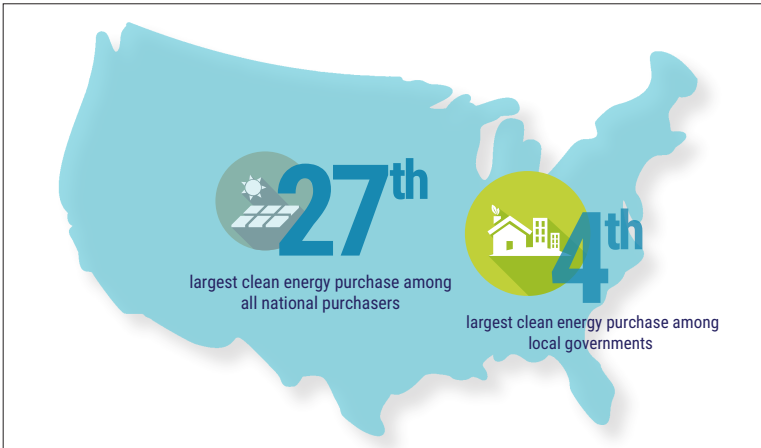
Solar

Over the past year, Montgomery County has exceeded its multi-year goal to install six megawatts of solar power on County facilities. Currently the County has installed 7.6 megawatts (MW) of solar on County facilities across our portfolio producing enough clean energy to power over 800 homes with plans to install a total of more than 11 MW. Through grants and power purchase agreements, Montgomery County benefits from low-cost energy with no upfront costs or maintenance responsibilities the solar energy generation systems.

Montgomery County's innovative solar initiative also fosters educational opportunities. The initiative includes projects in neighborhoods across the County and across a wide range of facilities, including libraries, community recreation centers, child care centers, correctional facilities, and offices. The contract is an ideal model for other government agencies to easily initiate their own solar energy projects.

In FY2018, Montgomery County installed nine acres of solar panels at Public Safety Headquarters (PSHQ) as part of the microgrid project for the facility. The 2 MW of solar are mounted on canopies above the existing parking lot providing shade and shelter for employees and visitors parking at the facility. The solar panels are expected to:

- **reduce greenhouse gas emissions as much as 2,400 metric tons;**
- **produce 3.3 million kilowatt hours of electricity annually; and**
- **generate enough clean electricity to power more than 250 homes.**

Current production shows the solar panels producing enough electricity most days for demand on the grid to go to zero.

Annual Capacity to Generate = 10 million kWh

Equivalent of:

Trees Planted	Cars off the Road	Homes Powered	GHG Reduction
192,000 trees	1,600 cars	over 800 homes	7,400 metric tons

Projected Savings Over 20 Years = $10 million

*Equivalencies calculated using EPA GHG Equivalencies Calculator.
*Annual generation and equivalencies include solar project at PSHQ; project at Oaks Landill has been deferred and is not included here.

GREEN BUILDINGS

With the large amount of energy required to heat, cool, and light buildings, they account for 41% of greenhouse gas emissions nationwide. Additionally, renovating or building a facility involves a large amount of construction materials that need to be manufactured and transported to the site. Recognizing this opportunity to conserve resources, reduce pollution, and make our communities more sustainable, all new County buildings more than 10,000 square feet are designed and constructed to achieve a minimum Leadership in Energy and Environmental Design (LEED) certification of Silver[4]. Green building elements include energy efficiency, renewable energy, minimizing water pollution, recycled and locally sourced building materials, water conservation, and providing transportation alternatives. As of November 2018, Montgomery County has built seven LEED Silver and 13 LEED Gold certified buildings. In December 2017, Montgomery County adopted the International Green Construction Code[5] (IgCC) to replace the LEED requirements, which lowers the threshold to new commercial buildings over 5,000 square feet and increases emphasis on energy consumption and greenhouse gas reductions.

4   Montgomery County Green Building Law, 2006 L.M.C., ch 44, 2
5   Executive Regulations 21-15AMII, Council Bill 19-17

13 Gold
7 Silver
Montgomery County Buildings
LEED CERTIFIED as of November 2018

LEED™ stands for Leadership in Energy and Environmental Design, and is a voluntary, consensus-based, market-driven green building rating system. It is based on existing, proven technology and evaluates environmental performance from a "whole building" perspective. LEED™ is a self-certifying system designed for rating new and existing commercial, institutional, and multi-family residential buildings. There are four rating levels: Certified, Silver, Gold, and Platinum.

LEED SILVER AND GOLD CERTIFIED BUILDINGS SINCE 2012

85%	Construction waste kept out of landfills.
21%	Recycled materials used in construction.
45%	Sustainably harvested (FSC certified) wood used during construction.
28%	Locally manufactured/extracted materials used in construction.
38%	Reduction in water use over baseline levels.
21%	Reduction in energy use over baseline levels.

*Percentages are an average of new construction buildings since 2012.
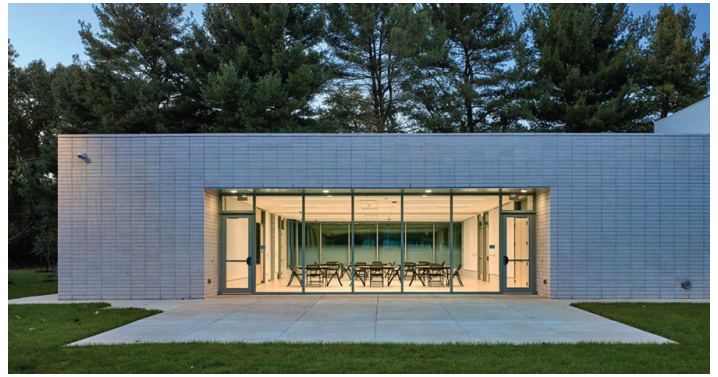
GOOD HOPE NEIGHBORHOOD RECREATION CENTER

The original facility constructed in 1976 was in critical need of a comprehensive replacement with key building systems having surpassed their useful service life. The new 14,000-square-foot facility delivers a safe, accessible, and energy-efficient public amenity to Eastern Montgomery County residents. The Department of Recreation in partnership with Strathmore will provide art, music and educational activities at the center. The new site corrects poor site utilization, encompassing sustainable building strategies targeting LEED Gold certification.

The facility's green features include:

- Use of daylighting or natural lighting;
- Stormwater quality control measures;
- Sensor operated, low flow fixtures;
- Enhanced and envelope commissioning ensuring energy efficiency;
- Construction materials with recycled content and regional sourcing; and
- Efficient lighting and thermal controllability.

NANCY H. DACEK NORTH POTOMAC COMMUNITY RECREATION CENTER

This recreation facility is an eco-friendly, LEED Gold certified, state-of-the-art facility adjacent to the 11 acre Big Pines Local Park, which offers a variety of programs and activities to residents of all ages. The facility's green features include:

- A vegetated roof;
- Energy conservation measures including reduced interior lighting power density, occupancy sensors, demand control ventilation, and an efficient thermal envelope;
- Enhanced commissioning, ensuring the building operates as designed; and
- Construction materials with recycled content and regional sourcing.

SMART GROWTH

Shared use path Crabbs Branch Way

The Smart Growth Initiative (SGI) is an award-winning comprehensive program that provides substantial economic opportunities for future growth in Montgomery County. Acknowledging that decisions and policies today will shape the County of tomorrow, the SGI takes the following priorities into consideration:

- Maintain a competitive, resilient, and sustainable economy;
- Create transit-oriented development;
- Replace and modernize antiquated public facilities;
- Redevelop brownfield sites;
- Restore landmark buildings;

- Protect the Agricultural Reserve;
- Create efficiencies and synergies though co-location of related uses;
- Construction of thousands of new housing units;
- Encourage higher paying jobs in a transit-oriented bioscience enclave, and;
- Reduce a significant portion of the $20 million spent annually on rental payments.

Shady Grove Westside, an integral Public Private Partnership that is part of the SGI, includes the redevelopment of formerly industrial public property into a residential community with retail on Metro-adjacent land. The project includes more than 20% affordable housing units available at a variety of income levels. Project accomplishments include completion of a shared use path and other pedestrian improvements to Crabbs Branch Way and installation of a pedestrian crossing between the new development and the Shady Grove Metro station. These improvements encourage and enable safe walking and biking and improve access to public transit for current and future County residents.

GREEN BUILDING HIGHLIGHT— 2ND DISTRICT POLICE STATION

The new 2nd District Police Station is a result of a public-private partnership between Montgomery County and developer StonebridgeCarras. Nearly 60 years old, the former station required major building repairs and had multiple site constraints that made it difficult to meet the needs of a growing police district. StonebridgeCarras designed and constructed the new state-of-the-art facility on an underutilized vacant lot. The new four-story, 28,000-square-foot police station meets police requirements and is in the process of receiving LEED certification. The new station maximizes the use of public land by utilizing a portion of the adjacent public garage for police vehicles and ancillary requirements.

In return for building the new station, the County transferred the old 2nd District site, only one block from the WMATA Bethesda Metro station and a large transit hub, to StonebridgeCarras. StonebridgeCarras will maximize the potential of the old police station site as part of a 500,000-square-foot redevelopment including an office building and hotel. This new private development project returns this valuable piece of property to the County tax base, supports the vibrant business community in an important central business district, and meets the transit-oriented smart-growth goals identified in the recently adopted Bethesda Downtown Plan. It also allows for the environmental remediation of the old station site.

RESILIENCY AND ENERGY POLICY

Montgomery County is improving its ability to anticipate and quickly adapt to extreme weather, economic downturns, and natural and human-made disasters. Reducing energy use and increasing on-site power generation at critical facilities ensures that Montgomery County can keep residents safe and provide needed services during power outages. Resilient County facilities also help relieve pressure on the power grid, reducing blackouts and brownouts during times of peak electricity use.

INCREASED RESILIENCY AND RELIABILITY OF THE UTILITY GRID

Montgomery County's Office of County Attorney (OCA) and DGS advocate for reliability and resiliency in the utility grid. The reliable and resilient delivery of energy is essential to ensuring the delivery of public services, especially during emergencies and crises where they are needed most. Understanding that cost effective and reliable utility services are essential for the well-being and economic development of the community, Montgomery County has consistently advocated that electric utilities perform in the top 25% of their peers nationwide and consistently pushes for standards that allow utility performance to be transparent to the community and objectively measured. The County reviews data on utility performance, poorly performing feeders, storm after action reports and other data to challenge utilities and regulators to provide resilient, clean power at the lowest possible cost.

Montgomery County has advocated for other improvements to utility services and direct benefits for the community and continues to advocate before the MD-PSC. These include incentive programs to encourage the adoption of clean energy including the EmPower suite of energy efficiency programs which reduces financial barriers to energy efficient equipment and new utility rate structures to remove disincentives to energy efficiency and renewable energy.

MODERNIZING THE UTILTIY GRID

The County is also an active participant in the MD-PSC Grid-of-the-Future proceeding. The effort aims to foster the adoption of new clean energy technologies and offer greater customer choice. Grid modernization efforts aim to ensure that electric distribution systems in Maryland are customer-centered, affordable, reliable, and environmentally sustainable. The Grid-of-the-Future initiative is developing new approaches and regulations that will transform the electric distribution grid, including the incorporation of smart-grid technology, microgrids,

superior government service with the smallest possible environmental footprint

renewable resources, and distributed generation. For more information, visit **www.psc.state.md.us/ transforming-marylands-electric-grid-pc44/**.

As part of the grid of the future proceeding, Montgomery County, including representatives from DGS, OCA, and DOT, have strongly advocated on behalf of a recent proposal before the PSC that would provide incentives for public and private electric vehicle charging stations, including installations in multi-family communities and areas not covered by other initiatives. The proposal was ultimately approved, and the County will remain active before the Commission as the details are finalized.

Other workgroups and efforts which OCA, DGS and Office of Consumer Protection staff have been involved in include efforts to allow consumers better access to their utility data and efforts to create time-of-use rates which give consumers greater choice and cost savings from saving energy during peak times by shifting behaviors to use energy off-peak.

RESILIENT PUBLIC FACILITIES

Montgomery County is one of the first jurisdictions in the country to leverage public private partnerships to foster investment in clean and lower carbon sources of energy in its facilities and actively leverage multiple technologies to ensure continuous operation of its most crucial facilities. In addition to its work at Public Safety Headquarters and the Montgomery County Correctional Facility, DGS has evaluated options for incorporating similar technologies into other crucial and critical facilities, including energy storage pilots and participation in nationwide discussions on new resiliency and energy assurance standards for public facilities and infrastructure.

SIGNATURE INITIATIVE

MICROGRIDS

In FY2017, Montgomery County initiated a process to improve the resiliency of critical facilities by installing microgrids at two key public safety facilities: PSHQ and Montgomery County Correctional Facility (MCCF). Microgrids are local power systems that use clean and renewable energy sources, such as solar panels, combined heat and power systems, batteries, and advanced controllers that include built in cybersecurity to provide electricity, heating, and cooling to a facility. Microgrids allow critical operations to run independently of the power grid during outages by generating their own power on site and islanding from the public grid. Both microgrid projects incorporate combined heat and power units, which use waste heat produced by electricity generation. The heat byproduct is used to make hot water and steam, and heat or cool buildings.

The initiative was prioritized due to the County's history with extended large-scale power outages caused by major storms and the County government's goal of reducing greenhouse gas emissions 80% by 2027. The County leveraged its innovative energy purchasing regulations to create a public private partnership to select private entities including Duke Energy Renewables and Schneider Electric to own and operate the systems for 25 years at no upfront cost to the County. Both projects were completed in 2018. *continued on page 18*

SIGNATURE INITIATIVE

MICROGRIDS (continued from page 17)

PSHQ Actual Generation in One Day

Legend: CHP, PV, Utility, Building Use

Electricity exported to public utility grid.
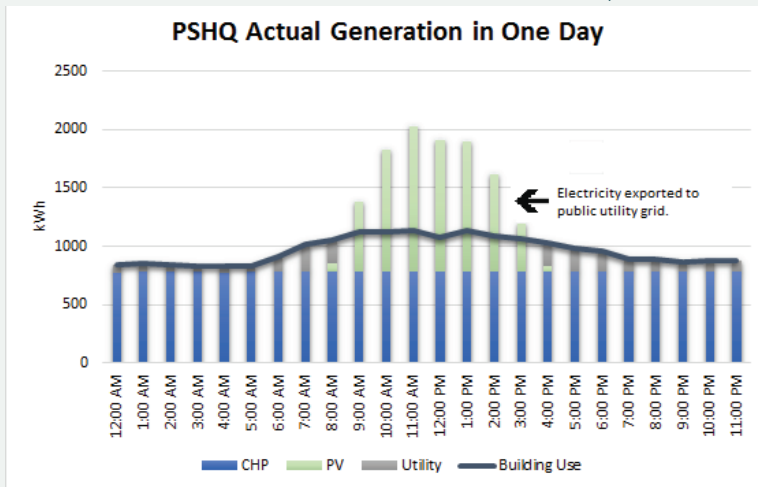
The two on site microgrids combined are expected to provide over 11 million kWh of electricity per year. This is the equivalent of:

- 750 homes powered;
- Removing over 1,400 cars from the road;
- Planting more than 178,000 trees;
- Reducing greenhouse gas emissions by over 6,800 metric tons.

The PSHQ microgrid project achieved PEER Platinum certification administered by the Green Building Certification Institute. Modeled after LEED, PEER stands for Performance Excellence in Electricity Renewal and is the nation's first comprehensive, consumer-centric, data-driven system for evaluating power system performance and recognizing industry leaders for improving efficiency, reliability and overall resiliency. PSHQ is the first facility of its kind to achieve certification from the PEER rating system. Montgomery County also won a 2018 NACo Achievement Award for their microgrid projects.

ENERGY-EFFICIENT

Reuses waste heat from power generation to heat building

RESILIENT

Independent of grid—power stays on regardless of storms

MICROGRID

SUSTAINABLE

Reduces greenhouse gas emissions

COST-EFFECTIVE

Innovative financing through public-private partnership
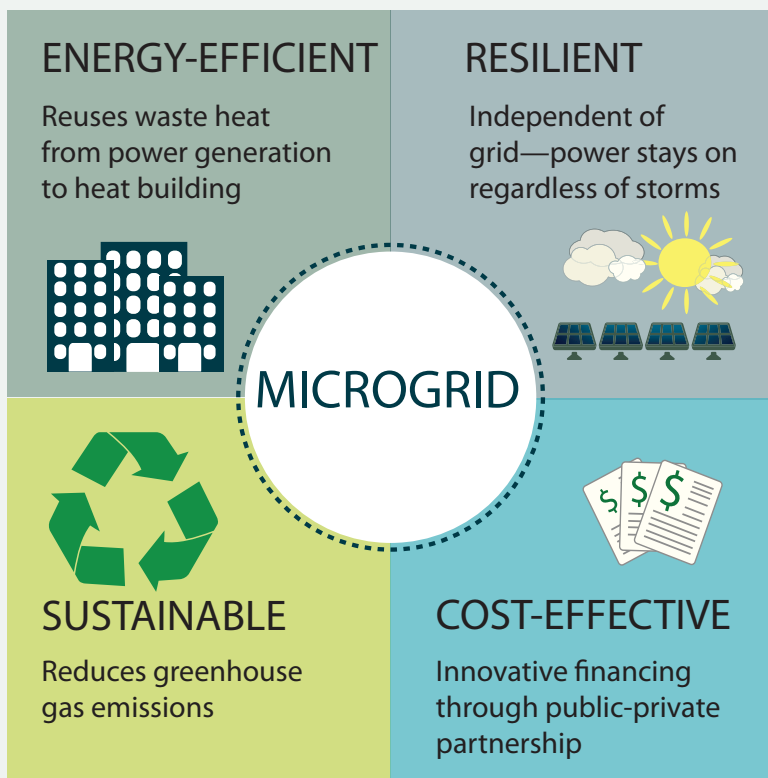
Montgomery County was joined by the Maryland Energy Administration, Maryland Public Service Commission, US Department of Energy, Pepco Holdings, Schneider Electric, Duke Energy Renewables and many others for the activation of the microgrids in October 2018. The County, wanting to help other cities, towns and counties do the same, also created a publicly available master contract which other governments can use.

TRANSPORTATION

County Petroleum Vehicle Fuel Use

**2014
BASELINE:**
5,372,927 Gallons

**2018
3.5% REDUCTION:**
5,182,767 Gallons

**2020 GOAL
20% REDUCTION:**
4,298,342 Gallons

FLEET FUEL CONSUMPTION

Montgomery County's comprehensive Green Fleet Strategy combines sound management, fleet rightsizing, alternative fuels, and innovative technology to achieve a 20% reduction in petroleum consumption by 2020. In the last four years, Green Fleet efforts have saved 190,160 gallons of fuel representing an 3.5% reduction in petroleum use since FY2014.

ELECTRIC AND OTHER LOW EMISSION VEHICLES AND INFRASTRUCTURE

Montgomery County continuously seeks opportunities to green the County fleet and reduce fuel consumption. The County's Fleet:

- is currently 34% alternative fuel vehicles with 1,204 alternate fuel vehicles including EVs, hybrids, E85 vehicles and compressed natural gas (CNG) buses;

- consists of 39 battery electric vehicles and 193 hybrid vehicles;

- replaced 19 gasoline vehicles with hybrid vehicles in FY2018;

- installed idle reduction technology on 15 vehicles in FY2018 with a total of 57 vehicles outfitted with the technology;

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- plans to install idle technology on an additional 125 vehicles which has demonstrated a 12% fuel savings in vehicles that demonstrate a high level of idling;

- currently has 20 EV charging stations with capacity to charge 36 vehicles at 12 County facilities; and

- used County EV charges for over 3,200 charge ups eliminating almost 4,000 gallons of gasoline in FY2018.

Montgomery County Division of Parking Management currently has 16 EV charging stations for public use with capacity to charge 32 vehicles in 14 parking garages in Bethesda, Silver Spring and Wheaton; this includes four new EV charges were installed in parking garages in FY2018. The installations also involve electrical systems upgrades which include state of the art controls and monitoring, improving energy efficiency and allowing usage and savings tracking.

ALTERNATIVE FUELS

The County maintains a fuel neutral approach by selecting fuels to achieve desired emissions reductions. The County has made extensive use of alternative fuels, in addition to electric vehicles. Ultra Low Sulfur Diesel is used instead of biodiesel due to performance issues discovered in biodiesel pilots. The County's primary focus is a fleet that is fuel neutral, fuel efficient, and environmentally sensitive. The County has embraced CNG as an effective, lower emissions alternative to diesel for transit and heavy duty vehicles. Currently 28% of the County's bus fleet is fueled by CNG and the County operates two CNG fueling stations replacing 1.8 million gallons of diesel in FY2018. An additional 17.5% of the County's buses are diesel hybrid electric.

FLEET COMPOSITION AND FUEL EFFICIENCY

Montgomery County maximizes fleet efficiency by ensuring each vehicle is the appropriate size for its intended use. Through an annual Sport Utility Vehicle (SUV) inventory, DGS Division of Fleet Management Services includes information on the type of work currently performed with the vehicle and makes recommendations for a more fuel-efficient replacement vehicle if appropriate. As fleet vehicles are replaced, DGS works with each County department to select the most appropriate and fuel-efficient vehicle for the required function. Currently, the County's fleet includes 415 SUVs (259 for public safety and 156 for administrative uses).

EMPLOYEE TRANSIT

Montgomery County offers employees a number of benefits to reduce the environmental impact of employee commutes to work. The Office of Human Resources (OHR) implemented an official telework policy following a successful pilot of the program. Typically, employees participating telework one day per week or on an as-needed basis reducing miles driven to work and lowering greenhouse gas emissions associated with County operations. In addition to telework options, employees have access to free Ride On bus service, discounted membership in Capital Bikeshare, access to the Commuter Connections regional ridesharing program, and reimbursement for regular public transit use through the County's Get-In program. New in 2018, the County offers employees a new Commuter Transit Flexible Spending Account benefit that allows County employees to save money on taxes by deducting pre-tax income from their paychecks to use for approved transit expenses.

TELECONFERENCES AND WEBINARS

DTS ensures County staff have the tools they need to collaborate and work remotely, including Skype for Business and Office 365 software. DTS also uses the software for its bi-monthly staff meetings, reducing the number of attendees driving to meetings. DTS reports that within six months, County staff organized 1,747 Skype audio and video conferences totaling 1,235 hours. The County IT Help Desk also provides remote access support to handle help tickets and calls, reducing the number of site visits required. Eliminating travel time and fuel use for meetings reduces greenhouse gas emissions related to travel and County operations. Other departments with staff in multiple locations across the County also are replacing in-person meetings and training with online options. The OHR Live Well program uses teleconferencing for monthly Wellness Champion meetings. Libraries uses online training modules that allow library staffers to complete trainings in their respective branches rather than traveling to a central administrative office. Libraries has also modified delivery routes to decrease driving time between stops, save gasoline and reduce greenhouse gas emissions.

BICYCLE COMMUTING

To advance Montgomery County's commitment to bikeable, walkable, transit oriented communities, DOT is currently designing and constructing separated bike lanes in White Flint, Silver Spring and Bethesda to improve bicycle access and encourage bicycle commuting. A new segment from Nebel Street to Rte. 355 will provide bicycle access to White Flint metro, in addition to the previously constructed lanes on both sides of Nebel Street between Randolph Road and Marinelli Road. In Silver Spring, two-way separated bike lanes will be constructed along Second Avenue from Spring Street to Coleville Road and along Wayne Avenue from Colesville Road to Georgia Avenue. Construction for these projects is expected to be completed in spring 2019.

Several Bethesda bikeway projects are also in the design phase. Proposed projects include two way separated bike lanes on the north side of Bethesda Avenue from Woodmont Avenue to Rte. 355 and Willow Avenue to 47th Street, two way separated bike lanes on Woodmont Avenue from Norfolk to Rte. 355, and Montgomery Lane from Woodmont Avenue to Pearl Street. Construction for these projects is anticipated in 2019 and 2020.

In addition to improving safety and access for cyclists, the County makes it easier for people to use bicycles for transportation by installing bikeshare stations.

The County has:

- 83 bikeshare stations with 10 new stations constructed in FY2018;

- piloted dockless bikeshare options in Silver Spring. Dockless bikeshare does not rely on fixed bike stations. Customers use a mobile phone app to locate a nearby bike;

- bike racks at 80% of County parking garages, totaling 85 bike racks with capacity to secure 170 bikes.

Montgomery County also promotes bicycling as a commuting option with outreach and events. In this year's D.C. area Bike to Work Day, Montgomery County DOT sponsored six pit stops and had 1,808 registered cyclists.

SIGNATURE INITIATIVE

BIKE PATHS AND TRAILS

The Maryland Department of Transportation Bikeways Program awarded DOT a grant for the ongoing Needwood Road Bike Path project. Phase 1 was completed in summer of 2017, providing pedestrian and bicycle access from the Intercounty Connector Trail to the Rock Creek Regional Trail, connecting trails within Maryland to Washington DC. This section includes an eight-foot-wide shared use path approximately 3,400 feet long on the south side of Needwood Road. Phase I was awarded a grant of $860,000 for costs associated with the design and construction, accelerating the project timeline. Phase 2 will extend to Colonel Zadok Magruder High School; construction began in summer 2018 and will be completed within one year. At completion, the Needwood Road Bike Path will provide a shared use path of 9,000 feet continuing to Shady Grove metro.

Additionally, the Pepco Trail in Pepco Corridor was made possible by a partnership agreement with Montgomery County and Exelon Corporation. The six-mile natural surface trail connects South Germantown Recreation Park with the Muddy Branch Stream Valley Park in North Potomac. Pepco owns the land and Montgomery Parks constructed the trail; the Mid-Atlantic Off-Road Enthusiasts, a nonprofit for bikers, will maintain the trail. As part of Pepco's merger with Exelon, the company was required to allow trails to be built along its utility lines in the County. The project opened in October 2018.

BUS COMMUTING

DOT makes bus commuting more attractive to County employees and the public. Starting in October 2017, the County began offering Ride On extRa service on Rte. 355. This provides a faster option for bus riders during rush hours. The service makes only 13 stops between the Medical Center Metro Station in Bethesda and the Lakeforest Transit Center in Gaithersburg. The 14 specially branded buses have amenities such as WiFi, USB charging, Infotainment and extra padded seats. The fare is the same as for normal service routes. Ridership

averaged 1,654 daily riders during FY2018 and is averaging 1,839 riders through the first three months of FY2019, exceeding the projected figure of 1,600 rides per day.

Future plans include a Bus Rapid Transit (BRT) System that will operate along U.S. 29. Montgomery County was selected by the U.S. Department of Transportation for a $10 million grant to help fund the 14-mile BRT. The new service will provide a high quality, environmentally-friendly transit alternative to commuters. Ground breaking for the new system occurred in October 2018, and the system is scheduled to be operational in 2020.

SMART PARKING

Montgomery County uses the latest technology at its most popular public parking garages to guide drivers to available spaces, saving driving time and reducing greenhouse gas emissions. In addition, smart parking meters in Bethesda, Silver Spring, and Wheaton use solar power and rechargeable batteries, saving energy and reducing waste. DOT has installed 2,360 smart parking meters.

COMMUNITY ENGAGEMENT AND PARTNERSHIPS

Montgomery County government employees, nearly 10,000 strong, can have an enormous impact on cleaning up pollution and reducing waste through everyday actions at work. Each year, employees across the County engage in recycling, purchasing environmentally preferable goods and services, and donating food, money, and surplus office supplies to community members in need.

COMMUNITY SERVICE

Montgomery County employees give back to the community through charitable donations and volunteer service. The County runs an employee giving campaign each fall, providing an on-line giving platform through a private partner and covers the modest administrative fee so that every dollar employees give goes to the nonprofit organizations they support. In calendar year 2018, County employees gave more than $226,000 to charities through the campaign. In addition to contributions by individual employees, County Departments host charity drives and volunteer service opportunities in partnership with local nonprofit organizations. Partners include a wide variety of nonprofit organizations with missions to improve the environmental, social, and financial health of the community. In 2018, staff from DGS revived a local group home property in need of significant landscaping and outside repair. The team cleaned the property's yard and deck for the residents to enjoy the outdoors. The work was done at a community-based residential home that supports adults with developmental disabilities.

LIVE WELL

Montgomery County's employee wellness program engages employees in eco-friendly behaviors. Virgin Pulse, the wellness program's information and rewards system app, includes daily habit challenges related to sustainability, such as a waste-free lunch challenge and a conserve energy challenge. In FY2018, OHR's Wellness Program worked with County Departments to promote a green and healthy transportation webinar for employees and promoted national car-free day.

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PARKING DAY

Park(ING) Day is an annual, global event that encourages the temporary transformation of parking spaces into enjoyable parklike spots. DOT's celebration of the event in Silver Spring and Bethesda encourages people to rethink the urban landscape, their transportation choices, and how infrastructure can be more transit-oriented, bikeable, and walkable. Montgomery County participants in 2018 included DOT Commuter Services and Maryland National Capital Parks and Planning Commission.

OUTREACH AND EDUCATION

County staff led presentations at several high-profile conferences and webinars over the course of the year to share information and lessons learned about green government operations with other local governments, schools, and businesses across the country. Presentations focused on the County's leadership in renewable energy, improving resiliency of County government facilities and operations with microgrid technology, and financing major energy projects. County staff also conducted tours of the recently completed microgrids and solar projects for various groups at County facilities. At the annual Montgomery County Procurement Forum, DGS, DOT, Department of Environmental Protection (DEP), and Department of Corrections educated consumers and vendors on green County initiatives and green purchasing opportunities. Additionally, DTS and DGS partnered as part of the County's annual DCM Expo to educate County IT managers on the latest trends in energy efficiency.

VIDEOS

The County produced several brief documentary videos to share the story of its green government initiatives. Videos, available at **http://www.montgomerycountymd.gov/dgs-oes/MediaVideo.html,** feature the LED lighting upgrade and safety improvements at Brookville Vehicle Maintenance Facility, solar canopies over parking at Holiday Park Senior Center, green building features of the White Oak Community Recreation Center, and the DGS Facilities Energy Management team.

SIGNATURE INITIATIVE

WORK GREEN

Work Green is an employee engagement program piloted by DGS and DEP to encourage staff to take eco-friendly actions at work and at home. The program engages employees in taking simple actions related to quarterly themes, such as reduce waste, save energy, and buy green with educational posters, newsletters, and events related to each theme. Green teams customize the program for their own departments and divisions. DEP, with support from DGS, started the first employee green team under the Work Green program. In FY2018, the group began a quarterly newsletter, held a brown bag on green commuting options in partnership with DOT, and celebrated America Recycles Day by maximizing reuse and recycling of office supplies during a clean-out event. The DEP Green Team has also established departmental environmental policies and green purchasing criteria, expanded office recycling efforts, and created "Green Gratitude" cards, which employees can use to express appreciation for leadership in sustainable actions.

WATER

WATER CONSERVATION

Montgomery County continues to audit high water use buildings to identify opportunities for savings through installation of high efficiency fixtures and other improvements. In addition, water efficiency improvements are included as one of the measures used in energy performance contracting to achieve improvements in energy efficiency of older facilities. In the Executive Office Building, the County has retrofitted 90 existing sink faucets with low flow faucet aerators in FY2018, reducing annual water use and costs. Installing these low flow aerators is expected to save approximately $15,000 annually after payback for the investment of the project. County staff are verifying all other faucets have similar efficient equipment.

POLLUTION PREVENTION

When rain and snow melt moves across roofs, parking lots, streets and other hard surfaces, it picks up oil, heat, and other pollutants on its way to local streams and rivers. This stormwater moves quickly over hard surfaces and may contribute to flooding.

Montgomery County treats all stormwater in new construction according to state and County regulations, capturing 90% of the average annual rainfall and removing 80% of pollutants. In addition to treating stormwater on new construction, the County installs new stormwater treatment structures on older facilities that were not previously being treated to today's standards. Treatment structures include installing rain gardens, bioswales, and other techniques on the grounds of County facilities through the RainScapes Program and the Capital Improvements Program, as well as using street rights of way for treatment through the Green Streets program.

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As of FY 2018, Montgomery County has treated over, 38 acres[7], the equivalent of almost 30 football fields, of impervious surfaces in older neighborhoods (built before current stormwater regulations were in place) by installing stormwater management facilities on County property.

To reduce pollutants washing into local streams and rivers, DOT washes and degreases parking spaces in all 21 garages twice per year to remove oil, gasoline and other residue. The washdown water goes through a sand filtration system to remove contaminants and particulates. Contaminants are trapped in the filter system, and processed water can safely go into the storm drain system. DEP also cleans porous pavement on County facilities, reassuring ongoing performance.

GREEN STREETS

Green Streets are roadway landscaping designs built in the grassy area along a street which is County-owned space and public right of way. Green Streets are targeted toward older neighborhoods built with minimal stormwater controls. This improves biodiversity by attracting birds and other pollinators and decreases flood risks.

In a typical Green Street project, stormwater runoff from the roadway is diverted into an inlet opening in the curb, and filtered through a mixture of highly permeable soils (sand, mulch, compost). The water is stored in an underlying gravel layer before percolating into the groundwater or entering into the storm drain system. Runoff has an opportunity to cool down while the plants help break down and absorb pollutants. Green Street systems are designed to drain any standing water before mosquitos can breed.

In 2018, DEP replanted and refurbished 60 sites for improvement of existing plant arrangements on Green Streets. By integrating an evergreen component, ground cover layer, and native plants, maintenance costs are expected to reduce while achieving four seasons of interest and bringing habitat benefits. This initiative is planned to be expanded in 2019 including larger sites with higher maintenance costs.

STORMWATER MANAGEMENT FACILITY MAINTENANCE

Stormwater management facilities use plants and infiltration to treat stormwater, also reducing flooding, removing pollution, recharging the groundwater supply, protecting local stream banks from erosion, and protecting public health. They require regular maintenance to ensure they function properly. DEP inspects and maintains more than 1,400 stormwater management structures on County property, an increase of 300 structures since FY2017. Stormwater ponds are inspected and maintained every three years. Environmental site design facilities such as rain gardens, conservation landscapes, pervious pavement, and green roofs are maintained monthly with weeding, trash removal, plant and mulch replacement, and sediment removal as needed.

Montgomery County maintains more than 1,400 stormwater management structures on County properties.

7   Does not include acres treated through the green Streets program.

WASTE REDUCTION

Montgomery County continues to reduce paper waste from government operations, eliminating more than 7.4 million sheets of paper waste in FY2018. The majority of the paper reductions quantified in this report are from the County's state-of-the-art print management system and from the Department of Permitting Services' (DPS) conversion to an electronic permit application and review system called ePlans. In FY2018, the County's print management system eliminated over 1 million sheets of paper, totaling over 3.1 million sheets of paper since FY2016. In FY2018, DPS processed 23% of permit applications electronically, saving more than 6.3 million sheets of paper. Switching to ePlans has saved 16.7 million sheets of paper since FY2014 with a total of 34,872 ePlans processed.

Paper Saved

4.4 million sheets of paper saved	6.7 million sheets of paper saved	7.4 million sheets of paper saved
FY 2016	FY 2017	FY 2018

Total of 2,700 trees saved since FY2016
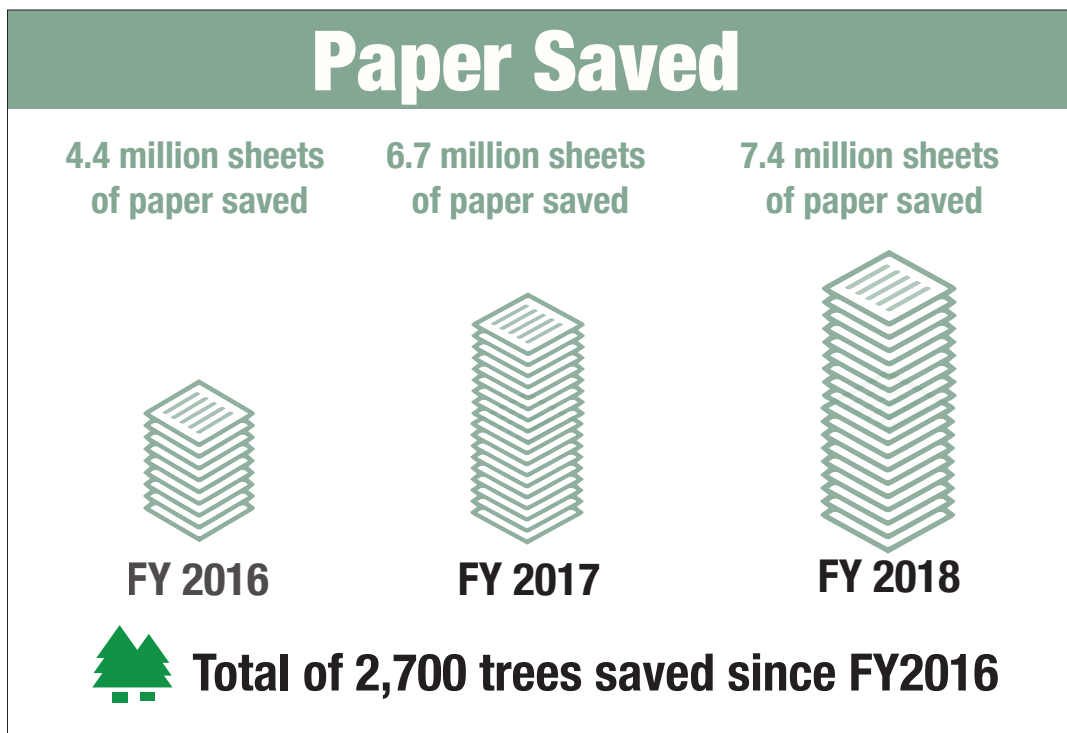
In addition, departments across the County are implementing waste reduction initiatives.

Montgomery County Public Libraries

- eliminated the use of printed mailers to customers replacing them with telephone or text notifications eliminating approximately 1,000 postcards per week. Savings in paper and print costs are estimated at $13,000 annually.

- reduced the use of paper using SharePoint for submittal of continuing hours training certificates. Training evaluations are also completed online, along with implementation of other online processes and forms, which further reduces waste.

The Department of Finance

- is replacing paper forms for items such as property tax refunds and credit applications with electronic forms submitted online. Full implementation is expected to be complete by Fall 2019 and greatly reduce paper waste.

- implemented new software which allows for automation and management of working papers, files, and statements. This integrated process has increased efficiencies and resulted in reduction in paper and other use of material supplies such as ink and binders.

ELECTRONICS RECYCLING

Working communications devices, including cell phones, tablets, and mobile computers are critical to police operations. Verizon replaces these devices for free and broken devices are recycled through buyback programs. The Police Department recycled 449 old or broken devices in FY2018, bringing in approximately $32,000 to the County.

2018 Recycled **1,600** PCs, laptops & tablets **100%** of end of life computer equipment

DTS recycles 100% of computer equipment at end of life, including 1,600 PCs, laptops, and tablets in FY2018.

County Vehicle Recovery Section

VEHICLE REUSE AND RECYCLING

The County's Vehicle Recovery Section (VRS) with the Police Department removes abandoned, unregistered, and junk vehicles throughout the County. In FY18, 2,018 cars and trucks were towed to VRS and not reclaimed; of those, 68% were sold to scrap processors. Parts including batteries, catalytic converters, starters, alternators and aluminum rims were sold for reuse or recycled. The rest of the vehicles were sold for reuse. The vast majority of these vehicles are retitled for use on our highways. For example, one frequent buyer reconditions care for use by law enforcement in Virginia for training scenarios. In all, VRS recycled approximately 3,500 tons of metal in FY2018 through scrap processors and sale for reuse. An additional 850 items, along with 80 bicycles, were sold or recycled through removal of property from auction vehicles and recovery of abandoned items. These items are sold through a bidding process and remaining unsold items are sent to recycling facilities via PropertyRoom.com. The VRS continually seeks opportunities to increase and enhance recycling efforts.

2018 **3,500 tons** recycled metal from cars

FOOD COMPOST

DEP has operated a pre-consumer food scrap recycling collection demonstration project at the Executive Office Building cafeteria since November 2011. The demonstration project diverted approximately 14.5 tons of food scraps from the waste stream each year. In 2017, DEP added similar programs at the Council Office Building and the Public Safety Headquarters Building, diverting more than 25 tons of food scraps each year. The program has diverted 136 tons of food scraps since its inception, enough to fill 10 garbage trucks. DEP monitors the food scrap recycling collection programs and provides training to new County employees and contractors, as well as refresher trainings to ensure that employees and contractors are familiar with the requirements of the program.

RECYCLING

In FY2017, DEP staff improved recycling stations near the elevators and in break rooms throughout the County's 15 story Executive Office Building in Rockville. Clearly labeled recycling bins and educational posters showing what materials belong in each bin are expected to improve recycling rates. In addition, DEP continues to provide training and educational materials for County employees and contractors to increase the amount of recyclable materials collected at all County facilities. DEP and DGS continue to work to improve the accuracy of recycling data in our buildings and to increase the facility recycling rates by eduction and outreach campaigns.

The Department of Corrections has added new recycling stations at the Detention Center and Correctional Facility. In order to increase recycling efforts, the stations have three color coded bags for trash, plastics and paper; bags are picked up by designated staff to ensure recyclable materials are in the proper bins.

BIODIVERSITY AND GREEN PURCHASING

BIODIVERSITY

Montgomery County improves biodiversity by conserving forests, planting native vegetation, implementing pollution prevention measures, and using eco-friendly landscaping on County-owned property.

Native plants are lower maintenance and can slow and filter pollutants from stormwater while also providing natural habitat for pollinators such as butterflies, hummingbirds, and bees.

Montgomery County currently has over 14 acres (the equivalent of ten football fields) of vegetated roofs on its government buildings that improve water quality of streams, prevent flooding, and provide habitat for pollinators and birds.

TREE PLANTING

Montgomery County is working to expand the tree canopy across the County's facilities. With the number of urban trees declining, the County seeks to reverse this trend. Trees provide shade and reduction in greenhouse gas emissions and can also reduce air conditioning needs and save energy used for heating when properly placed around a building. Additionally, trees improve air quality, increase biodiversity and reduce pollution in stormwater. Trees were planted at Kensington Park Library in FY2018, with tree plantings at more facilities planned for in FY2019 and FY2020.

PRINT SHOP

The Montgomery County Print Shop is an environmentally conscious in its operations and purchasing of supplies. The Print Shop purchases paper from trees harvested under sustainable forest initiatives and uses the most energy efficient printing equipment including the high efficiency digital press. DGS replaced the Xerox 1000 in the Print Shop in 2017 with the Xerox iGen 5 digital press at no additional cost to the County. More than 80% of the waste the printer produces can be reused and the digital press can be recycled or remanufactured at end of life. The technology uses non-toxic toners, generating no hazardous waste. Digital press technology is an environmentally responsible choice with great print quality and speed, improving print shop efficiency. The Print Shop also uses 30% post-consumer content recycled paper.

RECYCLED MATERIALS

Montgomery County purchased more than $6 million worth of products containing recycled materials in FY2018:

- 38% of the paper and paper products purchased by the County contained at least 25% recycled content;

- $397,044 worth of recycled office supplies purchased through a contract with a County small business;

- The County executed a contract for athletic resurfacing systems maintenance and construction using recycled materials;

- Used an average of 21% recycled materials, 45% certified sustainably harvested wood, and 28% locally sourced or manufactured materials in new construction between FY2012 and FY2018.

GREEN PURCHASING

Purchasing reused, recycled, and energy efficient products can reduce waste, conserve energy and water, protect natural resources, and alleviate climate change. The Office of Procurement encourages green purchasing by providing educational information to employees through the County's internal Intranet site, coordinating major contracts to purchase green, and ensuring green options are easily searchable for employees purchasing office supplies. In addition, the Office of Procurement collaborates with other regional jurisdictions on trends and best practices related to recycling and environmentally friendly products. Individual departments also provide employees information on green purchasing options. For example, Montgomery County Public Libraries are making it easier for library employees to choose green items by including information about how to purchase reused and recycled options on their redesigned Intranet site. Electronics throughout County government facilities, including all printers and copiers, PCs, laptops, and tablets are independently verified as energy efficient with ENERGY STAR qualification and Electronic Product Environmental Assessment Tool (EPEAT) certification. ENERGY STAR qualification means the equipment is among the most energy efficient options available and EPEAT certification addresses environmental sustainability throughout a product's life cycle.

SIGNATURE INITIATIVE

DTS DEVICE CLIENT MANAGEMENT (DCM) PROGRAM

The Department of Technology Services' DCM program ensures that all County computers are purchased from manufacturers that demonstrate leadership in a number of eco-friendly manufacturing practices. DCM selected manufacturers must strive to eliminate environmentally-sensitive substances from products wherever possible. Embracing green PCs is a smart approach that saves money on reduced energy costs, enables new business processes and behaviors that are more productive and energy efficient. It also supports larger sustainability goals of reducing GHG emissions and carbon footprint. Studies show that IT enabled solutions may cut annual CO2 emissions by up to 15% worldwide by 2020.

A 'green' computer is one that is built from eco-friendly materials, features low power consumption and Computer Power Management (CPM) capabilities. It has fewer and smaller component parts and generates less heat than previous models and is packaged with recyclable materials. DCM, whenever possible, purchases green PCs.

In the monitors deployed by DCM, 85% of the weight of the plastics used in the mechanical parts comes from recycled plastic material, with 65% of the plastic in the monitor comprising post- consumer content (material previously used in products such as home appliances, computers, vehicles and office equipment). By weight, over 25% of the total plastics used in these monitors are post-consumer recycled content plastics (per EPEAT™ calculation guidance).

DCM ensures that all end-of-life computers are safely disposed in an environmentally friendly manner. All removed computers are sanitized of County data and disposed of with a PC recycler or through refurbish and repurpose companies that offer inexpensive computing access to underprivileged families and communities. In FY2018, 892 new systems were purchased through the DCM program.

DATA TABLES

1. **Greenhouse Gas Emissions (GHG) in Metric Tons (MTCO2e) from Montgomery County government operations (facilities and fleet)[1].**

Fiscal Year	GHG from Facilities (metric tons)	GHG from Fleet (metric tons)	Total GHG from Facilities and Fleet without Offsets (metric tons)	GHG Reductions from Renewable EnergyCertificates (metric tons)	Total GHG from Facilities and Fleet with Offsets (metric tons)	County Social Cost of Carbon Impact with Offsets
2011	93,847	55,335	149,182	(33,174)	116,008	$3,596,250
2012	100,218	59,607	159,825	(32,903)	126,922	$3,934,593
2013	100,017	60,916	160,933	(104,042)	56,891	$1,763,634
2014	97,262	56,021	153,282	(88,067)	65,215	$2,021,654
2015	99,224	60,346	159,571	(73,762)	85,809	$3,089,111
2016	98,221	63,463	161,684	(194,804)	(33,120)	$(1,192,332)
2017	101,444	61,416	162,860	(194,804)	(31,944)	$(1,149,980)
2018	88,370	64,881	153,251	(194,804)	(41,554)	$(1,495,927)

1 Facilities data is based on electricity, natural gas, and building fuel consumption based on utility bill data for all County-owned facilities as well as leased spaces that house County staff and operations, and County owned and operated streetlights and traffic signals. Fleet data is based on petroleum, natural gas, and electricity consumption for all County vehicles, including cars, trucks, buses and off-road and industrial equipment. Renewable energy certificates are purchased to ensure renewable energy from wind, solar and other renewable sources are added to the grid and used by another party to offset the greenhouse gas emission from fossil fuels.

2 Data is different from FY17 Green Government Annual Report as the FY18 data method for calculating GHG emissions is aligned with the County's most recent greenhouse gas inventory conducted by the Metropolitan Washington Area Council of Governments.

2. **Energy Use Intensity Across County Buildings by Funding Source and Department[3].**

NDA Departments[4]	FY15 Annual Energy Use Intensity (kBtu/SqFt)	FY16 Annual Energy Use Intensity (kBtu/SqFt)	FY17 Annual Energy Use Intensity (kBtu/SqFt)	FY18 Annual Energy Use Intensity (kBtu/SqFt)
Circuit Court	55.78	49.60	53.68	55.28
Correction and Rehabilitation	85.52	72.61	73.67	66.42
Elections	44.47	39.81	62.61	49.98
Fire and Rescue Services	105.83	92.35	86.15	106.42
General Services	15.77	14.93	17.68	40.41
Health and Human Services	69.23	77.52	73.33	77.90
Leased Buildings	56.69	38.04	87.46	49.31
Libraries	86.64	92.11	92.90	98.71
Miscellaneous Buildings	21.41	29.92	30.54	41.40
General Government[5]	143.32	137.54	123.90	123.43
Police	103.11	115.37	120.96	151.21
Sheriff's Office	98.98	83.87	83.62	86.35
Technology Services	293.41	273.50	271.75	329.58
Theater and Arts	162.99	157.37	169.91	162.68
NDA Average	**85.20**	**81.06**	**83.05**	**94.41**
Tax Supported Departments				
Recreation	148.21	136.36	144.91	151.62
Transportation	13.35	13.28	6.58	5.01
Tax Supported Average	**75.07**	**70.65**	**68.34**	**73.18**
Non-Tax Supported Departments				
DEP (Solid Waste Disposal)	46.75	36.14	77.53	101.02
DGS (Motor Pool)	235.53	217.54	275.13	264.83
Liquor	17.39	32.27	73.27	79.79
Transportation (Parking Lot District)	10.17	9.51	10.11	10.01
Non-Tax Supported Average	**16.07**	**15.70**	**19.13**	**19.21**
County-wide Average Energy Use Intensity kBtu/SqFt	**53.46**	**50.59**	**53.70**	**57.44**

3 Energy Use Intensity is the amount of energy in kBtu per square foot (kBtu/SqFt). The data set from FY17 Green Government Annual Report is different for FY18 as the FY18 square footage has been reallocated across NDA, Tax Supported and Non-Tax Supported Departments.

4 NDA or Non Departmental Accounts include all departments that are fully funded through the County's general budget through taxpayer dollars. Tax-supported are departments that are funded partially through tax dollars and partially through program fees. Non-Tax Supported include departments that are fully funded by program fees.

5 Includes administrative offices and other buildings that house multiple departments or County government-wide functions.

3. Energy Performance Benchmarking[6]

County Building	FY17 ENERGYSTAR Score	FY18 ENERGYSTAR Score	ENERGYSTAR Score % Change	FY17 Site EUI (kBtu/ft²)	FY18 Site EUI (kBtu/ft²)	Site EUI (kBtu/ft²) % Change
MID-COUNTY DHHS BUILDING	97	99	2.10%	27.8	27.7	-.40%
HHS ADMINISTRATIVE OFFICES	99	98	-1.00%	37.9	45.5	20.10%
JUDICIAL CENTER	37	31	-16.20%	67.5	73.9	9.50%
GREY COURTHOUSE	43	39	-9.30%	71.6	71.2	-.06%
HOLIDAY PARK SENIOR CENTER[7]	N/A	N/A	N/A	73.3	95.3	30%
JUDICIAL CENTER ANNEX	21	22	4.80%	134	134	0.0%
UPCOUNTY REGIONAL SERVICES CENTER	72	69	-4.20%	57.6	62.7	8.90%
PUBLIC SAFETY HEADQUARTERS	28	40	42.90%	197.1	183.2	-7.10%
EXECUTIVE OFFICE BUILDING	10	12	20.0%	120.1	115.5	-3.80%
COUNCIL OFFICE BUILDING	2	3	50.0%	168.9	160.3	-5.10%
ROCKVILLE LIBRARY[7]	N/A	N/A	N/A	99.3	92.8	-2.90%
GAITHERSBURG LIBRARY[7]	N/A	N/A	N/A	60.1	56.0	-6.80%
GERMANTOWN LIBRARY[7]	N/A	N/A	N/A	137.9	98.5	-20.40%
STRATHMORE CONCERT HALL[7]	N/A	N/A	N/A	186.8	173.9	-6.90%
WHITE OAK CRC[7]	N/A	N/A	N/A	26.6	23.5	-11.70%

6　The Energy Performance Benchmarking table reports data on a fiscal year basis, consistent with County planning and budgeting. In addition, the County submits benchmarking data to the Department of Environmental Protection on a calendar year basis in compliance with the County's Building Energy Benchmarking and Transparency Law. Additional information on benchmarking and the County's Benchmarking Law are available at **https:www.montogmerycountymd.gov/green/energy/benchmarking.html.**

7　Building type is not eligible to receive an ENERGY STAR score.

4. Planned Energy Efficiency Projects (FY19–FY21)[8]

Facility Name	Fiscal Year Expected Completion	Project Type	Funding Source	Estimated Annual Cost Savings ($)	Annual GHG Emissions Reductions (MTCO$_2$e)	Annual Social Cost of Carbon[9]
Brookeville- Maintenance (Phase II)	FY19	Lighting Upgrade (Interior & Exterior)	CIP, Operating, and Other Sources	$18,146	107	$3,850
Piccard Office Building	FY19	Building Envelope, HVAC & Lighting Upgrades, Water Conservation	EPC	$181,853	496	$17,856
Garage 11	FY19	Lighting Upgrade	CIP, Operating, and Other Sources	$12,000	66	$2,393
Garage 11A	FY19	Lighting Upgrade	CIP, Operating, and Other Sources	$4,000	21	$764
Garage 35	FY19	Lighting Upgrade	CIP, Operating, and Other Sources	$20,000	113	$4,058
Garage 36	FY19	Lighting Upgrade	CIP, Operating, and Other Sources	$84,000	492	$17,694
Garage 40	FY19	Lighting Upgrade	CIP, Operating, and Other Sources	$19,000	113	$4,074
Garage 42	FY19	Lighting Upgrade	CIP, Operating, and Other Sources	$51,400	293	$10,540
Garage 47A	FY19	Lighting Upgrade	CIP, Operating, and Other Sources	$27,000	160	$5,744
Garage 57	FY19	Lighting Upgrade	CIP, Operating, and Other Sources	$35,400	204	$7,327
Garage 02	FY19	Lighting Upgrade	CIP, Operating, and Other Sources	$38,000	225	$8,096
Garage 04	FY19	Lighting Upgrade	CIP, Operating, and Other Sources	$24,000	145	$5,219
Garage 07	FY19	Lighting Upgrade	CIP, Operating, and Other Sources	$34,000	193	$6,950
Garage 58	FY19	Lighting Upgrade	CIP, Operating, and Other Sources	$84,000	535	$19,248
Public Safety Headquarters	FY19	Cooling Tower Upgrade, HVAC System Recommissioning & Improvements	CIP, Operating, and Other Sources	TBD	TBD	TBD
Miscellaneous Small Facilities [e.g., Fire Stations]	FY19	Lighting Upgrade	CIP, Operating, and Other Sources	TBD	TBD	TBD
Multiple Facilities	FY19	Chiller Sub-metering	CIP, Operating, and Other Sources	TBD	TBD	TBD
Bethesda Depot	FY19	Lighting Upgrade	CIP, Operating, and Other Sources	TBD	TBD	TBD
Germantown Indoor Swim Center	FY19	Boiler Upgrade	CIP, Operating, and Other Sources	TBD	TBD	TBD
Holiday Park Senior Center	FY19	Boiler Upgrade	CIP, Operating, and Other Sources	TBD	TBD	TBD
Kensington Fire Station #5	FY19	Building Envelope Repair	CIP, Operating, and Other Sources	TBD	TBD	TBD
Kidstop Childcare Center	FY19	Building Envelope Repair	CIP, Operating, and Other Sources	TBD	TBD	TBD
Public Safety Headquarters	FY19	Air Handling Unit	CIP, Operating, and Other Sources	TBD	TBD	TBD
Silver Spring Fire Station #19	FY19	Building Envelope Repair	CIP, Operating, and Other Sources	TBD	TBD	TBD
Upcounty Regional Services Center	FY19	Building Envelope Repair	CIP, Operating, and Other Sources	TBD	TBD	TBD

Facility Name	Fiscal Year Expected Completion	Project Type	Funding Source	Estimated Annual Cost Savings ($)	Annual GHG Emissions Reductions (MTCO$_2$e)	Annual Social Cost of Carbon[9]
Hillandale Fire Station #24	FY19	HVAC/ Electrical Systems Upgrade	CIP, Operating, and Other Sources	TBD	TBD	TBD
PSCC	FY19	HVAC Upgrade	CIP, Operating, and Other Sources	TBD	TBD	TBD
Council Office Building	FY19	Building Envelope, HVAC & Lighting Upgrades, Water Conservation	EPC	$ 178,384	985	$35,460
Longbranch Outdoor Pool	FY20	Lighting, HVAC and Controls Upgrade	EPC	$3,000	5	$229
Street Lights (DOT)- Phase I	FY20	Lighting Upgrade	CIP, Operating, and Other Sources	$455,000	2,279	$95,718
Garage 49	FY20	Lighting Upgrade	CIP, Operating, and Other Sources	$100,000	506	$21,267
Garage 31	FY20	Lighting Upgrade	CIP, Operating, and Other Sources	$60,000	362	$15,208
Garage 05	FY20	Lighting Upgrade	CIP, Operating, and Other Sources	$22,000	131	$5,495
Garage 09	FY20	Lighting Upgrade	CIP, Operating, and Other Sources	$19,300	109	$4,592
Garage 55	FY20	Lighting Upgrade	CIP, Operating, and Other Sources	$34,900	201	$8,439
Garage 60	FY20	Lighting Upgrade	CIP, Operating, and Other Sources	$57,000	389	$16,337
Garage 61	FY20	Lighting Upgrade	CIP, Operating, and Other Sources	$40,000	255	$10,693
Garage 16	FY20	Lighting Upgrade	CIP, Operating, and Other Sources	$5,300	30	$1,277
Garage 45	FY20	Lighting Upgrade	CIP, Operating, and Other Sources	$10,800	59	$2,495
Rockville Core (Grey Courthouse)	FY20	Major Renovation	CIP, Operating, and Other Sources	TBD	TBD	TBD
Kensington (Aspen Hill) Fire Station #25	FY20	Major Renovation	CIP, Operating, and Other Sources	TBD	TBD	TBD
Colesville Health Center	FY20	HVAC Upgrade	CIP, Operating, and Other Sources	TBD	TBD	TBD
Kennedy Shriver Aquatic Center	FY20	Thermal Envelope	CIP, Operating, and Other Sources	TBD	TBD	TBD
Germantown Library	FY20	Lighting, HVAC and Controls Upgrades	EPC	$57,000	339	$14,238
Liquor Warehouse	FY20	Lighting, HVAC and Controls Upgrades	EPC	$65,000	491	$20,622
Long Branch Senior Center	FY20	Lighting, HVAC and Controls Upgrades	EPC	$30,000	165	$6,930
Longbranch Library	FY20	Lighting, HVAC and Controls Upgrades	EPC	$23,000	123	$5,166
Marilyn J. Praisner CRC	FY20	Lighting, HVAC and Controls Upgrades	EPC	$23,000	109	$4,578
Martin Luther King Jr. Swim Center	FY20	Lighting, HVAC and Controls Upgrades	EPC	$119,000	678	$28,476
Rockville Memorial Library	FY20	Lighting, HVAC and Controls Upgrades	EPC	$74,000	383	$16,086
Street Lights (DOT)- Phase II	FY21	Lighting Upgrade	CIP, Operating, and Other Sources	$455,000	2,279	$95,718
Total FY19-FY21				**$2,446,337**	**13.041**	**$522,838**

5. Energy Efficiency Projects Completed in FY18 (Current)[8]

Facility Name	Fiscal Year Completed	Project Type	Funding Source	Estimated Annual Cost Savings ($)	Annual GHG Emissions Reductions (MTCO$_2$e)	Reduction in Social Cost of Carbon[9]
Kensington Park Library	FY18	Building Controls, HVAC & Lighting Upgrades, Water Conservation	EPC	$7,489	45	$1,620
Longwood CRC	FY18	Building Controls, HVAC & Lighting Upgrades, Vending Controls, Water Conservation	EPC	$12,945	72	$2,592
Pre-Release Center	FY18	Building Controls, HVAC & Lighting Upgrades, Variable Frequency Drives, Vending Controls, Water Conservation	EPC	$183,317	462	$16,632
Silver Spring Health Center	FY18	Building Controls, HVAC & Lighting Upgrades, Variable Frequency Drives, Vending Controls, Water Conservation	EPC	$24,923	111	$3,996
Twinbrook Library	FY18	Building Envelope, HVAC & Lighting Upgrades, Water Conservation	EPC	$4,901	30	$1,080
Aspen Hill Library	FY18	Lighting Upgrade	CIP, Operating, and Other Sources	$2,417	16	$576
Little Falls Library	FY18	Lighting Upgrade	CIP, Operating, and Other Sources	$603	4	$144
Quince Orchard Library	FY18	Lighting Upgrades	CIP, Operating, and Other Sources	$1,259	8	$288
White Oak Library	FY18	Lighting Upgrades	CIP, Operating, and Other Sources	$1,957	1	$36
Connie Morella Library (Bethesda)	FY18	Lighting Upgrades	CIP, Operating, and Other Sources	$2,485	14	$504
Davis Library	FY18	Lighting Upgrades	CIP, Operating, and Other Sources	TBD	TBD	TBD
Total FY18				**$242,296**	**763**	**$27,468**

6. Energy Efficiency Projects Completed in FY13-FY17 (Previous)[8,10]

Facility Name	Fiscal Year Completed	Project Type	Funding Source	Estimated Annual Cost Savings ($)	Annual GHG Emissions Reductions (MTCO$_2$e)	Reduction in Social Cost of Carbon[9]
AFI/ Blackbox	FY17	Lighting Upgrade	CIP, Operating, and Other Sources	$2,173	12	$432
Brookeville-Maintenance (Phase I)	FY17	Lighting Upgrade (Interior)	CIP, Operating, and Other Sources	$32,308	199	$7,164
Executive Office Building (11th Floor)	FY17	Lighting Upgrade	CIP, Operating, and Other Sources	$1,511	9	$324
Strathmore Concert Hall	FY17	Lighting Upgrade and Chiller Replacement	CIP, Operating, and Other Sources	$184,772	1045	$37,620
Total FY17				**$220,764**	**1265**	**$45,540**
Aspen Hill Library	FY16	Lighting Upgrade	CIP, Operating, and Other Sources	$2,641	16	$576
Damascus Library	FY16	Lighting Upgrade	CIP, Operating, and Other Sources	$6,955	43	$1,548
Detention Center	FY16	Lighting Upgrade	CIP, Operating, and Other Sources	$15,461	95	$3,420
Garage 11	FY16	Lighting Upgrade	CIP, Operating, and Other Sources	$60,222	358	$12,888
Germantown Indoor Swim Center	FY16	Lighting Upgrade	CIP, Operating, and Other Sources	$9,125	56	$2,016
Imagination Stage	FY16	Lighting Upgrade	CIP, Operating, and Other Sources	$16,293	97	$3,492
North Potomac CRC	FY16	Chiller Upgrade	CIP, Operating, and Other Sources	$6,283	37	$1,332
Potomac CRC	FY16	Lighting Upgrade	CIP, Operating, and Other Sources	$14,026	86	$3,096
Potomac Library	FY16	Lighting Upgrade	CIP, Operating, and Other Sources	$3,747	23	$828
Public Safety Headquarters	FY16	Lighting Upgrades	CIP, Operating, and Other Sources	$5,812	36	$1,296
Scotland NRC	FY16	Chiller Upgrade	CIP, Operating, and Other Sources	$1,185	7	$252
Strathmore Concert Hall (Mansion)	FY16	ENERGY STAR Appliances	CIP, Operating, and Other Sources	$60	0	$-
Total FY16				**$141,810**	**854**	**$30,744**
Halfway House for Women	FY15	ENERGYSTAR Appliances	CIP, Operating, and Other Sources	$19	0	$-
HHS Administration Offices	FY15	Building Controls, High-Efficiency Transformers, HVAC and Lighting Upgrade, Vending Controls	EPC	$222,159	1132	$40,752
Rothgeb Worker Center	FY15	Lighting Upgrade	CIP, Operating, and Other Sources	$5,116	32	$1,152
Total FY15				**$227,294**	**1164**	**$41,904**
Cabin John Liquor	FY14	Lighting Upgrade	CIP, Operating, and Other Sources	$6,344	38	$1,178
Garage 02	FY14	Lighting Upgrade	CIP, Operating, and Other Sources	$68,818	410	$12,710
Garage 07	FY14	Lighting Upgrade	CIP, Operating, and Other Sources	$81,148	483	$14,973
Hampden Lane Liquor	FY14	Lighting Upgrade	CIP, Operating, and Other Sources	$1,670	10	$310

Facility Name	Fiscal Year Expected Completion	Project Type	Funding Source	Projected Annual Cost Savings ($)	Annual GHG Emissions Reductions (MTCO$_2$e)	Reduction in Social Cost of Carbon[9]
Kensington Liquor	FY14	Lighting Upgrade	CIP, Operating, and Other Sources	$4,065	24	$744
Kingsview Liquor	FY14	Lighting Upgrade	CIP, Operating, and Other Sources	$5,318	32	$992
Leisure World Liquor	FY14	Lighting Upgrade	CIP, Operating, and Other Sources	$2,810	17	$527
Montrose Liquor	FY14	Lighting Upgrade	CIP, Operating, and Other Sources	$2,089	12	$372
Muddy Branch Liquor	FY14	Lighting Upgrade	CIP, Operating, and Other Sources	$3,610	21	$651
Olney Liquor	FY14	Lighting Upgrade	CIP, Operating, and Other Sources	$9,647	57	$1,767
Potomac Liquor	FY14	Lighting Upgrade	CIP, Operating, and Other Sources	$2,908	17	$527
Rockville Liquor	FY14	Lighting Upgrade	CIP, Operating, and Other Sources	$6,169	37	$1,147
Silver Spring Liquor	FY14	Lighting Upgrade	CIP, Operating, and Other Sources	$2,355	14	$434
Strathmore Concert Hall	FY14	Variable Frequency Drives	CIP, Operating, and Other Sources	$29,803	178	$5,518
Walnut Hill Liquor	FY14	Lighting Upgrade	CIP, Operating, and Other Sources	$2,354	14	$434
Westwood Liquor	FY14	Lighting Upgrade	CIP, Operating, and Other Sources	$4,043	24	$744
Wheaton Liquor	FY14	Lighting Upgrade	CIP, Operating, and Other Sources	$2,080	12	$372
White Oak Library	FY14	Chiller Upgrade	CIP, Operating, and Other Sources	$2,939	17	$527
Total FY14				**$238,170**	**1417**	**$43,927**
Council Office Building-Parking Garage	FY13	Lighting Upgrade	CIP, Operating, and Other Sources	$28,764	171	$5,301
Garage 09	FY13	Lighting Upgrade	CIP, Operating, and Other Sources	$34,632	206	$6,386
Garage 45	FY13	Lighting Upgrade	CIP, Operating, and Other Sources	$40,476	241	$7,471
Garage 49	FY13	Lighting Upgrade	CIP, Operating, and Other Sources	$65,963	393	$12,183
Garage 55	FY13	Lighting Upgrade	CIP, Operating, and Other Sources	$73,000	434	$13,454
Garage 60	FY13	Lighting Upgrade	CIP, Operating, and Other Sources	$126,128	751	$23,281
Garage 61	FY13	Lighting Upgrade	CIP, Operating, and Other Sources	$99,857	594	$18,414
Kensington Park Library	FY13	Chiller Upgrade	CIP, Operating, and Other Sources	$2,296	14	$434
Total FY13				**$471,116**	**2804**	**$86,924**

8   Projects are constantly being planned and implemented. These tables may not include every completed and planned project. Projects listed as planned in previous reports may have been deferred and not listed in this report.

9   SCOC values determined using calculations provided by the US Environmental Protection Agency.

10 Some parking garages were updated to fluorescent lighting prior to FY2018. Between FY2019 and FY2021 all parking garages will be updated to LED lighting, including the garages that were previous updated to fluorescent.

7. Advanced Energy Project Summary

Facility	Completion Date	Type	Power (kW)	Energy Generation FY17 (kWh)	Savings FY17[11]	Energy Generation FY18 (kWh)	Savings FY18[11]
Projects Self-Funded by Montgomery County[12]							
Shady Grove Transfer Station	2012	Rooftop	280	350,000	$42,000	350,000	$42,000
Equipment Maintenance and Transit Operations Center	2012	Rooftop	74	93,758	$11,251	93,758	$11,251
Circuit Court South Tower	2013	Rooftop	12 (estimated)	15,144	$1,817	15,144	$1,817
Projects Made Possible by Power Purchase Agreement Through Public-Private Partnership[13]							
Montgomery County Department of Liquor Control	February 2016	Rooftop	1,120	1,124,757	$79,858	1,102,090	$75,876
Rockville Library	February 2016	Rooftop	88	96,376	$7,710	89,288	$7,473
Potomac Community Center	March 2016	Rooftop	55	54,663	$4,592	27,559	$2,356
Jane Lawton Recreation Center	March 2016	Rooftop	41	45,381	$3,630	39,823	$3,688
Silver Spring Civic Building at Veterans Plaza	March 2016	Rooftop	39	43,502	$3,567	30,669	$2,516
Gaithersburg Library	April 2016	Rooftop	220	254,434	$21,627	249,970	$21,751
Up-County Regional Services Center	May 2016	Rooftop	54	70,886	$3,828	64,249	$3,470
Fire Station 31	January 2017	Rooftop	37	19,985	$1,739	34,466	$2,888
Council Office Building	March 2017	Rooftop	32	14,158	$255	36,106	$199
Montgomery County Correctional Facility[14]	May 2017	Ground mount and rooftop	2,803	130,861	$9,160	1,420,397	$108,906
Holiday Park Senior Center	June 2017	Canopy	350	5,547	$460	181,255	$18,981
Kidstop Childcare Center	June 2017	Rooftop	31	4,459	$392	32,124	$2,993
Public Safety Headquarters (PSHQ) Microgrid[15]	October 2018	Solar Canopy and CHP microgrid	2,510 solar; 800 CHP	n/a	n/a	n/a	n/a
Montgomery County Correctional Facility (MCCF) Microgrid[15]	October 2018	CHP	220	n/a	n/a	n/a	n/a
Total				**2,323,911**	**$191,886**	**3,766,898**	**$306,165**

11 Please note that because solar projects came online at different times of the year, projects may not have had a full year of actual savings during the year that they came online.

12 Energy generation and cost savings for projects built prior to 2016 are estimated based on expected annual generation.

13 Oaks Landfill solar project has been deferred.

14 An additional ground mount came online at MCCF in 2018.

15 Generation for PSHQ Microgrid and MCCF Microgrid will begin in FY19. Anticipated annual energy generation for the microgrid at PSHQ is 3,305,808 kWh for the solar canopies and 6,307,200 for the CHP generator. Anticipated annual energy generation for the microgrid project at MCCF is 1,734,480 kWh.

8. Fuel Economy Standards and SUV Inventory[16]

Average Fuel Economy (mpg)	FY2016	FY2017	FY2018
Administrative Fleet	14.02	13.95	14.43
Public Safety Fleet	12.63	12.52	12.37

SUV INVENTORY

Department	# of SUVs	% of SUVs
Circuit Court	1	0.24%
Community Engagement Cluster	2	0.48%
Correction and Rehabilitation	6	1.45%
County Executive's Office	2	0.48%
Economic Development	1	0.24%
Environmental Protection	16	3.86%
Fire and Rescue	39	9.40%
General Services	26	6.27%
Health and Human Services	1	0.24%
Housing and Community Affairs	1	0.24%
Liquor Control	2	0.48%
Office of Homeland Security	1	0.24%
Permitting Services	23	5.54%
Police	216	52.05%
Recreation	2	0.48%
Sheriff's Office	21	5.06%
Technology Services	3	0.72%
Transportation	52	12.53%
Total	**415**	

Subfleet	Total Count	Percentage of SUVs	Mileage	Fuel Usage	Ave MPG
Public Safety SUV	259	62.50%	3,396,079	279,470	12.15
Other SUV	156	37.50%	1,117,744	72,261	15.47
Total	415		4,513,823	351,731	12.83

16 Disclosure required by Bill 6-14. MPG data has been updated for FY2016 and FY2017 since more accurate data has become available.

9. County Employee Participation in Commuter Services Programs

Program	Description	Participation in FY2016	Participation in FY2017
Ride On C-Pass	County employees can take Ride On buses for free using their employee ID badge.	77,725 rides (approximately 8.5 rides per employee).	74,893 rides (approximately 7.5 rides per employee).
Capital Bikeshare	Employees receive discounted annual membership for the bikesharing program.	118 registered since 2014; 56 are active or pending (have a key fob but haven't started riding yet).	119 registered since 2014; 57 are active or pending (have a key fob but haven't started riding yet).
Get In Program	Partial reimbursement of public transit costs for employees who use public transportation five days a week.	85 employees participate.	89 employees participate.

10. Recycled Materials Purchased by Montgomery County Government

Recycled Product	FY17 Cost	FY18 Cost
Asphalt and bituminous concreate (bituminous concrete may consist of 27% recycled material)	$4,500,000	$5,000,000
Recycled paper	$208,473	$128,554
Recycled office supplies purchased through the County's LSBRP contract with Benjamin Office Supplies	$440,299	$397,044
Plastic recycling bins (recycled content from 25% to 50%)	$827,071	$521,813
Record storage boxes (with recycled content from 10% to 26%)	$46,531	$7,383
Total	**$6,022,374**	**$6,054,794**

11. Stormwater Management Facility Retrofits on County Property[17]

Facility/Location	Stormwater Management Practice(s)	Status	Impervious Area Treated (acres)
Ken Gar Recreation Center	Rain Garden	Completed	0.05
Wheaton Veterans Park	Conservation Landscaping	Completed	0.11
Glen Echo Heights Right of Way	Conservation Landscaping	Completed	0.05
Aspen Hill Library	Bioretention; Curb Extension	Completed	0.71
Kensington Library	Rain Gardens; Bioretention; Bioswale	Completed	0.76
Upper County Community Recreation Center	Dry Pond Retrofit	Completed	3.63
Colesville Park & Ride	Bioretention; Water Quality Inlets	Completed	1.28
Greencastle Park & Ride	Bioretention; Water Quality Inlets	Completed	1.77
Little Falls Library	Bioretention	Completed	0.68
Westmoreland Hills Corner Garden	Conservation Landscaping	Completed	0.12
Montgomery Auto Park Dam	Wet Pond Retrofit	Completed	17.15
Brookeville Maintenance Depot	Wet Pond Retrofit	Completed	12.49
Total Completed			**38.8**

17   Three projects from the FY2017 report were listed as "Expected" and have been deferred. These projects are not listed in this report.

12. County LEED Silver and Gold Certified Building Statistics

Facility	LEED Certification	Construction Waste Diverted from Landfill	Building Materials with Recycled Content	FSC Certified Wood used in Construction	Building Materials Harvested or Manufactured Locally	Water Use Reduction[18]	Energy Use Reduction[18]
MCPS Food Distribution Center	Silver	77%	20%	97%	33%	36%	19%
Plum Gar Rec Center	Silver	75[19]%	20[19]%	n/a	20[19]%	30[19]%	20%
Travilah Fire Station	Silver	82%	25%	n/a	22%	33%	21%
Ross Boddy Neighborhood Recreation Center	Silver	87%	20%	n/a	39%	38%	20[19]%
Progress Place	Silver	92%	19%	100%	16%	36%	18%
MCPS and MNCPPC Facilities	Silver	75[19]%	20[19]%	50[19]%	20[19]%	26%	21%
The Fillmore	Silver	n/a	n/a	n/a	n/a	n/a	n/a
Dennis Avenue Health Center	Gold	85%	20[19]%	n/a	20[19]%	32%	21%
Animal Services and Adoption Center	Gold	96%	15%	n/a	24%	40%	14%
Circuit Court South Tower	Gold	93%	26%	80%	40%	35%	24%
Colesville Depot	Gold	98%	14%	n/a	43%	41%	18%
EMTOC	Gold	75[19]%	20%	50%	20%	40%	28%
Gaithersburg Library	Gold	79%	33%	97%	35%	30%	21%
Glenmont Fire Station 18	Gold	92%	18%	n/a	27%	46%	19%
3rd District Police Station	Gold	94%	24%	51%	24%	37%	17%
Olney Library	Gold	83%	20%	76%	22%	38%	20%
Scotland Neighborhood Recreation Center	Gold	75[19]%	22%	50[19]%	28%	44%	14%
Silver Spring Library	Gold	85%	20%	76%	27%	43%	28%
White Oak Recreation Center	Gold	85%	20%	50[19]%	40%	50%	32%
North Potomac Community Recreation Center	Gold	84%	20%	83%	33%	44%	25%
Public Safety Training Academy	In Process	n/a	n/a	n/a	n/a	n/a	n/a
2nd District Police Station	In Process	n/a	n/a	n/a	n/a	n/a	n/a
Good Hope Neighborhood Recreation Center	In Process	n/a	n/a	n/a	n/a	n/a	n/a

18   Water use reduction and energy use reduction are compared to a baseline building performance rating calculated following guidelines provided by the U.S. Green Building Council.

19   Montgomery County achieved LEED points for this category that require at least the minimum threshold listed to be met. In cases where a more precise number was not available we constituted the minimum needed to achieve the points. Actual percentages for some of these categories may be even higher.

MISCELLANOUS DATA[20]

20   In an effort to merge and consolidate reporting to save paper and increase efficiency, this document includes data that was historically reported under the annual Resource Conservation Plan.

13. Estimated Utility Costs by Type[21]

Utility Type	Unit of Measure	Unit Costs FY16	Unit Costs FY17	Unit Costs FY18
Electric	kWh	$0.125	$0.117	$0.123
Water & Sewer	Kgal	$17.00	$18.00	$19.00
Natural Gas	Therm	$0.852	$0.941	$0.873
Fuel Oil #2	Gal	$1.783	$3.143	$2.934
Propane	Gal	$3.640	$3.526	$4.118

21   Represents all County Government facilities (Non-Departmental, Tax Supported and Non-Tax Supported).

14. Utility Costs Estimates for FY19 for New Buildings

New Building FY19	Floor Area (SqFt)	OBI FY20	Average Annual Utility Costs/ Floor Area (SqFt)
Wheaton Library and Community Recreation Center	91,795	$379,000	$4.13
Total		**$379,000**	

15.   Total Building Square Footage Fueled by Electricity and Natural Gas

Group	Fund	Utility	Bldg. Sq.Ft. FY16	Bldg. Sq.Ft. FY17	Bldg. Sq.Ft. FY18
County Facilities	NDA	Electricity	6,507,442	6,602,407	5,942,414
		Natural Gas	4,723,160	5,004,430	4,530,723
Recreation	Tax Supported	Electricity	738,122	799,922	786,494
		Natural Gas	584,373	619,029	619,029
Mass Transit	Tax Supported	Electricity	842,578	902,793	902,793
		Natural Gas	25,000	40,179	40,179
Liquor	Non Tax Supported	Electricity	329,051	348,723	340,299
		Natural Gas	311,886	327,334	327,334
Solid Waste Disposal	Non Tax Supported	Electricity	21,910	21,910	15,438
		Natural Gas	-	-	-
Motor Pool	Non Tax Supported	Electricity	149,163	122,842	215,884
		Natural Gas	152,179	152,179	152,179
Parking Lot District	Non Tax Supported	Electricity	6,782,998	6,556,558	6,517,008
		Natural Gas	2,042,672	2,042,672	2,042,672
County TOTAL		**Electricity**	**15,371,264**	**15,355,155**	**14,720,330**
		Natural Gas	**7,839,270**	**8,185,823**	**7,712,116**

16. County Utility Expenditures FY16-FY18

Fund	Utility	Total Consumption FY16	Total Cost FY16	Total Consumption FY17	Total Cost FY17	Total Consumption FY18	Total Cost FY18
NDA[22]	Electricity	169,143,933	$21,142,992	180,040,117	$20,704,613	162,957,820	$19,880,854
	Natural Gas	1,803,573	$1,533,037	1,863,222	$1,747,702	2,256,252	$1,962,939
Tax Supported	Electricity	18,786,668	$2,378,278	21,241,750	$2,611,773	20,670,168	$2,611,432
	Natural Gas	498,080	$423,995	486,062	$449,633	517,941	$448,906
Non Tax Supported	Electricity	32,065,223	$3,995,029	30,801,861	$3,796,872	30,646,108	$3,857,072
	Natural Gas	335,909	$258,264	312,728	$299,544	322,109	$290,614
County TOTAL	**Electricity**	**219,995,825**	**$27,516,299**	**232,083,728**	**$27,113,258**	**214,274,096**	**$26,349,358**
County TOTAL	**Natural Gas**	**2,637,562**	**$2,215,296**	**2,662,012**	**$2,496,880**	**3,096,302**	**$2,702,460**

22 NDA includes Traffic Signals and Streetlights

County Utility Expenditures FY16–FY18

Utility	Actual Consumption FY16 (kWh)	Actual Cost FY16	Actual Consumption FY17 (kWh)	Actual Cost FY17	Actual Consumption FY18 (kWh)	Actual Cost FY18
Traffic Signals and Streetlights	67,936,307	$8,492,038	78,199,844	$8,992,982	69,513,448	$8,480,641

17. Clean Energy Purchase[23]

Clean Energy Volume 2018 (kWh Equivalent)	Percent Purchased 2018[21]	FY18 Cost
270,700,000	100%	$129,936

23 Includes 100 percent of the electricity use of County facilities and additional renewable energy credits to mitigate for natural gas and oil used in County facilities and fleet.

18. Maryland Energy Administration Grants and Utility Incentives FY13-FY19[25]

Fiscal Year	MEA Grants Received	Utility Incentives Received	Total MEA Grants & Utility Incentives Received
FY19[24]	$45,000	$6,182,654	CHP, LED Lighting, HVAC Upgrades, Controls Upgrades, EV Chargers and Monitoring-Based Commissioning (MBCx)
FY18	-	$222,234	CHP, LED Lighting, HVAC Upgrades, and Solar PV
FY17	-	$29,024	CHP, LED Lighting, HVAC Upgrades, and Solar PV
FY16	$152,775	$378,306	LED Lighting, HVAC, Building Envelope and Energy Efficient Transformer Upgrades
FY15	$338,646	$176,549	LED Lighting and HVAC Upgrades
FY14	$405,000	$327,880	LED Lighting, HVAC Upgrades and Fleet conversion to Compressed Natural Gas
FY13	$482,580	$252,791	LED Lighting and HVAC Upgrades
TOTAL	**$1,424,001**	**$7,569,437**	

24 Amounts for FY19 are projected for grants awarded and utility incentives preapproved; these are not yet received.
25 Montgomery County additionally has several grants from other sources which are not included in this table.

COMING UP NEXT

ENERGY AND CLIMATE

▶ DOT plans to retrofit its 25,000 streetlights to highly energy efficient lighting over the next three years, with anticipated energy savings of more than $900,000 each year.

▶ DGS and DTS are piloting Smart Power Strips which automatically turn off devices when not in use to save electricity.

▶ The County is developing new tools to identify facilities with high energy savings potential, prioritize and plan energy saving projects over the next several years.

GREEN BUILDINGS

▶ Transitioning from LEED to International Green Construction Code (IgCC) which will yield greater GHG savings as it focuses more on energy savings.

▶ The County is identifying facilities that may be good candidates for net zero facilities. Net zero buildings combine energy efficiency and renewable energy generation to consume only as much energy as can be produced onsite.

RESILIENCY AND ENERGY POLICY

▶ The County is currently reviewing options for installing more microgrid systems at County facilities. With a focus on resilient operations, the County is evaluating fire and police stations and other crucial facilities for microgrid projects.

▶ Montgomery County also is working with utilities and other stakeholders to expand microgrid concepts to a community scale.

▶ Transitioning to a new energy purchasing process in 2021, creating opportunities for more savings and greater adoption of clean energy.

TRANSPORTATION

▶ Montgomery County is purchasing fourteen electric buses and charging stations and pursuing additional grants for electric buses.

▶ The Police Department and DGS plan to implement a pilot for public safety hybrid SUVs using models expected in 2020 and will target other potential roles for the hybrid vehicles.

COMMUNITY ENGAGEMENTS

▶ DGS and DEP will implement a program design and plans to expand the Work Green program across DGS in 2020 with long term plans to expand the program County-wide.

WATER

▶ The County will install low flow shower and sink fixtures in several other high use facilities as part of the Continuous Energy Improvement Program.

WASTE REDUCTION

▶ Exploring technologies for composting food waste generated at the Montgomery County Correctional Facility.

▶ DEP and DGS are partnering to increase the recycling rate in County facilities and expand the education of employees regarding recycling and composting.

GREEN PURCHASING

▶ The Division of Fleet Management Services has ordered 88 high efficiency vehicle lifts which use approximately 35% less energy compared to conventional lifts. The lifts are made from components that are 98% recyclable and use bio-degradable oil and batteries that are 100% recyclable, and recovers energy when vehicles are lowered.

ACKNOWLEDGEMENTS

The data and information in this report replaces information found in the FY2017 Green Government Report published in March 2018. The information in this FY2018 Green Government Report includes new information about FY2017 green government operations that became available after the publication of the previous report. Data may have been updated from the FY2017 report as more accurate data has become available. All references to GHG reduction equivalencies in this report were calculated using EPA's GHG Equivalencies Calculator.

Montgomery County **DEPARTMENT OF GENERAL SERVICES**

DGS

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