



**Resource Conservation
Plan
FY 2018**



**Science Center West (SW) Renovation
Rockville Campus**

LEED Gold Targeted
Opened January 2017

Prepared by
Office of Central Facilities
January 2017

EXECUTIVE SUMMARY

The Resource Conservation Plan (RCP) has been prepared by Montgomery College’s Office of Central Facilities to support the College's Fiscal Year (FY) 2018 Energy Conservation Capital Improvements Program (CIP) and Utility Operating Budget requests for funding. Published annually this plan provides historical background and discusses FY2016-FY2017 accomplishments and FY2017-2018 plans.

This document describes the Montgomery College Resource Conservation Program that includes master planning, utility management, benchmarking, sustainable building design, energy conservation activities, transportation fleet management, waste stream management and program outreach and awareness.

Included are descriptions of the resource conservation organization, discussion of current and historical utility consumption and costs, resource conservation program accomplishments and future plans. Tables and graphs present information on historical utility consumption and utility budget estimates while Capital Improvement Program (CIP) Project Description Forms (PDF) that relate to the College’s Resource Conservation efforts are discussed and included in the appendices.

Since 2002 the College has seen an 94% increase in building space as the College continues to expand to meet the demands of its educational programs. The table summarizes recent and active construction projects.

Campus	Building	Gross Square Feet (GSF)	New (N) Renovated (R) Expansion (E)	Status	Open	LEED Certification
T	Pavilion Three (P3)	17,000 (+2,000)	R, E	Opened	January 2016	Silver Targeted
R	North Garage (NG)	310,000 (918 spaces)	N	Opened	January 2017	ParkSmart Targeted 20 EV Charging Stations
R	Science Center West (SW)	70,164 (+28,176)	R,E	Opened	January 2017	Gold Targeted
OC	Central Services (CT)	126,801	R	Opened Construction	March 2017	Bill I-85 Executive Order
G	Science and Applied Studies (SA) Phase 1	99,648 (+35,502)	R,E	Construction	September 2018	Silver Targeted
R	New Student Services	127,960	N	Construction Bid Award	September 2019	Gold Targeted
T	Math & Science Center (MSC)	134,600	N	RFP Design	June 2022	Gold Targeted
Total		758,168				

Historically, all buildings regardless of function have been optimized to meet the project requirements while minimizing environmental impacts. The College plans to achieve the U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) Gold certification that exceeds the County Legislated LEED Silver as well as surpassing the requirements of the 1985 Building Energy Performance legislation.

The College continues to implement recommendations in the college-wide Master Plans and Utility Master Plans on all three campuses while at the same time preparing new and expanded master plans for the out- years. Master planning is an important tool using Integrated Lifecycle Management (ILM) practices to ensure that sustainability issues are fully examined and properly integrated into the fabric of the institution.

The College participates in the joint agency procurement of deregulated electricity, natural gas and wind generated renewable energy certificates (REC). In FY 2017 the College purchased 136% of its electricity in the form of wind RECs and plans to commit to purchase 138% in FY 2018.

The College continues to participate as a member of various County sponsored sustainability and energy committees and national engineering and professional society committees. The College encourages faculty, staff, student and public participation in our sustainability efforts via social media, electronic newsletter articles and the student sponsored MC Green Club. Interdepartmental coordination continues to increase, providing more opportunities for College stakeholders to participate. In fall 2011 the College organized the MC Green Team, tasked with expanding resource conservation program outreach efforts throughout the College community. The College offers credit and non-credit academic and continuing education courses in subjects related to green collar jobs, sustainable design, green business practices and the LEED Rating System.

Montgomery College is requesting \$125,000 for the FY 2018 College Energy Conservation Capital Improvements Program (CIP) which funds the Utility Analyst position and various energy projects while the FY 2018 operating budget includes funding for one Energy Manager Position. These requests are the same as in past fiscal years. Energy and sustainability opportunities are also integrated into various building renovation and equipment replacement projects which are funded by various capital and operating budgets. The FY 2018 utility operating budget request \$8,978,960 a 12.1% increase from the FY 2017 request, primarily due to increased unit costs and increased consumption due to new building construction and acquisition.

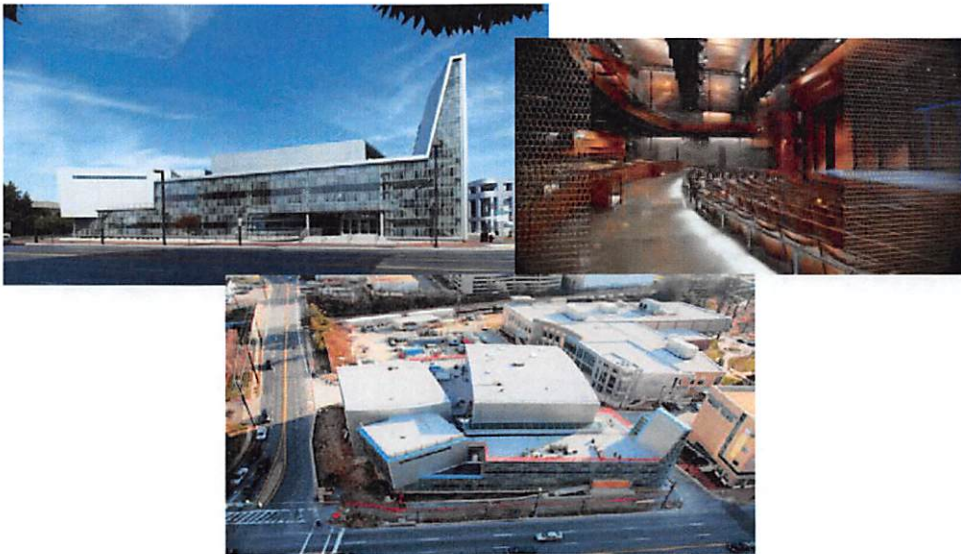
Montgomery College is dedicated to implementing and maintaining a sustainable, life cycle cost-effective, low risk resource conservation program. Although all energy conservation and environmentally friendly opportunities are considered, only those opportunities which are of the appropriate level of technology, have a high probability of success and meet the lowest net present value criteria will be implemented. To ensure that the resource conservation program is operating as predicted, measurement and verification protocols are implemented and appropriate databases are maintained and buildings are benchmarked. The goal of the program is to provide safe, comfortable, economical and environmentally friendly facilities, which will enhance the learning environment and contribute to student success at Montgomery College.



Rockville Campus North Garage (NG) Opened January 2017

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Cultural Arts Center

Takoma Park/Silver Spring Campus

AIA Maryland Public Building of the Year 2010

Green Building Design

Opened Fall 2009

GENERAL INFORMATION

Montgomery College was founded in 1946 and established its first campus in Takoma Park in 1950. The College added a second campus in Rockville in 1965, a third campus in Germantown in 1978, and expanded the Takoma Park Campus into Silver Spring in 2000. The College owns and maintains approximately 333 acres of property on three campuses and operates 50 buildings just in excess of 2.8 million gross square feet (GSF) which includes three parking garages, totaling 694,105 GSF. The College also occupies 7 additional off campus owned or leased sites in excess of 312,00 GSF including the recent acquisition of 126,801 for renovation of a newly owned building to house central services of Montgomery College.

The College buildings consist of classrooms, computer laboratories, offices, science and engineering laboratories, libraries, meeting rooms, gymnasiums, automobile shops, shipping and receiving areas, child care centers, swimming pools and greenhouses. The hours of use are generally from 7:00 a.m. until 11:00 p.m. on weekdays and at various times during the day on weekends. Summer and winter session classes are offered at all three campuses. The College's administrative and academic offices are open year-round and major building cleaning and maintenance occurs after occupied hours. There are frequently activities in the Physical Education (PE) buildings as well as community use (rental) of PE and other spaces on the weekends. In addition to the programs offered at each campus, the College offers regular college credit programs and non-credit courses in off-campus locations throughout the County. The College's Information Technology Operations Center (ITOC) is a 4,000 GSF space located in the Cafritz Arts Center on the Takoma Park/Silver Spring Campus and is operational 24 hours a day. In 2009 this high energy density facility was relocated from a smaller space in the Computer Science building on the Rockville Campus to the Takoma Park- Silver Spring campus in the Cafritz Foundation Arts Center (CF). It was upgraded to include redundant systems and high density servers which support cloud based computing. Campus maps and summaries of space allocations can be found in the Appendix.

Electricity is purchased from a deregulated supplier who generates and transmits power via PJM, the regional transmission organization (RTO) to Potomac Electric Power Company (PEPCO), the regulated public utility and local distribution company (LDC). In FY 2018 one hundred and thirty-eight percent (138 %) of the electricity will be purchased from a renewable energy supplier in the form of wind generated RECs. The College also generates a small portion of its electricity from College owned and operated on-site solar photovoltaics (PV). The College consumes fossil fuels in the form of deregulated natural gas and propane and has now eliminated No 2 fuel oil consumption. By Spring 2019 the College will have removed all underground fuel oil tanks. High efficiency central plants on the Rockville, Germantown, and Takoma Park/Silver Spring campuses generate and distribute hot and cold water to the buildings for heating and cooling of the occupied spaces. Ice thermal storage and co-generation (co-process) technologies are used in the central plants as "smart grid" electrical demand management strategies to minimize electricity cost. In many buildings, integrated, multivendor, Direct Digital Control (DDC) Building Automation Controls (BAC), using American Society of Heating, Refrigerating and Air-Conditioning Engineers, (ASHRAE) BACnet open protocols, orchestrate the efficient operation of the building systems. Domestic and fire protection water is supplied by local water utilities and sewer waste is discharged back into the public sewer system. Storm water is treated in College owned and maintained storm water management facilities.

Montgomery College, which began its resource conservation program prior to the oil embargo in 1973, is a charter member of the Interagency Committee on Energy and Utility Management (ICEUM), and has submitted a Resource Conservation Plan in support of the utility operating budget since January 1976. Since the late 1970s the College has been a leader in environmental stewardship by implementing energy efficient, environmentally friendly, green, award winning building designs and creating an award winning

recycling program. The College has an active hazardous waste management program and recycling

program which minimizes its solid waste stream. In FY 2016, the College was awarded a green seal certification for cleaning services. The College has been a member of the Electricity Deregulation Task Force, has participated with other agencies in the joint procurement of the electricity supply and has been the lead agency for the joint procurement of electricity and natural gas supply. In FY 2004, the College joined other County agencies in forming the Environmental Policy Implementation Task Force (EPITF), and assisted in producing the first Environmental Policy Issues and Action Report. In FY 2006 and FY 2007 the College participated with other County agencies in crafting the Montgomery County Green Building Law which requires Leadership in Energy and Environmental Design (LEED) Silver rating for all new County facilities. In FY 2008 and FY 2009, in response to County Council Bill No. 32-07, Environmental Sustainability – Climate Action Plan, the College participated with other agencies and formed the Environmental Sustainability Working Group. In FY 2010, the College participated with other agencies on the County Agency Resource Sharing (CARS) Committee and completed an in-house Print Management Committee which implemented efficiencies and increased revenue stream related to printing and printing practices. In FY 2011 the College formed the MC Green Team, the College’s sustainability committee, which involves faculty, staff and students in sustainability issues. Additional information can be found on the Web site: <http://cms.montgomerycollege.edu/EDU/Department2.aspx?id=31372>

Spring 2014 (FY 2014) saw the passage of several legislative energy and sustainability initiatives which mandate benchmarking, site generated solar and electric car charging stations. The College has Benchmarked its’ three Campuses and has been recognized by the County Council as Early Bird Benchmarking submitting data a year earlier than legislatively mandated.



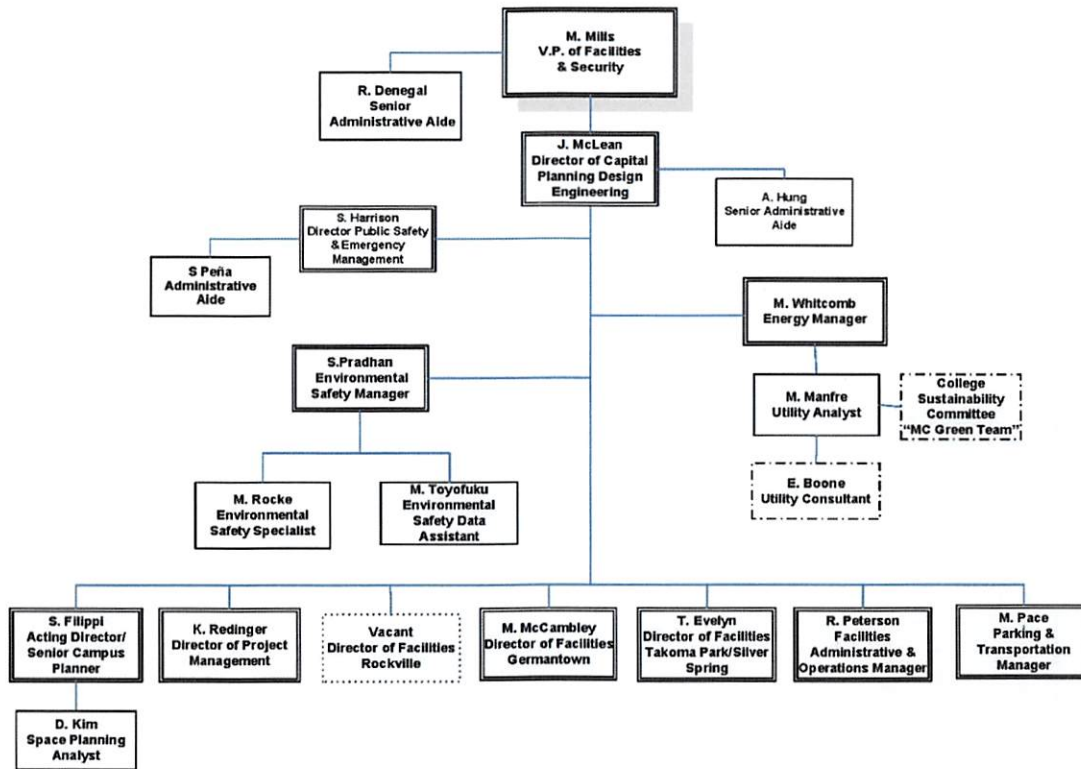
Science Center (SC) on the Rockville Campus (top right) Science East (SE) middle LEED Gold Certified, and Science Center West (SW) LEED Silver Targeted bottom left Opened January 2017

Sustainability Features Shown: 90 kW Photovoltaic Solar Generation on Day-lit Atrium Roof (upper right), Green Roof (lower right), High Albedo (reflective white) Roof, High Performance Day-lit Envelope (northeast elevation shown), On-site Storm Water Management Features (rain garden front & pond rear) and Roof Top Mounted High Performance HVAC System with Energy Recovery

RESOURCE CONSERVATION PROGRAM ORGANIZATION

The Office of Central Facilities provides college-wide facilities management services for all three campuses and is responsible for managing resource conservation activities. Headed by the Vice President of Facilities & Security the organization manages a highly developed integrated resource conservation and sustainability program through integrated planning, program management and operations. The figure below shows the office organization chart and those individuals directly responsible for influencing the Resource Conservation Program and ensuring program success.

Office of Central Facilities Organization Chart



The Energy Manager reports directly to the Vice President for Facilities & Security and is responsible for implementing the energy and sustainability components of the Resource Conservation Program. The Energy Manager is the College's representative on ICEUM. His contact information is:

Mr. J. Michael Whitcomb, P.E.
 Energy Manager, Montgomery College
 Office of Central Facilities
 9221 Corporate Boulevard
 Rockville, Maryland 20850
 Phone No. (240) 567-7375, Email: mike.whitcomb@montgomerycollege.edu

Mr. Whitcomb has been a member of the ICEUM committee, representing various county agencies since its formation in 1983. Mr. Whitcomb has served as the Interim Chairman of ICEUM, and is a former member of the Montgomery County Citizens Energy Conservation Advisory Committee (ECAC). Mr. Whitcomb is a Registered Professional Mechanical Engineer in the State of Maryland. A Certified Energy Manager holds a B.S. in Mechanical Engineering (Energy Conversion) and an Engineering Master's Degree (Energy & Environment) from the University of Maryland.

The Energy Manager coordinates Utilities Master Plans and Sustainable Design of new and renovated buildings with the Director of Capital Planning and Design, the Acting Director/Senior Campus Planner and the Director of Project Management and coordinates utility consumption, energy audits, and retrofits with the three Directors of Facilities. The Energy Manager coordinates matters relating to utility bills and utility bill accounting database with the Utility Analyst, Administrative & Operations Manager and the College's Utility Consultant. The College contracts utility consultant services to provide assistance with utility bill management and deregulation issues. The Energy Manager also promotes participation in the Resource Conservation Program through various college-wide media outlets and is the co-chair of the MC Green Team, the College's sustainability committee. In addition to ICEUM, the Energy Manager is a member of the County Deregulation Task Force and represents the College as necessary on other committees on issues related to Resource Conservation and Sustainability.

The Utility Analyst, a new capital position in FY 2016, is responsible for assisting the Energy Manager with utility management duties related to the capital energy program and assisting in implementing various legislatively mandated capital programs such as Benchmarking.

The Space Planning Analyst coordinates and maintains college-wide space databases and room inventories, prepares reports for State, County, and College officials and works with members of the planning and design teams to ensure integration of College and other space standards. Space management attempts to optimize and improve space utilization while accurate square foot records are required for energy and utility reports.

The Director of Capital Planning and Design and the Acting Director/Senior Campus Planner are responsible for integrated planning and design of College facilities. Consideration of resource conservation and sustainability during the planning and design process ensures that environmental measures are integrated into the life cycle of the campus infrastructure.

The Director of Project Management is responsible for construction of new and renovated facilities. Building performance is ensured through persistent quality supervision of building and infrastructure during construction.

Operations and maintenance are the responsibility of the Directors of Facilities for each campus. It is the College's goal to operate and maintain safe, reliable and economical facilities which contribute to the well-being of the College occupants. The Directors of Facilities are responsible for managing the operations and maintenance aspects of their campus sustainability programs. This includes energy efficient operations of facilities and implementing best practices with respect to recycling, building cleaning, and landscape management.

The Facilities Administrative and Operations Manager is responsible for managing the facilities operating budget accounts including the college-wide Utility Operating budget. Utility bills are received, reviewed and approved for payment. Utility bill data is entered into Energy CAP utility management database to maintain the College's historical utility record and provide annual data.

The Facilities Administrative and Operation Manager, assisted by the College's Utility Analyst and Utility Consultant, coordinates utility bill reviews and utility bill dispute resolution with utilities.

The Director of Public Safety & Emergency Management is responsible for ensuring that Montgomery College is prepared to respond to emergency events in order to safeguard the well-being of the College community, preserve College property, communicate promptly and clearly, and restore College operations after an emergency event. The Director Public Safety & Emergency Management also coordinates activities of the Environmental Safety Coordinator who is responsible for management of college-wide occupational and environmental safety issues, including Occupational Safety and Health Organization (OSHA), asbestos abatement, hazardous waste stream management, occupant awareness and indoor environmental quality (IEQ). The College has been a leader and began its' Environmental Safety Program in the late 1970s with hazardous waste management and asbestos abatement. The College's environmental safety web page is maintained at:
<http://cms.montgomerycollege.edu/EDU/Department3.aspx?id=28290>

The Parking and Transportation Manager is responsible for managing issues related to college-wide parking and transportation. Transportation management is tasked with providing sustainable transportation solutions for the College community.

The College's recycling program is coordinated by the Director of Facilities, Germantown Campus and managed by the Directors of Facilities on each campus. The Director of Facilities, Germantown Campus prepares the Annual Recycling Report.

The College maintains a vehicle fleet to support the functions of the various College departments. In addition to road vehicles, the College maintains various vehicles such as mowers, tractors and powered carts. The Director of Facilities, Germantown is responsible for college-wide maintenance support of these vehicles and staffs an auto maintenance shop on that campus.

Based upon their expertise, members of the Facilities organization represent the College on national, regional and local committees related to the College's Resource Conservation efforts.

As the need for sustainability awareness increases, interagency and college-wide management strategies and practices have been modified. The College organized a sustainability committee, the MC Green Team with representation from staff, faculty and students. Interdepartmental coordination has increased, for example, members of the Procurement Office are coordinating with agency counterparts and developing strategies for procurement best practices, while the business office implemented a print management program. The academic programs are now offering credit and non-credit sustainability classes and are working with the Montgomery County Government to offer sustainable training opportunities.

Resource Conservation Plan Summary

The following summarizes the activities and accomplishments of the College's Resource Conservation Program.

Master Planning: Facility Master Planning is the process of examining current and future academic programs to determine the space required for these programs and their support services. The master plan establishes the quantity and types of space, where it will be located and the cost of converting existing or adding new space. Since facility master planning establishes the owner's project requirements (OPR) and is used to support capital budget funding it is the ideal place to incorporate resource conservation into the building process. The college-wide Master Plan was completed in February 2016 for the FY 2013-FY 2023 period. The Master Plan can be found:

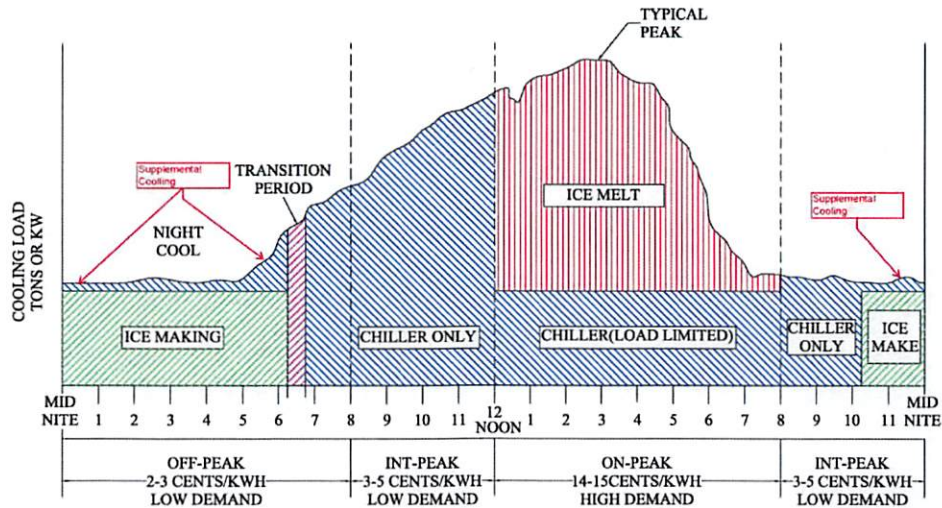
<http://cms.montgomerycollege.edu/EDU/Department2.aspx?id=32897>

Utility Master Planning: Utility master planning is an extension of the facility master planning process which examines the current and future requirements for utility infrastructure, on a life cycle cost basis, to meet the needs of the planned space requirements. The utility master planning process began in the late 1980s and examined electrical, natural gas, fuel oil, central hot water and chilled water plants, water, sewer, storm water and telecommunications systems that are affected by campus buildings. Over the years the recommendations of utility master plans have been implemented and refined as necessary to meet the changing needs and the expansion of the College. The current utility master plan will be updated in FY 2018. The college-wide Facility Planning CIP No. 886686 is the primary funding source for all College planning activities. The Project Description Form (PDF) is shown in Appendix A.

One of the early utility master plan recommendations was to implement high efficiency, environmentally friendly, central plant technology which allows consolidation of major heating and cooling equipment into a more life cycle cost effective central plant rather than individual plants in each building. Consolidation of equipment realizes economies of scale, allows higher diversity which reduces total equipment costs, provides redundancy and allows use of smart grid technologies such as ice thermal storage and co-generation.

These environmentally friendly plants use high efficiency, variable speed, open drive chillers. The chillers use Ammonia (R-717), a highly efficient, naturally occurring refrigerant that minimizes the Total Equivalent Warming Impact (TEWI) in that it has no Ozone Depletion Potential (ODP) and No Direct Global Warming Potential (GWP). The chiller and refrigerant cycle is further enhanced by using high efficiency plate and frame heat exchangers and ice thermal storage. The heat exchangers improve refrigerant heat transfer while the ice storage stores cold energy at night when the electricity rates are low for use during the day when electricity rates are high. Ice thermal storage also improves the overall electrical load profile and positions the College to participate in smart grid demand management activities. Ice thermal storage also reduces the quantity of active rotating mechanical and electrical equipment by half, produces colder water which reduces the size of distribution system, pumping systems and their associated operation costs.

The following figure shows a typical plant cooling profile using ice storage (costs are illustrative only).



Typical Central Plant Load Profile

High efficiency chillers are now able to achieve 0.35 kW/ton consumption by magnetically levitating compressor shafts in a frictionless bearing configuration. As an additional energy and electrical demand strategy, some plants use co-generation/co-processes technology. In these plants, natural gas fired engine driven chillers provide cooling while recovering waste jacket and exhaust heat and returning it to the heating system for space, swimming pool and domestic water heating.

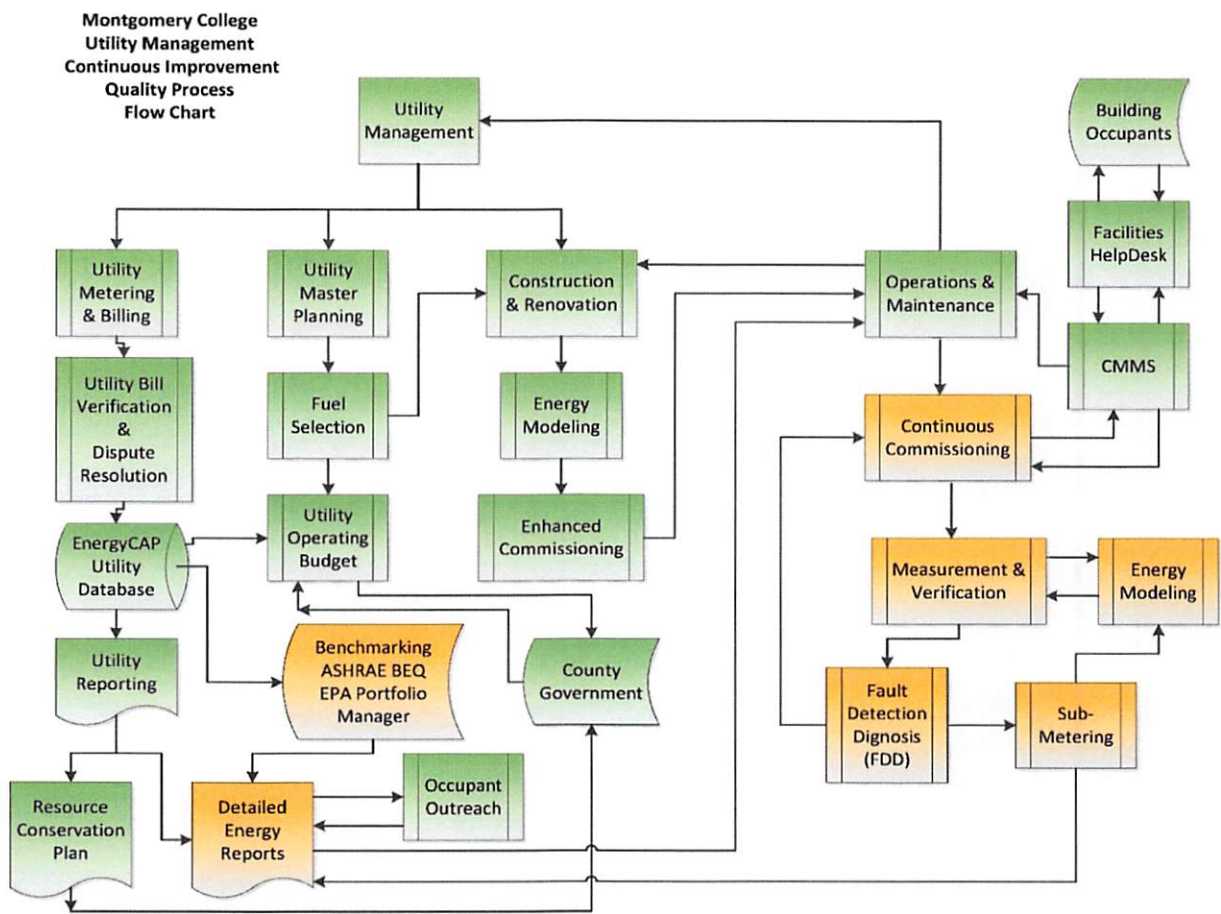
The central plants have been integrated into either new buildings or existing building renovations and therefore leverage project resources and capital expenditures such that the resource conservation benefits are shared with other buildings on the campus. The earliest Rockville and Germantown plants have been successfully on-line since the early 1990s, while the newest plants have been commissioned in the last several years. The newest plant to be commissioned is the plant in Germantown Bioscience (BE) that opened in fall 2014. To date, six separate plants have been installed, two on each of the campuses.

Building Design: In 1985 Montgomery County Council enacted Building Energy Performance Standards (BEPS) legislation that requires county agencies to perform energy analysis and life cycle costs on new and renovated buildings. This combined with enhanced master and utility planning formed the basis for the College's sustainable building program. Energy design guidelines (EDG) were developed which established performance and equipment requirements and these were distributed to the Architectural and Engineering (A/E) teams. Compliance, quality control and sustainability have been and remain the responsibility of College staff. Over time these standards evolved to include requirements for indoor air quality, storm water management, combined heat and power (CHP), commissioning and controls.

In 2007, the County Council required that county agencies meet at least the USGBC, LEED Silver rating. The College has exceeded this requirement by obtaining LEED Gold ratings for all recent buildings and continues to improve its building process by requiring A/E comply with College design standards and

requiring enhanced commissioning of all building systems. Even alteration projects are scrutinized for resource conservation opportunities. 2014 legislation for benchmarking, sight generated solar and electric vehicle charging stations influence building design. A summary of building projects since 2004 can be found in Appendix A.

Utility Management: Utility management is one of the fundamentals of energy management and resource conservation and is influenced by all aspects of college operations. The figure below shows the activities that contribute to utility management. Objects in green are well developed College utility management activities while those in yellow have been developed but opportunities remain to enhance and improve efficiencies.



Utility Management Flow Chart

The following is a brief description of some of the utility management activities shown in the figure:

Master Planning - As previously described, utility management is influenced by master and utility planning. Energy type, cost, availability, capacity, environmental impact and distribution all influence the life cycle of the campus and buildings. Utility life cycle cost analysis is performed during the utility master planning process.

Energy and Fuel Selection - The selection of the energy and fuel is influenced by availability and life cycle cost. It influences utility distribution systems, building design, type of equipment selected for the building, and impacts both first cost and operating cost. LEED certification awards credits based upon energy cost savings and credits onsite renewable energy generation and offsite purchase of RECs. The College is eliminating fuel oil burning appliances and will no longer be purchasing No.2 fuel oil, and all underground fuel oil tanks will have been removed by Spring 2019.

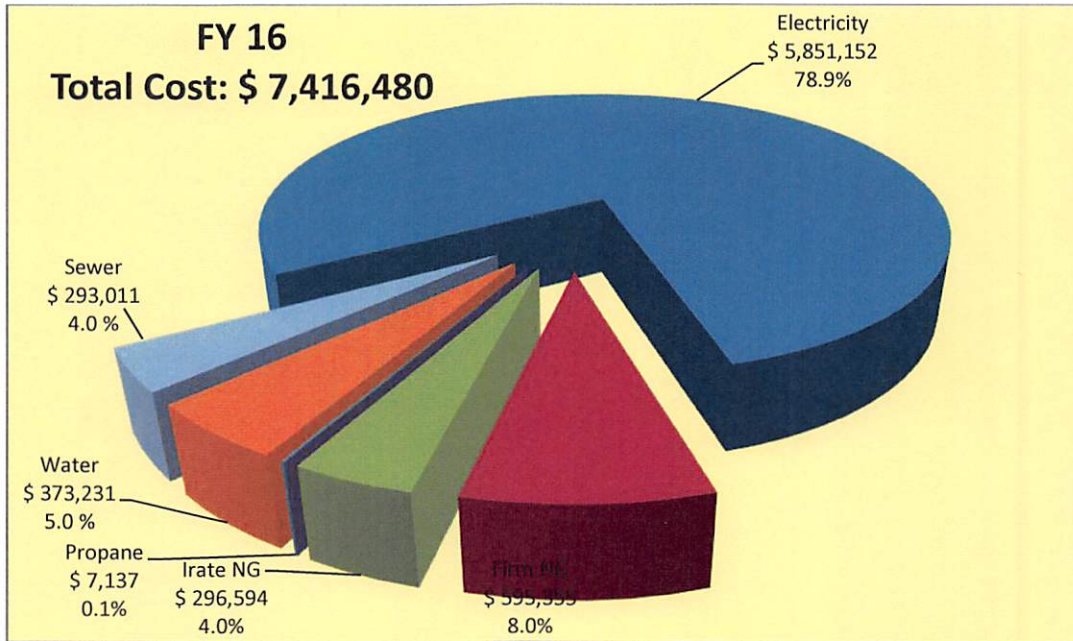
Utility Procurement - Procurement of utilities requires periodic renewal of deregulated supply contracts for electricity, natural gas and RECs. The College's Utility Analyst and Utility Consultant participate in aggregated procurement with other County agencies.

This table show current contract status.

Utility Supply	Vendor	Signed	Start	End	Unit Cost (\$/unit of energy)	Contract
Electricity	WGL Energy	5/15/2014	1/2015	2/2017	0.08195/kWh	BRCPC
Electricity	WGL Energy	11/15/2015	2/2017	6/2017	0.07095/kWh	DGS
Electricity	WGL Energy	1/28/2016	6/2017	6/2019	0.07114/kWh	DGS
N.Gas (Firm)	WGL Energy	5/7/2013	7/2014	5/2016	0.560/therm	FCG
N.Gas (IRATE)	WGL Energy	5/7/2013	7/2014	5/2016	0.525/therm	FCG
N.Gas (Firm)	WGL Energy	5/8/2016	6/2016	5/2018	0.460/therm	FCG
Wind (REC)	Renewable Choice	6/27/2014	7/2014	6/2015	1.23/MWh	MCG
Wind (REC)	Renewable Choice	10/6/2015	7/2015	6/2016	0.67/MWh	MCG
Wind (REC)	Renewable Choice	10/6/2015	7/2016	6/2017	0.71/MWh	MCG

Utility Metering, billing, verification and payment - Utility bills are generally received in paper form, on a monthly and quarterly basis. Utility bills are paid on time, verified, errors corrected and cost and consumption recorded. The Utility Analyst and Utility Consultant assists in bill verification and correcting billing errors. Automated bill capture and data analysis are currently on line for FY 2017

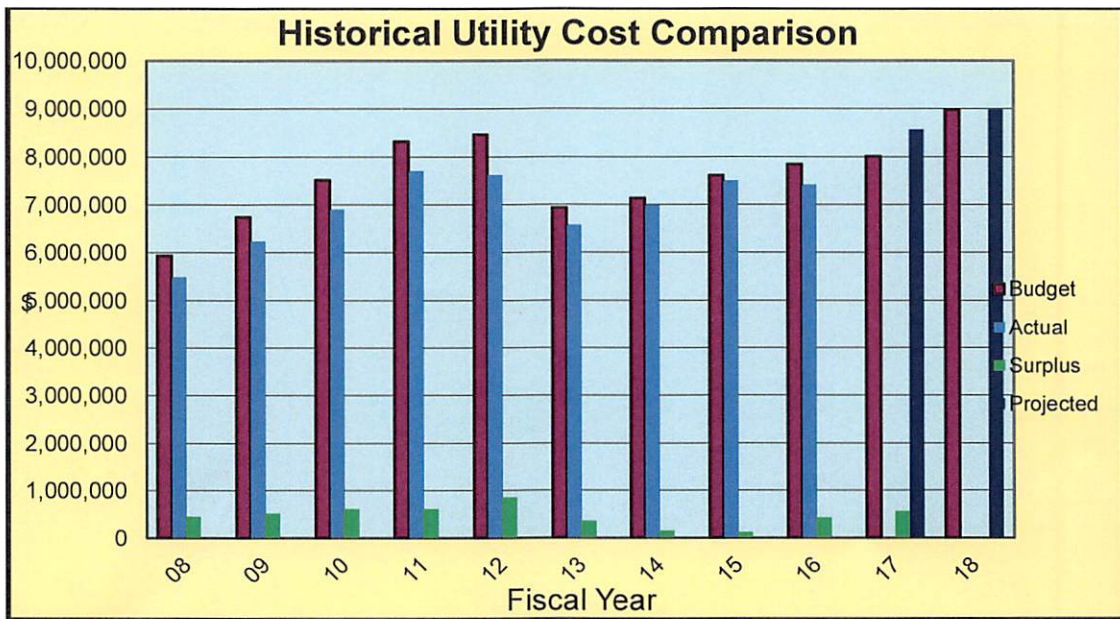
Utility Database - The utility database is where utility records are stored and from which data can be retrieved for utility analysis. Since the 1970s the College has maintained a database, initially as typed spreadsheets, computerized in the late 1980s and converted to an offsite hosted server application, EnergyCAP. The database is maintained by the Utility Analyst. Both the Utility Analyst and the Utility Consultant review the utility bills as well as maintain spreadsheets that are used to predict consumption and costs. Data from the EnergyCAP and various spreadsheets are used in reports for benchmarking and budgeting. The Utility Projection Report in Appendix A shows the historical consumption since FY 2007.



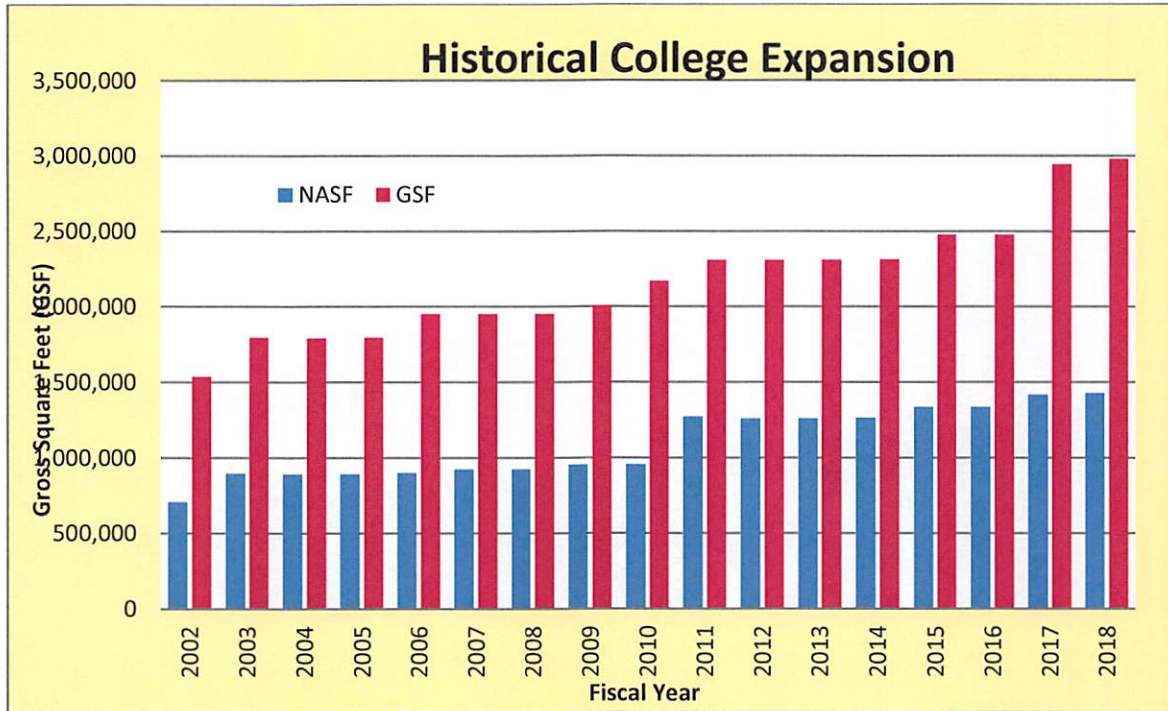
Utility Cost Distribution FY 2016

Since electricity represents nearly 80% of the total utility consumption, improvement in efficiency in this area becomes a priority. Proper lighting design is an important tool in ensuring that electricity consumption is minimized.

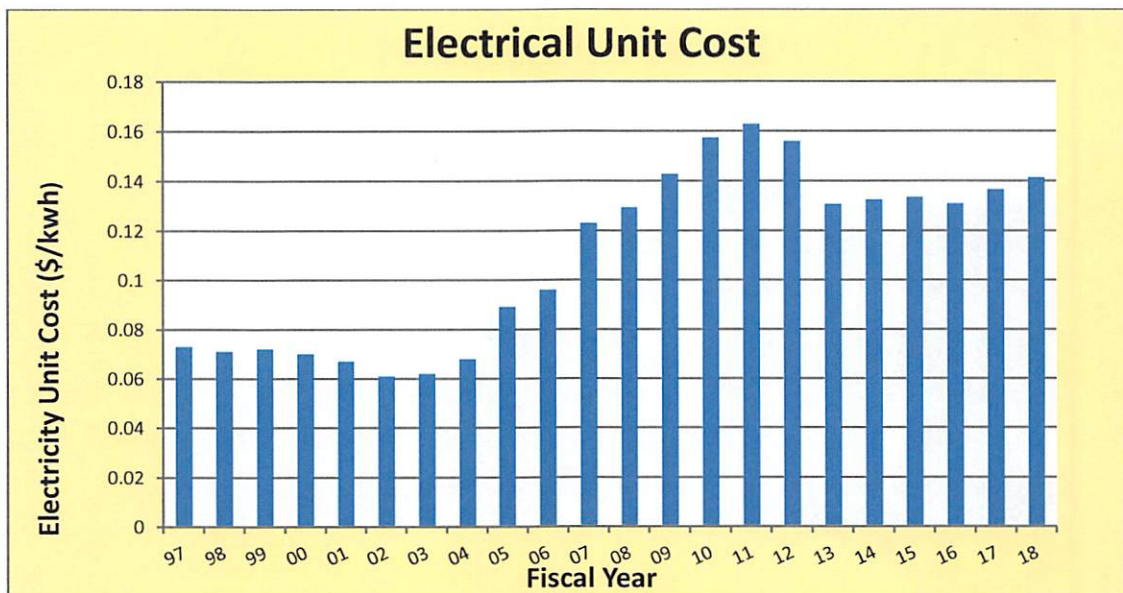
The utility database is also used to track historical utility consumption and this data is used to determine building performance. The figure below shows the historical and projected utility consumption. The data for this table is located in the Utility Projection Report in Appendix A.



Cost fluctuations are due to changes in consumption and changes in unit costs. Addition of space is one factor that influences consumption. The figure below shows the 94 % increase in College space since FY 2002.



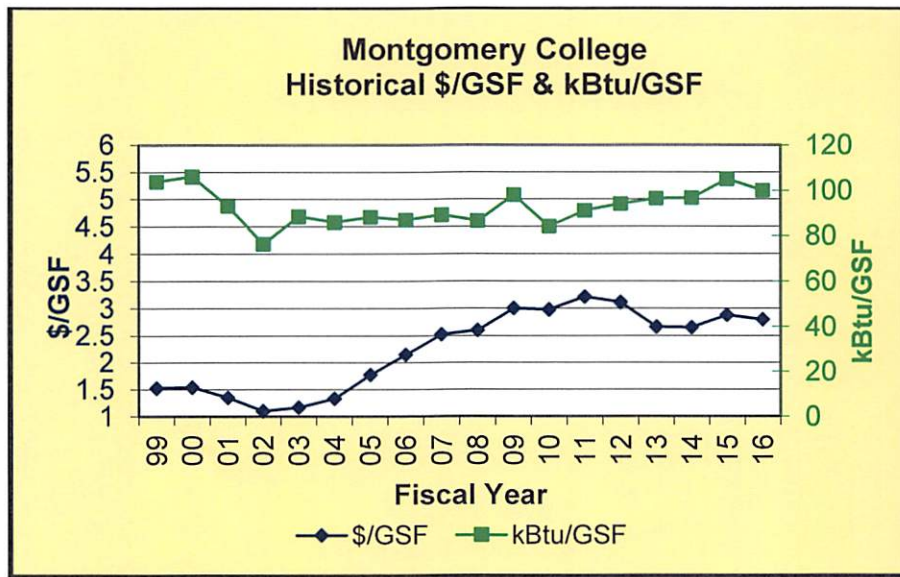
Fluctuations in unit cost, particularly electricity, influence the total cost of utilities. The figure below shows the unit cost of electricity over time.



Stable pricing was the norm prior to deregulation. In the early years of deregulation FY 2001- FY 2003, unit cost dropped due to recovery of windfall profits from the sale of generation assets. After 2003, standard offer price caps were removed and prices steadily increased until the 2007-2008 market recession. Commitments to multi-year supply contracts delayed unit cost reductions until after FY 2012. The College will pay \$ \$728,000 EmPower Maryland for FY 18 and \$1,029,326 for the Montgomery County Energy Tax which represents 11% of the total utility budget.

Benchmarking: Detailed energy reports and occupant outreach are used as opportunities to understand consumption and influence occupant behavior. Benchmarking is the presentation of energy consumption and cost data in the form of an Energy Use Index (EUI) expressed in kBtu/GSF and as Energy Cost Index (ECI) expressed in \$/GSF. The advantage of using these metrics is that it simplifies comparison by converting to all energy consumed into common unit of British Thermal Units (Btu) and to a cost unit of Dollars (\$). Normalizing these units by the square foot of space then tends to remove the influence of fluctuation of size. The following figure shows historical benchmarking for the College. The EUI trend seems to indicate that even as the College expanded, resource conservation practices appear to have stabilized energy consumption. The exception to this is in FY 2001 & 2002 when large blocks of unoccupied space was added to the Takoma Park/Silver Spring Campus, an increase FY 2009 when additional occupied buildings were added to the College inventory and a gradual increase now as high energy density space such as the Rockville Science Center and Germantown Bioscience Center.

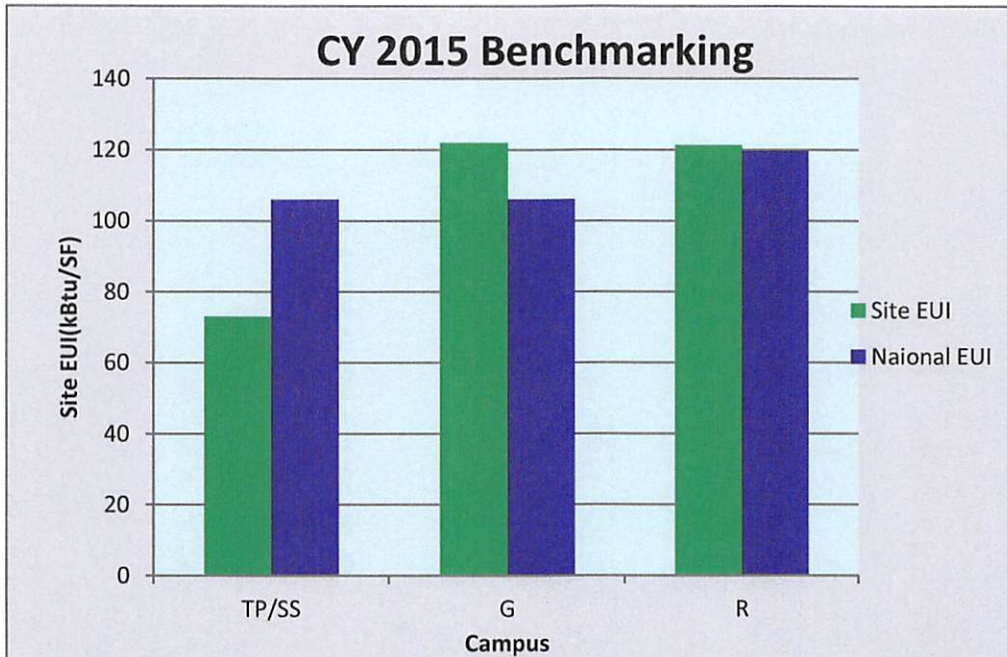
The College has calculated benchmarking data since the 1970s when it was required to report this information to the Maryland State Department of General Services. Although no longer required to report benchmarking information to the state, values are still calculated for each building, campus and college-wide.



The Historical ECI (\$/GSF) and EUI (kBtu/GSF) for the past 17 years.

This information is available for review by the facility management team and is another tool

available to measure building performance. Enhanced benchmarking is being evaluated which uses the features available in the ASHRAE's Building Energy Quotient (BEQ) program and the federal Energy Protection Agency (EPA's) Portfolio Manager. BEQ is a benchmarking program that was developed by ASHRAE and the federal Department of Energy (DOE). It provides an engineered process that gathers building data and enters it into a database which then can be used as the basis for energy audits and retro-commissioning by qualified registered professionals. Portfolio Manager is also another benchmarking tool which is similar to BEQ. The College's EnergyCAP utility database is capable of downloading data into Portfolio Manager. Both BEQ and Portfolio Manager rank a buildings consumption based upon defined criteria and scores the building's energy efficiency based upon these criteria. Benchmarking information is a tool that is useful in communicating building consumption information in a simpler form to the broader audience of building occupants. Benchmarking became a legislatively mandated requirement with the passage of Benchmarking Bill 2-14 in May 2014. The College was recognized as an Early Bird Benchmarker, reporting the Campuses' energy use and cost, a year earlier than legislatively mandated. Workforce development and Continuing Education (WDCE) hosted an information and training class for College Benchmarking Ambassadors in FY 2016.



Most Current CY Benchmarked Energy Data

Design, construction, renovation (retrofits & replacement), energy modeling and enhanced commissioning - Design, construction, renovation (retrofits & replacement) are all opportunities to improve efficiency and minimize utility and resource consumption. Whether it is implementing recommendations of the master plan, optimizing whole building systems or simply installing more efficient equipment when replacement is warranted, efficiency improvements are made. Energy modeling and life cycle cost analysis are required on new buildings and major renovations to demonstrate compliance with codes but it is also the opportunity compare efficiency and justify costs. Enhanced commissioning of all building systems and equipment is essential to ensuring that a high quality building meets the owner's project requirements and obtains additional LEED certification credit.

Operations and Maintenance - Operations and maintenance is the period during which the building is occupied. It is generally the longest period during which efficiencies are maintained. Building occupants contact the facilities service desk to report various building issues, as such sometimes the initial indication that the building may not be operating as intended. Computerized maintenance management system (CMMS) is an automated work order database that tracks occupant issues and tracks periodic equipment service requirements.

Continuous commissioning, Measurement and Verification, Energy Modeling, Fault Detection Diagnosis -These are all measures which have been implemented, but changes in technology and operating practices continue to improve their effectiveness. Measures such as these are used to fine tune building operations by confirming design intent or as proactive recognition of the building system not performing as intended. These measures are intended to ensure building occupant comfort, productivity and save costs.

Sub-metering, net metering and smart grid - Sub-metering and net metering are two methods which are currently being used but are becoming more important as costs continue to rise. Detailed monthly utility billing verification is warranted and benchmarking has become a legislative mandate. Implementation of Smart Electrical meters may improve monthly electrical meter data verification and provide more detailed hourly consumption data. Sub-metering and net metering will also prove valuable as smart grid practices are introduced. The College's use of ice thermal storage and BACnet compatible building automation systems are already in place. These systems currently reduce kW demand and will be ready to provide response to real time pricing signals and demand response should these features become available from the grid. The College has enrolled in a demand management program in which it will curtail each selected site below the Peak Load Contribution (PLC) among the three campuses. This is a four-year contract in which the College will perform these events during the summer months.

Utility Operating Budget

Utility budget preparation generally begins a year in advance of budget approval and is based upon review of historical records, current supply contracts, rate increases or fee adjustments known at the time, adjustment to space, and assumptions that take into account unknown factors. In the second quarter of the current fiscal year, a unit cost rate sheet is prepared which again reviews these factors but with a more accurate projection of the future. Utility projections may be adjusted periodically as assumptions change or are influenced by budget discussion. Final utility budgets are approved by County Council by May of the current fiscal year. The FY 2017 - FY 2018 Utility Rate sheet is located in Appendix A and shows the unit costs and assumptions. The goal is to accurately predict future utility costs and minimizing a surplus.

The following table is a summary of budget information for FY 2016 – FY 2018.

Category	FY 2016 (\$)	FY 2017 (\$)	Consumption Change (FY17-18) (\$)	Unit Change (FY17-18) (\$)	FY 2018 (\$)	Percent Increase (%)
Budget	7,840,755	8,009,945	-	-	8,978,960	FY 16-17 2.16
Actual	7,416,480	-				
Projected	-	8,568,160	194,885	215,915	8,978,960	FY 17-18 4.79
Surplus	424,275	(558,215)				

The FY 2018 utility operating budget request is \$8,978,960, a 12.1 % increases over the FY 2017 budget. The consumption change is due to the return of service and additional 28,176 GSF to SW as well as 310,000 GSF for NG, both on the Rockville Campus in FY 17. Also in FY 17, 126,801 GSF was added with the acquisition new CT building. In FY 18, 34,502 GSF was added to the SA building projecting a cost of \$359,455. The unit cost increases are due primarily to increase in electricity, water and sewer.

Capital Improvement Projects and Operating Budget Sources of Funding: The College Resource Conservation Program is funded by various capital improvement projects (CIP) and operating budget sources. The Energy Conservation CIP, No. 816611 is the original capital program for which the College is requesting \$125,000, the same as in past fiscal years. Other CIPs such as Planned Lifecycle Asset Replacement (PLAR), No. 926659 and College Capital Renewal, No. 096600, also contribute to increased efficiency during equipment and infrastructure replacements. As previously mentioned, the Facility Planning CIP, No. 886686, Project Description Forms (PDF), attempts to integrate sustainability into the planning process. CIP PDFs are shown in Appendix A. Resource conservation opportunities are also integrated into building projects (new construction and renovations) which are usually funded by individual building CIPs. A list of these building projects is also shown in Appendix A.

The College’s operating budget includes funding for one Energy Manager Staff position while the Energy CIP includes funding for the Utility Analyst position. Operating budget funds are also used to replace older less efficient equipment with newer more efficient equipment during routine equipment replacement. Other sources of funding or fund reimbursement such as grants and utility rebates are also used when they become available. The table in Appendix A lists existing, new & planned improvement measures and estimated costs related to the Energy Conservation CIP.

Competitive Procurement of Utilities: The College historically has joined with other County Government agencies and local municipalities to procure deregulated utility supply. The spring 2008 procurement resulted in long term three year contracts with electricity and natural gas suppliers in the face of rising utility projections. Although this resulted in stable prices it also reduced flexibility to respond to unforeseen recessionary price reductions. Contracts are currently in place for natural gas supply through May of 2018 and electricity supply through June of 2019. Under deregulation the natural gas procurements have been straightforward and resulted in competitive yet volatile price excursions. Deregulated electricity supply originally offered savings, but prices have steadily increased due to various influences.

Information Technology: Similar to other agencies, the College continues to expand its information technology capabilities. Most classrooms have been retrofitted with Smart Instructor Work Stations

(SIWS) that include computers to control electronic audio and video multi-media presentation devices. Many traditional multi-purpose classrooms are being retrofitted with computer workstations to meet the “high tech,” demands of the educational programs. A traditional classroom might consume 2-3 watts/square foot while the newer energy intensive classrooms might consume twice that amount. Network, voice and data equipment required to support computer growth consume additional electricity and require dedicated cooling systems. The College continues to respond to this growth by purchasing new computer equipment that is more efficient and complies with the EPA’s Energy Star requirements. High efficiency flat Screen liquid crystal displays (LCD) monitors have long since replaced the older inefficient cathode ray tubes (CRT). Obsolete computer equipment is recycled as part of the College’s recycling program. The College’s Office of Information Technology continues to examine opportunities for integration of energy efficiency and sustainability into their programs. In FY2008 the College began to include Facilities IT Infrastructure into its Utility Master Plans in an attempt to minimize infrastructure and energy impacts of digital technology.

The Network Operations Center, formerly located in the Computer Science Building on the Rockville Campus was relocated to the new Information Technology Operations Center in the Cafritz Foundation Arts Center on the Takoma Park/Silver Spring Campus. Completed in the second half of FY 2009, this new 4,000 GSF facility provides needed expansion space for the central network computer equipment and provides space for operations and the IT Help Desk activities. Primary cooling of the computer equipment is provided by chilled water from the high efficiency West Campus Central Plant which is also located in this building. Redundant cooling is provided by high efficiency secondary direct expansion (DX) cooling systems which are supported by standby emergency generators. In FY2012 an initiative began to switch from distributed desktop computing to cloud computing using high density servers in the network operations center. Cost savings will be realized when individual CPUs are replaced with lower energy consuming virtual terminals, reduced manpower requirements and lower software licensing costs. Additional space on the other campuses is being considered for location of redundant network operations.

ASHRAE BACnet System Integration: The College has been installing DDC and BAC since the late 1980s. These devices orchestrate the operations of the Heating, Refrigeration and Air Conditioning (HVAC) systems to provide occupant comfort, schedule HVAC operations, minimize energy consumption and monitor the system alarms and provide building operator access. These systems also provide sub- metering that supports the College’s Benchmarking efforts.

Motion sensors located in occupied spaces control both lighting and HVAC and these sensors notify the system when spaces become un-occupied so that the lights and HVAC system can go into stand-by. Additionally, other building systems such as security, fire alarms, chiller controls, pump and fan variable speed drives, and lighting control systems are integrated to provide secondary control and monitoring capabilities.

Standardization of communication protocols using BACnet by ASHRAE and acceptance by the engineering and manufacturing community has resulted in building control system integration capabilities allowing open competition for services. This provides the College with a competitive solution to sole source procurement of controls and it was previously. Integration also allows communications between building system components through the BACs which increases capabilities while reducing costs. These newer systems are also capable of communicating over existing building networks, which eliminates redundant networks and further reduces costs. The College introduced this technology on all three campuses in the early 2000s and is incorporating it into all new building designs.

Renewable Solar & Wind Energy: The College began using solar thermal power on Germantown Campus in the late 1970s and currently generates solar electricity using photovoltaics and wind generation on its Bioscience Education Center on the Germantown Campus. The table below shows the historical and proposed site generated renewable energy systems.

Montgomery College Renewable Energy Site Generation Facilities January 2017

Campus	Building	Year Installed	Solar Array Type	Building Load	Status	Comments
Germantown	Science and Applied Studies	1978	224 Flat Plate Thermal Panels	Thermal Source for WSHP & DHW	Decommissioned 1998	See 1998 Comment
Germantown	Humanities & Social Sciences	1978	282 Flat Plate Thermal Panels	Thermal Source for WSHP, DHW, & Swimming Pool	Decommissioned 2000	See 2000 Comment
Germantown	Science and Applied Studies	1998	26 kW Photovoltaic	Building Electrical Grid	Operational	Replaced original thermal array.
Germantown	Humanities & Social Sciences	2000	24 kW Photovoltaic & 900 Evacuated Tube Thermal	Building Electrical Grid, Thermal Source for WSHP, DHW, & Swimming Pool	PV System Operational. Thermal System Reached End of Useful Life and is Out of Service.	Replaced 3/4 of original thermal array with PV & converted remainder to evacuated tube.
Takoma Park /Silver Spring	Heath Sciences	2004	33 kW Photovoltaic	Building Electrical Grid	Operational	
Rockville	Science Center	2012	25 kW Photovoltaic	Building Electrical Grid	Operational	Represents less than 1% of building electrical. LEED Gold Building
Rockville	Science East	2013	20 kW Photovoltaic	Building Electrical Grid	Operational	Represents approximately 2% of the building electrical.
Germantown	Biosciences Education Center	2014	35 kW Potovoltaic & 6 kW Wind Turbines	Building Electrical Grid	Operational	Represents approximately 1% of the building electrical.
Rockville	Science West	2017	35 kW Photovoltaic	Building Electrical Grid	Operational	Represents approximately 2% of the building electrical.
Germantown	Science and Applied Studies	2016	26 kW Photovoltaic	Building Electrical Grid	Decommissioned 2016	Building under renovation/construction
Total KW			172.00			
Annual kWh			337,348			
Annual Saving			\$47,814.00			

The photos below show the solar arrays on the Germantown, Takoma Park/Silver Spring and Rockville Campus facilities.



Germantown Campus Photovoltaic and Thermal Arrays



Takoma Park/Silver Spring Health Science Building Photovoltaic Array



Rockville Campus Science Center Photovoltaic Array

The College partners with the other County agencies and procures a percentage of its electricity in the form of RECs. In FY 17 the College will be purchasing 138% percent of its electricity in the form of wind generated RECs. This exceeds the county mandate of reaching 100% RECS by FY 16 per Green Power Purchasing, Bill 9-14. The College's total pollutant reduction for fiscal year 2018 is well over 155 million pounds.

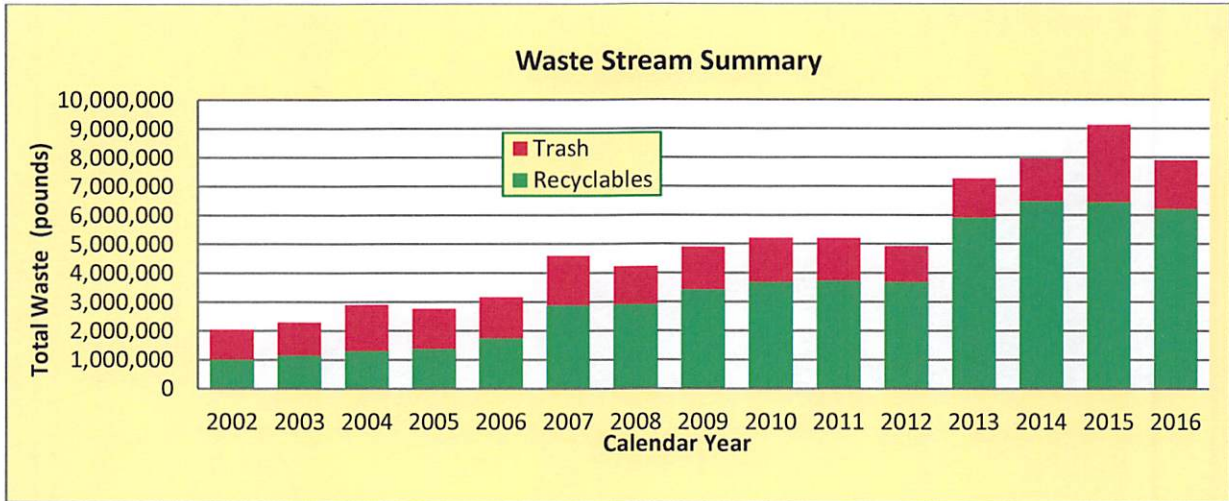
Montgomery College Historical Wind REC Purchase

Fiscal Year	Annual Electricity Consumption (kWh) (5)	Wind REC (kWh) (6) (7)	Annual Electricity Consumption (MWh)	Wind REC (MWh)	Wind REC Cost (Cents/kWh)	Wind Energy Annual Premium (\$)	Wind Percentage of Annual (%)	Sulfur Dioxide (SO ₂) (pounds)	Nitrogen Oxides (NO _x) (pounds)	Carbon Dioxide (CO ₂) (pounds)	Total Pollutant Reduction (pounds)
2005 (1)	28,281,748	1,286,315	28,282	1,286	1.498	19,269	4.55	9,004	2,573	1,569,304	1,580,881
2006 (1)	30,231,974	1,286,315	30,232	1,286	1.498	19,269	4.25	9,004	2,573	1,569,304	1,580,881
2007 (1)	33,089,460	3,135,738	33,089	3,136	1.498	46,973	9.48	21,950	6,271	3,825,600	3,853,822
2008 (1)	33,540,204	3,135,738	33,540	3,136	1.498	46,973	9.35	21,950	6,271	3,825,600	3,853,822
2009 (2)	34,761,200	24,658,000	34,761	24,658	0.130	32,055	70.94	161,756	111,208	53,231,444	53,504,408
2010 (2)	36,078,995	27,132,080	36,079	27,132	0.177	48,159	75.20	177,986	122,366	58,572,463	58,872,815
2011(2)	38,465,527	7,725,000	38,466	7,725	0.106	8,189	20.08	50,676	34,840	16,676,653	16,762,169
2012(2)	40,088,577	8,320,000	40,089	8,320	0.117	9,734	20.75	54,579	37,523	17,961,133	18,053,235
2013(2)	41,050,962	8,300,000	41,051	8,300	0.094	7,802	20.22	54,448	37,433	17,917,957	18,009,838
2014(2)	42,551,000	8,300,000	42,551	8,300	0.115	9,545	19.51	54,448	37,433	17,917,957	18,009,838
2015(3)	45,000,000	45,000,000	45,000	45,000	0.123	55,350	100.00	141,750	106,650	99,839,700	100,088,100
2016(3)	45,311,646	60,000,000	45,839	60,000	0.067	40,200	130.89	189,000	142,200	133,119,600	133,450,800
2017(3)	47,657,446	65,000,000	47,657	65,000	0.071	46,150	136.39	204,750	154,050	144,212,900	144,571,700
2018 (3)*	50,892,980	70,000,000	50,893	70,000	0.071	49,700	137.54	220,500	165,900	155,306,200	155,692,600
Total:	403,139,647	138,279,186	358,140	333,279		303,319	-	1,151,303	801,390	570,239,616	572,192,309
Notes:											
Pollutant rate of offset	PEPCO (1)	MROW (2)	SPNO (3)								
SO ₂ (lbs/Mwh)	7.00	6.56	3.15								
NO _x	2.00	4.51	2.37								
CO ₂	1,220.00	2158.79	2,218.66								
Total offset:	1,229.00	2169.86	2,224.18								
5. Projected amounts for FY 2014, FY 2015 and FY 2016											
6. Renewable Energy Certificate (REC)											
7. Additional RECs ini FY 16 through FY 18 offset estimated college fossil fuel CO2											

Occupant Awareness and Outreach Programs: The College continues to promote occupant energy awareness. In FY 2007 a Facilities Office Web site was developed and launched, detailing the activities of the Office of Facilities as well as the energy management and resource conservation program. Periodic energy and utility conservation notices to building occupants are posted on the College's Web based newsletter. A student environmental club, MC Green was formed in the second half of FY 2008 and College faculty and staff are providing support and promoting its development. Classes are now being offered on sustainability and green practices and additional programs are being discussed. As sustainability awareness increases interagency and College management strategies have evolved. For example, the Procurement Office is currently coordinating with other County agencies to implement sustainable procurement practices and has organized a print management committee. The Office of Information Technology has implemented network efficiency measures and equipment control and the Office of Human Resources has submitted applications for workplace sustainability and workplace wellness awards. In FY 2010, Montgomery College Television (MCTV) began a television series called MC Green which highlights College and community sustainability activities. In FY 2012 the College's sustainability committee the MC Green Team was formed and consists of representatives from administrative departments, faculty, staff and students, who meet monthly. In FY 2014 the MC Green Team sponsored a college-wide sustainability contest and solicited proposals from students, faculty and staff. In December 2013 twenty-five proposals were received, judged by a panel of independent judges and five finalists were selected to proceed to the final round. Those finalists prepared final proposals and were judged and the top three received monetary awards in the form of student scholarships and staff recognition awards. The goal of the committee is to offer sustainability outreach to the College community. MC Green Team Blog: <http://montgomerycollegesustainability.wordpress.com/>

Recycling and Hazardous Waste Disposal: The College has a long standing and proactive recycling and hazardous waste disposal program. The College has received numerous Smart Organizations Reduce and Recycle Tons (SORRT) awards from the Montgomery County Government for exceeding the 50% recycling goal. In calendar year (CY) 2012 the County increased the goal to 70% and although the College as a whole exceeded this threshold, it did not obtain the SORRT award for CY 2012 and 2013 because of changes in reporting requirements.

The following chart shows the historical progression and summary table show the categories and quantities of the College's waste stream management. It is the College's goal to reduce the amount of waste that it generates and then recycle more of that waste. The graph shows the recycling percentage for Calendar Years 2002-2016.



The College's print management committee has implemented a pay for print program, reduced the quantity, quality and cost of print and mailing of material. Other efforts such as digital distribution of materials have reduced paper, distribution cost and postage. Improvements to signage, education campaigns, and outreach to the College community are all part of this continuing effort.

Montgomery College Summary of Recycling for CY 2016

**Montgomery College
Summary of Recycling (LBS)**

	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
Required Recycling											
Commingled Containers	366,849	350,667	350,627	350,627	317,372	317,372	257,428	167,402	166,272	147,968	99,962
Mixed Paper and Cardboard	807,614	868,619	868,510	857,273	796,220	814,320	709,430	1,320,288	956,430	980,614	778,622
Scrap Metal	232,001	419,750	301,558	234,943	40,200	59,206	107,374	60,841	2,580	4,430	6,260
Yard Waste	2,509,520	2,509,520	2,509,520	2,433,520	2,444,160	2,444,160	2,444,160	1,775,162	1,677,200	1,620,060	574,280
Total Required Recycling	3,915,984	4,148,556	4,030,215	3,876,363	3,597,952	3,635,058	3,518,392	3,323,694	2,802,482	2,753,072	1,459,124
Total % Required Recycling	69.7%	60.6%	72.9%	74.1%	74.3%	71.1%	69.6%	69.2%	68.0%	61.7%	50.3%
Voluntary Recycling											
Antifreeze	1,395	1,760	1,640	1,360	1,285	1,640	1,200	1,600	1,850	1,600	3,000
Batteries & Power Supplies	2,174	3,020	2,140	2,513	3,247	1,311	1,298	5,409	3,176	5,745	4,723
Computer Equipment	62,380	36,650	108,448	62,383	49,596	60,080	25,760	72,529	81,703	104,572	211,830
Construction/Demolition Debris ARA		110,000	2,304,240	1,939,540			91,480				
Equipment and Appliances				2,115	868		40,960	2,270	15,413	700	
Furniture	571	6,906		2,550	25,000	8,915	1,560	6,623	1,050	755	22,737
Light Tubes and Lamps	1,603	3,080	3,860	3,641	3,868	2,168	2,180	3,500	3,015	2,925	2,291
Oils - various	4,425	5,260	9,220	6,830	5,580	9,540	5,225	5,185	5,375	5,535	7,030
Tires	9,480	5,340	6,240	1,920	1,620	1,860	345	510	592	849	1,163
Toner Cartridges	816	500	500	1,154	740	760	2,496	1,777	1,345	1,034	2,120
Wood Pallets		8,250	7,800	17,600	8,000	12,500	1,500	12,750	15,000	21,100	28,800
Total Voluntary Recycling	2,294,590	2,292,966	2,444,088	2,041,606	99,804	98,774	174,004	112,153	128,519	144,815	283,694
Total % Voluntary Recycling	29.0%	25.1%	30.7%	28.1%	2.0%	1.9%	3.3%	2.3%	3.0%	3.1%	8.9%
Total Recycled (LBS)	6,210,574	6,441,482	6,474,303	5,917,969	3,697,756	3,733,832	3,692,396	3,435,847	2,931,001	2,897,887	1,742,818
Total % Recycled	78.50%	70.5%	81.2%	81.4%	74.8%	71.6%	70.6%	69.9%	69.0%	62.9%	54.7%
Total Solid Waste (LBS)	1,700,852	2,698,752	1,494,964	1,353,464	1,247,360	1,479,820	1,538,916	1,479,247	1,316,842	1,711,886	1,442,420
Total Recycled and Solid Waste (LBS)	7,911,426	9,140,234	7,969,267	7,271,433	4,945,116	5,213,652	5,231,312	4,915,094	4,247,843	4,609,773	3,185,238
SORRT Award	?	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes

68% 6,426,642 recycled excluding yard waste and regulated wastes per LEED guidance recycled materials (adjusted) and recycling (adjusted) and solid waste

Hazardous waste is managed by the Environmental Safety team who ensure that hazardous chemicals are minimized and hazardous waste is properly disposed. The College attempts to

reduce the chemical stream by reducing or eliminating chemical inventories. For example, volatile organic compounds used to clean automotive parts, printing equipment or art equipment have been eliminated and replaced with natural citrus cleaners.

The College has also taken steps to save money and reduce the quantity of products that get into the waste stream by promoting the use of digital dissemination, rather than hard copy printing, copying or faxing. This not only reduces the waste stream but saves money in printing, mail and manpower. Waste stream reduction is also part of the College's occupant awareness and outreach programs.



Typical College Recycling Containers, Signage and Restricted Openings

Vehicle Fleet: The College maintains vehicles to support the various functions of the College. The fleet is maintained by the Director of Facilities on the Germantown Campus. The College also maintains various other specialty vehicles, such as mower, tractors, forklifts and carts. The College has converted to 4-cycle engines for efficiency and noise reduction. The College improves efficiency by purchasing “right sized” vehicles for their application and now uses Electric Vehicle Carts reducing gasoline consumption.

Transportation Management: Montgomery College manages parking and transportation to support its students, faculty and staff. Each campus provides parking and public transportation facilities; parking regulations are enforced by campus Security. Several years ago the College began to assess a parking fee as a means to provide a revenue stream to support capital improvements to parking structures and to subsidize free Montgomery Ride-on Bus access for College students. For the past several years the College has been investigating opportunities that support transportation demand management (TDM). The College has participated in the bike share program and installed bike share stations on the Rockville and Takoma Park/Silver Spring Campuses. Surveys have been conducted to determine the preferences and preferred modes of transportation for students, faculty and staff. Since August of 2014, the College has had its' own shuttle buses that travel between campuses to allow students, faculty and staff direct access to all campuses.

Through the guidance of the Student Governance Council, it was clear that travel among the campuses was a setback for many students to attend their classes. Public transportation can take up to 90 minutes to two hours each way due to frequent stops, from Rockville to Takoma Park Silver Spring Campus while Rockville to Germantown would be about an hour. The relevance for a timely and reliable weekday inter-campus transportation for commuting students and employees was a necessity. The MC Shuttle cuts that time to 40 minutes between Rockville and TPSS Campuses and to 20 minutes between the Rockville and

Germantown Campuses.

In addition, the College has established several programs to reduce vehicular travel. A telecommuting program allows employees to work from home several days a week rather than commute to work. Video and audio teleconferencing facilities are available throughout the College to allow remote team collaboration and eliminate mileage. Many courses are available on-line or through the College's Instructional Television (ITV) program. Both of these offer access to broader audiences while eliminating travel. College employees can choose to participate in a pre-tax public transportation flexible spending account. The new Rockville North Campus Parking Garage has 20 electric vehicle (EV) parking stations.

Operations and Maintenance: Operations and Maintenance (O&M) is responsible for operating and maintaining the College's resources in a safe, reliable and economical manner. Consumption of chemicals is reduced by using environmentally friendly cleaning products and minimizing concentrations. In FY 2010, the Takoma Park Silver Spring O&M management and staff adopted the Green Seal GS42 (see more below) cleaning program and became certified instructors in order to share their knowledge with the other campus O&M staff. The best practices of integrated pest management are applied to insect and pest treatment programs. Building systems are optimally maintained and operated to meet the comfort requirements of the building occupants. Grounds and landscapes are maintained in an environmentally friendly manner with drought, disease and insect resistant native species and use of high efficiency, low emitting, four cycle, grass mulching equipment. O&M also manages the recycling program on each campus. O&M also does various lighting and controls retrofits in order to improve efficiency and replace obsolete equipment.



Takoma Park/Silver Spring Building Service Staff

Montgomery College Takoma Park/Silver Spring became the first community college in the country to be awarded the Green Seal Certification (GS-42) for cleaning services in August of 2015.

To earn this certification, an in-depth review of the cleaning service's processes, procedures, and purchasing records is involved. An on-site audit of facilities cleaned by the service is required as well. This institution continues to be at the forefront of sustainability by following a science-based standard, without bias or conflict of interest being environmentally responsible and respectful through GS-42.



GS-42

Green Seal™ Standard for Commercial and Institutional Cleaning

A Guide for Leadership in Commercial Cleaning

Green cleaning—high performance cleaning that protects human and environmental health—is in demand. The procedures, products, and training that services utilize can enhance our health and well-being if managed responsibly. Both in-house and contracted cleaning services can protect tenants, workers, and the environment by following the requirements in Green Seal's Standard for Commercial and Industrial Cleaning, GS- 42.

The Scope of GS-42

The standard establishes leadership environmental requirements for all activities that cleaning services typically perform when cleaning indoor areas and entryways of commercial, public and industrial buildings. The standard also covers the cleaning of hotels, hospitals, dormitories, and similar properties with residential and common areas, and the cleaning of common or public areas of apartment buildings and similar properties. GS-42 does not cover the maintenance of any exterior areas such as parking lots, grounds, or picnic areas; residential homes or areas, or specialty cleaning services.

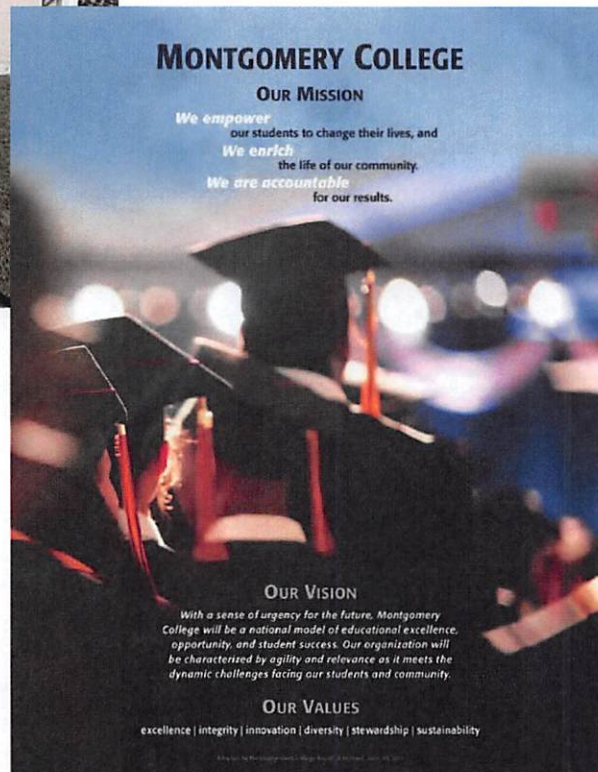


CONCLUSIONS

FY 2018 Montgomery College Resource Conservation Program is a well-balanced, environmentally friendly, low risk, high return on investment program, based upon results of Master Planning and Best Practice Resource/Energy Conservation efforts. All investments are selected based upon their life cycle cost effectiveness and on their high probability for success. Utility consumption figures indicate that energy conservation measures implemented have had a positive, cost-effective impact. The potential exists for savings in lighting and controls, which continue to be identified during the walk-through and detailed energy audits. All new or renovated buildings undergo rigorous analysis to determine the optimum life cycle cost effective systems and meet or exceed the requirements of the Montgomery County Green Buildings Law. It is the College's goal to attain at least USGBC LEED Gold rating on current and future building designs. To ensure that the program is proceeding as predicted, various databases have been developed to provide accountability for the energy dollars spent. Montgomery College is confident that the fiscal year 2018 Resource Conservation Program will meet the goal of providing safe, reliable, environmentally friendly and economical facilities which enhance the learning environment at Montgomery College and contribute to student success.



**Green Roof and Daylight
Atrium Rockville Campus**



**Montgomery College Mission,
Vision, Values**

APPENDIX A

Summary of New Buildings and Renovations

Energy Conservation CIP, No. 816611, PDF

Planned Lifecycle Asset Replacement CIP, No. 926659, PDF

College Capital Renewal CIP, No. 096600, PDF

Facility Planning CIP, No. 886686, PDF

Montgomery College FY 2017, Utility Projection Report, August 14, 2016

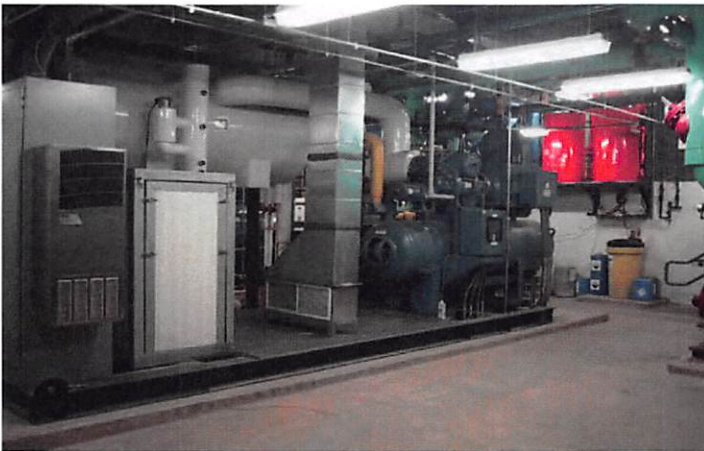
Utility Rates, FY16-FY17, August 14, 2016

Existing, New & Planned Measure Table

Space Summaries & Campus Maps



The Gudelsky Institute for Technical Education, Opened 1992
Award Winning Example of College's Early Sustainability
Efforts



High Performance Rotary Screw Chiller, Takoma Park/Silver Spring West Central Plant
Using Ammonia (R-717) Natural and Efficient Refrigerant, with Ice Thermal Storage for
"Smart Grid" Electrical Demand Management

Summary of New Buildings, Renovations & Projects – RCP FY 2018

Year	Campus	Building Name	Gross Square Feet	Green Building Certification (1)	Features
2004	TP/SS	Health Sciences Center - New	98,038	BEPS	Classrooms, Offices, Laboratories 33 kW photovoltaic.
2006	TP/SS	Charlene R. Nunley Student Services Center - New	110,504	BEPS	Classrooms, Offices, Bookstore, Cafeteria, East Campus Central Plant, Ammonia Refrigeration, Ice Storage. Classrooms, Offices on 1 st floor, 2 nd floor leased by Montgomery County
2006	GT	Goldenrod Building Purchased/Renovated	68,826	BEPS	
2007	TP/SS	The Morris and Gwendolyn Catritz Foundation Arts Center - Redevelopment	134,748	BEPS	Art Labs, Offices, Bookstore, West Campus Central Plant, Ammonia Refrigeration, Ice Storage. 4000 GSF, Information and Technology Operations Center added Spring 2009.
2009	TP/SS	The Cultural Arts Center - New	57,243	BEPS	Performing arts studios, classrooms, Auditorium. Connection to West Campus Central Plant.
2009	TP/SS	The Commons - Renovation	30,235	BEPS	Classrooms, offices. Connection to East Campus Central Plant.
2010	TP/SS	West Garage - New	159,795	BEPS	5 level, 300+ space parking garage. High efficiency lighting, west plant ice modules installed.
2011	RV	Science Center - New	140,700	BEPS & LEED Gold	Classrooms, Laboratories, Offices, satellite plant, frictionless chillers, 25 kW photovoltaic, vegetative roof.
2013	TP/SS	Falcon Hall	39063	Equipment Replacement	Removal of original equipment, ageing, No. 2 Oil Fueled boilers by connection to central plant hot water distribution system.
2012	GT	Child Care Center - New	5,000	BEPS	Child care facility. Central plant connection.
2013(4)	TP/SS	Pavilion Four HVAC Renovation	15,837	BEPS	Major HVAC replacement, connection to central plant, removal of underground fuel oil storage tank.
2013	GT	Humanities & Social Sciences, Physical Education	75,700 & 36,77	Equipment Replacement	Replaced ageing pulse combustion boilers with high efficiency condensing boilers and new controls. New high efficiency pumps.
2013	GT	Physical Education	36,770	Equipment Replacement	Replaced original air handling system in natatorium with high performance dehumidification heat pump w/heat recovery.
2013	GT	High Technology	36,770	Equipment Replacement	Replaced ageing pulse combustion boilers with high efficiency condensing boilers and new controls
2013	RV	Parking Lot 1	N/A	Lighting Replacement	Parking lot renovation & resurfacing. New lighting design using super pulse start metal halide lighting, replaces low pressure sodium lighting.
2014-2016	TP/SS	Pavilion Three - Renovation	17,000	BEPS & LEED Silver Targeted	Classrooms, computer laboratories, & offices. New envelope, lighting, HVAC, etc. Conversion from all electric heating and cooling to central plant connection.

Year	Campus	Building Name	Gross Square Feet	Green Building Certification (1)	Features
2014	GT	Bioscience Education Center – New	145,139	BEPS & LEED Gold Targeted	Classrooms, Laboratories, Offices, satellite plant, ammonia refrigeration, ice storage, frictionless chiller, heat recovery. 35kW photovoltaic, 6 kW wind, vegetative roof, bio retention area.
2014	RV	Science East Building – Renovation	53,737 + 7,056	BEPS & LEED Gold Targeted	Renovation & addition. Classrooms, computer laboratories, & offices. Envelope, lighting, HVAC & 20 kW photovoltaic.
2014	RV	Parking Lot 5 & 6	N/A	Lighting Replacement	Parking lot renovation & resurfacing. New lighting design using super pulse start metal halide lighting, replaces low pressure sodium lighting. Selection based upon life cycle cost analysis.
2014-2016	RV	Science West Building – Renovation & Addition	35,502	BEPS & LEED Gold Targeted	Renovation & 3 rd floor addition. Classrooms, computer laboratories, offices. Envelope, lighting, HVAC, 20 kW photovoltaic.
2014-2017	CW	college-wide (CW)	N/A	PEPCO Rebate Program	Various energy upgrades, i.e. lighting, lighting controls, etc. Involves numerous College buildings.
2014-16	TP/SS	Falcon Hall	39,063	Equipment Replacement	Major HVAC & lighting multi-year replacements. Replacing ageing HVAC equipment, connection to central plant for heating and cooling. Elimination of No. 2 Fuel Oil fired equipment and fuel oil storage
2014-16	TP/SS	Resource Center	44,906	Equipment Replacement	Major HVAC & lighting multi-year replacements. Replacing ageing HVAC equipment, connection to central plant for heating and cooling. Elimination of electrical heating and cooling systems.
2015-2016	RV	North Garage - New	N/A	BEPS, LEED & Green Parking Targets	New 918 space parking structure. Sustainable design, lighting, photovoltaic evaluation, & 20 electric vehicle charging stations.
2014-2018	GT	Science & Applied Studies – Renovation & Addition	99,648 +35,502	BEPS, LEED Gold Targeted	Renovation of 2 nd floor and addition. Classrooms, computer laboratories, dry laboratories & offices. Envelope, lighting, HVAC & evaluation of photovoltaic.
2016-2019	RV	Student Services Center – New	120,400	BEPS, LEED Gold Targeted	Classrooms, registration areas, counseling, security office, new high performance central hot water plant which will replace ageing central plant boilers in the existing Humanities Building central plant.
2016-2017	GT	Physical Education	N/A	Envelop Replacement	New higher performance building envelop with drainable <i>Drybit</i> replacement. Retro-commissioning.

2016	RV	Parking Lot 8 & 9	N/A	Lighting Replacement	Super Pulse Star Light retrofit
2016-2017	OC	Central Services	126,801	BEPS	30 year old renovation

Notes

1. 1985 County Council legislation mandated Building Energy Performance Standards (BEPS). Which requires all county agency buildings to meet energy standards and perform energy analysis and life cycle cost. 2007 County Council legislation requires all county agency buildings to meet U.S. Green Building Council (USGBC) LEED Silver rating. Equipment replacements are based upon technical evaluation and life cycle cost analysis.
2. Lighting – All lighting involves selection of the appropriate source based upon national standards and technical evaluation of the application. Analysis is performed to determine lighting layouts and life cycle cost effectiveness.
3. Central Plant – All campuses have central heating and cooling plants which have been determined to be cost effective based upon utility planning and life cycle cost analysis. The plants contain high efficient ammonia refrigeration cooling systems with ice thermal storage for electrical demand management, co-generation/co-process equipment with heat recovery and high efficient natural gas fired boilers.

Energy Conservation: College (P816611)

Category Montgomery College
Sub Category Higher Education
Administering Agency Montgomery College (AAGE15)
Planning Area Countywide

Date Last Modified 5/3/2016
Required Adequate Public Facility No
Relocation Impact None
Status Ongoing

	Total	Thru FY15	Est FY16	Total 6 Years	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	Beyond 6 Yrs
EXPENDITURE SCHEDULE (\$000s)											
Planning, Design and Supervision	2,342	1,782	80	480	80	80	80	80	80	80	0
Land	0	0	0	0	0	0	0	0	0	0	0
Site Improvements and Utilities	59	59	0	0	0	0	0	0	0	0	0
Construction	2,935	2,620	45	270	45	45	45	45	45	45	0
Other	132	132	0	0	0	0	0	0	0	0	0
Total	5,468	4,593	125	750	125	125	125	125	125	125	0
FUNDING SCHEDULE (\$000s)											
Current Revenue: General	2,108	1,994	18	98	18	18	18	18	18	18	0
Federal Aid	49	49	0	0	0	0	0	0	0	0	0
G.O. Bonds	3,282	2,488	109	654	109	109	109	109	109	109	0
State Aid	61	61	0	0	0	0	0	0	0	0	0
Total	5,498	4,593	125	750	125	125	125	125	125	125	0
OPERATING BUDGET IMPACT (\$000s)											
Energy				-8,810	-1,010	-1,080	-1,110	-1,160	-1,210	-1,260	
Maintenance				-2,580	-380	-400	-420	-440	-460	-480	
Net Impact				-9,390	-1,390	-1,480	-1,530	-1,600	-1,670	-1,740	
Full Time Equivalent (FTE)					1.0	1.0	1.0	1.0	1.0	1.0	1.0

APPROPRIATION AND EXPENDITURE DATA (000s)

Appropriation Request	FY 17	125
Appropriation Request Est.	FY 18	125
Supplemental Appropriation Request		0
Transfer		0
Cumulative Appropriation		4,718
Expenditure / Encumbrances		4,643
Unencumbered Balance		75

Date First Appropriation	FY 81	
First Cost Estimate		
Current Scope	FY 17	5,468
Last FY's Cost Estimate		5,218

Description

This project provides funding to (1) continue development of a Collegewide energy management program, (2) implement life-cycle cost effective energy conservation measures based upon energy audits, and (3) review new building/renovation designs for compliance with Montgomery County Code, Ch. 8 Building Energy Performance Standards. Typical project activities include retrofits and modifications of lighting, controls, and HVAC equipment; building envelope modifications; solar energy retrofits; computer equipment for equipment control and energy-use monitoring; HVAC system evaluation/balancing studies; long-range energy/utility planning studies; central plant design plans (Germantown, Rockville, Takoma Park/Silver Spring); and waste management studies. Typical payback on lighting, controls, HVAC and solar energy modifications is five to six years. This project includes one staff position for a Utility Analyst which is in response to increased workload associated with the energy and utility functions, but also the design reviews of major projects, planned lifecycle asset replacements, and capital renewals, as well as complying with laws.

Cost Change

Increase due to the addition of FY21 and FY22.

Justification

As mandated by Ch. 8 of the County Code and supported by the College, County Council, the Interagency Committee on Energy & Utility Management (ICEUM), and the Citizens Energy Conservation Advisory Committee (ECAC), an energy cost reduction program has been developed. This program consists of energy audits performed by College staff to identify life cycle cost effective retrofits, including a lighting retrofit program, LEED certification, etc.

Other

Energy Conservation: College (P816611)

FY2017 Appropriation: \$125,000 (G.O. Bonds). FY2018 Appropriation: \$125,000 (G.O. Bonds). The following fund transfers have been made from this project: \$21,420 to Central Plant Distribution System project (#P886676) (BOT Resolution #90-102, 6/18/90); \$70,000 to Fine Arts Renovation (#P906601) (BOT Resolution #94-114, 9/19/94), \$7,000 to Planning, Design & Construction project (#P906605) (BOT Resolution #01-153, 10/15/01), and \$200,000 to Germantown Bioscience Education Center Project (#P056603)(BOT Resol. #12-06-036, 6/11/12). Beginning in FY98, the portion of this project funded by County Current Revenues migrated to the College's Operating Budget. It is anticipated that migration of this portion of the project will promote a desirable consistency with County budgeting practices and encourage greater competition in an environment of scarce resources. Reflecting the migration of this portion of the project, the College's Operating Budget includes funds for this effort. New construction and building renovation projects under review during FY14-15 include planning for new buildings on the Rockville and Germantown campuses. Campus utilities master plans are currently being updated to conform to the approved Facilities Master Plan Update (1/15). This project is also coordinated with the Collegewide Facilities Condition Assessment Update (12/13).

Disclosures

Expenditures will continue indefinitely.

Montgomery College (A15) asserts that this project conforms to the requirements of relevant local plans, as required by the Maryland Economic Growth, Resource Protection and Planning Act.

Coordination

This project is coordinated with the scheduled building renovations, and the planned construction of new buildings, on the Rockville, Germantown, and Takoma Park/Silver Spring Campuses., ICEUM & ECAC, Facility Planning: College (CIP No. P886686), Planned Lifecycle Asset Replacement: College (CIP No. P928659), Roof Replacement: College (CIP No. P876684)

Planned Lifecycle Asset Replacement: College (P926659)

Category Montgomery College
 Sub Category Higher Education
 Administering Agency Montgomery College (AAGE15)
 Planning Area Countywide

Date Last Modified 5/3/16
 Required Adequate Public Facility No
 Relocation Impact None
 Status Ongoing

	Total	Thru FY15	Est FY16	Total 6 Years	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	Beyond 6 Yrs
EXPENDITURE SCHEDULE (\$000s)											
Planning, Design and Supervision	7,513	4,280	933	2,300	300	400	400	400	400	400	0
Land	0	0	0	0	0	0	0	0	0	0	0
Site Improvements and Utilities	0	0	0	0	0	0	0	0	0	0	0
Construction	58,349	35,205	3,644	19,500	2,400	2,700	3,600	3,600	3,600	3,600	0
Other	310	276	34	0	0	0	0	0	0	0	0
Total	66,172	39,761	4,611	21,800	2,700	3,100	4,000	4,000	4,000	4,000	0
FUNDING SCHEDULE (\$000s)											
Current Revenue: General	1,840	1,840	0	0	0	0	0	0	0	0	0
G.O. Bonds	64,232	37,821	4,611	21,800	2,700	3,100	4,000	4,000	4,000	4,000	0
Total	66,172	39,761	4,611	21,800	2,700	3,100	4,000	4,000	4,000	4,000	0

APPROPRIATION AND EXPENDITURE DATA (000s)

Appropriation Request	FY 17	2,700
Appropriation Request Est.	FY 18	3,100
Supplemental Appropriation Request		0
Transfer		0
Cumulative Appropriation		44,372
Expenditure / Encumbrances		40,312
Unencumbered Balance		4,060

Date First Appropriation	FY 93
First Cost Estimate	
Current Scope	FY 17 67,072
Last FY's Cost Estimate	59,048

Description

This project provides funding for a comprehensive lifecycle renewal and replacement program to protect the investment in College facilities and equipment and to meet current safety and environmental requirements. Funding also provides for project management staff and/or services. This collegewide project is targeted at deteriorating facilities and deferred maintenance of major building systems. This project includes: (1) HVAC system renovation/replacement; (2) major mechanical/plumbing equipment renovation/replacement; (3) interior and exterior lighting system renovation/replacements; (4) electrical service/switchgear renovation/replacement; (5) building structural and exterior envelope refurbishment; (6) asbestos removals not tied to building renovations; (7) major carpet replacement; (8) underground petroleum tank upgrades; and (9) site utility, and site infrastructure replacement/ improvements. Note: The Life Safety Systems project, (CIP No. P046601), has been merged into this project. This project also provides design and construction funding for the correction of life safety and fire code deficiencies identified in the Collegewide Facilities Condition Audit prepared by Vanderweil Facility Advisors (VFA). The scope of this project includes the installation and/or replacement of fire alarm systems, fire sprinkler systems, smoke control systems, emergency power systems, emergency lighting systems, public address systems, and similar equipment and operations.

Cost Change

Increase due to the addition of FY21, and FY22. FY18 was reduced by \$900,000 for fiscal capacity.

Justification

In November 2007 (December 2013 update), the College updated a comprehensive building system/equipment assessment, including site utilities and improvements, that identified deficiencies, prioritized replacements and upgrades, and provided the framework for implementing a systematic capital renewal program to complement on-going preventive maintenance efforts. The College continues to have a significant backlog of major building systems and equipment renovations and/or replacements due to the age of the Campuses and deferral of major equipment replacement. Key components of the HVAC, mechanical and electrical systems are outdated, energy inefficient, and costly to continue to repair. The renovation and/or replacement of major building systems, building components and equipment, and site improvements will significantly extend the useful life of the College's buildings and correct safety and environmental problems. The Collegewide Facilities Condition Assessment Update (12/13) identified a \$85 million deferred maintenance backlog for the three campuses. If additional financial resources are not directed at this problem, facilities will continue to deteriorate leading to higher cost renovations or building replacements. The Collegewide Facilities Condition Audit identified various life safety concerns on all three campuses. This project allows the College to address the concerns, replacing and/or installing appropriate life safety or fire code measures, and ensuring compliance with applicable life safety, fire, and building codes. Other relevant plans and studies include the Collegewide Facilities Master Plan Update (1/15), and the County Council Report of the Infrastructure Maintenance Task Force (3/14).

Planned Lifecycle Asset Replacement: College (P926659)

Other

FY2017 Appropriation: \$2,700,000 (G.O. Bonds). FY2018 Appropriation: \$3,100,000 (G.O. Bonds). The following fund transfers have been made from this project: \$47,685 to Takoma Park Child Care Center (CIP No. P946657) (BOT Resol. #93-106, #94-26 & #941-26); \$185,000 to Rockville Surge Building (CIP No. P986665) (BOT Resol. #11-2291 - 1/21/97); \$7,000 to Planning, Design & Construction (CIP No. P906605) (BOT Resol. #01-153); \$91,175 to the Art Building Renovation Project (CIP No. P906608) (BOT Resol. # 06-09-106 - 9/18/06); and \$250,000 to the Takoma Park Expansion Project (CIP No. P996662) (BOT Resol. #07-01-005 - 1/16/07). The following fund transfers have been made into this project: \$15,000 from Central Plant Distribution System (CIP No. P866676) (BOT Resol. #98-82 - 6/15/98), \$25,000 from Clean Air Act (CIP No. P956643) (BOT Resol. # 98-82 - 6/15/98), and \$24,000 from the Rockville Campus Science Center Project (CIP No. P036600) (BOT Resol. # 15-03-025 - 03/23/15). Beginning in FY98, the portion of this project funded by County Current Revenues migrated to the College's Operating Budget. Reflecting the migration of this portion of the project, the College's Operating Budget includes funds for this effort. The following fund transfer has been made from this project: \$67,000 to the Commons Building Renovation Project (CIP No. P056601) (BOT Resolution #10-08-057, 07/31/10).

Disclosures

Expenditures will continue indefinitely.

Coordination

This project is coordinated with Utility Master Plans and building renovations on the Rockville, Germantown, and Takoma Park/Silver Spring Campuses; and the following projects: Capital Renewal: College (CIP No. P096600), Elevator Modernization: College (CIP No. P046600), Energy Conservation: College (CIP No. P816611), Facility Planning: College (CIP No. P886686), Macklin Tower Alterations (CIP No. P036603), Roof Replacement: College (CIP No. P876664), Computer Science Alterations (CIP No. P046602).

Capital Renewal: College (P096600)

Category Montgomery College
 Sub Category Higher Education
 Administering Agency Montgomery College (AAGE15)
 Planning Area Countywide

Date Last Modified 5/3/16
 Required Adequate Public Facility No
 Relocation Impact None
 Status Ongoing

	Total	Thru FY15	Est FY16	Total 6 Years	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	Beyond 6 Yrs
EXPENDITURE SCHEDULE (\$000s)											
Planning, Design and Supervision	3,648	1,302	544	1,600	300	300	300	300	300	300	0
Land	0	0	0	0	0	0	0	0	0	0	0
Site Improvements and Utilities	0	0	0	0	0	0	0	0	0	0	0
Construction	18,183	8,916	1,047	8,200	700	700	1,700	1,700	1,700	1,700	0
Other	1,079	818	261	0	0	0	0	0	0	0	0
Total	22,888	11,036	1,852	10,000	1,000	1,000	2,000	2,000	2,000	2,000	0
FUNDING SCHEDULE (\$000s)											
G.O. Bonds	22,888	11,036	1,852	10,000	1,000	1,000	2,000	2,000	2,000	2,000	0
Total	22,888	11,036	1,852	10,000	1,000	1,000	2,000	2,000	2,000	2,000	0

APPROPRIATION AND EXPENDITURE DATA (000s)

Appropriation Request	FY 17	1,000
Appropriation Request Est.	FY 18	1,000
Supplemental Appropriation Request		0
Transfer		0
Cumulative Appropriation		12,888
Expenditure / Encumbrances		11,036
Unencumbered Balance		1,852

Date First Appropriation	FY 09
First Cost Estimate	
Current Scope	FY 17 23,888
Last FY's Cost Estimate	21,508

Description

This project provides funding for the capital renewal and major renovation of College facilities for new and changing College academic programs and student service operations. The major focus of this project is to support programmatic changes to College facilities and operations by allowing the College to continue an on-going building modernization effort where State aid is lacking. With this project, the College will selectively focus State aid requests on high cost projects utilizing these County funds to support an on-going renovation effort on each campus. In conjunction with programmatic improvements and modifications, this project will replace aging building systems, such as heating, air conditioning, electrical, plumbing, etc., provide furniture, fixtures, and equipment; and update facilities to current building codes and regulations.

Cost Change

Increase due to the addition of FY21, and FY22. FY18 was reduced by \$1,000,000 for fiscal capacity.

Justification

Starting FY2008, the County approved funding several renovation projects from the Capital Renewal project. These renovation projects were less likely to receive funding from the State, and as a result five projects at that time were merged into the Capital Renewal project. In November 2007, the College updated a comprehensive building system/equipment assessment, including site utilities and improvements, that identified deficiencies, prioritized replacements and upgrades, and provides the framework for implementing a systematic capital renewal program to complement on-going preventive maintenance efforts. The College continues to have a significant backlog of major building systems and equipment renovations and/or replacements due to the age of the Campuses and deferral of major equipment replacement. Key components of the HVAC, mechanical and electrical systems are outdated, energy inefficient, and costly to continue to repair. The renovation and/or replacement of major building systems, building components and equipment, and site improvements will significantly extend the useful life of the College's buildings and correct safety and environmental problems. The Collegewide Facilities Condition Assessment identified a \$85 million deferred maintenance backlog for the three campuses. If additional financial resources are not directed at this problem, College facilities will continue to deteriorate leading to higher cost renovations or building replacements. Related studies include the Collegewide Facilities Condition Assessment Update (12/13), and the Collegewide Facilities Master Plan Update (1/15), and Utilities Master Plan (5/08).

Other

FY17 Appropriation: \$1,000,000 (G.O. Bonds). FY18 Appropriation: \$1,000,000 (G.O. Bonds). The following budget reallocation is made to this project: \$800,000 from the Health Sciences Expansion project (P096603).

Disclosures

Expenditures will continue indefinitely.

Coordination

Energy Conservation: College (CIP No. P818611), Facility Planning: College (CIP No. P886886), Planned Lifecycle Asset Replacement: College (CIP No. P926659), Roof Replacement: College (CIP No. P876684), Site Improvements: College (CIP No. P076601)

Facility Planning: College (P886686)

Category	Montgomery College	Date Last Modified	5/3/2016
Sub Category	Higher Education	Required Adequate Public Facility	No
Administering Agency	Montgomery College (AAGE16)	Relocation Impact	None
Planning Area	Countywide	Status	Ongoing

	Total	Thru FY15	Est FY16	Total 6 Years	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	Beyond 6 Yrs
EXPENDITURE SCHEDULE (\$000s)											
Planning, Design and Supervision	6,857	4,881	378	1,620	270	270	270	270	270	270	0
Land	0	0	0	0	0	0	0	0	0	0	0
Site Improvements and Utilities	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Total	6,857	4,881	378	1,620	270	270	270	270	270	270	0

	Total	Thru FY15	Est FY16	Total 6 Years	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	Beyond 6 Yrs
FUNDING SCHEDULE (\$000s)											
Current Revenue: General	6,857	4,881	378	1,620	270	270	270	270	270	270	0
Total	6,857	4,881	378	1,620	270	270	270	270	270	270	0

APPROPRIATION AND EXPENDITURE DATA (000s)

Appropriation Request	FY 17	270
Appropriation Request Est.	FY 18	270
Supplemental Appropriation Request		0
Transfer		0
Cumulative Appropriation		5,237
Expenditure / Encumbrances		4,881
Unencumbered Balance		378

Date First Appropriation	FY 88
First Cost Estimate	
Current Scope	FY 17
Last FY's Cost Estimate	6,317

Description

This project provides funding for campus master plans, and facility planning studies for projects being considered for possible inclusion in the CIP. In addition, facility planning serves as a transition stage for a project between the master plan or conceptual stage, and its inclusion as a stand-alone project, or subproject, in the CIP. Prior to the establishment of a stand-alone project, the College develops a Facility Program/Program of Requirements (POR) that outlines the general facility purpose and need and specific features required on the project. Facility planning is a decision-making process to determine the purpose and need of a candidate project through a rigorous investigation of the following critical project elements: usage forecasts; academic requirements; investigation of non-County sources of funding; and detailed project cost estimates. This project provides for project planning and preliminary design, and allows for the development of a program of requirements in advance of the full programming of a project in the CIP, including the preparation of Part I and II documentation to meet State requirements. Depending upon the results of a facility planning determination of purpose and need, a project may or may not proceed to construction.

Cost Change

Increase due to the addition of FY21 and FY22.

Justification

There is a continuing need for the development of accurate cost estimates and an exploration of alternatives for proposed projects. Facility planning costs for all projects which ultimately become stand-alone PDFs are included here. These costs will not be reflected in the resulting individual project. Future individual CIP projects which result from facility planning may each reflect reduced planning and design costs. Relevant studies include the Collegewide Facilities Condition Assessment Update (12/13), and the Collegewide Facilities Master Plan Update (1/15).

Other

FY2017 Appropriation: \$270,000 (Current Revenue: General). FY2018 Appropriation: \$270,000 (Current Revenue: General). The following fund transfers have been made from this project: \$25,000 to the Information Technology: College project (CIP No. P856509) (BOT Resol. #91-56 - 5/20/91); \$7,000 to Planning, Design & Construction (CIP No. P906805) (BOT Resol. #01-153 - 10/15/01); \$25,000 to Planning, Design and Construction (CIP No. P804064) (BOT Resol. #02-62 - 6/17/02). The following fund transfer has been made to this project: \$28,000 from the South Silver Spring Property Acquisition (CIP No. P016602) (BOT Resol. # 03-28 - 4/21/03). By County Council Resol. No. 12-6333, the cumulative project appropriation was reduced by \$187,500 in FY92. By County Council Resolution No. 16-1281, the cumulative appropriation was reduced by \$171,000 (Current Revenue: General) as part of the FY10 savings plan.

Disclosures

Expenditures will continue indefinitely.

Coordination

Collegewide Facilities Master Plan Update, FY16 -- Takoma Park/Silver Spring Math and Science Center Part I/II as submitted to the State, FY17 -- Germantown Student Services Center Part I/II as submitted to the State.

**Montgomery College
Office of Central Facilities
FY 2018
Utility Projection Report
August 14, 2016**

	ACTUAL FY 2007	ACTUAL FY 2008	ACTUAL FY 2009	ACTUAL FY2010 (9)	ACTUAL FY2011	ACTUAL FY2012	ACTUAL FY2013	ACTUAL FY2014	ACTUAL FY2015	ACTUAL FY2016	PROJECTED FY2017 (1)	CONS. CHNG. FY17-18 (1)	UNIT. CHNG. FY17-18 (1)	PROJECTED FY2018 (1)
ELECTRICITY														
kWh	33,089,460	33,540,204	34,761,200	36,078,995	38,465,527	40,088,577	41,050,962	43,235,645	45,311,646	43,841,396	49,593,980	1,299,000	49,593,980	50,892,980
Cost(\$)	4,069,169	4,332,987	4,963,699	5,676,658	6,263,080	6,254,507	5,362,803	5,723,494	6,043,713	5,851,152	6,923,320	185,887	173,578	7,282,785
UNIT(\$/kWh)	0.1230	0.1292	0.1428	0.1573	0.1628	0.1560	0.1306	0.1324	0.1334	0.1335	0.1396	0.1431	0.0035	0.1431
N. GAS (Firm)														
Therms (thm)	161,870	176,404	257,069	232,517	349,253	369,409	438,338	540,878	623,522	578,337	1,000,200	9,675	1,000,200	1,009,875
Cost(\$)	251,023	270,682	367,550	338,415	480,084	427,656	427,246	518,208	634,288	595,355	930,200	8,998	2.09	939,200
Unit(\$/therm)	1.55	1.53	1.43	1.46	1.37	1.16	0.97	0.96	1.02	1.03	0.93	0.93	0.00	0.93
N. GAS (Rate)														
Therms (thm)	435,747	411,052	442,200	425,119	393,165	384,121	371,190	358,797	406,849	349,637	0.00	0.00	0.00	0.00
Cost(\$)	618,717	579,337	564,648	537,805	523,477	362,790	312,933	278,361	348,925	296,594	0.00	0.00	0.00	0.00
Unit(\$/therm)	1.42	1.41	1.28	1.27	1.33	0.94	0.84	0.78	0.86	0.85	0.00	0.00	0.00	0.00
WATER														
KiloGallons	28,000	29,164	29,795	29,184	32,889	39,546	34,530	30,903	31,565	39,857	39,519	0.00	39,519	39,519
Cost(\$)	87,252	98,299	119,029	136,169	185,050	262,548	242,172	226,908	253,787	373,231	385,800	0.00	23,035.00	408,835
Unit(\$/kgal)	3.12	3.37	3.99	4.67	5.63	6.64	7.01	7.34	8.04	9.36	9.76	10.35	0.58	10.35
SEWER														
KiloGallons	21,306	24,075	23,523	23,024	26,184	29,665	25,649	22,133	22,488	30,708	30,952	0.00	30,952	30,952
Cost(\$)	101,894	122,585	128,733	132,631	166,029	200,955	198,861	201,888	208,906	293,011	321,040	0.00	19,300	340,340
Unit(\$/kgal)	4.78	5.09	5.47	5.76	6.34	6.77	7.75	9.12	9.29	9.54	10.37	11.00	0.62	11.00
NO.2 FUEL OIL														
Gallons (gal)	29,952	24,000	42,100	29,048	28,393	30,054	9,503	9,563	0.00	0.00	0.00	0.00	0.00	0.00
Cost(\$)	63,099	74,775	84,345	76,477	84,321	102,671	30,487	33,850	0.00	0.00	0.00	0.00	0.00	0.00
Unit(\$/gal)	2.11	3.12	2.00	2.63	2.97	3.42	3.21	3.54	0.00	0.00	0.00	0.00	0.00	0.00
PROPANE														
Gallons (gal)	2,569	2,687	2,575	2,249	2,817	1,964	2,452	2,926	3,495	2,597	2,600	0.00	2,600	2,600
Cost(\$)	6,235	9,504	8,510	6,854	9,527	7,086	7,341	10,279	10,558	7,137	7,800	0.00	0.00	7,800
Unit(\$/gal)	2.43	3.54	3.30	3.05	3.38	3.61	2.99	3.51	3.02	2.75	3.00	3.00	0.00	3.00
TOTAL COST (\$)	5,197,389	5,488,169	6,236,514	6,905,009	7,711,568	7,618,213	6,581,843	6,992,988	7,500,177	7,416,480	8,568,160	194,885	215,915	8,978,960
Wind Power	(3)	(3)	(4)	(5)	(6)	(7)	(8)	(10)	(11)	(12)	(13)	N/A	N/A	(14)
Total Cost	5,197,389	5,488,169	6,236,514	6,905,009	7,711,568	7,618,213	6,581,843	6,992,988	7,500,177	7,416,480	8,568,160	194,885	215,915	8,978,960
Approved Budget	5,710,675	5,937,126	6,753,482	7,514,720	8,321,690	8,467,369	6,940,471	7,139,046	7,613,648	7,840,755	8,009,945			
Surplus/ (Deficit)	513,286	448,957	516,968	609,711	610,122	849,156	358,628	146,058	113,471	424,275	(558,215)			
NOTES:														
1. Projections based upon 8/14/2016 Utility Rates.														
2. FY2005 & 2006 Electrical includes \$19,269 for 5% Wind Power Purchase @1.498 cents/kWh														
3. FY2007 & FY2008 Electrical includes \$46,974 for 10% Wind Power Purchase @ 1.498 cents/kWh														
4. FY2009 Electrical includes \$32,055 for 71 % Wind Power Purchase @ 0.13 cents/kWh														
5. FY2010 Electrical includes \$48,159.00 for 75% Wind Power Purchase @ 0.18 cents/kWh														
6. FY2011 Electrical Includes \$8,188 for 20% Wind Power Purchase @ 0.106 cents/kWh														
7. FY2012 Electrical Includes \$9,734 for 20% Wind Power Purchase @ 0.117 cents/kWh														
8. FY2013 Electrical includes \$7,802.00, 20% Wind Power Purchase @ 0.094 cents/kWh.														
9. FY2010 Does Not Include \$87,500 PEPCO Generation Credit. Surplus actually \$695,869.														
10. FY2014 Electrical includes \$9,545.00 for 20% Wind Power Purchase @ \$0.115 cents/kWh														
11. FY2015 Electrical includes \$55,350 for 100% Wind Power Purchase @ \$0.123 cents/kWh														
12. FY2016 Electrical includes \$60,000 for 131% Wind Power Purchase @ 0.067 cents/kWh														
13. FY2017 Electrical includes \$65,000 for 136% Wind Power Purchase @0.071 cents/kWh														
14. FY2018 Electrical includes 70,000 for 138% Wind Power Purchase @0.071 cents/kWh														

UTILITY RATES
August 14, 2016
FY2017- FY2018

<u>Utilities</u>	Actual <u>Fv15</u>	Actual <u>Fv16</u>	Budget set 12/18/15 <u>Fv17</u>	Projected <u>FY17</u>	Projected <u>FY18</u>
Electricity	\$0.1334 per kWh	\$0.1335 per kWh	\$0.1366 per kWh	\$0.1396 per kWh	\$0.1431 per kWh
#2 Fuel Oil	no usage	no usage	no usage	no usage	no usage
Natural Gas	\$0.95 per therm	\$0.96 per therm	\$0.92 per therm	\$0.93 per therm	\$0.93 per therm
Propane	\$3.02 per gallon	\$2.75 per gallon	\$3.02 per gallon	\$3.00 per gallon	\$3.00 per gallon
Water & Sewer	5.9% increase over Actual Fy14 \$8.56/kgal	10.3% increase over Actual Fy15 \$9.44/kgal	16.4% increase over Actual Fy15 \$9.96/kgal	6.2% increase over Actual Fy16 \$10.03/kgal	12.6% increase over Actual Fy16 \$10.63/kgal

Notes:

1. All Utilities: Unit cost- Agency unit cost should be equal to or lower than unit cost in this table.
2. All Utilities except w/s:Unit Cost includes energy tax rates set by the Montgomery County Council on 5/22/14 and left unchanged on 5/13/15 and May 26, 2016.
3. 2.5% increase (in electricity) to cover charges such as:
 - a. PEPSCO Grid Resiliency Charge (GRC)- Began 1/14/14; decreased 12/22/16; December 2017 unknown
 - b. PEPSCO- Distribution Rate increase proposed April 2016. Used 50% of the request amount November 2016
 - c. PEPSCO- Empower- increased 54.6/172.8/46.2 % last 3 years. Used 50% increase February (2017 & 2018).
 - d. PEPSCO- Universal Service Charge (USC) decreased about 14% effective February 2014; not changed since
 - e. PEPSCO- monthly changes in Bill Stabilization Adjustment
 - f. Washington Gas- STRIDE (System Improvement fee) 3/21/14; new rates effective 10/26/15
 - g. Washington Gas- Empower- new rates effective 10/26/15
4. 140% renewable energy certificates (REC) from wind energy
5. Electricity- Supply Contract rate decrease effective 2/2017 and thru Fy20
6. Natural Gas- Supply Contract decrease effective 6/2016 and thru 5/31/20
7. Water/Sewer- 3.5% increase in Fy18 for WSSC and 3.5/12.5% for City of Rockville
8. City of Rockville Storm Water Management Utility Fee is not included.
9. Oil/Propane- No oil used. Propane based upon commodity futures

Montgomery
College
Existing
Measures

Resource conservation measures implemented prior to FY 2017 (FY 1998 TO
FY 2016)

Measures	Date Implemented (mo/yr)	Cumulati -ve Cost (\$)	Annual Net Impact On Maintenance Cost (\$)	Fuel Type Affected And Units	Units Saved Per Year	Annual Cumulative Cost Savings (\$)
Lighting	Various	393,000	(13,000)	Electricity	1,406,423 kWh Maint.	217,188 13,000
HVAC & Controls	Various	1,241,000	(32,000)	Elect., N. Gas & Fuel Oil	897,307 kWh 68,987 therms (Th) Maint.	87,067 90,900 32,000
New Building Design	Various	2,200,000	(29,250)	Elect., N. Gas & Fuel Oil	2,117,800 kWh 71,375 Th Maint.	282,134 67,200 29,250
Central Plant Technology	Various	900,000	(32,000)	Elect., N. Gas & Fuel Oil	963,877 kWh 19,870 Th Maint.	126,749 19,075 32,000
Total		4,734,500	(106,250)		5,385,407 kWh 161,232 Th	996,563 Av. Payback 4.7 yrs

Existing measures consist of Lighting, HVAC & Controls, New Building and Renovated Building Design and Central Plant Technologies that reduce energy cost, reduce energy consumption and reduce maintenance costs.

Measures

Resource conservation measures implemented during FY 2017 (July 1, 2016 through June 30, 2017)

Measures	Date Implemented (mo/yr)	Initial Cost (\$)	Annual Net Impact On Maintenance Cost (\$)	Fuel Type Affected And Units	Units Saved Per Year	Annual Cost Savings (\$)
Lighting	Various	18,000	(1,000)	Elect.	32,000 kWh	4,480 1,000
HVAC	Various	18,000	(1,500)	Elect., N.Gas & Fuel Oil	10,000 kWh, 16,000Th	1,400 5,600 1,500
Controls	Various	9,000	(1,700)	Elect.N.Gas & Fuel Oil	10,000 kWh 800 Th	1,400 720 1,700
Total		45,000	(4,200)			17,800
Simple Payback						2.5 yrs

New measures consist of Lighting, HVAC & Controls, which reduce energy cost, reduce energy consumption and reduce maintenance costs.
Participation in the PEPCO rebate program for FY 2017 - FY 2018 will supplement College funds.

Planned Measures

This table shows information on resource conservation measures planned to be implemented in FY 2018 (July 1, 2017 through June 30, 2018)

Measures	Date Implemented (mo/yr)	Initial Cost (\$)	Annual Net Impact On Maintenance Cost (\$)	Fuel Type Affected And Units	Units Saved Per Year	Annual Cost Savings (\$)
Capital Improvement Projects:						
Lighting, HVAC & Controls	July 2018	40,000	(1,000)	Elect., N.Gas & Fuel Oil	100,000 kWh 1,000 Th Maint.	14,000 1,500 2,000
Total		125,000	0			16,500
Simple Payback						2.42 yrs.

**SUMMARY OF SPACE ALLOCATIONS
TOTAL COLLEGE
Fall 2014*
332.8 Acres
50 Buildings Owned
6 Leased and/or Off-Campus Owned Buildings**

<u>Campus</u>	<u>GSF</u>	<u>NASF</u>	<u>Bldgs</u>	
Germantown	513,192	328,109	10	
Rockville (w/out North Garage)	1,004,213	641,667	21	
TP/SS (w/out East & West Garage)	643,401	391,626	16	
Total	2,160,806	1,361,402	47	
TP/SS East Garage	224,310	1,815	1	
TP/SS West Garage	159,795	1,369	1	
Rockville North Garage	310,000	2,508	1	
Total w/ East & West Garages	2,854,911	1,367,094	50	Bldgs Owned
Leased and Off-Campus Space *	312,395	163,718	7	
Total	3,167,306	1,530,812	57	Owned & Leased

<u>Yr. Open</u>	<u>Planned Buildings</u>				
2019	R Student Services Center	126,756	71,054	1	
	Total	126,756	71,054	<u>58</u>	Owned & Leased

Notes
*Edits for RCP FY 2018_mcm

SPACE SUMMARY		
TAKOMA PARK/SILVER SPRING CAMPUS		
Fall 2014*		
19.5 Acres		
18 Buildings with 2 Garages		
1,275 Parking Spaces		
without East & West Garage	643,401 GSF	391,626 NASF
with East & West Garage	1,027,508 GSF	394,810 NASF

<u>Building</u>	<u>Gross Square Feet</u>	<u>Net Assignable Square Feet</u>
1. Child Care Center	3,310	1,863
2. Pavilion Four	15,873	8,518
3. Falcon Hall	39,063	29,051
4. Pavilion One	7,386	4,468
5. Mathematics Pavilion	6,942	4,257
6. North Pavilion	6,942	4,398
7. Pavilion Three*	17,000	12,015
8. Resource Center	44,906	34,689
9. Science North	39,950	27,093
10. Science South	23,757	14,495
11. Pavilion Two	7,385	4,827
12. The Commons	30,354	16,405
13. Health Sciences Center	98,038	60,219
14. Student Services Center *	110,504	52,988
15. Cafritz Foundation Arts Center	134,748	88,521
16. Cultural Arts Center	57,243	27,819
Subtotal	643,401	391,626
17. East Garage	224,310	1,815
18. West Garage	159,795	1,369
Total	1,027,508	394,810

* Notes:

14. Student Services Center NASF does not include 8,545 NASF of unfinished space.

Edits made for RCP FY 2018_mcm

Special Facilities/Systems

Indoor Swimming Pool

Central Heating & Cooling Plants with ice thermal storage and co-generation systems

Solar Photovoltaic System for electric power generation

Energy Utilities

Electricity

No. 2 Fuel Oil

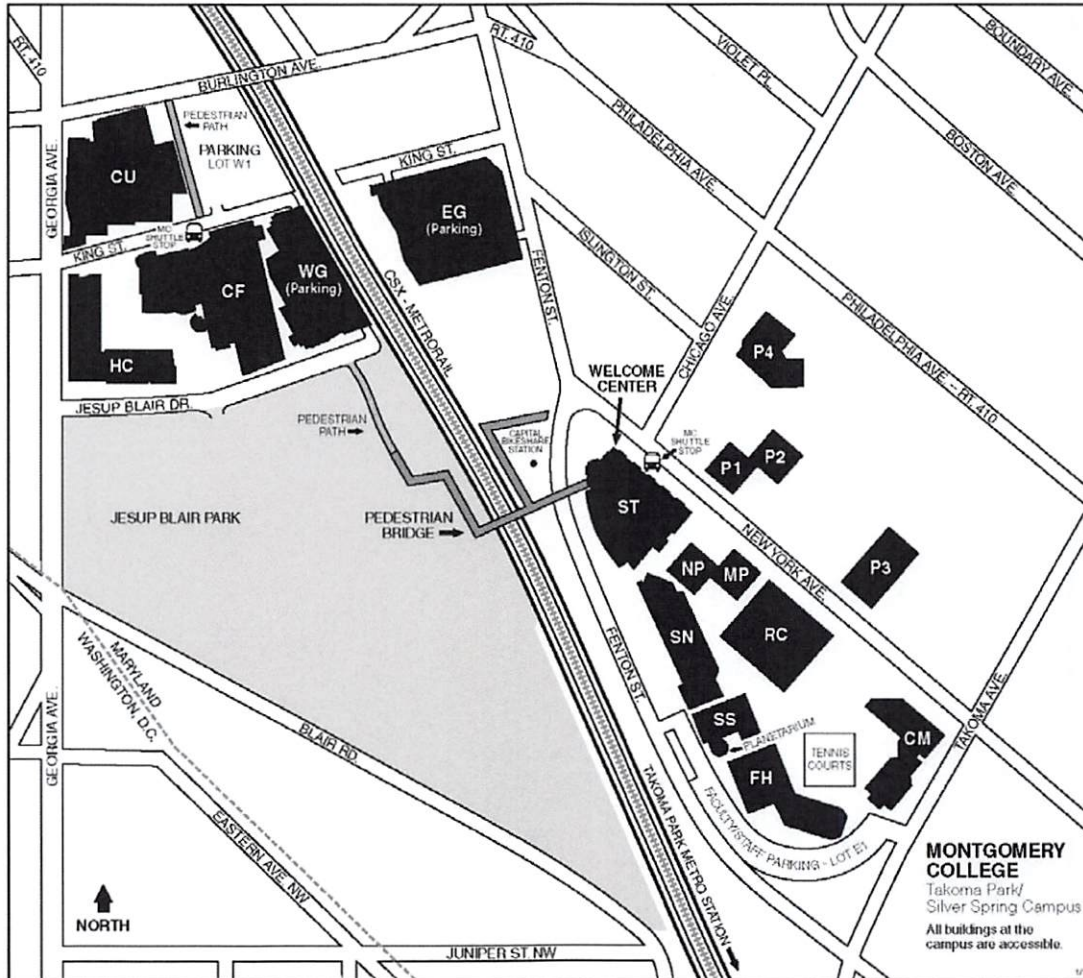
Natural Gas

Solar Energy

Wind Energy Purchase

MONTGOMERY COLLEGE

Takoma Park/Silver Spring Campus and Vicinity



Takoma Park/Silver Spring Campus

7600 Takoma Avenue
 Takoma Park, MD 20912
 240-567-1300; TTY 301-587-7207
 montgomerycollege.edu
 For updates to campus maps, visit
 montgomerycollege.edu/maps

Legend of Campus Buildings (as of January 2017)

- CF** The Morris and Gwendolyn Cafritz Foundation Arts Center
 - Art store/food options
 - Educational Opportunity Center
 - Refugee Training Center
 - Workforce Development & Continuing Education (MD&CE)
- CM** Catherine F. Scott Commons
- CU** Cultural Arts Center
- EG** Fast Garage (parking)

- FH** Falcon Hall
 - Physical Education
- HC** Health Sciences Center
- MP** Mathematics Pavilion
- NP** North Pavilion
- P1** Pavilion One
- P2** Pavilion Two
- P3** Pavilion Three
- P4** Pavilion Four
- RC** Resource Center
- SN** Science North Building

- SS** Science South Building
 - Planetarium
- ST** Charlene R. Nunley Student Services Center
 - Cafeteria
 - Enrollment Services
 - Financial Aid Office
 - School Stores
 - Public Safety Office
 - Student Life Office
 - Welcome Center
- WG** West Garage (parking)

SPACE SUMMARY		
ROCKVILLE CAMPUS		
Fall 2014*		
84.6 Acres		
22 Buildings with 1 Garage		
4,133 Parking Spaces		
without North Garage	1,004,213 GSF	641,687 NASF
with North Garage	1,314,213 GSF	644,175 NASF

<u>Building</u>	<u>Gross Square Feet</u>	<u>Net Assignable Square Feet</u>
1. Paul Peck Art Building	25,594	14,414
2. Campus Center	74,302	52,621
3. Gordon & Marilyn Macklin Tower	117,282	82,481
4. Child Care Center	2,498	2,344
5. Computer Science	20,862	12,661
6. Counseling and Advising	17,696	9,830
7. Gudelsky Institute for Tech. Ed.	64,000	41,260
8. Humanities Building	73,912	49,368
9. Interim Technical Training Center	9,360	7,894
10. Maintenance Shop	4,720	4,028
11. Mannakee Building	42,102	34,359
12. Music Building	21,050	10,221
13. Parilla Performing Arts Center	28,000	16,501
14. Physical Education	84,949	58,431
15. Canoe Trailer Shed	420	380
16. Science West*	70,164	42,734
17. South Campus Instruction Bldg.	29,900	17,662
18. Student Services	10,448	6,818
19. Technical Center	55,908	40,690
20. Theatre Arts	35,032	20,391
21. Science Center	<u>216,014</u>	<u>116,579</u>
	Subtotal	1,004,213
		641,687
22. North Garage (2017)*	<u>310,000</u>	<u>2,508</u>
	Total	1,314,213
		644,175

Proposed New Buildings

23. Student Services Center (2018)	127,960	70,960
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***Notes:**

- 16. Science West closed for renovation in Spring 2014. 60 parking spaces in Lot 8 being used for [SW] construction purposes. Opened January 2017
- 22. *North Garage (2017) 918 spaces have been added. Opened January 2017

Edits for RCP FY 2018 _mcm

Special Facilities/Systems

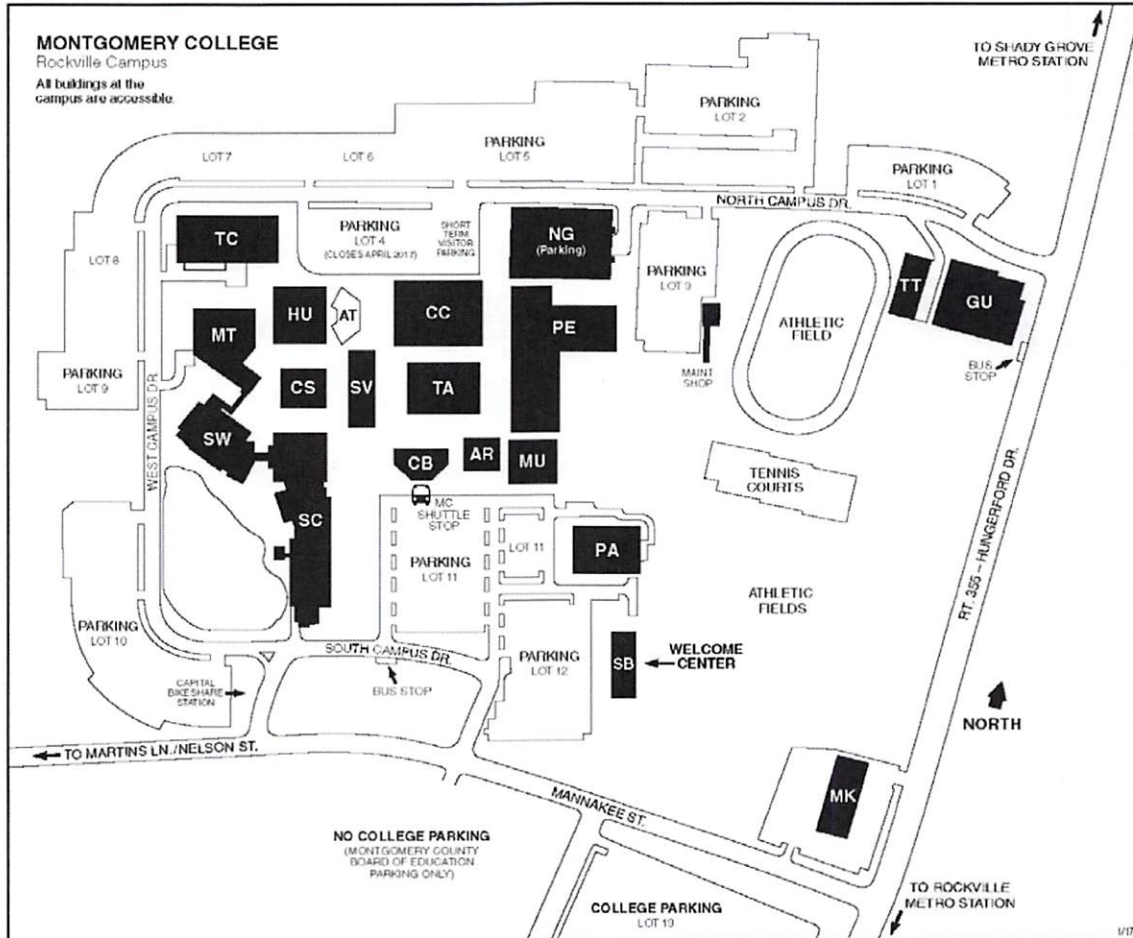
- Indoor Swimming Pool
- Central Heating and Cooling Plant with ice thermal storage and co-generation system
- Solar Photovoltaic System for electric power generation

Energy Utilities

- Electricity
- Natural Gas
- No. 2 Fuel Oil
- Propane
- Wind Energy Purchase
- Solar Energy

MONTGOMERY COLLEGE

Rockville Campus



MC MONTGOMERY COLLEGE
Rockville Campus
51 Mannakee Street
Rockville, MD 20850
240-567-5000; TTY: 301-294-9672
montgomerycollege.edu
For updates to campus maps, visit
montgomerycollege.edu/maps

- Legend of Campus Buildings**
(as of January 2017)
- AR Paul Peck Art Building
 - AT Amphitheatre
 - CB Counseling and Advising Building
= Public Safety Office
 - CC Campus Center
= Cafeteria
= School Stores
= Student Life Office
= Workforce Development & Continuing Education Office (WD&CE)
 - CS Computer Science Building
 - GU Homer S. Gudelsky Institute for Technical Education
 - HU Humanities Building
 - MK Mannakee Building
= Central Services

- MT Gordon and Marilyn Macklin Tower
= Library
 - MU Music Building
 - NG North Garage (parking)
 - PA Robert E. Parilla Performing Arts Center
 - PE Physical Education Center
 - SB South Campus Instruction Building
= Welcome Center
 - SC Science Center
 - SV Student Services Building
= Enrollment Services
= Financial Aid Office
 - SW Science Center West
 - TA Theatre Arts Building
 - TC Technical Center
 - TT Interim Technical Training Center
- Note: Parking Lot 4 closes April 2017.*

SPACE SUMMARY		
GERMANTOWN CAMPUS		
Fall 2014		
228.7 Acres (Includes 20271 Goldenrod Lane Property)		
10 Buildings		
1,824 Parking Spaces		
513,192 GSF		328,109 NASF

<u>Building</u>	<u>ross Square Fe</u>	<u>Net Assignable Square Feet</u>
1. Greenhouse Structures	4,562	4,371
2. High Technology & Science Center	75,542	45,492
3. Humanities & Social Sciences	75,700	51,601
4. Physical Education	36,770	29,351
5. Tennis/Baseball Storage Shed	450	408
6. Science and Applied Studies*	99,648	54,456
7. Storage, Grounds, and Vehicle Repair	6,177	6,051
8. Paul Peck Academic & Innovation Building	68,826	54,052
9. Child Care Center	5,535	3,574
10. Bioscience Education Center*	<u>139,982</u>	<u>78,753</u>
Total	513,192	328,109
 <u>Proposed New Buildings</u>		
11. Student Services Center (2017)	120,400	70,425

*** Notes:**

- 6. When the Science & Applied Studies Phase 1 renovation is completed in 2017, the building square footage will be GSF 99,648, NASF 54,456
- 10. The Bioscience Education Center opened Fall 2014.

Edits for RCP FY 2018 _mcm

Special Facilities/Systems

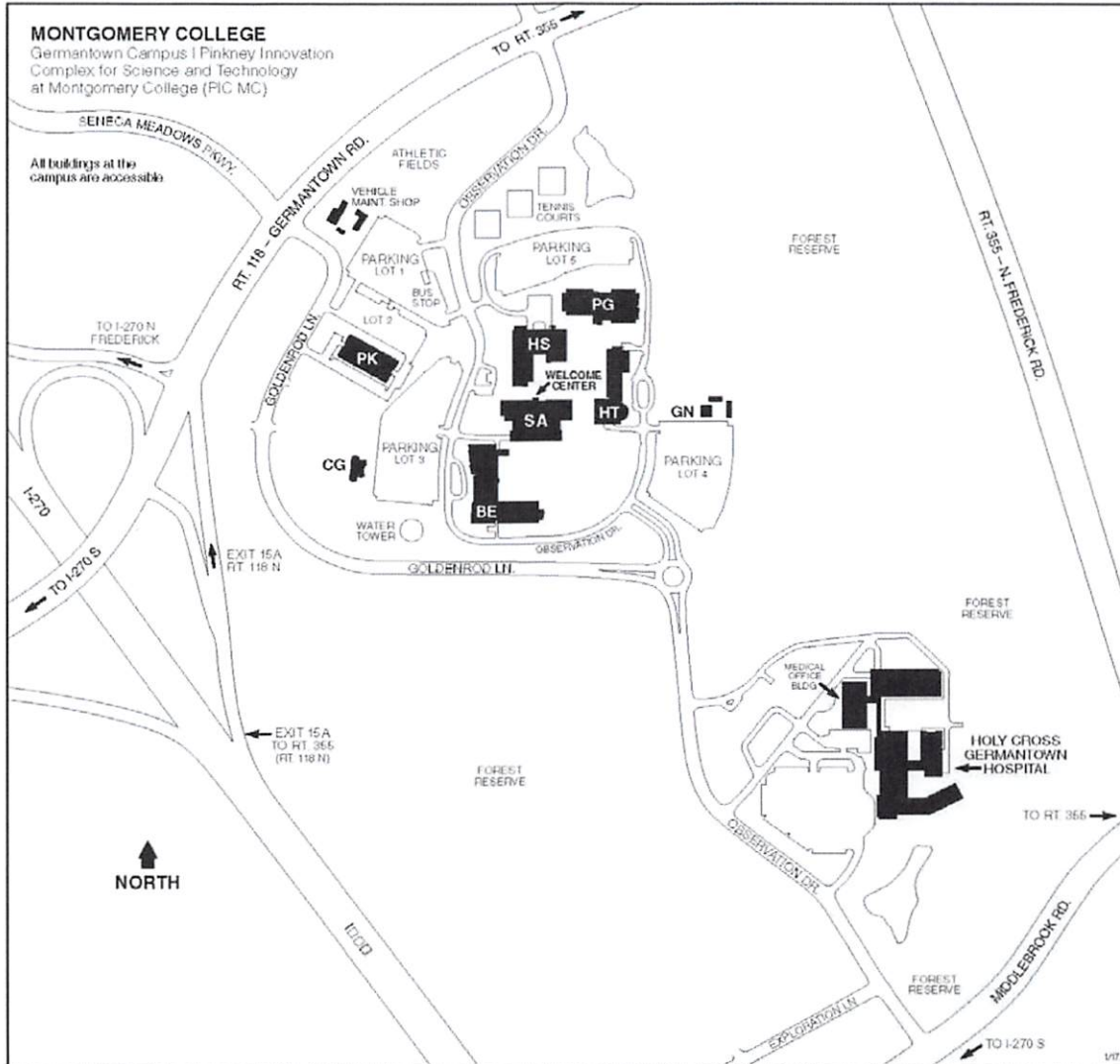
- Indoor Swimming Pool
- Central Cooling Plant with ice thermal storage
- Solar Photovoltaic System for electric power generation
- Solar Thermal Heating System for domestic water, pool water and space heating

Energy Utilities

- Electricity
- Natural Gas
- Propane
- Solar Energy
- Wind Energy Purchase

MONTGOMERY COLLEGE

Germantown Campus | Pinkney Innovation Complex for Science and Technology (PIC MC)



MC MONTGOMERY COLLEGE
Germantown Campus | Pinkney Innovation Complex for Science and Technology at Montgomery College (PIC MC)
20200 Observation Drive
Germantown, MD 20876
240-567-7700
montgomerycollege.edu
For updates to campus maps, visit
montgomerycollege.edu/maps

Legend of Campus Buildings
(as of January 2017)

- BE** Bioscience Education Center
 - Conference Center
- CG** Child Care Center
 - Center for Early Education (CEE)
- GN** Greenhouse

- HS** Humanities and Social Sciences Building
 - Cafeteria
 - Library
 - School Stores
 - Workforce Development & Continuing Education (WD&CE)
- HT** High Technology and Science Center
 - Globe Hall
- PG** Physical Education Building

- PK** Paul Peck Academic and Innovation Building
 - Germantown Innovation Center
- SA** Science and Applied Studies Building
 - Counseling and Advising
 - Enrollment Services
 - Financial Aid Office
 - Public Safety Office
 - Student Life Office
 - Welcome Center

**SPACE SUMMARY
LEASED AND OFF-CAMPUS SITES
Fall 2014***

312,395 GSF 163,718 NASF

<u>Building</u>	<u>Gross Sq. Ft.</u>	<u>Net Assignable Sq. Ft.</u>	<u>User</u>	<u>Original Occ. Date</u>	<u>Lease Term</u>	<u>Expiration Date</u>
1. Westfield South 11002 Veirs Mill Rd., Silver Spring, MD 20902	13,678	9,551	WDCE	08/01/99	24 years	02/18/22
2. Office of Information Technology Bldg. 15400 Calhoun Drive, Rockville, MD 20855	43,491	35,736	IT	06/16/08	10 years	06/30/18
3. Gaithersburg Business Training Ctr. 12 S. Summit Ave., Gaithersburg, MD 20877	18,577	14,889	WDCE	08/01/01	18 years	07/31/19
4. 40 West Gude 40 West Gude Dr., Rockville, MD 20850	34,709	32,063	Various Central Adm.	10/1/06	10 years	6/30/17
5. Central Warehouse 7602 Standish Pl., Rockville, MD 20855	10,866	9,646	Procurement, IT, Facilities	Feb. 2009	10 years	01/31/19
6. Firstfield Road Parking Lot (Driver Training) 14 Firstfield Road, Gaithersburg, MD 20878	64,273	n/a	WDCE	05/15/02	12 years	month to month
7 Central Services Building (CT) *Owned	126,801	61,833	Central Services	2/28/2017	n/a	n/a
Total	312,395	163,718				

Notes:

*Edits for RCP FY 2018 _mcm

IT = Information Technology

WDCE = Workforce Development & Continuing Education