Resource Conservation Plan

Fiscal Year 2021

Maryland-National Capital Park and Planning Commission Montgomery County Department of Parks Montgomery County Planning Department January 30, 2020





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Introduction

The Maryland-National Capital Park and Planning Commission (M-NCPPC) in Montgomery County is responsible for the acquisition, development, and management of more than 36,990 acres of parkland, providing residents and visitors with a diverse array of recreational and leisure-time opportunities/activities; clean, safe and accessible facilities; meaningful educational opportunities; and dedication to open space and habitats for conservation and stewardship of our County's precious natural resources.

Through the Resource Conservation Plan, M-NCPPC – Montgomery County establishes programs and initiatives, makes improvements to infrastructure and amenities, and reports on progress related to efficient use of energy and water resources to fulfill the mission of the organization. The Resource Conservation Plan is designed in conjunction with the M-NCPPC – Montgomery County Sustainability Plan, approved and currently implemented for FY20 through FY21.

The significant and serious challenges posed by global climate change led to the passage of the Montgomery County Council Emergency Climate Mobilization resolution (Resolution 18-974) in 2017. This resolution brought forth accelerated greenhouse gas reduction goals county-wide, calling for an 80% reduction of greenhouse gas emissions by 2027 and 100% elimination by 2035. M-NCPPC – Montgomery County is committed to acting responsibly and collaboratively with all local government agencies, organizations, community members, and other stakeholders toward achievement of these reduction targets. Working together will be critical to our success in battling climate change and ensuring a healthy and safe environment for future generations.

Developed by the Sustainability Office in the Facilities Management Division of the M-NCPPC Department of Parks, the Resource Conservation Plan report presents the accomplishments of the implemented energy and water-related projects as of December 31, 2019 and the projected plans for the balance FY20. The report also establishes strategies for FY21 to conserve energy and water resources as part of a comprehensive approach to resource management.

Utility Cost and Projections

The Department of Parks and the Planning Department established a comprehensive utilities management program beginning in July 2003. Utility resource consumption has been reduced as a result of the projects and programs implemented by Commission staff. M-NCPPC manages a utility program consisting of over 500 utility meters across the county (water, sewer, electricity, natural gas, propane, oil).

Beginning in 2019, significant work on a project to verify all utility meter locations and associated accounts was initiated. This process should help address meter and account validation which will lead to reduction in billing errors across the system.

Utility Cost and Projections FY16 to FY21

The actual utility costs for FY16 through FY19, the budgeted utility costs for FY20, and the proposed FY21 budget are noted in the table below. Utility costs for the new Wheaton Headquarters building have been factored in to the FY21 proposed budget.

	FY16 Actual	FY17 Actual	FY18 Actual	FY19 Actual	FY20 Budget	FY21 Proposed Budget
PARKS DEPARTMENT	\$1,719,843	\$1,880,681	\$1,989,338	\$2,275,737	\$2,238,733	\$2,250,522
PLANNING DEPARTMENT	\$206,349	\$185,092	\$183,332	\$193,206	\$211,590	\$52,897
ENTERPRISE	\$1,144,540	\$1,027,069	\$948,832	\$849,959	\$922,000	\$960,700
PROPERTY MANAGEMENT	\$14,973	\$16,192	\$29,957	\$23,046	\$14,500	\$14,500
BI-COUNTY	\$80,777	\$73,761	\$71,996	\$73,545	\$91,605	\$82,075
WHEATON HQ	N/A	N/A	N/A	N/A	N/A	\$764,659
TOTAL:	\$3,166,482	\$3,182,795	\$3,223,455	\$3,415,494	\$3,478,428	\$4,125,353

Data obtained from M-NCPPC General Ledger

Utility Cost and Projections FY20

The current estimate for utility costs, as of December 20, 2019, for the following Funds within the Department of Parks, Planning Department, and the shared Bi-County utility costs are depicted below. A projection for the fiscal year and approved FY20 budget is also included.

	FY20 Cost as of 12/20/2019	Projection	Budget FY20	
PARKS DEPARTMENT	\$677,639**	\$2,196,900	\$2,238,733	
PLANNING DEPARTMENT	\$69,464	\$192,300	\$211,590	
ENTERPRISE	\$351,870	\$910,000	\$922,000	
PROPERTY MANAGEMENT	\$1,698	\$28,700	\$14,500	
BI-COUNTY	\$35,200	\$73,500	\$91,605	
TOTAL:	\$1,135,871	\$3,401,400	\$3,478,428	

Data obtained from M-NCPPC General Ledger and EnergyCAP

** Adjustments made to account for reimbursement/credits

The following table shows, per commodity, utility consumption and cost as of December 20, 2019. The cost projection depicted is for FY20. Consumption data and cost data for each commodity is obtained from the M-NCPPC EnergyCAP (ECAP) system.

FY20 Consumption as of 12/20/19	Units	Utility	FY2020 Cost as of 12/20/2019	Projection	Budget FY20
6,181,758**	кwн	Electric*	\$718,852**	\$2,130,500	\$2,159,132
28,771	THERM	Natural Gas	\$33,595	\$320,700	\$378,313
6,597	GAL	Propane	\$12,768	\$147,000	\$193,000
2,640,202**	KGAL	Water/Sewer	\$369,666**	\$794,300	\$742,583
238	KGAL	Heating Oil (#2)	\$990	\$8,900	\$5,400
		TOTAL:	\$1,135,871	\$3,401,400	\$3,478,428

* Includes Solar PPA Payments

** Adjustments made to account for reimbursement/credits

The following table shows the solar energy produced and cost per the power purchase agreements for the two solar fields located at Rock Creek Regional Parks and South Germantown Recreational Park.

Location	FY19 Production	FY19 Cost	FY20 Production as of 12/23/19	FY20 Cost as of 12/23/19
Rock Creek Regional Park	1,506,646 kWh	\$106,686	698,372 kWh	\$50,037
South Germantown Recreational Park	1,736,005 kWh	\$125,806	835,261 kWh	\$59,844

Utility Cost and Consumption Changes FY20

Facility renovations, upgrades, and improvements of existing locations and parks included in the FY20 approved budget that will increase utility costs, resulting in operating budget impact across both the Department of Parks and the Planning Department, are shown in the tables below.

FY20 Utility Cost Changes – Operating Budget Impact – Montgomery Parks						
FY20 Adopted Budget	Amount	Comment				
Josiah Henson Historic Park	\$2,434	Prorated for partial year: \$1,417 for electric; \$583 for water/sewer service				
North Four Corners Local Park	\$3,179	Water Service - Ballfield Irrigation				
Pinecrest Local Park	\$3,179	Water Service - Ballfield Irrigation				
Wheaton Regional Park	\$32,460	Water Service - Ballfield Irrigation				
Wheaton Headquarters \$13,700		Prorated for partial year: \$10,368 for energy cost; \$3,332 for water/sewer service				
Total:	\$54,952					

FY20 Utility Cost Changes – Operating Budget Impact – Montgomery Planning					
FY20 Adopted Budget Amount Comment					
Wheaton Headquarters\$13,700Prorated for partial year: \$10,368 for energy cost; \$3,332 for water/sewer service					

Utility Cost and Consumption Changes FY21

Facility renovations, upgrades, and improvements of existing locations and parks included in the FY21 proposed budget that will increase utility costs, resulting in operating budget impact across both the Department of Parks and the Planning Department, are shown in the tables below.

FY21 Utility Cost Changes – Operating Budget Impact – Montgomery Parks						
FY21 Proposed Budget	Amount	Comment				
Columbia Local Park	\$240	Water service – drinking fountain addition				
Josiah Henson Historic Park	\$10,000	Adds balance of funding: \$7,083 for electric; \$2,917 for water/sewer service				
Ken-Gar Palisades Park	\$10,820	Water Service - Ballfield Irrigation				
Wheaton Headquarters	\$164,402	\$124,416 for energy cost; \$39,986 for water/sewer service				
Total:	\$185,462					

FY21 Utility Cost Changes – Operating Budget Impact – Montgomery Planning						
FY21 Proposed Budget Amount Comment						
Wheaton Headquarters	\$164 402	\$124,416 for energy cost; \$39,986 for water/sewer				
Wheaton headquarters	J104,402	service				

Renewable Energy Resources

With the accelerated greenhouse gas reduction targets passed in 2017 (Montgomery County Council Resolution 18-974), a greater focus on local renewable energy generation has taken priority. However, purchase of renewable energy certificates (REC) has also served an important role in supporting the renewable energy market and the renewable energy portfolio for M-NCPPC – Montgomery County for many years.

Renewable Energy Certificate Purchase

M-NCPPC is committed to a clean energy purchase policy and for each year since FY16, M-NCPPC – Montgomery County has purchased wind-based renewable energy certificates (REC) equal to 100% of the total electricity consumption for the organization. The below table outlines historical wind REC purchase details for the organization since FY16.

Renewable Energy Certificate Purchase – M-NCPPC - Montgomery County								
Fiscal Year	REC Volume	Cost per REC	Total Cost	Vendor	Contract			
16	52,000*	\$0.67	\$34,840.00	Renewable Choice Energy	Montgomery County			
17	52,000*	\$0.71	\$36,920.00	Renewable Choice Energy	Montgomery County			
18	54,300**	\$0.48	\$26,064.00	Renewable Choice Energy (Schneider Electric)	Montgomery County			
19	54,000**	\$0.48	25,920.00	Renewable Choice Energy (Schneider Electric)	Montgomery County			
20	15,500	\$0.89	\$13,795.00	Schneider Electric	Montgomery County			
21	15,500	\$0.89	\$13,795.00	Schneider Electric	Montgomery County			

*Agency-wide purchase to include both M-NCPPC Montgomery & Prince George's Counties

**Program overcommitment

Solar Panel Installation

One major effort to reduce organizational greenhouse gas emissions includes transition to local renewable energy generation to support the energy needs of operating the Department of Parks and the Planning Department.

The two largest solar installations on parkland were completed in FY18 at South Germantown Recreational Park (1.173 MW) and Rock Creek Regional Park (1.320 MW). These solar fields were constructed through a power purchase agreement (PPA) and the energy generated by these two sites are powering nearly 40 sites/facilities on M-NCPPC parkland in Montgomery County.



Rock Creek Regional Park and South Germantown Recreational Park solar field installations. Image credits: Standard Solar, Inc.

These project sites are a result of an extensive site selection process. Montgomery Parks Facilities Management and Park Planning and Stewardship Divisions conducted a site selection study, analyzing approximately 135 potential park properties in the Pepco and the Potomac Edison Service areas.

Excluded from consideration were any sites where the solar fields would displace existing or future planned park uses, remove forest, or impact sensitive buffer areas. Conservation Parks, Stream Valley Parks and Neighborhood Parks were generally excluded from consideration for solar field installation. At this time, M-NCPPC in Montgomery County is not considering future solar field installations and are instead moving forward with consideration of more rooftop, parking canopy, etc. applications.

Across M-NCPPC - Montgomery County are numerous small facilities like outdoor restroom buildings and shelters that may serve as good candidate sites for small-scale solar panel installations. Employed at M-NCPPC is a talented team of electricians who have begun tackling these kinds of projects. The first in-house solar panel installation was completed in FY19 at Olney Mill Neighborhood Park. The installed 1.8kW system provides power and heat for the restrooms.



Olney Mill Neighborhood Park rooftop solar installation.

Energy Utilization & Consumption Allocations

The total square footage of conditioned buildings/facilities that consume electricity and natural gas are as follows:

TOTAL CONDITIONED BUILDING SQ.FT.								
Energy	Energy FY16 FY17 FY18 FY19 FY20							
Electric	1,145,150	1,145,150	1,145,150	1,145,150	1,145,150			
Natural Gas 482,170 482,170 482,170 482,170 482,170 482,170								

Values currently under review and subject to change

The energy consumption for FY17, FY18 and FY19, and estimated figures for FY20 and FY21 are as follows:

TOTAL ENERGY CONSUMPTION							
Energy FY17 FY18 FY19 FY20 Projection RECOM							
Electric - kWh	14,240,045	14,916,755	14,635,012	13,902,402	16,971,645		
Natural Gas - therm	306,052	293,530	287,277	345,878	335,286		

FY20 Projection does not account for Wheaton HQ, but FY21 Recommendation does include Wheaton HQ estimates

ENERGY CONSUMPTION - FACILITIES						
Energy	Energy FY17 FY18 FY19 FY20 FY21 PROJECTION RECOMMEND					
Electric - kWh	10,140,045	10,529,775	10,390,859	9,870,705	12,049,868	
Natural Gas - therm	306,052	293,530	287,277	345,878	335,286	

FY20 Projection does not account for Wheaton HQ, but FY21 Recommendation does include Wheaton HQ estimates

ENERGY CONSUMPTION - ATHLETIC FIELDS & EXTERIOR POLE LIGHTS							
Energy	FY17	FY18	FY19	FY19 FY20 FY21 PROJECTION RECOMMENDA			
Electric - kWh	4,100,000	4,387,000	4,244,153	4,031,697	4,921,777		

Data from FY17, FY18, and FY19 are obtained from the M-NCPPC EnergyCAP (ECAP) system

Energy Procurement, Contract Status, & Purchasing Policy

M-NCPPC has implemented a procurement program that has contracted fixed cost energy supply of electricity and natural gas service to provide long-term budget stability. Upcoming renewals are anticipated to be renegotiated six months prior to the current contract expiration dates.

Energy Procurement – M-NCPPC Montgomery County					
	Current Rate	Contract Term			
Electricity					
Baltimore Gas & Electric Company (BGE)	\$0.0701/kWh	June 2019 – June 2021			
PEPCO	\$0.06714/kWh	June 2019 – June 2021			
PEPCO: SOLAR (capacity/transmission pass through)	\$0.052/kWh	June 2019 – June 2021			
Potomac Edison – 1 st Energy Corp	\$0.0580/kWh	June 2019 – June 2021			
Natural Gas					
Washington Gas	\$0.4210/therm	June 2018 – July 2021			

Building Benchmarking

Beginning in 2014, Montgomery County government adopted a building benchmarking law and in 2015 amended Bill 35-15 (Environmental Sustainability – Benchmarking Amendments) requiring benchmarking of energy use at nonresidential buildings 50,000 square feet and greater. Utilizing Energy Star Portfolio Manager, these data are reported to Montgomery County government for public disclosure.

Cabin John Ice Rink is the only M-NCPPC, Montgomery County facility that currently meets the County reporting requirements for building benchmarking. This facility, located at 10610 Westlake Drive, Rockville MD 20852 is a 78,000 square foot public facility. Originally constructed in 1969, this facility offers ice skating and ice hockey classes and camps, as well as special events and skating exhibitions. The facility offers three ice rinks (NHL, Olympic, and Studio) as well as a dance studio, party rooms, a pro shop, and café.

> In FY19 and FY20, improvements made to the Cabin John Ice Rink included the replacement of the aging and outdated R-22 refrigeration system, used to cool the ice surfaces of the NHL and Studio rinks, with a new ammonia refrigeration system. The

> ammonia system was selected over other refrigerant alternatives because it is the most efficient refrigerant available, has zero global warming potential and zero ozone depletion potential.

From an energy efficiency perspective, the new system compressors are 18% more efficient than the old compressors removed from the facility. The ammonia, as a refrigerant, is approximately 8% more efficient than R-22 and the condensers provide a 10% efficiency advantage. Overall, the net electrical energy efficiency gain following completion of this project is estimated to be 15-20%.

Equipment room for ammonia refrigeration system at Cabin John Ice Rink.





Exterior of Cabin John Ice Rink (above) Skaters enjoying the ice rink (below)

Summarized building benchmarking data for Cabin John Ice Rink from 2017 is depicted in the table below.

Energy Type	Consumption (kBtu)	National Median Comparison	Unit
Grid Electric	9,310,698.1	National Median Site Energy Use Intensity (EUI)	43.7 kBtu/ft2
Natural Gas	7,415,168.5	National Median Source EUI	96.8 kBtu/ft2
		% Difference from National Median Source EUI	390%
Total Energy:	10,725,800.0	Emissions (Based on Site Energy Use)	1,426.7 MT CO2e

Efficiency Projects on M-NCPPC, Montgomery County Parkland

Throughout the year, projects are completed to improve the efficient use of water and energy resources while still providing an exceptional level of service to the public. The overarching goals of this program include:

- Implementing projects focused on heating and air conditioning system replacements for equipment in operation for over 20 years.
- Continued expansion of building automation controls and energy management systems capabilities in primary staff office, support, and maintenance buildings.
- Exterior lighting retrofit program to utilization of LED technology.
- Making progress on programs and initiatives included in the M-NCPPC Montgomery County Sustainability Plan.
- Continued comprehensive audit of the utility bills being tracked by EnergyCAP to validate data entered and reported for primary locations.

Efficiency Projects - Fiscal Year Results, FY19

In FY19 projects were completed in support of the program to efficiently utilize water and energy resources at parks and facilities. The below table depicts specific project locations and types of improvements/upgrades completed.

Projects Completed: FY19

Project Location	Description	Efficiency Standard	Primary Shop(s)
Agricultural History Farm Park	Exterior building and roadway lighting retrofit.	LED Fixtures	Electric
Black Hill Maintenance Facility	Exterior wall pack and exterior lighting upgrade, including parking lot.	LED Fixtures	Electric
Black Hill Visitors Center	Installation of EcoBee technology to monitor temperatures in central education room, combined with mechanical use of window blinds to determine need for window tinting. Determined that proper management of blinds provided sufficient energy and heat gain reduction.	Improved temperature modulation and energy savings	HVAC
Brookside Gardens: Conservatory	Replaced air circulator.	Improved temperature modulation	HVAC
Brookside Gardens: Visitor's Center	 Installed N-1050 solar control window film on atrium upper window line to reduce energy consumption. Installed publicly accessible dual port level 2 electric vehicle charging station. 	Energy efficient window film; Electric Vehicle Charging Station	HVAC, Electric
Fleming Local Park	Basketball Court Lighting Retrofit (ADA and Energy Funding).	LED Fixtures	Electric
General Getty Neighborhood Park	Replaced and upgraded water fountain to frost free system.	Maintenance Efficiency	Plumbing

Project Location	Description	Efficiency Standard	Primary Shop(s)
Glenmont Local Park	 Installed ductless heat pump. Retrofit 3 toilets from 3.5 gpf to 1.6 gpf, replaced 5 sinks with water-saving fixtures, replaced urinal to water efficient unit. 	High Efficiency Appliance, High Efficiency Water Fixtures	HVAC, Plumbing
Good Hope Local Park	Basketball and Tennis Court Lighting Retrofit (Grant and Energy Funding).	LED Fixtures	Electric
Indian Spring Local Park	Replaced furnace with 95% efficient unit.	High Efficiency Appliance	HVAC
Leland Neighborhood Park	Replaced and upgraded water fountain to frost free system.	Maintenance Efficiency	Plumbing
Little Bennett Regional Park: Campground	Exterior Lighting Upgrade to All 3 Bathhouses.	LED Fixtures	Electric
Locust Grove Nature Center	Installed ductless heat pump.	High Efficiency Appliance	HVAC
Meadowbrook Maintenance Facility	 FY18 (previously unreported) Upgraded restroom fixtures: 5 toilets retrofit from 3.5 gpf to 1.6 gpf. 5 sinks retrofit to 3 compartment water efficient units. 2 urinal retrofit to water efficient units. 3 water efficient shower heads installed. 	High Efficiency Water Fixtures	Plumbing
MLK Maintenance	Installed tube heater in auto-shop for more uniform	High Efficiency	HVAC
Facility Olney Family Neighborhood Park	Replaced and upgraded 1 water fountain to frost free system.	Appliance Maintenance Efficiency	Plumbing
Olney Mill Neighborhood Park	Completed installation of 6 panel, 1.8 kW rooftop solar photovoltaic system to power restroom/shelter.	Solar Panel Installation	Electric
Rock Creek Regional Park	Installed new variable frequency drive (VFD) grinder pump at Bathhouse #2.	Energy Efficient Unit	Plumbing
Rockwood Manor: Skyview House	Replaced water heater with Navien tankless water heater for energy efficiency.	High Efficiency Appliance	HVAC, Plumbing
Rockwood Manor: French House	Installed tankless hot water heater.	High Efficiency Appliance	Plumbing
Saddlebrook Park Police Headquarters	 Parking Lot Lighting Retrofit. Interior Hallway Lighting Retrofit. 	LED Fixtures	Electric
Sligo Avenue Neighborhood Park	 Parking Lot Lighting Retrofit. Replaced furnace with 95% efficient unit. 	LED Fixtures, High Efficiency Appliance	Electric, HVAC

Project Location	Description	Efficiency Standard	Primary Shop(s)
Sligo Dennis Local	Park Activity Building:	High Efficiency	HVAC, Plumbing
Park	Replaced furnace with 95% efficient unit.	Appliance, High	
	• Retrofit 3 toilets from 3.5 gpf to 1.6 gpf,	Efficiency Water	
	upgraded drinking fountain.	Fixtures	
Stoneybrook Local	Parking Lot Lighting Retrofit.	LED Fixtures	Electric
Park			
Veirs Mill Local	Park Activity Building:	High Efficiency	HVAC, Plumbing
Park	Retrofit HVAC system.	Appliance, High	
	 Retrofit 3 toilets from 3.5 gpf to 1.6 gpf, 	Efficiency Water	
	replaced 5 sinks with water-saving fixtures,	Fixtures	
	replaced urinal to water efficient unit.		
Wheaton	Upgraded the HVAC furnace and air conditioning	High Efficiency	HVAC
Maintenance	system to a 95% efficient unit and 19 SEER split	Appliance	
Facility	system with condensing unit; reconfigured exhaust		
	systems to draw in fresh air to the building.		
Wheaton Regional	Installed blown-in insulation in ceiling plenum	Insulation for	HVAC
Park: Sports	above entire main building.	energy efficiency	
Pavilion			
Wheaton Regional	Exterior duct insulation replacement.	Insulation for	HVAC
Park: Tennis		energy efficiency	

Utility Budget Results for FY19:

	FY19 Cost	FY19 Budget	Difference
PARKS DEPARTMENT	\$2,275,737	\$2,157,115	(\$118,622)
PLANNING DEPARTMENT	\$193,206	\$225,223	\$32,017
ENTERPRISE	\$849,959	\$1,082,200	\$232,241
PROPERTY MANAGEMENT	\$23,046	\$12,000	(\$11,046)
BI-COUNTY	\$73,545	\$99,968	\$26,423
TOTAL:	\$3,415,494	\$3,576,506	\$161,013

Expenditures for FY19:

Programs Energy Management:	\$46 <i>,</i> 900
Projects Local:	\$37 <i>,</i> 000
Projects Non-local:	\$40,000
Water Projects Non-local:	\$25 <i>,</i> 000
Water Projects Local:	\$25,000
Total in FY19:	\$173 <i>,</i> 900

Efficiency Projects - Results to Date, FY20

The results of the current program year as of December 2019 are as follows:

Goals:

- > Continue to expand the exterior lighting retrofit program to use LED technology.
- Continue executing programs and initiatives included in the M-NCPPC Montgomery County Sustainability Plan.
- > Implementation of small-scale solar photovoltaic opportunities.
- Exploration of additional opportunities for stormwater and graywater harvesting for reuse (e.g. operations, irrigation, toilet flushing, other identified uses).
- Continued comprehensive audit of the utility bills being tracked by EnergyCAP to validate data entered and reported for primary locations.

In FY20 a number of projects have been planned, are in process, or have been completed in support of the program to efficiently utilize water and energy resources at parks and facilities. The below table depicts the details and status of specific projects, including locations and types of improvements for FY20.

Project Location	Description	Efficiency Standard	Planned, In Process, or Complete	Primary Shop(s)
Black Hill Regional	 Install 2.4 kW rooftop solar 	Solar Panel	In Process	Electric,
Park: Bathhouse	photovoltaic system.	Installation,		Plumbing
#2	 Install 500-gallon rainwater 	High Efficiency		
	harvesting system for toilet	Water-Saving		
	flushing.	Unit		
Black Hill Regional	Replace propane tank with electric tankless	High Efficiency	Planned	Plumbing
Park: Park Police	hot water heater.	Appliance		
Blair Local Park	Install automated control and monitoring of	Improved	In Process	Park
	athletic field lighting.	energy		Development
		efficiency		Division
		through		
		automation		
Brookside	Installed new variable frequency drive	Energy Efficient	Complete	Plumbing
Gardens: Visitors	(VFD) grinder pump.	Unit		
Center				
Cabin John	Install automated control and monitoring of	Improved	In Process	Park
Regional Park:	athletic field lighting.	energy		Development
Athletic Fields		efficiency		Division
		through		
Cabin John	Poplacement of D 22 refrigeration system	automation	Complete	Contractor
	for NUL and Studio Disks with ammonia		Complete	
Cabin John Joo	for NHL and Studio Rinks with ammonia	Appliance		Fetorerico
Dink	global warming notantial and zoro azona			and Park
	doplotion potential			Dovelopment
				Division

Project Status To Date: FY20

Project Location	Description	Efficiency Standard	Planned, In Process, or Complete	Primary Shop(s)
Camp Seneca Special Park: Seneca Lodge	Installed new variable frequency drive (VFD) grinder pump.	Energy Efficient Unit	Complete	Plumbing
Camp Seneca Special Park: Seneca Day Camp	 Park Offices: Upgraded the HVAC to a 95% efficient unit. Reconfigured system and moved duct work to conditioned space. Installed ductless heat pump. Remove old grease interceptor. Replaced kitchen sink faucet to low-flow fixture. 	High Efficiency Appliance, High Efficiency Water Fixtures	In Process	HVAC, Plumbing
Capital View Homewood	Retrofit 4 exterior pole lights.	LED Fixtures	Complete	Electric
Cloverly Local Park	Replace and upgrade water fountain to frost free system.	Maintenance Efficiency	Planned	Plumbing
Colesville Local Park	Replaced terracotta sewer line with PVC.	Infrastructure Upgrade	Complete	Plumbing
Darby Historical Cultural Park: Darby Store	Installed new variable frequency drive (VFD) grinder pump.	Energy Efficient Unit	Complete	Plumbing
Dewey Local Park	Retrofit 9 exterior pole lights.	LED Fixtures	Complete	Electric
Eastern Middle School	Install automated control irrigation with advanced water management.	Improved water conservation on irrigated site through automation	In Process	Ballfields Team, Park Development Division
Jesup Blair Local Park	Install upgraded/relocated exterior drinking fountain.	Maintenance Efficiency	Planned	Plumbing, Heavy Equipment
Ken-Gar Local Park	Install automated control irrigation with advanced water management.	Improved water conservation on irrigated site through automation	In Process	Ballfields Team, Park Development Division

Project Location	Description	Efficiency Standard	Planned, In Process, or Complete	Primary Shop(s)
Maydale Nature Classroom	 Construction of first M-NCPPC net-zero facility to include features such as: Sustainably-sourced materials (Hardie board Cementitious Siding, Bamboo flooring). Ceiling material R-43 and wall material R-30. Trombe wall installed. LED interior and exterior lighting. 17.4 kW rooftop solar photovoltaic system. Ductless HVAC system. 275-gallon rainwater harvesting system. Two 1.6 gpf toilets. 2 wall mounted low-flow sinks. Low-flow kitchen sink faucet. 	Net Zero	In Process	Carpenters, Electric, Heavy Equipment, HVAC, Plumbing
Meadowbrook Maintenance Facility	Installation of charging infrastructure for electric mowers.	Electric Vehicle Charging Station	Complete	Electric
Meadowside Nature Center	Parking Lot Lighting Retrofit.	LED Fixtures	Planned	Electric
MLK Recreational Park: Field #3	Install automated control irrigation with advanced water management.	Improved water conservation on irrigated site through automation	In Process	Ballfields Team, Park Development Division
Nolte Local Park	 Install upgraded/relocated exterior drinking fountain. Replace 400' of galvanized water line to poly-pipe in support of Community Garden. 	Maintenance Efficiency, Infrastructure Improvement	Planned	Plumbing
North Four Corners Local Park	Install automated control irrigation with advanced water management.	Improved water conservation on irrigated site through automation	In Process	Ballfields Team, Park Development Division

Project Location	Description	Efficiency Standard	Planned, In Process, or Complete	Primary Shop(s)
Pinecrest Local Park	 Park Activity Building: Retrofit building interior and parking lot lighting. Install ductless heat pump. 2 toilets retrofit from 3.5 gpf to 1.6 gpf. 2 wall mounted low-flow sinks. Low-flow kitchen sink faucet. Efficient electric hot water heater. 	LED Fixtures, High Efficiency Water Fixtures, High Efficiency Appliance	Planned	Electric, HVAC, Plumbing
Quebec Terrace Neighborhood Park	Parking Lot Lighting Retrofit.	LED Fixtures	In Process	Electric
Ridge Road Recreational Park	Install automated control and monitoring of athletic field lighting.	Improved energy efficiency through automation	In Process	Park Development Division
Rock Creek Maintenance Facility	 EcoBee thermostats installed. Installed new variable frequency drive (VFD) grinder pump. 	Improved temperature modulation and energy savings, Energy Efficient Unit	Complete	HVAC, Plumbing
Rock Creek Regional Park	Installed new variable frequency drive (VFD) grinder pumps at Bathhouse #2, #3, #4, and Boathouse.	Energy Efficient Unit	Complete	Plumbing
Saddlebrook Park Police Headquarters	 Interior renovation for patrol and dispatch, including new restrooms: Addition of R-19 insulation to concrete/masonry walls, furred over with gypsum wallboard. LED lighting fixtures with occupancy sensors. Install variable refrigerant flow (HVAC) to allow for heat transfer between spaces with heat recovery (more efficient than constant volume and variable air volume systems). Install 4 low-flow toilets (1.6 gpf). Install 1 high-efficiency urinal. Install low-flow kitchen sink faucet. 	Insulation for energy efficiency, LED Fixtures, High Efficiency Appliance, High Efficiency Water Fixtures	In Process	Carpenters, Electric, Heavy Equipment, HVAC, Plumbing

Project Location	Description	Efficiency Standard	Planned, In Process, or Complete	Primary Shop(s)
Seneca Landing Special Park: Poole's Store	 New R-13 insulation added to building envelope. Full electric upgrade. Interior lighting upgraded to LED. Installed electric heat pump. Added bathroom with 1.6 gpf toilet. Installed new mop sink, low-flow hand sink, and 3 compartment sink with grease-trap. Replaced 1,000-gallon septic tank. Installed new variable frequency drive (VFD) grinder pump. 	Insulation for energy efficiency, LED Fixtures, High Efficiency Appliance High Efficiency Water Fixtures, Energy Efficient Unit	Complete	Carpenters, Electric, Heavy Equipment, HVAC, Plumbing
Silver Spring Intermediate Middle School	Install automated control irrigation with advanced water management.	Improved water conservation on irrigated site through automation	In Process	Ballfields Team, Park Development Division
South Germantown Recreational Park	Installed new variable frequency drive (VFD) grinder pumps at Adventure Playground bathhouse, Miracle Field, near Aquatic Center and at Maintenance Yard.	Energy Efficient Unit	Complete	Plumbing
Wheaton Claridge Local Park	 Park Activity Building: 3 toilets retrofit from 3.5 gpf to 1.6 gpf. 2 wall mounted low-flow sinks. Low-flow kitchen sink faucet and drain replacement from galvanized to PVC. 	High Efficiency Water Fixtures	Planned	Plumbing
Wheaton Regional Park: Athletic Bathhouse	 Complete building replacement: Standing seam metal roof with 2" insulation. Double-glazed windows with 1" infill and thermal barriers. Thermal insulation throughout exterior walls. Lighting fixtures: partial LED. Occupancy Sensors on all fixtures. Hot water heater is more efficient than previous model. Low-flow toilets (1.6 gpf). No HVAC, but designed for future addition of heat. 	Insulation for energy efficiency, LED Fixtures, High Efficiency Appliance, High Efficiency Water Fixtures	Complete	Contractor Managed by Park Development Division

Project Location	Description	Efficiency Standard	Planned, In Process, or Complete	Primary Shop(s)
Wheaton Regional Park: Athletic Lighting	 Athletic Lighting Retrofit. Install automated control and monitoring of athletic field lighting. 	LED Fixtures, Improved energy efficiency through automation	Planned	Electric, Park Development Division
White Oak Recreation Center	Install automated control irrigation with advanced water management.	Improved water conservation on irrigated site through automation	In Process	Ballfields Team, Park Development Division

Utility Budget Projection for FY20:

	FY20 Budget	Cost as of 12/20/2019	FY20 Annual Projection	Difference (FY20 Budget-Projection)
PARKS DEPARTMENT	\$2,238,733	\$677,639**	\$2,196,900	\$41,833
PLANNING DEPARTMENT	\$211,590	\$69,464	\$192,300	\$19,290
ENTERPRISE	\$922,000	\$351,870	\$910,000	\$12,000
PROPERTY MANAGEMENT	\$14,500	\$1,698	\$28,700	(\$14,200)
BI-COUNTY	\$91,605	\$35,200	\$73,500	\$18,105
TOTAL:	\$3,478,428	\$1,135,871	\$3,401,400	\$77,028

Data obtained from M-NCPPC General Ledger and EnergyCAP ** Adjustments made to account for reimbursement/credits

Budgeted expenditures for FY20:

+=0)000
\$25.000
\$25,000
\$40,000
\$37,000

Efficiency Projects - Planned Measures, FY21

The proposed program for FY21 is as follows:

Goals:

- > Assess building envelopes and improve insulation where applicable.
- Continue lighting retrofit program to use LED technology inside facilities, in parking lots, along walkways and at ballfields/sports courts.
- Determine additional potential small-scale solar applications. Investigate opportunities for geo-thermal technology for heating and cooling.
- > Continue maximizing HVAC and water heater efficiency through appliance and equipment upgrades.
- > Continue retrofitting plumbing fixtures to low-flow, low consumption units.
- Maintain existing and implement appropriate new opportunities stormwater and graywater harvesting for reuse (e.g. operations, irrigation, toilet flushing, other identified uses).
- Utilize ArcGIS collector to gather locational data for all utility meters on parkland. Address meter and account issues as appropriate with the utility.
- Continue to implement the comprehensive audit of the utility bills being tracked by E-CAP to validate data entered and reported for primary locations.

For FY21 several projects have been planned in support of the program to efficiently utilize water and energy resources at parks and facilities. The below table depicts the details and status of a limited number of specific projects, including locations and types of improvements for FY21.

While a few capital improvement program (CIP) projects have been identified below, due to the nature of the work in the M-NCPPC Facilities Management Division, this list is kept truncated to ensure balance between maintenance tasks that arise through the year, which have a budgetary impact, along with planned, proactive efficiency upgrades. When maintenance tasks arise for specific sites, opportunities are often taken for mobilization of staff and resources to install or upgrade appliances or equipment. This practice effectively improves efficiency and a more holistic approach to maintenance and upkeep of facilities on parkland.

Project Location	Description	Efficiency Standard	Funding	Primary Shop(s)
Agricultural History	Install fresh air exchangers and	High Efficiency	To be determined	HVAC
Farm Park	heat pumps.	Appliance		
Cabin John Regional	Replace water line	Infrastructure	Pending Funding	Plumbing
Park		Upgrade		
Calverton-Galway	Install rooftop solar photovoltaic	Solar Panel	CIP: Local Energy	Electric
Local Park	system with power backup to	Installation		
	shelter/restroom building			
Meadowbrook Local	Replace water/sewer line	Infrastructure	To be determined	Plumbing
Park		Upgrade		

Planned Measures FY21

Project Location	Description	Efficiency Standard	Funding	Primary Shop(s)
Meadowbrook	Replace gas radiant heat with high	High Efficiency	CIP: Non-Local	HVAC
Maintenance Facility	efficiency heat pump and install	Appliance	Energy	
	door blowers			
Rock Creek	Install radiant heating upgrades	High Efficiency	Pending Funding	HVAC
Maintenance Facility		Unit		
Spencerville Local	Upgrade HVAC with high efficiency	High Efficiency	CIP: Local Energy	HVAC
Park	heat pump.	Appliance		
Waters House	Upgrade existing HVAC equipment	High Efficiency	Pending Funding	HVAC
Special Park: Waters		Appliance		
House				
Wheaton Regional	Replace water line to Sports	Infrastructure	Pending Funding	Plumbing
Park	Pavilion	Upgrade		

Utility Budget Proposal for FY21:

	Proposed Budget FY21
PARKS DEPARTMENT	\$2,250,522
PLANNING DEPARTMENT	\$52,897
ENTERPRISE	\$960,700
PROPERTY MANAGEMENT	\$14,500
BI-COUNTY	\$82,075
WHEATON HQ	\$764,659
TOTAL:	\$4,125,353

Proposed budget expenditures for FY21:

Total in FY21:	\$127,000
Water Projects Non-Local:	\$25,000
Water Projects Local:	\$25,000
Projects Non-local:	\$40,000
Projects Local:	\$37,000

Waste Reduction and Recycling

M-NCPPC – Montgomery County operates a comprehensive and proactive waste reduction and recycling program, adhering to the business/commercial recycling standards and reporting requirements established by the Montgomery County Executive and the Division of Solid Waste Services. As such, M-NCPPC – Montgomery County recycles mixed paper/cardboard, commingled materials of aluminum, glass, plastic, steel/tin, scrap metal and green waste (e.g. vegetation/plant material).

In addition to these materials, the M-NCPPC - Montgomery County further reduces the waste stream by recycling a number of voluntary products including tires, motor oil and other hazardous waste, electronics, light bulbs, batteries, as well as construction debris including concrete and asphalt. The below graph depicts the past four years of waste stream data for the organization. Total Recycle/Reuse includes both the mandatory and voluntary recycling materials.



M-NCPPC – Montgomery County works to divert as much waste out of trash and into an appropriate recycling stream. Montgomery County has established a goal of recycling 70% of the waste stream by 2020 and the organization has worked diligently to try to achieve this goal. In 2016 and 2017, the total waste diversion rates were 67% and 68% respectively. In 2018, M-NCPPC in Montgomery County successfully surpassed the 70% goal with 73% total waste diversion and in 2019 total waste diversion for the organization was 67%.



Waste removed by volunteers from parkland.

Efforts are taken to reduce waste within our operations, however, as a public land agency, a portion of the organizational waste stream is a result of illegal dumping of various types of waste, including household trash, on parkland. These volumes become part of the total waste stream of the organization. Waste removed by volunteers from stream and park cleanups comprise another portion of

the organization's waste stream. Each year, on average, more than 10,000 volunteers dedicate time to removing trash and recyclables from streams and parks. Since FY16, through this valuable support, over 450,000 pounds of trash and recyclables have been removed.

In an effort to increase efficiency, the Department of Parks is currently piloting trash/recycling sensor technology. These sensors, once affixed to the inside of a trash or recycling container, will allow staff to remotely assess the volume of material in that container. Once the volume reaches a targeted threshold, staff are notified via a preferred method, text or email, and can schedule pickup logistics into the maintenance schedule.

This technology is promising and will not only help to improve the efficiency of operations but will also help to cut fuel consumption and greenhouse gas emissions by eliminating unnecessary mobilization of trash collection vehicles. Additionally, it is estimated that a more efficient allocation of resources can result in an estimated 20-40% savings in collection expenses. Ensuring timely and efficient collection also helps to improve aesthetics across parkland, leading to an improved customer experience for our residents and visitors.



A graph depicting the fill level on a container over a 2-week period.



The trash and recycling sensor tracking software also provides a host of information to make operations and logistics planning more efficient.

Fleet and Equipment

M-NCPPC – Montgomery County operates and maintains a park and planning system that offers a wide range of services and amenities for recreation and leisure, as well has habitat and natural resources for the benefit of the community. A diverse array of vehicles and equipment are required to support the operations and maintenance of this system. Vehicle types range from small sedans, to light-duty pickup trucks, to large dump trucks and specialized vehicles which serve as the backbone of our maintenance commitment.

In an ongoing effort to improve efficiency and cost effectiveness without compromising the safety of employees or jeopardizing the standards for excellence set forth by the Department, the Director of the Department of Parks authorized an extensive review of the Department's vehicle fleet. Led by the M-NCPPC – Montgomery County Chief Performance Officer, this review looked at vehicle type and aspects of vehicle use, including annual mileage, types of trips etc. At the time of completion of the analysis and report, M-NCPPC – Montgomery County maintained a vehicle fleet of about 600 light duty vehicles, including the M-NCPPC Park Police fleet.

From this analysis, a listing of potentially underutilized vehicles was generated for further review by senior management. Forty-three vehicles were identified as potentially underutilized, with 19 recommended for disposal and 24 for redeployment to other areas of need within the Department. Long-term total savings for disposed vehicles was estimated at over \$820,000 which accounts for avoided replacement costs, avoided maintenance costs, and proceeds from trade-in. Redeployed vehicles identified from this study will allow for savings in new vehicle purchase avoidance in an amount over \$810,000. This review also identified future strategies to better right-size vehicles for the job at the time of purchase.

Another priority of the organization is to reduce greenhouse gas emissions from transportation through improving vehicle efficiency and increasing use of alternatively fueled and electric vehicles. At present, M-NCPPC – Montgomery County maintains a number of hybrid and fully electric vehicles in the fleet inventory. As electric vehicle technology advances and more vehicle types become electrified, the organization expects to further increase this inventory. Additionally, in FY20, the Department of Parks began piloting use of all electric commercial-grade mowers. Primarily being used in our urban parks, the mowers get the job done while producing zero greenhouse gas emissions and greatly reducing noise pollution in the parks.



Hybrid and electric vehicles and maintenance equipment are increasingly considered across the organization.

Resource Conservation Plan Charts

Summary and Montgomery Parks Green Tree Report

Agency	Maryland-National Capital Park and Planning Commission							
Number	of Facilities	399 Facilities that have utilities	Change in number of facilities	0				
Total square feet active and leased:		1,232,614	Change in total ft ²	0				
Average operating hrs./year Varies Change in avg. operating hrs./year No								
Other ch consump	anges effecting energy otion	The implementation of a comprehensive energy management and water conservation program for the Department of Parks by the following Divisions: Facilities Management, Northern Parks, Southern Parks, Enterprise, and Park Development contributed to additional consumption reductions at park facilities. The Montgomery Parks Green Tree Report (below) provides insight into available park amenities, facilities, and other park system highlights.						

COMPARE AND A	
MONTCOMERY DARKS M	INCRRC
Parks Information Line: 201	
Parks mornation Line. 501-4	+93-2393
	<u></u>
Protect and interpret our valuable natural and cultural resources need for conservation; offer a variety of enjoyable recreational a provide clean, safe, and accessible places for leisure-time activiti	; balance the demand for recreation with the ctivities that encourage healthy lifestyles; and es.
PARK SYSTEM HIGHLIGHTS	
Total number of parks: 422 Stream Le	ngth: 490 miles
Total owned or managed acres of parkland: 36,991 Total Park	Boundary: 941.39 miles
TUDES OF DADUS	
TYPES OF PARKS	
Conservation: 22 Neighborhood: 95	Special: 24
Local: 152 Neighborhood Conservation Area	: 41 Stream Valley: 36
Miscellaneous Recreation/ Recreational: 11	Urban: 30
Non-Recreation Facilities: 6 Regional: 5	
PARK FACILITIES	
Archery: 2 Event Centers: 4	Park Activity Buildings: 28
Athletic fields: 342 Exercise Stations: 41	Picnic Shelters – Non-Permitted: 48
Basketball courts: 225 Formal Botanical Gardens: 2	Picnic Shelters – Permitted: 88
Boating Facility – Rentals: 2 Golf Courses: 4	Playgrounds: 273
Boating Landing Ramps: 3 Gymnasiums: 1	Skate Park: 3
BMX Track: 1 Historic Sites: 43	Splash Playground: 1
Campgrounds – Full Service: 1 Historic Structures: 111	Tai Chi Courts: 1
Campgrounds – Primitive: 2 Ice Rinks: 2	Tennis Centers – Indoor: 3 (20 courts)
Campsites: 102 Lakes: 4	Tennis Courts – Outdoor: 304
Carousel: 1 Large Group Picnic Areas: 2	Trails – Canoe: 5.4 miles
Community Gardens: 11 Miniature Golf: 1	Trails – Natural Surface: 185 miles
Cricket Fields: 7 Miniature Trains: 2	Trails – Paved: 68.6
Dog Parks: 6 Nature Centers: 4	Volleyball: 24
Driving Range (Stand Alone): 1 Outdoor Rope Courses: 1	
Equestrian Centers: 6 Overlay football/soccer fields:	41
PARK BUDGET	
Adopted Operating Budget FY2020	\$122 million
Capital Improvements Program FY2019-2024	\$68.1 million for acquisition
Capital Improvements Program FY2019-2024	\$167.7 million for development
	As of July 2019
	Source: EAW, GIS, and the Parks Acquisition Ledger



Energy Conservation - Local Parks

(P998710)

Category	M-NCPPC		Date Last Modified			10/04/18 M-NCPPC					
Planning Area	Countywide		Status	ening Age	ncy				Ongo	oing	
	Total	Thru FY18	Rem FY18	Total 6 Yeara	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24	Beyond 6 Years
		EXPEND	ITURE S	CHEDU	LE (\$00	00s)					
Planning, Design and Supervision	130	35	35	60	10	10	10	10	10	10	
Construction	365	107	96	162	27	27	27	27	27	27	
TOTAL EXPENDITURES	495	142	131	222	37	37	37	37	37	37	
M-NCPPC Bonds	495	FUNDI	NG SCHE	DULE (\$000s 37)	37	37	37	37	
TOTAL FUNDING SOURCES	495	142	131	222	37	37	37	37	37	37	
	PPROP	RIATION	AND EX	PENDIT	URE	DATA	(\$000s)				
Appropriation FY 20 Request			37	Year First	st Appropri	ation				FY9	99
Cumulative Appropriation			310	Last FY's	s Cost Est	imate				495	
Expenditure / Encumbrances			150								
Unencumbered Balance			160								

PROJECT DESCRIPTION

This project provides finds to modify existing local park buildings and facilities to control fuel and utilities consumption. The project scope encompasses planning, identifying, implementing and monitoring effective energy conservation measures at each major local park facility. Emphasis is placed upon positive and proven measures to remedy heat losses and gains through modifications to building envelope systems and through improvement and retrofit of building support systems; and modification of electrical and mechanical systems and equipment and their associated control and distribution systems.

COST CHANGE

In FY19, added FY23 and FY24 to this ongoing level of effort project.

FISCAL NOTE

Prior year partial capitalization of expenditures through FY16 totaled \$531,000.

DISCLOSURES

Expenditures will continue indefinitely.

CIP: Energy Conservation – Non-Local Parks

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Energy Conservation - Non-Local Parks

(P998711)

Category	M-NCPPC		Date Last	Modified					10/01/	18	
SubCategory Development		Administe	Administering Agency					M-NCPPC			
Planning Area	Countywide		Status				Ongoing				
	Total	Thru FY18	Rem FY18	Total 6 Years	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24	Beyond 6 Years
		EXPEND	TURE SC	HEDUL	E (\$000	s)					
Planning, Design and Supervision	40	10	-	30	5	5	5	5	5	5	
Construction	350	57	83	210	35	35	35	35	35	35	
TOTAL EXPENDITURES	390	67	83	240	40	40	40	40	40	40	
G.O. Bonds	390	FUNDIN 67	NG SCHEI	240	000s) 40	40	40	40	40	40	
TOTAL FUNDING SOURCES	390	67	83	240	40	40	40	40	40	40	
		RIATION	AND EXP	ENDITU	RE D		\$000s)				
Appropriation FY 20 Request			40	Year First /	\ppropriat	ion				FY9	9
Cumulative Appropriation			190	Last FY's C	ost Estim	ate				390	
Expenditure / Encumbrances			67								
Unencumbered Balance			123								

PROJECT DESCRIPTION

This project provides funds to modify existing non-local park buildings and facilities to control fuel and utilities consumption. The project scope encompasses planning, identifying, implementing and monitoring effective energy conservation measures at each major non-local park facility. Emphasis is placed upon positive and proven measures to remedy heat losses and gains through modifications to building envelope systems and through improvement and retrofit of building support systems; and modification of electrical and mechanical systems and equipment and associated control and distribution systems.

COST CHANGE

In FY19, added FY23 and FY24 to this ongoing level of effort project.

FISCAL NOTE

Prior year partial capitalization of expenditures through FY16 totaled \$792,000.

DISCLOSURES

Expenditures will continue indefinitely.

Existing Measures FY00 – FY19

Existing Measures FY00 to FY19	Initial Cost	Annual Net Impact on Maintenance	Energy Type(s)	Units Saved Per Year	Annual Cost Savings		
Capital Improvement Program (CIP)							
Equipment Replacement Projects Local & Non-Local	\$595,930 est.	\$123,000 on Annual Service Costs	Electricity, Natural Gas, and Propane	834,000 kWh, 49,600 therm & 6,100 Pounds	\$158,000 est. Annual Cost Avoidance		
Equipment Retrofit Projects Includes MEA Grant in 2010 and DOE Grant in 2012	\$283,482 est.	\$10,000 on Annual Service Costs	Electricity, Natural Gas, and Propane	190,200 kWh, 11,500 therm & 600 Pounds	\$47,600 est. Annual Cost Avoidance		
Control Improvements	\$140,000 est.	N/A	Electricity and Natural Gas	284,000 kWh & 21,000 therm	\$85,000 est. Annual Cost Avoidance		
Lighting Projects Includes MEA Grant in 2010 and DOE Grant in 2012	\$501,000 est.	N/A	Electricity	489,800 kWh	\$208,000 est. Annual Cost Avoidance		
Sub Total:	\$1,656,894 est.			1,798,000 kWh, 82,100 therm & 6,700 Pounds	\$498,600 est. Annual Cost Avoidance		
Operations and Maintenance							
Operations and Maintenance Best Management Practice and Programs FY00-FY19	\$551,400	\$5,000 annual	Electricity, Natural Gas, and Propane	764,000 kWh, 39,500 therm & 6,800 Pounds	\$155,000 est. Annual Cost Avoidance		
Overall Total:	\$2,208,294			2,562,000 kWh, 121,600 therm & 13,500 pounds	\$653,600 est. Annual Cost Avoidance 2.7 yrs. Return on Investment (ROI)		

New Measures FY20

New Measures FY20	Projected Initial Cost	Annual Net Impact on	Energy Type(s)	Estimated Units Saved	Projected Annual Cost			
Capital Improvement Program (CIP)								
Capital Improveme	nt Program (CIP)							
Equipment Replacement Projects Local & Non-Local	\$45,000 est.	\$5,000 on Annual Service Costs	Electricity, Natural Gas, and Propane	79,000 kWh, 11,600 therm	\$10,800 est. Annual Cost Avoidance			
Control Improvements	\$20,000 est.	N/A	Electricity	30,000 kWh	\$4,200 est. Annual Cost Avoidance			
Lighting Projects Local & Non-Local	\$50,000 est.	N/A	Electricity	39,000 kWh	\$5,300 est. Annual Cost Avoidance			
Sub-total:	\$115,000 est.	\$5,000			\$20,300			
Operations and Maintenance								
Best Management Practices and Sustainability Programs	\$29,500	N/A	Electricity, Natural Gas, and Propane	21,000 kWh, 400 therm	\$3,000 est. Annual Cost Avoidance			
Operations and Maintenance Improvement Programs	\$24,500	N/A	Electricity, Natural Gas, and Propane	9,000 kWh, 300 therm & 100 Pounds	\$3,000 est. Annual Cost Avoidance			
Sub Total:	\$54,000	N/A			\$6,000			
Overall Total:	\$169,000	\$5,000			\$26,300 5.0 yr. Return on Investment (ROI)			

Planned Measures FY21

Planned Measures FY21	Projected Initial Cost	Projected Maintenance Cost	Energy Type(s)	Estimated Units Saved Per Year	Projected Annual Cost Savings		
Capital Improvement Program (CIP)							
Equipment Replacement Projects Local & Non-Local	\$45,000 est.	\$2,000 on Annual Service Costs	Electricity, Natural Gas, and Propane	10,300 kWh, 5,000 therm	\$7,500 est. Annual Cost Avoidance		
Control Improvements	\$15,000 est.	N/A	Electricity (Solar)	30,000 kWh	\$4,200 est. Annual Cost Avoidance		
Lighting Projects Local & Non-Local	\$10,000 est.	N/A	Electricity	47,000 kWh	\$7,000 est. Annual Cost Avoidance		
Sub-total:	\$70,000 est.	\$2,000			\$18,700		
Operations and Ma	aintenance						
Best Management Practices and Sustainability Programs	\$29,500	N/A	Electricity, Natural Gas, and Propane	21,000 kWh, 500 therm & 100 Pounds	\$3,300 est. Annual Cost Avoidance		
Operations and Maintenance Improvement Programs	\$24,500	N/A	Electricity, Natural Gas, and Propane	14,000 kWh, 400 therm	\$2,200 est. Annual Cost Avoidance		
Sub Total:	\$54,000	N/A			\$5,500		
Overall Total:	\$124,000	\$2,000			\$24,200 6.2 yrs. Return on Investment (ROI)		

Proposed Utility Budget By Fund/Cost - FY21

Flectricity	
LIEULIULY	\$1,152,578162
Natural Gas	\$220,000
Water and Sewer	\$697,044
Heating Oil (#2)	\$5,400
Propane	\$175,500
Sul	b Total \$2,250,522
DEPARTMENT OF PLANNING	
Electricity	\$46,912
Natural Gas	\$3,628
Water and Sewer	\$2,357
Propane	\$0
Sul	b Total \$52,897
DEPARTMENT OF PARKS - ENTERPRISE	
Electricity	\$741,000
Natural Gas	\$139,400
Water and Sewer	\$67,300
Propane	\$13,000
Sul	b Total \$960,700
DEPARTIVIENT OF PARKS - PROPERTY	
	¢0.000
Electricity	\$9,800
Electricity Natural Gas Water and Sower	\$9,800 \$3,700 \$1,000
Electricity Natural Gas Water and Sewer Propage	\$9,800 \$3,700 \$1,000 \$0
Electricity Natural Gas Water and Sewer Propane	\$9,800 \$3,700 \$1,000 \$0 b Total \$14,500
Electricity Natural Gas Water and Sewer Propane Sul	\$9,800 \$3,700 \$1,000 \$0 b Total \$14,500
Electricity Natural Gas Water and Sewer Propane Sul	\$9,800 \$3,700 \$1,000 \$0 b Total \$14,500
Electricity Natural Gas Water and Sewer Propane Sul WHEATON HEADQUARTERS Electricity	\$9,800 \$3,700 \$1,000 \$0 b Total \$14,500 \$578,679
Electricity Natural Gas Water and Sewer Propane Sul WHEATON HEADQUARTERS Electricity Water and Sewer	\$9,800 \$3,700 \$1,000 \$0 b Total \$14,500 \$578,679 \$185,980
Electricity Natural Gas Water and Sewer Propane Sul WHEATON HEADQUARTERS Electricity Water and Sewer Sul	\$9,800 \$3,700 \$1,000 \$0 b Total \$14,500 \$578,679 \$185,980 b Total \$764,659
Electricity Natural Gas Water and Sewer Propane Sul WHEATON HEADQUARTERS Electricity Water and Sewer Sul	\$9,800 \$3,700 \$1,000 \$0 b Total \$14,500 \$578,679 \$185,980 b Total \$764,659
Electricity Natural Gas Water and Sewer Propane Sub WHEATON HEADQUARTERS Electricity Water and Sewer Sub BI-COUNTY	\$9,800 \$3,700 \$1,000 \$0 b Total \$14,500 \$578,679 \$185,980 b Total \$764,659
Electricity Natural Gas Water and Sewer Propane Sul WHEATON HEADQUARTERS Electricity Water and Sewer Sul BI-COUNTY Electricity	\$9,800 \$3,700 \$1,000 \$0 b Total \$14,500 \$578,679 \$185,980 b Total \$764,659 \$77,796
Electricity Natural Gas Water and Sewer Propane Sul WHEATON HEADQUARTERS Electricity Water and Sewer Sul BI-COUNTY Electricity Water and Sewer	\$9,800 \$3,700 \$1,000 \$0 b Total \$14,500 \$578,679 \$185,980 b Total \$764,659 \$777,796 \$4,279
Electricity Natural Gas Water and Sewer Propane WHEATON HEADQUARTERS Electricity Water and Sewer BI-COUNTY Electricity Water and Sewer	\$9,800 \$3,700 \$1,000 \$0 b Total \$14,500 \$578,679 \$185,980 b Total \$764,659 \$777,796 \$4,279

Overall Total	\$4,125,353

