



**Montgomery County**

**Resource Conservation Plan**

Fiscal Year 2019

**Department of Parks**  
**Department of Planning**

January 10, 2018

## TABLE OF CONTENTS

	Page
1. INTRODUCTION	3
2. RESOURCE CONSERVATION PLAN: FISCAL YEAR 2017 - Results	4
3. RESOURCE CONSERVATION PLAN: FISCAL YEAR 2018 – To date	6
4. RESOURCE CONSERVATION PLAN: FISCAL YEAR 2019 - Planned	8
5. RESOURCE CONSERVATION PLAN CHARTS:	
Summary	10
Montgomery Parks Green Tree Summary	11
Existing Measures – 2000 to 2017	12
New Measures - Fiscal Year 2018	13
Planned Measures – Fiscal Year 2019	14
BUDGET – Fiscal Year 2019	15

## RESOURCE CONSERVATION PLAN

### **The Maryland-National Capital Park and Planning Commission**

#### **Montgomery County**

#### **Department of Parks**

#### **Department of Planning**

### **1. INTRODUCTION**

The Maryland-National Capital Park and Planning Commission is responsible for the acquisition, development, and management of more than 36,895 acres of parkland, providing residents and visitors with outstanding recreational opportunities, facilities, and open space for natural resources stewardship.

The Department of Parks and Department of Planning established a comprehensive utilities management program in July 2003. Utility resources consumption and costs have been reduced as a result of the projects and programs implemented by the Commission staff.

The goal of the comprehensive Resource Conservation Plan is to establish programs and projects that will efficiently use energy and water resources to fulfill the mission of the Commission to serve the citizens and visitors of Montgomery County.

The Resource Conservation Plan strives to improve operations and maintenance practices to efficiently use electricity, natural gas, propane, and water to serve the programs implemented by the Departments.

This report presents the accomplishments as of December 31, 2017 and the plans for the balance of the 2018 Fiscal Year.

The Maryland-National Capital Park and Planning Commission has continued to reduce costs based on the implementation of programs and projects completed in Fiscal Year 2018.

The report establishes plans for the 2019 Fiscal Year to conserve energy and water resources as part of a comprehensive Resource Conservation Plan.

## 2. FISCAL YEAR RESULTS – 2017

July 2016 to June 2017

### Goals Achieved:

- Implemented projects focused on heating and air conditioning system replacements for equipment in operation for over 20 years
- Expansion of the building automation controls and energy management systems capabilities in the primary staff office, support, and maintenance buildings
- Continued to expand the exterior lighting retrofit program to use LED technology
- Integrated programs as part of the original 2014-2016 Sustainability Plan
- Finalized an opportunity to construct two solar renewable energy projects
- The 2015-2017 Sustainability Plan was updated
- Initiated a comprehensive audit of the utility bills being tracked by E-CAP to validate data entered and reported for primary locations

### Projects and Programs Completed Fiscal Year 2017

- **Meadowbrook Maintenance Yard** - Replaced the hydronic circulator for the boiler system with a new Grundfos Magna 3 Variable Speed Circulator, reducing energy consumption
- **Rockwood Manor** - Installed a high efficiency Mitsubishi Heat Pump on the top floor of the Caroline Cottage section of the Manor
- **Skyview house at Rockwood Manor** - Replaced tank style water heater with new Navien tankless water heater, generating 95% efficiency
- **Parkside Headquarters Permit Office** - Replaced inefficient ductless Sanyo heat pump with new 20 SEER Mitsubishi unit
- **Black Hill - Park Police Substation** - Installed a single new efficient Mitsubishi heat pump in office
- **Cabin John Tennis** – Installed 2-Variable Frequency Drives in the existing package HVAC units to obtain greater efficiency from the units
- **Locust Grove Recreational Park** - Upgraded the old inefficient ductless heat pump with a new high efficiency Mitsubishi heat pump

- **Brookside Gardens** – As part of the greenhouse renovation, a 25,000 gallon capacity cistern was installed to collect water from the greenhouse roof (to be mixed with fresh WSSC water) and used for irrigating the plants grown on site. Prior to use, the water will be treated with a 25-micron filter and exposed to UV light to control potential plant pathogens
- **Exterior Parking Lot Lighting replacements with LED fixtures:**
  - Sligo Avenue Neighborhood Park – Four Fixtures
  - Colesville Local Park – Four Fixtures
  - Pilgrim Hills Local Park – Three Fixtures
  - Valley Mill Special Park – Two Fixtures
  - Germantown Square Urban Park – Six Fixtures
  - Damascus Recreational Park – Three Fixtures

**Budget Results for Fiscal Year 2017:**

	<b>FY 2017 Budget</b>	<b>FY 2017 Cost</b>	<b>Difference</b>
<b>ENTERPRISE</b>	\$996,900	\$1,027,069	(\$30,169)
<b>PLANNING DEPARTMENT</b>	\$221,000	\$185,056	\$35,944
<b>PROPERTY MANAGEMENT</b>	\$12,000	\$16,192	(\$4,192)
<b>PARKS DEPARTMENT</b>	\$2,190,345	\$1,880,771	\$309,574
<b>TOTAL</b>	<b>\$3,420,245</b>	<b>\$3,109,088</b>	<b>\$311,157</b>

**Expenditures for Fiscal Year 2017:**

Programs Energy Management:	\$46,000.00
Projects Local:	\$37,000.00
Projects Non-local:	\$40,000.00
Water Projects Non-local:	\$25,000.00
<u>Water Projects Local:</u>	<u>\$25,000.00</u>
Total in FY 2017:	\$173,000.00

### 3. RESULTS TO DATE - FISCAL YEAR 2018

#### July 2017 to June 2018

The results of the current program year as of December 2017 are as follows:

#### Goals:

- Complete construction of the two solar renewable energy projects
- Continue to expand the exterior lighting retrofit program to use LED technology
- Continue integrating programs as part of newly updated and approved Sustainability Plan (Fiscal Year 2018-2019)
- Research and begin implementation of small scale solar opportunities
- Explore additional opportunities for gray water and harvested stormwater reuse (e.g. operations, irrigation, toilet flushing, other identified uses)
- Begin conducting a comprehensive audit of the utility bills being tracked by E-CAP to validate data entered and reported for primary locations

#### Status to Date: Completed Projects and Programs for Fiscal Year 2018

- **South Germantown Recreational Park and Rock Creek Regional Park** – Final construction, commissioning and activation of the Solar Photovoltaic systems based on the FY 2015 Request for Proposals for Power Purchase Agreement. The combined 2.5 megawatts of ground-mounted solar arrays will produce about 3,500,000 kWh of solar electricity annually – offsetting 2,877 tons of greenhouse gases yearly.
- **Black Hill Maintenance Facility** - Upgraded the furnace and air conditioning equipment. Replaced with a 95% efficiency gas furnace and an 18 SEER split system air conditioning unit.
- **Woodlawn Helicopter Hanger** - Replaced the existing HVAC system with two new high efficiency heat pumps. One is a 5-ton capacity unit, and one is a 3-ton capacity unit. Both new heat pumps are 18 SEER efficiency.
- **Maughlin House** - Replaced the heating system during renovation of the building by Property Management, with a new Navien Combi Boiler. The new boiler heats via two hydro air coils and act as a tankless water heater to provide domestic hot water. The new boiler is a 95% efficient propane system.
- **Cabin John Maintenance Yard** - Staff Fitness Room - Upgraded the existing ductless heat pump with a new higher efficiency Mitsubishi Heat Pump

- **Agricultural History Farm Park** - Activity Building - Installed window tinting film on the south facing windows in the hall and reception/lobby area to reduce solar gain during summer months
- **Brookside Gardens Visitor's Center** - Upgraded the rooftop unit controls to allow the provided heat to work in concert with the damper system in the ducts to conserve energy usage
- **Wheaton Ice Arena** - Replaced the existing ice rink dehumidifier with a new high efficiency dehumidifier, providing the duct work for the project
- **Rock Creek Maintenance Yard** – As part of the maintenance yard replacement, contractors installed a 1,700-gallon rainwater harvesting system to collect the roof water to be used for flushing toilets
- **Exterior Parking Lot Lighting replacements with LED fixtures:**
  - Sundown Local Park – Four Fixtures
  - Olney Mill Neighborhood Park – Five Fixtures
  - Olney Family Neighborhood Park – One Fixture
  - Ken-Gar Palisades Park – Eleven Fixtures
  - Owens Local Park – Four Fixtures
  - Tilden Woods Local Park – Four Fixtures
  - Sligo-Bennington Neighborhood Park – Two Fixtures
  - Kensington Cabin Local Park – Five Fixtures
  - Glen Hills Local Park – Ten Fixtures
  - Sligo Creek Stream Valley Unit 3 495 Underpass – Five Fixtures

**Budget Projection for Fiscal Year 2018:**

	<b>FY 2018 Budget</b>	<b>Cost as of Dec. 2017</b>	<b>FY18 Annual Projection</b>	<b>Difference (FY2018 Budget – Projection)</b>
<b>ENTERPRISE</b>	\$1,050,600	\$492,574	\$992,040	\$58,560
<b>PLANNING DEPARTMENT</b>	\$200,300	\$95,075	\$184,730	\$15,570
<b>PROPERTY MANAGEMENT</b>	\$12,000	\$7,463	\$12,000	\$0
<b>PARKS DEPARTMENT</b>	\$2,161,105	\$851,192	\$2,419,320	(\$258,215)
<b>Total</b>	<b>\$3,424,005</b>	<b>\$1,446,304</b>	<b>\$3,608,090*</b>	<b>(\$184,085)</b>

\*Projection includes \$300,000 weather contingency

**Budgeted expenditures for Fiscal Year 2018:**

Programs Energy Management:	\$46,900.00
Projects Local:	\$37,000.00
Projects Non-local:	\$40,000.00
Water Projects Non-local:	\$25,000.00
<u>Water Projects Local:</u>	<u>\$25,000.00</u>
Total in FY 2018:	\$173,900.00

**4. PLANNED RESOURCE CONSERVATION PLAN – FISCAL YEAR 2019**

**July 2018 to June 2019**

The proposed program for Fiscal Year 2019 is as follows:

**Goals:**

- Continue making progress on the exterior lighting retrofit program to use LED technology
- Maintain existing and implement appropriate opportunities for gray water and harvested stormwater reuse (e.g. operations, irrigation, toilet flushing, other identified uses)
- Determine potential small-scale solar applications
- Continue the comprehensive audit of the utility bills being tracked by E-CAP to validate data entered and reported for primary locations

**Projects and Programs for Fiscal Year 2019**

**Park Facilities –**

- Continue HVAC replacements and energy efficiency upgrades
- Replace water heaters as needed utilizing high-efficiency models
- Install low-flow, low consumption hand wash units
- Install stormwater cisterns for variety of uses

**Park Activity Buildings –**

- Install LED interior lighting and exterior wall lighting
- Install low-flow, low consumption hand wash units



- Install low-flow urinals and toilets

**Exterior Lighting –**

- Install additional LED fixtures in parking lots and for area lighting

**Budget Proposal for Fiscal Year 2019 is:**

	<b>Proposed FY 2019 Budget (Note 1)</b>
<b>ENTERPRISE</b>	\$ 1,087,700
<b>PLANNING DEPARTMENT</b>	\$ 225,223
<b>PROPERTY MANAGEMENT</b>	\$ 12,000
<b>PARKS DEPARTMENT</b>	\$ 2,177,915
<b>TOTAL</b>	<b>\$3,502,838</b>

**Note 1 - The proposed budget for Fiscal Year 2019 assumes the following:**

- The Department of Planning will remain at the current location in Silver Spring in FY 2019
- Central Offices for the Department of Parks will remain at the current location at the Parkside Headquarters Building in FY 2019

**Proposed budget expenditures for Fiscal Year 2019:**

Programs Energy Management:	\$54,000.00
Projects Local:	\$37,000.00
Projects Non-local:	\$40,000.00
Water Projects Local:	\$25,000.00
<u>Water Projects Non-Local:</u>	<u>\$25,000.00</u>
<b>Total in FY 2019:</b>	<b>\$181,000.00</b>

## RESOURCE CONSERVATION PLAN

### SUMMARY

Agency	<b>Maryland-National Capital Park and Planning Commission</b>		
Number of Facilities	399 Facilities that have utilities	Change in number of facilities	0
Total square feet	1,207,570	Change in total ft <sup>2</sup>	0
Average operating hrs./year	Varies	Change in avg. operating hrs./year	None
Other changes effecting energy consumption	<p>The implementation of a comprehensive energy management and water conservation program for the Department of Parks by the three operating Divisions: North Parks Region, South Parks Region, and Enterprise Operations contributed to additional consumption reductions at the following park facilities.</p> <p>See the attached Montgomery Parks, MNCPPC <b>Park Facility Highlights</b></p>		

# RESOURCE CONSERVATION PLAN MONTGOMERY PARKS GREEN TREE

## SUMMARY



### MONTGOMERY PARKS, M-NCPPC

Parks Information Line – 301-495-2595

[www.MontgomeryParks.org](http://www.MontgomeryParks.org)

#### OUR MISSION

Protect and interpret our valuable natural and cultural resources; balance the demand for recreation with the need for conservation; offer a variety of enjoyable recreational activities that encourage healthy lifestyles; and provide clean, safe, and accessible places for leisure-time activities.

#### PARK SYSTEM HIGHLIGHTS

Total number of parks:	421
Total owned or managed acres of parkland:	36,895
Total developed acreage:	7,189
Open and environmental preservation acreage:	29,706

#### TYPES OF PARKS

Local	151	Regional	5	Neighborhood Conservation Areas	41
Neighborhood	95	Recreational	11	Miscellaneous Recreation/ Non-Recreation Facilities	6
Urban	30	Special	24		
Stream Valley	36	Conservation	22		

#### PARK FACILITIES

Archery: 2	Driving Range (Stand Alone): 1	Picnic Shelters - Non-Permitted: 48
Athletic fields: 303	Golf Courses: 4	Picnic Shelters - Permitted: 88
Cricket Field: 8	Gymnasiums: 1	Large Group Picnic Areas: 2
Overlay football/soccer fields: 41	Historic Sites: 43	Playgrounds: 290
Basketball Courts: 219	Historic Structures: 117	Skate Park: 3
Campgrounds – Full Service: 1	Ice Rinks: 2	Splash Playground: 1
Campgrounds – Primitive: 2	Lakes: 4	Sports Center: 1
Campsites: 102	Boating Facility - Rentals: 2	Sports Pavilion: 1
Carousel: 1	Boating Landing Ramps: 3	Tai Chi Court: 1
Dog Parks: 6	Miniature Golf: 1	Tennis Centers - Indoor: 3 (20 courts)
Equestrian centers: 6	Miniature Trains: 2	Tennis Courts - Outdoor: 302
Event Centers: 4	Nature Centers: 4	Trails - Canoe: 5.4 miles
Exercise Courses: 18	Outdoor Ropes Course: 1	Trails - Natural Surface: 161.9 miles
Formal Botanical Gardens: 2	Park Activity Buildings: 28	Trails - Paved: 76.5 miles
Community Gardens: 12	Volleyball Courts: 25	

#### PARK BUDGET

Park Fund, Adopted Operating Budget FY2018	\$101.4 million
Capital Improvements Program FY2017-2022	\$39.52 million for acquisition
Capital Improvements Program FY2017-2022	\$144.64 million for development

As of 01/2018

Source: EAM, GIS, and the Parks Acquisition Ledger

**Existing Measures**  
**Programs and Projects Completed - Fiscal Years 2000 to June 2017**

Measures - Existing: (implemented from FY 2000 to FY 2017)	Dates implemented	Initial cost (\$)	Annual net impact on maintenance cost (\$)	Fuel type(s) effected and units	Units saved per year	Annual cost savings (\$)
<b>Capital Improvement Projects:</b>						
Equipment Replacement Project	FY 2000 to FY 2017	\$545,930 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
<u>Equipment Retrofit Projects</u> Includes MEA Grant in 2010 and DOE Grant in 2012	FY 2000 to FY 2017	\$121,000 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
Controls Improvements	FY 2000 to FY 2017	\$140,000 est.	NA	Electricity and Natural Gas	284,000 kWh & 21,000 therm	\$85,000 est. Annual Cost Avoidance
<u>Lighting Projects</u> Includes MEA Grant in 2010 and DOE Grant in 2012	FY 2000 to FY 2017	\$501,000 est.	NA	Electricity	489,800 kWh	\$208,000 est. Annual Cost Avoidance
<b>CIP Projects Sub-total</b>		\$1,307,930 est.			1,798,000 kWh, 82,100 therm & 6,700 Pounds	\$498,600 est. Annual Cost Avoidance
<b>Operations and Maintenance:</b>						
Operations and Maintenance Best Management Practice and Programs	FY 2000 to FY 2017	\$504,500	\$5,000 annual	Electricity, Natural Gas, and Propane	764,000 kWh, 39,500 therm & 6,800 Pounds	\$155,000 est. Annual Cost Avoidance
<b>Totals</b>		<b>\$1,812,430</b>			<b>2,562,000 kWh, 121,600 therm &amp; 13,500 pounds</b>	<b>\$653,600 est. Annual Cost Avoidance 2.7 yrs. ROI</b>

**Resource Conservation Measures Fiscal Year 2018  
Being Implemented July 1, 2017 through June 30, 2018**

<u>Measures - Planned:</u>	<u>Projected completion date</u>	<u>Projected initial cost (\$)</u>	<u>Projected maintenance cost (\$)</u>	<u>Fuel type(s) effected and units</u>	<u>Estimated units saved per year</u>	<u>Projected annual cost savings (\$)</u>
<b>Capital Improvement Projects:</b>						
Equipment Replacement Projects Local & Non-Local	Entire Year	\$51,580 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	Entire Year	\$20,000 est.	NA	Electricity	30,000 kWh	\$4,200 est. Annual Cost Avoidance
Lighting Projects Local & Non-Local	Entire Year	\$25,000 est.	NA	Electricity	39,000 kWh	\$5,300 est. Annual Cost Avoidance
<b>CIP Projects Sub-total</b>		<b>\$96,580</b>	<b>\$5,000</b>			<b>\$20,300</b>
<b>Operations and Maintenance:</b>						
Best Management Practices & Sustainability Programs	Entire Year	\$29,500	NA	Electricity, Natural Gas, and Propane	21,000 kWh, 400 therm	\$3,000 est. Annual Cost Avoidance
Operations and Maintenance Improvement Programs	Entire Year	\$24,500	NA	Electricity, Natural Gas, and Propane	9,000 kWh, 300 therm & 100 Pounds	\$3,000 est. Annual Cost Avoidance
<b>O&amp;M Total</b>		<b>\$54,000</b>	<b>NA</b>			<b>\$6,000</b>
<b>Totals</b>		<b>\$150,580</b>	<b>\$5,000</b>			<b>\$26,300</b> <b>5.0 yr. ROI</b>

**Planned Resource Conservation Measures Fiscal Year 2019**  
**July 1, 2018 through June 30, 2019**

<b><u>Measures - Planned:</u></b>	<b><u>Projected completion date</u></b>	<b><u>Projected initial cost (\$)</u></b>	<b><u>Projected maintenance cost (\$)</u></b>	<b><u>Fuel type(s) effected and units</u></b>	<b><u>Estimated units saved per year</u></b>	<b><u>Projected annual cost savings (\$)</u></b>
<b>Capital Improvement Projects</b>						
Equipment Replacement Project - Local & Non-Local	Entire Year	\$50,000 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	Entire Year	\$20,000 est.	NA	Electricity	30,000 kWh	\$4,200 est. Annual Cost Avoidance
Lighting Projects- Local & Non-Local	Entire Year	\$27,000 est.	NA	Electricity	47,000 kWh	\$7,000 est. Annual Cost Avoidance
<b>CIP Projects Sub-total</b>		<b>\$97,000</b>	<b>\$2,000</b>			<b>\$18,700</b>
<b>Operations and Maintenance</b>						
Best Management Practices and Sustainability Programs	Entire Year	\$29,500	NA	Electricity, Natural Gas, and Propane	21,000 kWh, 500 therm & 100 Pounds	\$3,300 est. Annual Cost Avoidance
Operations and Maintenance Improvement Programs	Entire Year	\$24,500	NA	Electricity, Natural Gas, and Propane	14,000 kWh, 400 therm	\$2,200 est. Annual Cost Avoidance
<b>O&amp;M Total</b>		<b>\$54,000</b>	<b>NA</b>			<b>\$5,500</b>
<b>Totals</b>		<b>\$151,000</b>	<b>\$2,000</b>			<b>\$24,200</b> <b>6.2 yrs. ROI</b>

**Fiscal Year 2019**  
**Utility Budget Projection by Fund /Cost**

<b>DEPARTMENT OF PLANNING</b>	
Electricity	\$203,469
Natural Gas	\$13,813
Water and Sewer	\$7,941
Propane	\$0
Sub Total	<b>\$225,223</b>

  

<b>DEPARTMENT OF PARKS</b>	
Electricity	\$1,179,745
Natural Gas	\$230,300
Water and Sewer	\$629,570
Oil	\$3,100
Propane	\$135,200
Sub Total	<b>\$2,177,915</b>

  

<b>DEPARTMENT OF PARKS - ENTERPRISE</b>	
Electricity	\$835,500
Natural Gas	\$165,500
Water and Sewer	\$69,700
Propane	\$17,000
Sub Total	<b>\$1,087,700</b>

  

<b>DEPARTMENT OF PARKS - PROPERTY MANAGEMENT</b>	
Electricity	\$7,800
Natural Gas	\$3,200
Water and Sewer	\$1,000
Propane	\$0
Sub Total	<b>\$12,000</b>

  

<b>Overall Totals</b>	<b>\$3,502,838</b>
-----------------------	--------------------