



FAIRFAX COUNTY PARK AUTHORITY



M E M O R A N D U M

TO: Chairman and Members
Park Authority Board

VIA: Kirk W. Kincannon, Director

FROM: Todd Johnson, Director
Park Operations Division

DATE: October 22, 2015

Agenda

**Park Operations Committee
Wednesday, October 28, 2015 – 6 p.m.**

Boardroom – Herrity Building

Chairman: Edward R. Batten, Sr.

Vice Chair: Linwood Gorham

Members: Michael Thompson, Jr., Frank S. Vajda, Faisal Khan

1. Annual Energy Management Plan (with presentation) – Information*
2. Infrastructure Overview – Roadways and Parking Lots (with presentation) – Information*

*Enclosures



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Board Agenda Item
November 10, 2015

INFORMATION

Energy Management Plans Update (with presentation)

The Park Authority adopted the agency wide FY 2015-17 Energy Management Plan on October 22, 2014. The goals of the Energy Management Plan include reducing energy costs while maximizing services, minimizing the impacts of energy use on the environment, preserving our local and global natural resources, and using renewable resources when feasible.

Staff will share information regarding the implementation progress of the FY 2015-17 Energy Management Plan elements, outline current energy management projects and accomplishments from FY 2015.

ENCLOSED DOCUMENTS:

None

STAFF:

Kirk W. Kincannon, Director

Sara Baldwin, Deputy Director/COO

Aimee Vosper, Deputy Director/CBD

Todd Johnson, Director, Park Operations Division

Barbara Nugent, Director, Park Services Division

Cindy Walsh, Director, Resource Management Division

Dave Bowden, Director, Planning and Development Division

Davood Majidian, Energy Manager, Park Operations Division

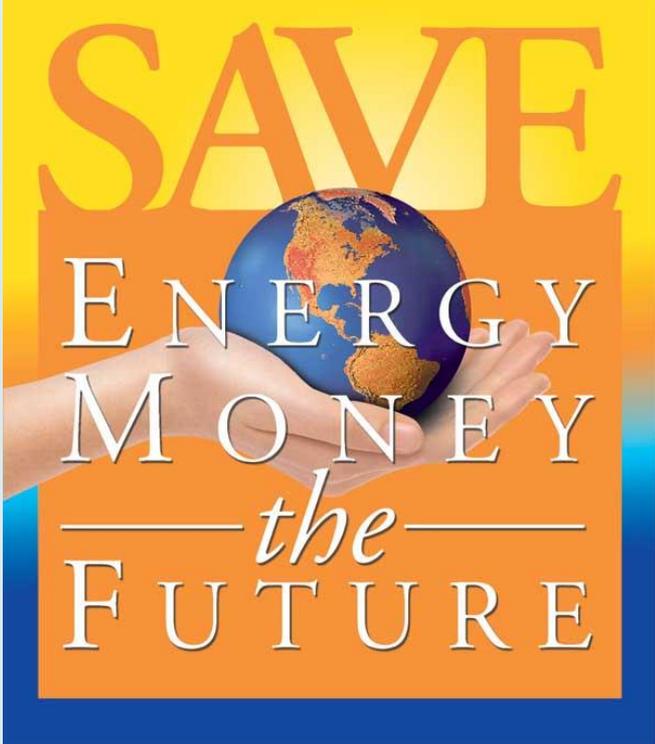
Energy Management Plan Update

Fairfax County Park Authority



Park Operations Committee

October 28, 2015



Agenda

FCPA Energy Management Plan Update

- County Energy Strategy / Plan
- FCPA EMP
- Energy Program Support

FCPA Energy Projects Update (Completed / Plans)

- Indoor Lighting and Control Projects
- VFD Installation Projects
- Outdoor Lighting and Control Projects
- Irrigation Control Projects
- Building Lighting Sensors Projects

FCPA Energy Data Update

- Audrey Moore REC
- Providence REC
- Jefferson Golf

County Energy Strategy / Plan

- **Built Environment & Infrastructure**
 - Location
 - Design & Construction
 - Operations & Maintenance
 - Lease Space
 - Capital Renewal
- **Awareness & Engagement**
 - Employee Work Environment
 - Employee Ownership and Buy-In
 - Other Facility Users
- **Energy Source & Supply**
 - Electricity purchases
 - Nat gas purchases
 - Fuel
 - Renewables
- **Resource Conservation and Management**
 - Waste Reduction, Reuse, & Recycling
 - Wastewater
 - General Materials Use Management
- **Transportation**
 - Public Transportation
 - Fleet Vehicles/Equipment

Energy Management Plan – Content Overview

Introduction

- I Objective
- II Background
- III Purpose
- IV Definitions
- V Energy Management Program Support
- VI Energy Management Process

EMP Elements

- 1 Energy Policy & Goals
- 2 Energy Awareness
- 3 Facility Energy Monitoring
- 4 Energy Feedback and Suggestions
- 5 Facility Energy Audit
- 6 Energy Project Management
- 7 Capital Project Review
- 8 Energy Sources and Supply

Appendices

- A1 Fairfax County Energy Policy
- A2 Fairfax County Procedural Energy Policy
- A3 Park Facilities Temperature Set Points
- A4 FCPA Energy Management Goals
- B1 EECCC Charter
- B2 FCPA Energy Management Webpage in FairfaxNET
- C1 FCPA Utility Accounts List
- C2 Energy Monitoring Software (EnergyCap) - Page View
- E1 Format for Energy Audit Report
- F1 Format for Energy Project Definition
- G1 Format for Utility Change Report
- H1 VEPGA Agreement in Principal
- S1 Format for Facility Energy Suggestions/Feedback
- S2 Format for Outdoor Lighting Information
- S3 Format for Park Facilities Temperature Set Points
- S4 Format for Utility Accounts Inventory Survey
- P1 Management System for Energy-ANSI/MSE 2000-2008 Model
- P2 Energy Management System Model in ISO 50001:2011

Energy Management Program - Financial Support

Funding Sources for Energy Projects / Initiatives

■ **FCPA Park Bond**

Bigger Projects with more attractive ROI

- 2012 Park Bond - Focus on Revenue-fund Facilities
- 2016 Park Bond - Focus on both General & Revenue fund Facilities

■ **FCPA Revenue Operating Fund**

Small Energy-Maintenance Projects

■ **Telecommunications & Proffer**

Small Energy Projects / Initiatives

■ **Fairfax County EIP**

Projects with more positive impacts on Environment

- EIP FY14 - focus on Security Lights and Control
- EIP FY15 - focus on Smart Irrigation & Outdoor Lighting
- EIP FY16 - focus on Smart Irrigation & Outdoor Lighting

■ **Grants**

Energy Projects Update



Energy Projects Update

Completed:

- George Washington Pool Lighting & Skylight Upgrade and Building Sensors Installation
- Lee District Pool Lighting Upgrade / Modification
- Audrey Moore Gymnasium Lighting and Control Upgrade + Painting Ceiling & Walls
- Providence VFD (Variable Frequency Drive) Installation
- Jefferson Parking lot Lighting and Control Upgrade
- Mason District Parking lot Lighting and Control Upgrade
- MVRC Parking lot and Security Lighting Upgrade
- Frying Pan Parking lot Solar Lighting Installation

Plans:

- Audrey Moore Walkway and Security Lighting Upgrade
- Mount Vernon Ice Rink Lighting and Control Upgrade
- Frying Pan Solar Lighting Expansion
- Buildings Lighting & Mechanical Improvement

GWRC Pool Skylight & Lighting & Building Sensors

Before



After



Project	KWH/YEAR Before	KWH/YEAR 2015	Energy Saving
GWRC Pool Lighting (Pool/Spa Overhead & Underwater Lights)	112000	25000	77%
GWRC Building Sensors	58000	40000	30%
Overall	170000	65000	60%

LDRC Pool and Spa Lighting Modification

before



2010



2015



Project	KWH/YEAR before	KWH/YEAR 2009/2010	KWH/YEAR 2015	Energy Saving
LDRC Pool Lighting (Pool/Spa lights)	110000	72000	54000	additional 25% 2015 VS 2010

AMRC Gymnasium Lighting and Control Upgrade

before



after



Project	before		after		Energy Saving
	KW	Operation Hours	KW	Operation Hours	
AMRC Gymnasium Lighting & Control	14	6,300	7	3,700	70%

VFD for Providence Pool Pump



- Variable Frequency Drive (VFD)
- Control AC Motor Speed
- Control Motor Input
- Motor Soft Start
- Decrease Water Hummer
- Higher Performance
- Lower Maintenance Costs
- Save Energy

Project	Amperage before	Amperage after	Energy Saving
PRRC VFD	25	18	28%

EIP

Smart Irrigation System

Implemented by Area Management



- **Smart Irrigation System**
- **Program irrigation**
- **Irrigate based on Weather Condition**
- **Remote diagnostic**
- **Detect any Leak**

- **Higher Performance**
- **Lower Maintenance Costs**
- **Save Water**
- **Save Energy**

EIP

JFGC Parking Lot Lighting Upgrade

Before



After



Project	KWH/YEAR before	KWH/YEAR 2015	Energy Saving
JFGC Parking Lot Lighting	60000	10000	80%

EIP

Mason District Parking lot and Roadway Lighting & Control Upgrade



before



after



New Junction Box



Old Junction Box



Project	KWH/YEAR Before	KWH/YEAR After	Energy Saving
Mason District Paking lot Lighting	33000	4400	80%

MVRC Parking Lot and Security Lighting and Control Upgrade

before



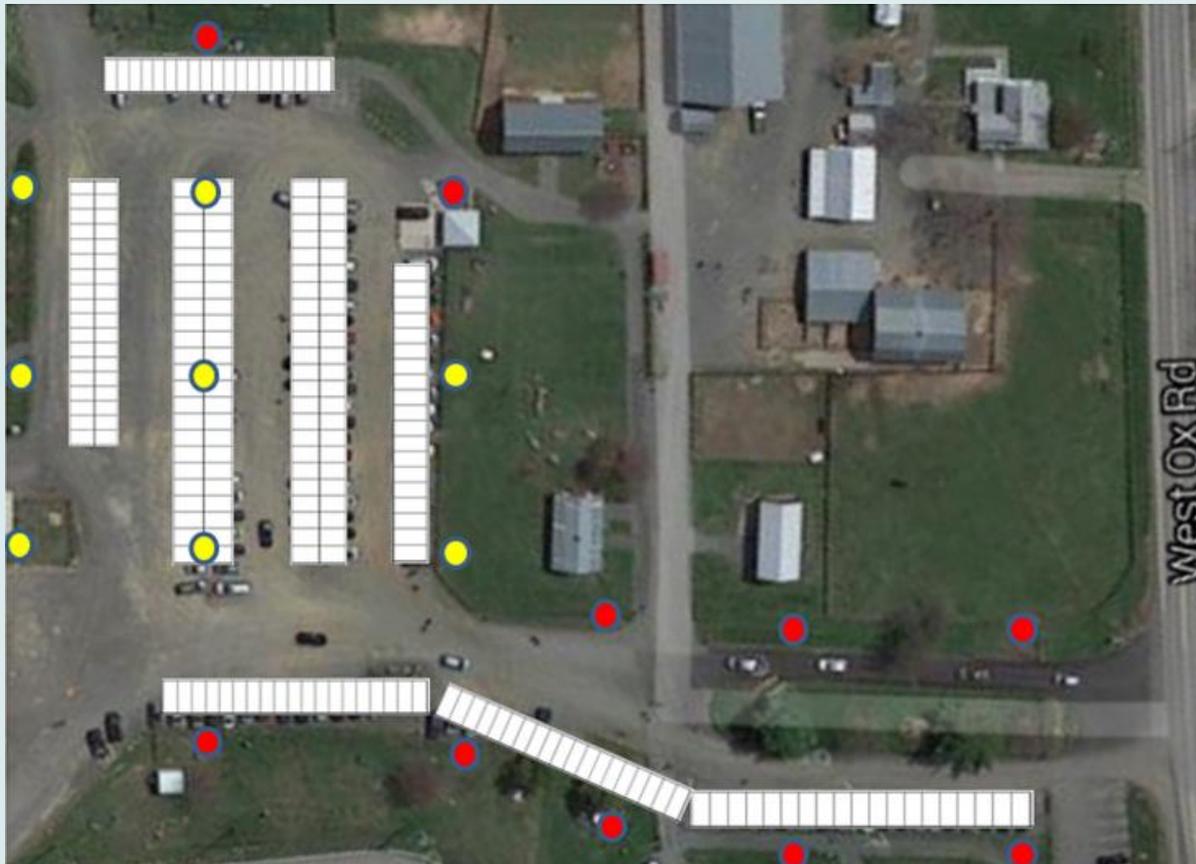
after



Project	KWH/YR Before	KWH/YR After	Energy Saving
MVRC Parking Lot and Security Lighting & Control Upgrade	60,000	17,000	71%

EIP

Plan - FFPF Parking Lot Solar Lighting - Under Construction



Plan - AMRC Walkway and Security Lighting Upgrade - Plan

before

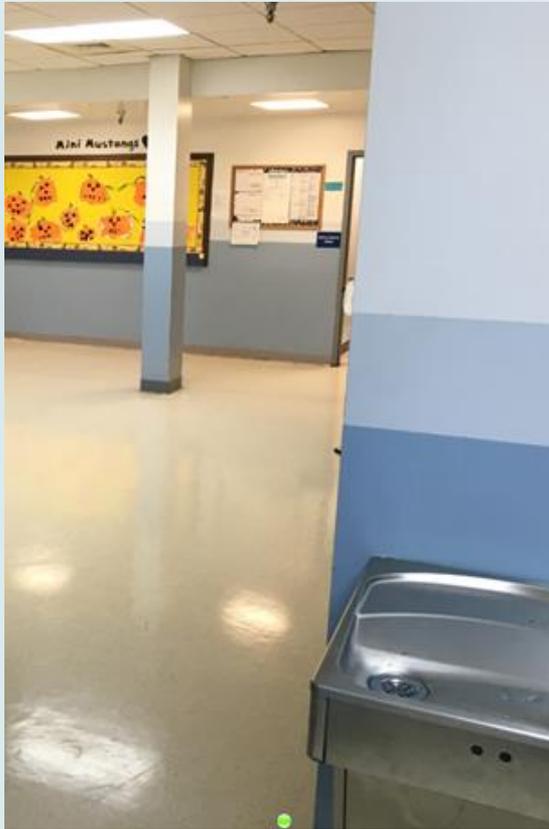


EIP

Plan - Building Lighting Improvement

Test – LDRC Lobby

before

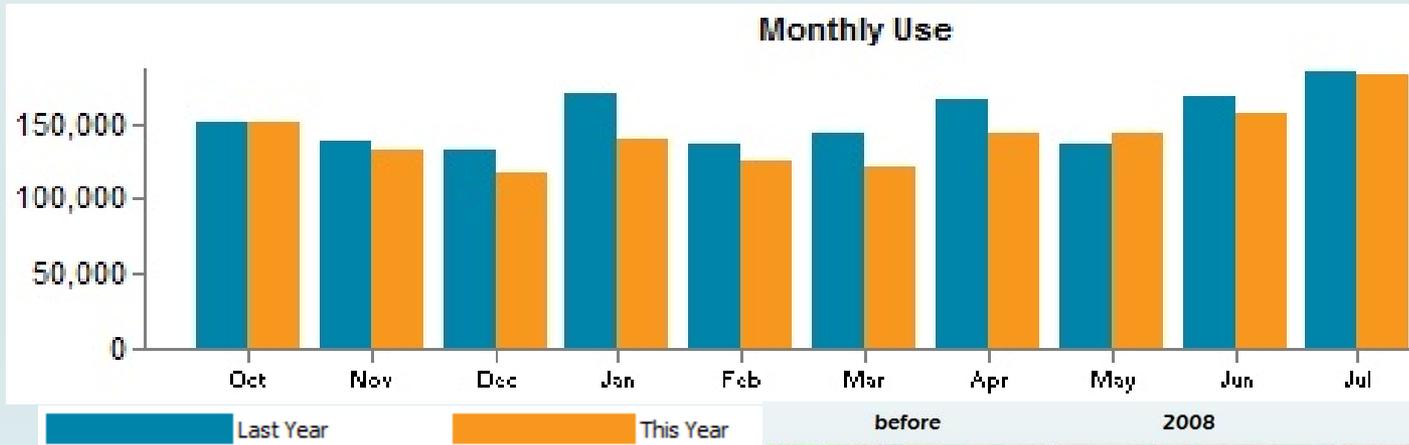


after



**Longer Life - 50% Less Energy Use
Payback less than 2 years**

PRRC Electricity Usage (KWH) - 2015 VS 2014



FY14: kwh = 1,860,000
FY15: kwh = 1,730,000
Saving (FY15 VS FY14) = 7%
(from entire facility usage)

	before	2008	2014
Total KW Before		Total KW 2008	Total KW 2014
	34.8	13.3	9.5
Energy Saving		60%	28% (compare to 2008)

Audrey Moore Rec Electricity Data

FY12 + FY13: kwh = 5,110,320

FY14 + FY15: kwh = 4,507,920

Saving = 11.8% (from entire facility usage)

Before Upgrade



After Upgrade



Project	Previous Total KW	New Total KW	Previous Operation Hours a Year	New Operation Hours a Year	Energy Saving
Audrey Moore Pool	36.8	12.3	5800	5800	66.6%

Estimate - Cost Saving / Avoidance

FCPA Energy Saving / Cost Avoidance (\$) for Listed Energy Projects - Estimated in Sep 2015

Project / Year	Funding Source	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY16 Accumulated Since FY09
PRRC pool lighting and control phase 1	EIP	10000	10000	10000	10000	10000	10000	10000	10000	80000
PRRC raquetball courts lighting and control	EIP	4000	4000	4000	4000	4000	4000	4000	4000	32000
PRRC building lighting and sensors	EIP	6000	6000	6000	6000	6000	6000	6000	6000	48000
FPFP activity and visitor centers lighting	EIP+Tele	4000	4000	4000	4000	4000	4000	4000	4000	32000
Huntley Meadow building and walkway lighting	EIP	1000	1000	1000	1000	1000	1000	1000	1000	8000
LDRC pool and racquetball courts lighting and control	Bond		10000	10000	10000	10000	10000	10000	10000	70000
LDRC gymnasium lighting	Bond		8000	8000	8000	8000	8000	8000	8000	48000
LDRC building lighting and sensors	Bond		7000	7000	7000	7000	7000	7000	7000	49000
MVRC pool lighting and control	Bond			10000	10000	10000	10000	10000	10000	60000
MVRC building lighting and sensors	Bond			5000	5000	5000	5000	5000	5000	30000
AS and Flatlick building lighting and HVAC control	EIP			2000	2000	2000	2000	2000	2000	12000
Hidden Oaks building HVAC control	EIP			1000	1000	1000	1000	1000	1000	6000
SRRC pool lighting and control	Bond				7000	7000	7000	7000	7000	35000
OMRC pool lighting and control	Bond				15000	15000	15000	15000	15000	75000
Athletic field lighting control	EECBG					30000	30000	30000	30000	120000
Outdoor lighting and control phase 1 (7 REC's parking lots)	EECBG					30000	30000	30000	30000	120000
SHRC pool lighting and control	Bond					7000	7000	7000	7000	28000
LDRC tennis courts lighting	Telecom					1500	1500	1500	1500	6000
AMRC pool lighting and control	Bond						12000	12000	12000	36000
AMRC raquetball courts lighting and control	Bond						6000	6000	6000	18000
Athetic courts lighing control	EECBG						15000	15000	15000	45000
VFD control for OMRC	EIP							2000	2000	4000
VFD control for LDRC spray park	EIP							1000	1000	2000
PRRC pool lighting and control phase 2	Bond							6000	6000	12000
JFGC parking lot lighting	EIP							2500	2500	5000
Buildings Walpack Security lighting and control	EIP							6000	6000	12000
Mason District parking lot and drive way lighting (under way)	Telecom							2500	2500	5000
GwRC pool lighting and control plus building sensors	Bond								12000	12000
LDRC pool lighting modification	Bond								2500	2500
VFD control for OMRC	EIP								1500	1500
MVRC parking lot and security lighting and control	EIP								5500	5500
AMRC gymnasium lighting and control	Bond								8500	8500
Total Cost Saving/Avoidance (\$) Per FY		25,000	50,000	68,000	90,000	158,500	191,500	211,500	241,500	1,028,000

Questions



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Board Agenda Item
November 10, 2015

INFORMATION

Infrastructure Overview- Parking Lots and Roadways (with presentation)

The Park Authority infrastructure continues to age without adequate resources to maintain, replace, renovate properly and address the deferred maintenance. Over the next several months, staff will continue to update the Board on the condition some of the agency's most popular park amenities and the maintenance and resource challenges moving forward.

Staff will provide an overview of the current condition of the Park Authority parking lots and roadways to including information on the lifecycle status of the agency's parking lots and roadways, examples of the current conditions and needed repairs and improvements. Staff will also share the history of funding and the estimated funding requirements to provide the parking lots and roadways moving forward.

ENCLOSED DOCUMENTS:

None

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Infrastructure Overview

- Parking Lots and Roadways

Roadways

- ❑ Vehicular access into and within parks.
 - ❑ Private maintenance access.
 - ❑ Public access:
 - ❑ RECenters, Golf, Athletic facilities, etc.
- ❑ Connect areas within larger parks (i.e. Lake Fairfax, Burke Lake, Wakefield)
- ❑ Surface types:
 - ❑ Gravel, Asphalt, Concrete, Block Pavers
Crushed Shell, Natural.



Roadways

- ❑ Total Number of Parks: 426
- ❑ Parks with roadways: 132 or 31%

- ❑ Total Number of roadways: 169
 - ❑ # roadways with gravel: 42
 - ❑ # roadways with asphalt: 127

*Note: Some parks have multiple roadways and multiple surfaces.



Parking Lots

- ❑ Total Number of Parks: 426
- ❑ Parks with parking lots: 101 or 24%

- ❑ Total Number of parking lots: 247
 - ❑ # parking lots with gravel: 67
 - ❑ # parking lots with asphalt: 191

*Note: Many lots are gravel with asphalt ADA parking spaces and are listed as both asphalt and gravel, therefore do not equal total # of lots.



Life Expectancy

- ❑ Paved asphalt surfaces have a 15-year life expectancy.
- ❑ Compacted gravel surfaces have a 10-15 year life expectancy.
- ❑ Site conditions, use and maintenance impact the conditions specific to each site and life expectancy may be different at each location.



Parking Lots and Roadways Quick Facts

- Miles of Roadways: 23.42
- Total Square Yards of Roadway: 381,408
- Total Square Yards of Parking Lots: 691,796
- Total Parking Spaces: 15,443
- Beyond Life Expectancy **FY16**:
 - Parking Lots 76,690 sq.yds. = \$1.40 M
 - Roadways 68,421 sq.yds. = \$1.14 M
- Beyond Life Expectancy **FY17-20**:
 - Parking Lots 85,471 sq.yds = \$1.62 M
 - Roadways 64,952 sq.yds = \$1.17 M



Parking Lots and Roadways Maintenance

- ❑ Staffed vs. Non-staffed Sites.
 - ❑ Staffed sites (RMD, Golf, Lakefronts)
 - ❑ Funded by POD & site as able.
 - ❑ POD labor provided or contract managed.
 - ❑ Non-staffed sites
 - ❑ Funded by POD.
 - ❑ Area Management- minor repair; pot hole, add gravel.
 - ❑ Mobile Crew- major repair; drainage, grading, paving.



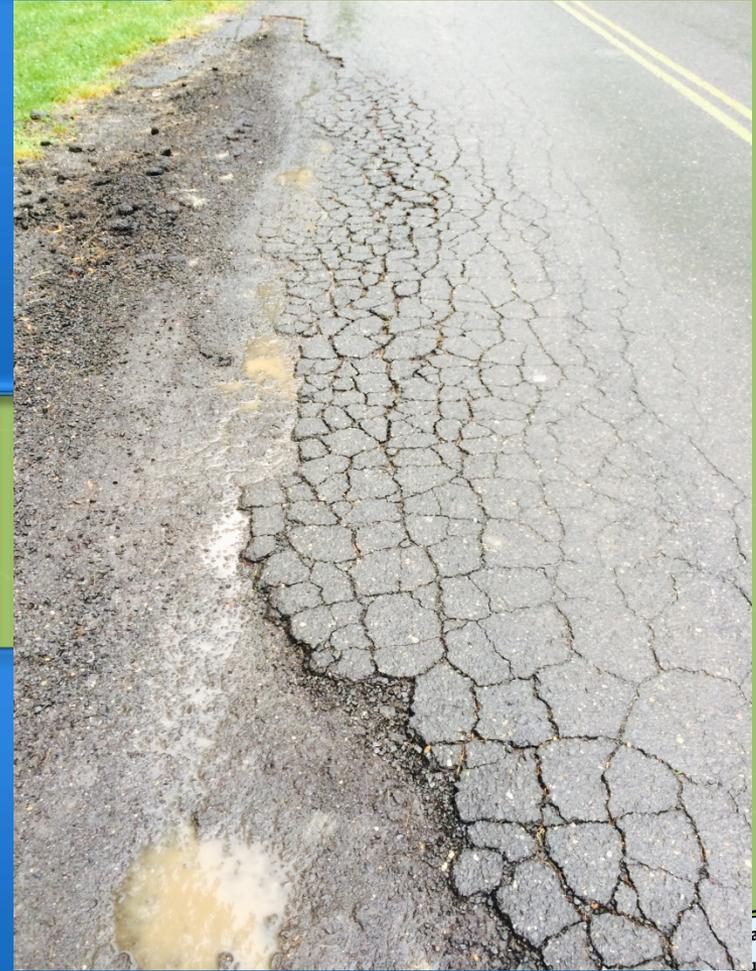
Mobile Crew Equipment used on Parking Lots & Roadways

- ❑ 2 Backhoes/Loaders
- ❑ 3 Skidsteers
- ❑ 1 Excavator
- ❑ 1 Bulldozer
- ❑ 1 Grader
- ❑ 2 Rollers
- ❑ 1 Asphalt Spreader
- ❑ 5 Heavy Dump Trucks



Maintenance Issues

“Alligating”



Maintenance Issues

Pot holes



Maintenance Issues

Road Slippage



Recurring patching



Maintenance Issues

Sub base failures



Upheaval

Maintenance Issues

Depressions



Maintenance Issues

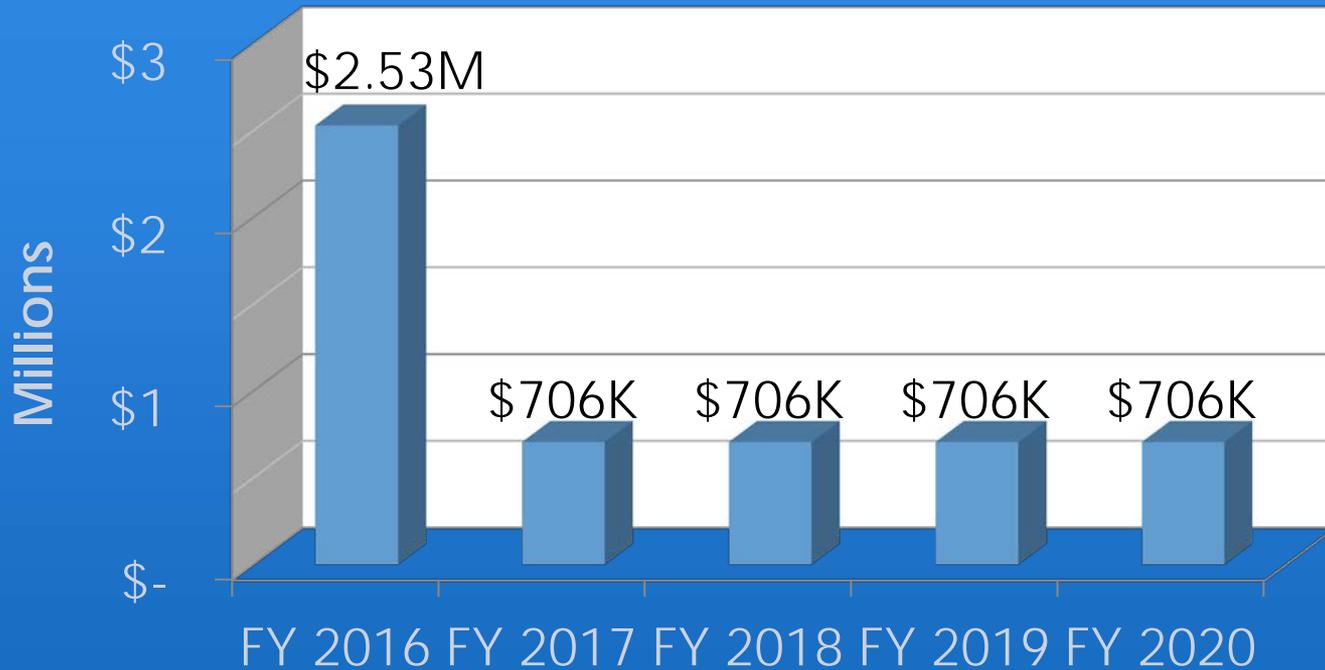
Flooding/Wash outs



Repetitive storm damage.



Estimated Replacement Costs Over Next 5 Years



Total Amount from FY2016 through FY2020 \$5.36M



Parking Lots & Roadways Maintenance Budget

- ❑ General Fund – \$0.00
- ❑ General County Construction Fund – ~\$50k (includes maintenance of stormwater features)
- ❑ Revenue Fund – \$0.00
- ❑ Other options.



Parking Lots & Roadways Budget/Funding

Bond Projects

1998 - \$738k
2004 - \$5.478m
2008 - \$2.7m
TOTALS - \$8.9m

Other Projects

ADA - \$1.82m
Gen. Park Imp. \$306k

\$2.13m



Summary of Infrastructure Costs

Facility	Cost over 5 years
Courts	\$ 2.7M
Playgrounds	\$18.1M
Amusements	\$ 750K (Burke Lake Carousel)
Outdoor Lighting	\$12.4M
Grounds Equipment	\$ 8.8M
Picnic Shelters / Outdoor Restrooms	\$15.9M
Parking Lots & Roadways	\$ 5.4M



Questions

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