



Fort Lauderdale Infrastructure Workshop



CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

August 30, 2017

Agenda

- **Infrastructure Goals and Objectives**
- **Water Program**
- **Wastewater Program**
- **Stormwater Program**



Infrastructure Goals and Objectives

INFRASTRUCTURE



G2 GOAL 2: *Be a sustainable and resilient community*



O1

OBJECTIVE 1: Proactively maintain our water, wastewater, road and bridge infrastructure

O2

OBJECTIVE 2: Reduce flooding and adapt to sea level rise

O6

OBJECTIVE 6: Secure our community's water supply



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Infrastructure Management

Focus

- Improving the reliability and resilience of our infrastructure
- Systematic modernization and replacement of critical systems and components
- Planning for the future to provide for anticipated growth and development

Management Approach

- Program level master plans to prioritize long-term requirements
- Operating based on the Effective Utility Management (EUM) model
- Instituting an Asset Management Program
- Adopting a Capacity, Management, Operation, & Maintenance Program (CMOM)



Comprehensive Utilities Strategic Master Plan (CUSMP)

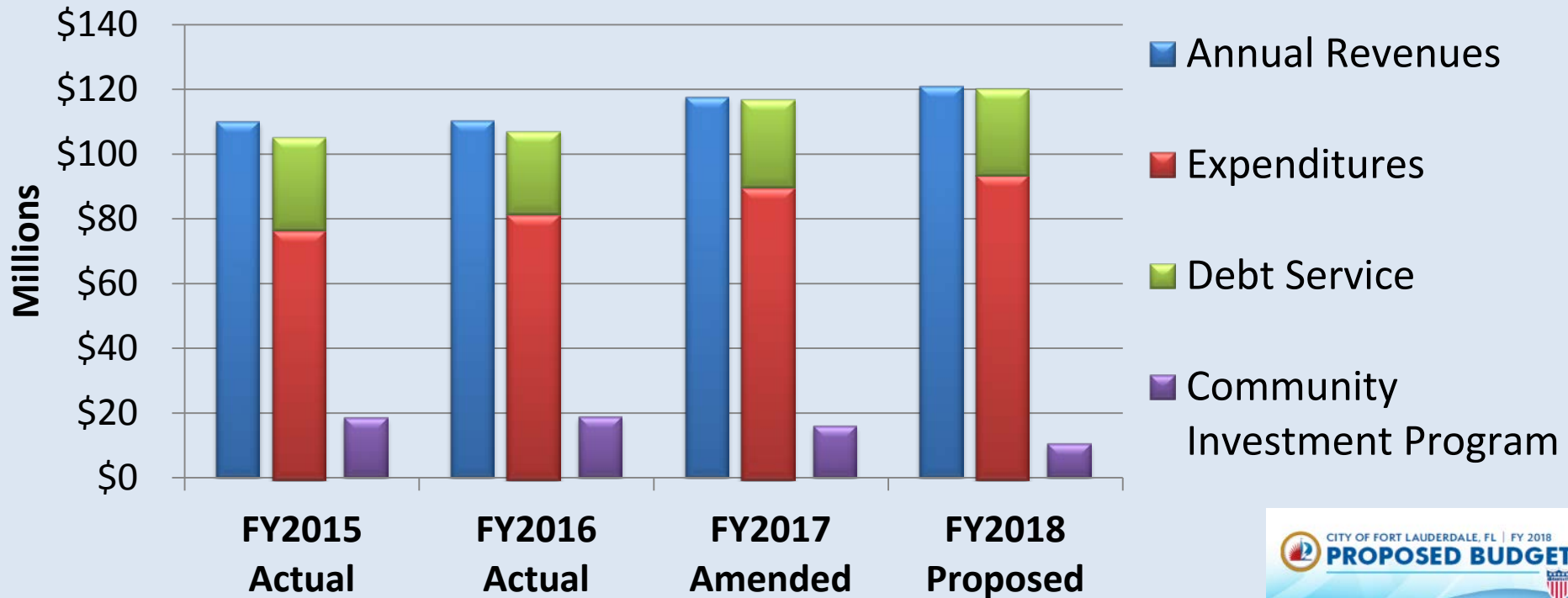
Utility Wide Planning to Identify Prioritized Needs

- Treatment Facility Evaluation and Capacity Forecast
 - *Water Treatment Facilities*
 - *Wastewater Treatment Facilities*
- Wastewater Collection & Transmission System Evaluation
 - *Redundancy and Reliability*
- Use Technology Efficiently
- Incorporate Sustainability
- Capital Improvement and Rehabilitation & Repair Projects
- Asset Management

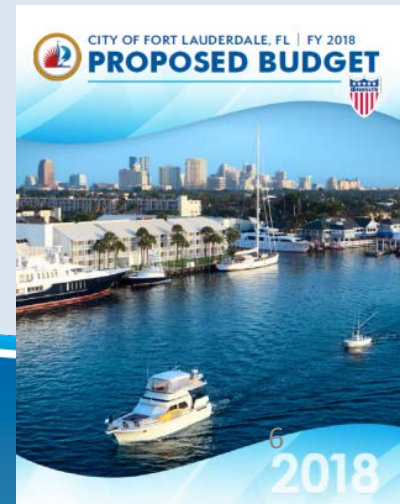


Water and Wastewater Fund

Relationship Among Revenues, Expenditures, and CIP Investments

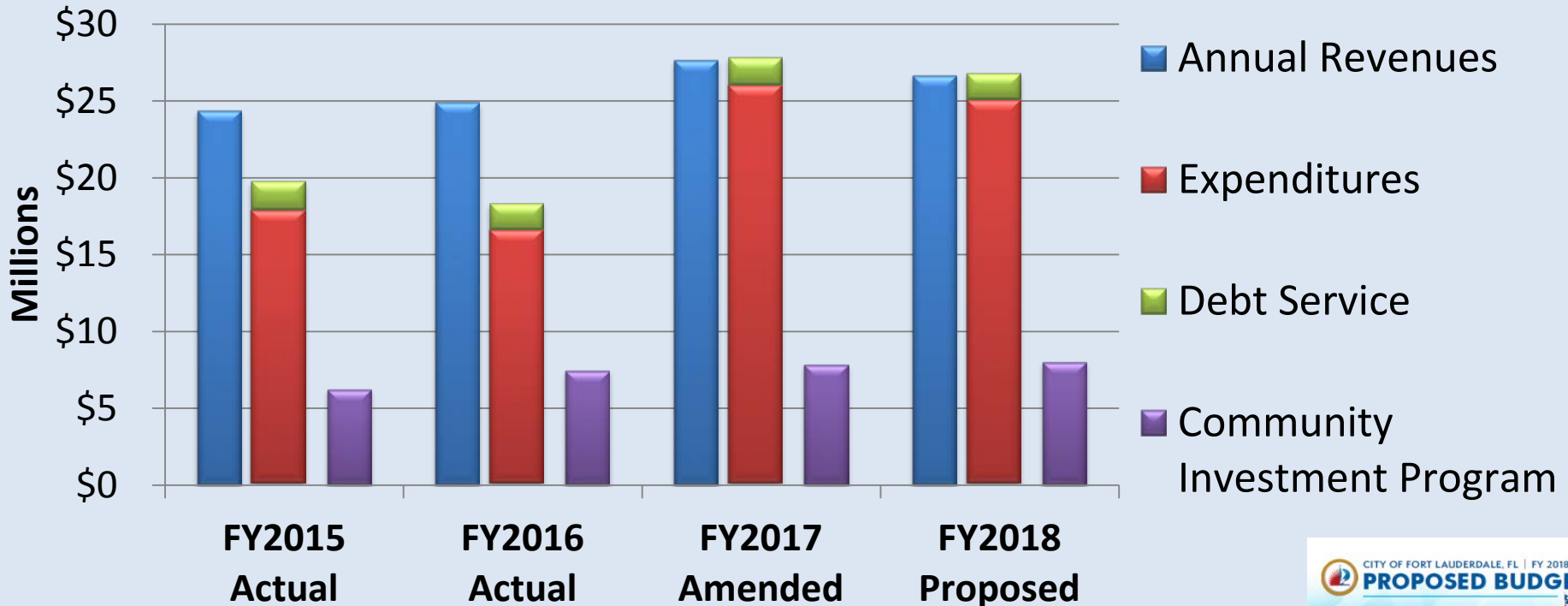


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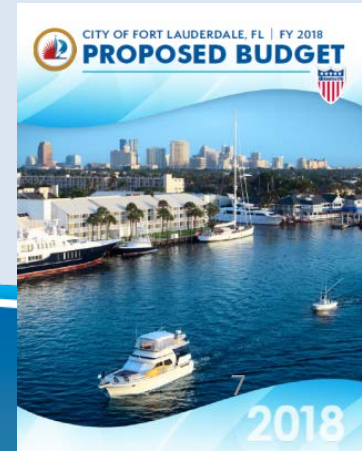


Central Region/Wastewater Fund

Relationship Among Revenues, Expenditures, and CIP Investments



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Water and Wastewater Investments

Central Region/Wastewater (Fund 451) and
Water and Wastewater Master Plan (Fund 454)

Comprehensive Utilities Strategic Master Plan (\$1,419.8M over 20 years)

CIP (FY18-22)
144 projects, \$223.4M
454 fund - 47 projects, \$68.1M
451 fund – 97 projects, \$155.3M

CONSENT ORDER \$117.5M
(if approved)

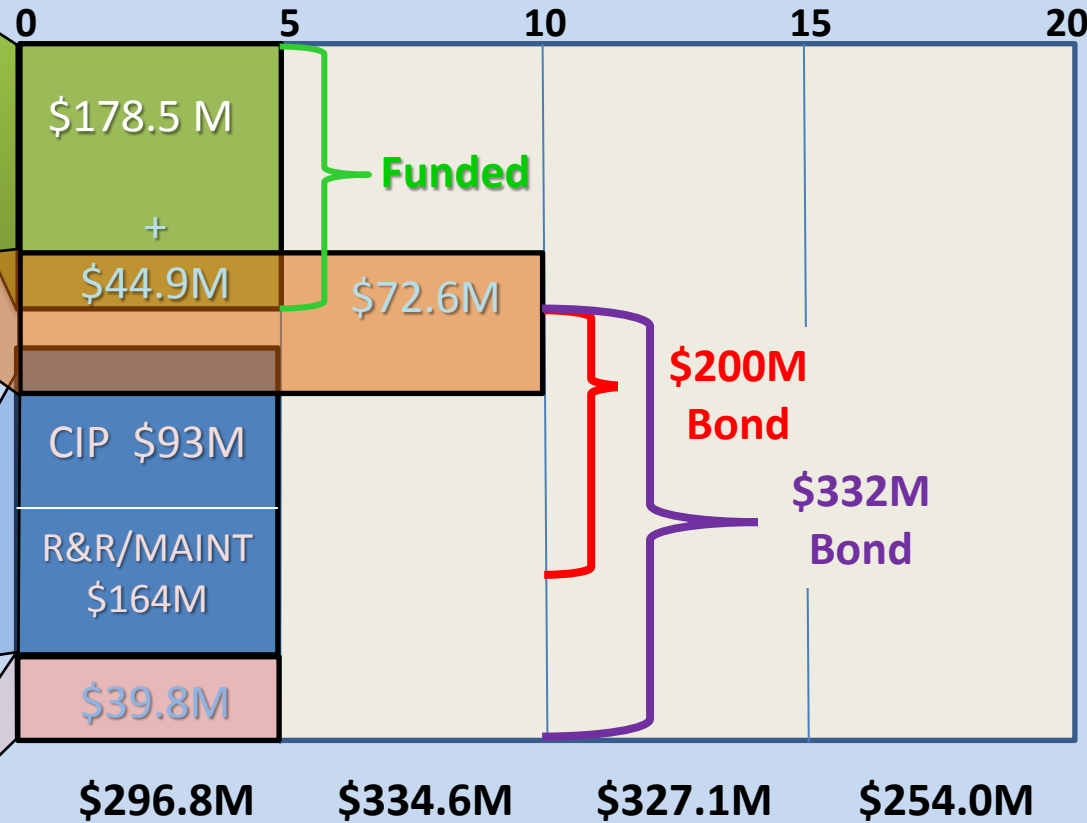
5 Lift Stations
6 Sewage Basin Rehab (I&I)
11 Force Main Rehab
Force Main Condition Assessment
Asset Management Program
CMOM Program

HIGH PRIORITY NEEDS

81 projects, \$257M
Fiveash Reliability Upgrade
Water Meter ESCO
Force Main Rehabs
Plant & Wellfield R&R

OTHER WANTS
65 projects, \$39.8M

Year



Funds Needed

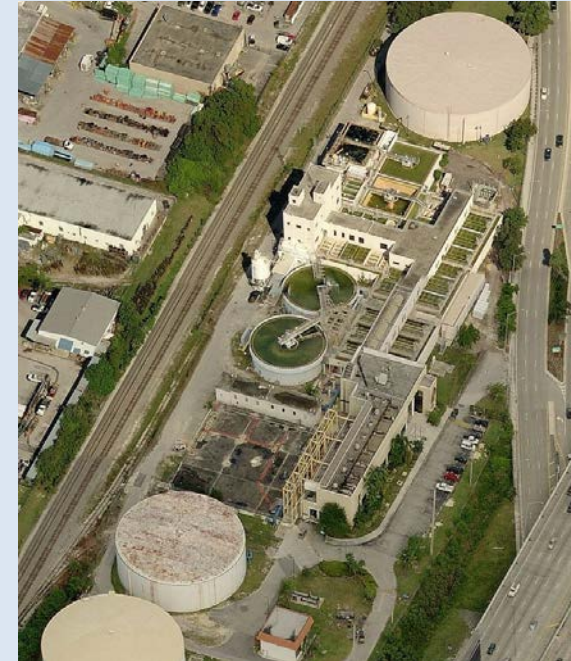
Water Utility

Overview

- Fiveash Regional Water Treatment Plant (70 MGD)
- Peele-Dixie Water Treatment Plant (12 MGD)
- Poinciana Park and NW 2nd AVE water tanks
- Sufficient water supply to meet demand through year 2035
- Provides for an additional 5.5 MGD daily demand beyond projections (30,000 additional people within 20 year forecast)

Recommendations

- Rehabilitation vs Replacement options for Fiveash WTP
- Rehabilitation of prioritized pipelines on a yearly basis
- Construct second interconnect with the City of Tamarac to provide redundancy
- Proceed with restoration of the 2nd Ave Water Tower
- Capacity-related improvements at the Peele-Dixie WTP
- Prioritize CIP investments at the Fiveash WTP to mitigate single point-of-failure risks



Fiveash Water
Treatment Plant



Wastewater Utility

Overview

- George T. Lohmeyer Wastewater Treatment Plant (56.6 MGD permitted capacity)
- Current average annual daily treatment is 38.6 MGD
- Up to 21 MGD of daily treatment is attributed to Infiltration and Inflow (I&I)

Recommendations

- Continue I&I program to reduce flows by 25%
- Emergency generators at high risk lift stations
- Force Main rehabilitation/replacement program, prioritizing high risk wastewater pipes
- Air release valve maintenance program
- Physical inspection of force main transmission systems
- Expand effluent disposal capacity



Water and Wastewater Community Investment Program

Fund	FY2018 Proposed	FY2019 Proposed	FY2020 Proposed	FY2021 Proposed	FY2022 Proposed
Water / Wastewater	\$10,554,481	\$16,971,960	\$ 19,986,244	\$ 21,322,620	\$ 20,659,175
Central Region	\$ 9,396,382	\$ 9,516,674	\$ 9,808,821	\$ 9,598,145	\$ 9,429,401
TOTAL	\$19,950,863	\$26,488,634	\$ 29,795,065	\$ 30,920,765	\$ 30,088,576

Typical Projects Funded within 5 Year CIP

- Small Water Main improvement projects
- Fiveash WTP & Peele Dixie Renewal & Replacement
- NW Second Avenue Tank Restoration
- Rehabilitation of PCCP Pipe and Cryogenic Plant at GTL
- 5 Sewage Lift Station Rehabilitation projects
- 6 Sewage Basin I&I reduction projects
- 4 Wastewater Force Main rehabilitation/replacement projects



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Water and Wastewater Community Investment Program

Priorities To Be Funded Next 5 Years

- Fiveash Reliability Upgrade Project
- ESCO Water Meter Replacement
- Clarifier Pipe Replacement
- Las Olas (D37), Middle River Terrace (A-27), Coral Ridge (B-11) Basin Rehab
- Victoria Park and Croissant Park Water Main Improvements

Priorities To Be Funded Years 5 - 20

- Reduce I&I in 18 Wastewater Basins
 - A11, A12, A22, A23, A27, A29, A31, A33
 - B4, B8, B10, B11, B14, B23
 - C1, C2
 - E3, E6
- Fiveash replacement or rehabilitation
- Force Main Rehabilitation Projects
- Wastewater Lift Station Projects

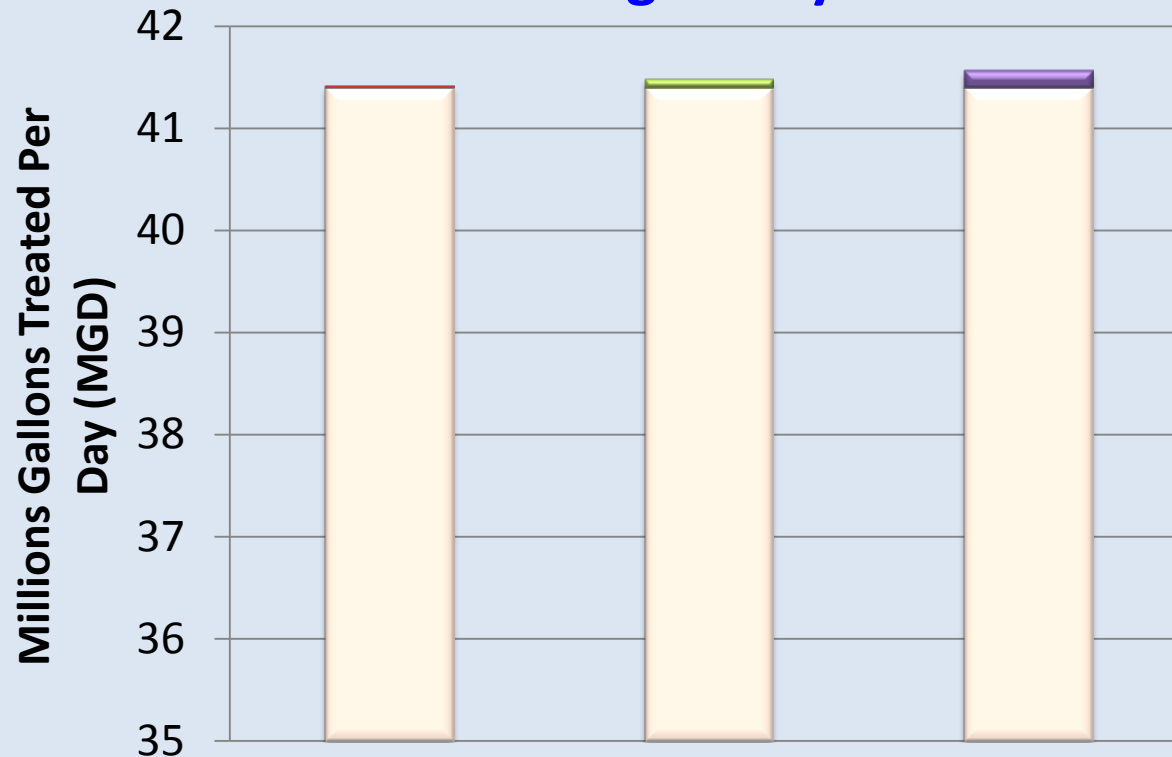


Water Treatment Plant Capacity

Permitted Capacity : 82 MGD

(Fiveash – 70 MGD, Peele Dixie 12 MGD)

Annual Average Daily Demand: 41.4 MGD




1000 New Neighbors


5000 New Neighbors


10,000 New Neighbors

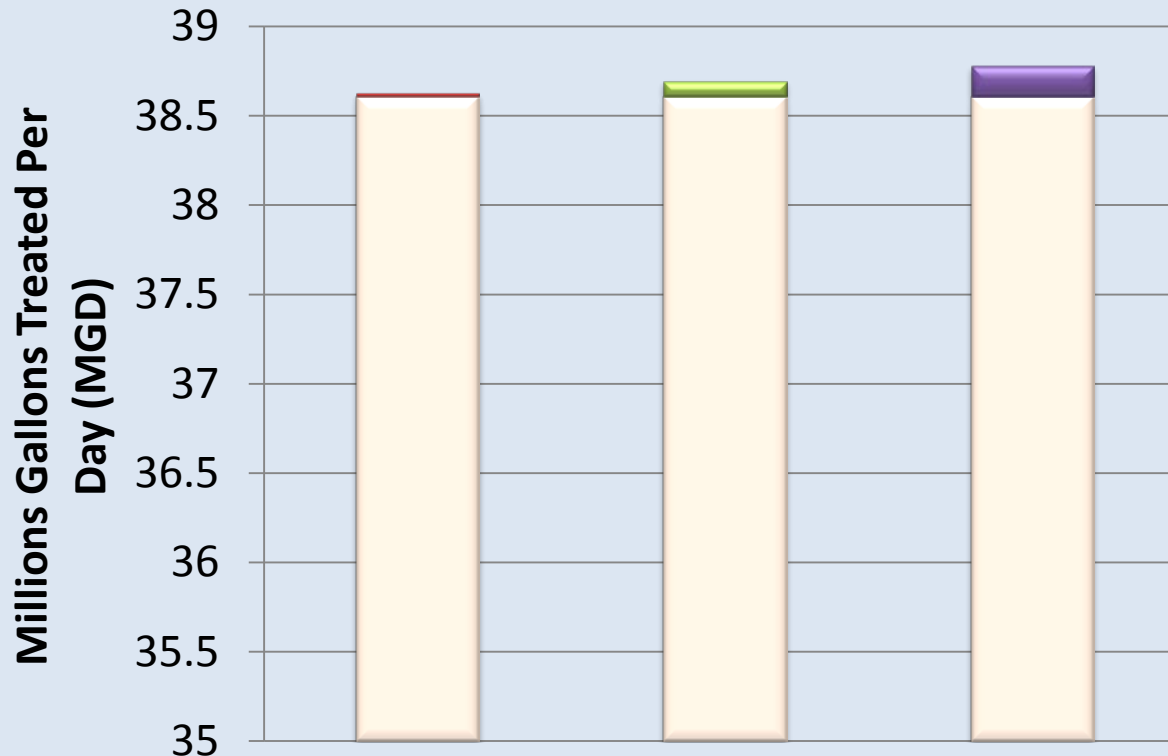


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GTL Wastewater Treatment Plant Capacity

Permitted Capacity : 56.6 MGD

Average Annual Daily Treatment : 38.6 MGD




1000 New Neighbors


5000 New Neighbors


10,000 New Neighbors

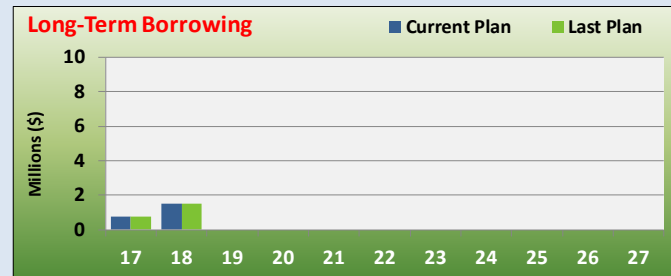
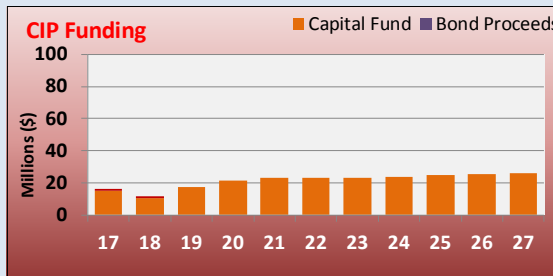
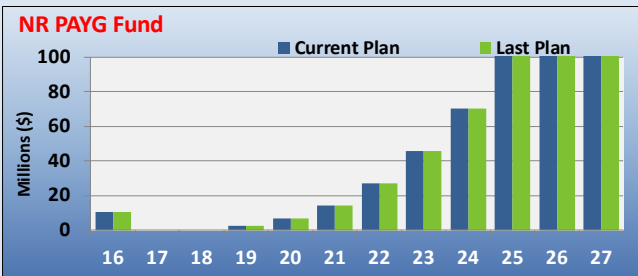
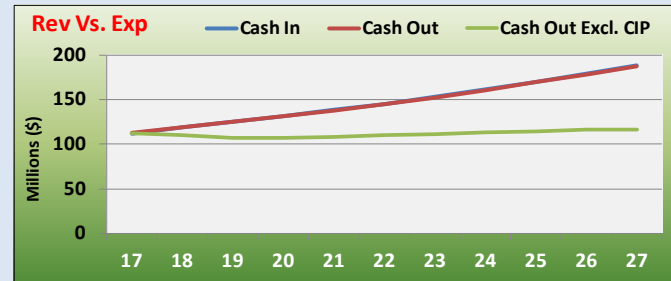
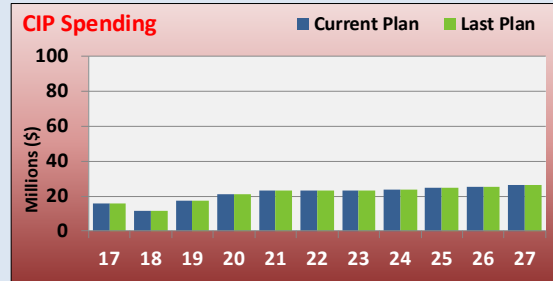
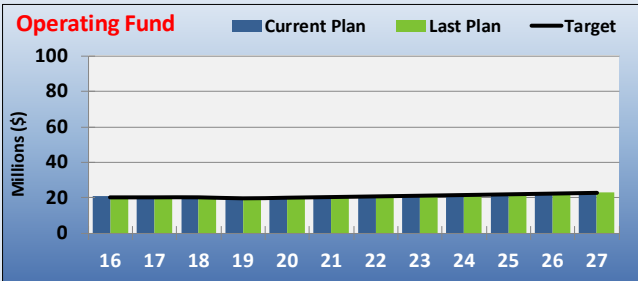


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FY 2017 Water & Wastewater Revenue Sufficiency Analysis

FINANCIAL ANALYSIS AND MANAGEMENT SYSTEM (FAMS) SUMMARY

SAVE	CALC	ROLL		FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Cumulative Change		
			Override ▶		5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	FY 2022	FY 2027	
Water Rate Increases				0.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	27.78%	63.00%	
			Last Plan	0.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	27.78%	63.14%	
			Override ▶		5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	PS FY19 ▶ OMF FY19 ▶	98.0% 90.0%	
Sewer Rate Increases				0.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%				
			Last Plan	0.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%				
Rate Covenant				2.17	2.46	2.79	3.00	3.22	3.45	3.70	3.98	4.29	4.60	4.95			
			Last Plan	2.17	2.46	2.79	3.00	3.22	3.45	3.70	3.98	4.29	4.60	4.95			
Average Bill (5,000 gals.)				\$60.09	\$63.11	\$66.27	\$69.61	\$73.11	\$76.78	\$80.61	\$84.63	\$88.87	\$93.34	\$98.00			
			Last Plan	\$60.09	\$63.11	\$66.27	\$69.61	\$73.11	\$76.78	\$80.61	\$84.63	\$88.87	\$93.34	\$98.00			



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* Slide is placeholder. Model outputs will be modified in real time during meeting based on different scenarios

Stormwater Utility

Overview

- 4 pump stations
- 6 drainage wells
- 128 tidal valves
- 1,213 manholes
- 1,039 outfalls
- 8,903 catch basins
- 184 miles of storm pipe

Issues / Challenges

- 4.41 miles seawalls (35 locations)
- Sea level rise impacts
- Funding for Phase II Master Plan projects
- Increased funding for maintenance

Opportunities

- Stormwater Master Plan for citywide planning and design
- Acquisition of an Asset Management System
- Utility fee increase



Before



After



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Stormwater Utility

CIP

PREVIOUS FY	\$13,625,091
FY2018 (Proposed)	\$2,945,796
FY2019	\$3,335,290
FY2019 (revenue bond)	\$148,200,000
FY2020	\$582,538
FY2021	\$1,971,000
FY2022	\$3,717,485
FIVE YEAR CIP TOTAL	\$174,377,200

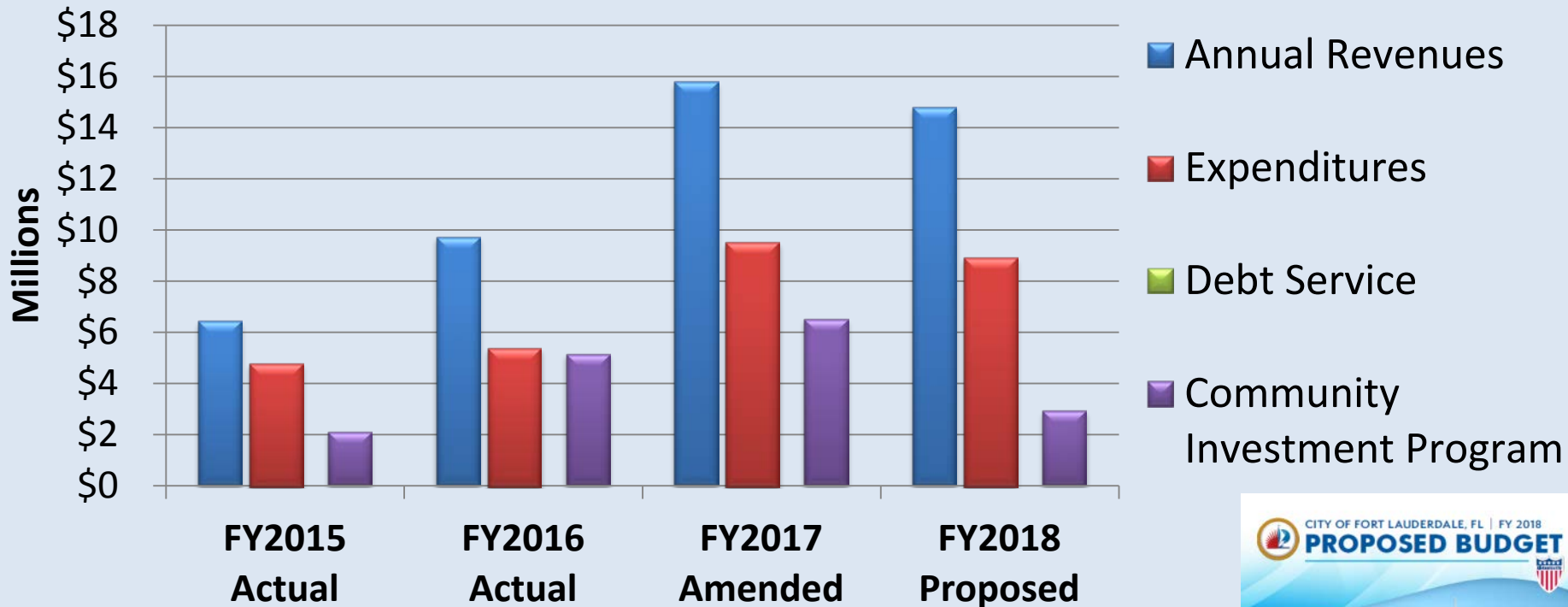
Stormwater Master Plan (FY 2014- FY2024)

- Phase I - 37 CIP Projects
- Phase II - Modeling & Design of 7 Neighborhoods
 - Dec 2017 completion
- Phase III - Construction of Phase II projects

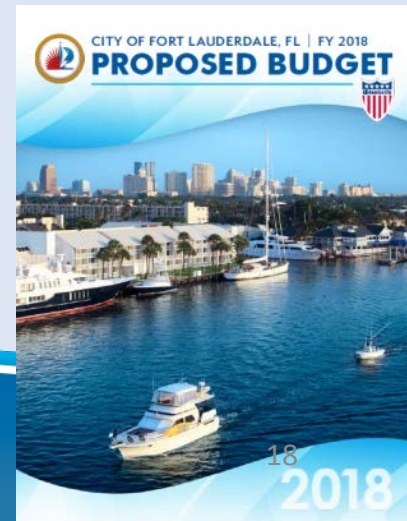


Stormwater Fund

Relationship Among Revenues, Expenditures, and CIP Investments



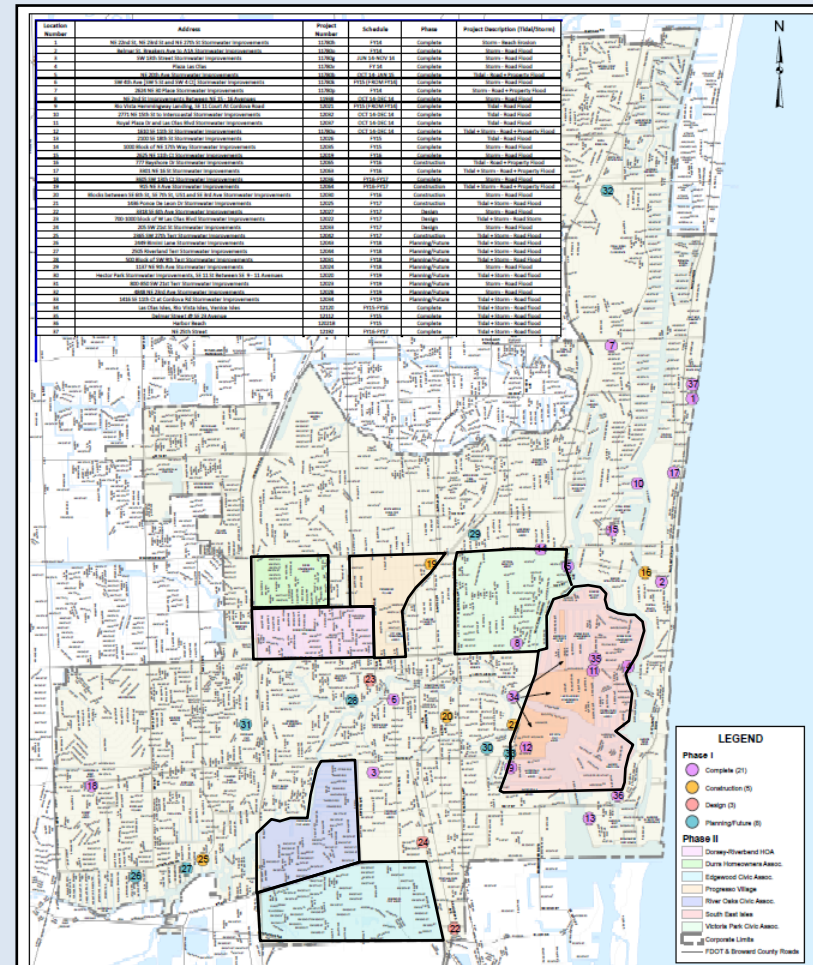
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Stormwater Utility

STORMWATER PHASE 1 CIP PROJECTS

STATUS	# PROJECTS
Complete	21
In Construction	5
In Design	3
Subtotal	29
In Planning	
FY 2018 funded	4
FY 2019 funded	4
Total	37

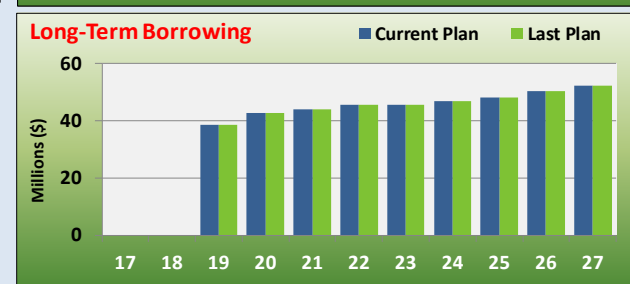
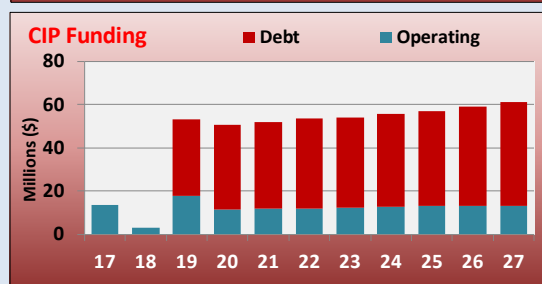
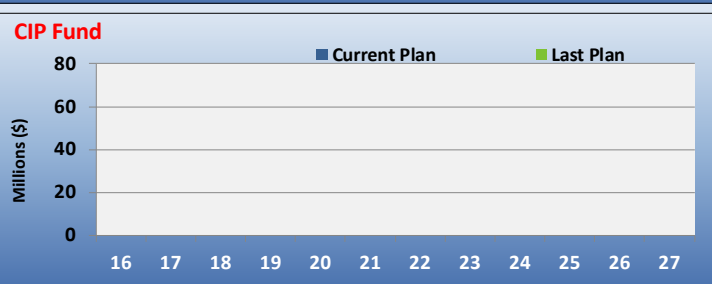
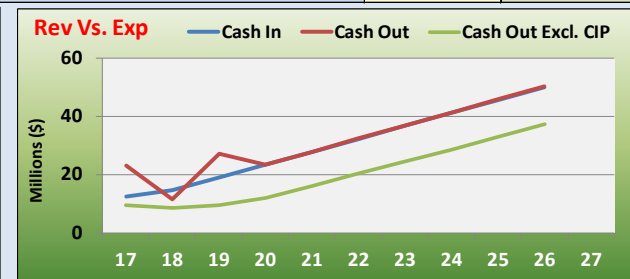
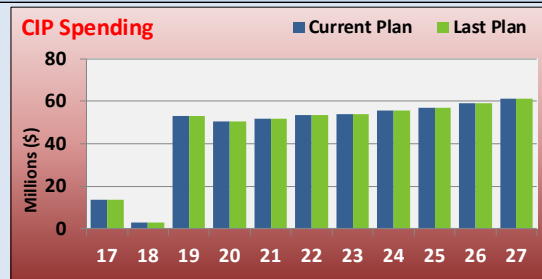
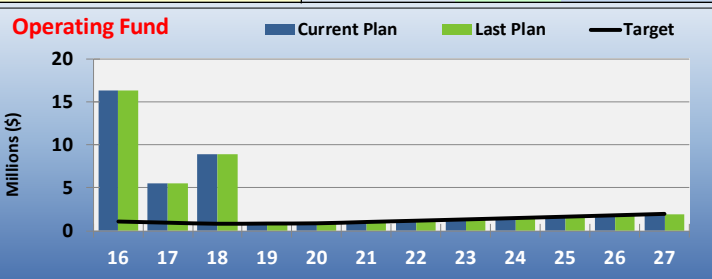


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FY 2017 Stormwater Fund Analysis

FINANCIAL ANALYSIS AND MANAGEMENT SYSTEM (FAMS) SUMMARY

SAVE CALC ROLL													Cumulative Change	
Override ▶		FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2022	FY 2027
Stormwater Rate Increases		0.00%	25.00%	30.00%	23.08%	18.75%	15.79%	13.64%	12.00%	10.71%	9.68%	8.82%	175.00%	362.50%
Last Plan		0.00%	25.00%	30.00%	23.08%	18.75%	15.79%	13.64%	12.00%	10.71%	9.68%	8.82%	175.00%	362.50%
Rate Covenant				6.87	3.67	2.68	2.24	1.99	1.82	1.70	1.61	1.53	PS FY18 ▶ OMV FY18 ▶	100.0%
Last Plan				6.87	3.67	2.68	2.24	1.99	1.82	1.70	1.61	1.53		95.0%
CIP \$ Redistribution ▶		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		
CIP Execution % ▶		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Operating Reserve Mo ▶		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5		
RESIDENTIAL LOTS/PARCELS	Per Unit	\$8.00	\$10.00	\$13.00	\$16.00	\$19.00	\$22.00	\$25.00	\$28.00	\$31.00	\$34.00	\$37.00		
UNIMPROVED LAND	Per Acre	\$80.64	\$100.80	\$131.04	\$161.28	\$191.52	\$221.76	\$252.00	\$282.24	\$312.48	\$342.72	\$372.96		
COMMERCIAL LOTS/PARCELS	Per Acre	\$25.56	\$31.95	\$41.54	\$51.12	\$60.71	\$70.29	\$79.88	\$89.46	\$99.05	\$108.63	\$118.22		



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* Slide is placeholder. Model outputs will be modified in real time during meeting based on different scenarios

Summary

- Significant investments/expenses over the next 5 years based on infrastructure master plans
 - Water and Wastewater Bond (\$200M - \$332M)
 - Stormwater Bond (\$148M - \$200M)
 - Additional operational funding for CMOM in both programs
- Focus on Strategic Plans and Master Plans
- Implementation of Asset Management System and CMOM allow proactive lifecycle management of assets
- Master Plans balance aging infrastructure and maintenance needs to ensure long term reliability at a reasonable cost for our Neighbors



BACKUP



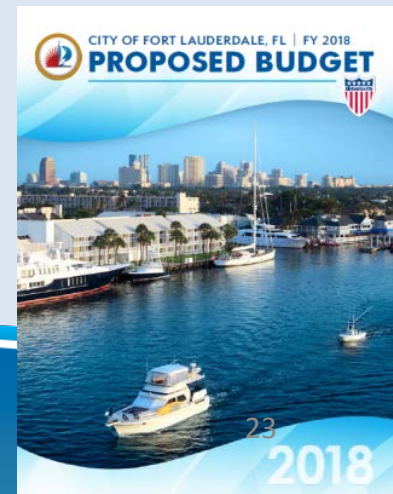
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Water and Wastewater Fund

Operating Budget	FY2015 Actual	FY2016 Actual	FY2017 Amended	FY2018 Proposed
Revenues	\$ 109,937,709	\$ 110,365,815	\$ 117,686,538	\$ 120,943,102
Total Expenditures	\$ 105,897,009	\$ 107,695,680	\$ 117,686,539	\$ 120,943,102
<i>% Expenditures for Debt Service</i>	27.2%	23.9%	23.3%	\$22.2%
CIP Budget				
Community Investment Program Expenditure	\$18,455,114	\$ 18,853,761	\$ 15,989,575	\$ 10,554,481



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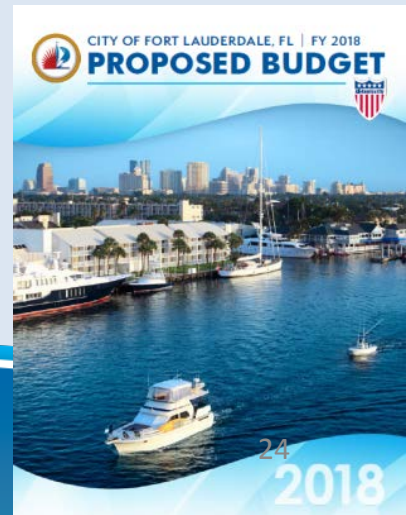
23
2018

Central Region/Wastewater Fund

Operating Budget	FY2015 Actual	FY2016 Actual	FY2017 Amended	FY2018 Proposed
Revenues	\$ 24,368,086	\$ 24,932,228	\$ 27,674,571	\$ 26,679,285
Total Expenditures	\$ 19,643,764	\$ 18,194,786	\$ 27,674,571	\$ 26,679,285
<i>% Expenditures for Debt Service</i>	9.5%	9.4%	6.3%	6.5%
CIP Budget				
Community Investment Program Expenditure	\$6,227,268	\$ 7,461,113	\$ 7,845,537	\$ 8,011,850



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24
2018

Stormwater Fund

	FY2015 Actual	FY2016 Actual	FY2017 Amended	FY2018 Proposed
Revenues	\$ 6,436,153	\$ 9,725,833	\$ 15,794,369	\$ 14,805,327
Expenditures	\$ 7,934,006	\$ 8,955,312	\$ 15,794,369	\$ 14,805,327
Community Investment Program	\$ 2,115,887	\$ 5,154,699	\$ 6,523,597	\$ 2,945,796



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