

Dallas Water Utilities: Capital Improvement Program

**Transportation and
Infrastructure Committee
March 24, 2020**

**Terry S. Lowery, Director
Matthew Penk,
Assistant Director
Dallas Water Utilities**



City of Dallas

Outline

- Background
- Capital Improvements
 - Water & Wastewater
 - Storm Drainage Management
- Capital Planning and Execution
- DWU CIP Funding
- DWU Revenues and Rates

BACKGROUND

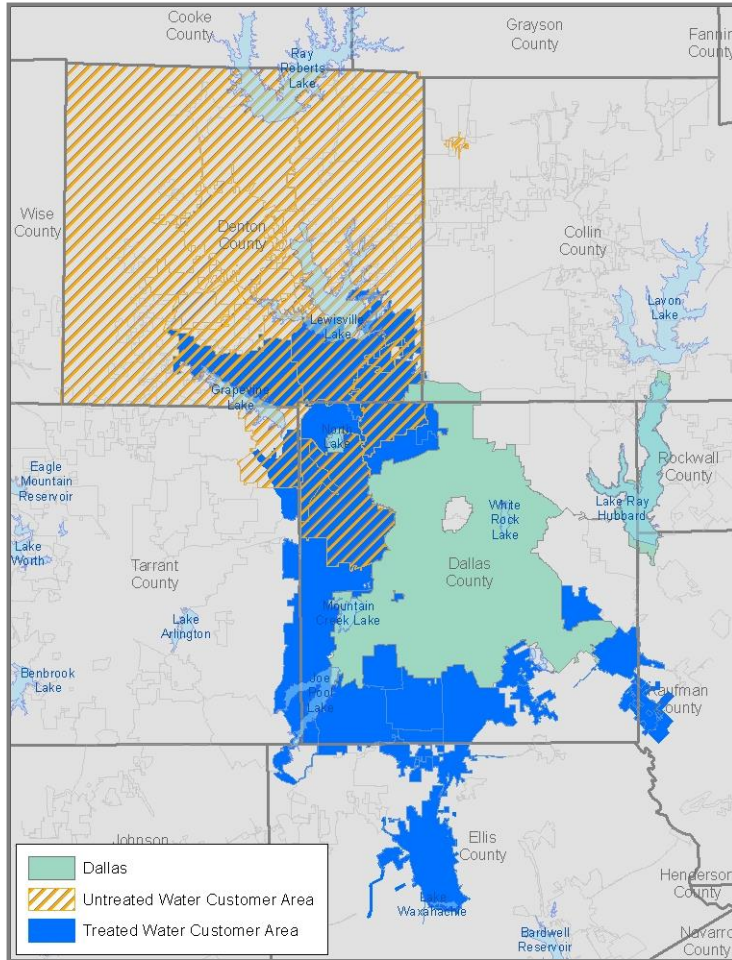


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City of Dallas

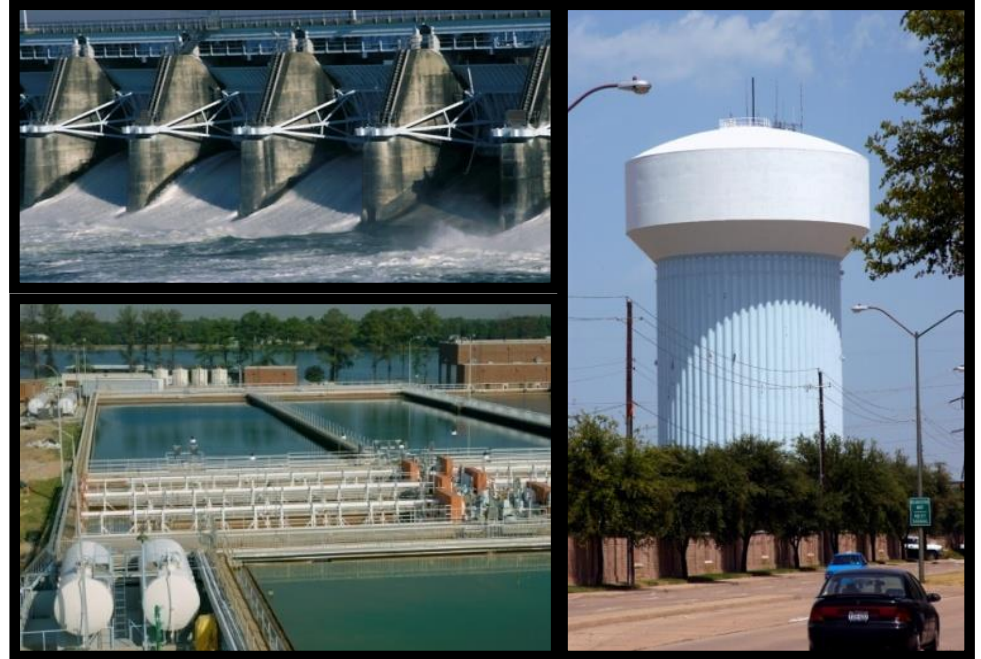
Dallas Water Utilities Fact Sheet



- Founded in 1881
- Funded from wholesale and retail water and wastewater revenues and stormwater fees (receives no tax dollars)
- Combined operating and capital budgets of \$1.1B
- 699 square mile service area
- Approximately 1,650 employees
- 2.5 million treated water customers
 - 1.3 million – Retail (City of Dallas)
 - 1.2 million – Wholesale
- 330,000+ retail customer accounts
 - 23 wholesale treated water
 - 4 wholesale untreated water
 - 11 wholesale wastewater

City of Dallas Water Assets

- 7 reservoirs (6 connected)
- 4,996 miles of water mains
- 3 water treatment plants with a combined capacity of 900 MGD
- 23 pump stations
- 9 elevated and 12 ground storage tanks
- Value of water assets \$3.6B
- Treated 135 BG of water in FY19



The map illustrates the expansion of the State Water Project in Texas over time. Key components include:

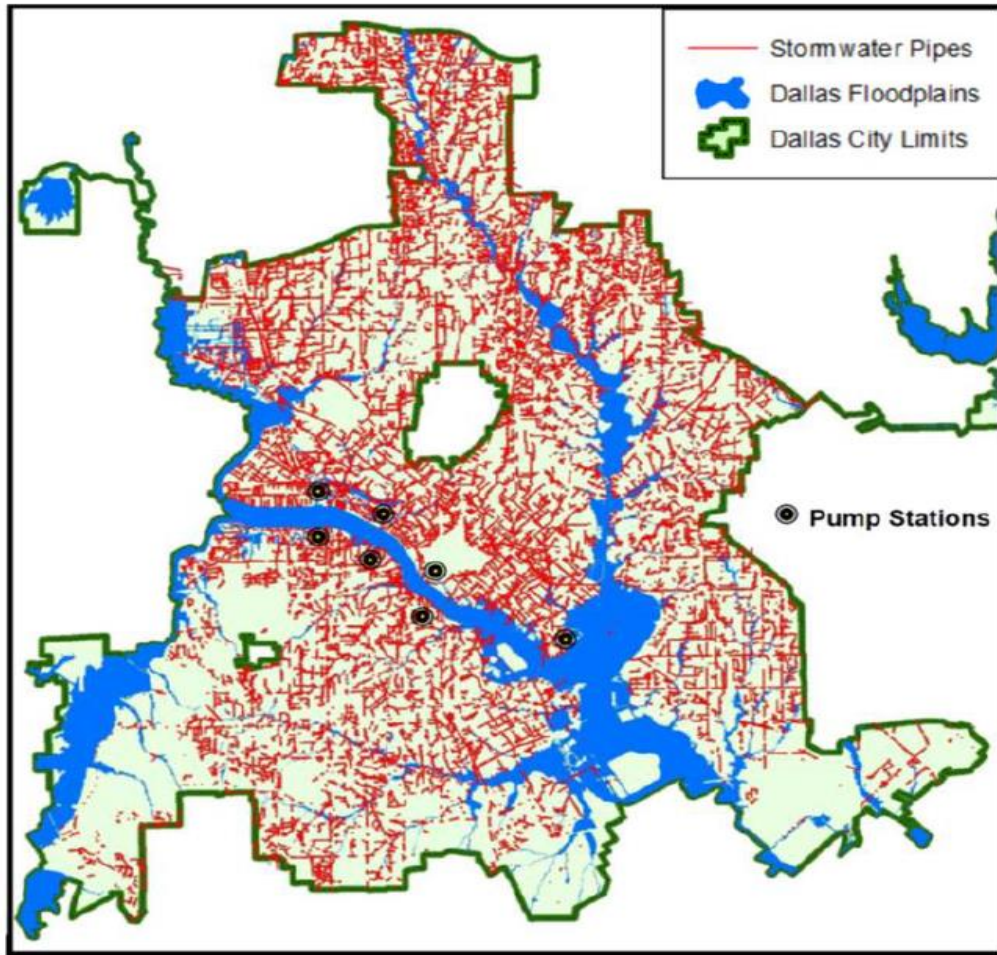
- Reservoirs and Ponds:** Lake Ray Roberts (1950), Lake Lewisville (1955), Lake Grapevine (1952), Lake Arlington (1973), Lake Benbrook, Lake Mountain Creek, Lake Joe Pool, Lake Forney (1973), Lake Balancing Reservoir, Lake Iron Bridge (1964), Lake Fork Reservoir (1981), Lake Athens, Lake Palestine (1971), and Lake Whitney.
- Pumping Stations and WTPs:** Elm Fork PS & WTP, Bachman PS & WTP, Forney PS & Eastside WTP, Iron Bridge PS, and Lake Fork PS.
- Conveyance System:** A red line indicates the main water conveyance system, connecting the various reservoirs and pumping stations.
- Geographic Context:** The map shows the project's location within Texas, with major cities and counties labeled. The project is primarily located in the North Central region, extending from the Dallas area towards the eastern part of the state.

City of Dallas Wastewater Assets

- 2 wastewater treatment plants with a combined capacity of 280 MGD
- 4,049 miles of wastewater main
- 15 wastewater pump stations
- Value of wastewater assets \$2.4B
- Treated 84 BG of wastewater in FY19



City of Dallas Storm Drainage System



- 8 storm water pump stations with a combined capacity of 5.7 BGD
- 1,963 miles of storm sewers
- 30 miles of levees
- 39,000 acres of floodplain

CAPITAL IMPROVEMENTS



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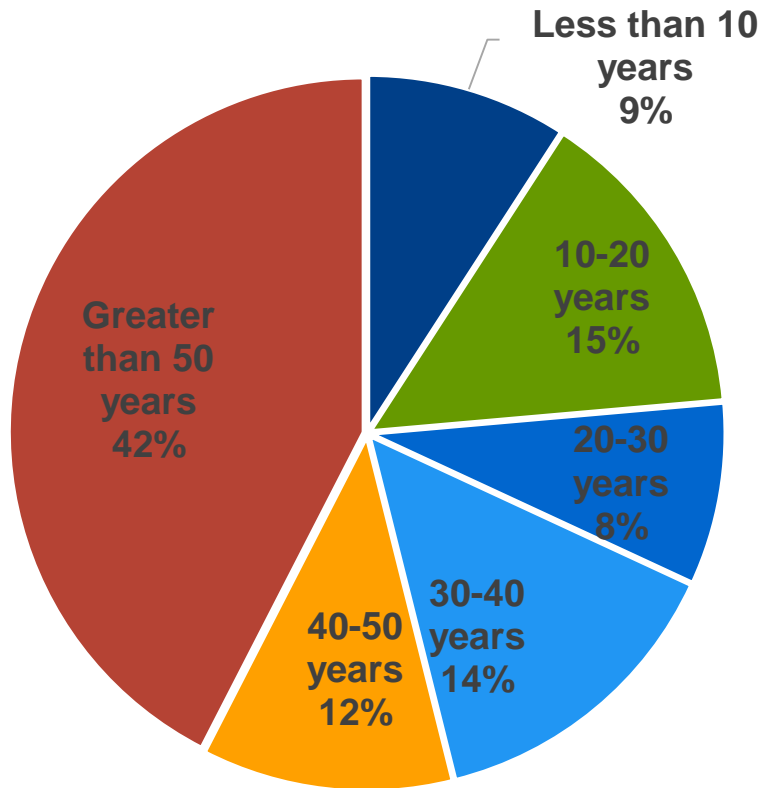
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DWU Capital Improvement Program (CIP)

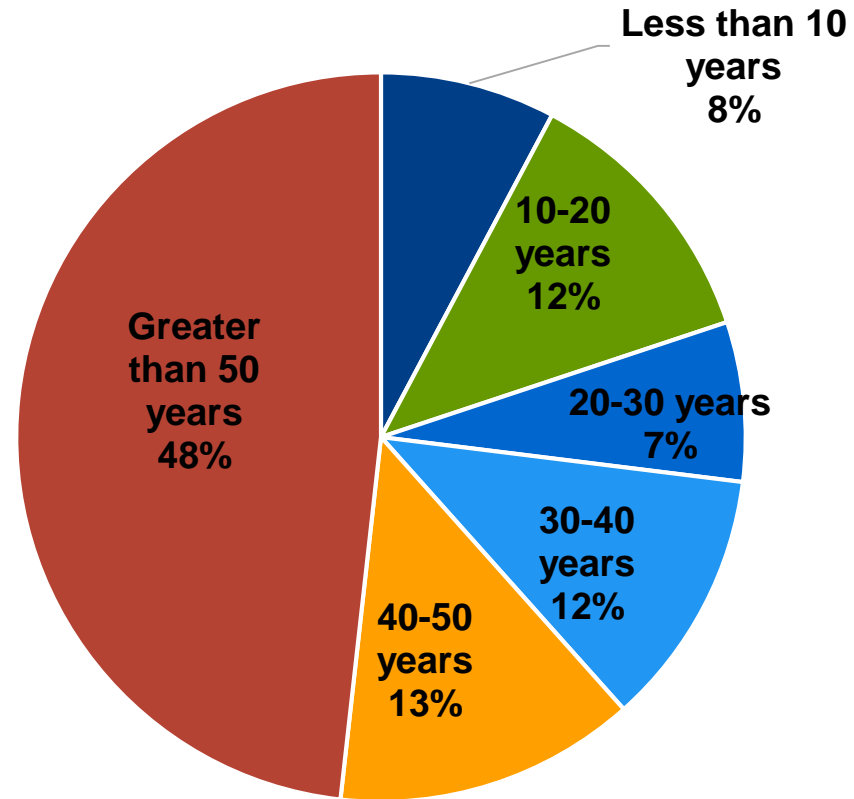
- Infrastructure is the **heart** of Dallas Water Utilities
- The capital program builds and provides major maintenance of DWU infrastructure
- Critical infrastructure must be planned, designed and built before the need exists
- Infrastructure implementation time can stretch from months to 30 years

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DWU's Aging Infrastructure



Water Lines



Sanitary Sewer Lines

DWU FY20 CIP Budget

- FY2019-20 CIP budget is \$315.8M (Water and Wastewater)
 - Regulatory - \$3M
 - EPA and TCEQ requirements
 - Growth - \$30.8M
 - To meet future customer needs
 - Long Range Plans, Master Plans and Studies
 - Rehabilitation and Replacement - \$282M
 - Projects requested by Operations programs
 - Areas of concern and excessive maintenance
 - Work with Others (TXDOT, DART, County, NTTA and PBW)

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Focus on Rehabilitation and Replacement

- Goals and Benefits
 - Efficient use of water resources
 - Recovers production capacity and costs
 - Reduced liability and damage to property
 - Improved environmental quality
- Unaccounted For Water has five-year average of 7.7% compared to 10.9% in FY07 with an industry goal of less than 10%
- Sanitary sewer overflows per 100 miles of main has a five-year average of 3.5 compared to 5.6 in FY 07 with an industry average of 6.2, a 38% reduction
- Water main repairs per 100 miles of main were 22 in FY 19 compared to 42 in FY 07 representing a 48% reduction
- Current funding maintains average system age (FY 15 - 43.3 yrs.; FY 19 – 44.2 yrs.)

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Storm Drainage Management CIP

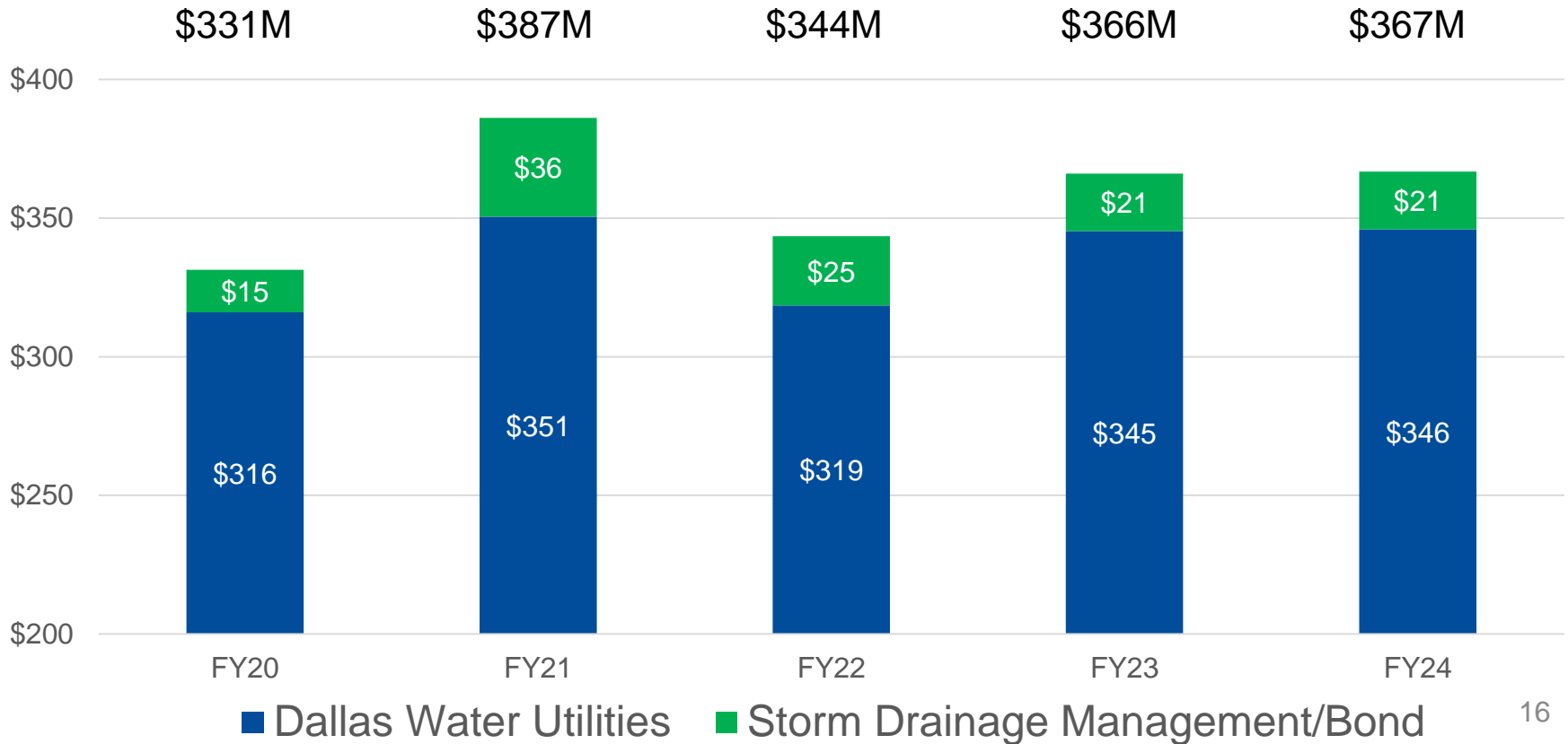


Storm Drainage Management CIP

- Erosion Control – structures threatened by creek or channel bank erosion
- Flood Management – projects recommended by master plans and hydrologic studies; bridge and culverts, channelization, detention, levee flood protection
- Storm Drainage Relief – storm drainage system improvements; pump stations
- Storm Drainage Management – provides funding for projects thru monthly storm water utility fees and future debt issuance.

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DWU/SDM Capital Program Outlook



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CAPITAL PLANNING and EXECUTION



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Capital Planning Process

- Strategic Planning – long range water supply, master plans and studies
- Project Prioritization and Risk Ratings
- Development of 10-year CIP Plan
- Five-year DWU Financial Forecast and O&M Cost Impacts
- Monthly Capital Project Committee Meetings
- Performance Measures
 - Replace/rehabilitate 0.9% of small diameter pipelines annually
 - Total value of capital projects awarded
 - Award 95% of projects in annual work plan

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Strategic Planning



Business Technology Master Plan for Dallas Water Utilities

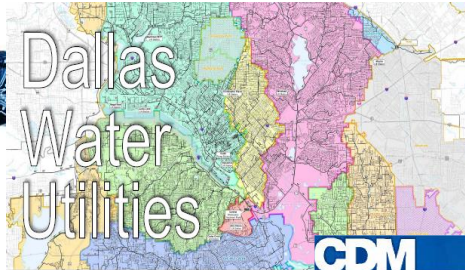
Prepared for:
Dallas Water Utilities and City of Dallas



2014 Dallas Long Range Water Supply Plan to 2070 and Beyond

Dallas Water Utilities
City of Dallas, Texas
December 2015

FOR



Dallas Water Utilities

Wastewater Treatment Facilities Strategic

BUILDING A WORLD OF DIFFERENCE®

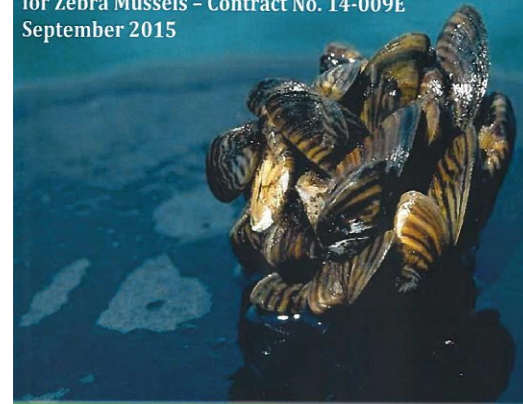


Water Capital Infrastructure Assessment & Hydraulic Modeling

Volume 1

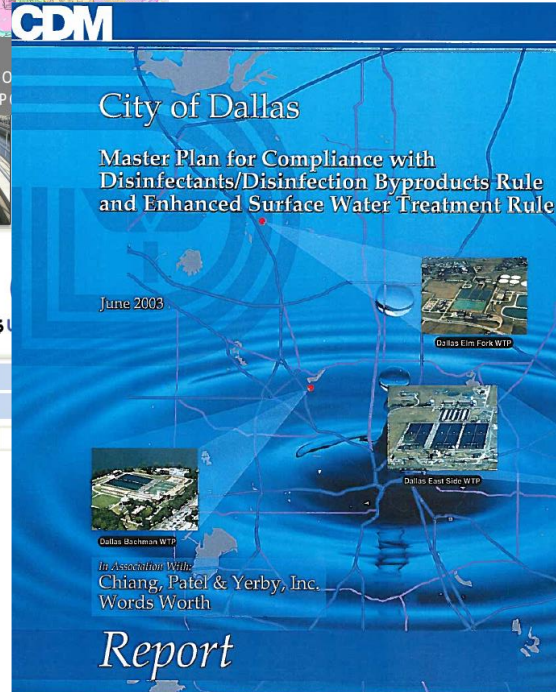
Capital Improvement Plan

DWU Control, Operation, and Maintenance Manual for Zebra Mussels – Contract No. 14-009E
September 2015



 **ARCADIS**

TEXAS BOARD OF PROFESSIONAL ENGINEERS FIRM REGISTRATION NUMBER: F-533



132404
0.02-057E

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DWU Estimated Capital Cost


Water Distribution Master Plan	\$ 388 Million	2006 Dollars (thru 2030)
Wastewater Collection System Assessment	\$ 2,725 Million	2019 Dollars (thru 2060)
Wastewater Treatment Facilities Strategic Plan	\$ 912 Million	2010 Dollars (thru 2030)
Business Technology	\$ 43 Million	2013 Dollars
Long Range Water Supply Plan	\$ 2,452 Million	2013 Dollars (thru 2070)
Zebra Mussel Control Plan	<u>\$ 30 Million</u>	2014 Dollars
Capital Estimate	\$ 6,550 Million	

* Water Delivery System Assessment and Water Treatment Facilities Strategic Planning underway

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Project Identification

- Condition Assessments
- Maintenance History
- Field Assessments
- Project Coordination
(outside agency / other depts.)
- Major Maintenance Needs
- Regulatory Requirements
- Master Plans

 CITY OF DALLAS WATER UTILITIES DEPARTMENT WASTEWATER OPERATIONS		WASTEWATER MAIN REPLACEMENT REQUEST	
Wastewater Collection Division 8915 Adlora Lane Dallas, TX 75238 Phone: (214) 670-8011		DATE: 12/18/18	
		WW ID: 19D2-13, DH	
To: Rishi Bhattarai, P.E. Pipeline Project Management			
Wastewater Main Information:			
Project Location:	4500 W. Lovers Lane		
Project Limits:	MH#29004330004M thru MH#29004330001M		
Length:	3415 ft.		
Existing Pipe Diameter:	6 inch		
Existing Pipe Material:	Concrete		
Existing Design Sheet:	N/A		
Reason for replacement:	Cracks, fractures, broken pipe, aggregate, size, age of pipe 1943		
Project Priority: 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> High Low		Type of Work: Regulatory <input type="checkbox"/> Relocation <input type="checkbox"/> Replacement <input checked="" type="checkbox"/> Emergency <input type="checkbox"/> Growth <input type="checkbox"/>	
Consequence of Failure (CoF) Score (1-5): 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> Lowest Highest		Likelihood of Failure (LoF) Score (2-10): Structural: 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> Performance: • O&M 1 <input type="checkbox"/> 1.5 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> • Hydraulic 1 <input type="checkbox"/> 1.9 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> Lowest Highest	
Risk Score (2 - 50): 6			
Requested by: <u>Jason Wu</u> 12/19/18 Jason Wu, P.E.			
Cc: Sophia Harvey, P.E.			
Pipeline Program Use Only			
Entered Date:	2/6/2019		
PID Assigned:	PID 6310		
Rev#2 Doc #DWU-FRM-032-WWC 02-27-2018 Description of Change: Added two Check Boxes Approved by: Sr. Program Manager			

Project Rating

- Rating sheets & Risk Score
- Numeric score for prioritization
- Criteria include:
 - Health, safety, environment
 - Meets customer needs
 - Cost/benefit
 - Planning/future needs
- Scores tracked in 10-year CIP Plan (needs inventory)
- Scores updated annually or as conditions change

DALLAS WATER UTILITIES-CAPITAL IMPROVEMENT PROGRAM
PROJECT JUSTIFICATION AND RATING SHEET

(I) PROJECT NAME/BLANKET FUND NAME	Jim Miller PS Rehab	
(II) RECOMMENDED FISCAL YEAR FOR ACTION	FY 18-19	
(III) RESPONSIBLE PROGRAM (ORG)	7126	
(IV) ESTIMATED PROJECT COST (WATER)	\$	2,500,000.00 (with 15% contingency where applicable)
(V) ESTIMATED PROJECT COST (WW)	\$	- (with 15% contingency where applicable)
(VI) ESTIMATED TOTAL COST		
(VII) PROJECT PHASE (Planning, ROW, CONSTRUCTION)		
(VIII) GENERAL PROJECT EXPLANATION	Phase 2 design services for rehab of Jim	
(IX) PRIMARY DRIVERS (REGULATORY, MAINTENANCE, CUSTOMER NEEDS, ETC.)	Maintenance	
(X) IS THIS PROJECT READY TO BUILD?		
(XI) IS THIS PROJECT PHASED OR CAN IT BE COMPLETED IN ONE YEAR?		
(XII) DOES THIS PROJECT CONNECT TO EXISTING INFRASTRUCTURE?	rehab of the Jim Miller PS - must be pl	
(XIII) WHAT IS THE IMPACT (RISK) OF LOSS OF SERVICE - continued issue with e		
(XIV) GENERAL SCORING		
#	CRITERIA	
(A) HEALTH, SAFETY, & ENVIRONMENT		
1	Required for Public Safety	
2	Regulatory/Legal Requirement	
3	Required by other Dept. or Non-Reg Agency	
4	Positive Environmental Impact	
(B) MEET CUSTOMER NEEDS AT REASONABLE COST		
5	Significant Citizen, Council, or Commission Interest	
6	Maintenance of Existing Infrastructure	
7	Protection of Other Infrastructure	
8	Benefit Cost/Ratio-Productivity Estimate	
9	Reduces On-Going Budget	
10	High Frequency/Criticality of use	
11	Equalizes level of service to customers	
(C) PLANNING FOR FUTURE NEEDS		
12	Benefits Economic Development	
13	Latest Schedule to Meet In-service	
14	Recommended in Council Adopted Resolution	
15	Right of Way obtained	

DWU-FRM-028-CIOPS

CAPITAL IMPROVEMENT PROGRAM
PROJECT RATING FORM

CATEGORY: EROSION CONTROL

This category would provide armoring of natural creek banks to protect soil against further erosion loss. Potential projects are classified by type as follows:

Type I: Threat to houses, attached garages, streets, alleys and bridges.
Type II: Threat to pools and other permanent structures not included in Type I.
Type III: Threat to fences, yards and private retaining walls.

Project:	6431 Riverview Lane		Date:	01/03/2019
No:	Criteria	Points		
1	Ratio of (distance creek bank to structure/depth of creek)	30		
2	Rate of creek bank loss	25		
3	Ratio of (cost/number of structures protected)	5		
4	Type of threat	5		
		Total Points:	65	
		SCORE =	58.64	

Criteria: 1. Ratio of (distance to structure)/(depth)

Ratio value	Points
0 to 0.25	40
0.26 to 0.59	35
0.60 to 1.00	30
1.01 to 1.25	20
1.26 to 1.50	10
1.51 to 2.00	5
Greater than 2.00	0

Ratio value: 22
Distance (ft): 25
Depth (ft): 0.88
Points: 30

2. Rate of creek bank loss

Rate	Points
Rapid	40
Moderately fast	30
Moderately fast	25
Moderately slow	20
Slow	10
Very slow	5

3. Ratio of (cost)/(number of structures protected)

Ratio	Points
0 to 50,000	20
50,001 to 150,000	15
Greater than 150,000	5

Wall cost: \$2,800.00
Cost/ln-ft: 1
Structures: 100
Length (ft): 25
Height (ft): 25
Total Cost: \$280,000.00
Ratio: 280,000
Points: 5

4. Type of threat

Type	Points
I	15
II	5
III	0

* Cost per linear feet based on wall up to 30ft height. Total Cost is multiplied by a factor of 0.4, 0.6 or 1.0 for a wall height less than 15ft, 20ft and 30ft.

Project Execution

- Approved capital budget identifies project cost & award year
- Factors affecting schedule:
 - Project rating
 - Required in-service date
 - Project dependencies
 - Cost constraints
 - Operational impacts
- Design services awards
 - Qualifications based selection
 - Two step – shortlist and selection
- Projects designed and procured for construction



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Project Implementation

- Pipeline, drainage, and erosion control projects packaged into multiple location contracts
 - Highest priority projects selected (1 – 5 priority; technical rating score)
 - Project priorities account for risk (consequence and likelihood of failure)
- Interagency projects reviewed and DWU scope developed
 - Provide funding to agency and engineering completed as needed
 - Provide design reviews and construction inspection
- Construction managed with in-house staff and third-party construction management for complex projects
- Construction inspection using in-house inspection staff

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DWU CIP FUNDING



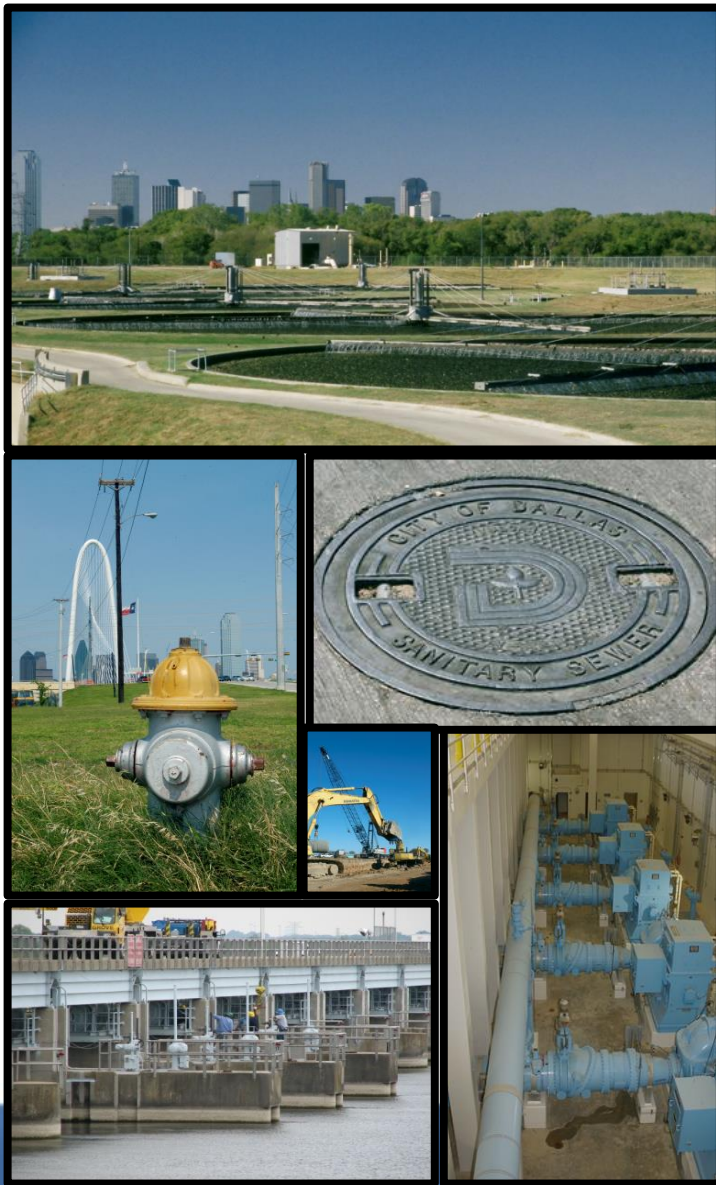
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Capital Budget Development

- Council approves Capital Program funding annually as part of the budget process
- Capital Program is typically funded by a combination of cash and debt
- FY20 \$315.8M Capital Budget funded by:
 - Cash Transfer - \$90.0M
 - Commercial Paper (CP) for interim financing
 - Lower interest rates
 - Greater financing flexibility
 - Revenue bond sale of \$230M
 - Approved by City Council
 - Used to pay off short term debt (CP)
 - 30 year term
- Meets all FMPC requirements



CIP Funding: Cash and Short-Term Debt

- DWU uses a combination of cash, short-term debt and long term debt
- Cash Funding – also known as equity funding
 - Cash funding for smaller projects is viewed positively by rating agencies
 - May be used to fund projects which do not meet the requirements for other financing options
 - Major maintenance
 - Assets with a short useful life
- Short Term Debt – Commercial Paper
 - Normally used to provide interim funding during the construction period for capital projects
 - Interest begins to accrue only as projects are awarded
 - Interest rates are historically lower than long term rates
- DWU has two Commercial Paper Series for \$600M
- Short term variable rate debt is periodically converted to long term debt
- *Similar to interim financing for new home construction*

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CIP Funding: Long-Term Debt

- Revenue bonds are long term debt instruments secured with a pledge of revenues from the utility
- Spreads cost of capital projects over the service period for which customers receive the benefits
 - Future customers help pay for the use of the infrastructure
 - DWU carries 30 year term for all outstanding debt except for water rights debt
 - DWU has a conservative financial approach and DWU's bonds have high ratings from rating agencies
 - **AA+** - Fitch; **AAA** - Standard and Poor's; **AA2** - Moody's
 - Higher ratings provide lower interest rates
- *Similar to home mortgages because the life of a home is greater than the term of the mortgage payments*

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Texas Water Development Board Funding

- May 2017 – 5 year funding commitment from TWDB
- DWU will receive \$66M annually with a loan repayment period of 30 years
- Debt service savings could total \$82.5M
- May 14, 2018 – first loan installment closed
- Drinking Water and Clean Water State Revolving Funds
- Began awarding pipeline contracts in FY 18-19

DWU Revenues and Rates



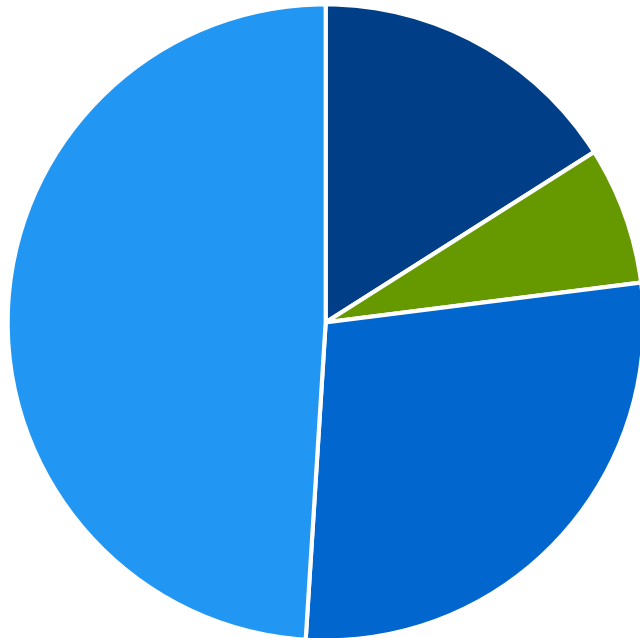
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FY20 Water and Wastewater Operating Budget

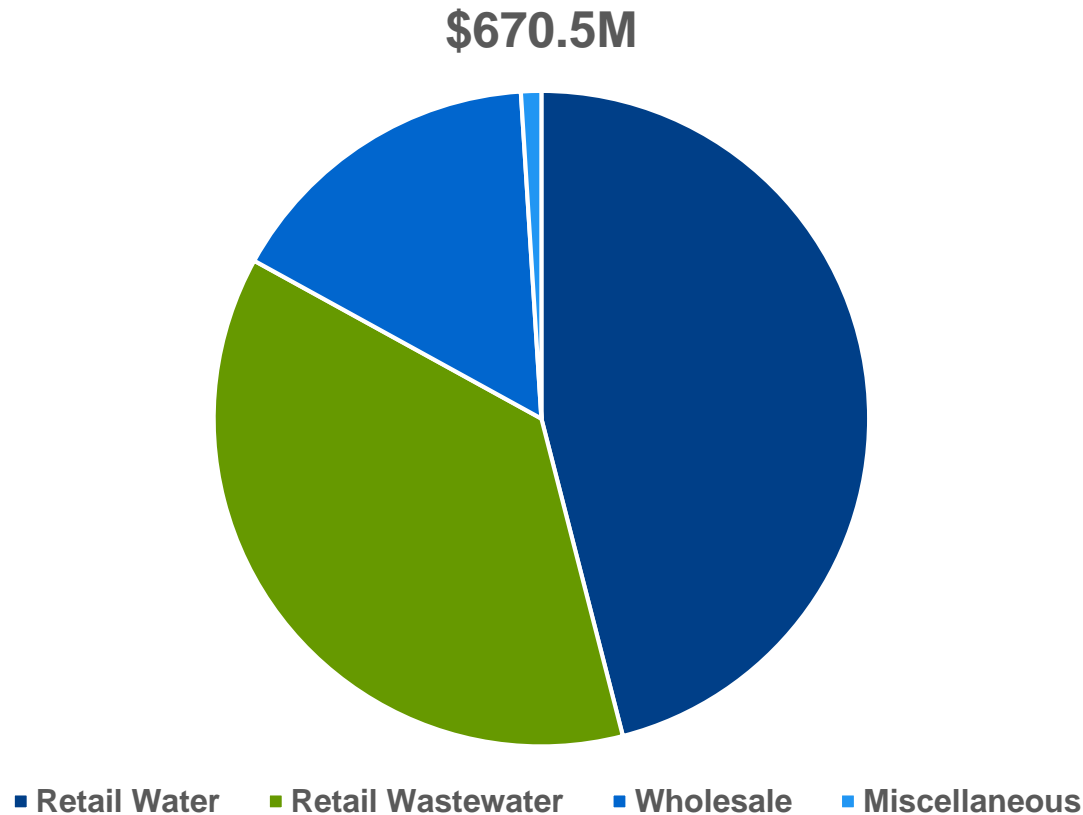
\$681.2M



- Personnel
- Power & Chemicals
- Other O&M
- Capital Funding



Fiscal Year 2020 Water and Wastewater Revenues

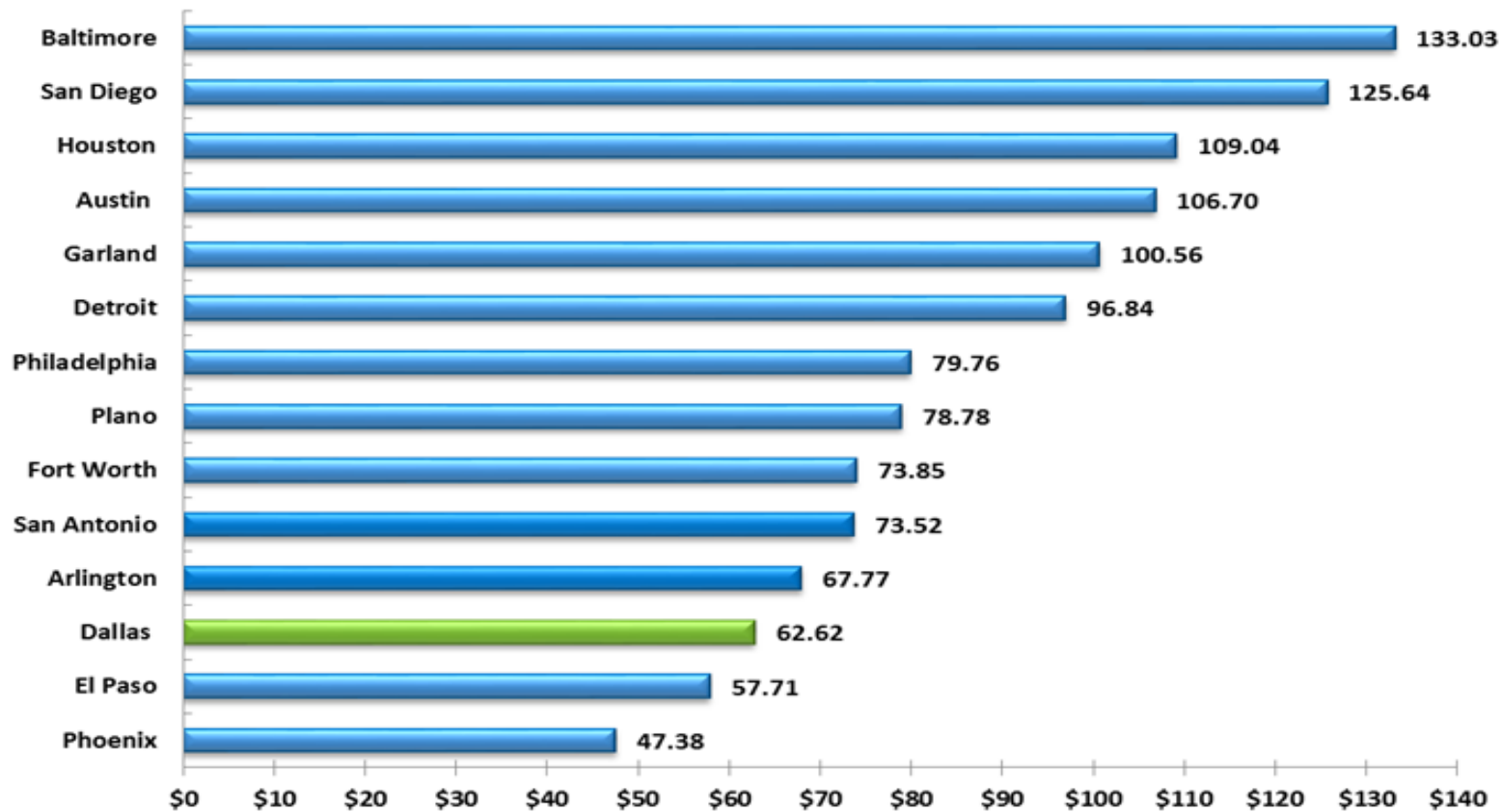


Note: Balance of FY20 expenses paid from SRA escrow fund and rate dispute settlement 32

Average Monthly Water & Wastewater Residential Bills

Dallas, Index and Selected Cities

(Based on 5/8" Meter; 8,300 Gallons/Month; 5,200 Gallons Winter Months Average)



Upcoming Financing Actions for FY20

- April 8, 2020 – City Council action on TWDB bonds for pipeline replacement
- May 13, 2020 – City Council action on 2020 Revenue Bond Sale to retire commercial paper and potentially refund existing bonds
- June 2020 – Renew or replace existing Series D and Series E commercial paper program totaling \$600M

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