COUNTY WATER DISTRICT OF BILLINGS HEIGHTS

CAPITAL IMPROVEMENTS PLAN (CIP)

COUNTY WATER DISTRICT OF BILLINGS HEIGHTS

INTERSTATE ENGINEERING

The ASCE gave the condition of the nation's water infrastructure a grade of C-

PURPOSE OF THE CIP

- Identify current and forthcoming capital needs of the district
- Ensure the timely repair and replacement of aging infrastructure
- Accommodate growth
- Improve efficiency

PURPOSE OF THE CIP

- Provide a level of certainty for residents, businesses, and developers regarding the location and timing of public investments
- Identify funding needs and options
- Eliminate unanticipated, poorly planned, or unnecessary capital expenditures

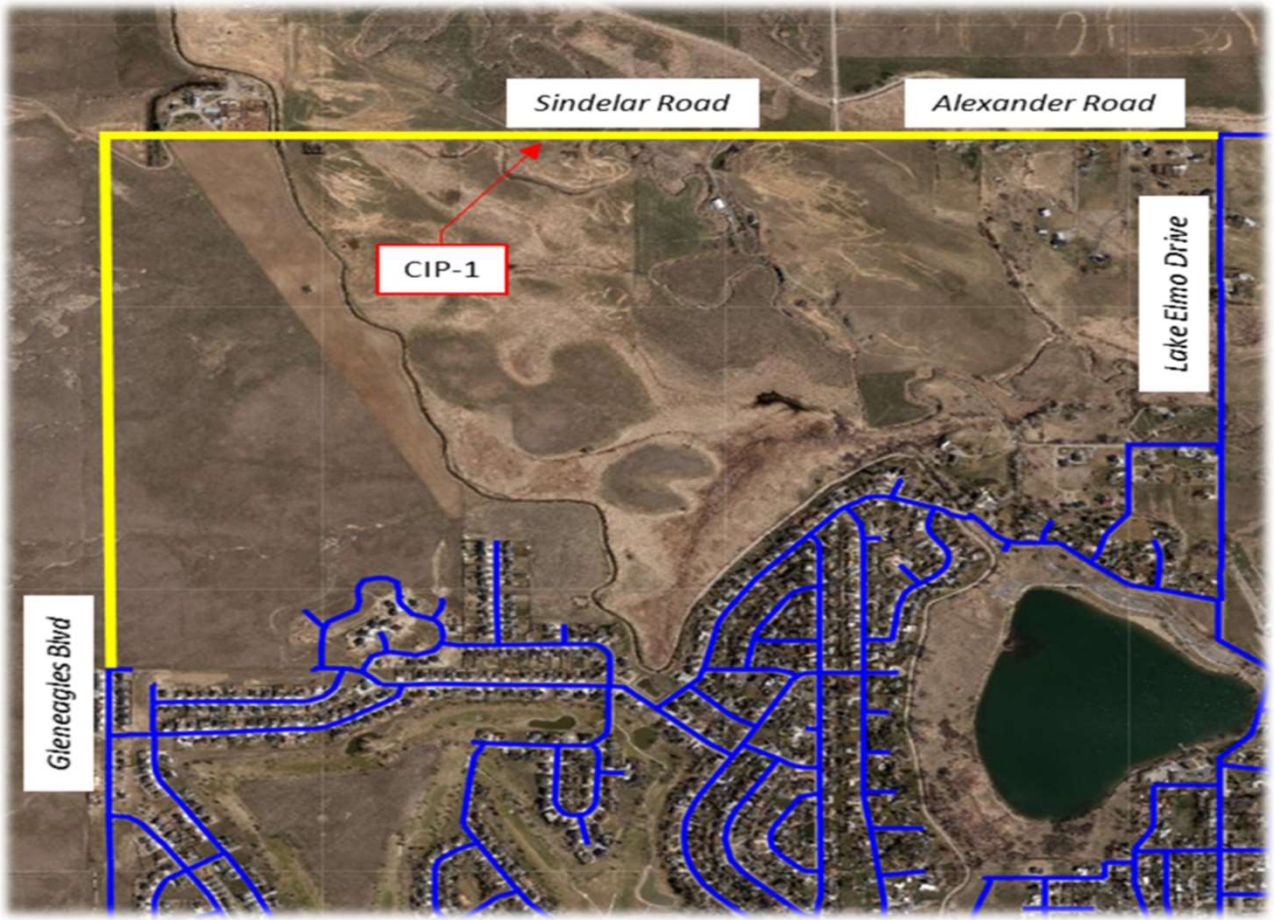
PURPOSE OF THE CIP

- Coordinate District improvements with the city, county, and utility company projects to minimize disruptions and costs associated with replacement of incidental infrastructure such as paving
- Provide an opportunity for public input in the budget and finance process
- Balance desired public improvements with the community's financial resources
- Eliminate sharp increases in user fees and debt levels to cover unexpected capital improvements

GOAL OF THE CIP

- Improve performance of Distribution System
- Improve efficiency
- Improve operator's ability to monitor and maintain the District's infrastructure
- Meet Regulatory Agency Requirements
- Provide consistent cash flow

#1 Northwest Transmission Main



- Minimize pressure drops during periods of peak demand
- System redundancy
- Accommodate growth

$11.82 M

#2 Comprehensive Water System Preliminary Engineering Report

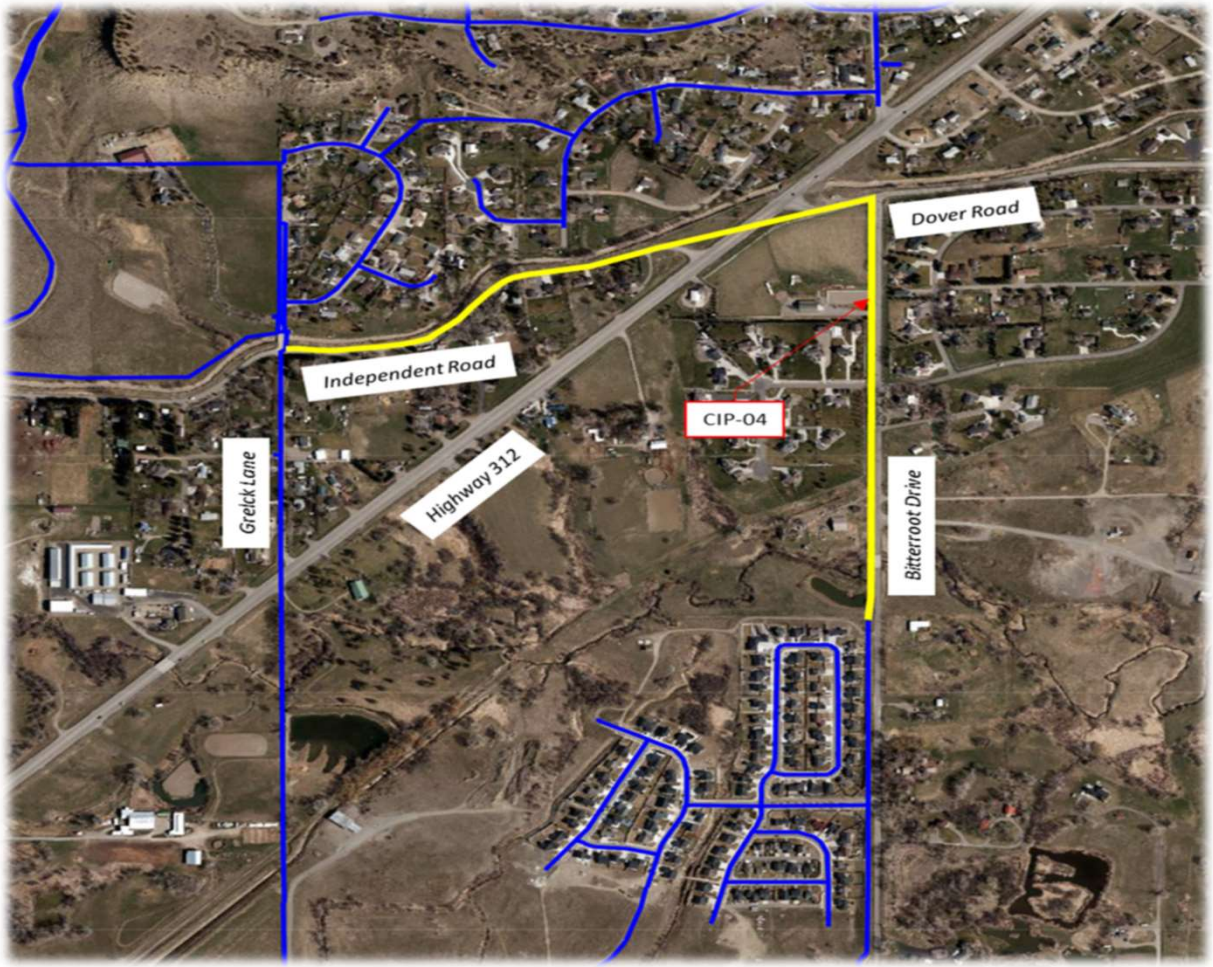
- Evaluate condition of District's assets and recommend improvements and upgrades
- Funding agencies require an up-to-date PER in order to be eligible for funding

$180k

#3 Water Intake Feasibility Study

$80k

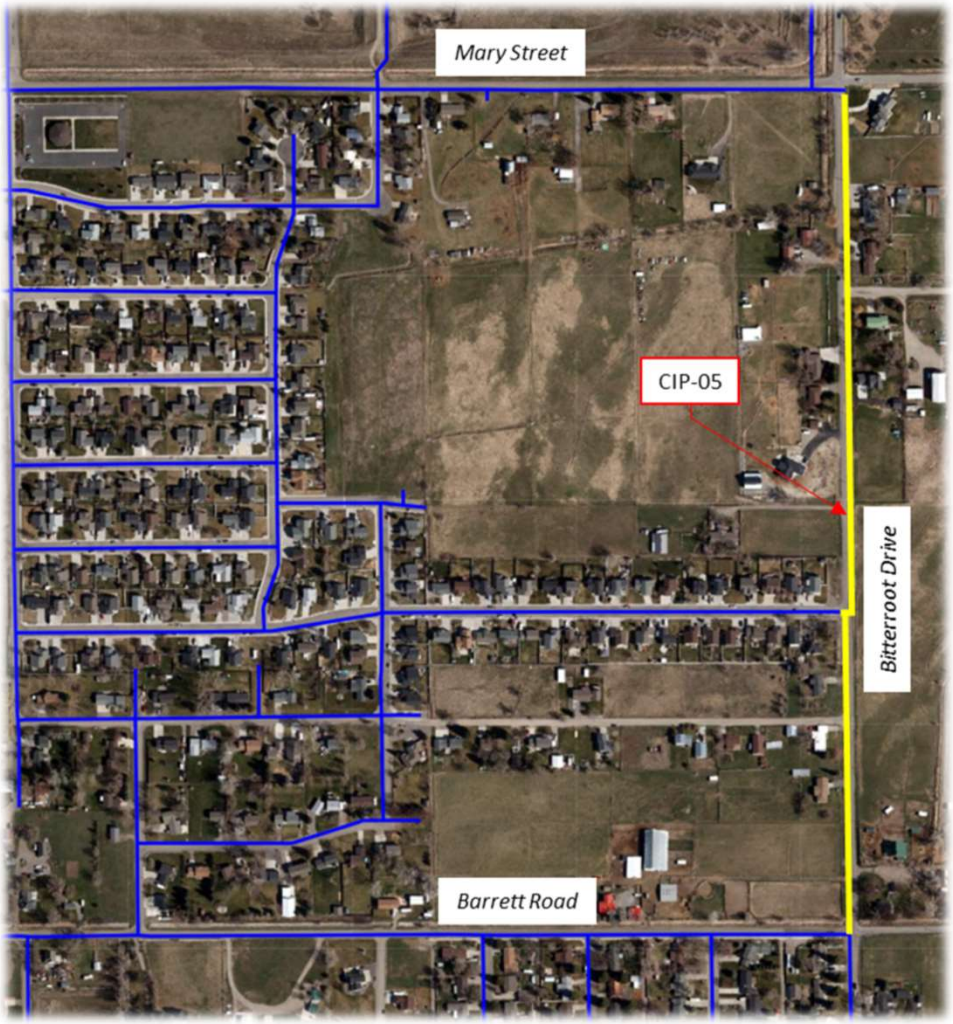
#4 Bitterroot Loop



- System redundancy
- Eliminate dead-end line
- Accommodate growth

$4.07 M

#5 Bitterroot from Barrett to Mary



- System redundancy
- Eliminate dead end
- Accommodate growth

$1.8 M

#6 Reservoir Management System

- Ensure consistent levels of disinfection
- Improve water quality through mixing
- Provide ability to sample directly out of storage tanks

$1.37 M

CAPITAL COSTS

Project Number	Project Description	Approximate Project Cost
7	Assessment of Existing Pipelines	$210K
8	Aging Watermain Replacement Program	$4.1M
9	Lanier Reservoir – Dedicated Fill Line	$640K
10	Hilltop & Lanier – Ultrasonic Meters	$130K
11	Update GIS Attributes	$150K
12	GIS Digital Workflows	$150K

CAPITAL COSTS

Project Number	Project Description	Approximate Project Cost
13	GIS Support & Data Workflow Maintenance	$69K Annually
14	Emergency Generator	$75K
15	Equipment Storage Building	$920K
16	Oxbow Tank – Cold Storage Yard	$70K
17	Shop Addition With 2-ton Bridge Crane	$370K
18	Capital Improvements Plan (CIP)	$90K

CAPITAL COSTS

Project Number	Project Description	Approximate Project Cost
19	Rate Study	$130k
20	Bypass Planning Area Study	$80K
21	4MG Oxbow II Reservoir	$8.04M
	PROJECT TOTALS	$15.48M

TERMS: EDU & TARGET RATES

- **Target Rates** are established by the Montana Department of Commerce (MDOC) to calculate relative financial need based on median household income (MHI) and utility rates. A utility must meet the target rate to be CDBG and TSEP grant eligible.
- EDU = Equivalent Residential Unit (3/4” or 5/8” service).
- The current Target Rate for water is $71.47 per residential EDU.
- Current average residential water bill is ~ $68.48/month
- **Target Rates are taken into consideration when funding applications are considered for grants and “Loan Forgiveness”**.

FUNDING SOURCES

- User fees
- Montana State Revolving Fund (SRF) Loan Program (Loan & Loan Forgiveness)
- Renewable Resource Grant/Loan Program (RRGL)
- USDA Rural Development (Loan & Grant)
- MT Department of Commerce Block Grant
- Montana Coal Endowment Program
- INTERCAP Loan Program

QUESTIONS/COMMENTS

Project Title	Northwest Transmission Main	Project Category	Pipelines
Project ID	CIP-01	Subcategory	*Transmission*
Estimated Total Project Cost	***$11,820,000***	Project Type	New Construction

Project Description

Install a redundant, secondary supply main that will connect from an existing stubbed out 24" transmission main and loop 2.5 miles to the northwest corner of the NW pressure zone. The existing 24" transmission main was installed to feed the 12" main that gravity feeds the NW zone.

Why this project needs to be completed:

Low pressure readings have been noted in the southwest corner of the Lake Hills area. Existing 12" gravity main from the NE and St. Andrews booster station from the SE are nearing capacity to supply the pressure zone.

How this project will benefit the District:

Completion of the NW transmission main loop will allow the Ox Bow tank to gravity feed this area with adequate pressure. Fire flow scenarios will be met. Pump stations located in this area can be decommissioned due to adequate gravity supply.

Consequences of delaying or eliminating this project:

Will require continued use existing online booster stations, require activation of two additional pump stations, and continue to see inadequate pressures in the area. Will prohibit growth in the area due to insufficient domestic supply and fire flow capacity.

Impact on annual operating budget:

Minimal impact; general maintenance of pipeline and appurtenances. Completion of this transmission main will nearly nullify the need for the St. Andrews pump station which will lead to reduced power consumption.

Additional Comments:

Residential growth in this area on pace to exceed water supply infrastructure capacity by 2024. It is assumed that the transmission main will be a combination of 24" and 18" pipe.

Potential Funding Sources:	Priority Level:
Drinking Water State Revolving Fund (DWSRF) Renewable Resource Grant & Loan Program	1

Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	**Total**
2023	$850,000		$120,000	*$970,000*
2024	$850,000	$10,000,000		*$10,850,000*
2025				
2026				
2027				
2028				
2029				
2030				
2031				
2032				
Total	*$1,700,000*	*$10,000,000*	*$120,000*	**$11,820,000**

Project Title	Comprehensive Water System PER	Project Category	Administration
Project ID	CIP-02	Subcategory	*Overall System*
Estimated Total Project Cost	***$180,000***	Project Type	Report or Study

Project Description

Complete a comprehensive Water System Preliminary Engineering Report (PER) that will meet the standards of the "Uniform Preliminary Engineering Report for Montana Public Facility Projects". The PER will be submitted to the Montana Department of Natural Resources and Conservation (DNRC) water bureau and the Montana Department of Environmental Equality (DEQ) program for review following completion. The PER will identify projects to alleviate deficiencies and maintenance needs for the aging infrastructure within the CWDBH system. The document will further evaluate the existing system's capacity to accommodate future expansion/ongoing growth.

Why this project needs to be completed:

The previous comprehensive PER is outdated (completed in 2008). The 2008 document is no longer recognized by applicable grant/loan funding agencies and DEQ reviewing authority including the Municipal Facilities Exclusion (MFE) process.

How this project will benefit the District:

The PER will be used as a supporting document for each upcoming design project subject to DEQ and/or MFE review. The PER will also fulfill the requirements of applicable funding agencies (including SRF) that issue project grants and loans.

Consequences of delaying or eliminating this project:

Possibility for reactive (instead of proactive) installations of necessary infrastructure and would have the potential to inflate the price of these installations due to reduced time to budget, plan, and/or take advantage of market situations or concurrent projects (e.g., street rehabs).

Impact on annual operating budget:

Without the completion of an updated PER, the District could be ineligible for preferred funding sources including grants, loan forgiveness and/or low interest loan options. Increased project borrowing costs and/or delays for upcoming projects could occur without the completed PER.

Additional Comments:

Additional supporting PER information will become necessary for agency review on upcoming projects.

Potential Funding Sources:	Priority Level:
	1

Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	**Total**
2023	$180,000			*$180,000*
2024				
2025				
2026				
2027				
2028				
2029				
2030				
2031				
2032				
Total	*$180,000*			**$180,000**

Project Title	Raw Water Intake Feasibility Study	Project Category	Facilities
Project ID	CIP-03	Subcategory	*WTP*
Estimated Total Project Cost	***$80,000***	Project Type	Report or Study

Project Description

Perform a feasibility research study to determine preliminary feasiblility of the District (or a developed Regional Authority) to construct a Yellowstone River intake and water treatment facility as an alternate source of potable water to supply the District. This preliminary study would evaluate potential water rights issues, potential intake locations relative to existing WWTP discharge locations on the Yellowstone, permitting requirements, etc. If determined feasible, this project would represent a precursor to a formal Preliminary Engineering Report (PER) for the Water Intake and Treatment Facility.

Why this project needs to be completed:

Front-end research and planning is required to ensure appropriate steps are taken and prevent unnecessary spending if project reaches a point of infeasibility.

How this project will benefit the District:

This project represents the first step towards the District augmenting its current water supply or establishing independence regarding its source of potable water.

Consequences of delaying or eliminating this project:

Continued reliance on City of Billings supplied potable water for the foreseeable future.

Impact on annual operating budget:

This portion of the overarching project will not have an impact on the annual operating budget.

Additional Comments:

N/A

Potential Funding Sources:	Priority Level:
	1

Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024	$80,000			*$80,000*
2025				
2026				
2027				
2028				
2029				
2030				
2031				
2032				
Total	*$80,000*			**$80,000**

Project Title	Bitterroot Loop Across Highway 312	Project Category	Pipelines
Project ID	CIP-04	Subcategory	*Transmission*
Estimated Total Project Cost	***$4,070,000***	Project Type	New Construction

Project Description

Construct a new 24"/18" grid main to connect Bitterroot Drive to Grelck Lane across Highway 312 along Bitterroot Drive and Independent Road, forming a major loop within the system.

Why this project needs to be completed:

Project will remove dead ends and complete a major loop within the system.

How this project will benefit the District:

Better overall system operability, water quality, and increase capability for growth near the future Billings Bypass corridor. Loop will also provide nearby existing neighborhoods a direct opportunity to be annexed into the CWDBH.

Consequences of delaying or eliminating this project:

Lack of preparedness for growth near new Billings Bypass corridor. Continued dead-end of major grid main in Bitterroot Drive.

Impact on annual operating budget:

Minimal impact; general maintenance of pipeline and appurtenances.

Additional Comments:

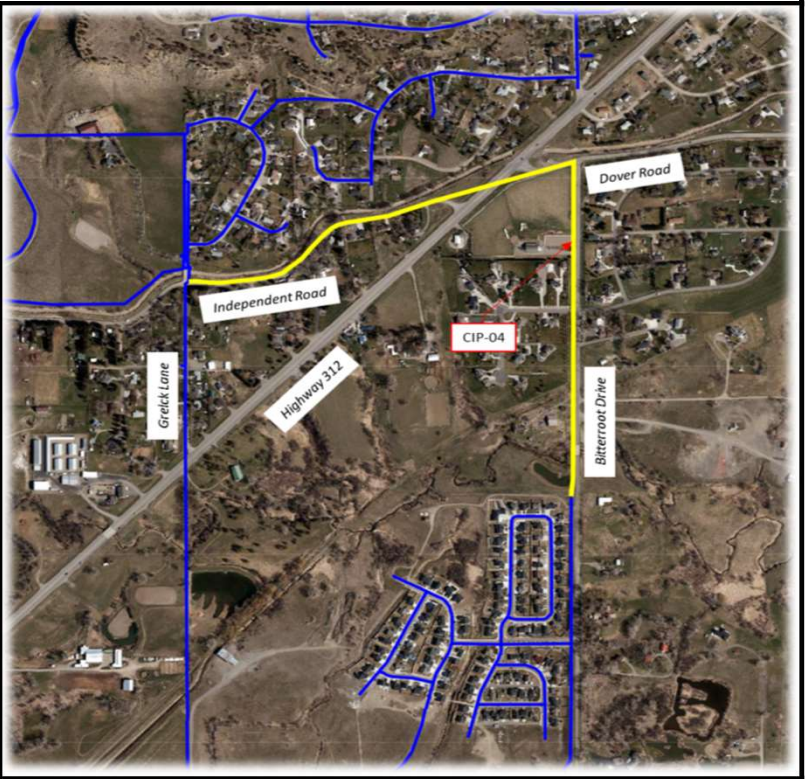
N/A

Potential Funding Sources:

Drinking Water State Revolving Fund (DWSRF)

Priority Level:

3



Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025				
2026				
2027				
2028	$330,000			*$330,000*
2029	$340,000	$3,400,000		*$3,740,000*
2030				
2031				
2032				
Total	*$670,000*	*$3,400,000*		**$4,070,000**

Project Title	Bitterroot from Barrett to Mary	Project Category	Pipelines
Project ID	CIP-05	Subcategory	*Transmission*
Estimated Total Project Cost	***$1,800,000***	Project Type	New Construction

Project Description

Construct a new 12" grid main along Bitterroot Drive between Barrett Road and Mary Street, forming a major loop within the system.

Why this project needs to be completed:

Project will remove dead ends and complete a major loop within the system.

How this project will benefit the District:

Better overall system operability, water quality, and increase capability for growth near the future Billings Bypass corridor. Loop will also provide nearby existing neighborhoods a direct opportunity to be annexed into the CWDBH.

Consequences of delaying or eliminating this project:

Lack of preparedness for growth near new Billings Bypass corridor. Continued dead-ends of grid mains in system.

Impact on annual operating budget:

Minimal impact; general maintenance of pipeline and appurtenances.

Additional Comments:

N/A

Potential Funding Sources:	Priority Level:
Drinking Water State Revolving Fund (DWSRF)	3

Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025				
2026	$150,000			*$150,000*
2027	$150,000	$1,500,000		*$1,650,000*
2028				
2029				
2030				
2031				
2032				
Total	*$300,000*	*$1,500,000*		**$1,800,000**

Project Title	Reservoir Management System	Project Category	Facilities
Project ID	CIP-06	Subcategory	*Monitoring Equipment*
Estimated Total Project Cost	***$1,370,000***	Project Type	New Construction

Project Description

Install a means to remotely and automatically monitor and boost chlorine levels in the existing water storage reservoirs (Lanier and Hilltop).

Why this project needs to be completed:

The ability to chlorinate at each reservoir will provide the system with additional protection against low-chlorine residuals, increased monitoring or system, operational flexibility in periods of low usage.

How this project will benefit the District:

Reduce the risk of non-compliance due to low chlorine residuals and eliminate the need for manual chlorination procedures if low residuals are detected.

Consequences of delaying or eliminating this project:

Continued risk of low chlorine residuals during low usage periods or in the event of chlorine injection failure in the supplied water from the City of Billings.

Impact on annual operating budget:

Power consumption will increase at the reservoir facilities to power the equipment. Regular deliveries of bulk sodium hypochlorite will be required for injection, as necessary.

Additional Comments:

This project is an expansion upon the existing reservoir management system program as initiated at the Ox Bow reservoir. A similar configuration will be used at the Hilltop and Lanier. This may be completed as a single project, or broken up to install at Hilltop first, then Lanier.

Potential Funding Sources:	Priority Level:
Drinking Water State Revolving Fund (DWSRF)	3

Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	**Total**
2023				
2024				
2025	$110,000			*$110,000*
2026	$110,000	$900,000	$250,000	*$1,260,000*
2027				
2028				
2029				
2030				
2031				
2032				
Total	*$220,000*	*$900,000*	*$250,000*	**$1,370,000**

Project Title	Assess Condition of Existing Pipelines	Project Category	Pipelines
Project ID	CIP-07	Subcategory	*Distribution*
Estimated Total Project Cost	***$210,000***	Project Type	Report or Study

Project Description

Perform a targeted, preliminary study of a sampling of the District's existing pipeline infrastructure to determine potential problem areas to guide future improvement scopes, schedules, and budgets. Utlization of acoustic sensor technology (such as Mueller ePulse) will provide pipeline wall condition while simultaneously checking for leaks. This technology can assess the condition of asbestos cement and metallic pipe materials. This project represents a preliminary assessment of strategically selected locations to determine if specific areas require additional investigation and/or results will aid in the development of an effective replacement schedule.

Why this project needs to be completed:

Aging pipelines throughout the District have unknown conditions and present potential issues in the near future.

How this project will benefit the District:

Assessment of pipeline condition will provide basis for schedule and priority for replacement to efficiently utilize funds slated for annual replacement.

Consequences of delaying or eliminating this project:

Failure to complete conditions assessment may result in lower priority pipelines being replaced before the end of their useful life.

Impact on annual operating budget:

No direct impact. Results-driven pipe replacement may reduce future maintenance costs.

Additional Comments:

Estimated Project Cost is based on testing approximately 30,000 LF of piping throughout the District.

Potential Funding Sources:	Priority Level:
Drinking Water State Revolving Fund (DWSRF)	2

Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025	$60,000	$150,000		*$210,000*
2026				
2027				
2028				
2029				
2030				
2031				
2032				
Total	*$60,000*	*$150,000*		**$210,000**

Project Title	Aging Watermain Replacement Program	Project Category	Pipelines
Project ID	CIP-08	Subcategory	*Distribution*
Estimated Total Project Cost	***$4,100,000***	Project Type	Replacement

Project Description

Implement a scheduled replacement program for asbestos-cement pipe throughout the District. The District's current GIS information depicts approximately 77,000 LF of AC pipe throughout the system; additional AC pipe length may be identified through a Atlas and GIS update. This project summary (and associated cost) assumes a 50-year program duration. This equates to 2-percent of the AC pipe to be replaced year-to-year.

Why this project needs to be completed:

Aging asbestos-cement pipe located within the District is approaching the end of its useful life. Replacement of all AC pipe throughout the District will likely be required within the next 50 years.

How this project will benefit the District:

By implementing a proactive replacement program, problematic pipe can be replaced gradually prior to major issues surfacing throughout the District.

Consequences of delaying or eliminating this project:

Delaying implementation of this program will result in additional lengths of pipe that need to be replaced year to year prior to the end of the useful life. Future regulations for the replacement of AC pipe may become more restrictive; resulting in significant additional costs.

Impact on annual operating budget:

Due to the size and nature of this project, a yearly budget allocation should be assigned to this program.

Additional Comments:

A yearly budget allocation will allow for quick action if road/street construction presents an opportunity for concurrent replacement.

Note: The total estimated cost represents 5 years of amortized replacement costs at ~1,500 LF/year.

Potential Funding Sources:	Priority Level:
Drinking Water State Revolving Fund (DWSRF)	3

Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	**Total**
2023				
2024				
2025				
2026				
2027				
2028	$120,000	$700,000		*$820,000*
2029	$120,000	$700,000		*$820,000*
2030	$120,000	$700,000		*$820,000*
2031	$120,000	$700,000		*$820,000*
2032	$120,000	$700,000		*$820,000*
Total	*$600,000*	*$3,500,000*		**$4,100,000**

Project Title	Dedicated Fill Line for Lanier Reservoir	Project Category	Pipelines
Project ID	CIP-09	Subcategory	*Transmission*
Estimated Total Project Cost	***$640,000***	Project Type	New Construction

Project Description

Add a tee, gate valve, and check valve to the existing inlet line to the Lanier reservoir to configure dedicated fill and discharge lines from the tank. Reconfigure suction line from the Lanier Pump Station to draw from upstream of the new check valve to ensure water turnover in the tank.

Why this project needs to be completed:

New configuration will ensure water turnover in the tank and reduce issues associated with water aging.

How this project will benefit the District:

Project will help maintain chlorine residuals and reduce water aging issues by ensuring proper flow through the tank.

Consequences of delaying or eliminating this project:

Potential water aging and low chlorine residuals if water in tank is not turned over adequately.

Impact on annual operating budget:

Minimal impact; general maintenance of additional valves and power consumption associated with heat tracing of external fill line.

Additional Comments:

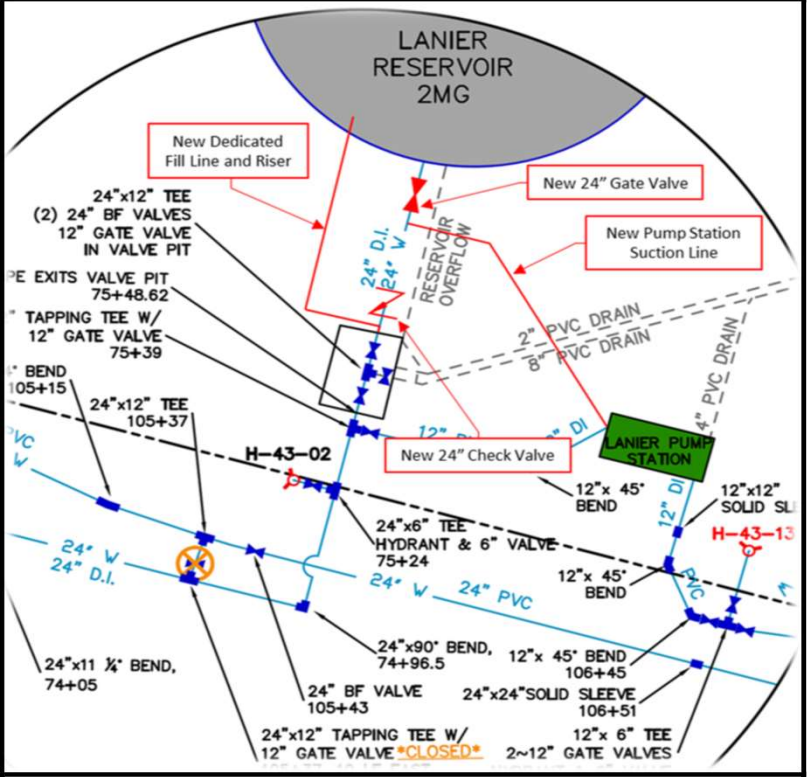
N/A

Potential Funding Sources:

Drinking Water State Revolving Fund (DWSRF)

Priority Level:

4



Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	**Total**
2023				
2024				
2025				
2026				
2027	$140,000	$500,000		*$640,000*
2028				
2029				
2030				
2031				
2032				
Total	*$140,000*	*$500,000*		**$640,000**

Project Title	Ultrasonic Meters at Hilltop & Lanier	Project Category	Pipelines
Project ID	CIP-10	Subcategory	*Monitoring Equipment*
Estimated Total Project Cost	***$130,000***	Project Type	New Construction

Project Description

Install non-invasive, ultrasonic flow meters on the discharge lines for the Hilltop and Lanier reservoirs.

Why this project needs to be completed:

Addition of flow meters will provide better system monitoring of outflows from the District's existing reservoirs.

How this project will benefit the District:

Constant flow monitoring will provide valuable water use tracking information for future distribution network improvements and verify system operations.

Consequences of delaying or eliminating this project:

Continued lack of meaningful data usage from these two tanks.

Impact on annual operating budget:

Minimal impact; general maintenance of system components.

Additional Comments:

N/A

Potential Funding Sources:	Priority Level:
	4

Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	**Total**
2023				
2024				
2025				
2026				
2027				
2028				
2029	$20,000	$110,000		*$130,000*
2030				
2031				
2032				
Total	*$20,000*	*$110,000*		**$130,000**

Project Title	Update GIS Attributes	Project Category	Administration
Project ID	CIP-11	Subcategory	*GIS*
Estimated Total Project Cost	***$150,000***	Project Type	New Construction

Project Description

Add and update current infrastructure attributes in existing Geographical Information System (GIS) database. Information collected from as-built files and record drawing information as well as field observations should be collected and added to the GIS database. The current GIS as of 2021, is functioning using ArcGIS Online, (AGOL), a cloud-based Software as a Service, (SaaS) made by a software company named ESRI. The District is managing their GIS on their own AGOL organizational account.

Why this project needs to be completed:

Most of the attribute fields in the GIS database have no information in them. It is recommended the District gets the present attribute information fully completed and updated.

How this project will benefit the District:

Significantly increase the effectiveness of the existing GIS database into which the District has already dedicated substantial time and resources. Useful as a tool to manage the Districts' assets by tracking maintenance and inspection histories.

Consequences of delaying or eliminating this project:

Only 50% of the effectiveness of the GIS will be realized.

Impact on annual operating budget:

Any estimated annual cost increases would be minimal and likely be superseded by the efficiency savings.

Additional Comments:

Ongoing efforts are being made to update the spatial and attribute information of the infrastructure the District owns and manages using their SaaS solution coupled with an EOS Arrow Gold GPS. With these two technologies the District field operations staff can update, add, and remove data with high accuracy while the District's management staff can see the updates in real time on their desktop application.

Potential Funding Sources:

Priority Level:

4

Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	**Total**
2023				
2024				
2025				
2026				
2027	$150,000			*$150,000*
2028				
2029				
2030				
2031				
2032				
Total	*$150,000*			**$150,000**

Project Title	GIS: Digital Workflows	Project Category	Administration
Project ID	CIP-12	Subcategory	*GIS*
Estimated Total Project Cost	***$150,000***	Project Type	New Construction

Project Description

Identify, outline, and document current workflows and processes which support the District's existing asset management functions. Once compiled and verified the "paper" methods can become conceptual "digital" systems for asset management that can be then built using available AGOL application tools and functions in conjunction with the present GIS infrastructure, creating an Asset Management System, (AMS). Assets can begin to be managed with digital processes, maintenances or repairs can be tracked with task-based workflows, and inspections done with online forms.

Why this project needs to be completed:

Current workflows are paper based and siloed in their respective departments.

How this project will benefit the District:

Workflows that are migrated to digital methods standardize processes, automate mundane procedures, and keep field and office staff integrated. Standardized processes have less errors and are more efficient. Automated procedures support efficiency and simplicity. Integrated staff helps the overall business operations stay in sync.

Consequences of delaying or eliminating this project:

The lack of an effective staff knowledge transfer and succession process will increase overhead by 25%

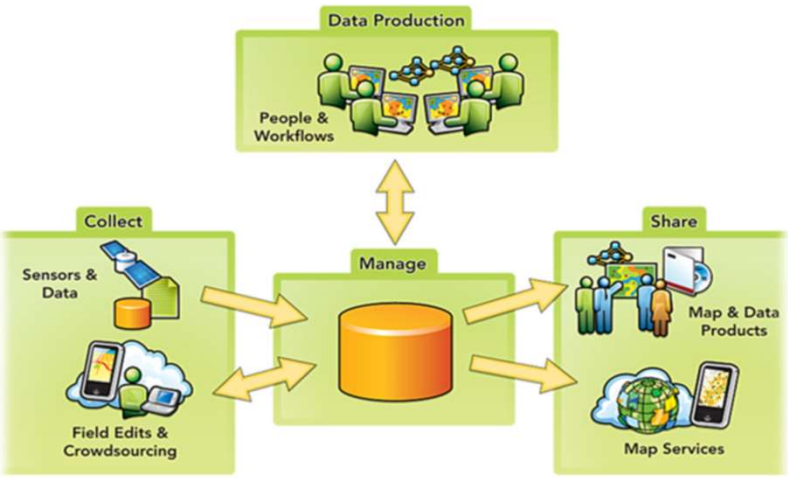
Impact on annual operating budget:

Any estimated annual cost increases would be minimal and likely be superseded by the efficiency savings.

Additional Comments:

The highest and best use of GIS is to leverage its capacity to make workflows digitally streamlined. This makes it a consistent resource for all users as a system of record keeping and tracking as well as a reliable tool for analysis and modeling of future growth efforts.

Potential Funding Sources:	Priority Level:
	4



Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025				
2026				
2027				
2028				
2029	$150,000			*$150,000*
2030				
2031				
2032				
Total	*$150,000*			**$150,000**

Project Title	GIS Support/Data Workflow Maintenances	Project Category	Administration
Project ID	CIP-13	Subcategory	*GIS*
Estimated Total Project Cost	***$690,000***	Project Type	New Construction

Project Description

The District should have a long-term data maintenance plan that ensures the sustained longevity and useful leveraging of the GIS remains. Continuous data updates, technical software support, and workflow maintenances would be the focus.

Why this project needs to be completed:

A long-term data maintenance solution doesn't currently exist.

How this project will benefit the District:

Having reliable support and maintenance ensures the day-to-day operations of the District continue to move consistently and dependably. The District can rely on having skilled professionals to keep them running smoothly and resourcefully.

Consequences of delaying or eliminating this project:

The lack of long-term data maintenances planning will undermine current investments and sabotage long-term success.

Impact on annual operating budget:

An estimated annual cost increases would be minimal.

Additional Comments:

From daily routines to long-term planning a mature GIS will bring the District the tools and information needed to operate at its optimum capacity. Looking to the future based on present day knowledge it is recommended that the District take a comprehensive and systematic approach to an intended goal of getting their workflows digitally architected.

Potential Funding Sources:	Priority Level:
	4

Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025				
2026				
2027				
2028				
2029				
2030				
2031	$340,000			*$340,000*
2032	$350,000			*$350,000*
Total	*$690,000*			**$690,000**

Project Title	Emergency Generation	Project Category	Facilities
Project ID	CIP-14	Subcategory	*Equipment*
Estimated Total Project Cost	***$75,000***	Project Type	New Construction

Project Description

Procure a mobile, emergency generator capable of powering the jockey pump at Hawthorne pump station or Hilltop booster pump station to be mobilized in the event of grid power failure at either site.

Why this project needs to be completed:

Several booster stations located throughout the District are necessary to maintain adequate pressures to certain neighborhoods in the service area. A wide-sweeping and extended power outage could result in low pressures in the system in such an event.

How this project will benefit the District:

Supplementing the District's auxilliary power fleet will provide additional protections against extented power outages within the service area; potentially preventing necessary boil-orders as a result of low pressures in the distribution system.

Consequences of delaying or eliminating this project:

Continued risk of low-pressure scenarios in the event of a large-scale power outage.

Impact on annual operating budget:

Minimal impact. Regular maintenance on the equipment will be required. Minor additional fuel costs.

Additional Comments:

N/A

Potential Funding Sources:

Priority Level:

4

Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	**Total**
2023				
2024				
2025				
2026				
2027				
2028			$75,000	*$75,000*
2029				
2030				
2031				
2032				
Total			*$75,000*	**$75,000**

Project Title	Equipment Storage Building	Project Category	Facilities
Project ID	CIP-15	Subcategory	*Buildings*
Estimated Total Project Cost	***$920,000***	Project Type	New Construction

Project Description

Construct a new 4,000 SF equipment and material storage building on the District's office property. This will also require relocation of stored materials to a new offsite cold-storage area.

Why this project needs to be completed:

Due to a limited number of usable bays in the existing facility, several vehicles are required to be stored outside in the elements. As the District's fleet grows, additional enclosed storage will be required for diesel equipment and other materials.

How this project will benefit the District:

Additional enclosed storage will provide additional security for the District's vehicles and stored materials.

Consequences of delaying or eliminating this project:

Continued exposure of equipment to weather leading to faster degradation and hard-starting of diesel engines.

Impact on annual operating budget:

Minimal impact; additional heating and power consumption costs for the additional building.

Additional Comments:

Reference **CIP-14** for information regarding new cold-storage location.

Potential Funding Sources:	Priority Level:
	4

Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025				
2026				
2027	$120,000	$800,000		*$920,000*
2028				
2029				
2030				
2031				
2032				
Total	*$120,000*	*$800,000*		**$920,000**

Project Title	Cold-Storage Yard at Ox Bow Tank Site	Project Category	Facilities
Project ID	CIP-16	Subcategory	*Buildings*
Estimated Total Project Cost	***$70,000***	Project Type	New Construction

Project Description

Develop and install security fence around approximately 0.5 acres of the existing Ox Bow Reservoir site as a cold-storage yard for materials and equipment.

Why this project needs to be completed:

Adding cold-storage space at this location will allow for materials to be removed from the main shop yard and free up area for additional improvements at that location.

How this project will benefit the District:

Moving long-term stored materials to a secure, offsite location will free up space and allow for more productive use of the of main facility property.

Consequences of delaying or eliminating this project:

Continued storage of materials at main facility location resulting in less space for improvements.

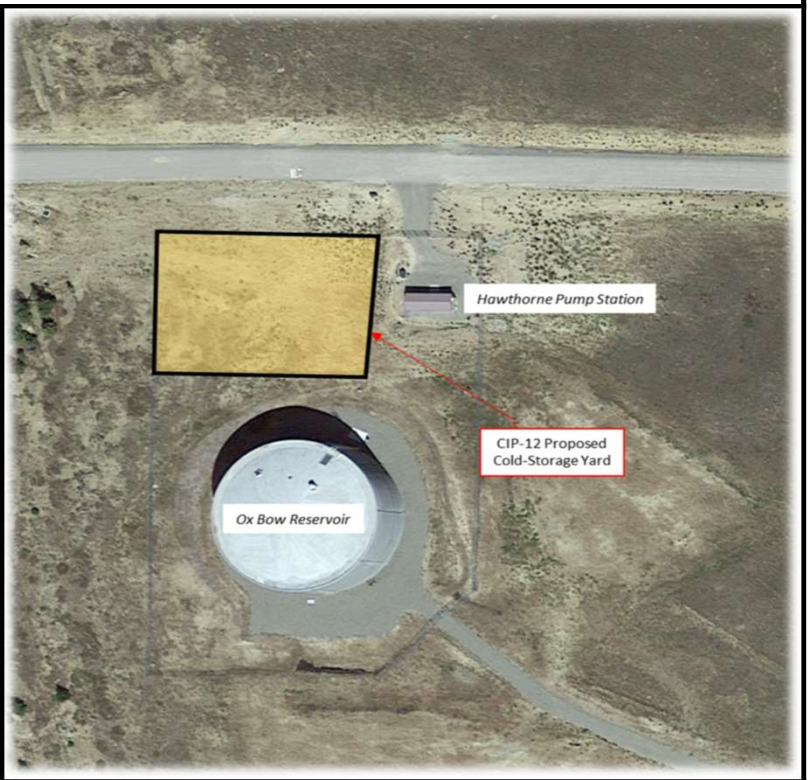
Impact on annual operating budget:

Minimal impact to operating budget. Maintenance of yard surfacing may be required periodically.

Additional Comments:

N/A

Potential Funding Sources:	Priority Level:
	3



Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	**Total**
2023				
2024				
2025	$20,000	$50,000		*$70,000*
2026				
2027				
2028				
2029				
2030				
2031				
2032				
Total	*$20,000*	*$50,000*		**$70,000**

Project Title	Shop Addition with 2-Ton Bridge Crane	Project Category	Facilities
Project ID	CIP-17	Subcategory	*Buildings*
Estimated Total Project Cost	***$370,000***	Project Type	New Construction

Project Description

Construct an addition onto the rear bay of the existing shop building and install an integral 2-ton bridge crane for material handling purposes.

Why this project needs to be completed:

The current final bay in the existing shop building is nearly unusable for equipment or material storage due to the partition wall that separates the rest of the shop. Adding additional space to that bay will create a much more usable space for protected storage.

How this project will benefit the District:

Increased interior storage space will prolong the life of equipment and materials, keep equipment warm during winter months, and add a level of security in the prevention of vandalism and theft. Addition of a bridge crane will lead to greater productivity.

Consequences of delaying or eliminating this project:

Continued sub-optimal use of interior space within the existing shop.

Impact on annual operating budget:

Minimal impact; increased heated storage area may result in slightly higher heating bills at the main facility.

Additional Comments:

N/A

Potential Funding Sources:	Priority Level:
	4

Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	**Total**
2023				
2024				
2025				
2026				
2027				
2028				
2029				
2030	$50,000	$320,000		*$370,000*
2031				
2032				
Total	*$50,000*	*$320,000*		**$370,000**

Project Title	5 Year Update to CIP	Project Category	Administration
Project ID	CIP-18	Subcategory	*CIP*
Estimated Total Project Cost	***$90,000***	Project Type	Report or Study

Project Description

Perform a 5-year update to the Capital Improvements Plan (CIP) to incorporate completed projects, priority adjustments, budgetary considerations, changing forecasts and growth patterns, and evaluate potential future projects.

Why this project needs to be completed:

The CIP should be a living document with regular updates to accommodate changing conditions or projections regarding the service area and goals of the District.

How this project will benefit the District:

Maintaining a current and relevant CIP will provide the District's leadership with guidance for planning and budgeting relative to the District's growth. A current CIP may also be used, and sometimes required, in grant or loan funding applications.

Consequences of delaying or eliminating this project:

As CIP's age and due to changing conditions, there is potential for projects to require priority status change or become a sub-optimal solution to a given challenge. Regular updates will provide an opportunity to re-evaluate and add projects as the need arises.

Impact on annual operating budget:

No impact.

Additional Comments:

N/A

Potential Funding Sources:	Priority Level:
Montana Coal Endowment Program	4

Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	**Total**
2023				
2024				
2025				
2026				
2027				
2028	$90,000			*$90,000*
2029				
2030				
2031				
2032				
Total	*$90,000*			**$90,000**

Project Title	Rate Study		Project Category	Administration
Project ID	CIP-19		Subcategory	*Rate Study*
Estimated Total Project Cost		***$130,000***	Project Type	Report or Study

Project Description

Perform a comprehensive rate study and evaluation as a 10-year update to the water rate schedule to address the true cost of supplying water to the District's service area residents.

Why this project needs to be completed:

Aging water and service rates without regular evaluation or updates can result in operating at a financial deficit due to costs associated with purchasing water, maintaining the District's assets, and many other considerations.

How this project will benefit the District:

Regular evaluation and updates to the water and service rates will ensure that the District's cost basis for operation is covered and mitigate the risk of required major rate hikes from year to year.

Consequences of delaying or eliminating this project:

The greater the time interval between rate studies increases the risk that operating costs are not being covered and can prevent potential growth and lead to inadequate service to existing residents.

Impact on annual operating budget:

No impact.

Additional Comments:

N/A

Potential Funding Sources:	Priority Level:
	3

Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025				
2026				
2027	$130,000			*$130,000*
2028				
2029				
2030				
2031				
2032				
Total	*$130,000*			**$130,000**

Project Title	Billings Bypass Planning Area Study	Project Category	Administration
Project ID	CIP-20	Subcategory	*Overall System*
Estimated Total Project Cost	***$80,000***	Project Type	Report or Study

Project Description

Perform a comprehensive study regarding the potential impact of the new Billings Bypass corridor and projected areas of development on the planning area of the District including existing and future infrastructure.

Why this project needs to be completed:

With the upcoming completion of the Billings Bypass connector between the Heights and Lockwood, this corridor will assuredly experience heavy growth in the near future. Forecasting and preparing for growth will be necessary to ensure adequate water service is provided.

How this project will benefit the District:

Preparedness for the forecasted growth and projected impacts will allow the District to properly budget and plan required installations to accommodate expansion along the corridor and play an integral part in promoting growth in the area.

Consequences of delaying or eliminating this project:

Failure to properly plan for growth may lead to budgetary constraints and limit or delay service to potential residential or commercial customers and/or may inhibit growth of the corridor due to lack of water services.

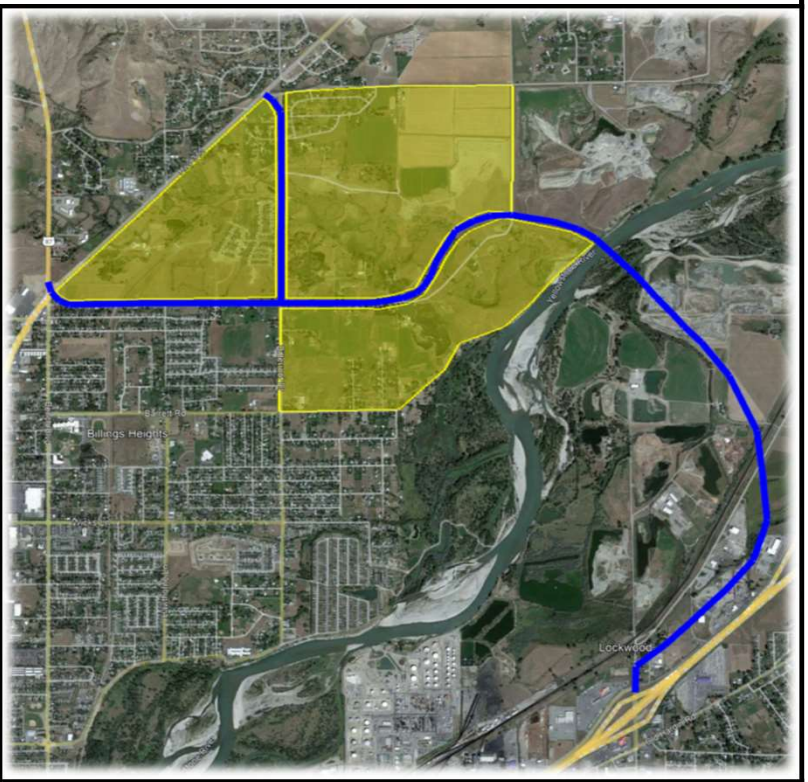
Impact on annual operating budget:

No direct impact; however, study results and associated planning and implementation measures are likely to result in long-term cost savings regarding adequate sizing of infrastructure and appropriate rate structure to accommodate future development.

Additional Comments:

N/A

Potential Funding Sources:	Priority Level:
	3



Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025	$80,000			*$80,000*
2026				
2027				
2028				
2029				
2030				
2031				
2032				
Total	*$80,000*			**$80,000**

Project Title	4MG Ox Bow II Reservoir	Project Category	Facilities
Project ID	CIP-21	Subcategory	*Reservoirs*
Estimated Total Project Cost	***$8,040,000***	Project Type	New Construction

Project Description

Installation of a new 4MG storage reservoir near the existing Ox Bow reservoir to supplement storage capacity throughout the system.

Why this project needs to be completed:

Experienced and continued growth in the northern portion of the District will require additional storage capacity to maintain domestic demand, fire flow, and adequate system pressures.

How this project will benefit the District:

Additional and redundant storage will accommodate demand growth, provide adequate fire flow/emergency storage, and increase reliability of the system overall.

Consequences of delaying or eliminating this project:

Will prohibit growth within the District due to insufficient supply and ability to meet domestic demands, fire flow, and emergency storage capacity.

Impact on annual operating budget:

Minimal impact; periodic tank inspections and general maintenance will be required.

Additional Comments:

N/A

Potential Funding Sources:	Priority Level:
Drinking Water State Revolving Fund (DWSRF)	5

Estimated Project Costs

FY	Engineering, Planning, Design	Construction	Other	Total
2023				
2024				
2025				
2026				
2027				
2028				
2029				
2030				
2031	$340,000			*$340,000*
2032	$700,000	$7,000,000		*$7,700,000*
Total	*$1,040,000*	*$7,000,000*		**$8,040,000**

County Water District of Billing Heights

Board Study Session: Water Financial Plan, Cost-of-Service, Rate, and Tap Fee Study Preliminary Results

December 8, 2022
Presented by Andrew Rheem

RAFTELIS

Agenda

- Rate Study and Financial Plan Overview
- Capital Recovery Fees
- Cost of Service and Rate Structure Alternatives and Bill Impacts
- Board Direction and Next Steps

Billing Heights Rates and Fees Must:

- Fund Operations
- Fund Capital Projects
- Maintain Reserves
- Fund Growth
- Ensure Customer Rate Equity

How we'll get there

Fund Operations

Fund Capital Projects

Maintain Reserves and DSC

Fund Growth

Ensure Customer Rate Equity

Tap Fees

Rate Design

Cost of Service

Financial Plan

Rate Study Process

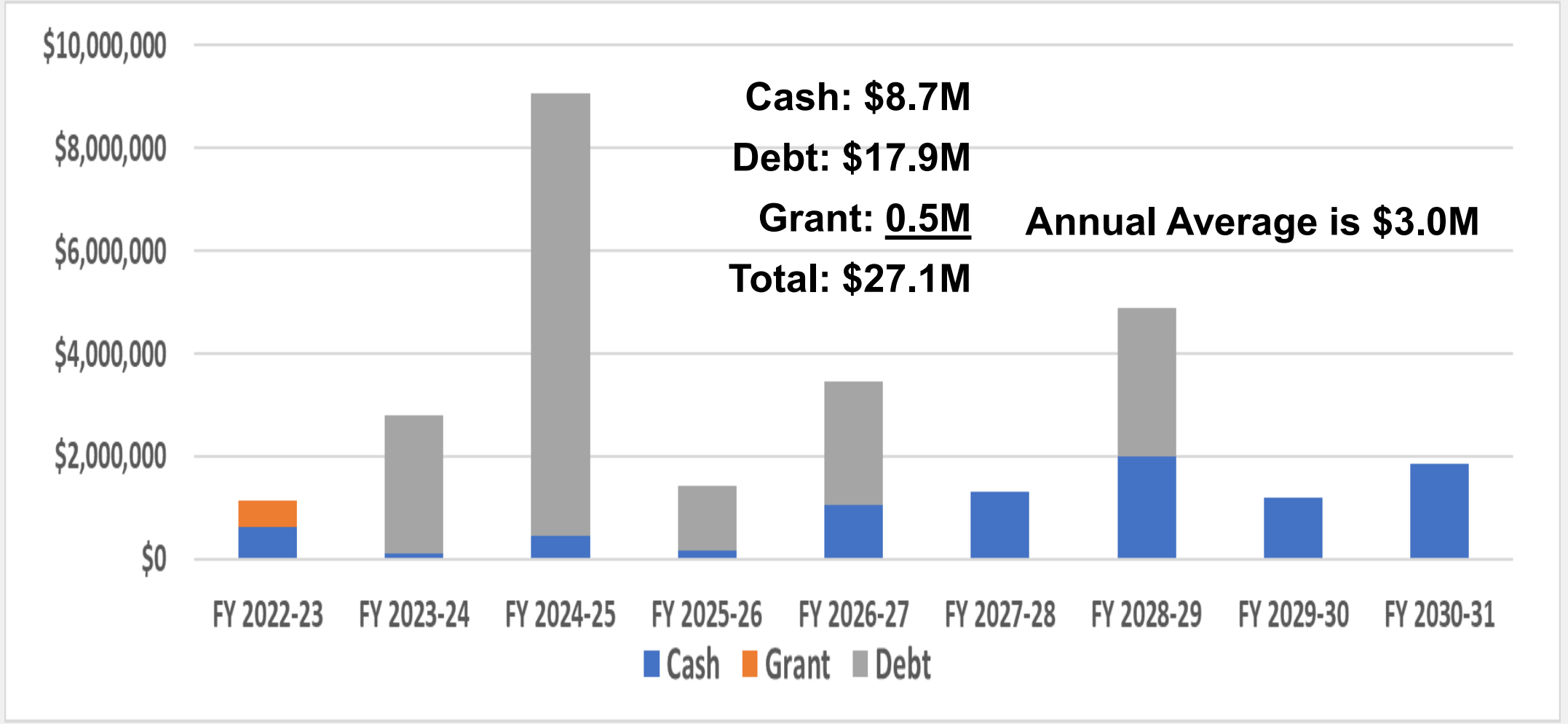
1. **Financial Plan**  → How much money do we need?
2. **Cost of Service**  → Is everyone paying their fair share?
3. **Rate Design**  → How can our rates help ensure fairness?
4. **Tap Fees**  → How to recover growth-related costs?

Financial Plan

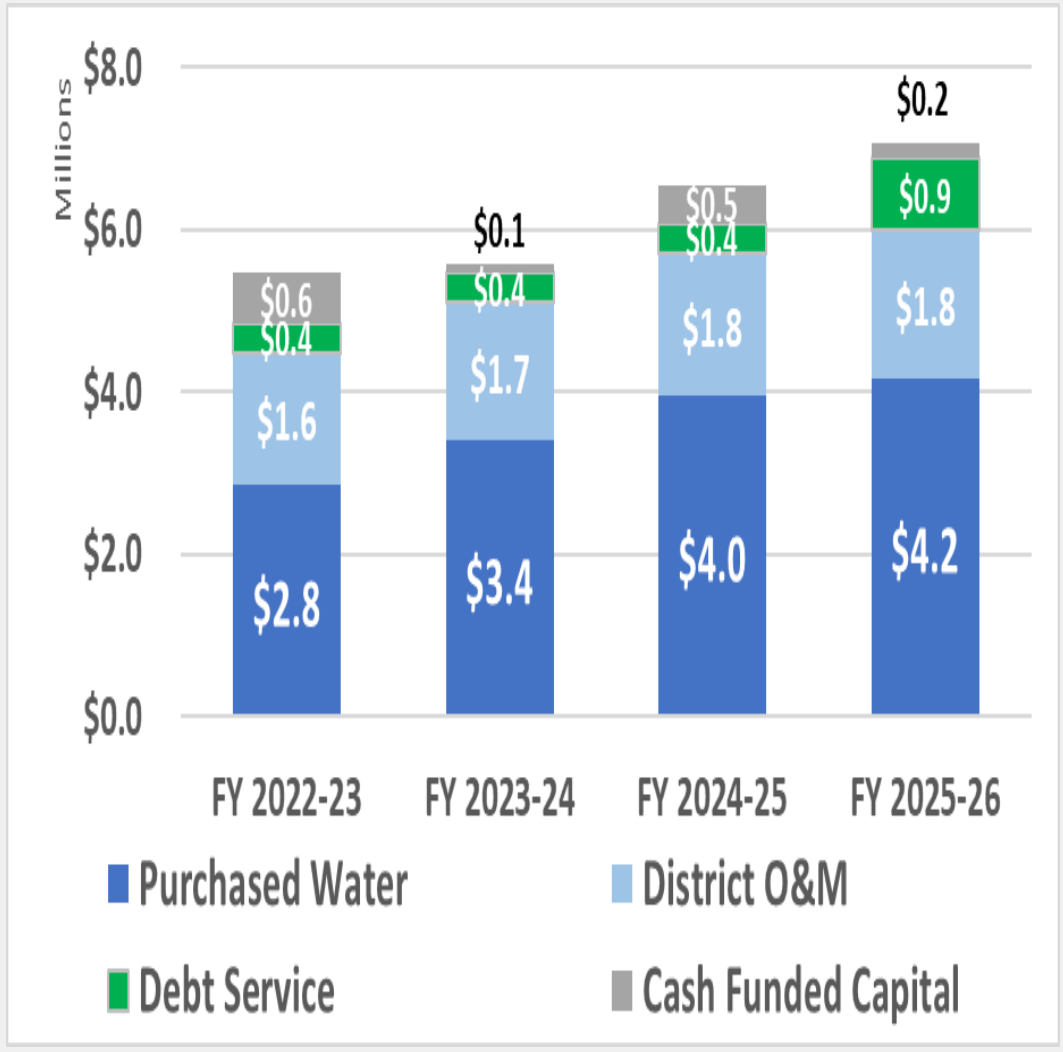
Goal: Prudent Utility Financial Planning

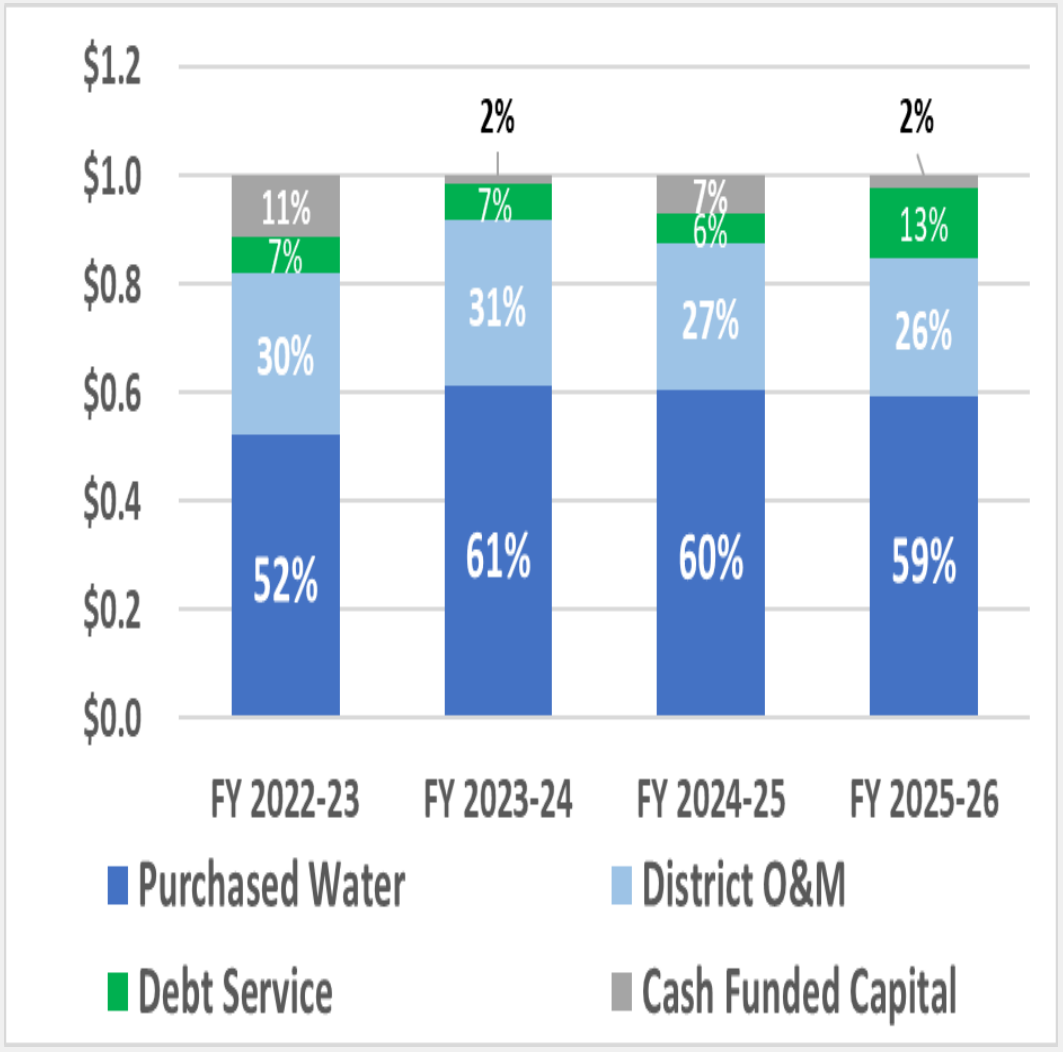
- Revenue sufficient to maintain the financial stability of the utility and:
  - Fund annual expenses
  - Exceed annual Debt Service Coverage (DSC) ratio targets with adequate revenues
  - Exceed annual operating and capital reserve targets with adequate reserves
    - 90 days (25%) of O&M (proposed)
    - $0.5M capital reserve (existing)

Capital Projects / Base Case Capital Funding



Expense by Types

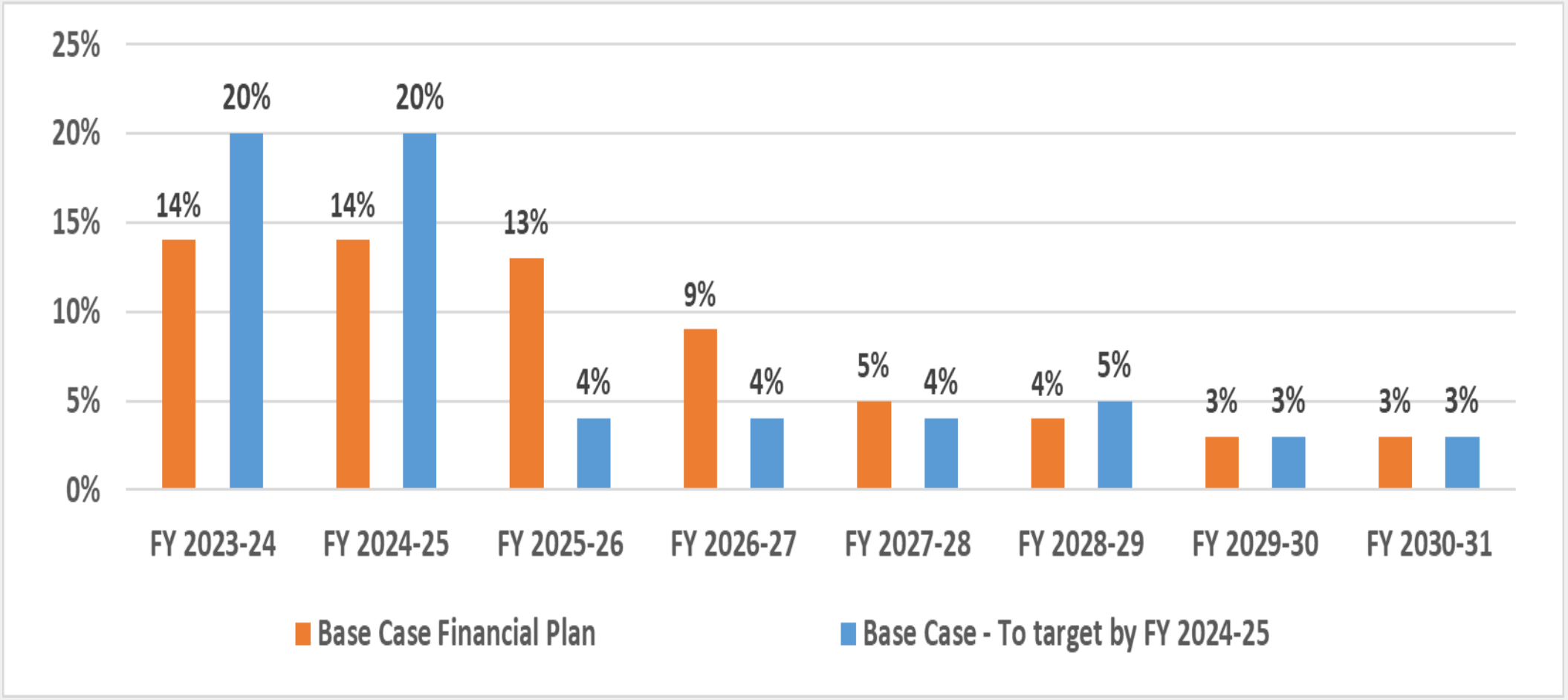




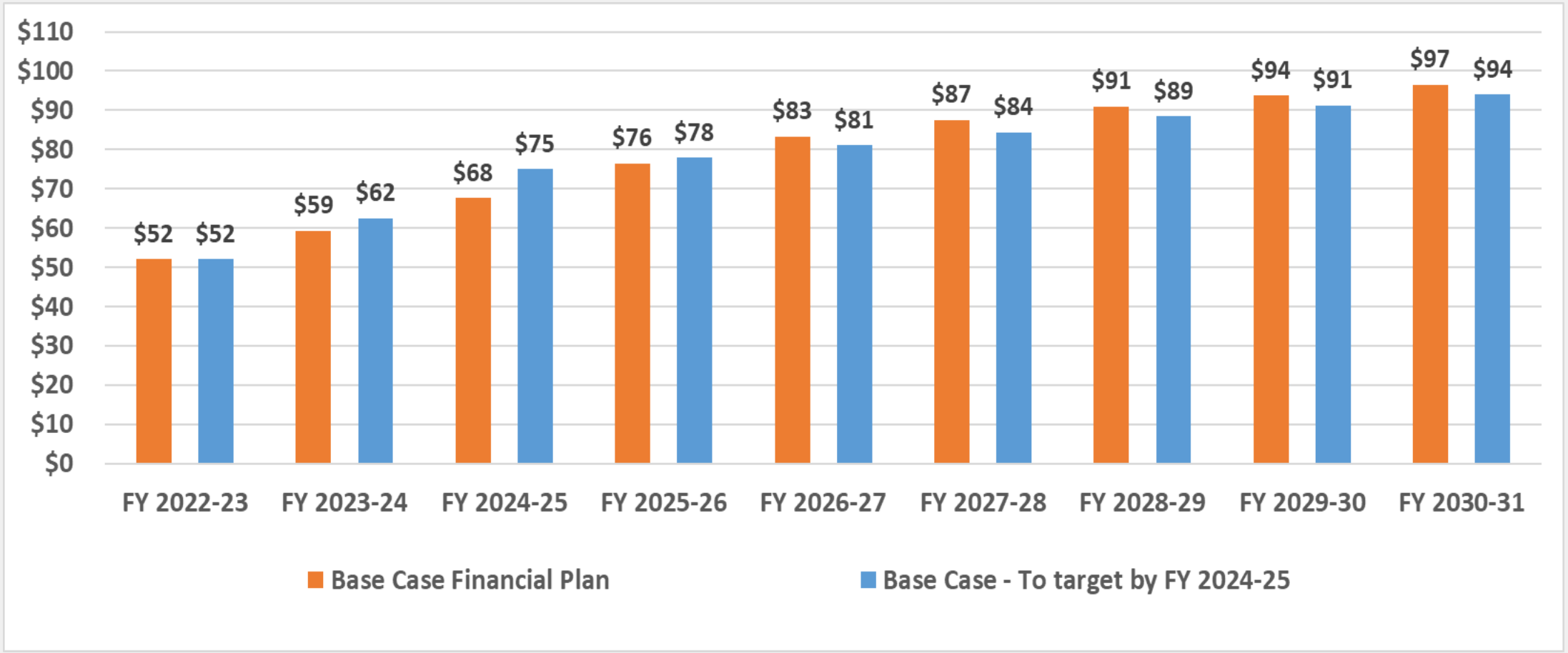
Financial Plan and Rate Revenue Increase Scenarios

- Base Case scenario:
  - Fund expenses and exceed cash reserve targets by FY 2026-27
  - Fund expenses and exceed cash reserve targets by FY 2024-25
- City Purchased Water Rate Increase Scenarios
  - Base case: 15% rate increases in FY 2023-24 and FY 2024-25, 4% per year afterward
  - Higher increase: 30% rate increase in FY 2023-24, 4% per year thereafter
  - Lower increase: 4% rate increase in FY 2023-24, 4% per year thereafter

Rate Revenue Increase – Base Case Plans

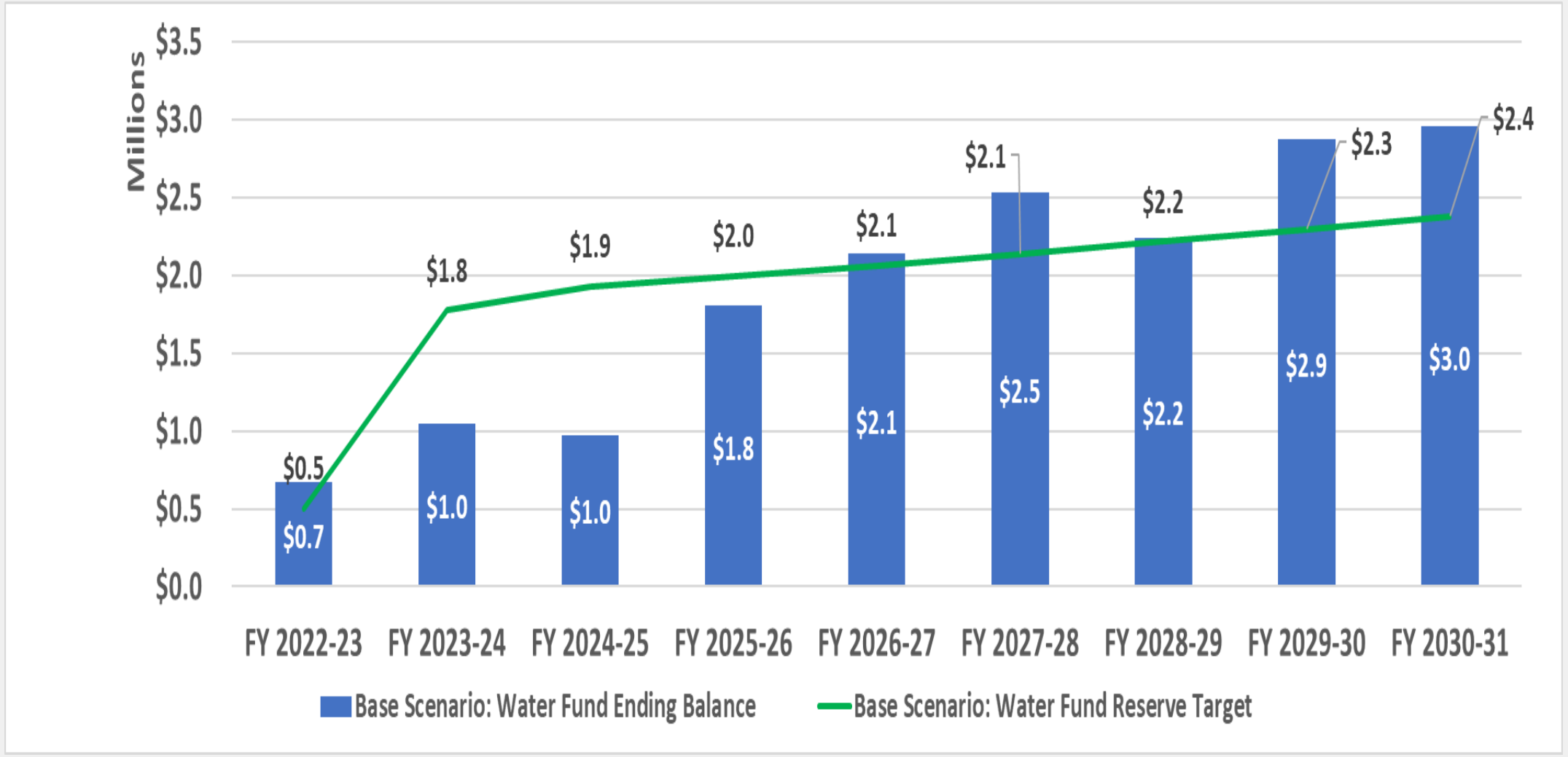


Typical Residential Bill – Base Case Plans (1)

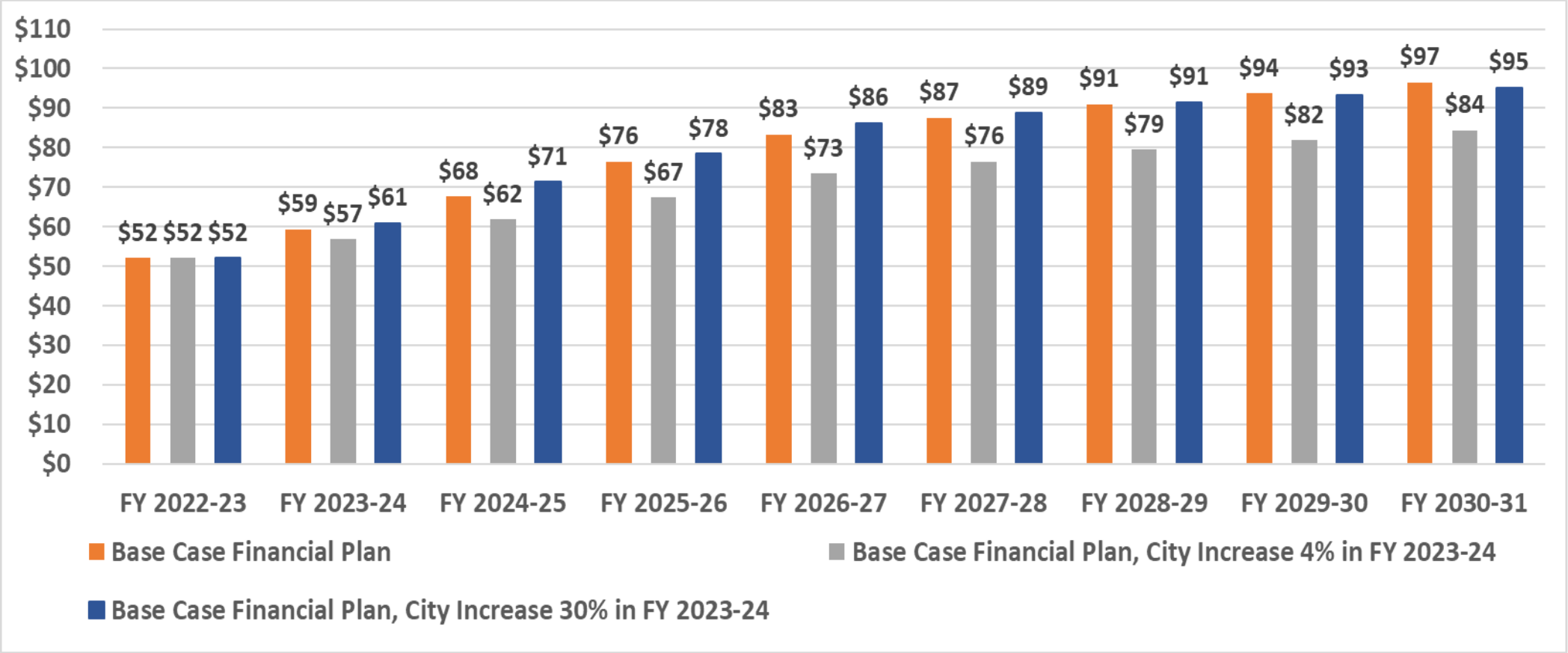


(1) Shows typical residential monthly bill for 3/4-inch meter using 10,000 gallons. **Increases are applied to base rate and volume rates under the Current Rate Structure.**

End-of-Year Cash vs. Target



Rate Revenue Increase – Purchased Water Increase Scenarios (1)



(1) Shows typical residential monthly bill for 3/4-inch meter using 10,000 gallons. **Increases are applied to base rate and volume rates under the Current Rate Structure.**

Capital Recovery Fee (Tap Fee)

What Are Capital Recovery or Tap Fees?

- One-time charge assessed to new and/or increased development (e.g., increased meter size for existing customer)
- Lots of different names for similar capital recovery fees (connection fee, system development fee or charge, plant investment fee, tap fee, etc).
- Required of all new customers for their share of capacity
- Based on the value ($) of the utility's capacity and the amount of capacity needed by the new customer and/or increased customer demands
- Can be used to pay debt service that was used to expand or improve facilities
- Fee represents cost to reserve capacity in system backbone and supporting facilities
- Balances equity between existing and new customers
- Reasonably tied to impact of new development

District Tap Fee and Annexation Buy-In Fee

Meter Size	One Time Fee Per Service Connection
¾-inch	$1,830
1-inch	3,660
1 ½-inch	7,320
2-inch	11,714
4-inch	46,120
6-inch	146,411
8-inch	256,220

+

Description	Annexation Buy-In Fee (1)
Residential & All Other	$10,147.97 Per Acre OR $0.233 per sq. ft.

(1) Only applies to developments not currently within the District service boundaries as part of annexation.

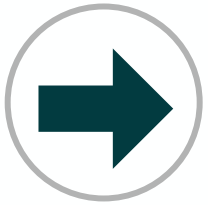
Capital Recovery Fee Recommendations

1. Consolidate to single capital recovery fee
   A. Plant Investment Fee increasing by water meter size
   B. Connection Fee recovering meter costs and District installation costs
2. Index PIF to inflation between comprehensive studies
3. Update as dictated by capital plan and/or system capacity
4. Update connection fee for meter costs and inflation annually
5. Implement Annexation Fee for administrative and procedural cost recovery

Capital Recovery Fee Methodologies

Buy In

- Capacity available
- New customer buys into existing system
- Facilities valued at today's replacement cost



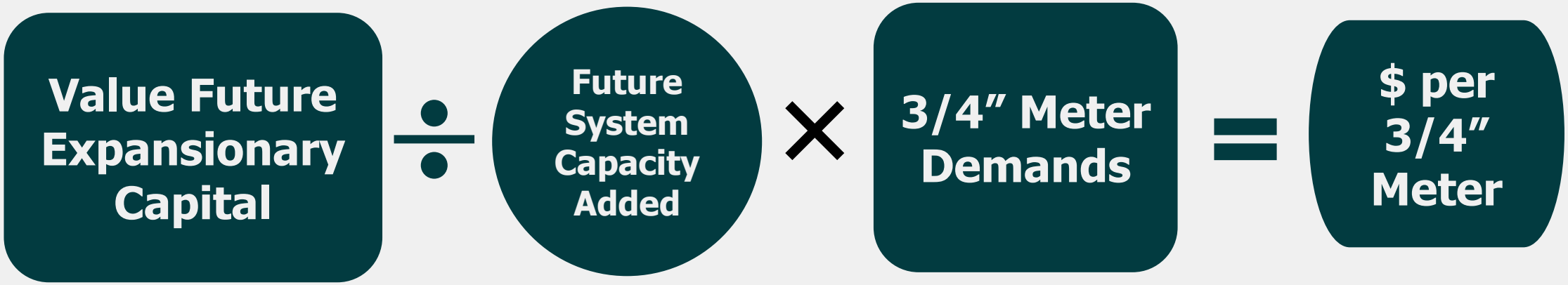
Incremental

- Capacity needed for growth
- Existing system has little or no capacity for growth

Hybrid

- Capacity available and future capacity needed
- Considers existing and new facilities to serve new development

Basic Capital Recovery Fee Calculation



Proposed District Plant Investment Fee and Service Connection Fee

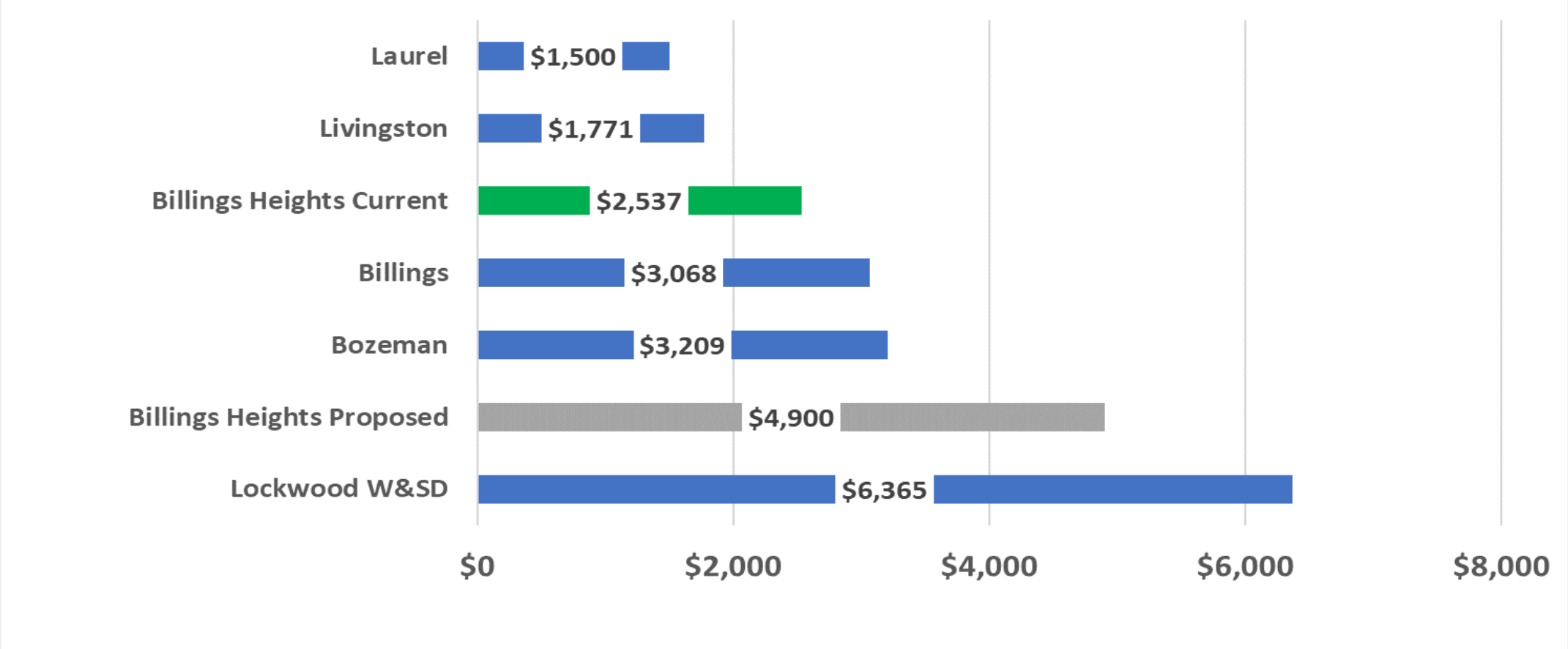
Meter Size	One Time Fee (1)
¾-inch	$4,900
1-inch	8,167
1 ½-inch	16,333
2-inch	26,133
4-inch	52,267
6-inch	163,333
8-inch	261,333

+

Description	Service Connection and Meter Fee
Varying by Meter Size	Meter costs plus District Installation Costs

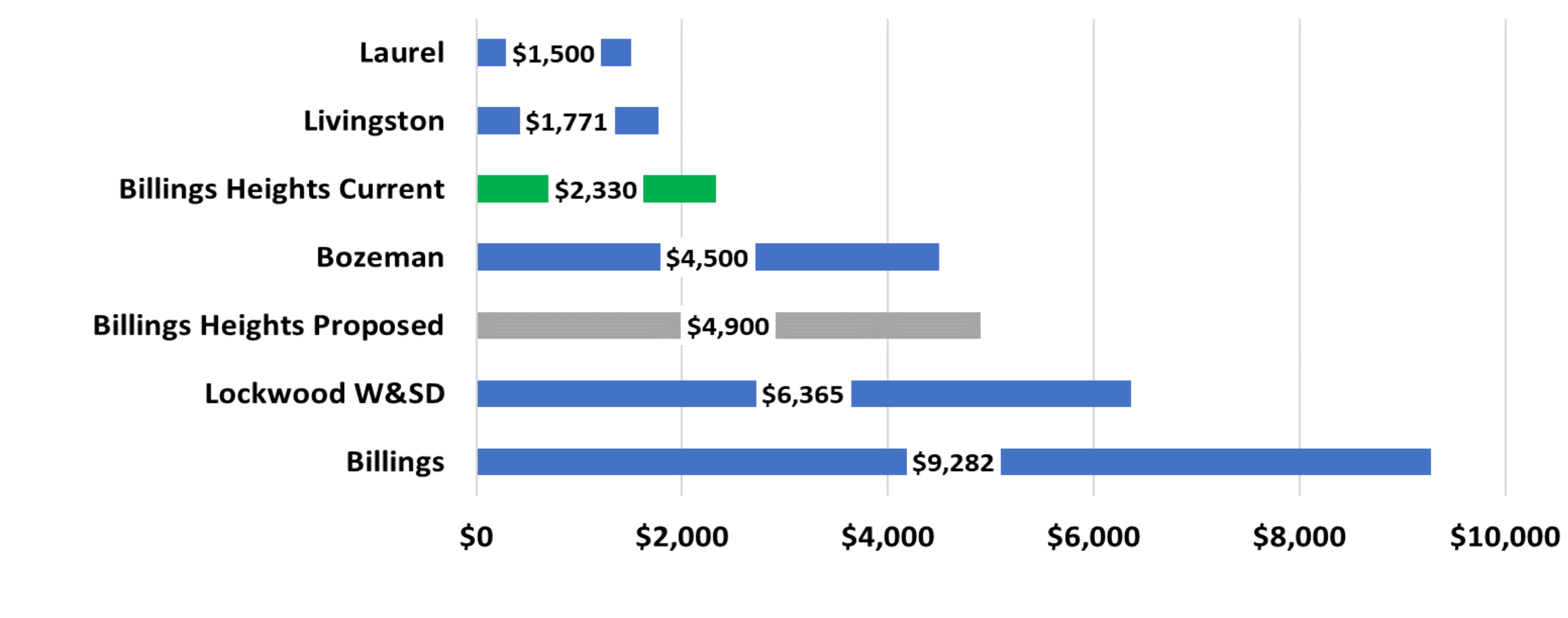
(1) Applies to developments not currently within the District service boundaries that has not paid an annexation fee.

Residential Capital Recovery Fee Survey Comparison (1)



(1) ¾-inch water meter, 2,000 square feet residential development, 0.25 acre lot.

Residential Capital Recovery Fee Survey Comparison (1)

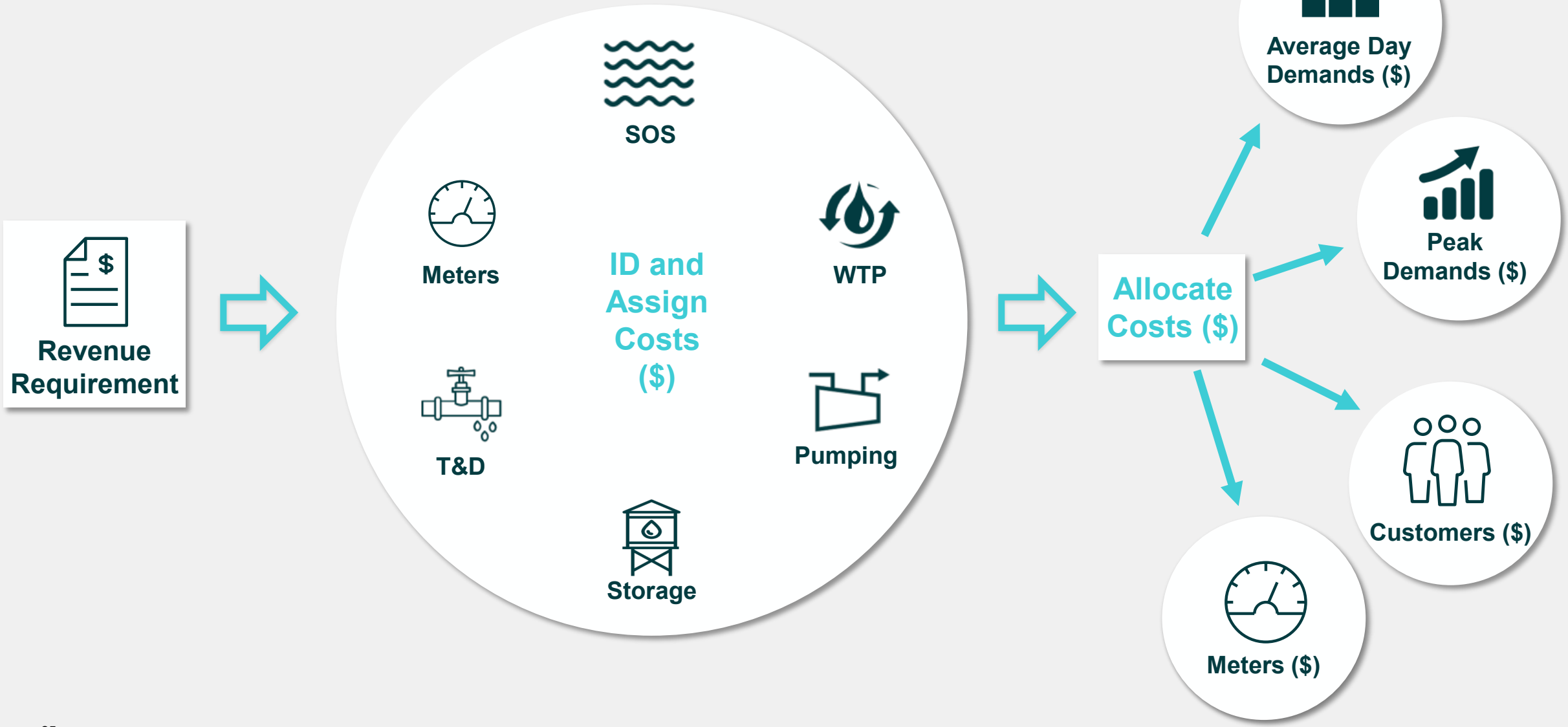


(1) ¾-inch water meter, 10,000 sq. ft. lot.

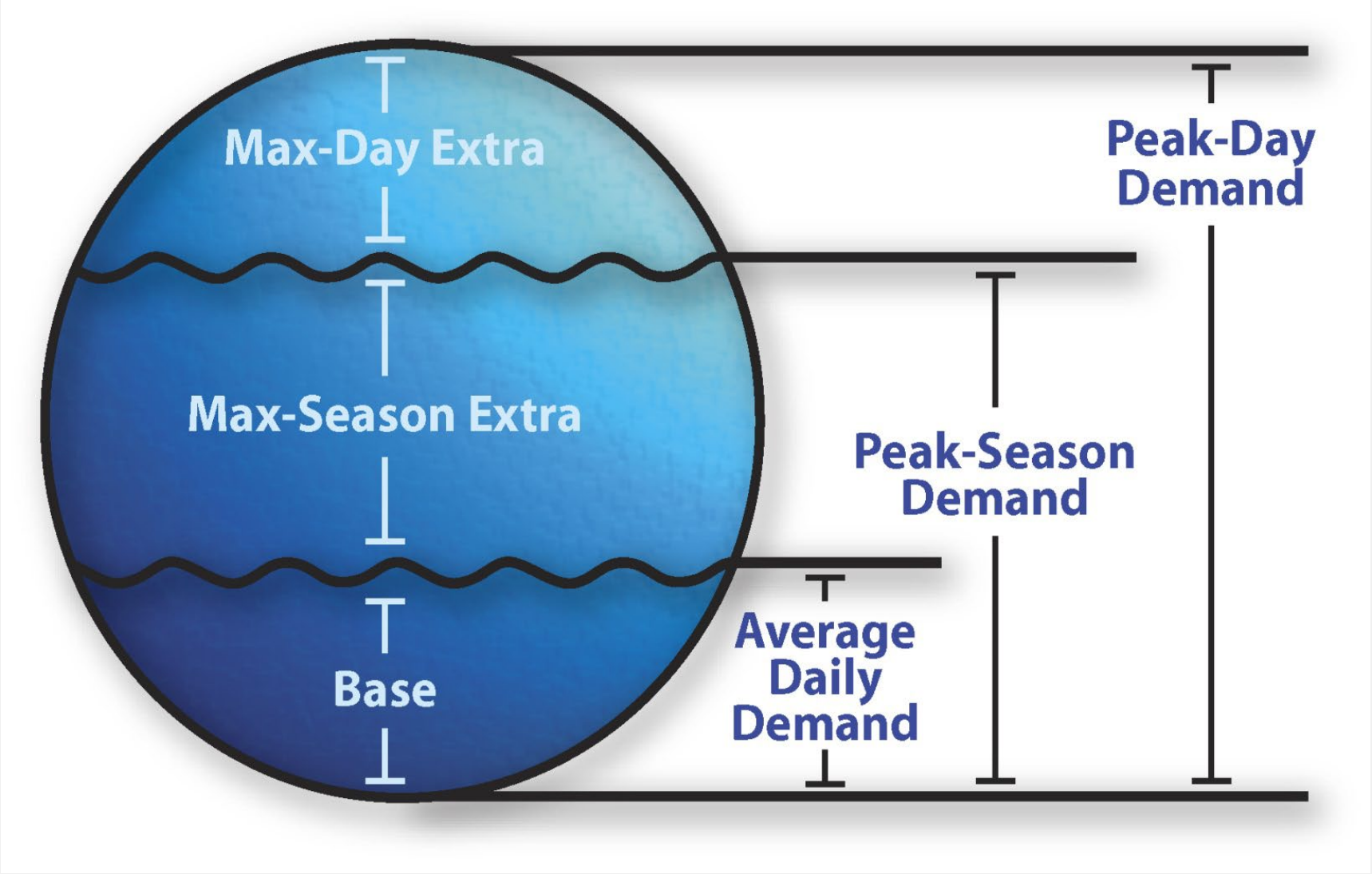
Cost-of-Service

Step 2: Cost-of-Service Analysis

Is everyone paying their fair share?



How do we Determine Peak Demand?



Cost of Service Results

Customer Class	FY 2023-24 Cost of Service	FY 2023-24 Revenue at Existing Rates	Change to Recover Cost of Service - $	Change to Recover Cost of Service - %
Residential	$4.13 M	$3.07 M	$1.06 M	35%
Commercial	1.27 M	1.70 M	(0.43 M)	(26%)
Irrigation-Only	0.30 M	0.22 M	0.73 M	33%
Total	5.70 M	5.00 M	0.70 M	14%

Rate Design & Bill Impacts

Current Base and Volume Rates and Rate Structure

Base Rate

Meter Size	Monthly Charge $ per bill*
¾-inch	22.04
1-inch	23.60
1 ½-inch	25.69
2-inch	31.47
3-inch	74.03
4-inch	89.65
6-inch	144.72
8-inch	168.23
*With $1.30 service line repair fee	

+

Fixed Block Volumetric Rates

Threshold (gallons)	Volume Rate $ per kgal
0 – 3,300	$0.00
3,301 – 20,000	$4.48
20,001 – 50,000	$5.38
> 50,000	$6.48

=

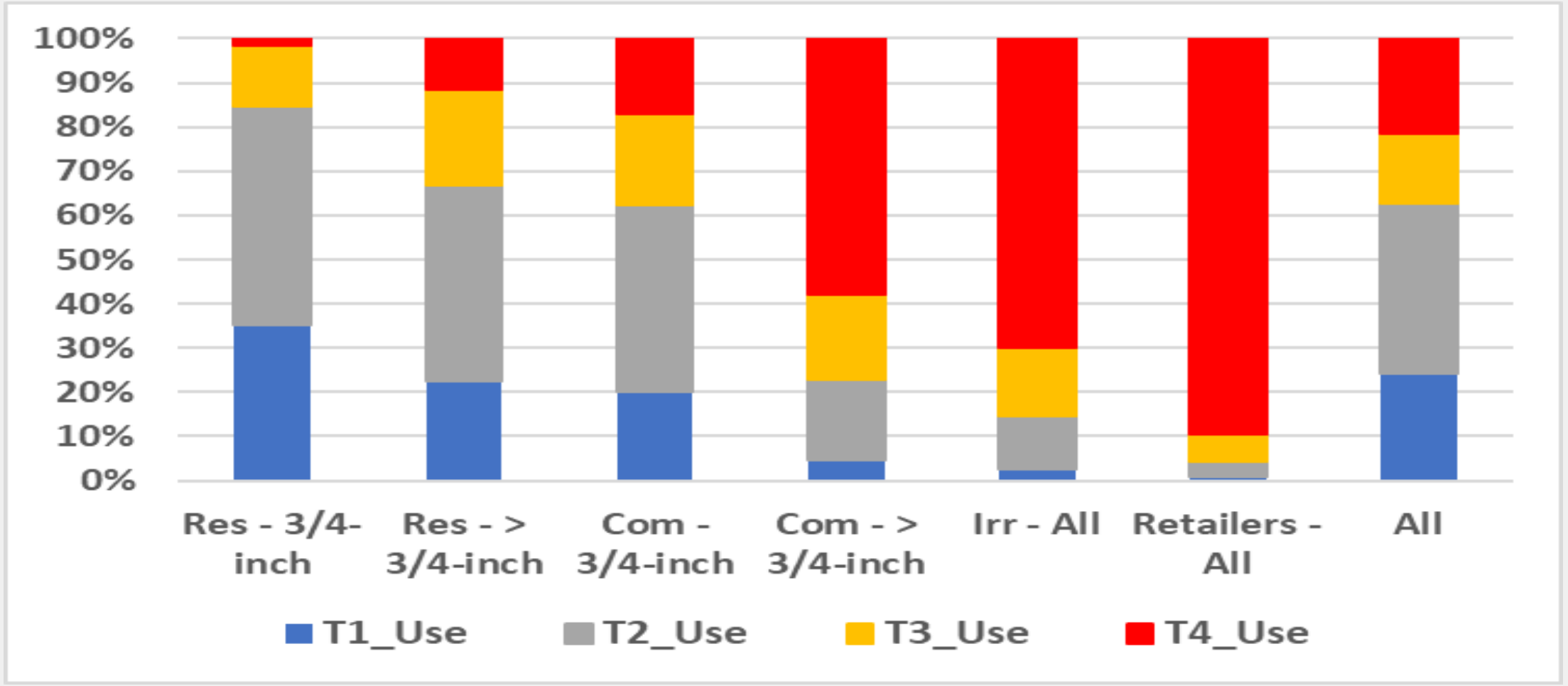
Monthly Water Bill

Bills and Usage by Class and Meter Size

Class	Meter Size	Bills	% of Bills	Usage (Gal.)	% of Use
Residential	¾-inch and less	62,805	**85%**	440 Million	55%
Residential	1-inch and larger	4,560	6%	58 Million	7%
Commercial	¾-inch and less	1,885	3%	25 Million	3%
Commercial	1-inch and larger	3,445	5%	218 Million	27%
Irr-Only	All Sizes	745	1%	37 Million	5%
Retailers	All Sizes	60	0%	23 Million	3%
Total	All Sizes	73,500	100%	801 Million	100%

(1) Projected FY 2023-24 bills and usage. Based on 2020 and 2021 usage adjusted for growth

Tiered Usage by Class and Meter Size



Rate and Cost of Service Recommendations

1. Eliminate the minimum water allowance in base rate
2. Consolidate service line fee and base rate to one base rate by meter size
3. Mitigate City purchased water rate risk through volume rate
4. Separate Residential, Non-Residential, and Irrigation-Only Classes
5. Assess uniform rates for non-residential customers
6. Increase tiered water allowances by meter size for residential
7. Recover customer class cost of service
8. Update ancillary rates, fees, and charges to full cost recovery

Current, A1, A2 Matrix

Criteria	Current	Alt. 1	Alt. 2
Min. 3,300 gallons in Base	Yes	No	
Base Rate Increasing by Meter Size	No	Yes	
Flat Service Line Fee	Yes	No	
Residential Volume	Tiered	Tiered	
Non-Residential Volume	Tiered	Uniform	
Tiered Volumes Increase by Meter Size	No	Yes	
Class Cost of Service	No	Yes	
Lowest Volume Rate	$0.00	$3.10	$3.32

Current, A1, A2 Fixed Charge

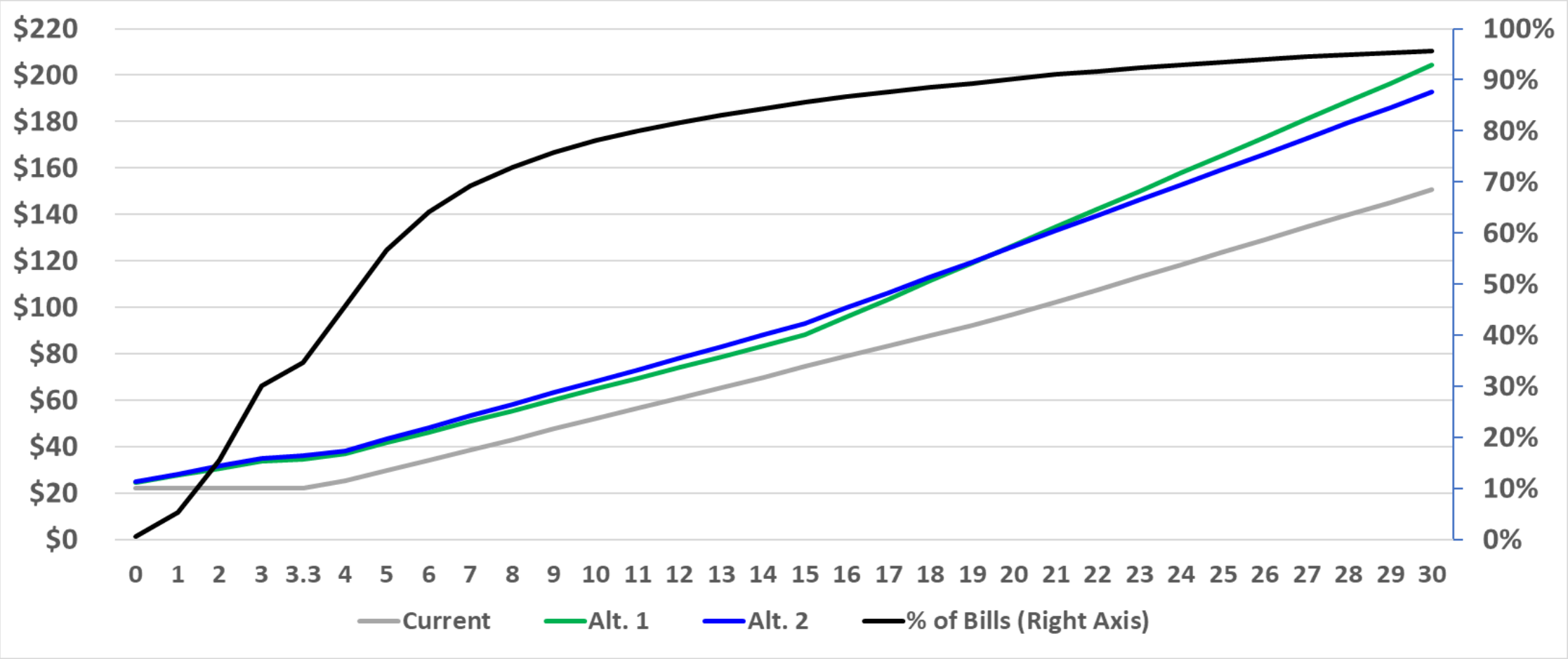
Meter Size	Current Monthly Charge (1)	Alt 1. Monthly Charge	Alt. 1 - $ Change	Alt 2. Monthly Charge	Alt. 2 - $ Change
¾-inch	$22.04	$24.50	$2.46	$25.00	$2.96
1-inch	23.60	34.30	10.70	35.00	11.40
1 ½-inch	25.69	61.25	35.56	62.50	36.81
2-inch	31.47	95.55	64.08	97.50	66.03
3-inch	74.03	181.30	107.27	185.00	110.97
4-inch	89.65	276.85	187.20	282.50	192.85
6-inch	144.72	546.35	401.63	557.50	412.78
8-inch	168.23	869.75	701.52	887.50	719.27

Current, A1, A2 Volume Rates

Tier	Threshold (gallons)	Volume Rate ($/1,000 gal)
1	0 – 3,300	$0.00
2	3,301 – 20,000	$4.48
3	20,001 – 50,000	$5.38
4	> 50,000	$6.48

Tier	Threshold (gallons)	Alt 1 Vol. Rate ($/1,000 gal)	Alt 2 Vol. Rate ($/1,000 gal)
1	0 – 4,000	$3.10	$3.32
2	4,001 – 15,000	4.65	4.98
3	15,001 – 40,000	7.75	6.64
4	> 40,000	10.85	9.96
N/A	Non-Res All Use	3.41	3.32
N/A	Irr-Only All Use	6.94	6.94

Current, A1, A2 Compared
Residential ¾-inch Customer Bill Impacts



Recommendation Review

Preliminary Recommendations

Financial Plan

1. Establish DSC Cash Reserve Targets for Rate Setting
2. Increase debt to mitigate near-term rate increases funding capital
3. Levelized rate revenue increases

Capital Recovery Fee

1. Consolidate to single capital recovery fee
   A. Plant Investment Fee increasing by water meter size
   B. Connection Fee recovering meter costs and District installation costs
2. Index PIF to inflation between comprehensive studies
3. Update as dictated by capital plan and/or system capacity
4. Update connection fee for meter costs and inflation annually
5. Implement Annexation Fee for administrative and procedural cost recovery

Rate and Cost of Service Recommendations

1. Eliminate the minimum water allowance in base rate
2. Consolidate service line fee and base rate to one base rate by meter size
3. Mitigate City purchased water rate risk through volume rate
4. Separate Residential, Non-Residential, and Irrigation-Only Classes
5. Assess uniform rates for non-residential customers
6. Increase tiered water allowances by meter size for residential
7. Recover customer class cost of service
8. Update ancillary rates, fees, and charges to full cost recovery

Next Steps

1. Incorporate Board and District staff feedback
2. Update preliminary study results and recommendations
3. Complete draft report
4. Update City purchased water costs following update of City plans for FY 2023-24 and FY 2024-25. March or April 2023?
    A. Evaluate the proposed rates and pursue dispute resolution processes with the City
5. Finalize study findings, recommendations and proposed rates effective August 1, 2023 and 2024
6. Begin August 1, 2023 public hearing and rate setting process for adjusting District rates and capital recovery fees