TUALATIN VALLEY
WATER DISTRICT

2021-23 Biennial Budget Committee Workshop

Workshop #1: March 23, 2021

→ Workshop #2: April 8, 2021

Workshop #3: April 22, 2021

Budget Committee Meeting and Public Hearing: May 25, 2021

Budget Committee Workshop #2 Agenda

Opening

- Questions from last workshop
- Review of workshop goals
- Comments from the CEO
- Update on financial performance and strategy

Overview of Department Requests

- Customer Service
- Engineering/Operations
- Water Supply Program

Closing

- Questions
- Next steps and adjournment

Questions from Workshop #1

Budget Committee Workshop #2 Agenda

Overall Goals

- Discuss assumptions for budget request
- Answer or gather questions from the Budget Committee
- Do not deliberate or make decisions

TVWD is in Transition

Suburban Water Provider Phase

- Serve customers water purchased under wholesale contracts
- Manage a complex transmission and distribution system
- Prepare for the WWSP Construction Phase

WWSP Construction Phase

- Serve customers water purchased under wholesale contracts
- Manage a complex transmission and distribution system
- Manage the construction of a $1.3 billion program
- Prepare for the Regional Operations Phase

Regional Operations Phase

- Serve customers water produced by WWSS/WIF
- Manage a complex transmission and distribution system
- Manage the newly created WIF and WWSS

But Uncertainty Persists

Construction Risks Exists

Estimate Class	Expected Accuracy Range	Level of Project Definition	Typical Purpose
Class 5	Low: -20% to -50% High: +30% to +100%	0% to 2%	Concept Screening
Class 4	Low: -15% to -30% High: +20% to +50%	1% to 15%	Study or Feasibility
Class 3	Low: -10% to -20% High: +10% to +30%	10% to 40%	Budget, Authorization, or Control
Class 2	Low: -5% to -15% High: +5% to +20%	30% to 70%	Control or Bid/ Tender
Class 1	Low: -3% to -10% High: +3% to +15%	50% to 100%	Check Estimate or Bid/Tender

Source: The Association for the Advancement of Cost Engineering (AACE) International Recommended Practice No. 18R-97.

Priorities for the Coming Biennium

Human Investment	Intergovernmental Relations	Business Intelligence	Efficiency Through Modernization	Current Initiatives
• Prepare employees to be successful in meeting the future requirements of the District.	• Improve relationships with local governments and neighboring utilities to solidify TVWD as a necessary and desired regional resource.	• Improve planning and the District's ability to respond by developing actionable information from disparate sources of data.	• Improve the service levels provided to our customers and find long-term strategies to lower the cost of doing so.	• Successfully execute and complete the initiatives currently underway.

TUALATIN VALLEY
WATER DISTRICT

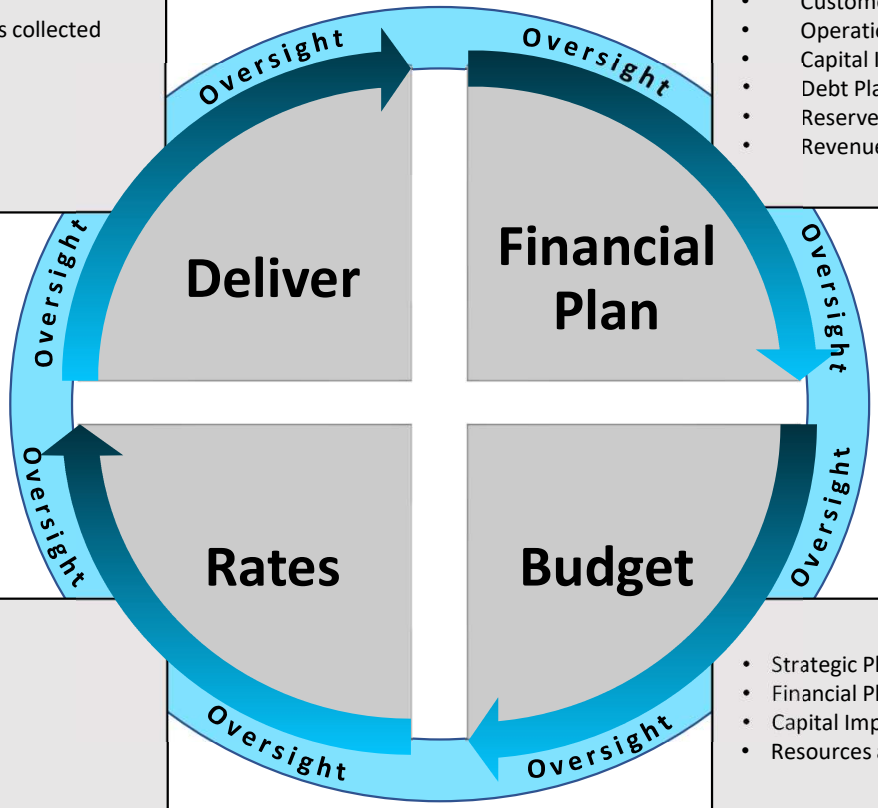
Update on Financial Performance and Strategy

2021-23 Biennial Budget
Committee Workshop

District Financial Management Process

FY 2020

- 7.8 Billion Gallons of Water
- Over 6,000 water quality samples collected
- 630,000 Meter Reads
- 540,000 Bills/Notices Generated
- 752 Miles of Pipe Maintained
- 3,747 Fire Hydrants Maintained



- Master Plan
- Customer Forecast
- Operations Plan
- Capital Improvement Plan
- Debt Plan
- Reserves and Fund Balances
- Revenue Requirements

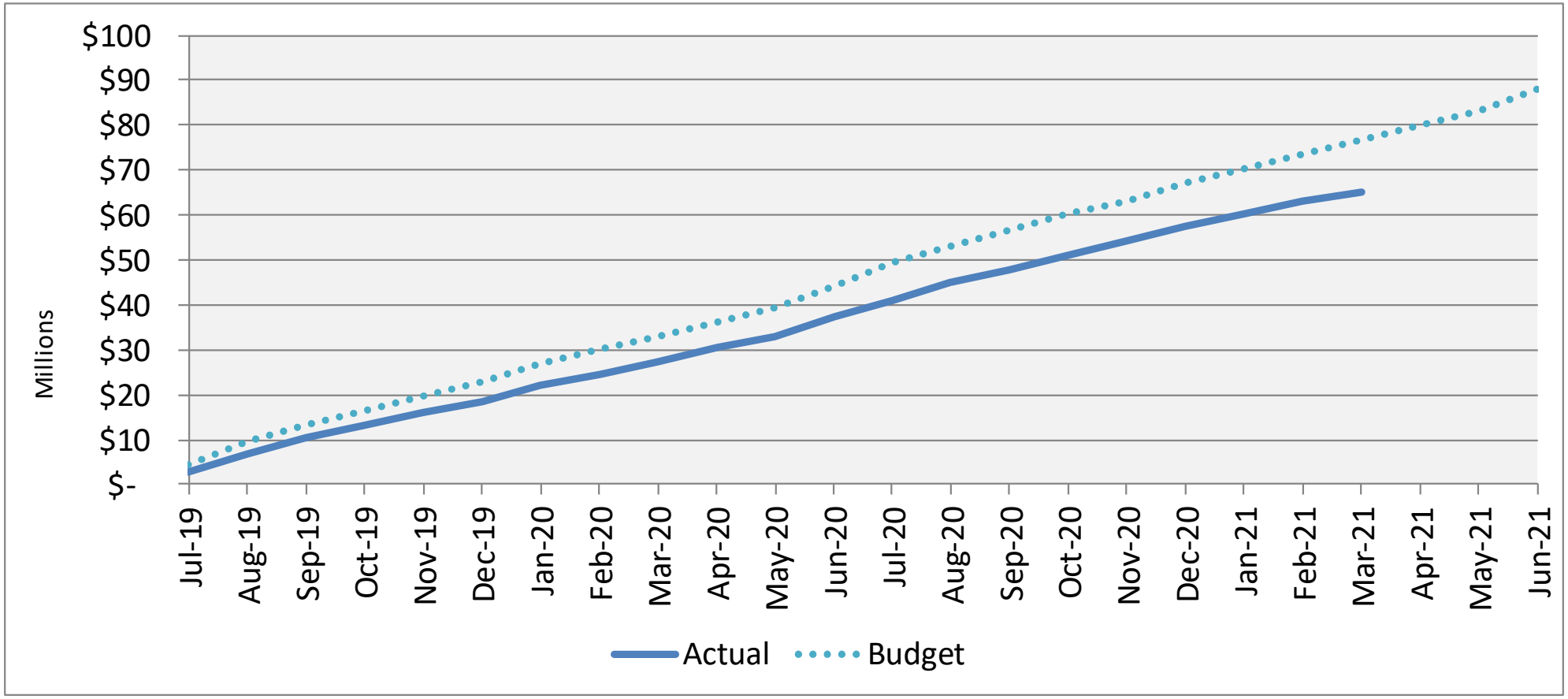
- Revenue Requirements
- Customer Forecast
- Customer Classification
- Block Structure
- Conservation
- Fixed and Volume Charges

- Strategic Plan
- Financial Plan
- Capital Improvement Plan
- Resources and Requirements

Elements of Financial Performance

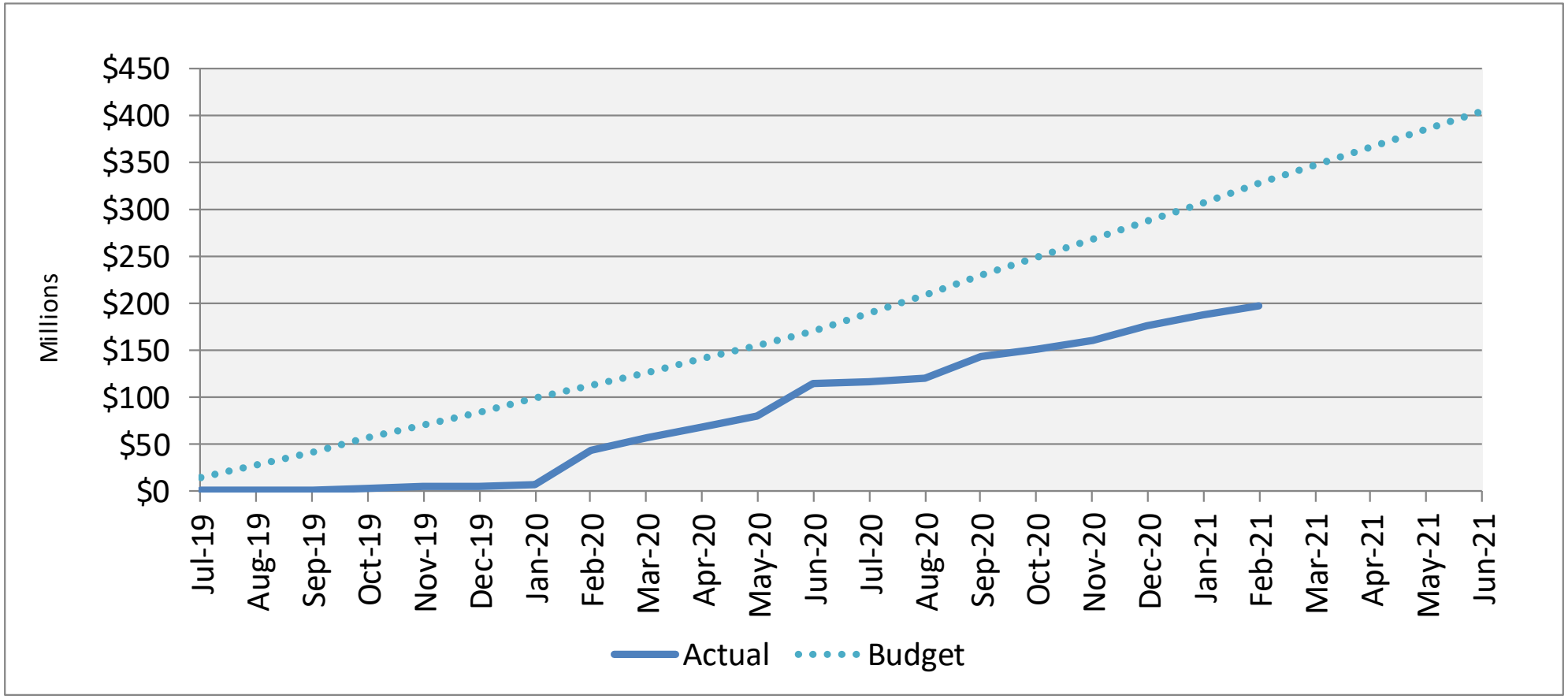
Expenditures	Revenue	Cash Flow
• Operating expenditures • Capital expenditures • Debt service	• Water rates and other operating revenue • SDCs	• Collections • Working capital • Capital reserves

Cumulative Operating Expenditures



Note: These graphs are based on unaudited estimates.

Cumulative Capital Expenditures



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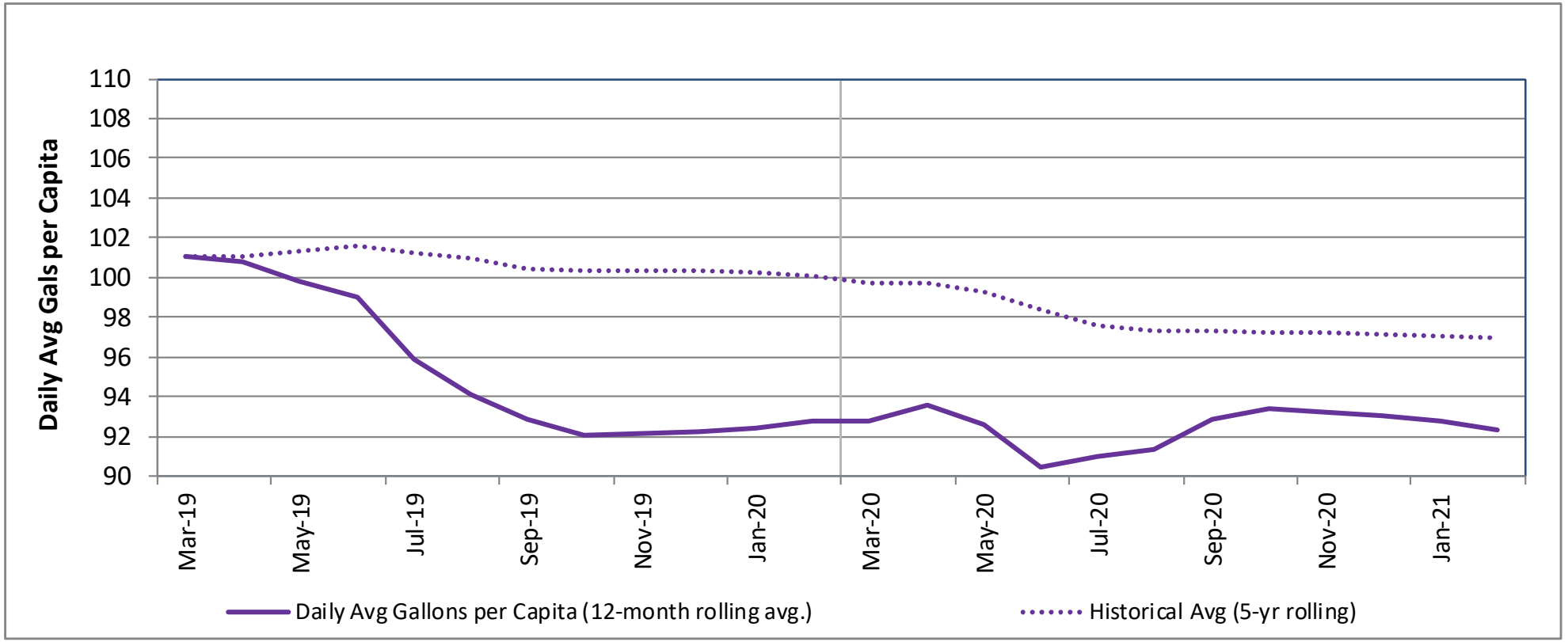
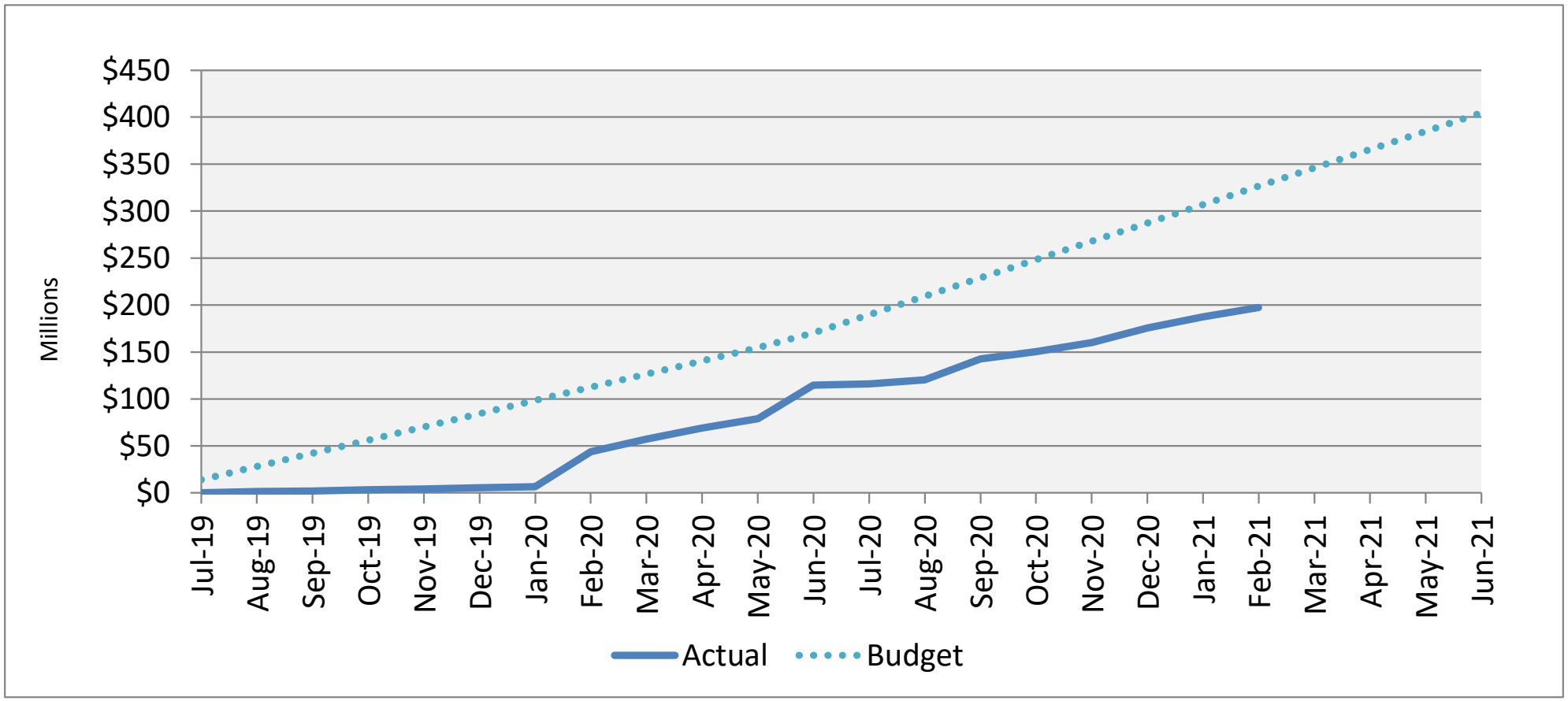
Customer Demands Remain Soft

Comparison of Gallons Per Capita Per Day

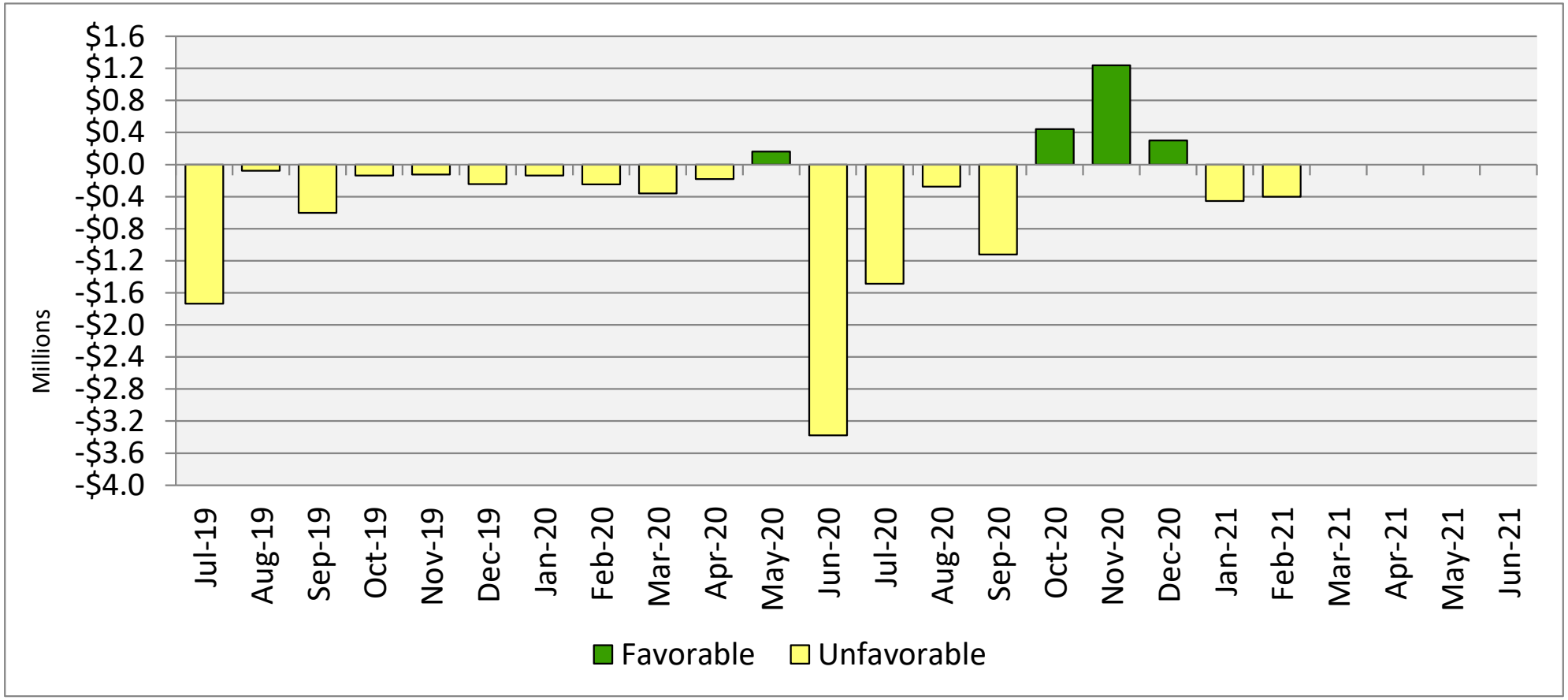


Cumulative Water Sales Revenue



Note: These graphs are based on unaudited estimates.

Water Sales Revenue



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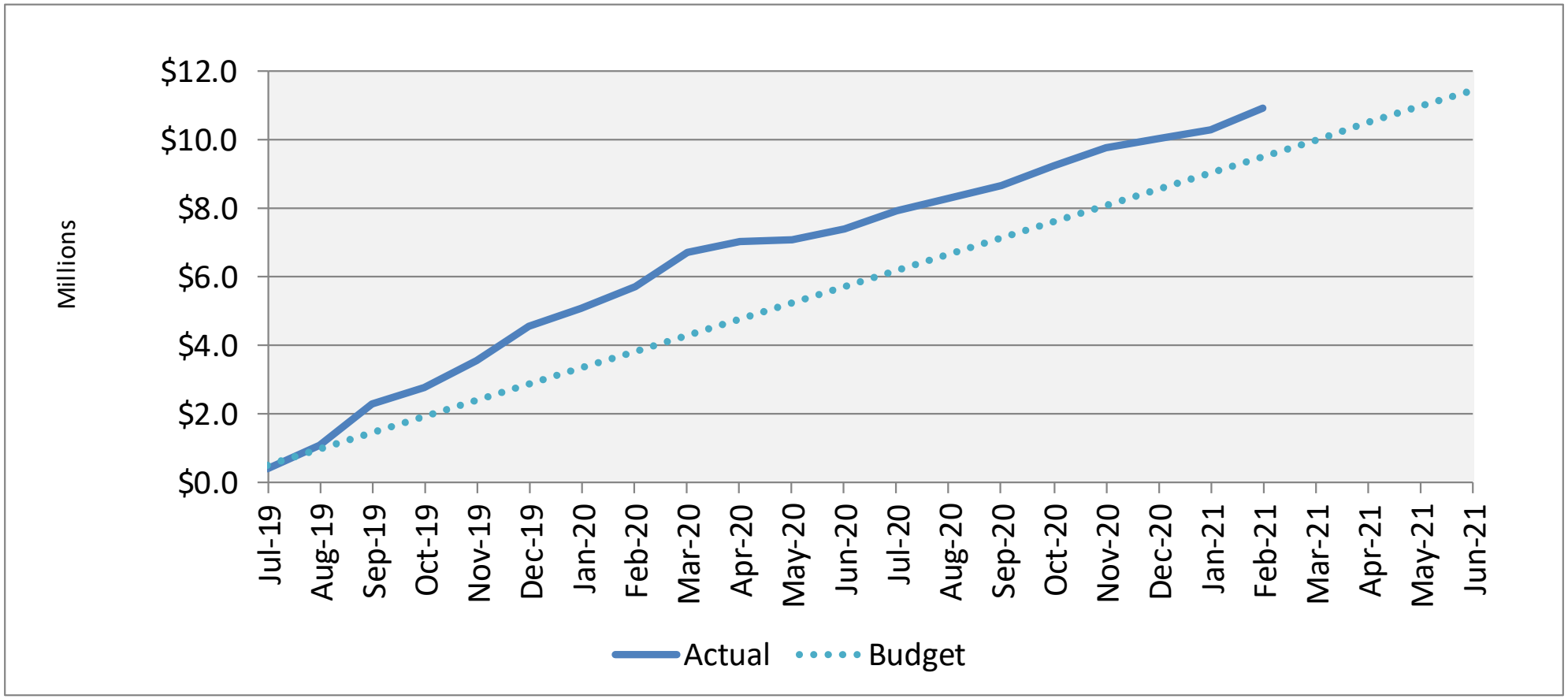
System Development Charge Revenue



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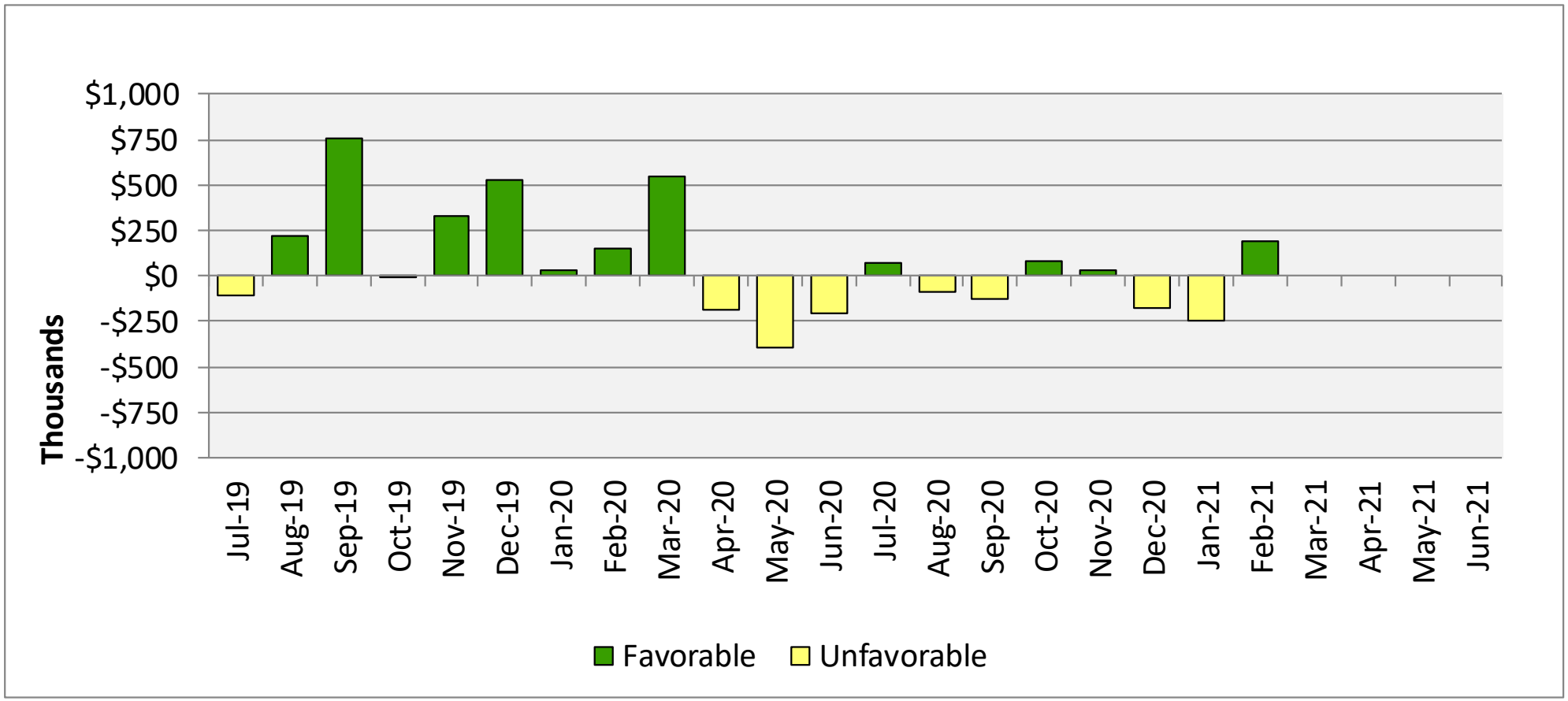
System Development Charge Revenue



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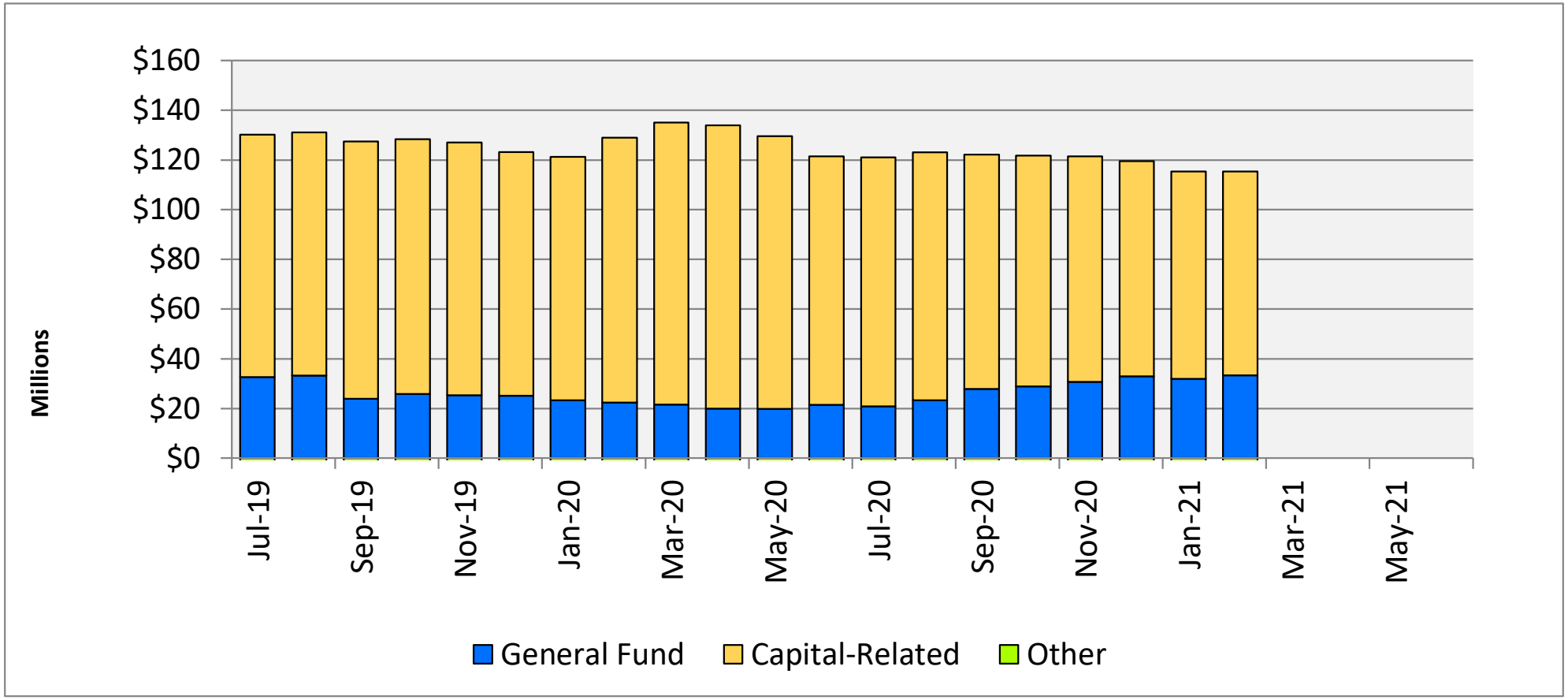
District's Cash Position



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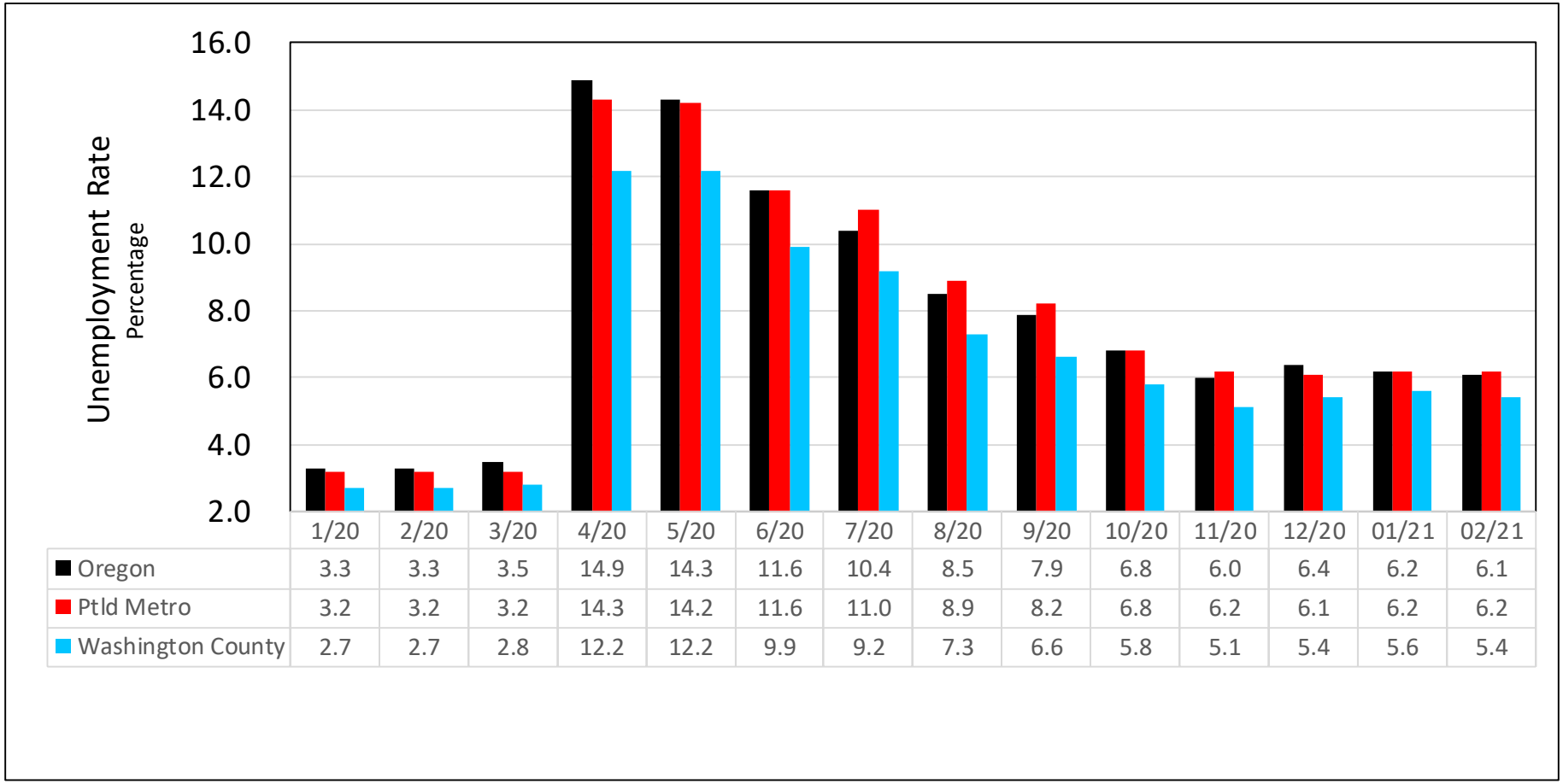
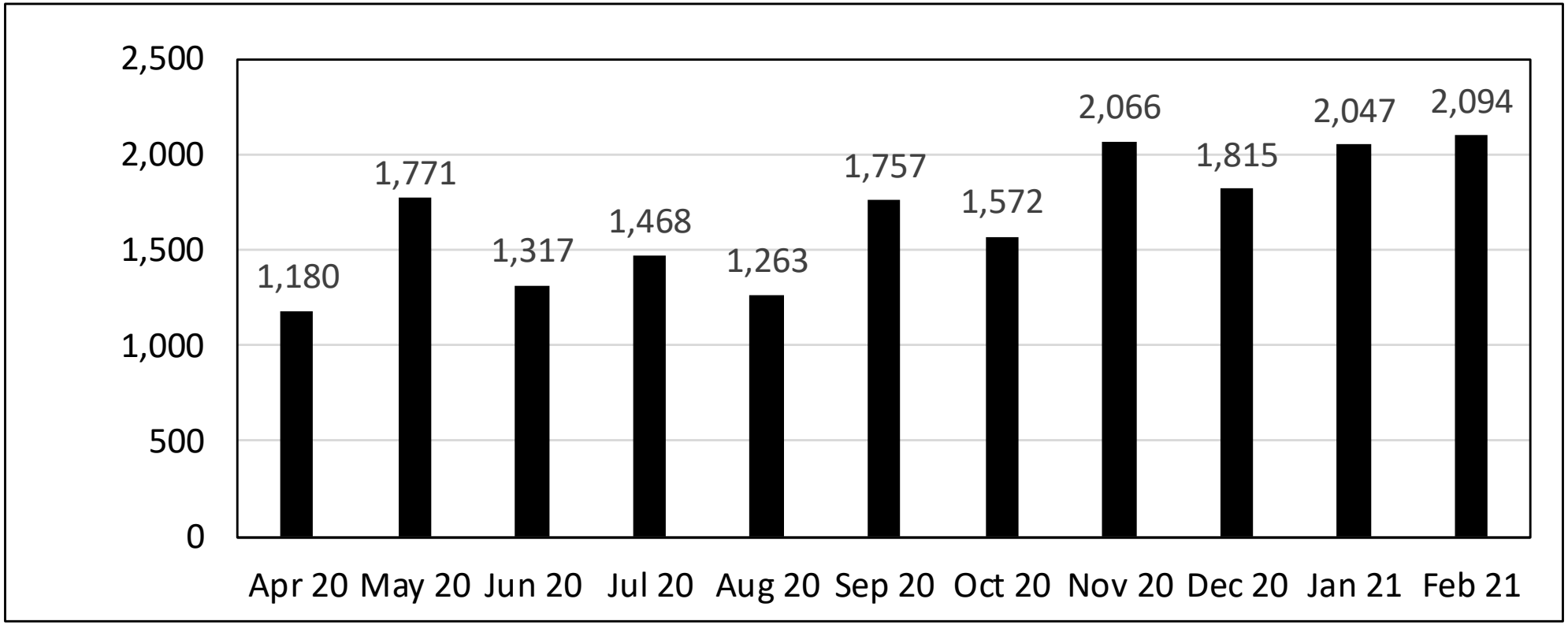
Improvements in Labor Market Slows

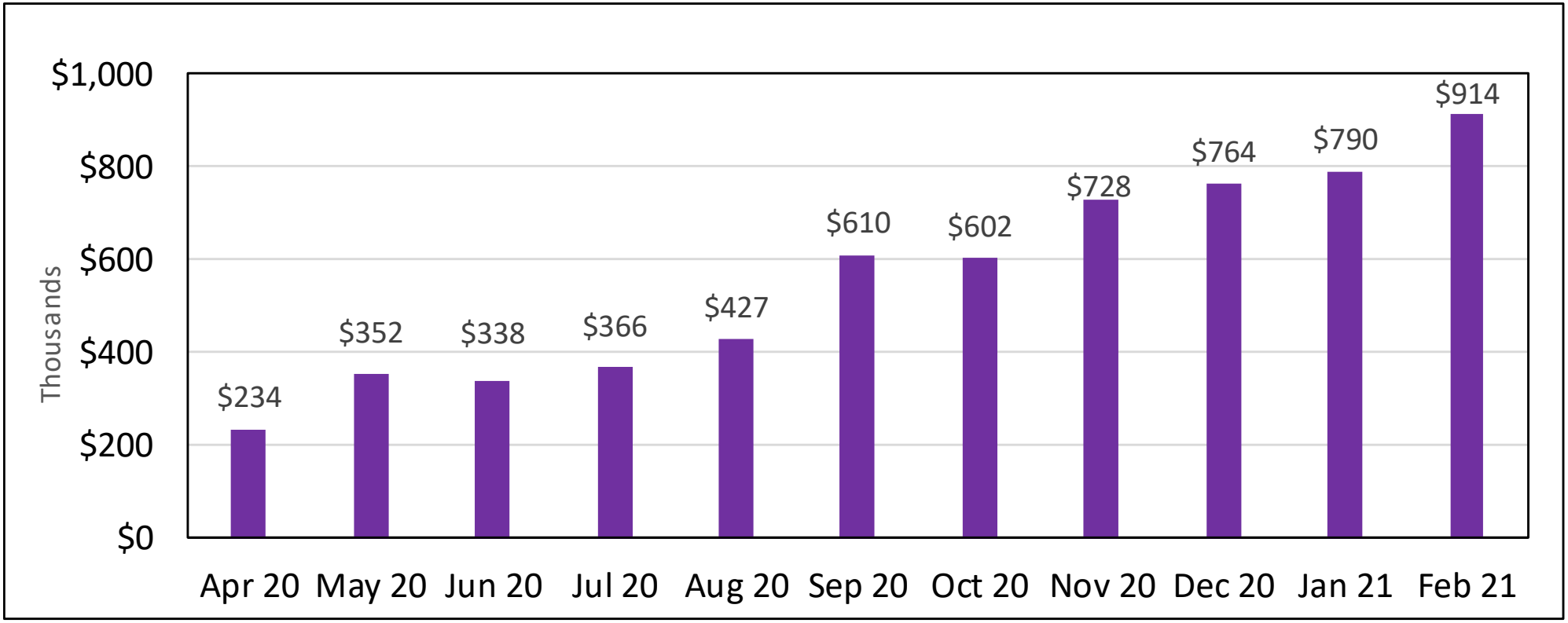


	1/20	2/20	3/20	4/20	5/20	6/20	7/20	8/20	9/20	10/20	11/20	12/20	01/21	02/21
Oregon	3.3	3.3	3.5	14.9	14.3	11.6	10.4	8.5	7.9	6.8	6.0	6.4	6.2	6.1
Ptld Metro	3.2	3.2	3.2	14.3	14.2	11.6	11.0	8.9	8.2	6.8	6.2	6.1	6.2	6.2
Washington County	2.7	2.7	2.8	12.2	12.2	9.9	9.2	7.3	6.6	5.8	5.1	5.4	5.6	5.4

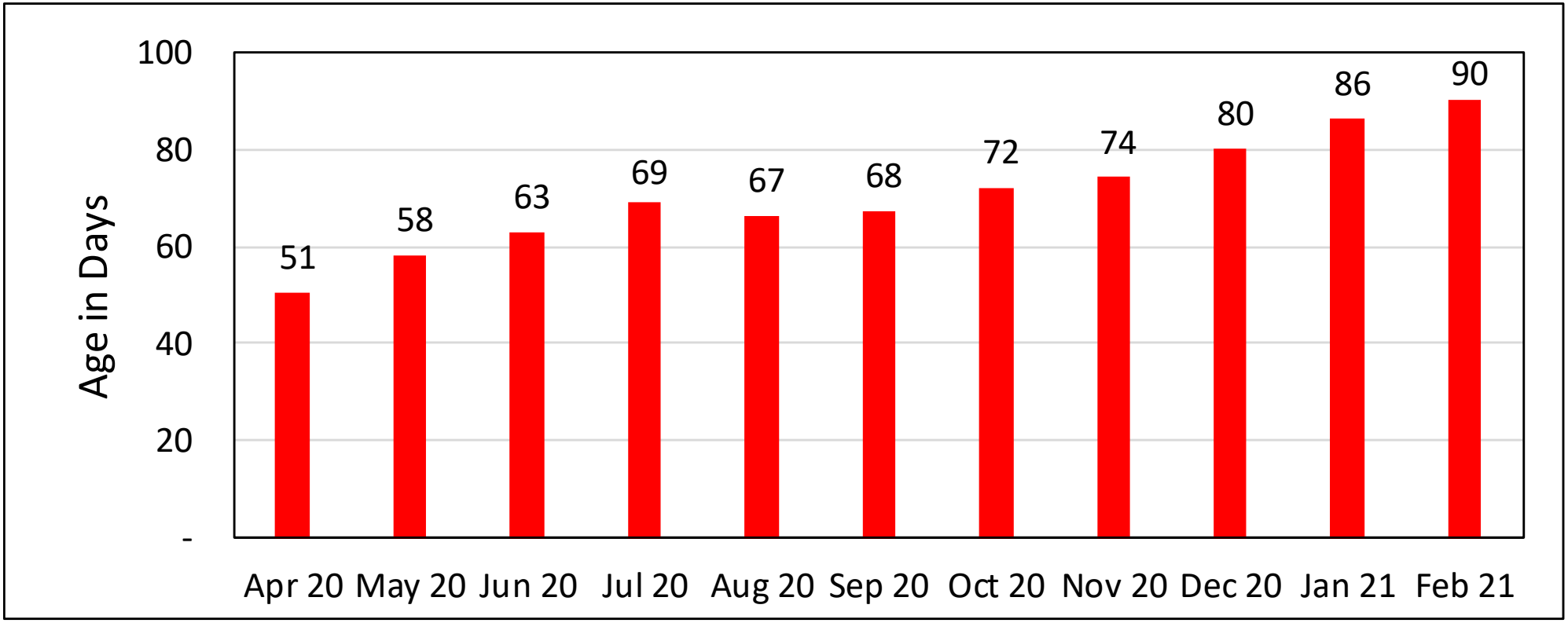
Number of Customers in "Shutoff" Status



Accounts Receivable of Customers in "Shutoff" Status



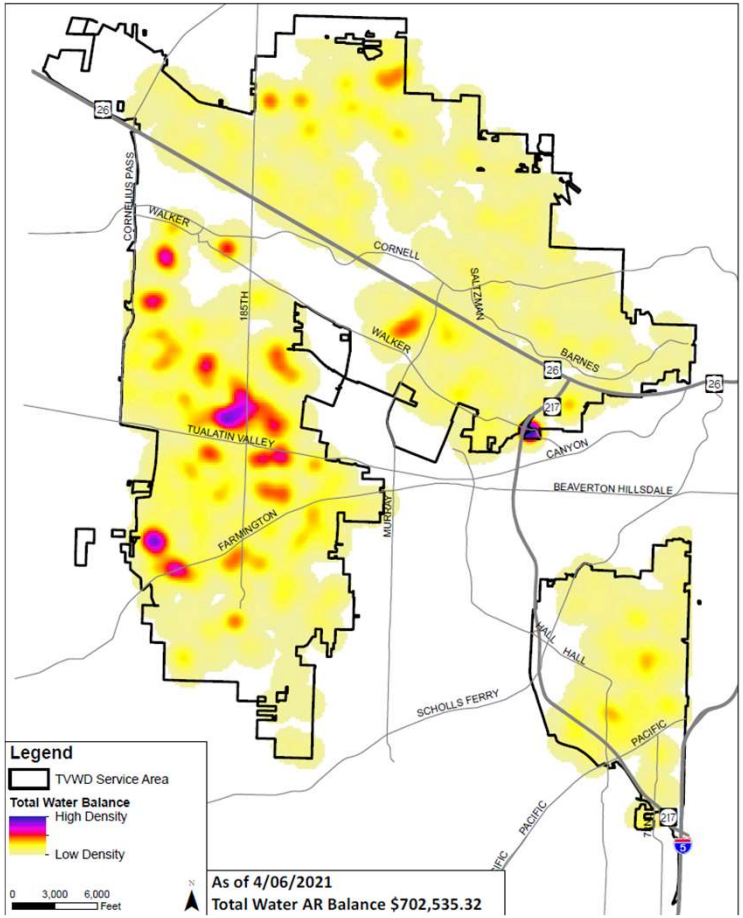
Age of Accounts Receivable of Customers in "Shutoff" Status



Locations of Struggling Customers

Heat Map

- Based on District's GIS
- Shows density of dollar balances of bills by location
- Areas of most concern are bluer in color



District's Financial Performance 2021-23 Biennium

Key Findings

- Operating expenditures below budget
- Capital expenditures below budget
- Water sales revenue below projections
- System development charges exceed plan, but slowing
- Projected ending fund balances higher than forecast
- Remain debt free -- $50 million in WIFIA Loan available
- Starting 2021-23 biennium with manageable challenges

Water Rate Forecast

Financial Strategy

- Board considered several financial strategies with various levels of financial risk
- Board approved financial strategy that lowered overall financial risk and overall costs to customers
- Financial plan will be published in May

	Typical Monthly Bill[1]		
Effective Date	Typical Bill	Change	Percent Change
Current (Nov 2020)	$56.33		
Nov 2021	$61.65	$5.32	9.4%
Nov 2022	$67.48	$5.83	9.5%

[1]Single-family residential customer with 5/8-inch meter using 7 CCF per month

TUALATIN VALLEY
WATER DISTRICT

Budget Process and Highlights

Andrew Carlstrom
Manager, Customer Service

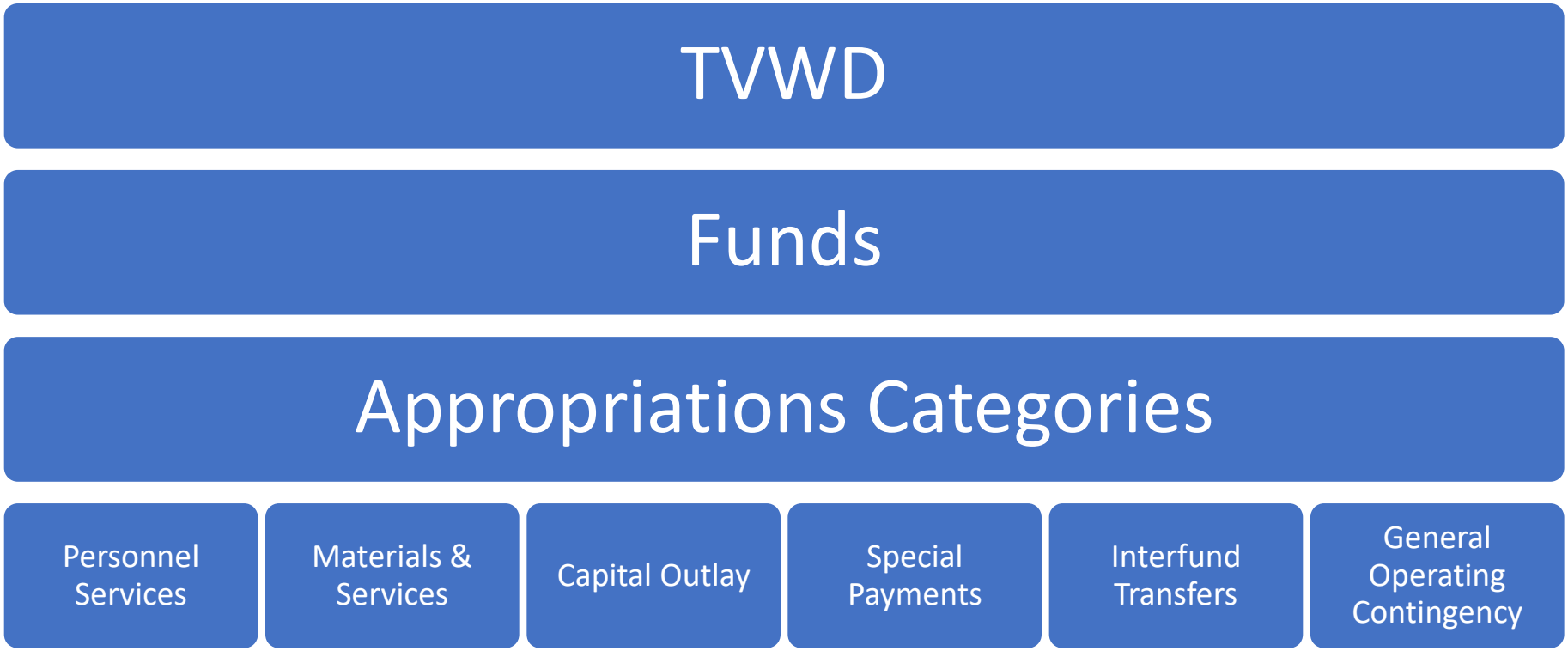
Oregon Local Budget Process

Oregon Local Budget Appropriations Categories

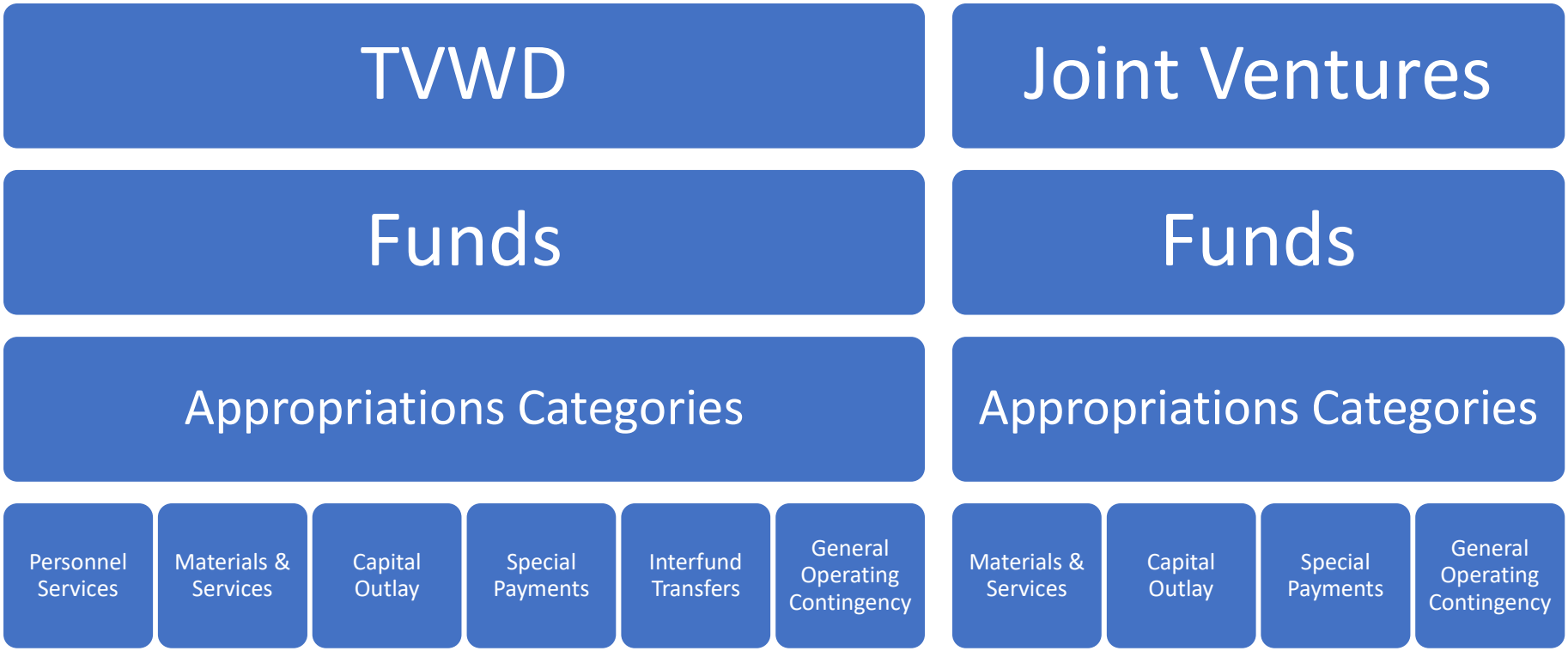
Types of Appropriations

- Personnel Services
- Materials & Services
- Capital Outlay
- Special Payments
- Debt Service
- Interfund Transfers
- General Operating Contingency

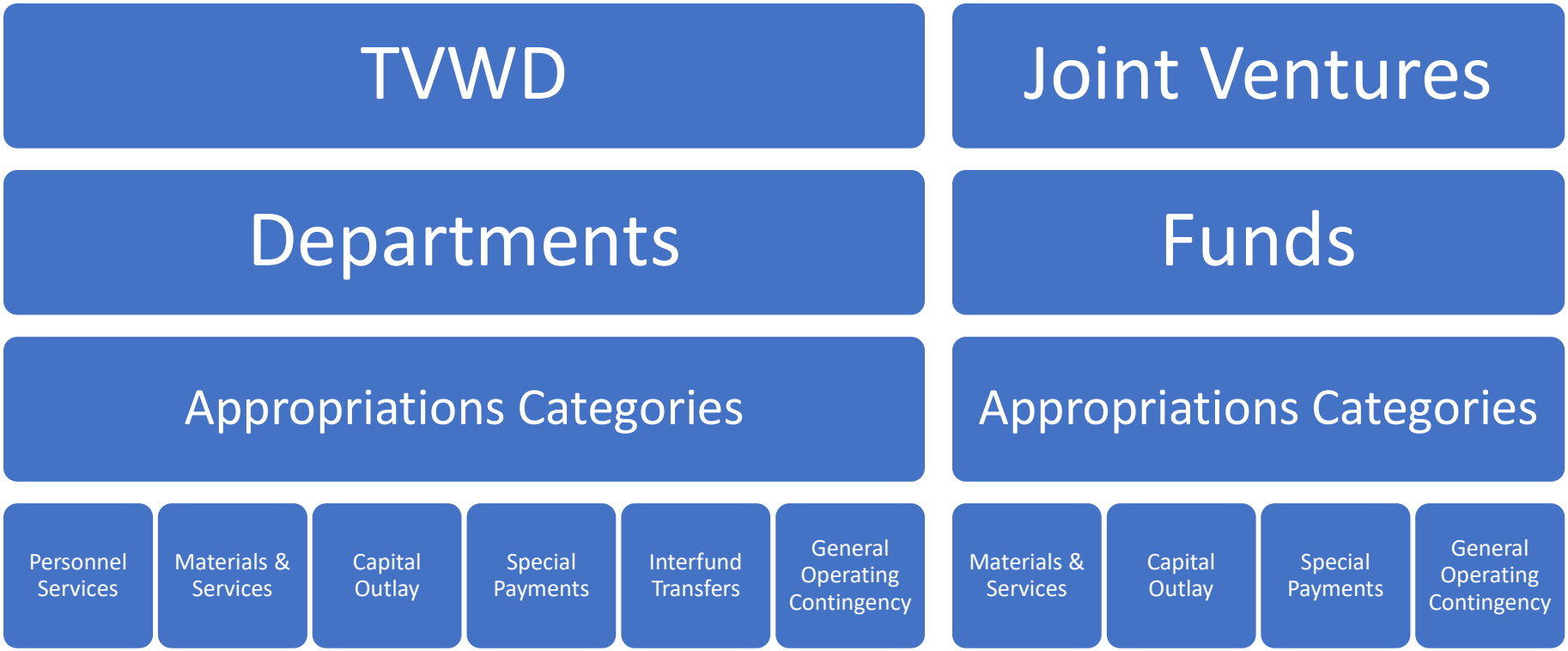
Historical Budget Hierarchy



New Budget Hierarchy



Budget Preparation Hierarchy

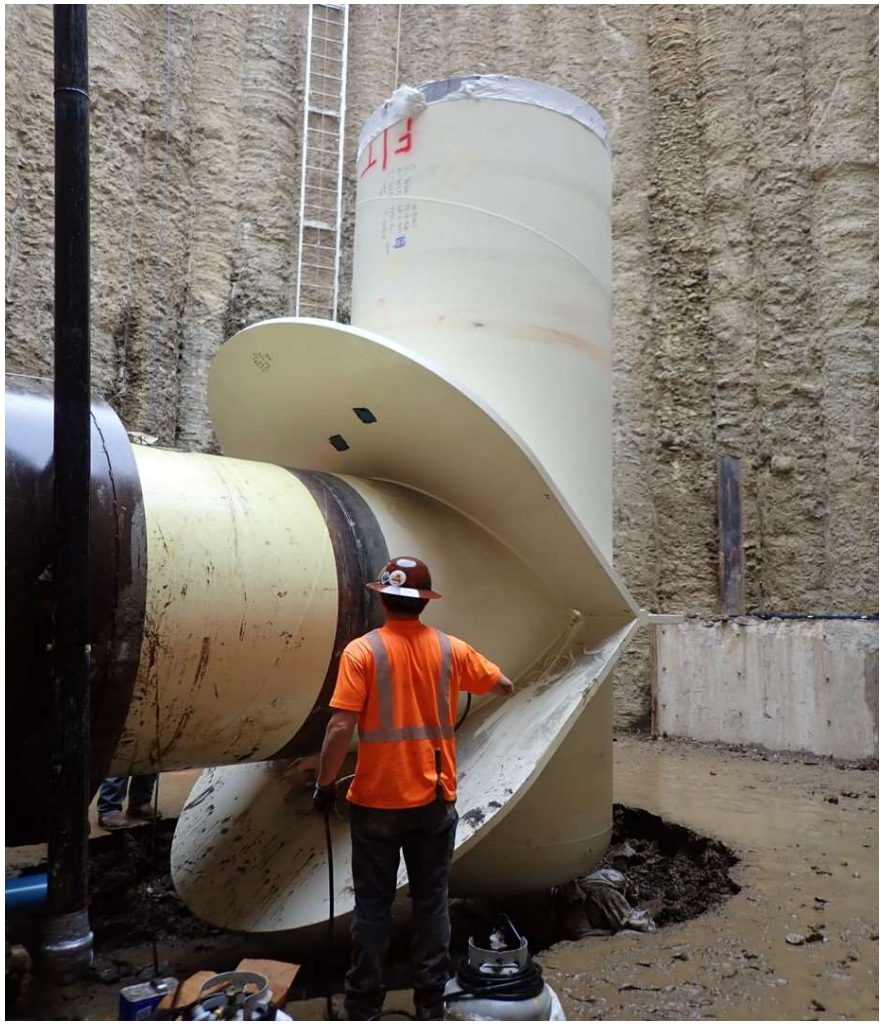


Budget Updates

Personnel Services

- Increases in benefits costs have slowed
  - Health insurance rates declined by 2.3% at last renewal
  - PERS costs have been offset by:
    - Side account and match from Employer Incentive Fund
    - PERS reforms
    - Changing demographics
- Retirements
  - Newer employees generally cost less than those retiring
  - Often lower benefits costs
- Continue to verify assumptions

Questions and Answers



Customer Services

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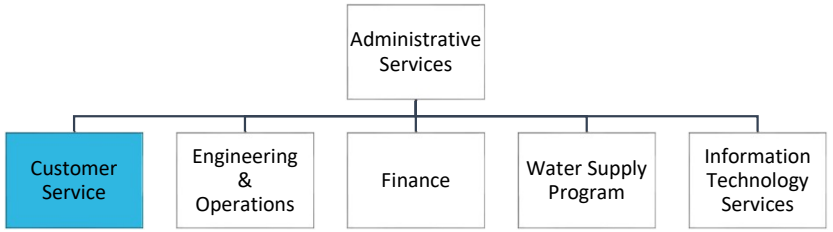
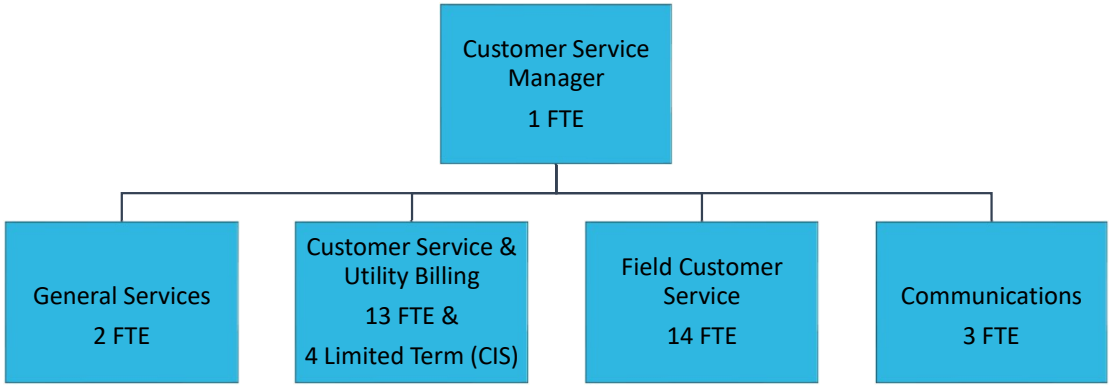
Customer Service Department

2021-23 Biennial Budget
Committee Workshop

Customer Service



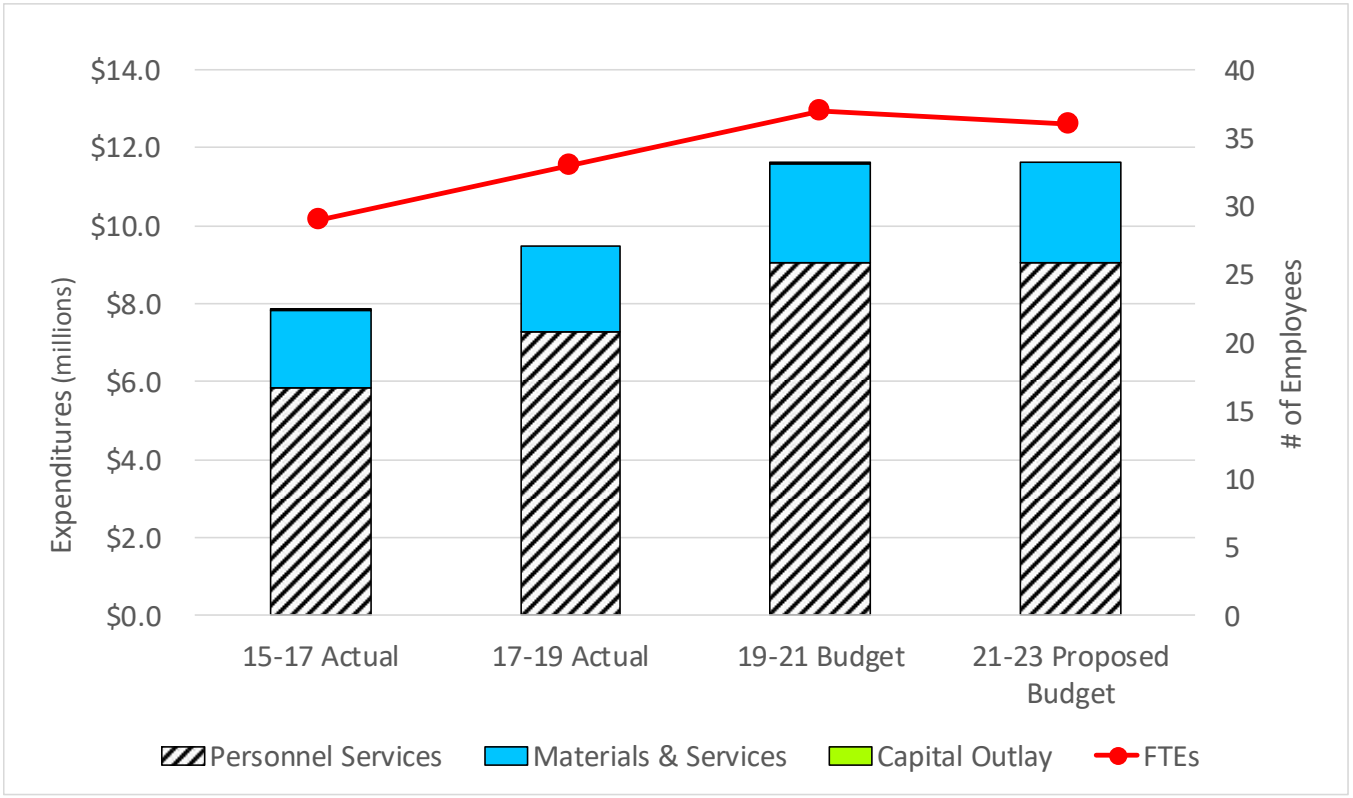


Customer Service Operating Budget

Modernization
- Meter to cash transformation
- CIS implementation
- AMI strategy

Feedback
- Surveys initiative
- Customer and employee feedback to inform decision making

Develop Staff
- Skills for transformation
- Internal training capacity



Requested Personnel Services

Division	2019-21 Budget	Requested Budget	Change	Percent Change	Annualized Percent
General Services	$1,005,351	$1,085,748	$80,397	8.0%	3.9%
Customer Service & Utility Billing	3,435,492	3,389,110	(46,382)	-1.4%	-0.7%
Field Customer Service	3,618,604	3,567,646	(50,958)	-1.4%	-0.7%
Communications	986,237	996,059	9,822	1.0%	0.5%
Department Totals	**$9,045,684**	**$9,038,562**	**($7,122)**	**-0.1%**	**0.0%**

Requested Materials & Services

Division	2019-21 Budget	Requested Budget	Change	Percent Change	Annualized Percent
General Services	$511,000	$586,591	$75,591	14.8%	7.1%
Customer Service & Utility Billing	1,521,624	1,497,452	(24,172)	-1.6%	-0.8%
Field Customer Service	233,660	262,647	28,987	12.4%	6.0%
Communications	267,340	221,100	(46,240)	-17.3%	-9.1%
Department Totals	**$2,533,624**	**$2,567,790**	**$34,166**	**1.3%**	**0.7%**

No Capital Outlay Requested

Division	2019-21 Budget	Requested Budget	Change	Percent Change	Annualized Percent
General Services	$40,500	$0	($40,500)	-100.0%	-100.0%
Department Totals	**$40,500**	**$0**	**($40,500)**	**-100.0%**	**-100.0%**

Customer Service Department Summary by Division

Division	2019-21 Budget	Requested Budget	Change	Percent Change	Annualized Percent
General Services	$1,556,851	$1,672,339	$115,488	7.4%	3.6%
Customer Service & Utility Billing	4,957,116	4,886,562	(70,554)	-1.4%	-0.7%
Field Customer Service	3,852,264	3,830,293	(21,971)	-0.6%	-0.3%
Communications	1,253,577	1,217,159	(36,418)	-2.9%	-1.5%
Department Totals	**$11,619,808**	**$11,606,352**	**($13,456)**	**-0.1%**	**-0.1%**

Customer Service Department Summary by Appropriation Category

Appropriations Category	2019-21 Budget	Requested Budget	Change	Percent Change	Annualized Percent
Personnel Services	$9,045,684	$9,038,562	($7,122)	-0.1%	0.0%
Materials & Services	2,533,624	2,567,790	34,166	1.3%	0.7%
Capital Outlay	40,500	0	(40,500)	-100.0%	-100.0%
Department Totals	**$11,619,808**	**$11,606,352**	**($13,456)**	**-0.1%**	**-0.1%**

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Update on Customer Information System Project

2021-23 Biennial Budget
Committee Workshop

CIS & the Water Utility Meter to Cash Cycle

A CIS is an application providing utilities an integrated environment to perform functions of the meter to cash cycle.

Source: Water Research Foundation, Report #4583

Meter to Cash

- Manage Customer Account Data
- Read Meters
- Calculate Consumption & Manage Rates
- Prepare and Deliver Bills
- Process & Record Payments
- Manage Credit & Collections
- Conduct General Ledger & Revenue Analysis

CIS Project Summary

- **Partnership project between District and Clean Water Services**
  - "The Partners" are sharing CIS costs, decision-making, and ownership
  - Foundation of modernizing meter-to-cash operations
  - Essential for future improvements including AMI
- **The Partners completed a rigorous CIS selection/contracting processes**
  - The new CIS provider is Open International
  - Open's product is called "SmartFlex"
  - Go-live scope includes CIS, batch processing, customer portal
- **The Partners are now implementing the solution**
  - The implementation schedule is fast – aggressive schedule
  - Go-live is currently projected for Q1 2022
- **Configuration, not customization!**
  - The Partners are committed to changing processes, not the system

CIS Project Cost Estimate

Component	Total
<u>Phase 1: Selection</u> - Professional services: requirements development, needs assessment, CIS vendor/product selection, contract negotiation, legal	**$9.5 million**
<u>Phase 2: Implementation</u> - Software, professional services - Professional services: project management, implementation, data conversion and integration, testing, training - Internal project Labor - Contingency	

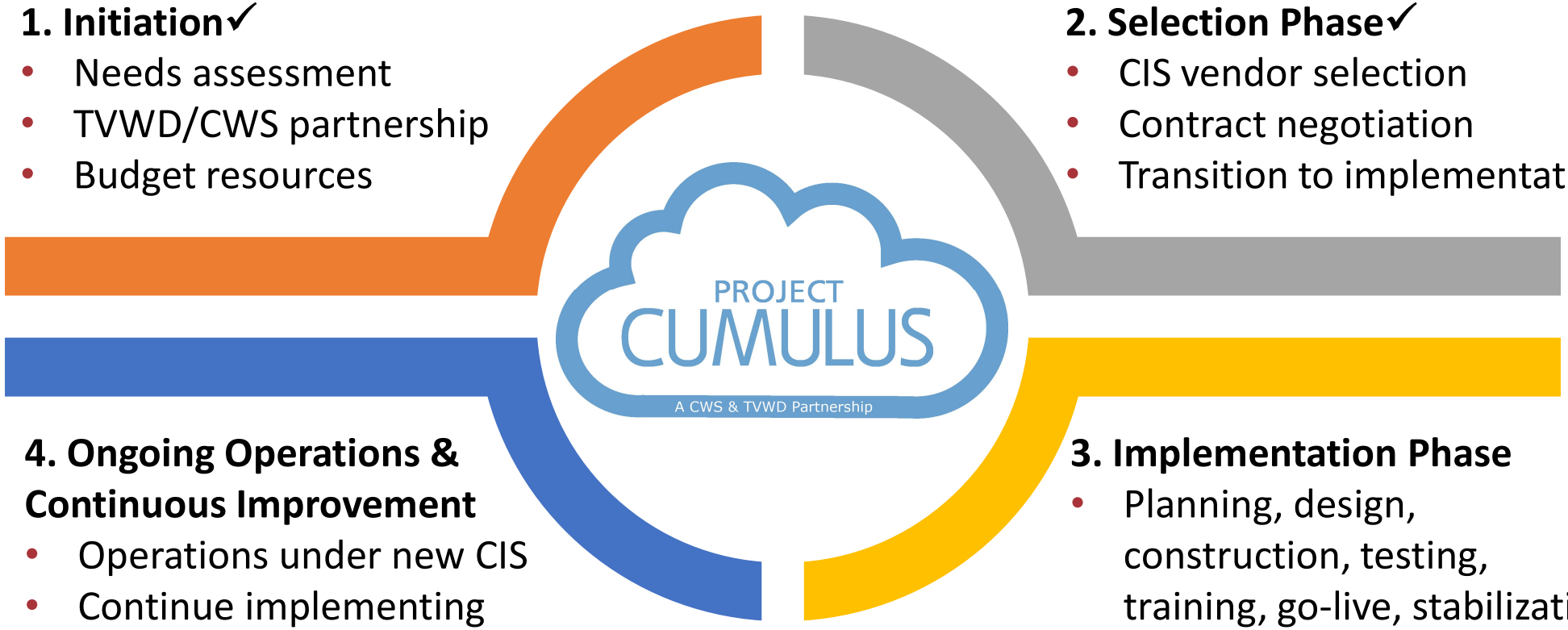
CIS Project Lifecycle: 2018 - 2022

1. Initiation✓

- Needs assessment
- TVWD/CWS partnership
- Budget resources

2. Selection Phase✓

- CIS vendor selection
- Contract negotiation
- Transition to implementation



4. Ongoing Operations & Continuous Improvement

- Operations under new CIS
- Continue implementing improvement roadmap

3. Implementation Phase

- Planning, design, construction, testing, training, go-live, stabilization

Why CIS? Key Project Objectives

1. **Address current and projected business needs**
2. **Provide improved system reliability**
3. **Increase customer satisfaction**
4. **Improve supportability through:**
   - ✓ Minimizing new system customization
   - ✓ Regular, vendor-provided technology updates
   - ✓ Complete legacy platform retirement
5. **Provide greater integration with key business systems**
6. **Manage risk through:**
   - ✓ Better controls
   - ✓ Data management, including customer information
   - ✓ Vendor support
7. **Provide a sustainable, predictable support cost model**

CIS Triple Constraint: Scope-Schedule-Budget

- **Established Project Go-Live Scope**
  - CIS, batch processing, customer self-service portal
  - Foundation of modernizing meter-to-cash operations
- **Established Project Schedule**
  - 14.5-month implementation to go-live
  - 4-month post go-live stabilization period
- **Established Project Budget**
  - $9.5 million: implementation, third-party services, staff labor
  - Costs shared between Partners per intergovernmental agreement

Due to COVID-19, CIS project implementation phase activity to date has been conducted entirely in a virtual environment.

TUALATIN VALLEY
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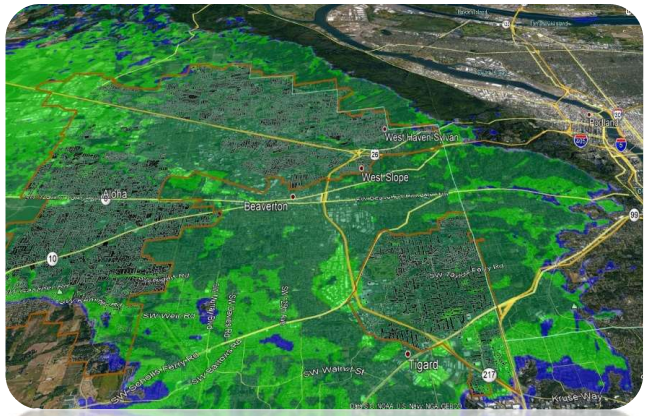
Advanced Metering Infrastructure (AMI)



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What is Advanced Metering Infrastructure, or AMI?

- **AMI is a system that collects time-differentiated consumption information.**
- **Rather than collecting one/two readings per month, an AMI system (with "smart meters") is configurable to take meter data multiple times per day.**
- **Some of the benefits of an AMI system include:**
  - Improved consumption information to customers
  - Automating the meter reading process
  - Reduced estimated reads
  - Reduced truck rolls to investigate reads
  - Improved leak detection
  - Reduced theft
  - System water loss and distribution information

Sources: Water Research Foundation, Report #4583, TVWD AMI Business Case

TVWD AMI Initiative

- **AMI will be an integral component of modernizing TVWD's meter to cash cycle.**
  - The purpose of the AMI initiative is to provide innovative AMI technologies that support the needs and expectations of TVWD customers and operations.
  - The new CIS is an integrated solution with AMI-required meter data management functionality built into the product.
  - AMI is one path for TVWD to achieve implementation of monthly billing, a key recommendation of the Rate Advisory Committee.

TVWD AMI Initiative (continued)

- **An AMI implementation is a large project and a multiyear effort.**
  - The 2021 – 2023 includes funds for starting the project through development of the District's AMI strategy: $200,000
  - Total project implementation cost estimate to be presented to Board after strategy development.
  - TVWD will pursue partnerships and external funding opportunities for AMI.
  - Like CIS, the AMI initiative will be a multidisciplinary effort within TVWD.

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Surveys

2021-23 Biennial Budget
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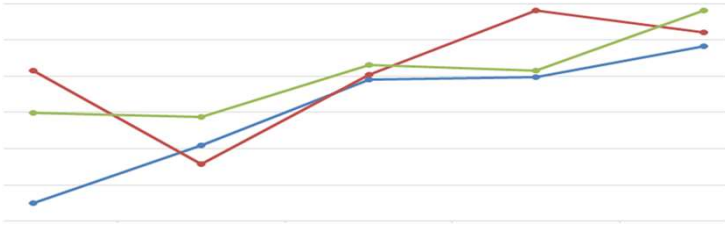
The TVWD Surveys Initiative

- **Useful feedback is necessary to:**
  - Measure and understand the TVWD customer experience (Cx).
  - Measure and understand the TVWD employee experience (Ex).
  - Provide trend data for District decision making.
- **The surveys initiative in the 2021 – 2023 budget:**
  - Includes funds to be used for consultant and software in designing, delivering, and interpreting external and internal surveys.
- **TVWD will use external expertise as well as develop internal staff capacity.**
  - The Communications division will lead the surveys initiative, working with other District departments.



Questions and Answers

Engineering and Operations

TVWD crews working on a main replacement project.

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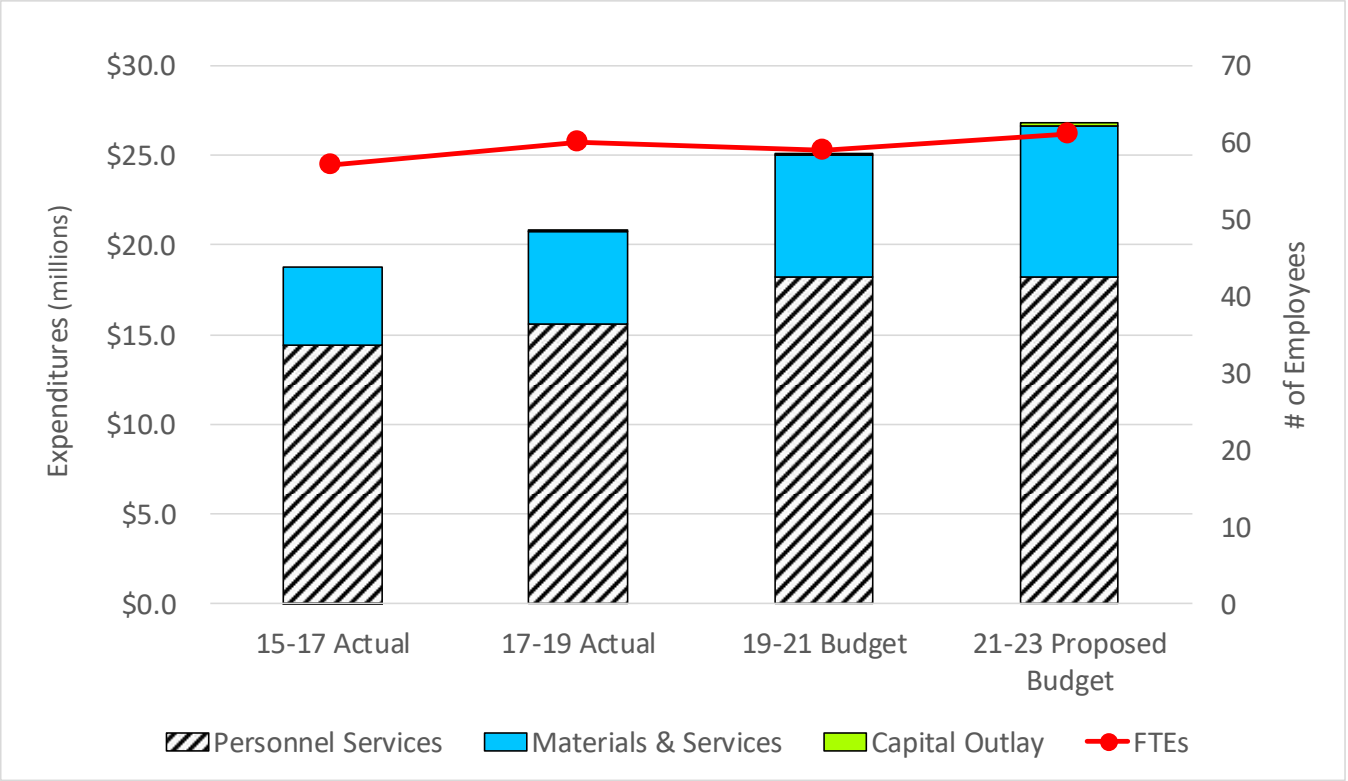
Engineering and Operations Department

Carrie Pak, P.E.
Chief Engineer

Engineering and Operations Operating Budget

- Continue delivering high-quality water
- Asset Management Program
- WWSS Readiness
- Staff Development
  - Two new staff
    - SCADA Staff
    - Water Works Operator



Requested Personnel Services

Division	2019-21 Budget	Requested Budget	Change	Percent Change	Annualized Percent
General Services	$558,748	$572,291	$13,543	2.4%	1.2%
System Operations	5,272,462	5,789,431	516,969	9.8%	4.8%
Engineering	3,543,785	3,142,702	(401,083)	-11.3%	-5.8%
Water Resources	1,648,222	1,519,250	(128,972)	-7.8%	-4.0%
Asset Management	2,488,632	2,504,878	16,246	0.7%	0.3%
Water Operations	535,207	573,517	38,310	7.2%	3.5%
Construction & Maint.	4,160,366	4,156,152	(4,214)	-0.1%	-0.1%
Department Totals	**$18,207,422**	**$18,258,221**	**$50,799**	**0.3%**	**0.1%**

Requested Materials & Services

Division	2019-21 Budget	Requested Budget	Change	Percent Change	Annualized Percent
General Services	$1,117,970	$2,029,246	$911,276	81.5%	34.7%
System Operations	990,900	965,150	(25,750)	-2.6%	-1.3%
Engineering	9,500	15,500	6,000	63.2%	27.7%
Water Resources	1,117,323	1,363,301	245,978	22.0%	10.5%
Asset Management	2,287,080	2,372,248	85,168	3.7%	1.8%
Water Operations	191,000	181,500	(9,500)	-5.0%	-2.5%
Construction & Maint.	1,062,800	1,421,000	358,200	33.7%	15.6%
Department Totals	**$6,776,573**	**$8,347,945**	**$1,571,372**	**23.2%**	**11.0%**

Requested Capital Outlay

Division	Budget	Budget	Change	Change	Percent
General Services	$40,600	$73,500	$32,900	81.0%	34.5%
Department Totals	**$40,600**	**$73,500**	**$32,900**	**81.0%**	**34.5%**

Engineering and Operations Department Summary by Division

Division	2019-21 Budget	Requested Budget	Change	Percent Change	Annualized Percent
General Services	$1,717,318	$2,734,872	$1,017,554	59.3%	26.2%
System Operations	6,263,362	6,744,581	481,219	7.7%	3.8%
Engineering	3,553,285	3,158,202	(395,083)	-11.1%	-5.7%
Water Resources	2,765,545	2,882,551	117,006	4.2%	2.1%
Asset Management	4,775,712	4,929,124	153,412	3.2%	1.6%
Water Operations	726,207	755,017	28,810	4.0%	2.0%
Construction & Maint.	5,223,166	5,577,152	353,986	6.8%	3.3%
Department Totals	**$25,024,595**	**$26,781,499**	**$1,756,904**	**7.0%**	**3.5%**

Engineering and Operations Department Summary by Appropriation Category

Appropriations Category	2019-21 Budget	Requested Budget	Change	Percent Change	Annualized Percent
Personnel Services	$18,207,422	$18,258,221	$50,799	0.3%	0.1%
Materials & Services	6,776,573	8,399,778	1,623,205	24.0%	11.3%
Capital Outlay	40,600	123,500	82,900	204.2%	74.4%
Department Totals	**$25,024,595**	**$26,781,499**	**$1,756,904**	**7.0%**	**3.5%**

Ridgewood View Park Pump Station

Capital Improvement Program

Objectives:

- Capacity improvements
- Replacement
  - Condition assessment
  - Age
  - Resiliency
- Relocation – Agency Driven

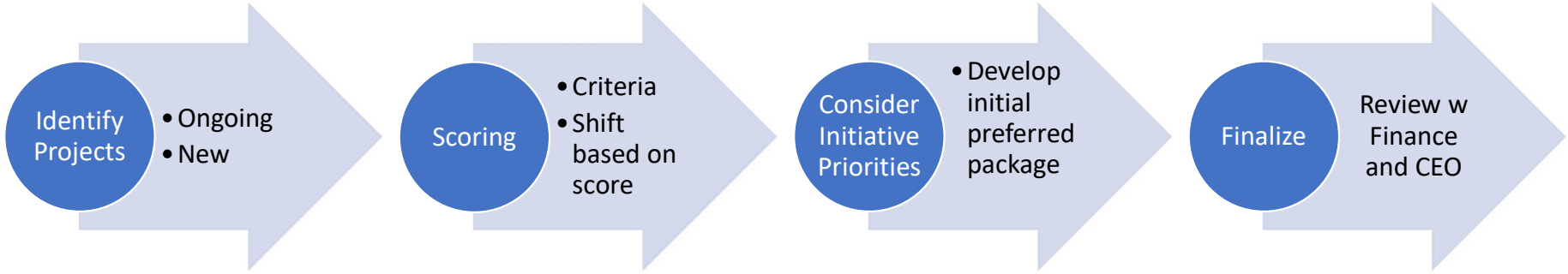
TVWD crews working on the St. Vincent meter replacement

Water Distribution System Assets

- 752 miles of pipe (2 to 54 inches)
- 41 pressure zones serving elevations from 150 ft. to 990 ft.
- 12 pump stations, over 55 pressure regulating facilities
- 23 active storage reservoirs
- 1 aquifer storage and recovery (ASR) facility with capacity of 300 MG
- 1 electrical generator station
- Over 150 water quality sampling stations

CIP Process

- Water Master Plan
- SCADA Master Plan
- Asset Management Plan
- Operations and Maintenance Staff
- Other Agencies



CIP Fact Sheet Anatomy

PROJECT INFORMATION		FUNDING SOURCES		FUTURE OPERATING COST IMPACT
Project Category:	Storage	Water Rates:	Yes	No anticipated impact on District operating costs. This project replaces existing infrastructure. Near-term operating costs are anticipated to be reduced.
		Service Fees:	No	
Project Manager:	Andrew Barrett	SDC Improvemt. Fee Elg.:	0%	
Work Performed By:	Outside Contract			
Total Priority Score:	30	Partner Cost Percentage:	0%	

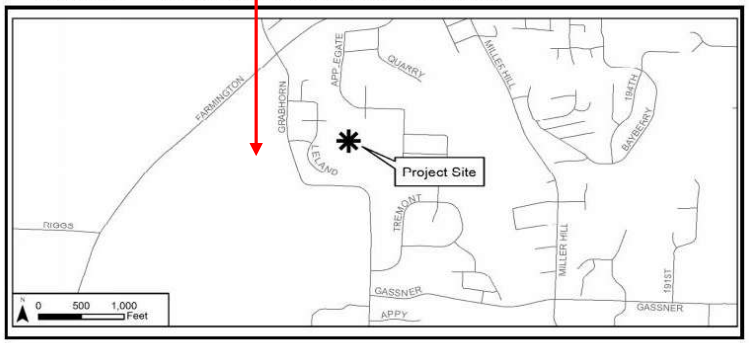
Key Drivers

Project Description

BUDGET INFORMATION & PROJECTED COSTS									
FY 17-19 Budget	FY 17-19 Projected	FY 19-20 Budget	FY 20-21 Budget	FY 21-22 Projected	FY 22-23 Projected	FY 23-24 Projected	FY 24-25 Projected	Six-Year (FY2020-25)	Future Years (FY2026-48)
10,915,898	14,614,782	362,500	-	-	-	-	-	362,500	-

Site Map

PROJECT TITLE: ST-9 Grabhorn Reservoir Replacement - Tank 1 (5 MG)



KEY DRIVERS FOR CIP PROJECT		
1.	Project Urgency	This project is on-going and nearing completion. The budget accounts for items associated with final completion of the project.
2.	Asset Condition	The existing reservoir was in disrepair and at the end of its useful life.
3.	Reliability	Improvements required to maintain reliable and seismically resilient facilities.

PROJECT DESCRIPTION

This project involves the demolition of the existing 5 MG concrete reservoir, then design and construction of a 5 MG pre-stressed concrete reservoir within the footprint of the existing reservoir. Onsite piping and valves will also be replaced.

PROJECT INFORMATION		FUNDING SOURCES		FUTURE OPERATING COST IMPACT
Project Category:	Storage	Water Rates:	Yes	No anticipated impact on District operating costs. This project replaces existing infrastructure. Near-term operating costs are anticipated to be reduced.
		Service Fees:	No	
Project Manager:	Andrew Barrett	SDC Improvemt. Fee Elg.:	0%	
Work Performed By:	Outside Contract			
Total Priority Score:	30	Partner Cost Percentage:	0%	

BUDGET INFORMATION & PROJECTED COSTS									
FY 17-19 Budget	FY 17-19 Projected	FY 19-20 Budget	FY 20-21 Budget	FY 21-22 Projected	FY 22-23 Projected	FY 23-24 Projected	FY 24-25 Projected	Six-Year (FY2020-25)	Future Years (FY2026-48)
10,915,898	14,614,782	362,500	-	-	-	-	-	362,500	-

CIP Prioritization

Timing:	• Sensitivity to time commitments • External demands, growth, condition, or other 3rd party • No points assigned, based on year needed
Customer Criticality:	• Level of importance based on cost per customer benefit • Points: 1-3, 5
Water Quality:	• Adherence to water quality and regulatory requirements • Points: 1-3, 5
Asset Condition & Risk:	• Probability of failure, consequence of failure. Related to known condition • Points: 1,3,5,10

CIP Prioritization

Reliability:	• Seismic resiliency, reliability of service, and redundancy • Points: 1-4
Safety & Security (including fireflow):	• Fire protection, facility security, worker and public safety • Points: 1-5
Cost Effectiveness / Community Benefit:	• Delay of other projects, partnership opportunity, other benefits or savings • Points: 1, 3, 5
Environment:	• Mitigation of impacts to natural environment • Points: 1-4

Criticality Ratings

Green

- great structural and mechanical conditions

Yellow

- some repairs needed; seismically and operationally vulnerable

Red

- major help needed now

Rating: Green

Reservoirs:

- Springville 1 & 2
- Bonny Slope Park 1 & 2
- Cooper Mountain 1 & 2
- Teufel
- Ridgewood View
- Grabhorn
- Garden Home
- Schell

Pump Stations:

- Teufel
- Bethany
- Thompson
- Ridgewood View
- Grabhorn ASR

Rating: Yellow

Reservoirs:

- Inglewood
- Sunset
- Thompson
- Florence Lane 1
- Florence Lane 2
- North Road*
- 189th Reservoir*
- Rosander

Pump Stations:

- Sunset
- Cooper Mtn
- Goyak
- 189th
- Florence Lane

*have recovery plan for emergencies

Rating: Red

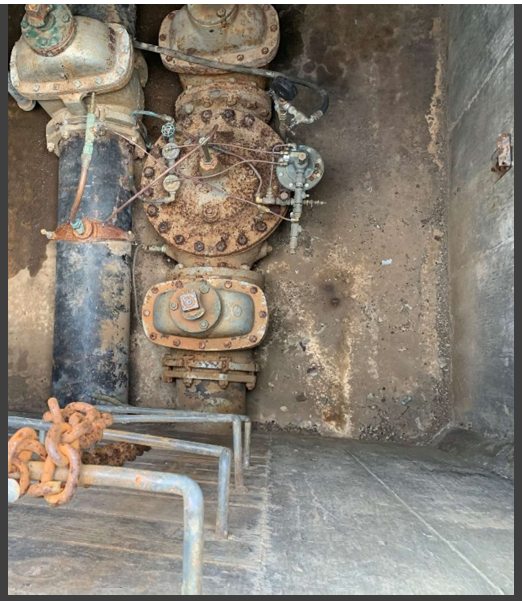
Reservoirs:

- Taylors Ferry No 1
- Taylors Ferry No 2
- Goyak*
- Somerset

Pump Stations:

- Viewmont
- Catlin Crest
- Inglewood

*have recovery plan for emergencies



Taylors Ferry Reservoir

- **Located in Metzger**
- **Built in ~1948 and 1975**
- **Serves 498 pressure zone**
- **Replace with 2-1.75 MG prestressed tanks**
- **Storage**
- **New on-site piping**

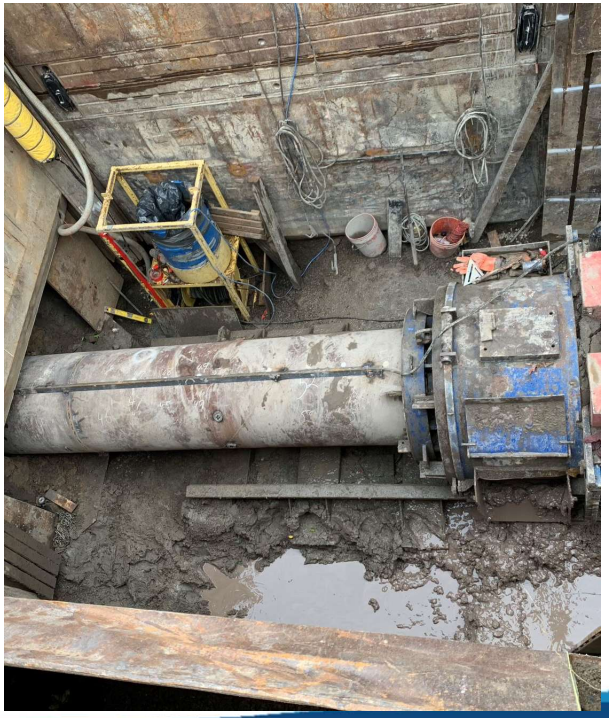
Farmington Fluoride and Flow Control Facility

- Located in Cooper Mtn Area
- Scope change
- WWSP intertie with a 6.5 MGD initial flow-through capacity; 17 MGD ultimate capacity
- Fluoride injection
- Flow control; future pump station

Somerset Reservoir

- Only storage in 1045 pressure zone
- Constructed in 1963
- Needs coating and safety improvements
- Complete seismic failure expected
- Capacity of 0.175 MG
- Additional future storage recommended in the long-term planning horizon

Metzger N-S Fire Flow Improvement



- Serves Tigard Triangle Area
- Successfully installed 10,000 feet of 12-inch and 16-inch pipe
- Trenchless crossing
- Steep terrain
- Liquifiable soil

Project Categories

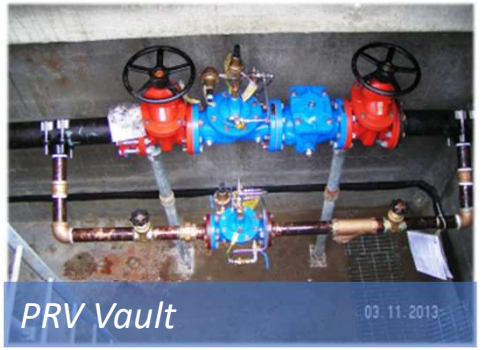
- Source: WWSS, WIF, JWC
- Source: TVWD
- Storage
- Pump Stations
- Pipelines
  - Mains replacements
  - Fireflow improvements
  - Miscellaneous and Agency-driven
- Pipelines – Valves and Vaults
- Facilities, Fleet Replacements, Information Technology
- Meters and Services

Joint Water Commission

Grabhorn Reservoir

Thompson Pump Station

Mainline Installation



PRV Vault

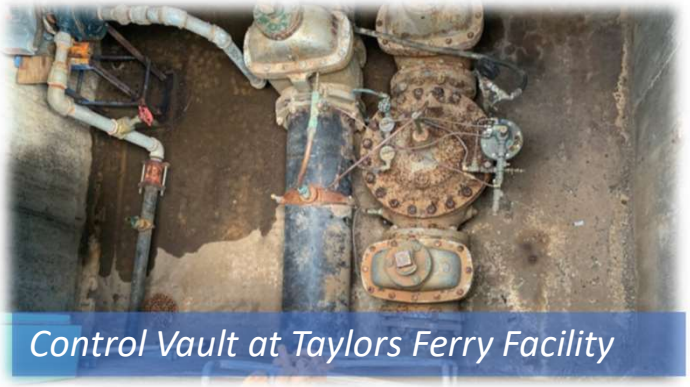
2021-23 Biennium CIP Summary

Category/Description	2021-2023 Totals
Source	$7.8
Storage	8.4
Pump Stations	2.0
Pipelines	
Agency-Driven Pipeline Upgrades & Renewals	7.0
Metzger Pipeline East (WWSP)	82.7
All Other Pipelines	10.0
Valves and Vaults	2.0
Facilities	1.8
Fleet Replacements	1.5
CIS	6.6
Meters & Services	3.6
Biennial Total	**$133.5**

Note: Values in millions.

Storage and Pumping Highlights – 2021-23

Farmington Fluoride & Flow Control Facility	• Page 15-13
Taylors Ferry Reservoir Replacements	• Page 15-15
Florence Lane Reservoir Coatings & Cathodic Improvements	• Page 15-18
Somerset Reservoir Modifications	• Page 15-20
Taylors Ferry Booster Pump Station design	• Page 15-28
Pump Replacement Program	• Page 15-31



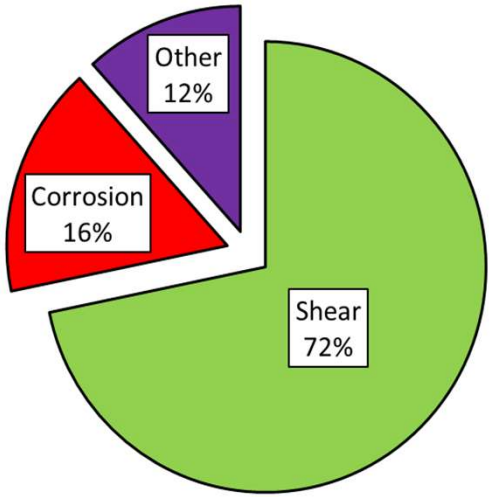
Control Vault at Taylors Ferry Facility

Taylors Ferry Concrete Reservoir

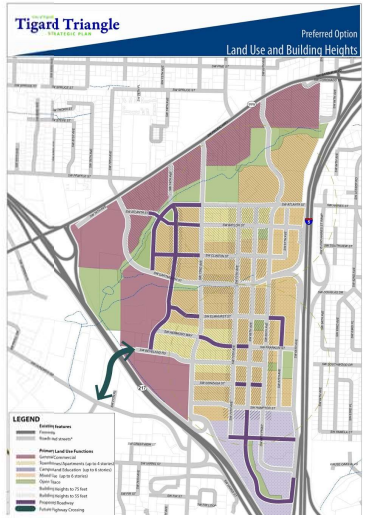
Pipeline Highlights - 2021-23

Small-diameter mains	• Page 15-32
Agency-driven replacements	• Page 15-44 to 15-50
Fire Flow Improvements	• Pages 15-52 to 15-55, and 15-57
Metzger Pipeline East	• Pages 15-61 to 15-63

Corroded Pipe at the Lincoln Center – Replaced in 2016



Percent of Breaks by Type (1999 – 2016)



Other CIP items

- Vaults and PRV valves (Page 15-66 to 15-69)
- Facilities, Fleet (Pages 15-71 to 15-79)
- Customer Information Service (Page 15-80)
- Meters and services (15-81 to 15-82)

Six-Year CIP Summary

Category/Description	6-year Totals
Source	$10.0
Storage	16.4
Pump Stations	13.6
Pipelines	
Agency-Driven Pipelines	12.4
Metzger Pipeline East (WWSP)	115.1
All Other Pipelines	47.1
Valves and Vaults	3.9
Facilities	1.8
Fleet Replacements	4.3
CIS	6.6
Meters & Services	11.7
6-year Total CIP	**$242.8**

Note: Values in millions.

Six-Year CIP Project Highlights

- Source Projects
  - Metzger Supply Improvements for WWSS — Page 15-7
  - Booster Chlorination — Page 15-12
- Storage Projects
  - Goyak Reservoir Seismic: — Page 15-14
  - Rosander 2 Reservoir — Page 15-17
- Pipelines
  - Mains replacement, agency-driven, development-driven — Pages 15-32 to 15-49
  - Fireflow improvements — Pages 15-52 to 15-57

Questions and Answers

Water Supply

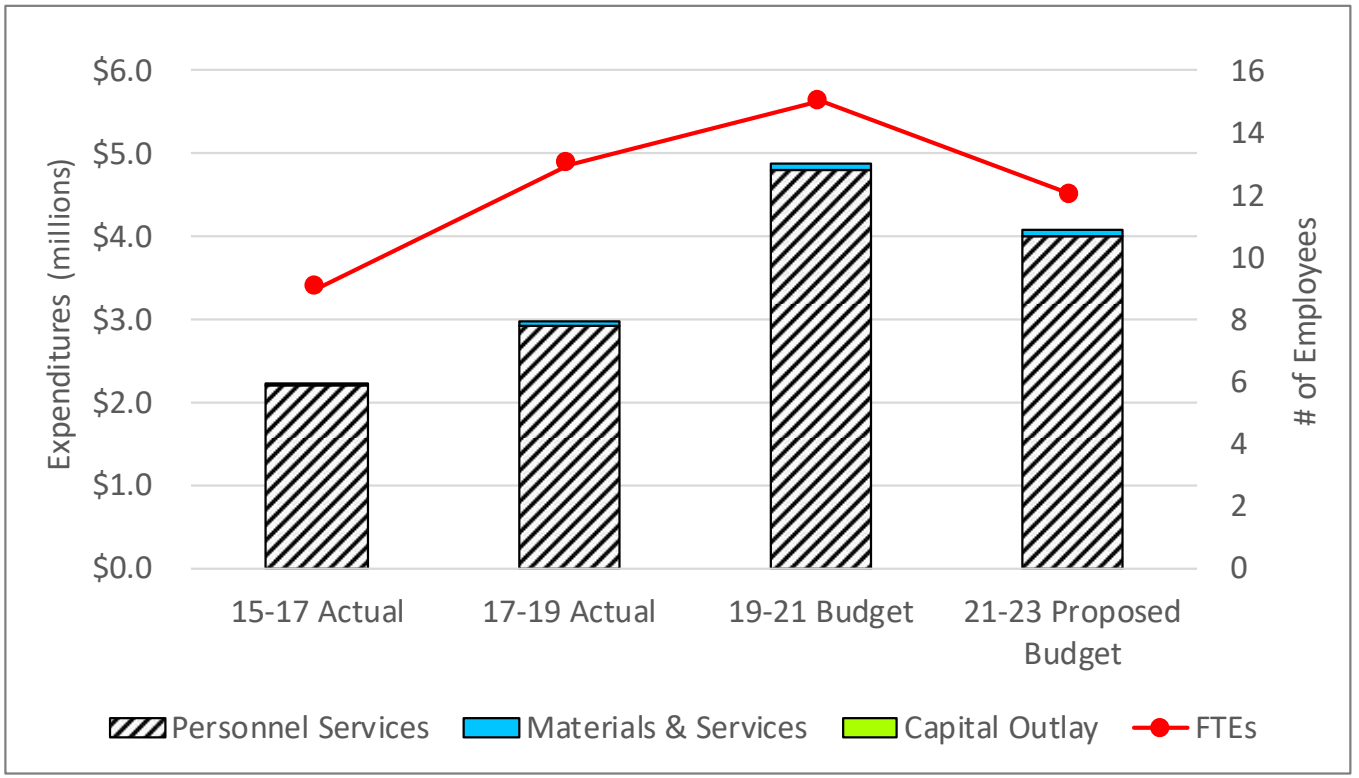
TUALATIN VALLEY
WATER DISTRICT

Water Supply Program Department

Dave Kraska, P.E.
WWSP Program Director

Water Supply Program Department Operating Budget

- Complete design work and related activities
- Initiate and advance 16 construction projects
- Continue planning for operations and system integration



Water Supply Program Department Summary by Appropriation Category

Appropriations Category	2019-21 Budget	Requested Budget	Change	Percent Change	Annualized Percent
Personnel Services	$4,798,806	$4,007,052	($791,754)	-16.5%	-8.6%
Materials & Services	72,095	76,990	4,895	6.8%	3.3%
Capital Outlay	0	0	0	0.0%	0.0%
Department Totals	**$4,870,901**	**$4,084,042**	**($786,859)**	**-16.2%**	**-8.4%**

Budget Summary Presentation Outline

Presented on March 23

- Water Supply Program (Department 60)
  - TVWD staff involved in delivering the WIF and the WWSS

Tonight's presentation:

- Willamette Intake Facilities (Fund 44)
  - Overview and status
  - Planned activities and budget for next biennium
- Willamette Water Supply System (Fund 45)
  - Overview and status
  - Planned activities and budget for next biennium

Willamette Water Supply Program Mission

Provide a cost-effective, reliable, and resilient water supply system by July 2026, that benefits current and future generations of the communities we serve and supports a vibrant local economy.

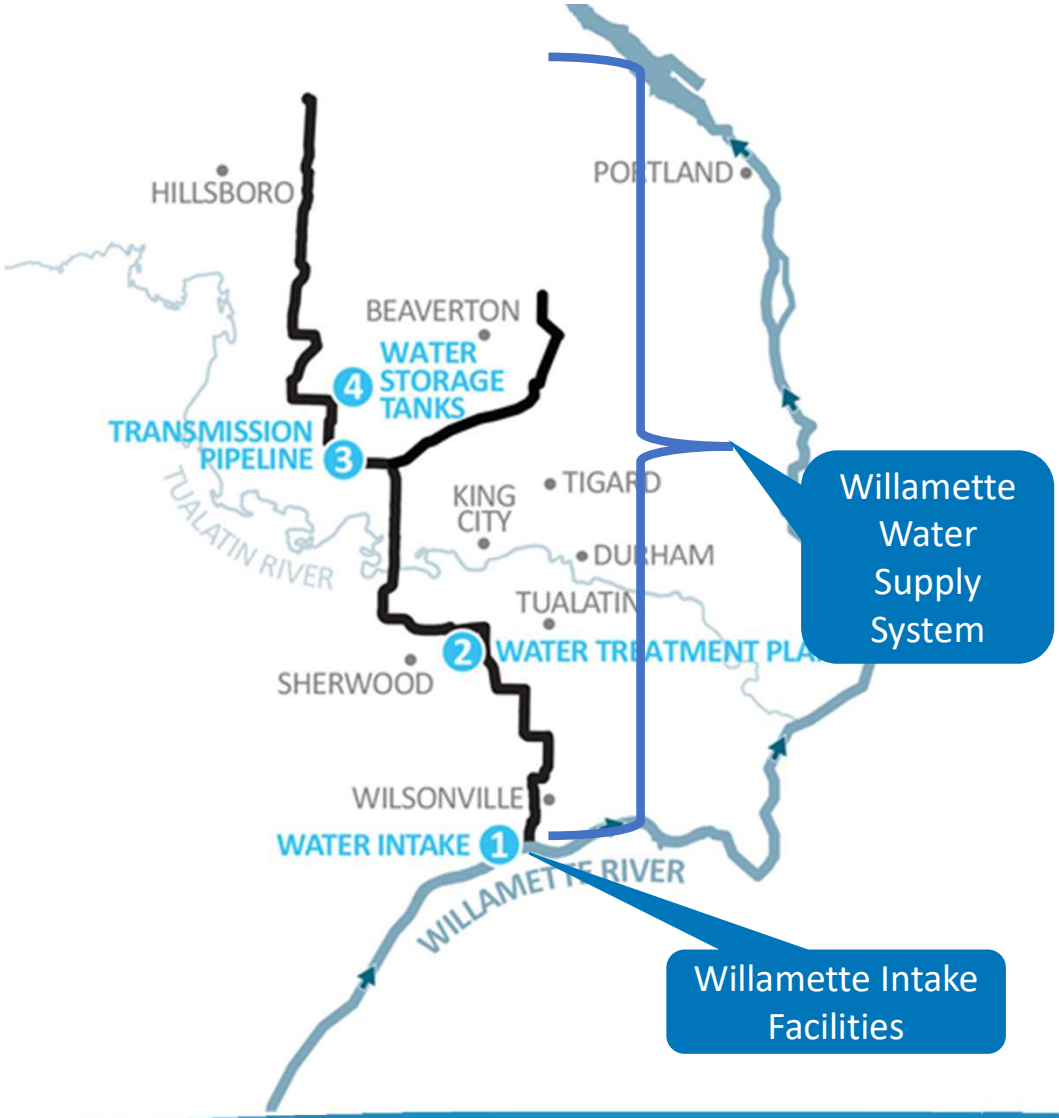
TUALATIN VALLEY WATER DISTRICT

Hillsboro OREGON

Beaverton OREGON

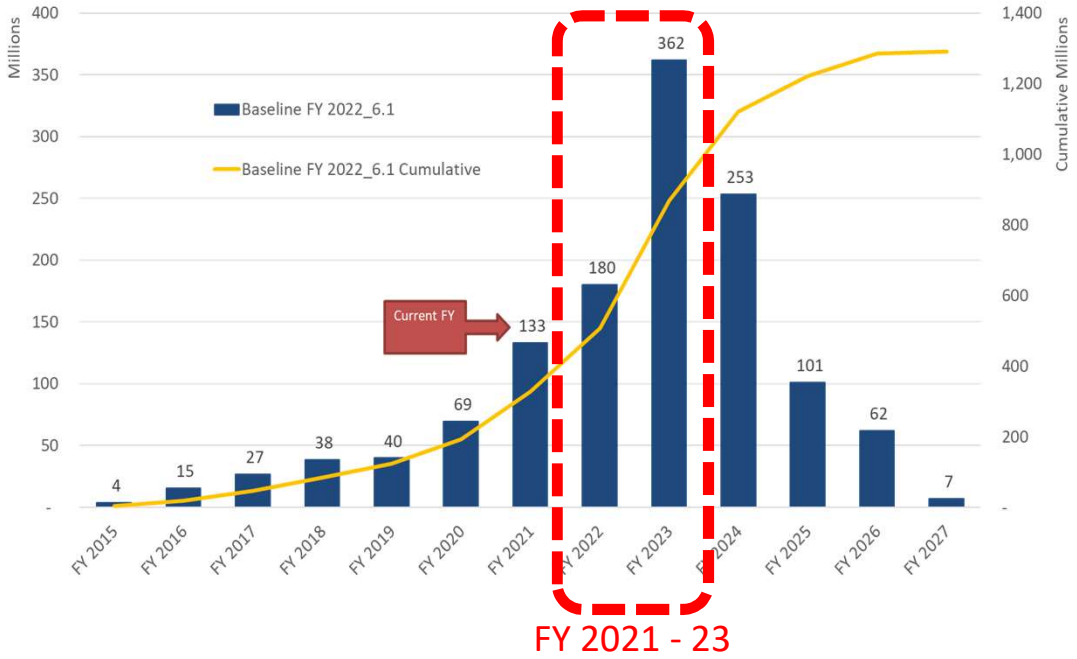
WIF/WWSS Overview

1. Willamette River intake, located in Wilsonville
2. New state-of-the-art water treatment plant
3. 30+ miles of large diameter transmission pipeline
4. Water storage tanks



Capital Spend Will Dramatically Increase in the Next Few Years

$1 billion in work left to deliver



FY 2021 - 23

Influencers

- Demand on WWSS partner agency staff and resources
- Reliance on regional partners for delivering projects
  - WCLUT
  - PGE
- Effects on stakeholders
  - Ratepayers
  - Property owners and businesses
  - Motorists, pedestrians, and cyclists
- Challenging economic climate
  - Competition for regional construction resources
  - COVID-19
- Need for jurisdictional approvals and properties
  - Many permits and approvals remain
  - Dozens of easements remain
  - Risk of opportunistic behaviors
- Environment of continual change

WWSS & WIF Costs and Schedule (Baseline) are Updated Annually

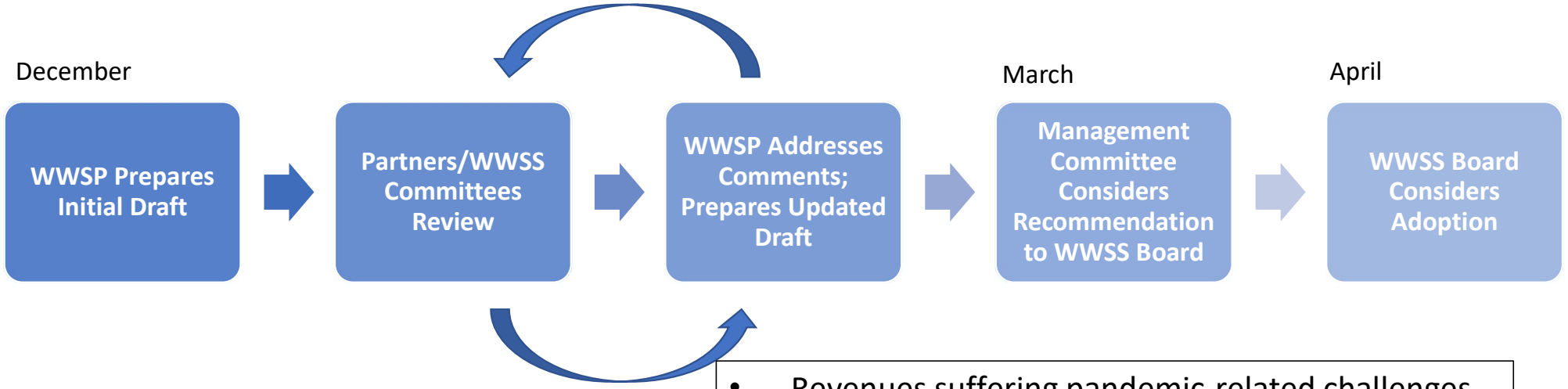
Why adopt a Baseline and when?

- Board to adopt a capital improvement plan (IGA Section 5 & 8)
- Component of WWSS Financial Procedures (IGA Exhibit 6)
- Part of WWSS governance (WWSS MAM)
- Updated annually and modified if needed

How is it used?

- Planning and managing work
- Establishing fiscal year budgets
- Detecting potential changes or variances
- Input to risk analysis and management
- Reporting to Board, Partners, WIFIA, and public
- Input to financial forecasting by Partners

Approach to Annual Baseline Preparation and Review

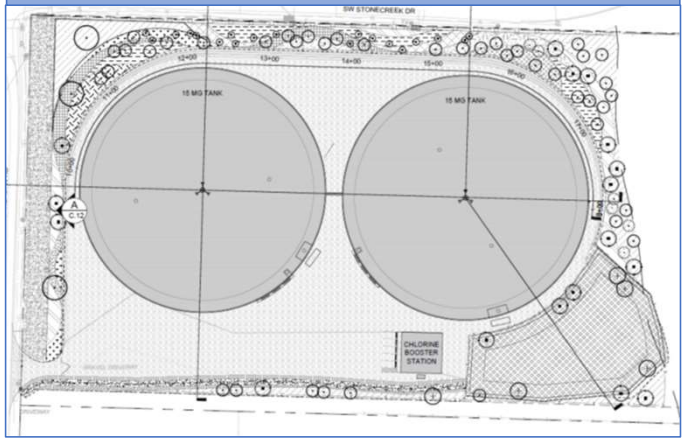


- Revenues suffering pandemic-related challenges
- Costs have increased since Baseline 5.2
- Acknowledge that all design done within one year
  - Last opportunity to make changes before everything is in construction
  - Substantial risk of cost escalation remains

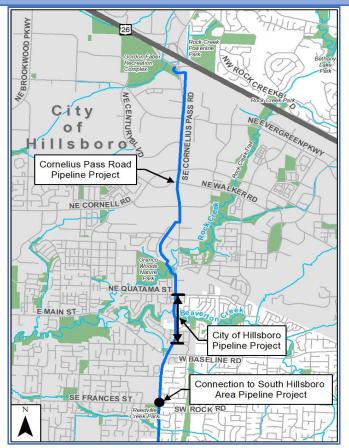
Managing Cost & Schedule Risk Related to Baseline 6.1

- Identified and evaluated a range of options to reduce spend on the WWSP through 2026 by between $30 million and $170 million
- Balanced maintaining the mission of the WWSP with the current realities
- Agreed on a limited number of changes to reduce spend through 2026 by about $50 million, while still delivering water by June 2026:

Defer one reservoir



Defer most of PLW_2.0

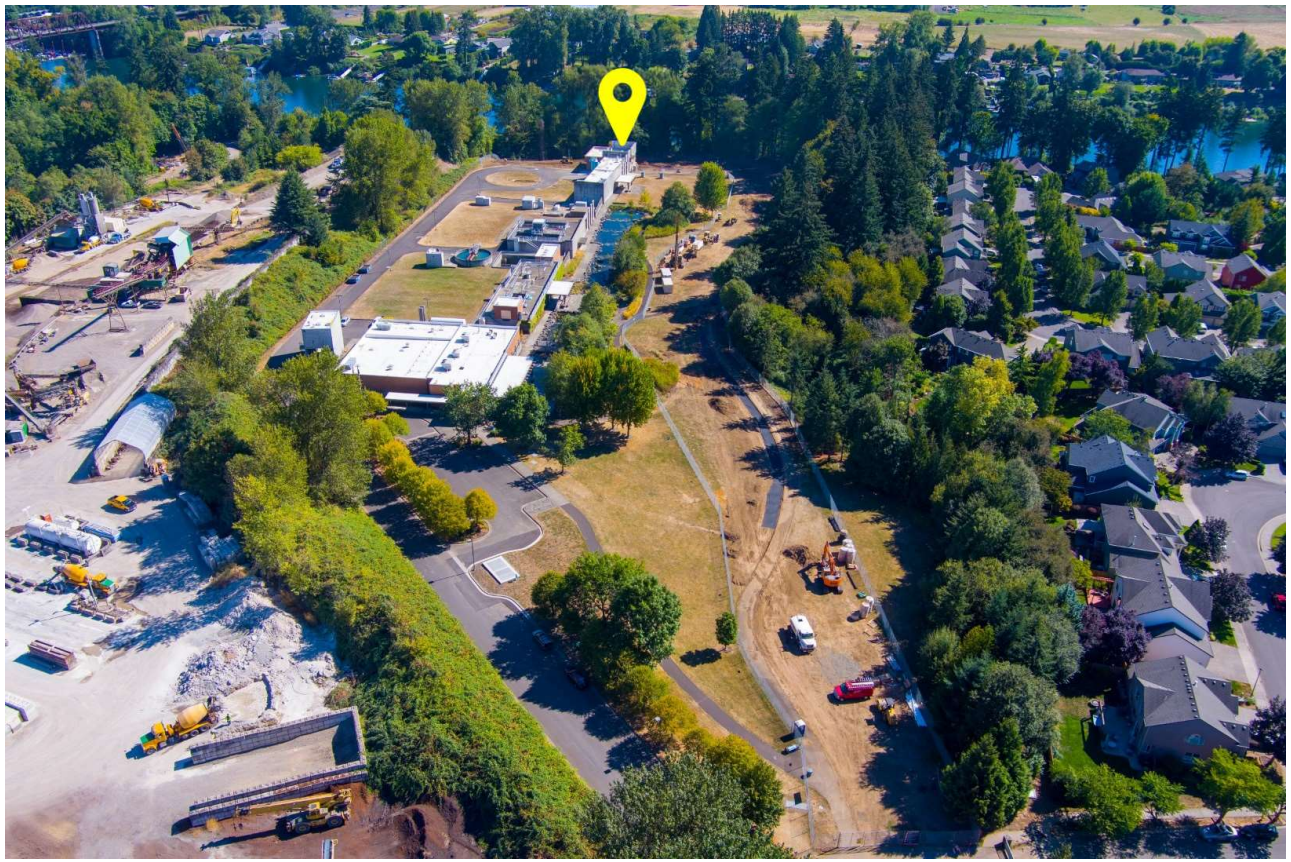


Other deferrals

- Completing the fiber-optic communications network north of the WTP
- Minor WTP components
- Staff positions

WILLAMETTE INTAKE FACILITIES

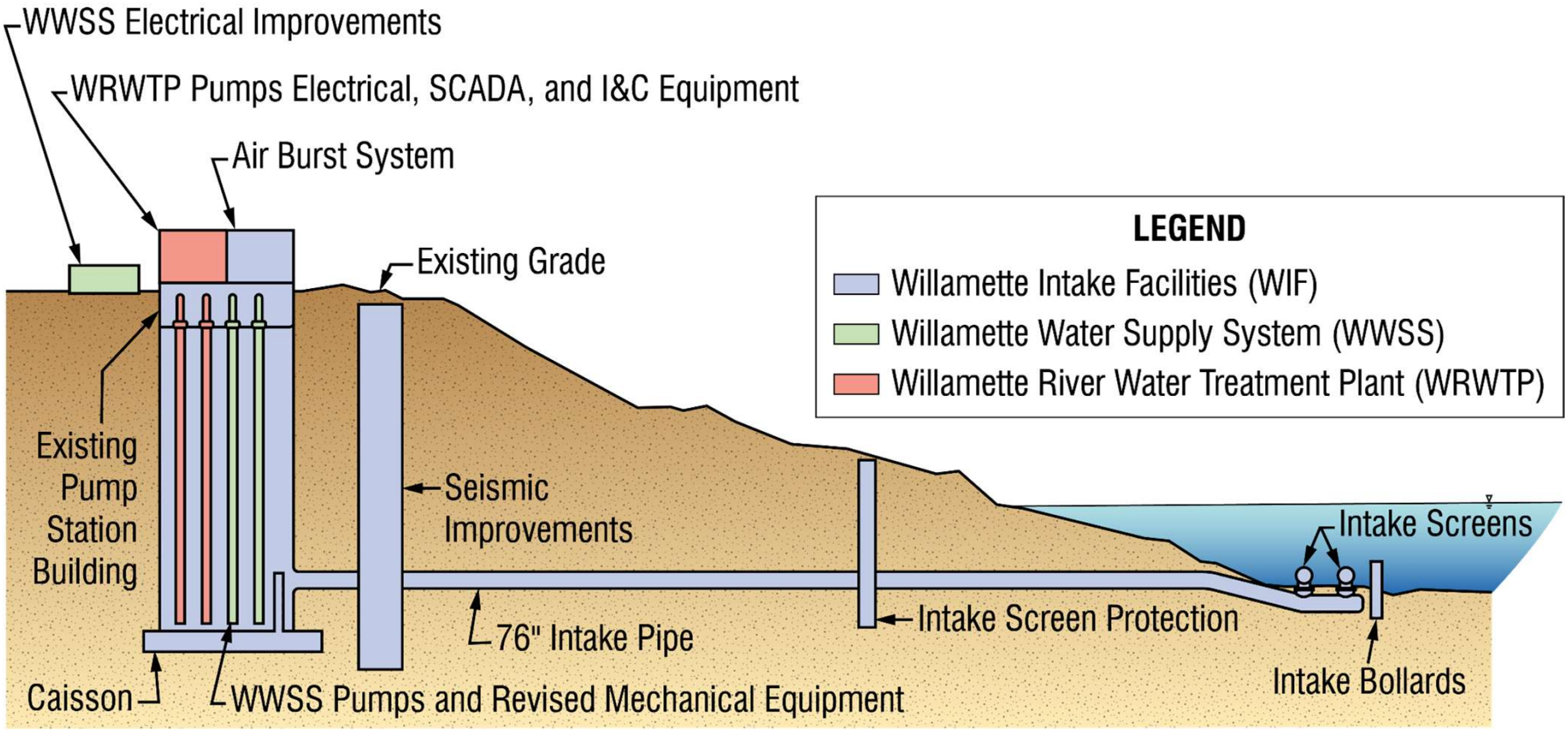
Co-located with the Willamette River Water Treatment Plant



Willamette Intake Facilities

North

Willamette Intake Facilities Components



Fish Screens

Raw Water Pump Station Structure

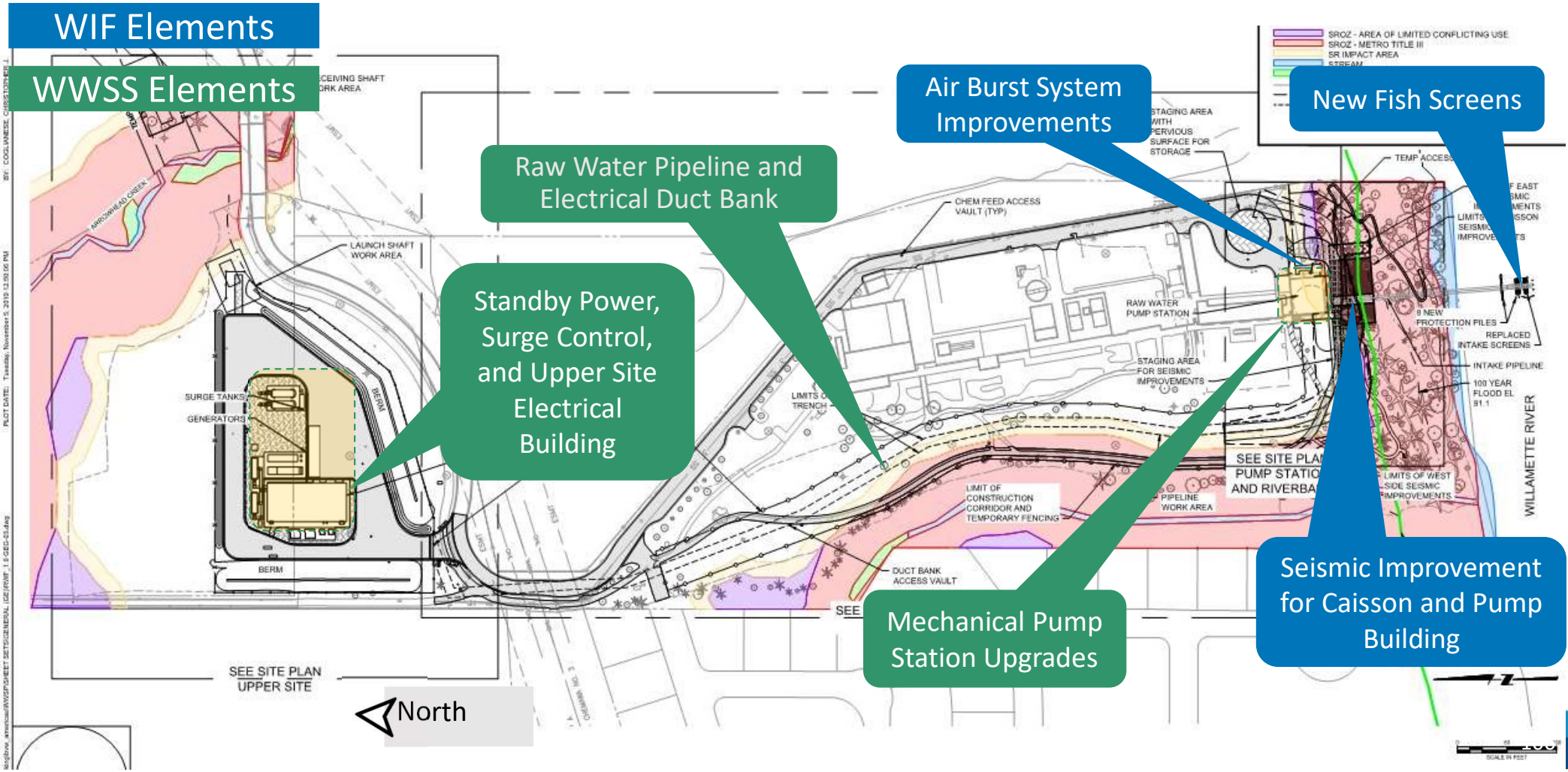
Air Burst System

Compressors

Receiver Tank

Air Burst Valves

WIF-Related Elements of the WWSP's RWF_1.0 Project



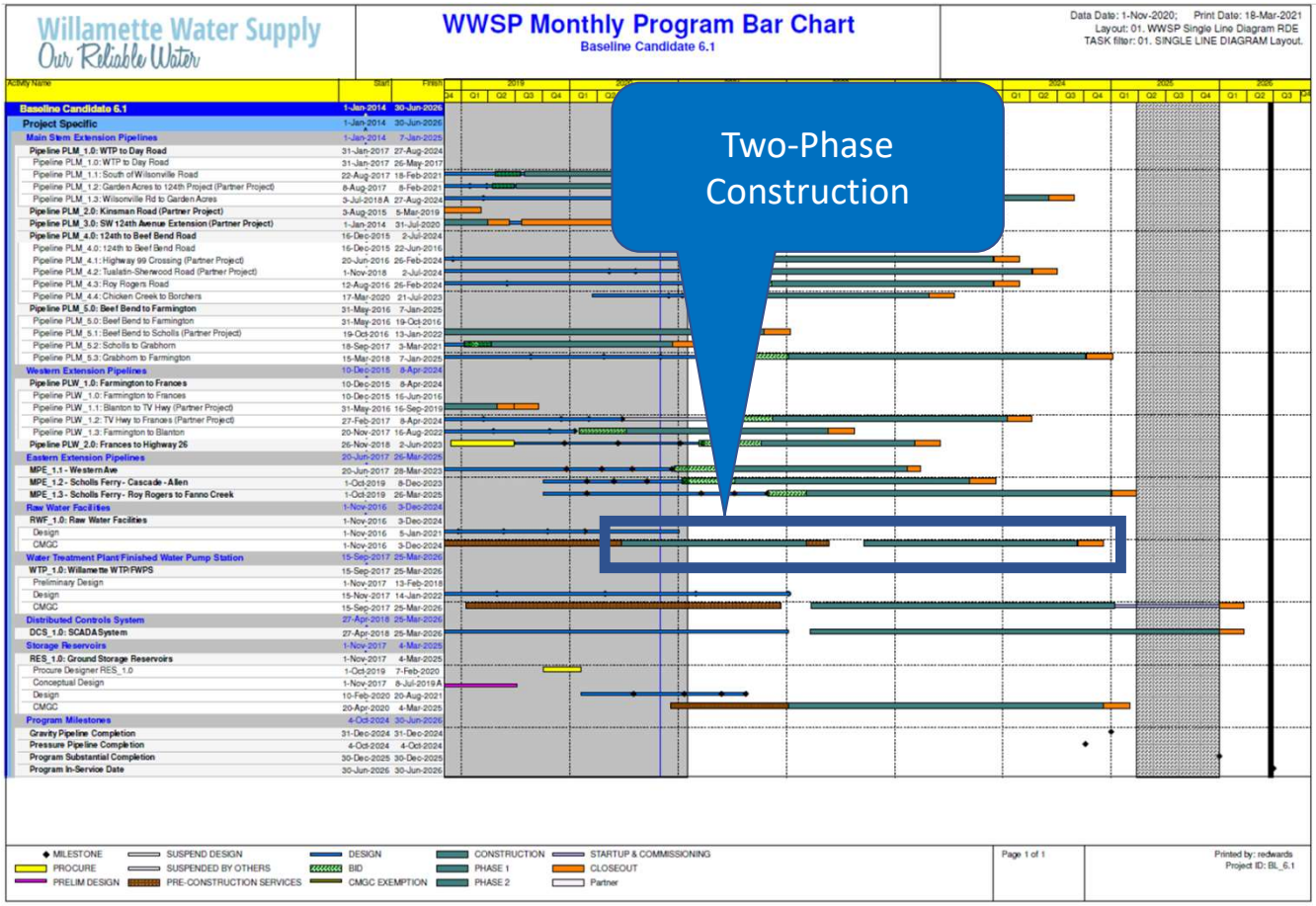
Construction Cost Estimate Update

Total Project Budget	Estimated WIF Share	Estimated WWSS Share
$108,766,499	$11,009,417	$97,757,082

Note: Total project budget estimate does not include permitting and other allocated system-wide costs

RWF_1.0 Project Schedule

- Design Phase:
  - Complete
- Construction Phase 1
  - Mostly below-ground work
  - Started Q2 2020
  - Ends Q1 2022
- Construction Phase 2
  - Above-ground construction and equipping
  - Starts Q3 2022



Completed Construction Elements (Q1 2021)

Mass Excavation

Upper Site CFA Piles

Current Activities (Q1 2021)
Ground Improvements

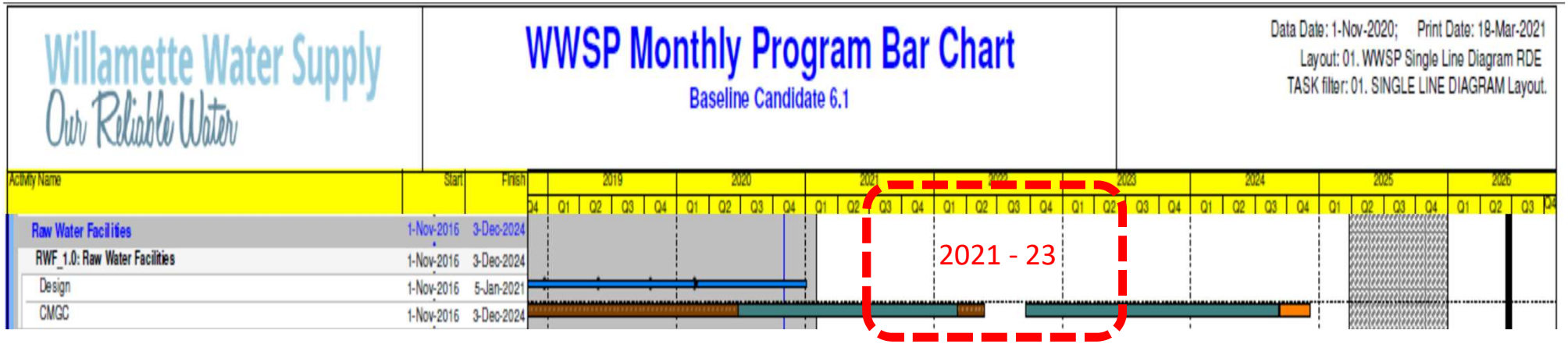
Current Activities (Q1 2021)
Ground Improvement Spoils Handling

Current Activities (Q1 2021)
Upper Site

- Trenchless crossing launching and receiving shafts
- Foundation for air burst receiver tank
- Coordination for the raw water pump station seismic retrofit improvements

2021-23 WIF BIENNIUM BUDGET ACTIVITIES

WIF-related Elements of the RWF_1.0 Project 21 – 23 Biennium



Construction Phase 1

- Starts Q2 2020
- Ends Q1 2022
- Ground stabilization
- Intake screens replacement
- Pump station seismic retrofit

Construction Phase 2

- Starts Q3 2022
- Ends Q4 2024
- Air-burst system improvements
- Building mechanical improvements

WIF Requested Capital Outlay 2021-23 Biennium

Resources		
TVWD	$	3,131,620
Other Partners		3,402,116
Total Resources	$	6,533,736
Requirements		
Capital Outlay	$	6,533,736
Total Requirements	$	6,533,736

Note: Requested capital outlay includes budget for allocated system-wide costs

WILLAMETTE WATER SUPPLY SYSTEM

WWSP Map

As found on the front page of:

www.OurReliableWater.org

Project Delivery Progress – Spring 2019

Work Package	Design					Construction
	Conceptual/ Preliminary	30%/50%	60%/70%	90%	100%	
RWF_1.0						
PLM_1.1						
PLM_1.2						
PLM_1.3						
PLM_2.0						
PLM_3.0						
WTP_1.0						
PLM_4.1						
PLM_4.2						
PLM_4.3						
PLM_4.4						
PLM_5.1						
PLM_5.2						
PLM_5.3						
RES_1.0						
PLW_1.1						
PLW_1.1 ext						
PLW_1.2						
PLW_1.3						
PLW_2.0						
MPE_1.0						

Complete Active Work

Project Delivery Progress – Spring 2021

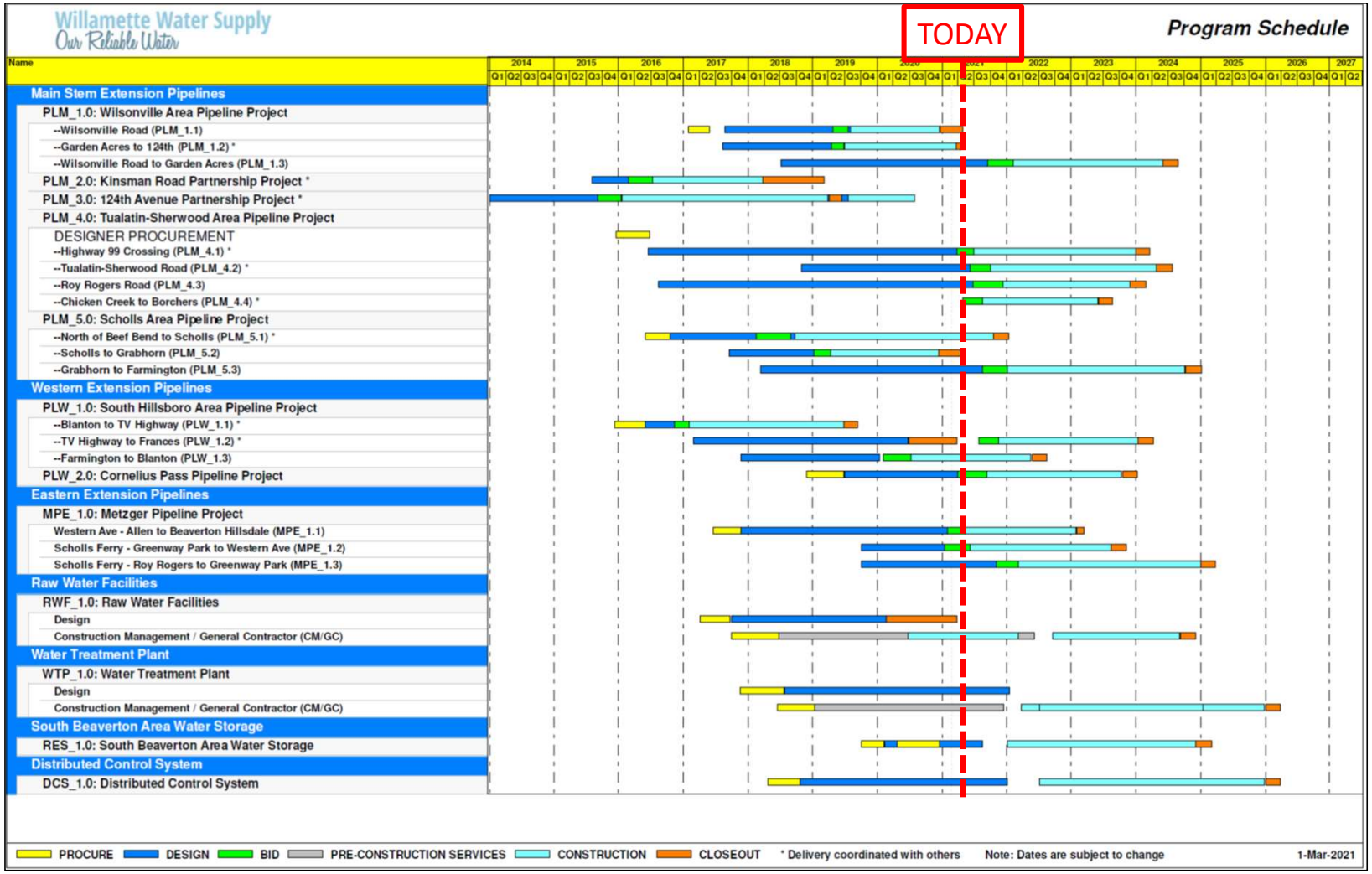
Work Package	Design					Construction
	Conceptual/ Preliminary	30%/50%	60%/70%	90%	100%	
RWF_1.0						
PLM_1.1						
PLM_1.2						
PLM_1.3						
PLM_2.0						
PLM_3.0						
WTP_1.0						
PLM_4.1						
PLM_4.2						
PLM_4.3						
PLM_4.4						
PLM_5.1						
PLM_5.2						
PLM_5.3						
RES_1.0						
PLW_1.1						
PLW_1.1 ext						
PLW_1.2						
PLW_1.3						
PLW_2.0/COH_1.0						
MPE_1.1/COB_1.1						
MPE_1.2/COB_1.2						
MPE_1.3						

Complete Active Work

WWSP Schedule

As found on the front page of:

www.OurReliableWater.org



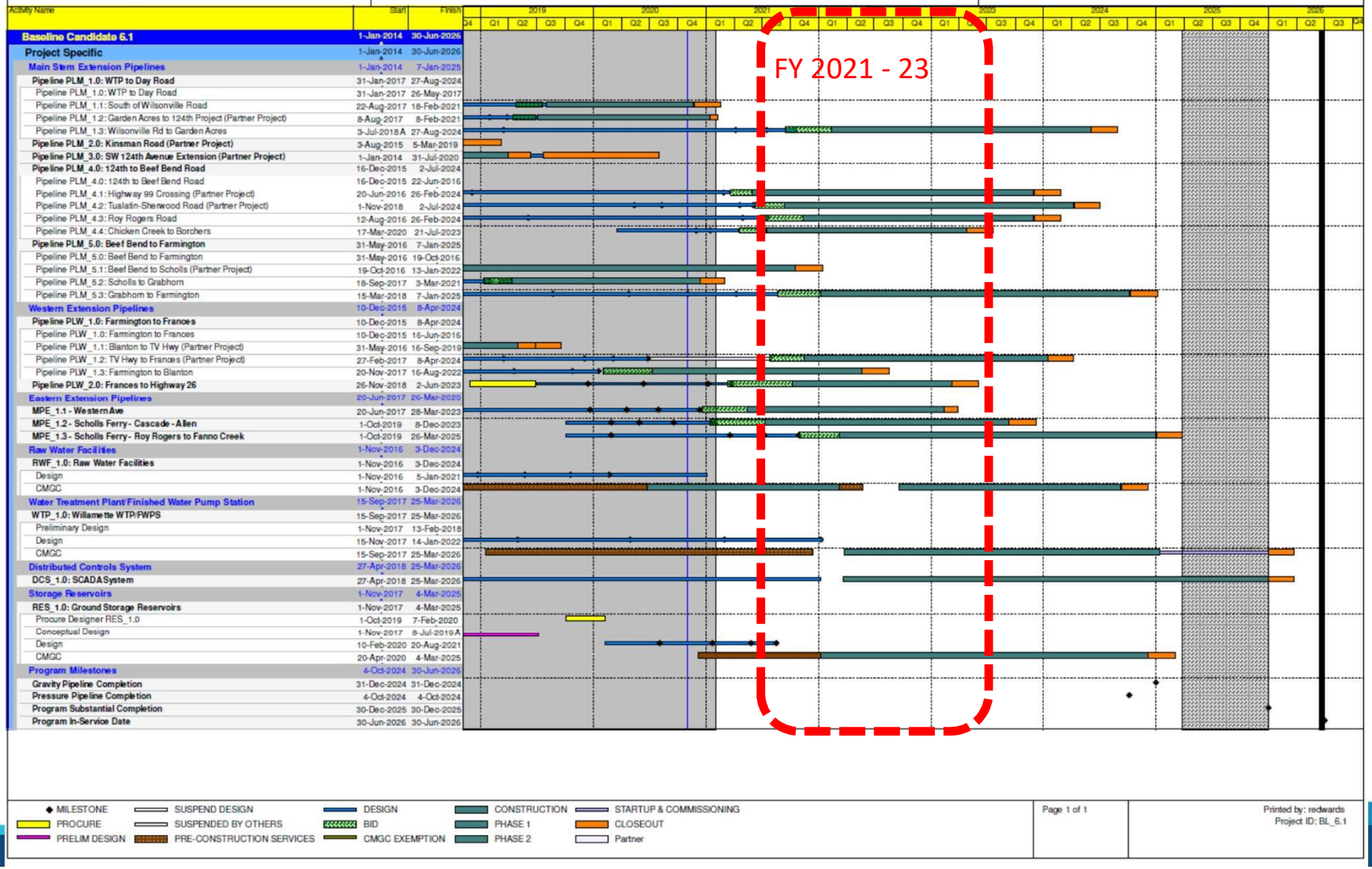
2021-23 WWSS BIENNIUM BUDGET ACTIVITIES

Willamette Water Supply
Our Reliable Water

WWSP Monthly Program Bar Chart

Baseline Candidate 6.1

Data Date: 1-Nov-2020; Print Date: 18-Mar-2021
Layout: 01. WWSP Single Line Diagram RDE
TASK filter: 01. SINGLE LINE DIAGRAM Layout.



Activity Name	Start	Finish
Baseline Candidate 6.1	1-Jan-2014	30-Jun-2026
Project Specific	1-Jan-2014	30-Jun-2026
Main Stem Extension Pipelines	1-Jan-2014	7-Jan-2025
Pipeline PLM_1.0: WTP to Day Road	31-Jan-2017	27-Aug-2024
Pipeline PLM_1.0: WTP to Day Road	31-Jan-2017	26-May-2017
Pipeline PLM_1.1: South of Wilsonville Road	22-Aug-2017	18-Feb-2021
Pipeline PLM_1.2: Garden Acres to 124th Project (Partner Project)	8-Aug-2017	8-Feb-2021
Pipeline PLM_1.3: Wilsonville Rd to Garden Acres	3-Jul-2018 A	27-Aug-2024
Pipeline PLM_2.0: Kinsman Road (Partner Project)	3-Aug-2015	5-Mar-2019
Pipeline PLM_3.0: SW 124th Avenue Extension (Partner Project)	1-Jan-2014	31-Jul-2020
Pipeline PLM_4.0: 124th to Beef Bend Road	16-Dec-2015	2-Jul-2024
Pipeline PLM_4.0: 124th to Beef Bend Road	16-Dec-2015	22-Jun-2016
Pipeline PLM_4.1: Highway 99 Crossing (Partner Project)	20-Jun-2016	26-Feb-2024
Pipeline PLM_4.2: Tualatin-Sherwood Road (Partner Project)	1-Nov-2018	2-Jul-2024
Pipeline PLM_4.3: Roy Rogers Road	12-Aug-2016	26-Feb-2024
Pipeline PLM_4.4: Chicken Creek to Borchers	17-Mar-2020	21-Jul-2023
Pipeline PLM_5.0: Beef Bend to Farmington	31-May-2016	7-Jan-2025
Pipeline PLM_5.0: Beef Bend to Farmington	31-May-2016	19-Oct-2016
Pipeline PLM_5.1: Beef Bend to Scholls (Partner Project)	19-Oct-2016	13-Jan-2022
Pipeline PLM_5.2: Scholls to Grabhorn	18-Sep-2017	3-Mar-2021
Pipeline PLM_5.3: Grabhorn to Farmington	15-Mar-2018	7-Jan-2025
Western Extension Pipelines	10-Dec-2015	8-Apr-2024
Pipeline PLW_1.0: Farmington to Frances	10-Dec-2015	8-Apr-2024
Pipeline PLW_1.0: Farmington to Frances	10-Dec-2015	16-Jun-2016
Pipeline PLW_1.1: Blanton to TV Hwy (Partner Project)	31-May-2016	16-Sep-2019
Pipeline PLW_1.2: TV Hwy to Frances (Partner Project)	27-Feb-2017	8-Apr-2024
Pipeline PLW_1.3: Farmington to Blanton	20-Nov-2017	16-Aug-2022
Pipeline PLW_2.0: Frances to Highway 26	26-Nov-2018	2-Jun-2023
Eastern Extension Pipelines	20-Jun-2017	26-Mar-2025
MPE_1.1 - Western Ave	20-Jun-2017	28-Mar-2023
MPE_1.2 - Scholls Ferry - Cascade - Allen	1-Oct-2019	8-Dec-2023
MPE_1.3 - Scholls Ferry - Roy Rogers to Fanno Creek	1-Oct-2019	26-Mar-2025
Raw Water Facilities	1-Nov-2016	3-Dec-2024
RWF_1.0: Raw Water Facilities	1-Nov-2016	3-Dec-2024
Design	1-Nov-2016	5-Jan-2021
CMGC	1-Nov-2016	3-Dec-2024
Water Treatment Plant/Finished Water Pump Station	15-Sep-2017	25-Mar-2026
WTP_1.0: Willamette WTP/FWPS	15-Sep-2017	25-Mar-2026
Preliminary Design	1-Nov-2017	13-Feb-2018
Design	15-Nov-2017	14-Jan-2022
CMGC	15-Sep-2017	25-Mar-2026
Distributed Controls System	27-Apr-2018	25-Mar-2026
DCS_1.0: SCADA System	27-Apr-2018	25-Mar-2026
Storage Reservoirs	1-Nov-2017	4-Mar-2025
RES_1.0: Ground Storage Reservoirs	1-Nov-2017	4-Mar-2025
Procure Designer RES_1.0	1-Oct-2019	7-Feb-2020
Conceptual Design	1-Nov-2017	8-Jul-2019 A
Design	10-Feb-2020	20-Aug-2021
CMGC	20-Apr-2020	4-Mar-2025
Program Milestones	4-Oct-2024	30-Jun-2026
Gravity Pipeline Completion	31-Dec-2024	31-Dec-2024
Pressure Pipeline Completion	4-Oct-2024	4-Oct-2024
Program Substantial Completion	30-Dec-2025	30-Dec-2025
Program In-Service Date	30-Jun-2026	30-Jun-2026

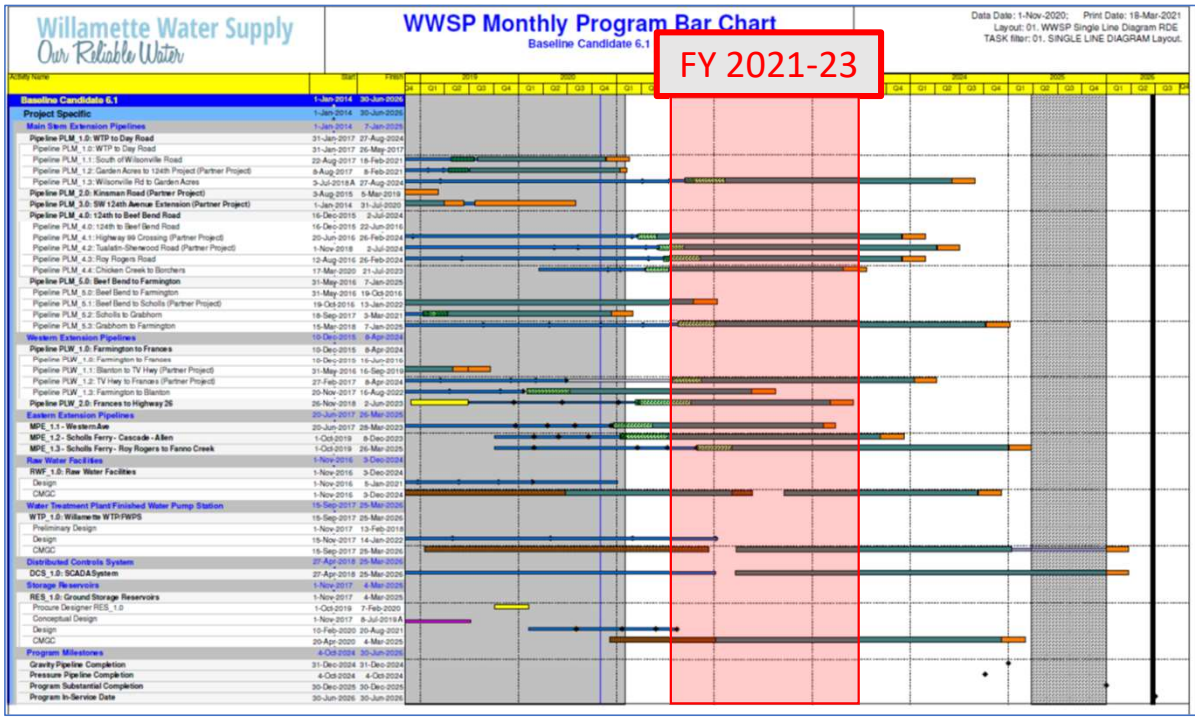
◆ MILESTONE
PROCURE
PRELIM DESIGN
SUSPEND DESIGN
SUSPENDED BY OTHERS
PRE-CONSTRUCTION SERVICES
DESIGN
BID
CMGC EXEMPTION
CONSTRUCTION
PHASE 1
PHASE 2
STARTUP & COMMISSIONING
CLOSEOUT
Partner

Page 1 of 1

Printed by: redwards
Project ID: BL_6.1

WWSS Work Planned for FY 2021-23

- Complete design of 7 projects
- Advance construction of 16 projects
- Continued program management
  - WIFIA compliance and loan programs
  - Safety program
  - Communications and outreach program
  - Development of financial procedures
- Continued acquisitions
  - Real estate
  - Permits and land use approvals
- Plan
  - Water supply integration
  - Commissioning and start-up
  - Operations



WWSS Requested Capital Outlay 2021-23 Biennium

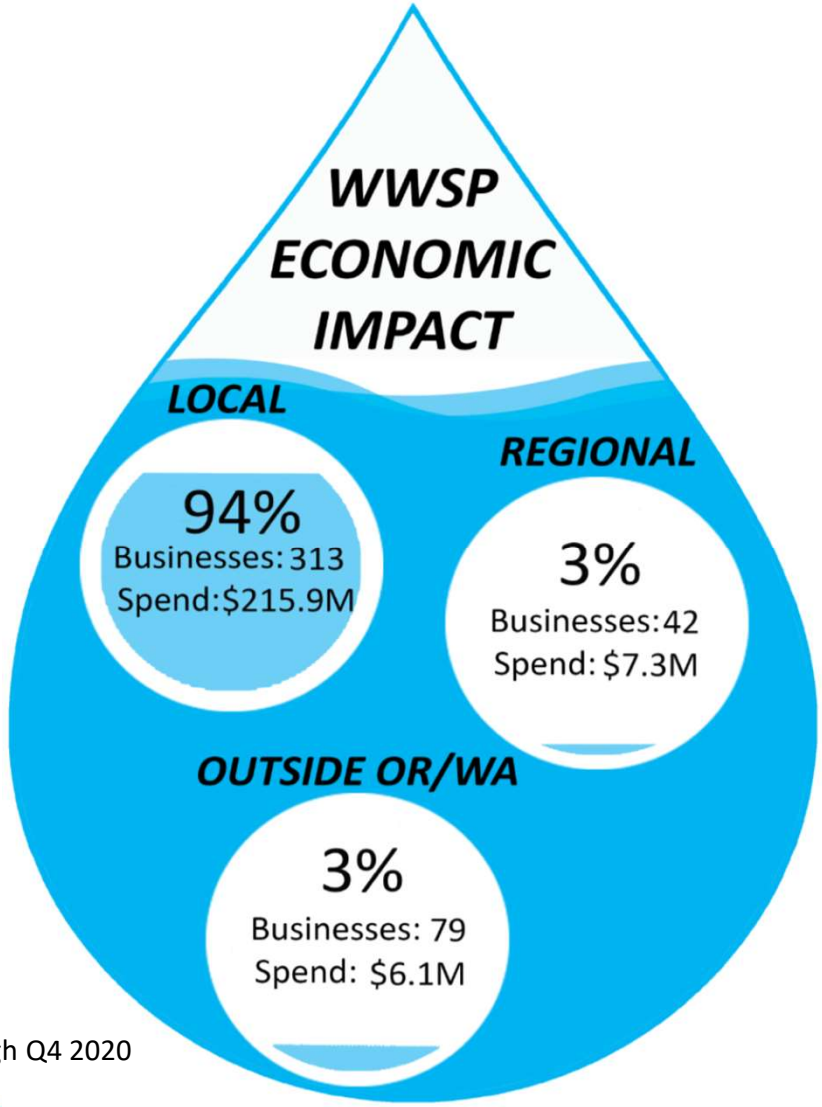
Resources		
TVWD	$	241,923,889
Other Partners		210,365,761
Total Resources		452,289,650
Requirements		
Capital Outlay	$	452,289,650
Total Requirements	$	452,289,650

WWSP Summary

	WIF	WWSS	MPE	Total
Resources				
TVWD	$ 3,131,620	$ 241,923,889	$ 82,747,861	$ 327,803,370
Other Partners	3,402,116	210,365,761	-	$ 213,767,878
Total Resources	$ 6,533,736	$ 452,289,650	$ 82,747,861	$ 541,571,247
Requirements				
Capital Outlay	$ 6,533,736	$ 452,289,650	$ 82,747,861	$ 541,571,247
Total Requirements	$ 6,533,736	$ 452,289,650	$ 82,747,861	$ 541,571,247

Supporting Our Economy

- Business Utilization: Recent Activities
  - 94% of spend for WWSS is benefitting the local economy
  - 69 additional local businesses were accounted for from Q3 to Q4 reporting
  - Finalized 2020 Q4 utilization statistics
  - Publishing Semi-annual Business Utilization Report



Data through Q4 2020

Questions and Answers

Next Steps

- Future Workshops and Meetings
  - Workshop #3: April 22, 2021
  - Budget Committee Meeting and Public Hearing: May 25, 2021
- Questions for the Team