

Budget Workshop

Fiscal Year 2024/25 Midcycle Budget

Jonathan Wunderlich, Director of Finance & Administration

Agenda

- Operating Budget Review
- Capital Improvement Program Overview
- Financial Planning Model Review
- Next Steps

This presentation provides a summary of the information presented at the May 23rd workshop. Please refer to the May 23rd workshop materials for additional detail.

Budget Review and Assumptions

Unplanned Reserve Impacts

Reserves are being spent faster than anticipated

- Construction costs have gone up and the AMI schedule has accelerated – increased spend of capital reserves of about \$3.7 million this year
- Additional SFPUC purchases this year compared to budget due to facility outages and water quality targets: ~\$6 million
- Unexpected SFPUC wholesale water rate increase of 8.8% effective July 1, 2024: ~\$2 million new ongoing cost
- Reduction in water demand – less post-drought increase than expected (1.7 MGD lower future demands: ~\$4 million annual revenue loss)

Other key assumptions

- Employee labor and benefit costs consistent with current contracts – cost of living adjustment of 3.14% effective July 1, 2024
- Projected water rate increases to maintain effective operations and financial capacity – assumed 5.5% increase in FY 24/25

Proposed Staffing Changes

Staffing Changes	Dept.	FTEs
Addition of 1 intern	OGM	Intern
Convert existing Public Affairs Technician (Defined Term) to permanent Public Affairs Specialist to support enhanced community engagement	OGM	
Add IT Analyst to directly support business applications, reporting, and support cybersecurity	ETS	1.0
Add Treatment Facilities Operator/Advanced (Defined Term) to support startup and operation of PFAS Treatment Facility	O&M	1.0
Remove 5 vacant Meter Reader (Defined Term) due to completion of AMI project	F&A	(5.0)
Reclassify Meter Reader Supervisor position to Customer Account Field Supervisor	F&A	
Conversion of Customer Service Representative (Defined Term) position to permanent position pending final Board review of monthly billing proposal (will stay defined term for budget)	F&A	
Convert 1 defined-term Water Conservation Specialist to a permanent position consistent with the adopted Water Efficiency Master Plan	WR	
Add 1 defined-term Engineer/Hydrologist I/II position to cover casework/regulatory work freeing up engineers for Sustainable Groundwater Management Act, projects, and climate change modeling	WR	1.0
Net Change		(2.0)

Budget Comparison

Total Revenues

Revenues	FYE 22 Actual	FYE 23 Actual	FYE 24 Budget	FYE 24 Estimated	FYE 25 Budget	FYE 25 Amended
	(\$ in thousands)					
Water Revenue	\$116,429	\$112,188	\$124,403	\$119,755	\$131,405	\$128,471
Drought Surcharge Revenue	2,976	10,259	-	-	-	-
Ground Water Revenue	443	611	560	623	571	631
1% Tax Allocation	7,310	8,063	8,081	8,081	8,445	8,445
State Water Contract Tax	6,283	6,349	6,545	6,545	6,452	6,452
Interest Revenue	3,705	3,128	4,323	4,231	3,793	3,754
Facilities Connection Charges - FIF	6,414	7,179	4,213	2,816	4,593	4,621
Facilities Connection Charges - FRF	3,410	4,000	2,540	1,680	2,769	2,679
Customer Capital Contributions	2,517	3,428	3,800	3,700	3,800	4,093
Grants, Reimbursements	6,969	5,569	1,007	2,398	1,078	1,078
Other Revenue	1,330	1,759	1,284	1,284	1,287	1,316
Total Revenues	\$157,787	\$162,535	\$156,756	\$151,112	\$164,192	\$161,539

Budget Comparison

Total Expenses

Expenses	FYE 22 Actual	FYE 23 Actual	FYE 24 Budget	FYE 24 Estimated	FYE 25 Budget	FYE 25 Amended
	(\$ in thousands)					
Source of Supply	\$43,516	\$47,564	\$50,126	\$56,828	\$51,531	\$55,245
Pumping	1,838	2,148	2,808	2,474	2,898	2,586
Water Treatment	14,725	15,632	19,373	16,652	19,895	19,532
Transmission & Distribution	15,717	16,530	16,545	16,432	16,903	16,053
Customer Accounts	4,770	5,318	6,339	6,197	6,552	5,232
Administrative & General	25,050	23,104	22,107	22,314	22,890	25,518
Expense Projects	4,700	4,187	4,497	3,289	4,093	4,121
Total Operating Expenses	110,316	114,484	121,796	124,187	124,762	128,288
Capital Projects	35,082	32,805	50,344	54,076	53,253	58,290
Customer Capital Contributions	3,078	3,817	3,800	4,000	3,800	4,093
Debt Service	4,848	5,965	5,924	5,924	5,911	7,646
Total Non-Operating Expenses	43,008	42,587	60,068	64,000	62,964	70,029
Total Expenses	\$153,324	\$157,070	\$181,864	\$188,187	\$187,726	\$198,317

Current Projected Financial Status

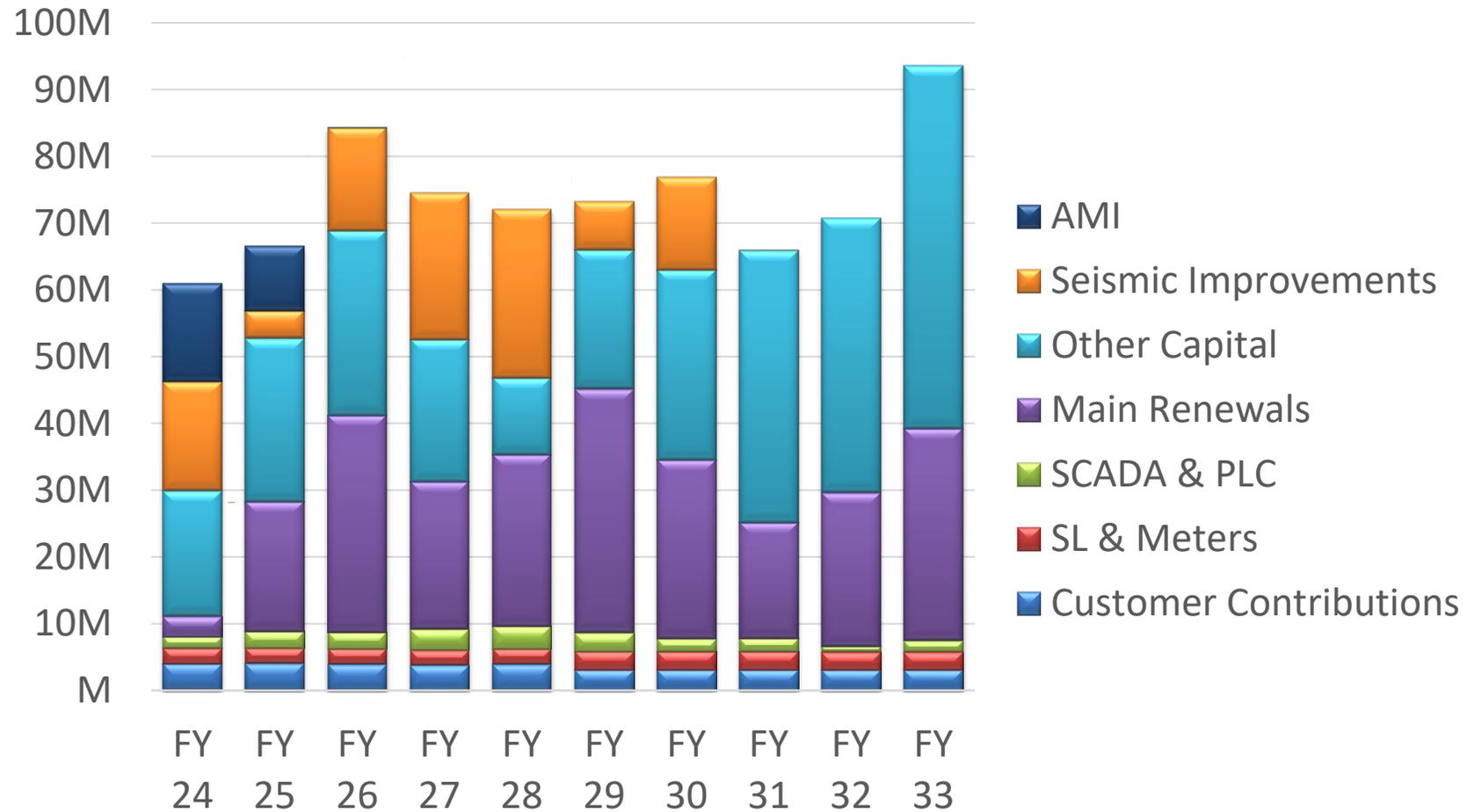
General Fund

	FYE 22 Actual	FYE 23 Actual	FYE 24 Budget	FYE 24 Estimated	FYE 25 Budget	FYE 25 Amended
Changes in Fund Balance	(\$ in thousands)					
General Fund Beginning Balance	\$123,949	\$135,429	\$134,304	\$135,386	\$110,904	\$102,409
Revenues	146,638	150,239	148,348	144,973	155,217	152,678
Expenses	144,264	148,911	171,748	177,950	176,586	186,072
Debt Proceeds	10,000	-	-	-	-	30,000
Reconciling Timing Difference	(870)	(1,371)	-	-	-	-
General Fund Ending Balance	\$135,429	\$135,386	\$110,904	\$102,409	\$89,535	\$99,015
Change in Fund Balance \$	11,481	(43)	(23,400)	(32,977)	(21,369)	(3,394)
Change in Fund Balance %	9%	0%	-17%	-24%	-19%	-3%

Capital Expenditures

	FYE 22 Actual	FYE 23 Actual	FYE 24 Budget	FYE 24 Estimated	FYE 25 Budget	FYE 25 Amended
Capital Expenditures			(\$ in thousands)			
Capital Projects - GF	\$26,022	\$24,645	\$40,228	\$43,839	\$42,114	\$46,045
Capital Expenditures - FIF	5,649	4,159	7,575	8,557	8,370	9,567
Capital Expenditures - FRF	3,410	4,000	2,540	1,680	2,769	2,679
Customer Capital Contributions	3,078	3,817	3,800	4,000	3,800	4,093
Total Capital Expenditures	38,159	36,621	54,144	58,076	57,053	62,383
Extraordinary Expense	4,700	4,187	4,497	3,289	4,093	4,121
Grand Total Capital Program	\$42,859	\$40,809	\$58,641	\$61,365	\$61,146	\$66,505

Proposed 10 year CIP By Program



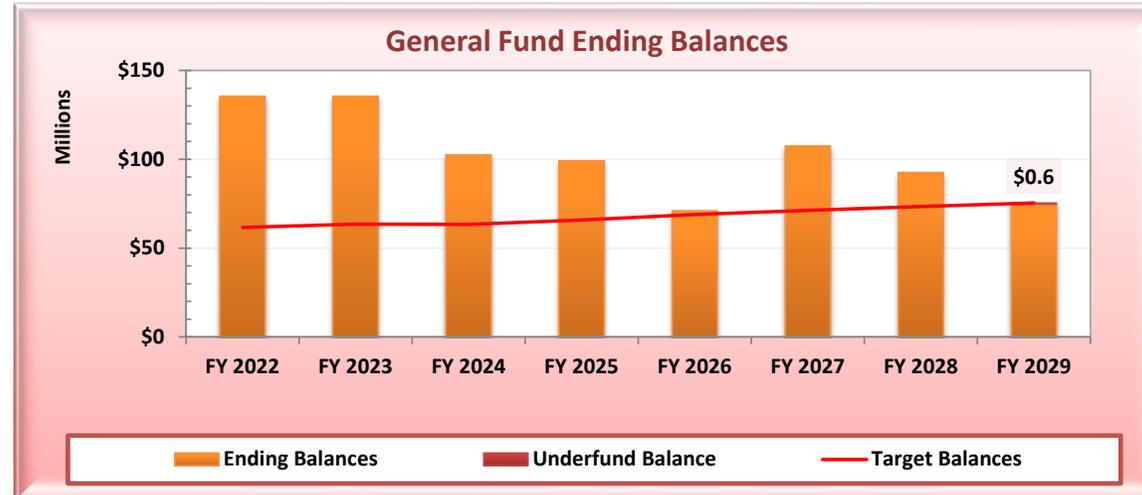
Financial Planning Model Review

- Significant Changes to Financial Planning Model Since Budget Adoption
 - Updated water demands
 - Increase in demand after the drought is less than expected
 - Demands decreased 2.1 MGD and 1.3 MGD for FY 23/24 and FY 24/25, respectively, compared to budget adoption; long term demand estimates decreased 1.7 MGD
 - Updated costs in FY 23/24 for major expenditures
 - Increase in construction costs for capital projects and additional water purchases from SFPUC due to facility outages and water quality goals
 - Assumes higher level of new debt – increase from \$45 million to \$85 million over the planning horizon to fund capital program, increasing annual debt service payment by \$2.3 million
 - SFPUC wholesale water rate increase of 8.8% effective July 1, 2024
 - Includes \$25 million in grants and other revenues in the out years considered highly likely
 - Projected water rate increases to maintain effective operations and financial capacity
 - FY 24/25: 5.5%; FY 25/26: 5.5%; FY 26/27: 5.0%; FY 27/28+: 4.0%
 - Previous water rate increases assumption was 4% annual rate increases

Financial Planning Model Review

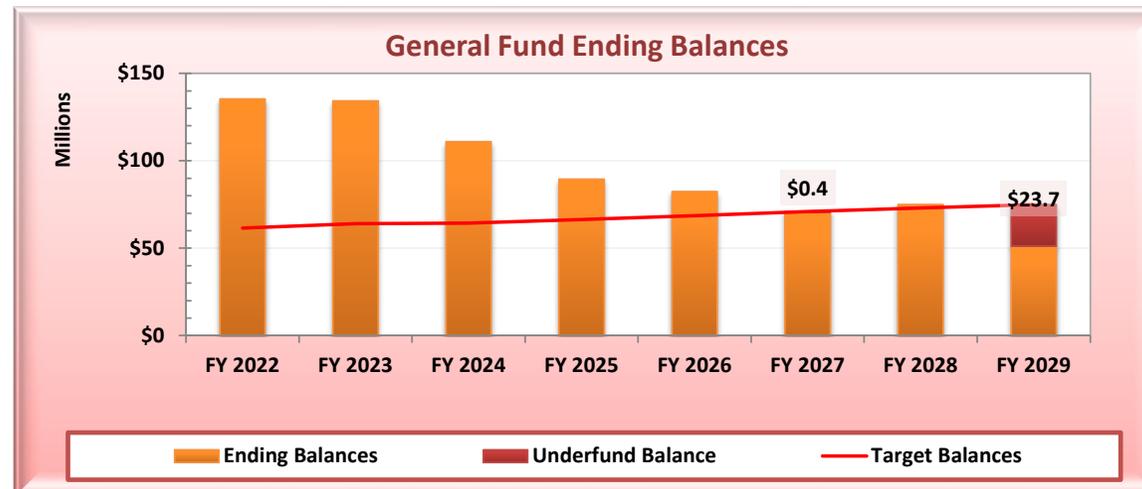
General Fund Ending Balances

Amended Budget



- Low year FYE 2029 at \$0.6 million below reserve target

Adopted Budget

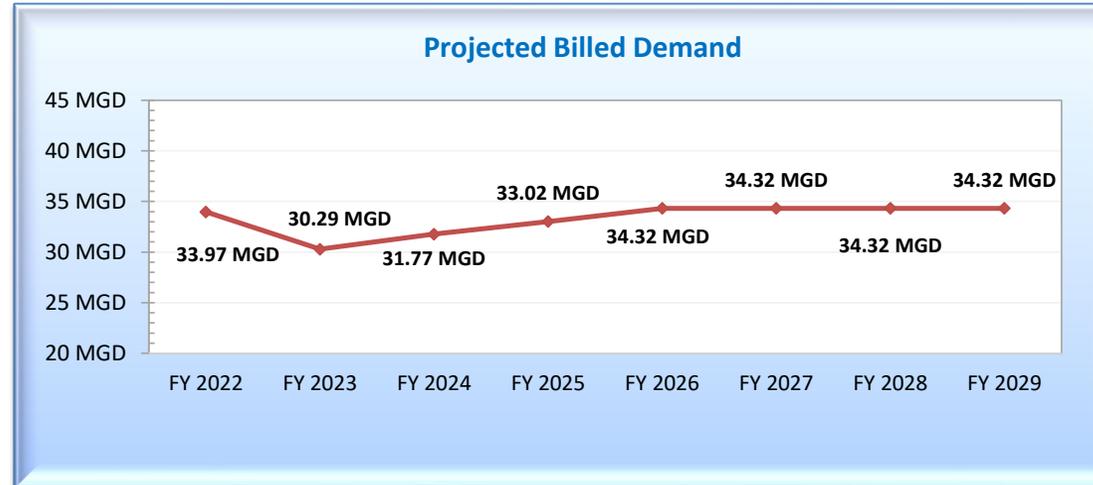


- Low year FYE 2027 at \$0.4 million below reserve target (FYE 2029 was not shown last year at budget adoption)

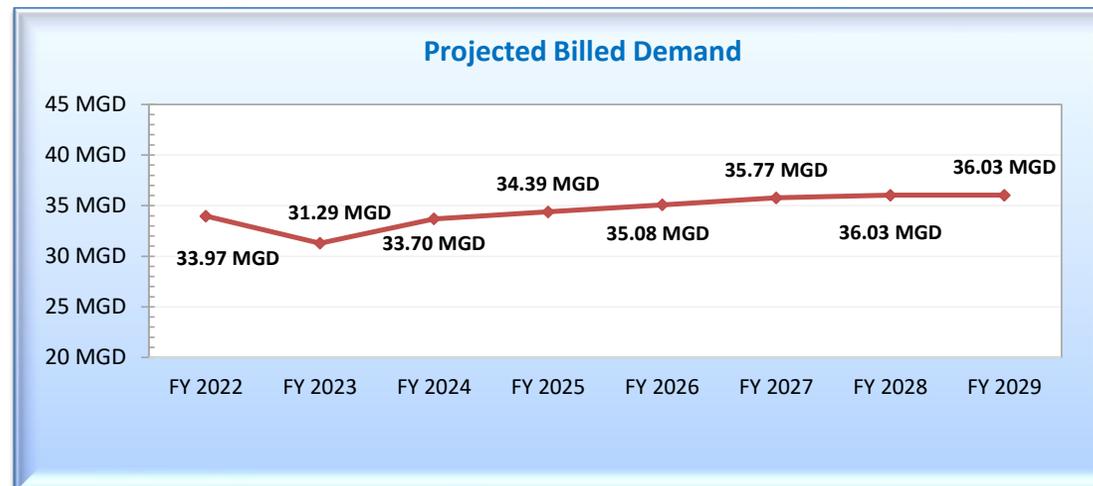
Financial Planning Model Review

Projected Billed Demand

Amended Budget



Adopted Budget

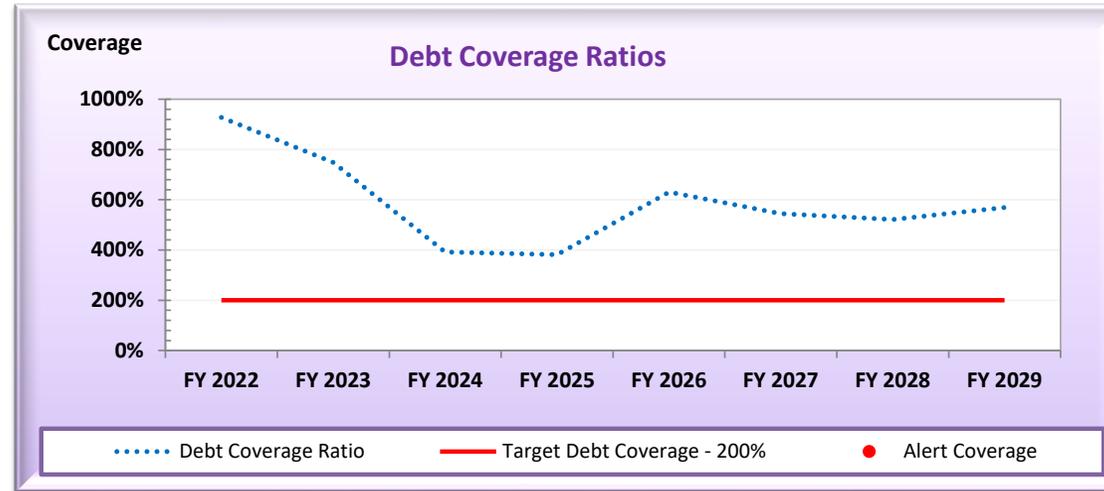


- Expected increase of demand after the drought effectively stopped. Updated forecast assumes greater permanent demand drop associated with the drought.

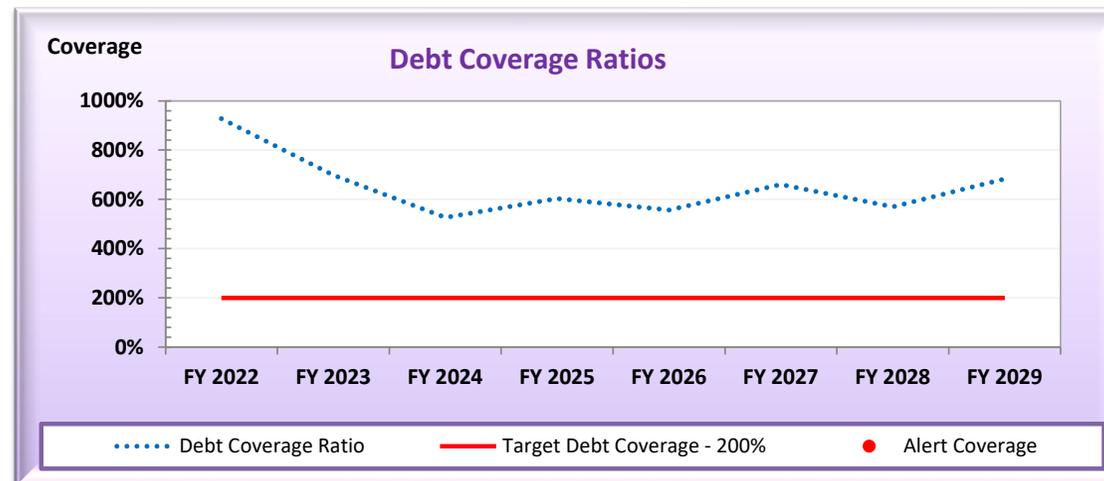
Financial Planning Model Review

Debt Coverage Ratios

Amended Budget



Adopted Budget

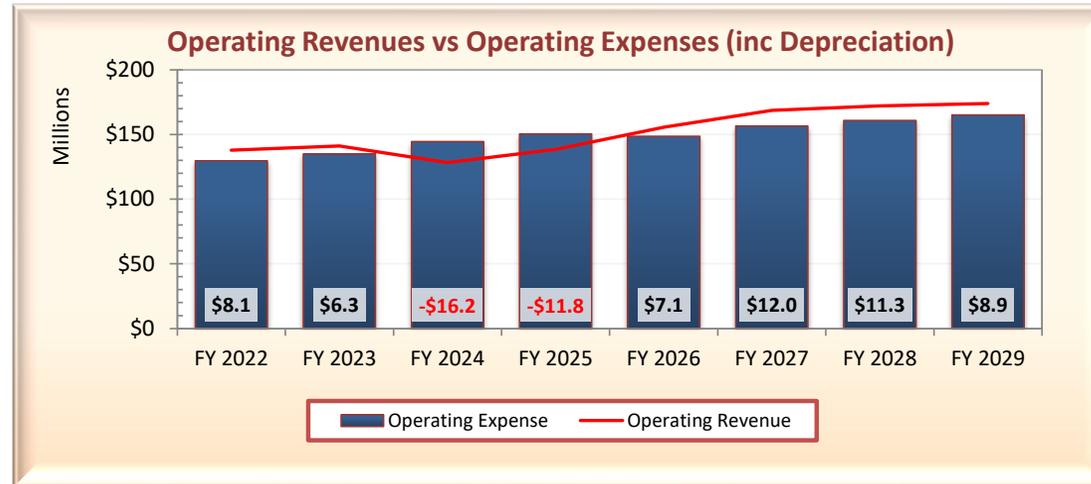


- Debt coverage ratios remain well above 200% target through the planning horizon.

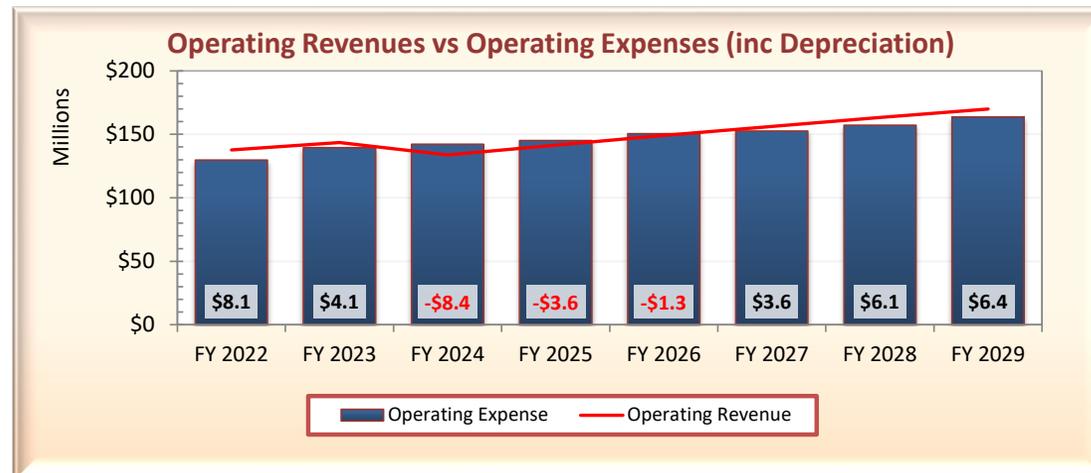
Financial Planning Model Review

Revenues vs Expenses

Amended Budget



Adopted Budget

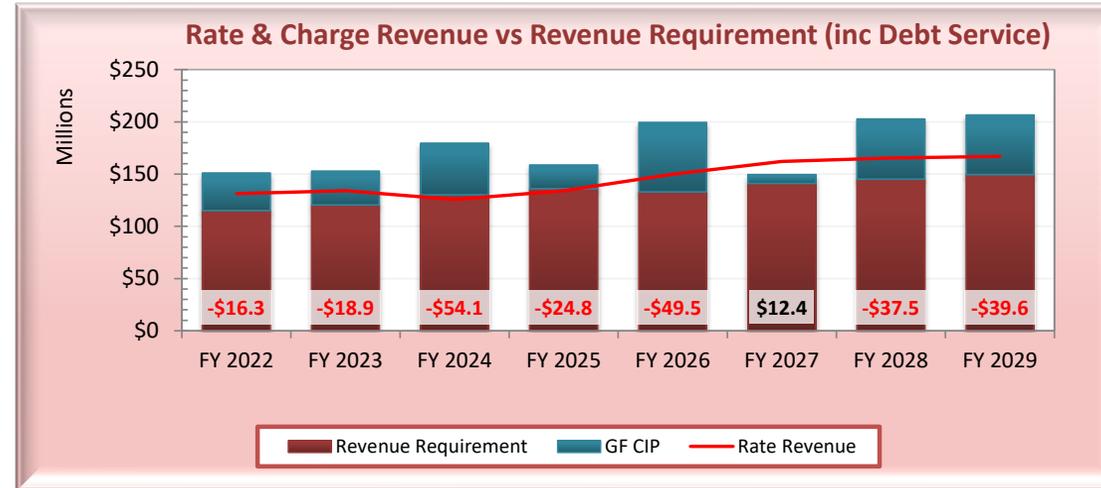


- District relies on non-operating revenues, such as property taxes, to cover operating expenses including depreciation.

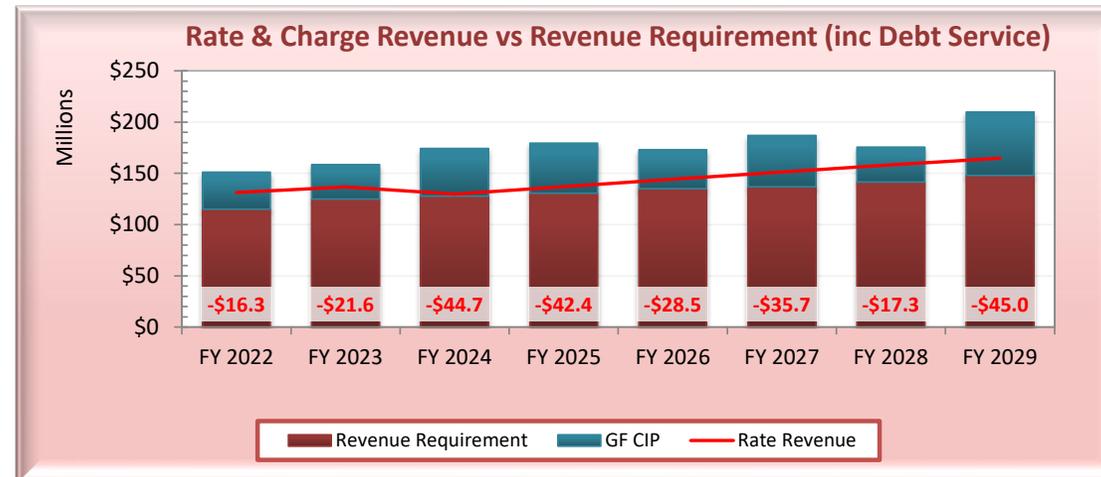
Financial Planning Model Review

Rate Revenue vs Revenue Requirement

Amended Budget



Adopted Budget

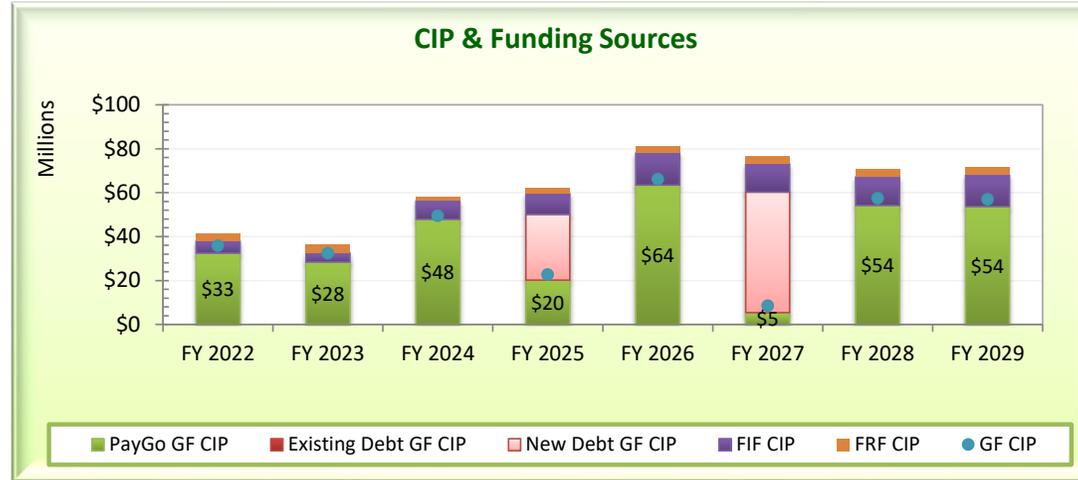


- District relies on other funding sources, including property taxes and accumulated reserves, in addition to water rate and charge revenue to meet its revenue requirement and fund General Fund capital projects.

Financial Planning Model Review

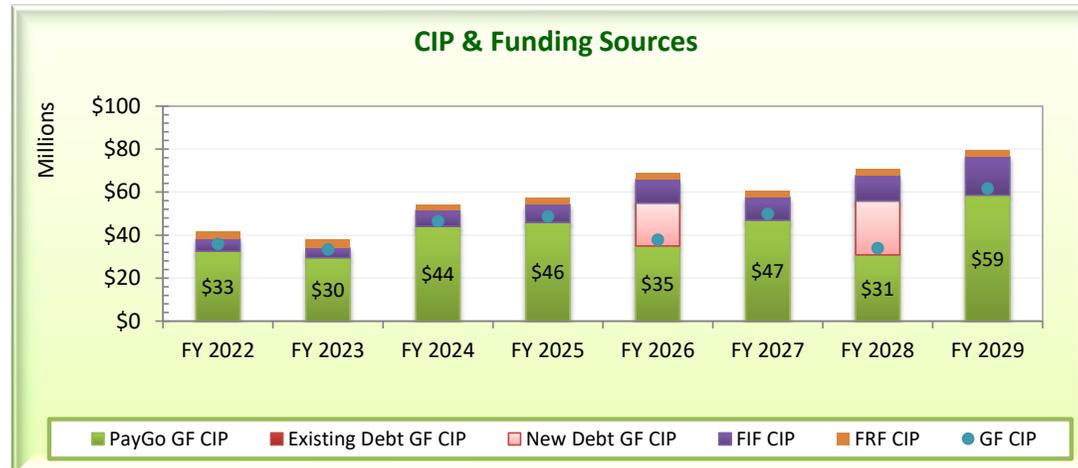
Capital Improvement Program

Amended Budget



- FYE 2024 – FYE 2029 Capital projects total \$420 million
- Debt issuances \$85 million

Adopted Budget



- FYE 2024 – FYE 2029 capital projects total \$391 million
- Debt issuances \$45 million

Financial Planning Alternative Scenarios

- Alternative scenarios #1 and #2 assume 4% annual rate increase and all other assumptions as previously presented
- Alternative Scenario #1 – Delay pension/OPEB funding
 - No Board interest was expressed in further exploring this scenario
- Alternative Scenario #2 – Minimum SFPUC purchases
 - There was Board interest in exploring this scenario
 - Follow up information will be presented at a rate setting workshop this summer
 - This scenario applies beginning in FY 2025/26

Financial Planning Considerations

- Financial planning considerations for the rates process not reflected in the budget:
 - Actual FY 2023/24 results
 - Potential for additional capital investments pending review of the Engineering Report and/or a placeholder for the results of the Water Supply Master Plan
 - Capital project deferral options to offset new investments and/or reduce overall costs during the water rates planning horizon (current fiscal year plus the next five years)
 - Potential for updated water demand forecast based on summer demands

Next Steps

- **June 13, 2024 – Board Meeting**

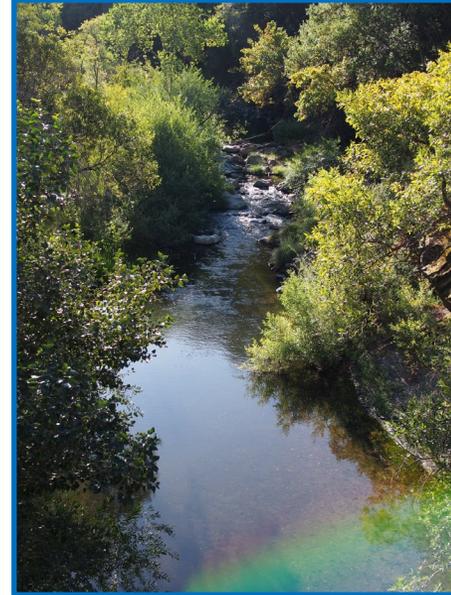
- Adopt Amended FY 2023/24 and FY 2024/25 Operating and Capital Budget
- Adopt Amended 25 Year Capital Improvement Program

- **July 18, 2024 – Special Board Meeting – Water Rates Workshop**

- First of three planned workshops. Workshops also planned for August 22 and September 26

Stay Connected to the District

- www.acwd.org
- ACWD Aqueduct Newsletter
- Facebook  & Twitter 
@AlamedaCountyWD



Alameda County Water District
43885 S. Grimmer Blvd.
Fremont, CA 94538
510.668.4200

Questions?

Alameda County Water District

Interim CIP Engineering Report Preliminary Findings & Draft Recommendations

Presenters:

Rekha Ippagunta, Project Engineering Manager

Ben Egger, Project Engineering Supervisor

Rosy Chan, Senior Engineer

May 30, 2024

Introduction

Provide continued reliable supply of high-quality water at a reasonable price to our customers

The Engineering Report identifies infrastructure investments needed to ensure:

- Treatment & Distribution Capacity
- Regulatory Compliance
- District Policy Implementation

Presentation Outline

- Introduction & Overview
- Demand Forecast
- Infrastructure Assessment
- Preliminary Findings & Recommendations
- Next Steps



Whitfield Reservoir Construction

Glossary

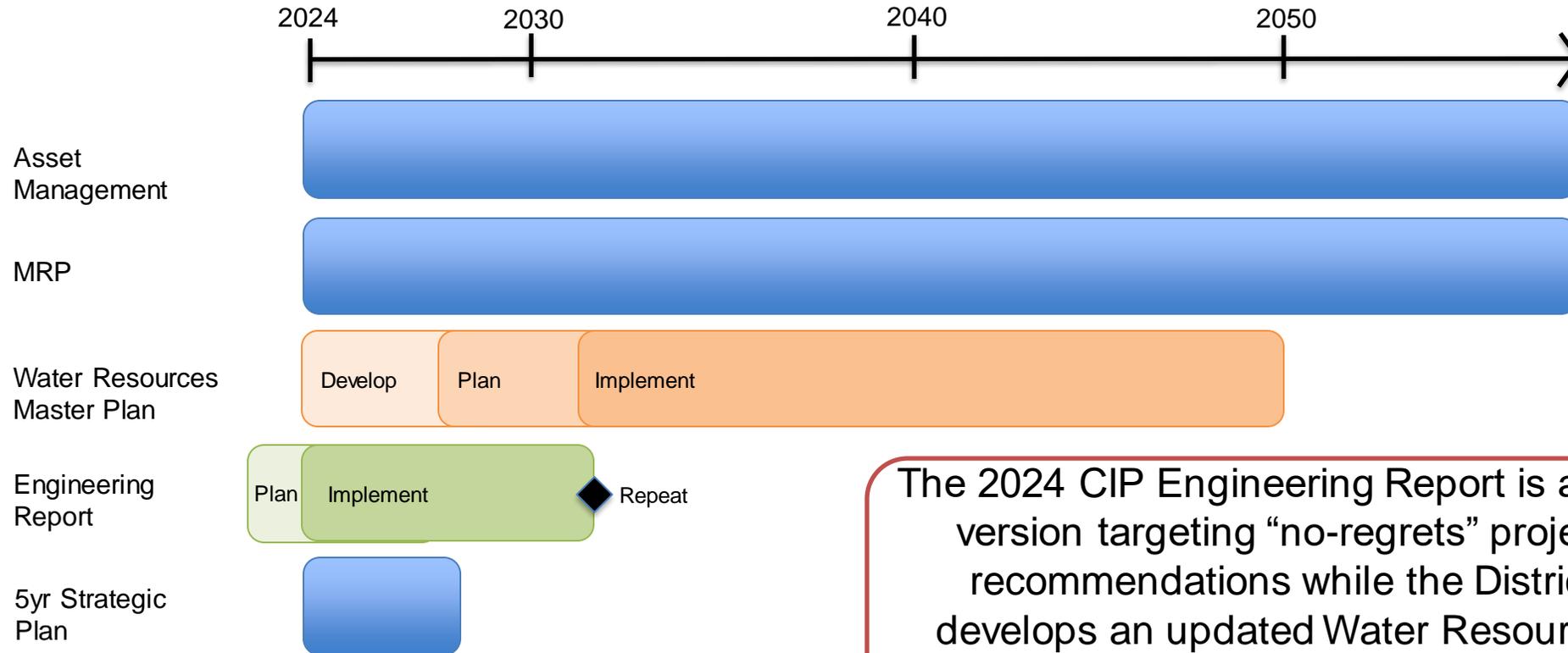
Acronym	Meaning	Definition
ADD	Average Day Demand	Daily distribution system demand averaged over one year
BF	Peralta-Tyson Blending Facility	Blends SFPUC water with local Mowry & Peralta Tyson groundwater
CIP	Capital Improvement Program	25-year long range planning program
IX	Ion Exchange media	PFAS removal technology
MCL	Maximum Contaminant Level	Maximum concentration of a contaminant legally allowed in drinking water
sMCL	Secondary Maximum Contaminant Level	Guidelines for aesthetic considerations, such as taste, color, odors, etc.
MDD	Max Day Demand	Distribution system demand on the highest day of use (midnight to midnight), excluding fire flow
MGD	Million Gallons Per Day	Measurement of daily water production rates
MRP	Main Renewal Program	Ongoing District program to replace aging potable water mains
PFAS	Per- and polyfluoroalkyl substances	Family of synthetic chemicals
PHD	Peak Hourly Demand	The amount of water utilized by customers during the highest hour of consumption during the maximum day, excluding fire flow
ppm	Parts per million	Measurement of chemical constituent level
ppt	Parts per trillion	Measurement of chemical constituent level
RO	Reverse Osmosis	PFAS & hardness removal technology
Title 22	California Code of Regulations	Regulates drinking water standards for new and existing source capacity
TO	SFPUC Take Off Facility	Facility for importing treated SFPUC water direct to the distribution system
WTP2	Water Treatment Plant No.2	Traditional plant that treats imported water from state water project

Purpose of this Workshop

- Interim review of ongoing analyses for future CIP cycles
 - Projects analyzed are not all in current CIP recommendation for FY 2024/25
- Review of infrastructure planning criteria and analyses
- Full transparency regarding scope of potential upcoming costs
- All information & analysis are draft and preliminary
 - Additional analyses and refinements are ongoing
- No decisions required, feedback encouraged

CIP Engineering Report is an analysis of near-term capacity constraints

How does the CIP Engineering Report fit within the chronology of our planning portfolio?



The 2024 CIP Engineering Report is a “lite” version targeting “no-regrets” project recommendations while the District develops an updated Water Resources Master Plan.

Interim CIP Engineering Report

- Detailed analysis of current and projected infrastructure needs:
 - Production, storage, boosting, transmission
 - Capacity and water quality considerations
 - Resiliency, redundancy, and contingency operations
 - Gaps and alternatives analyses to assess changes to CIP to meet needs/objectives
- This interim report:
 - Pending Water Supply Master Plan & other planning underway
 - “Lite” version, “no regrets” improvements
 - Contingency considerations:
 - Loss of major production facilities for extended periods
 - Loss of water supplies for extended periods

Report Preparation Process

Develop Criteria

- Regulatory & Non-regulatory criteria
- Calculate Supply/Demand needs
- Review with multiple departmental stakeholders

Gap Analysis

- Data collection
- Preliminary supply demand gap analysis
- Reliability and redundancy feasibility analysis

Hydraulic Modeling Analysis

- Ensure demands are met geographically and by zone
- Multiple production scenarios
- Modeling for various demand types

CIP Investment Needs

- Evaluate existing CIP projects
- Recommend CIP packages based on criteria and analysis results.

Criteria Development

❖ Regulatory

- Max Day Demand (MDD)
- Peak Hourly Demand (PHD)
- Fire Flow Requirement
- Minimum Operating Pressure

❖ District Criteria

- Supply Reliability
- Pump Reliability
- Fire Flow Reliability
- Emergency Supply
- And Others

District Criteria

District Policies and Standards:

- ✓ Hardness policy of 150ppm +/-10%.
- ✓ Treatment capacity of MDD + 10%
- ✓ N+1 pumps per Booster Station
- ✓ PFAS standard of 80% MCL
- ✓ Water velocity in pipelines ≤ 5 feet per second
- ✓ Stored water turnover requirements
- ✓ Time of Use (TOU) pumping for energy cost savings

Historical Demands – 2014 to 2023

Year	Max. Day Demand (MDD) MGD	Ratio MDD/ADD	Date of Max. Day	Peak Hourly Demand (PHD) MGD
2014	49.28	1.37	6/30/2014	73.9
2015	40.7	1.31	7/20/2015	61.06
2016	43.98	1.56	8/1/2016	65.96
2017	51.3	1.4	6/21/2017	76.96
2018	51.47	1.37	7/19/2018	77.2
2019	53.66	1.45	6/12/2019	80.49
2020	53.93	1.37	8/13/2020	80.89
2021	50.21	1.33	6/17/2021	75.32
2022	45.89	1.31	5/18/2022	68.84
2023	46.31	1.36	7/18/2023	69.46

Summary	
10 YR AVG (2014-2023)	35.24
10 YR MDD (2014-2023)	53.930
MDD/ADD ratio	1.5

Highest MDD over the past 10 years is 53.93 MGD

MDD Calculations

Production Options	10-year MDD (2014-2023)	10-year ADD (2014-2023)	10-year MDD/ADD	Projected ADD for 2033	Projected MDD for 2033	Add 10% Production Contingency
<u>Traditional Approach</u> - Meet projected MDD plus 10% District's contingency	53.93MGD	35.24MGD	53.93/35.24 = 1.5	39.3MGD	39.33 * 1.5 = 59MGD	59MGD + 10% = 65MGD
<u>Interim ER Approach</u> - Meet historical 10-year MDD plus District's 10% contingency	53.93MGD	Not applicable	Not applicable	Not applicable	Not applicable	53.93MGD + 10% = 59MGD
<u>Do-nothing Approach</u> - Meet historical 10-year MDD	53.93MGD	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

Recommended

Recommended
MDD Target:
59 MGD

Production Assessment



Production Capacity Review

Production Facilities	Design Capacity (MGD)	Contractual Output (MGD)	Sustainable Output (MGD)
WTP2	28	28	22
MSJWTP	8	0	0
NDF	12.5	12.5	8.5
BF	60		26 ⁽¹⁾
- Mowry & PT	46.3	46.3	
- SFPUC		24 Daily Max 13.760 Daily Average	0 ⁽²⁾
* Fremont TO	15		
* Paseo Padre TO	20		
SFPUC TO			
- Central & Cherry TO	6.5		
- Durham TO	7.2		
- Sycamore TO	5.0		
- Washington TO	1.4		
- Warren TO	1.4		
- Mission TO	1.4		
Total	131.4	110.8	67.5

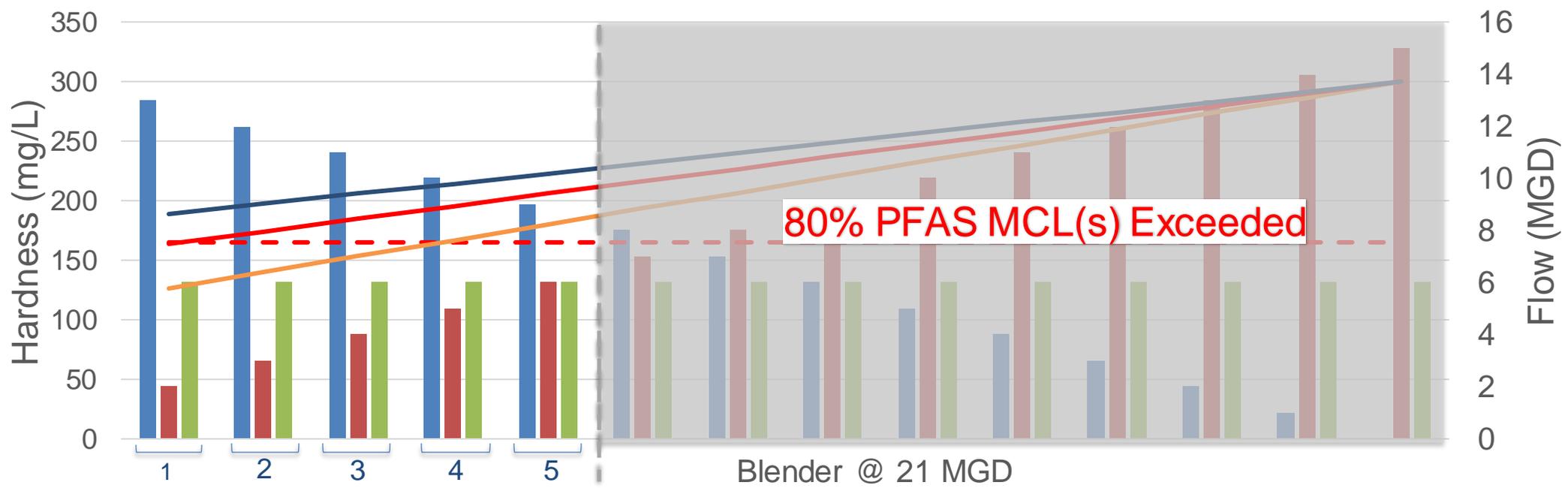
- Factors limiting production outputs:
- Contractual
 - Hydraulic
 - Water quality
 - Treatment process constraints

Leveraging sustainable production allows us to achieve the MDD Target

Optimizing Production to Achieve MDD Target

Cost-effective achievement of MDD Target: **BF-21MGD**, WTP2-22MGD, NDF-8.5MGD, Direct TO-7.5MGD

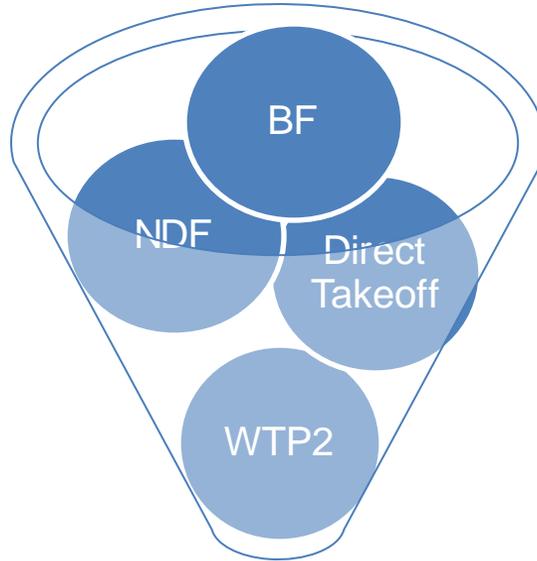
Blender Hardness @ 21MGD



- SFPUC Flow
- IX Flow
- Hardness w/ 20mg/L from SFPUC
- Hardness w/ 120mg/L from SFPUC
- Direct Well Flow
- - - District Hardness Policy Limit
- Hardness w/ 80mg/L from SFPUC

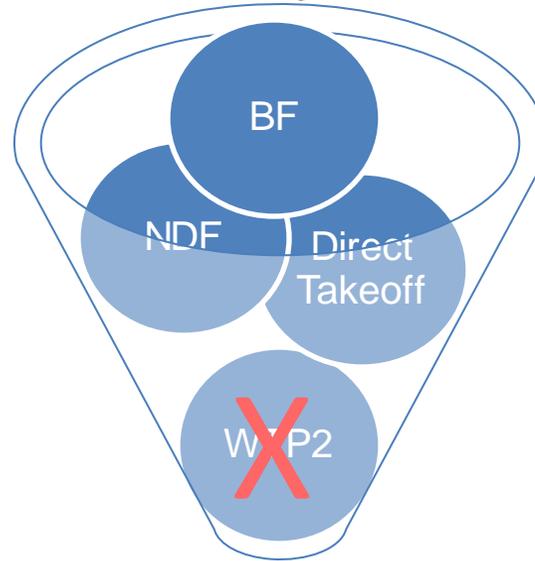
Production Scenarios

Normal Scenario



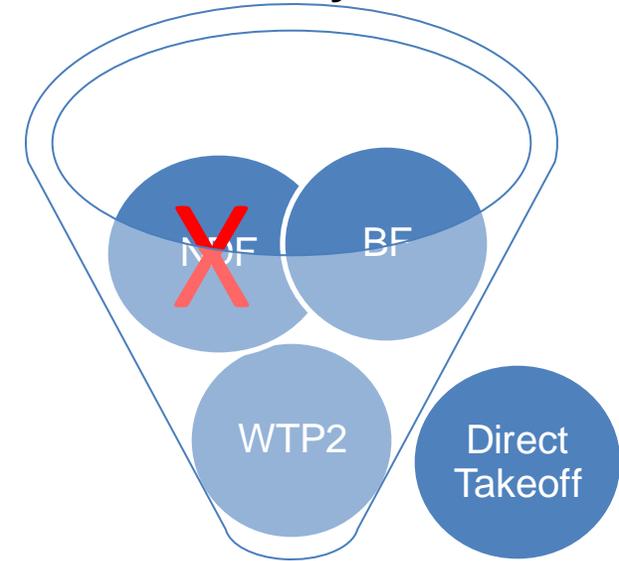
Normal Scenario	
Facilities	MGD
WTP2	22
NDF	8.5
BF	21
Direct TO	11
Total Available	62.5
Goal	59
Surplus	3.5

Redundancy Scenario 1



Redundancy Scenario 1	
Facilities	MGD
WTP2	0
NDF	8.5
BF	21
Direct TO	11
Total Available	40.5
Goal	59
Deficient	-18.5

Redundancy Scenario 2



Redundancy Scenario 2	
Facilities	MGD
WTP2	22
NDF	0
BF	21
Direct TO	0
Total Available	43
Goal	59
Deficient	-16
Deficient w/ TO	-5

Redundancy Scenario 1 – Can we meet the MDD demand target **if we lose WTP2?**

With SF hardness of 20 mg/L

Line No.	Blender Flow (MGD)					Total Hardness mg/L	Total PFOS ppt	Direct TO MGD	WTP2 Flow MGD	Desal Flow MGD	Total Production MGD
	Fremont TO	New Source of Supply?	Well	IX Treated Well	Total						
	MGD	MGD	MGD	MGD	MGD						
1	13	0	21	6	40	209	5.63	10.5	0.0	8.5	59.0
2	13	0	12	15	40	209	3.22	10.5	0.0	8.5	59.0
3	13	12	0	15	40	119	0.00	10.5	0.0	8.5	59.0

Without CIP Improvements
Require CIP Improvements

Key Takeaways:

1. Not feasible without CIP improvements. Exceeds hardness and PFAS limits.
2. Feasible with IX expansion to 15MGD. Exception to hardness policy will still be required. Complies with MCL's for PFAS.
3. Further guidance from Water Supply Master Plan is needed to comply with both hardness and PFAS limits.

Optimize **SFPUC** supply and local groundwater supply

Redundancy Scenario 2 – Can we meet the MDD demand target **if we lose Desal?**

With SF hardness of 20 mg/L

Line No.	Blender Flow (MGD)					Total Hardness mg/L	Total PFOS ppt	Direct TO MGD	WTP2 Flow MGD	Desal Flow MGD	Total Production MGD
	Fremont TO	New Source of Supply?	Well	IX Treated Well	Total						
	MGD	MGD	MGD	MGD	MGD						
1	13	0	14	6	33	190	4.55	0.0	26.0	0.0	59.0
2	13	0	5	15	33	190	1.62	0.0	26.0	0.0	59.0
3	13	5	0	15	33	144	0.00	0.0	26.0	0.0	59.0

Without CIP Improvements
Require CIP Improvements

Key Takeaways:

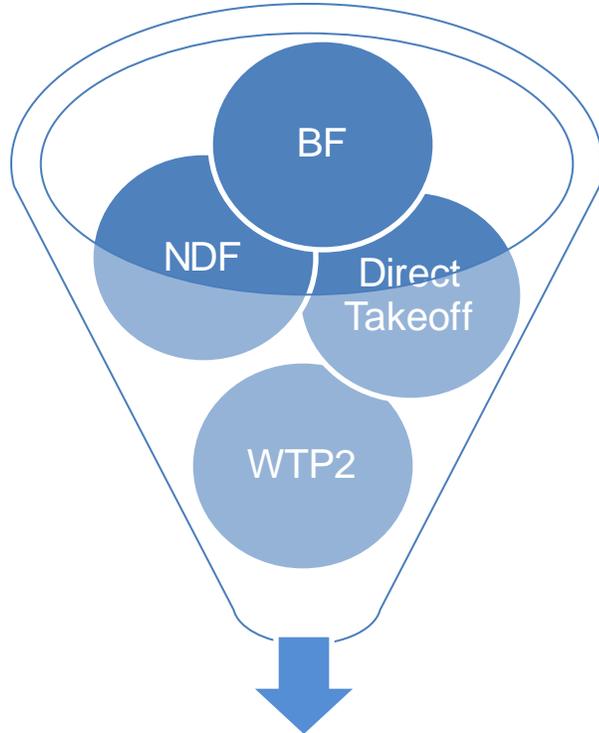
1. Not feasible without CIP improvements. Exceeds hardness and PFAS limits.
2. Feasible with IX expansion to 15MGD. Exception to hardness policy will still be required. Complies with MCL's for PFAS.
3. Further guidance from Water Supply MP is needed to comply with both hardness and PFAS limits.

All options require WTP2 process improvements.

Optimize **SBA supply** and **local groundwater supply**

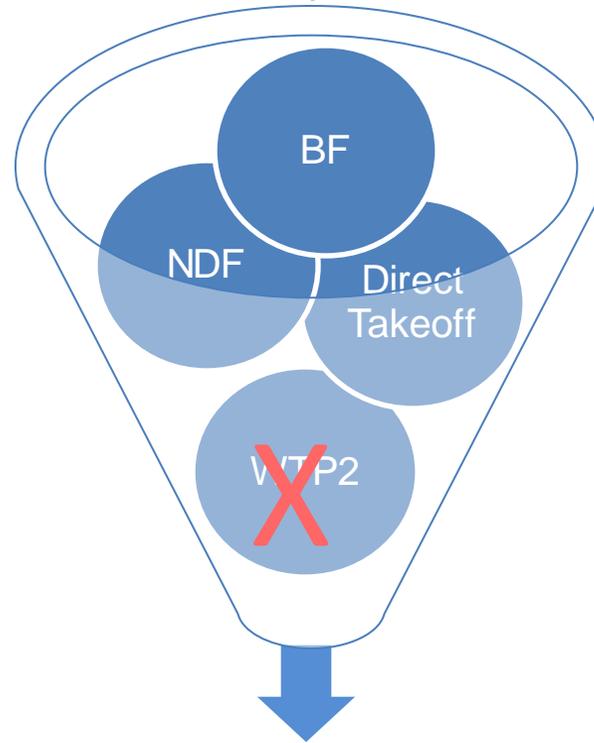
Redundancy Scenario Findings

Normal Scenario



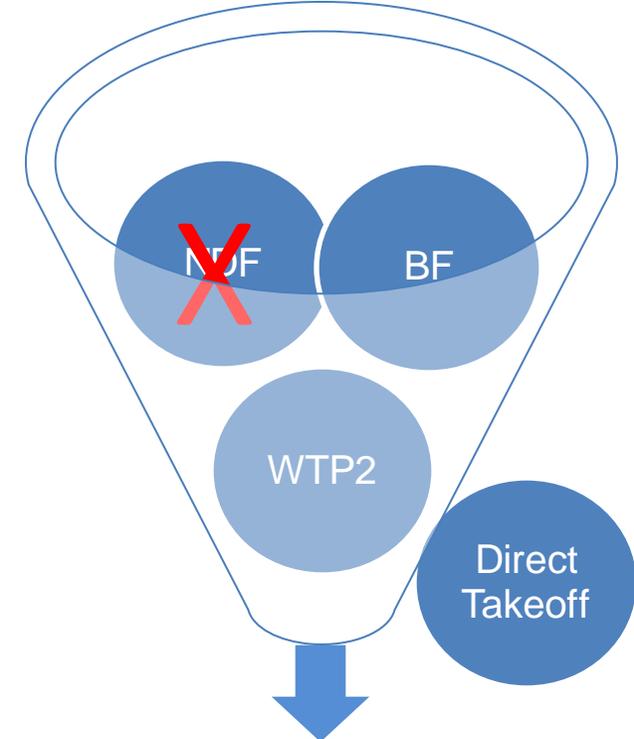
- ✓ Meets 59 MGD Demand Target
- ✓ Comply with hardness goal
- ✓ Comply with PFAS MCLs

Redundancy Scenario 1



- ✓ Meets 59MGD Demand Target
- ✗ Does not meet hardness policy targets
- ✗ Does not meet PFAS MCL's without IX expansion

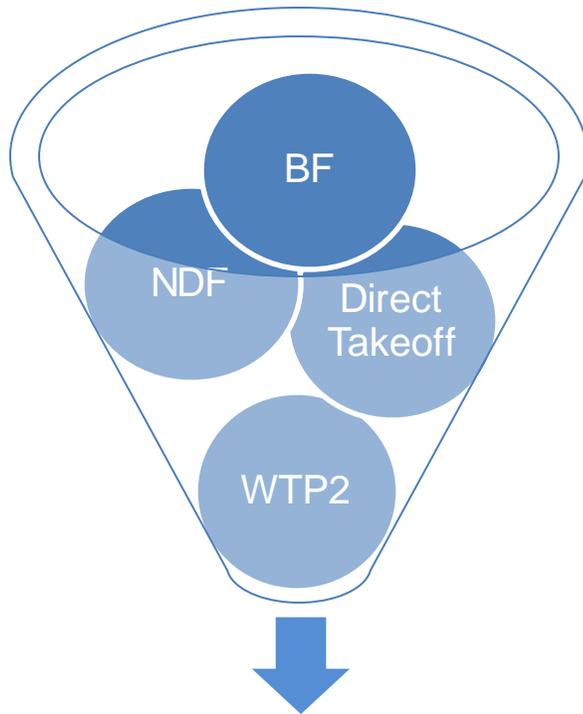
Redundancy Scenario 2



- ✗ Does not meet 59MGD Demand Target
- ✗ Does not meet hardness policy targets
- ✗ Does not meet PFAS MCL's without IX expansion

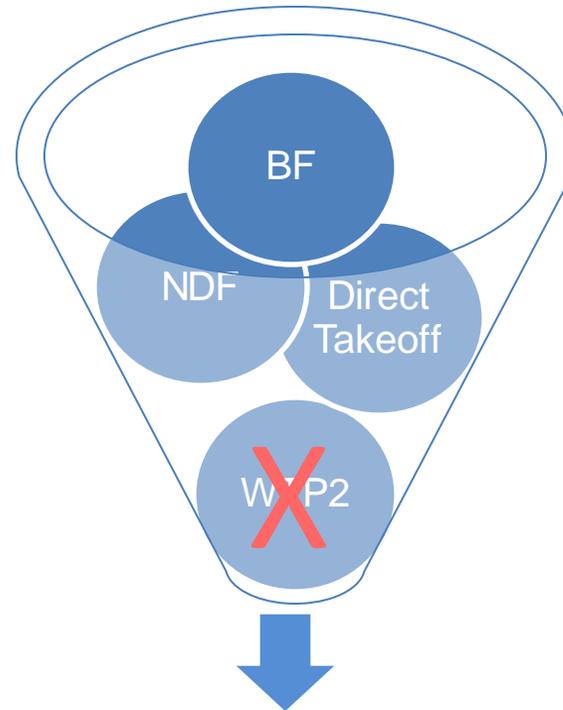
Redundancy Scenario Recommendations

Normal Scenario



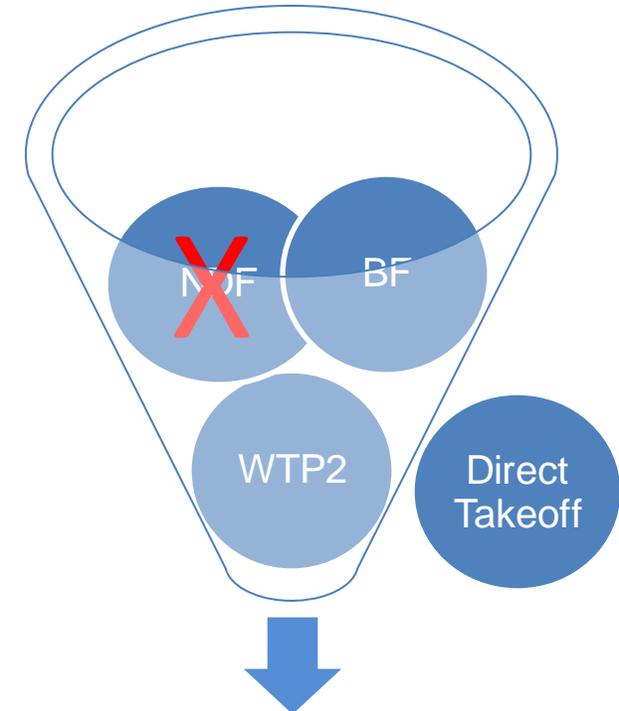
✓ No CIP Improvements

Redundancy Scenario 1



- IX Expansion
- Hardness treatment or policy flexibility

Redundancy Scenario 2



- WTP2 Process Improvements
- IX Expansion
- Hardness treatment or policy flexibility

Storage Assessment

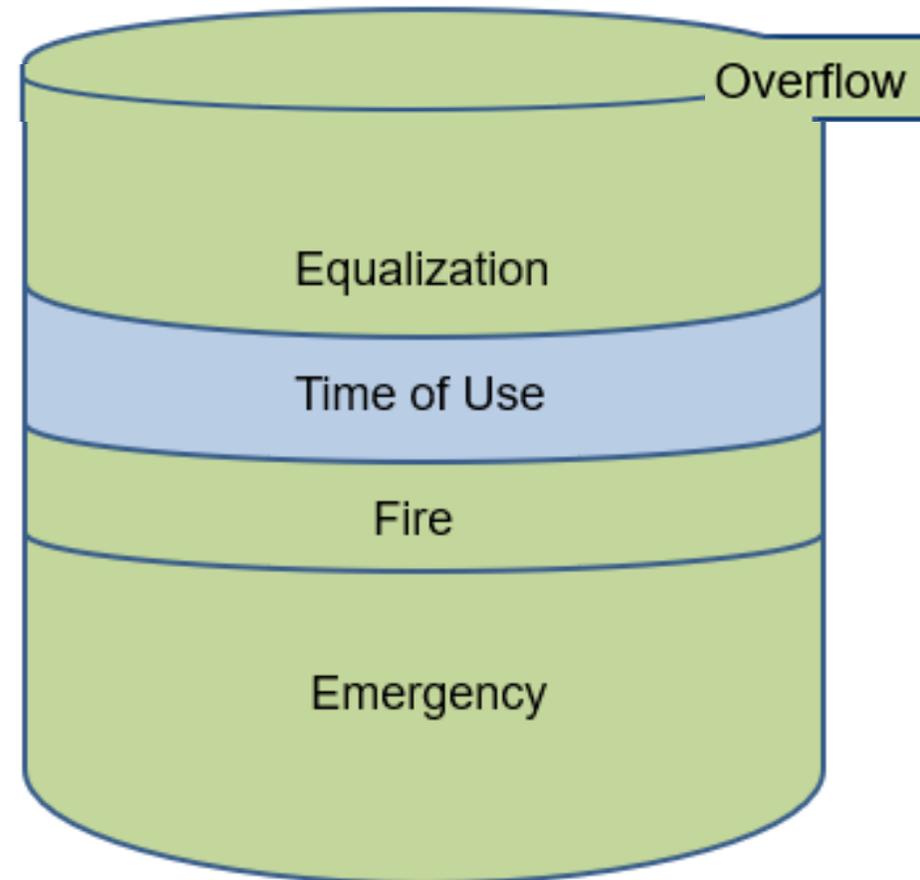


Patterson Reservoir

Storage Criteria & Volumetric Requirements

Criteria	Storage Volume
Equalization Storage	10% x MDD
TOU Storage	30% x SDD
Fire Suppression Storage	0.24 MG (2000 gpm for 2 hours) per facility
Emergency Storage – System wide	1 x MDD
Emergency Storage – Zone 1 and independent special zones with only one storage facility	1 x SDD
Emergency Storage – Upper zones with multiple storage facilities and production capability	0.75 x SDD

Legend:



Analysis identified storage deficiencies in the Appian Zone

Summary of Storage

Zone	Criteria Met
Zone 1	Yes
Zone 2N, 2S and 3	Yes
Zone 4	Yes
Avalon Zone (AV)	Yes
Combined 2N, 2S, 3, 4 & AV	Yes
Appian Zone	No*
Canyon Heights (CH)	Yes
System Wide	Yes

Assessment of Appian Zone Storage Deficiencies

- Insufficient equalization storage
- Insufficient TOU storage
- Total deficiency – 0.23 MG

*Planned Additional Analyses

- Comprehensive review of zone-specific water storage criteria, e.g. time of use, energy requirements
- Evaluation of redundancy and service reliability needs for individual zones as well as sub-zones.

Storage – Water Age

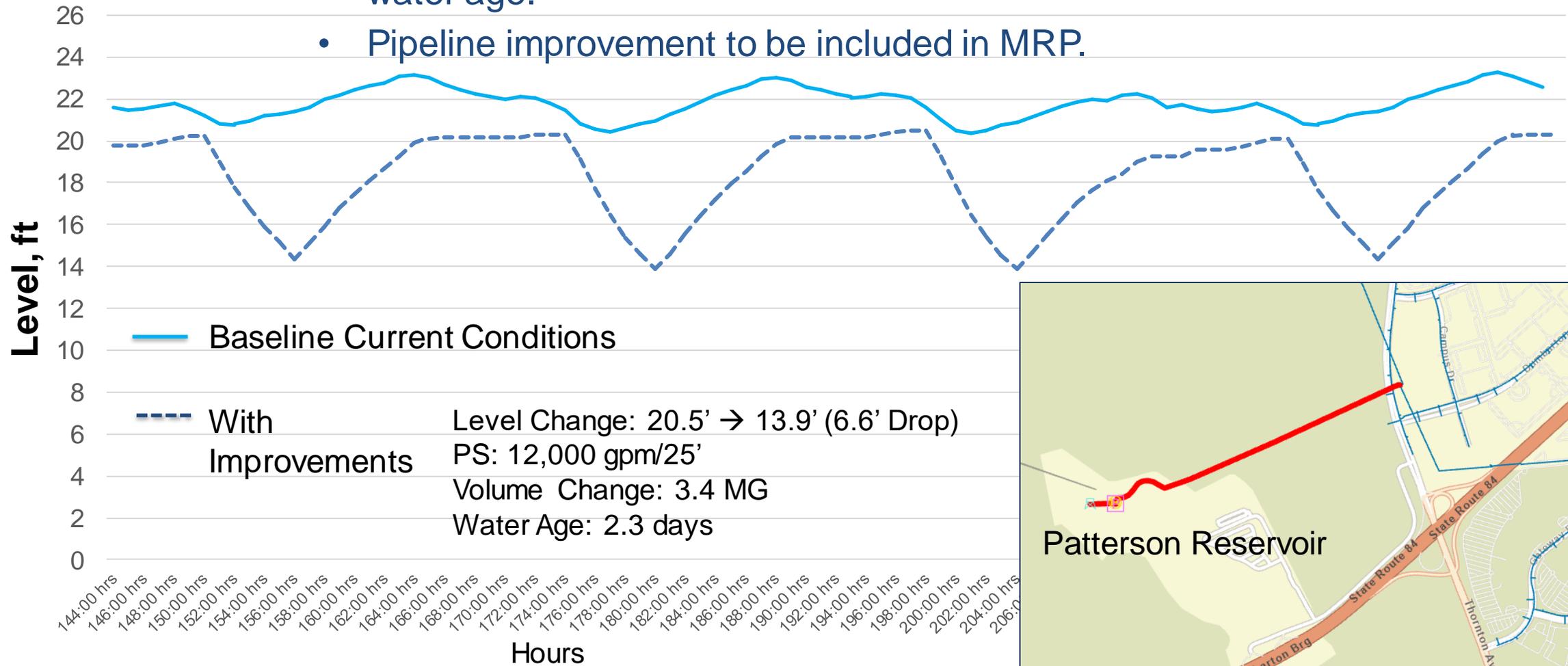
- Maintain water quality by sizing storage facilities to maintain a maximum turnover of seven days.
- No major WQ issues identified at storage facilities except for Patterson reservoir. Further assessment needed for Patterson Reservoir.



Appian Tank

Patterson Reservoir Water Quality Improvement

- Patterson reservoir low head booster pump station to address high water age.
- Pipeline improvement to be included in MRP.



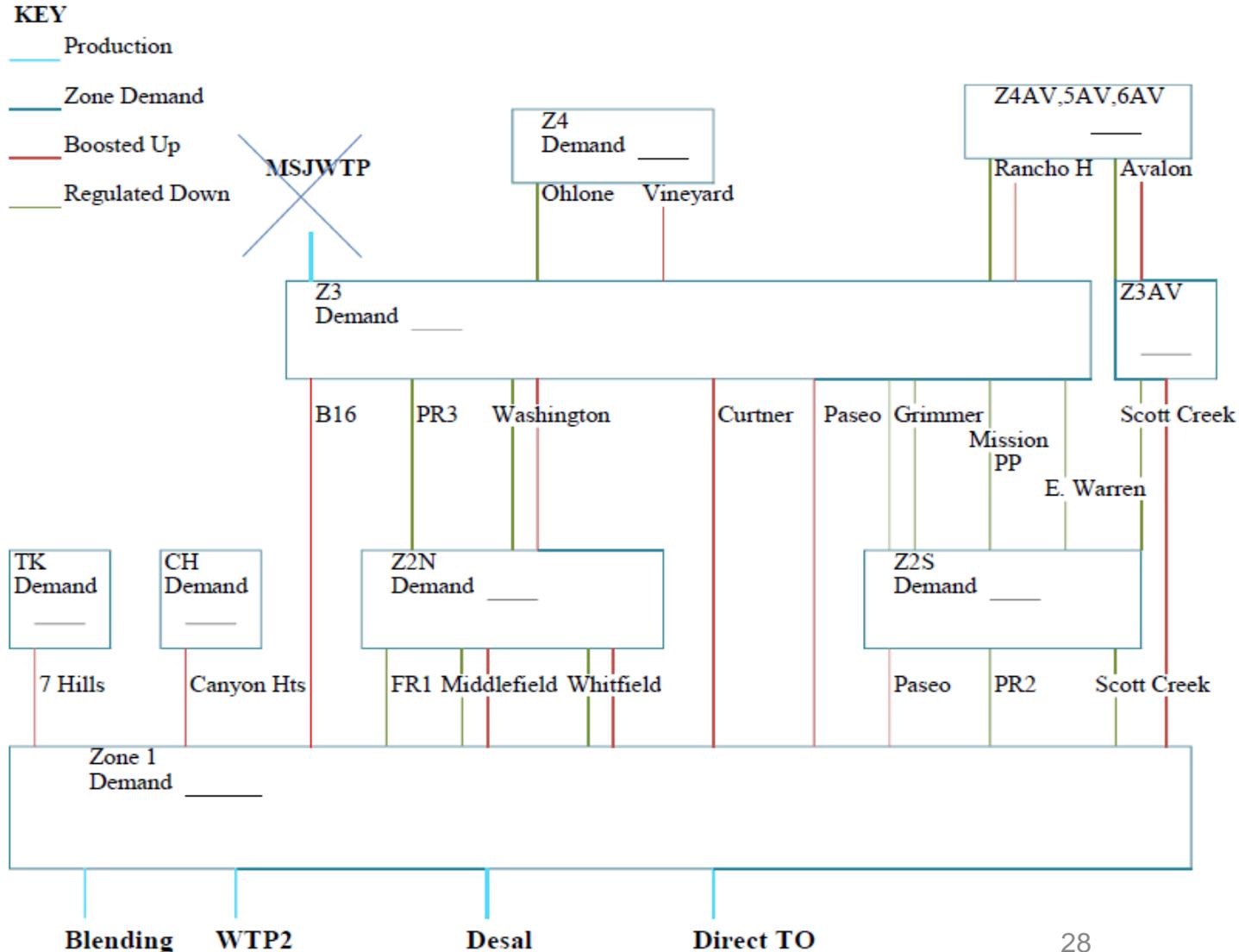
Storage Findings and Recommendations

- All zones have adequate fire suppression storage.
- All zones have adequate emergency and equalization storage except the Appian Zone.
- Storage volume required to implement a TOU pumping strategy is not sufficient in the Appian Zone.
- Further investigation of Appian Zone storage is necessary
- Recommend Patterson reservoir low head booster pump station to address high water age.

Booster Capacity Assessment



Do we have enough boosting to deliver water to upper zones?



- Production is in lowest pressure zone, Zone 1.
- This means all the water in the upper zones must be pumped.
- Hydraulic modeling used for analysis
- The criteria states a minimum of one pump on standby for emergencies.

Booster Stations Findings and Recommendations

- Combined Whitfield Z2/Z3 improvements
 - Add two additional pumps at Whitfield Zone 2 to meet max day demand with one pump on standby to meet the criterion.
 - Whitfield Zone 3 booster station (currently in the CIP)
- Improve B16 to become a permanent booster station and add one additional pump to meet max day demand with one pump on standby to meet the criteria.



Paseo Padre Booster Station

Transmission Capacity Assessment

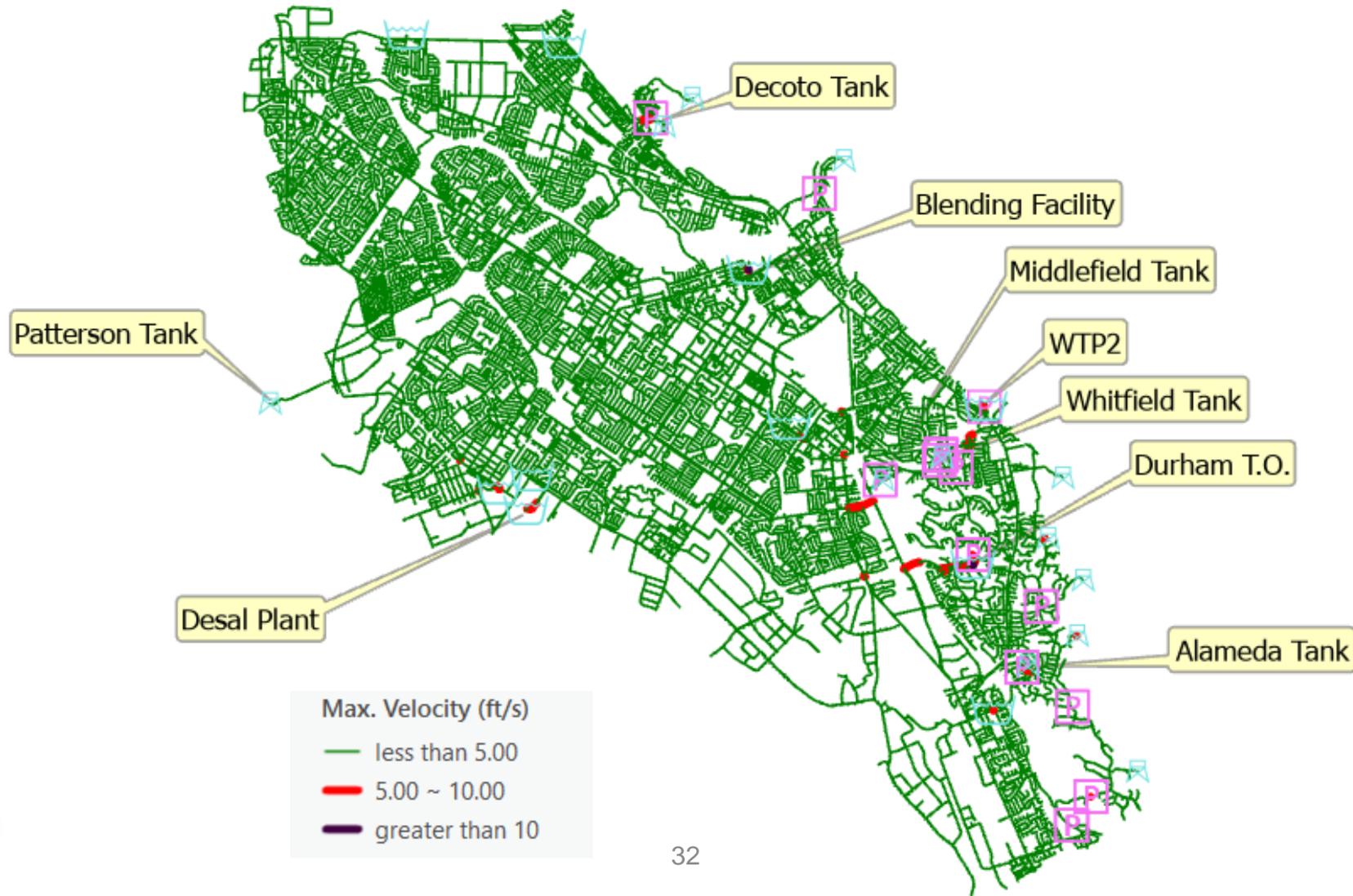


Transmission Main Requirements

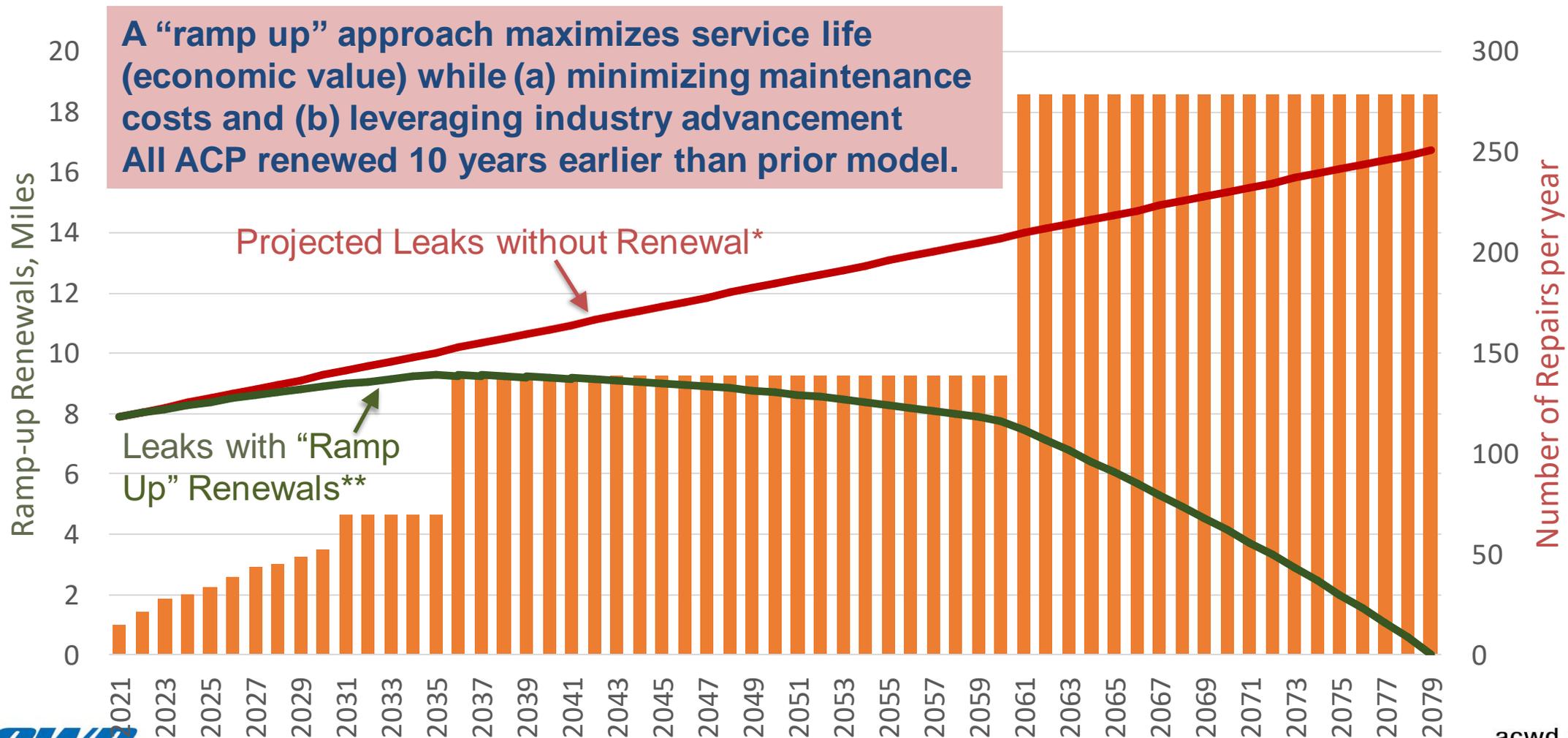
Key Criteria:

- Maximum velocity will be 5 fps excluding fire flow conditions.
- Minimum operating pressure in the water main at the user service line throughout the distribution system be maintained at no less than 20 psi at all times.
- Minimum operating pressure throughout the distribution system of not less than 40 psi at all times excluding fire flow.

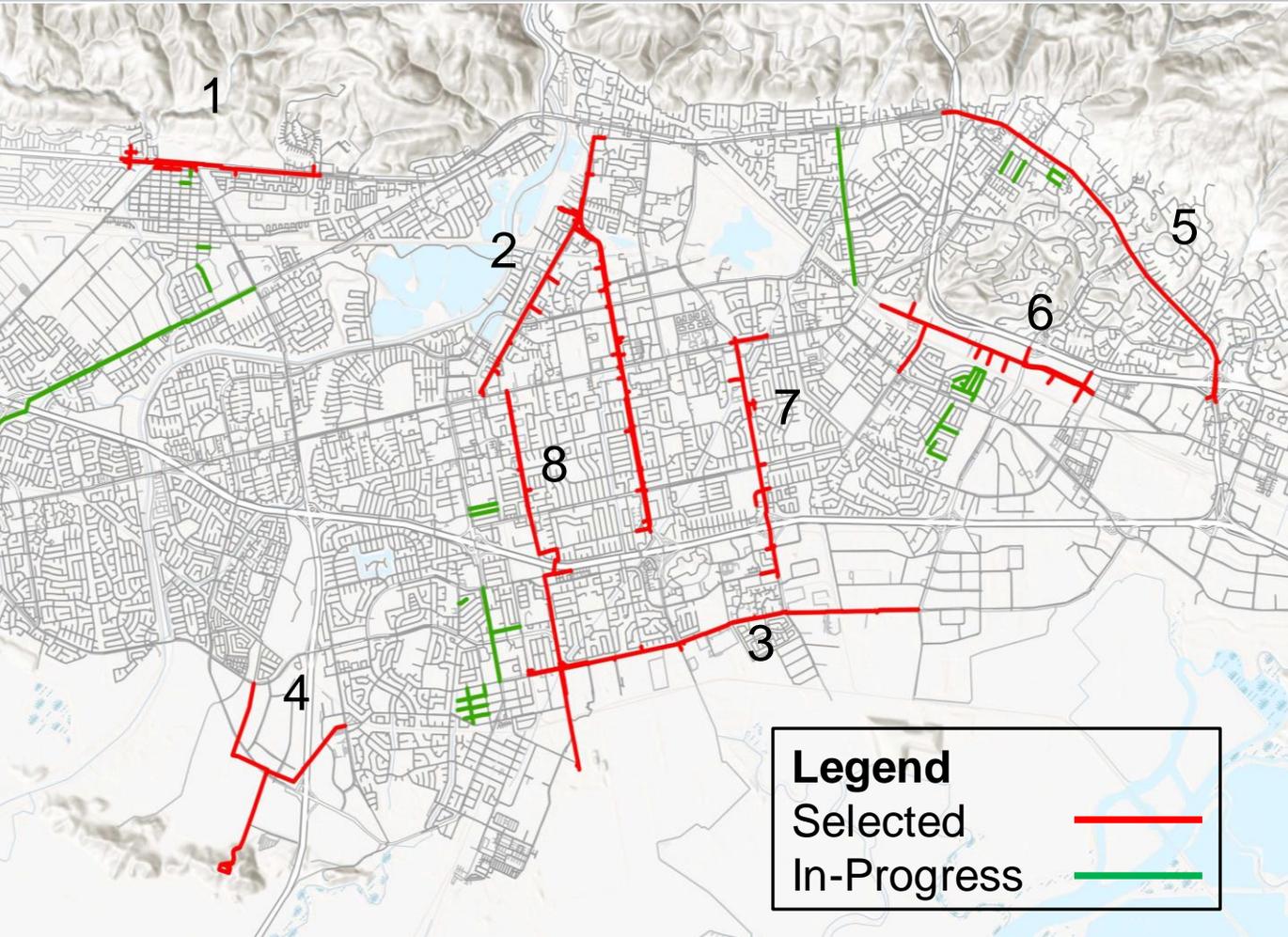
Transmission Mains Scenario 1 Normal Operation



Ramp Up Renewals “Ramp Up” Approach (Illustration only)

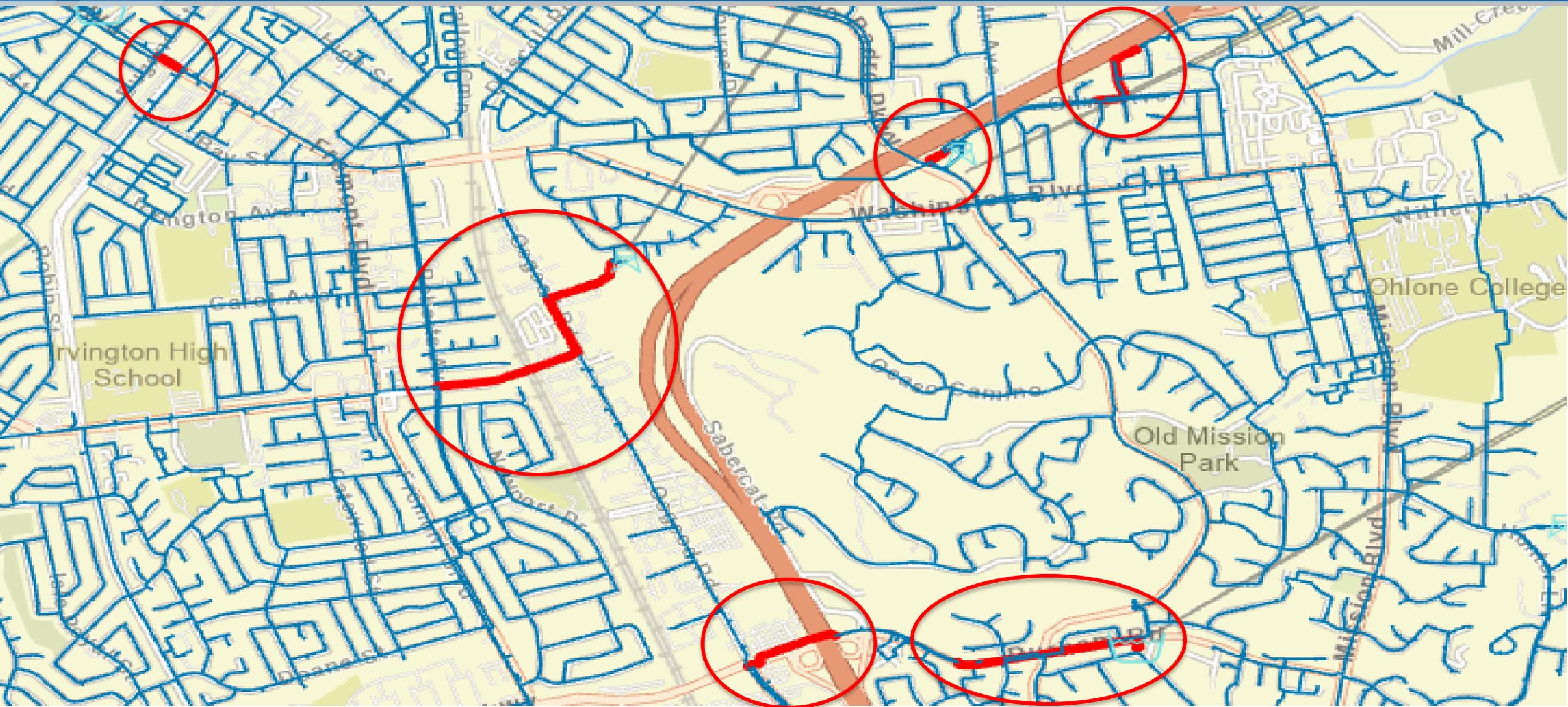


Previously Programmed Main Renewals (2024-2033)

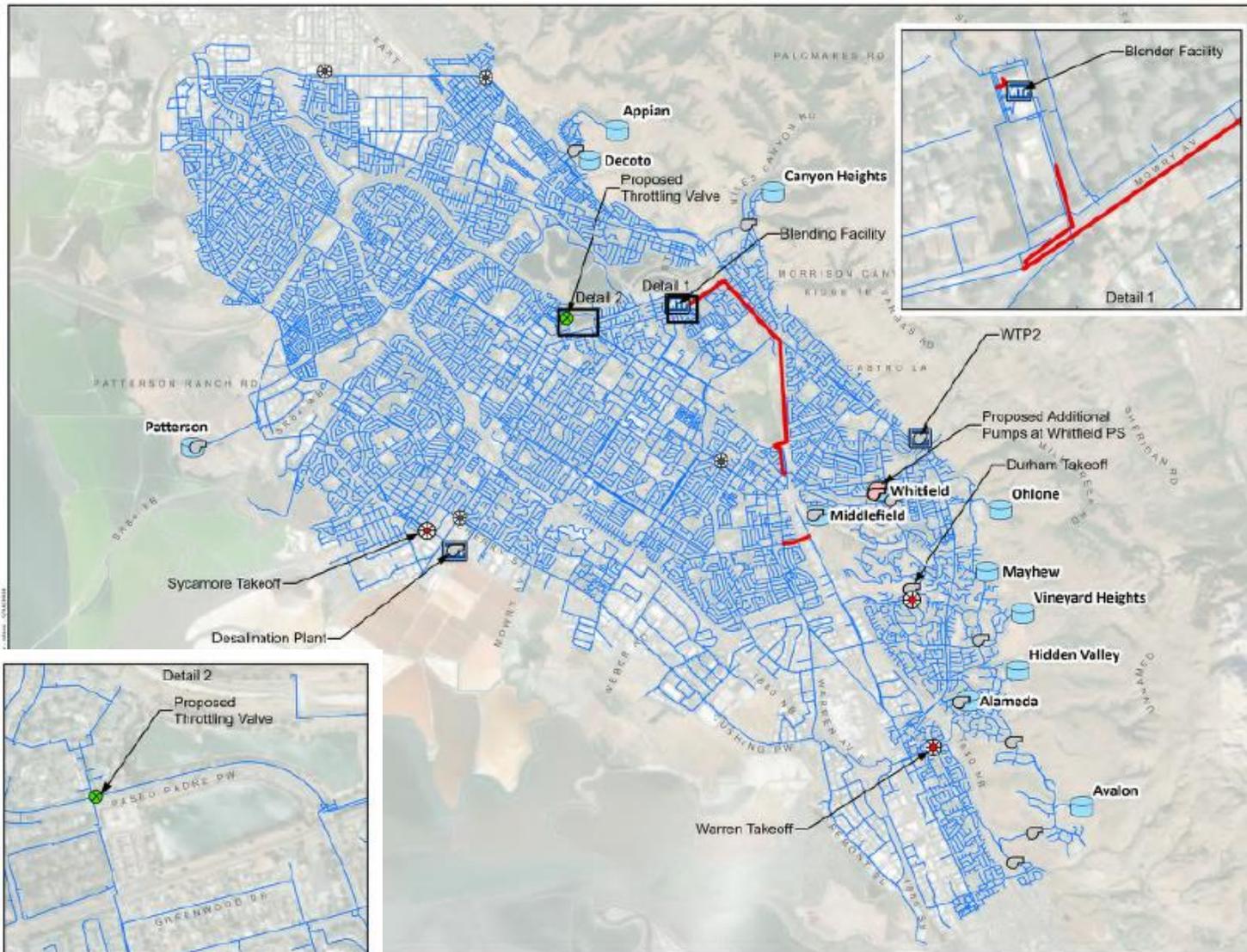


No.	Project	Length (mi)	Cost (\$)
1	Mission - Tamarack	3	21,514,000
2	Peralta	2	19,601,000
3	Cherry	2	18,313,000
4	Patterson	3.9	33,145,000
5	Mission – 680	3	23,360,000
6	Osgood	2.2	20,746,000
7	Stevenson (Fremont)	1.5	12,069,000
8	Central Ave (Fremont)	1.7	24,729,000
	TOTAL	19.3	173,500,000

Scenario 1 Normal Transmission Operation Improvements



Summary of Transmission Improvements Reliability Scenario



- Pipeline Improvements (20,315 ft)
- Pump Station Improvements at Whitfield to Zone 2 to
 - Improve cycling of Whitfield Reservoir as system head is high for the reservoir to drain.
 - Improve system pressure in Zone 2
- Throttling Valve at Paseo Padre and Sequoia Road to reduce flow to Patterson and push water southward

Integration of CIP Engineering Report Transmission Main Recommendations

- Engineering report transmission capacity recommendations will be integrated into the Main Renewal Program Implementation.
- Main renewals will be prioritized based on likelihood of failure and consequence of failure, with upgrades influencing prioritization decisions.



Interim Engineering Report

Summary of Preliminary Findings and Draft Recommendations

Summary of Findings

Summary of Findings to Support Various Capacity Scenarios

Normal Operation	Redundancy Scenario 1 (WTP2 Outage)	Redundancy Scenario 2 (Desal Outage)	For Distribution System Reliability
<ul style="list-style-type: none"> • Pipeline Hydraulic Capacity Improvements 	<ul style="list-style-type: none"> • 15MGD IX Expansion 	<ul style="list-style-type: none"> • 15MGD IX Expansion 	<ul style="list-style-type: none"> • Tamarack Knolls Tank
	<ul style="list-style-type: none"> • Related Pipeline Capacity Improvements 	<ul style="list-style-type: none"> • WTP2 Process Improvements 	<ul style="list-style-type: none"> • Patterson Reservoir Hydraulic Improvements
	<ul style="list-style-type: none"> • Whitfield Z2/Z3 Pumping Capacity Improvements 	<ul style="list-style-type: none"> • Harness Control or Hardness Exception 	<ul style="list-style-type: none"> • B16 Reliability Improvements
	<ul style="list-style-type: none"> • Zone 1 Throttling Valve 		
	<ul style="list-style-type: none"> • Hardness Control or Hardness Exception 		

Risk Matrix with Scoring Scheme

(Ref. PMBOK 6th Edition)

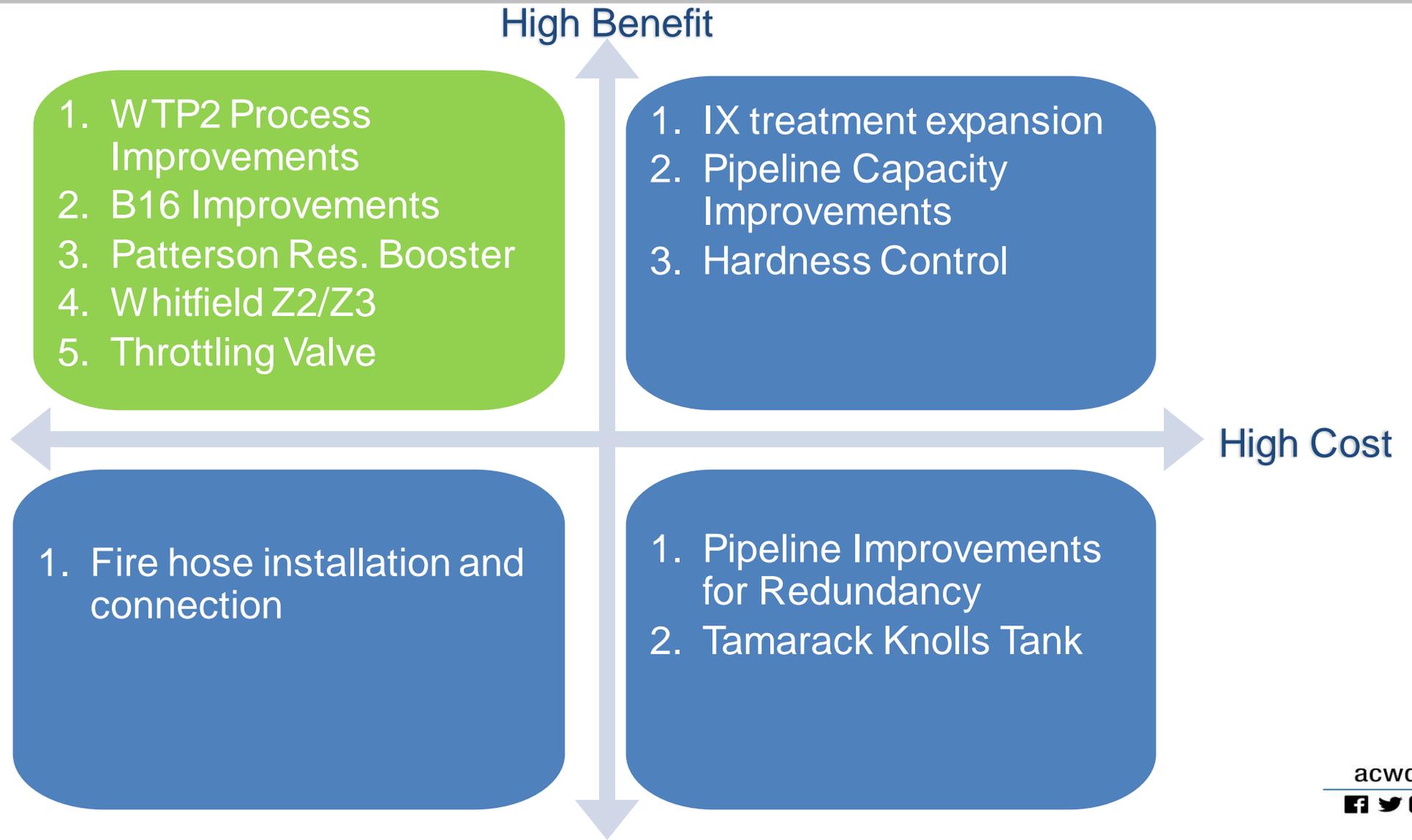
		Threats					Opportunities						
Probability	Very High 0.90	0.05	0.09	0.18	0.36	0.72	0.72	0.36	0.18	0.09	0.05	Probability	Very High 0.90
	High 0.70	0.04	0.07	0.14	0.28	0.56	0.56	0.28	0.14	0.07	0.04		High 0.70
	Medium 0.50	0.03	0.05	0.10	0.20	0.40	0.40	0.20	0.10	0.05	0.03		Medium 0.50
	Low 0.30	0.02	0.03	0.06	0.12	0.24	0.24	0.12	0.06	0.03	0.02		Low 0.30
	Very Low 0.10	0.01	0.01	0.02	0.04	0.08	0.08	0.04	0.02	0.01	0.01		Very Low 0.10
		Very Low 0.05	Low 0.10	Moderate 0.20	High 0.40	Very High 0.80	Very High 0.80	High 0.40	Moderate 0.20	Low 0.10	Very Low 0.05		
		Negative Impact					Positive Impact						

Opportunities - Benefits	Criteria
Very High 0.80	Complete redundancy and reliability
High 0.40	Can help resolve more than one problem or already included in another program
Moderate 0.20	Can resolve one problem
Low 0.10	-
Very Low 0.05	No opportunity

Probability – Likelihood of Occurring	Criteria
Very High 0.90	Currently experiencing
High 0.70	More than three months in a year
Medium 0.50	Three months in a year – SDD or WDD
Low 0.30	Once a year - MDD
Very Low 0.10	Not likely to occur within 10 years

Threats – Consequences	Criteria
Very High 0.80	Severe, not comply with policy and regulations, not meeting the demand
High 0.40	Major - cannot recover without major efforts
Moderate 0.20	Major - can recover with some efforts
Low 0.10	Minor impact to local facility only
Very Low 0.05	No impact

Cost/Benefit Matrix



Interim Engineering Report

Summary of Infrastructure Packages

Resiliency (“Lite”) Package Summary

Accommodates:

- MDD – 59 MGD
- MCL – 80% PFAS MCL’s
- WTP2 rate sustainability improvements
- District Standards
 - Hardness 150 mg/L \pm 10%
 - Storage criteria: Meet EQ, emergency, and TOU storage
 - Increase reservoir turnover
 - Booster station criteria – Maintain one pump on standby
 - Minimum operating pressure \geq 40 psi or 20 psi with fire flow

Provides no additional production redundancy but achieves enhanced sustainability and reliability

Total CIP Improvements – Resiliency (“Lite”) Package Summary

Facility Types	CIP Improvements	Total CIP Costs	Existing CIP Budget	New CIP Budget
Storage Facilities	Tamarack Knolls tank *	\$36 M	\$9.5 M	\$26.5 M
	Patterson Reservoir low head booster station	\$3.5 M	-	\$3.5 M
	Total Cost	\$39.5 M	\$9.5 M	30 M
Booster Stations	B16 improvements	\$2 M	\$2 M	\$0
	Total Cost	\$2 M	\$2 M	\$0
Total CIP Improvements		\$41.5 M		\$30 M

* Further investigation of capacity analysis is required.

Resiliency & Outage Redundancy Package Summary

Accommodates:

- “Lite” Package plus the following:
 - Sustained WTP2 Outage or Desal Outage on MDD demands
 - Emergency preparedness improvements

Achieves production redundancy, enhanced sustainability, and reliability

Note: Some recommendations are already programmed in the CIP:

- WTP2 Process Improvements
- MRP Program
- Whitfield Z3 Booster Station

Total CIP Improvements – Resiliency & Outage Redundancy Package Summary

Facility Types	CIP Improvements	Total CIP Costs	Existing CIP Budget	Additional Proposed Budget
Production	IX treatment facility expansion	\$15 M	-	\$15 M
	WTP2 process improvements	\$6 M	\$3 M	\$3 M
	Hardness treatment at Blender ⁽¹⁾	\$60 M	-	\$60 M
	Total Costs	\$81 M	\$3 M	\$78 M
Storage Facilities	Tamarack Knolls tank *	\$36 M	\$9.5 M	\$26.5 M
	Patterson Reservoir low head booster station	\$3.5 M	-	\$3.5 M
	Total Costs	\$39.5 M	\$9.5 M	\$30 M
Booster Stations	Whitfield Z2/Z3 improvements	\$6.3 M	\$3.3 M	\$3 M
	B16 improvements	\$2 M	\$2 M	\$0
	Total Costs	\$8.3 M	\$5.3 M	\$3 M

* Further investigation of capacity analysis is required.

Total CIP Improvements – Resiliency & Outage Redundancy Package Summary (cont.)

Facility Types	CIP Improvements	Total CIP Costs	Existing CIP Budget	Additional Proposed Budget
Transmission Mains	Throttling valve	\$300,000	-	\$300,000
	Total Costs	\$300,000	-	\$300,000
Emergency Preparedness	Firehose installation and connections at wellfields	\$300,000	-	\$300,000
	Total Costs	\$300,000	-	\$300,000
Total CIP Improvements		\$129.4 M	\$17.8 M	\$111.6 M⁽¹⁾

Note 1: Proposed CIP includes \$51.6 M without hardness treatment (Potential Exception to Hardness Policy).

Main Renewal Program Augmentation

Accommodates pipeline upgrades

Facility Types	CIP Improvements	Incremental Cost
Transmission Mains	Pipeline improvements for reliability under normal scenario (Upsize existing mains)	\$4 M
Transmission Mains	Pipeline improvements for WTP2 redundancy (New transmission mains)	\$40 M
Total CIP Improvements		\$44 M

Next Steps

- Finalize Engineering Report Documentation
- Financial assessment of draft engineering report recommendations
- Incorporate accepted projects in future CIP Budget Cycle



Thank you



ACWD
ALAMEDA COUNTY WATER DISTRICT

f t acwd.org i y

Draft Engineering Report

Supplemental Reference Slides

Regulatory Criteria

CCR Title 22 Waterworks Standard

- ✓ The public water system's water sources shall have the capacity to meet the system's MDD at all times for the entire system and for each pressure zone.

- ✓ System > 1000 services:
 - Systems with more than 1000 service connections shall meet Peak Hour Demand (PHD) for a minimum of four hours.
 - Peak Hour Supply can be provided by Zone's Sources, Storage, and/or Emergency Connections.
 - Emergency Connections will not be included in the analysis because they cannot be relied on every day.

Regulatory Criteria (cont.)

CCR Title 22 Waterworks Standard

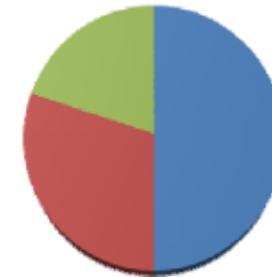
- ✓ If daily water usage data are available, identify the day with the highest usage during the past ten years to obtain MDD; determine the average hourly flow during MDD and multiply by a peaking factor of at least 1.5 to obtain the PHD.
- ✓ $PHD = 1.5 \times MDD$

District Supply Portfolio Details

Existing supply portfolio:

- 40% - State Water Project
 - ❖ Guaranteed daily average amount is 13.760 MGD
 - ❖ Daily maximum amount is 24 MGD
 - ❖ Minimum amount is 7.648 MGD
- 40% Local supply from Groundwater production wells and ARP wells.

Sources of Water Supply

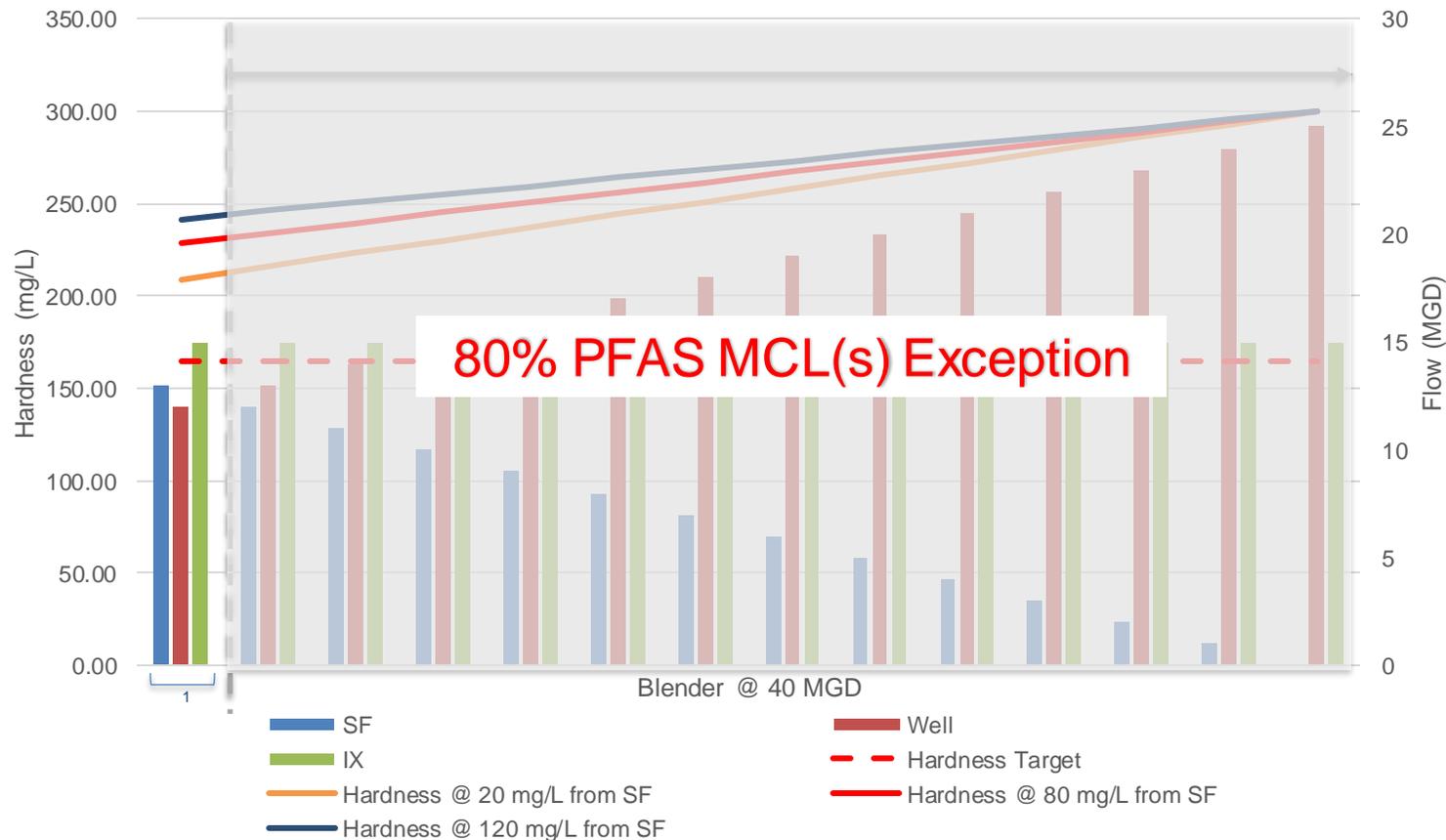


- Groundwater
- State Project Water
- San Francisco

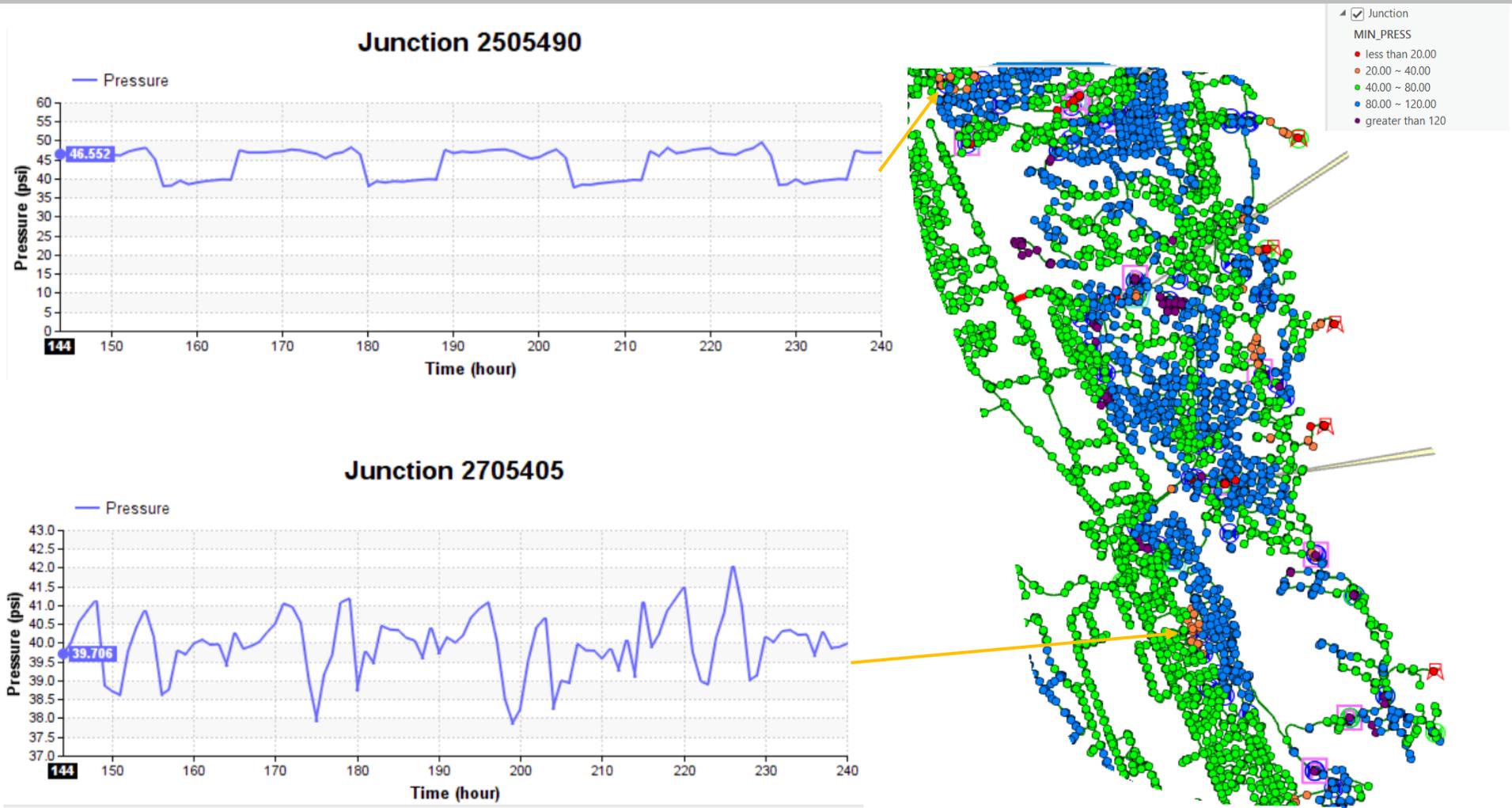
Redundancy Scenario 1 - Optimizing Production to Achieve MDD Target

Increase Blender Supply to **BF-40MGD**, WTP2-0, NDF-8.5MGD, Direct TO-10.5MGD
 Total - 59 MGD

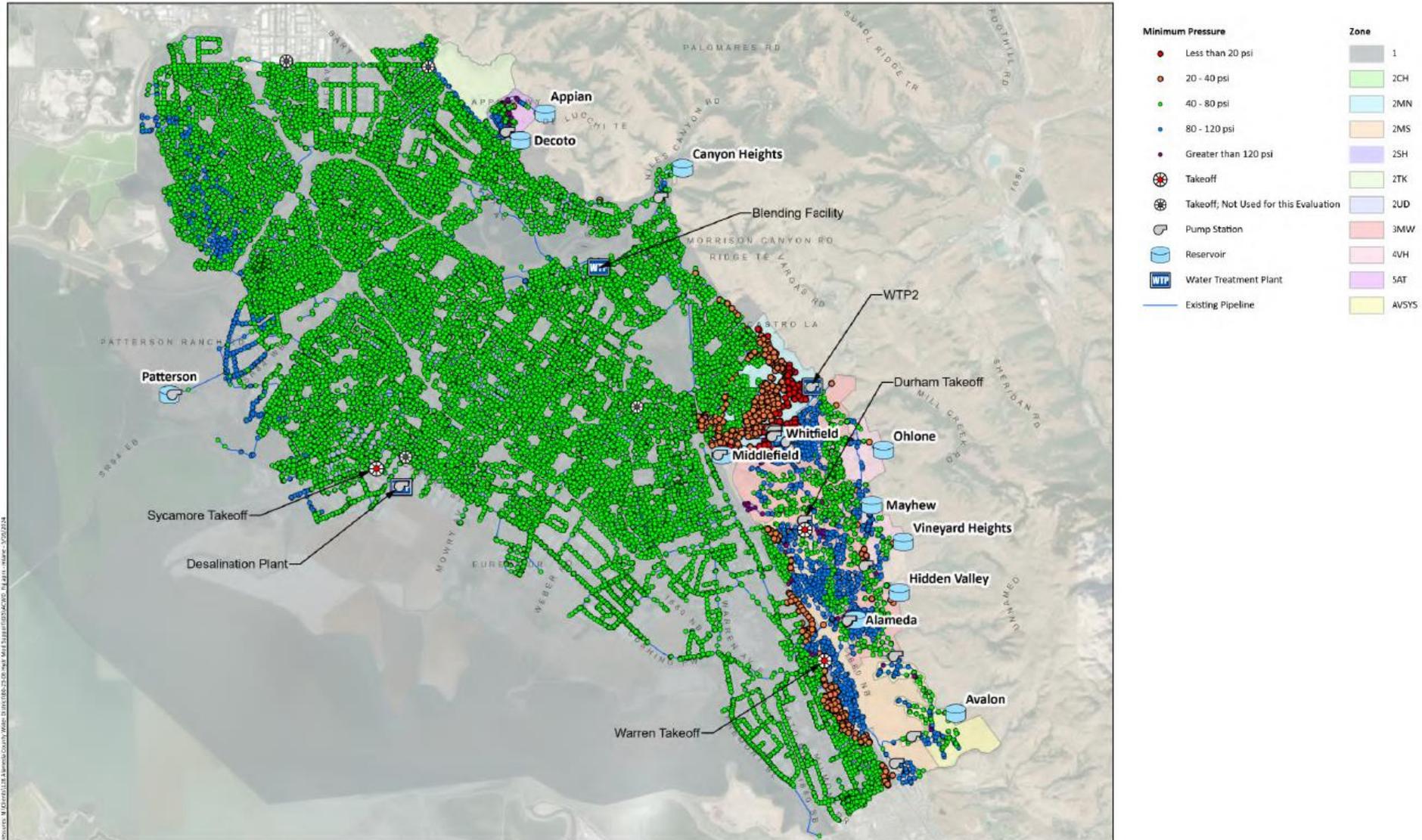
Blender Hardness @ 40MGD



Normal Scenario: Nominal Operation Pressures



Redundancy Scenario 1: Nominal Operating Pressures



Risk Assessment Details

Facility Types	CIP Improvements	Probability	Impact (Threats)	Impact (Opportunities)
Production Facilities	IX treatment facility expansion	Low 0.30	Very High 0.80	Very High 0.80
	WTP2 process improvements	Very High 0.90	High 0.40	Very High 0.80
	RO treatment at Blending Facility	Low 0.30	High 0.40	Very High 0.80
Storage Facilities	Tamarack Knolls tank	Low 0.30	Very High 0.80	Very High 0.80
	Patterson Reservoir low head booster station	Very High 0.90	High 0.40	High 0.40
Booster Stations	Whitfield Z2/Z3 improvements	Low 0.30	High 0.40	High 0.40
	B16 improvements	Very High 0.90	High 0.40	Very High 0.80
Transmission Mains	Pipeline improvements normal scenario	Low 0.30	Very Low 0.05	Moderate 0.20
	Pipeline improvements for redundancy scenario	Low 0.30	High 0.40	Moderate 0.20
	Throttling valve	Low 0.30	High 0.40	Moderate 0.20
Emergency Preparedness	Firehose installation and connection	Very Low 0.10	Low 0.10	Moderate 0.20