



Board of Directors Workshop on
Engineering, Operations and Technology

Pure Water Southern California Program Cost Update

Item 5a

September 23, 2025

Item 5a
PWSC
Program Cost
Update

Subject

Pure Water Southern California Program Cost Update

Purpose

Provide updated cost estimates and projected expenditure cash flows for Pure Water Southern California and present potential staging options for program implementation

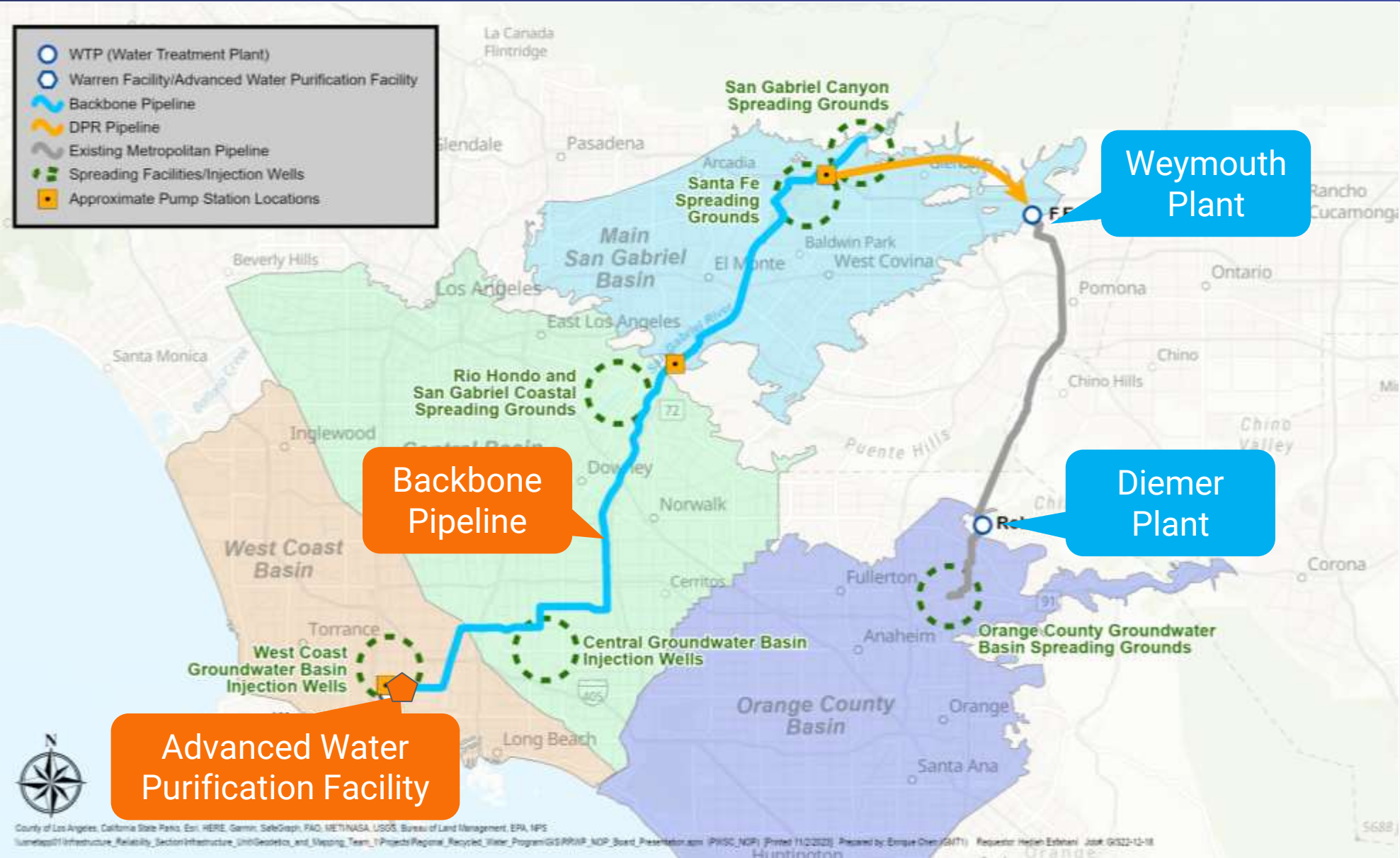
Item 5a

PWSC Program Cost Update

Agenda

- Program Overview
- 2025 Program Cost Update Basis & Assumptions
- Program Schedule Update
- Staged Options for Program Implementation
- Projected Unit Costs
- Next Steps

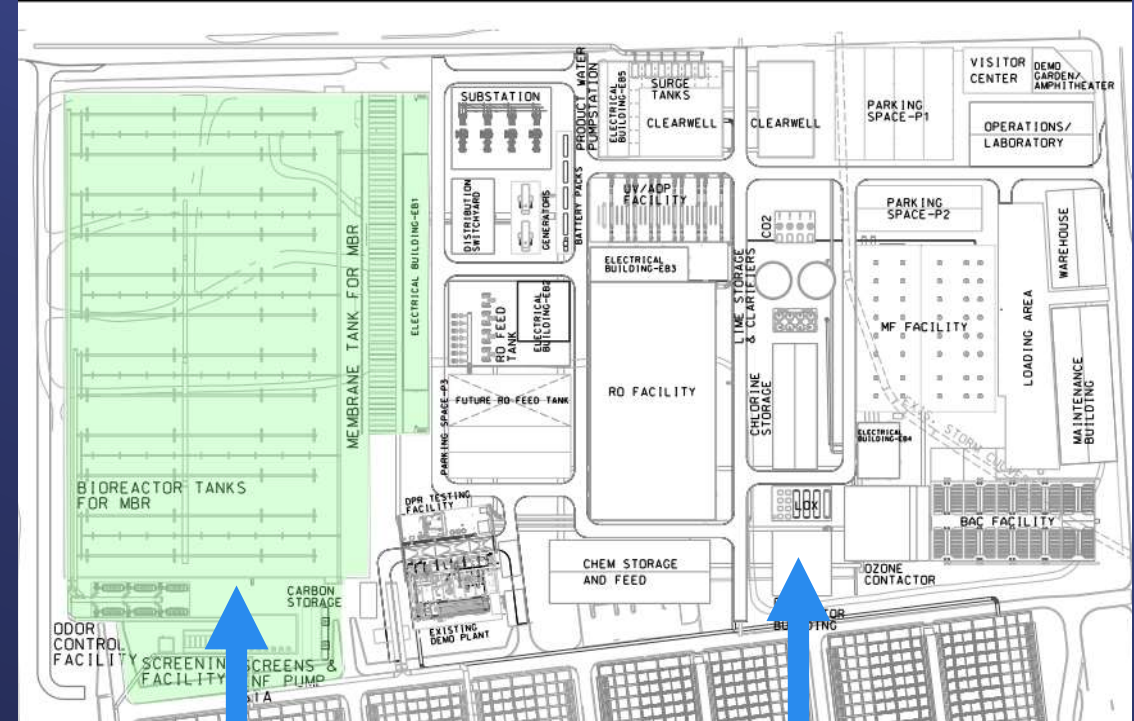
Program Overview



Major Cost Components

Advanced Water Purification Facility (AWPF)

- Site Preparation
- Process Equipment
- Chemical Feed Systems
- Power/Electrical Facilities
- SCE Substation
- Ancillary Facilities
- Outreach Facilities
- Workforce Training Center
- DPR Facilities



Pretreatment Facility
Owned/Operated by LACSD

Advanced Water Treatment (AWT) Facility
Owned/Operated by MWD

Major Cost Components

Conveyance Facilities

- Pipelines (Backbone, DPR)
- Service Connections & Laterals
- Pump Stations
- SCE Substation
- Azusa Pipeline Rehabilitation
- Property Easements

Recharge Facilities

- Spreading Facility Improvements
- Well Relocations & Groundwater Monitoring
- Property Acquisitions



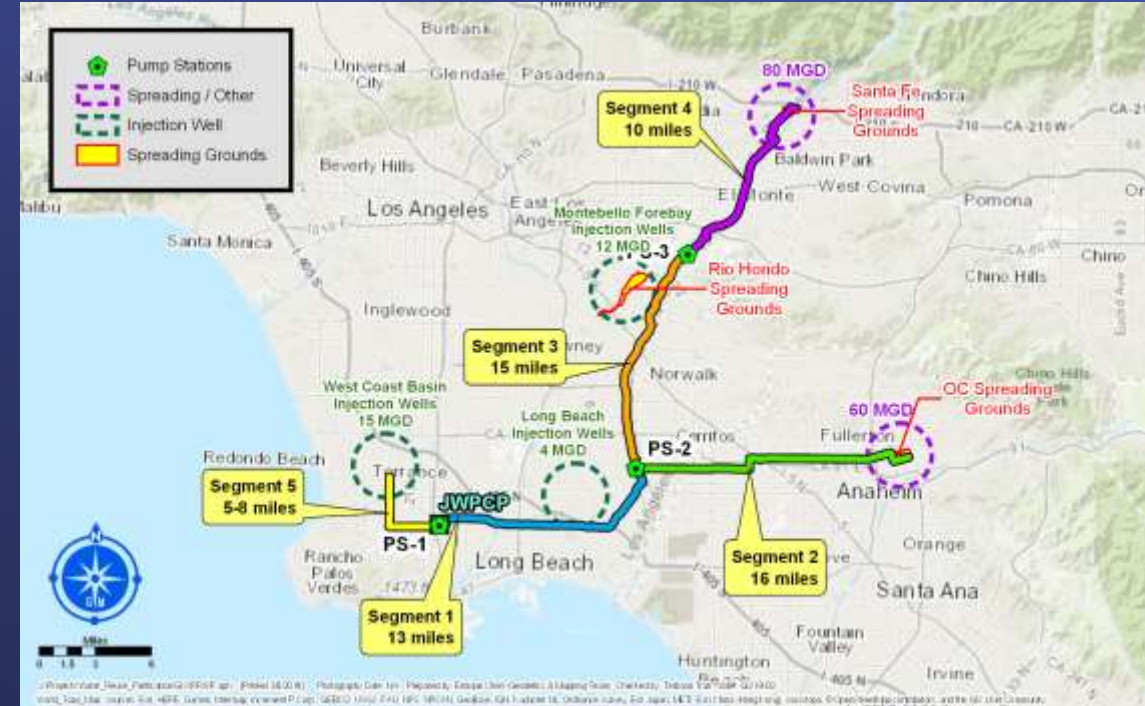
Major Cost Components

Other Program Costs

- Environmental Mitigation
- Community Benefits Program
- Build America/Buy America Act (BABAA) & Tariff Allowances
- Program Management/Engineering
- Contingencies

Previous Program Cost Estimates and Major Updates

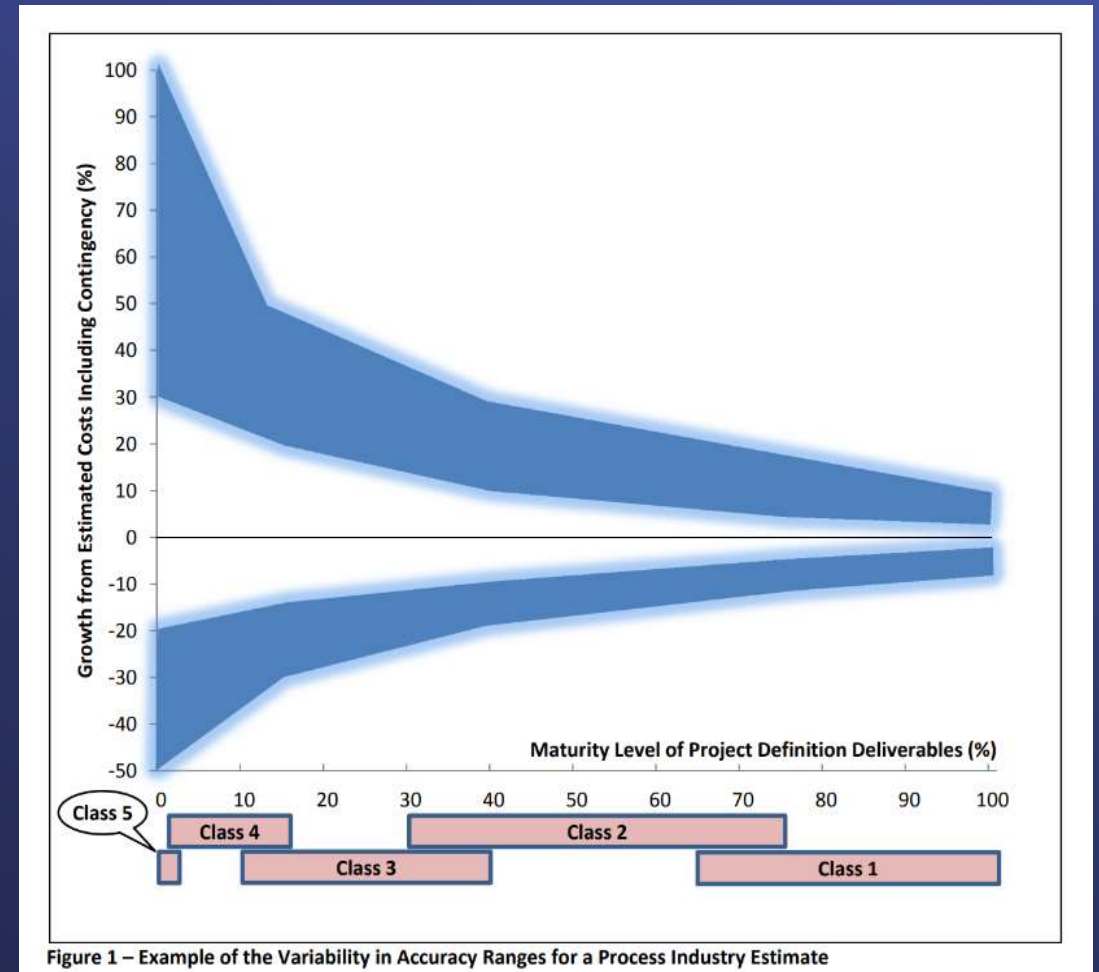
- 2016 – Initial Feasibility Study
- 2018 – Conceptual Planning Studies
- 2022 – Addition of Direct Potable Reuse
- 2024 – Board report on 2023 Cost Estimate
- 2025 – Development of Staged Options and 2025 Cost Estimate



Original Program Concept
for 2016/18 Estimates
(Indirect Potable Reuse only)

Cost Estimate Classification System

ESTIMATE CLASS	MATURITY LEVEL OF PROJECT DEFINITION DELIVERABLES Expressed as % of complete definition	END USAGE Typical purpose of estimate
Class 5	0% to 2%	Concept screening
Class 4	1% to 15%	Study or feasibility
Class 3	10% to 40%	Budget authorization or control
Class 2	30% to 75%	Control or bid/tender
Class 1	65% to 100%	Check estimate or bid/tender



With the AACE Cost Estimating Classification System, contingency can be lowered as the work is better defined

Recommended Contingencies (Accuracy Ranges)

2023 Estimates: used 35% contingency for all cost elements

2025 Class 4 Estimates: uses maturity-specific contingencies

- AWT Maturity Level: 10%-12%
- AWT Accuracy Range: 30%
- Conveyance Maturity Level: 5%-10%
- Conveyance Accuracy Range:
 - 30% for Reaches 1 & 2
 - 35% for Remaining Reaches

ESTIMATE CLASS	Primary Characteristic	Secondary Characteristic		
	MATURITY LEVEL OF PROJECT DEFINITION DELIVERABLES Expressed as % of complete definition	END USAGE Typical purpose of estimate	METHODOLOGY Typical estimating method	EXPECTED ACCURACY RANGE Typical variation in low and high ranges at an 80% confidence interval
Class 5	0% to 2%	Concept screening	Capacity factored, parametric models, judgment, or analogy	L: -20% to -50% H: +30% to +100%
Class 4	1% to 15%	Study or feasibility	Equipment factored or parametric models	L: -15% to -30% H: +20% to +50%
Class 3	10% to 40%	Budget authorization or control	Semi-detailed unit costs with assembly level line items	L: -10% to -20% H: +10% to +30%
Class 2	30% to 75%	Control or bid/tender	Detailed unit cost with forced detailed take-off	L: -5% to -15% H: +5% to +20%
Class 1	65% to 100%	Check estimate or bid/tender	Detailed unit cost with detailed take-off	L: -3% to -10% H: +3% to +15%

Table 1 – Cost Estimate Classification Matrix for Process Industries

2025 Program Cost Update

Key Assumptions:

- All costs in 2025 dollars; not escalated
- Phase 1 (115 MGD) – provides baseline cost and schedule for program
- 5% program management allowance (typical range: 5-15%)
- 25% allowance for Engineering/CM support and indirect costs
- 30% contingency for AWT and Conveyance R1 & R2 facilities
- 35% contingency for Pretreatment, Conveyance R3-R8, & recharge facilities
- Construction Cost Index (CCI) for the City of Los Angeles

Baseline Estimates Phase 1 - 115 MGD

Program Facilities - Phase 1 (115 MGD)



AWPF Site Legend

MWD

LACSD

Shared



Phase 1 (115 MGD) Program Capital Costs

Assets	Costs (\$ M)
Advanced Water Treatment (AWT)	1,098
Conveyance Facilities	3,707
Recharge Facilities	206
Program Management, Engineering & Indirect Costs	1,503
Program Contingency	1,648
Other Allowances	91
Other Shared Program Costs	58
Metropolitan Grand Total:	8,311
LACSD Grand Total:	1,085

Program Phase 1 Grand Total = \$9.4 Billion

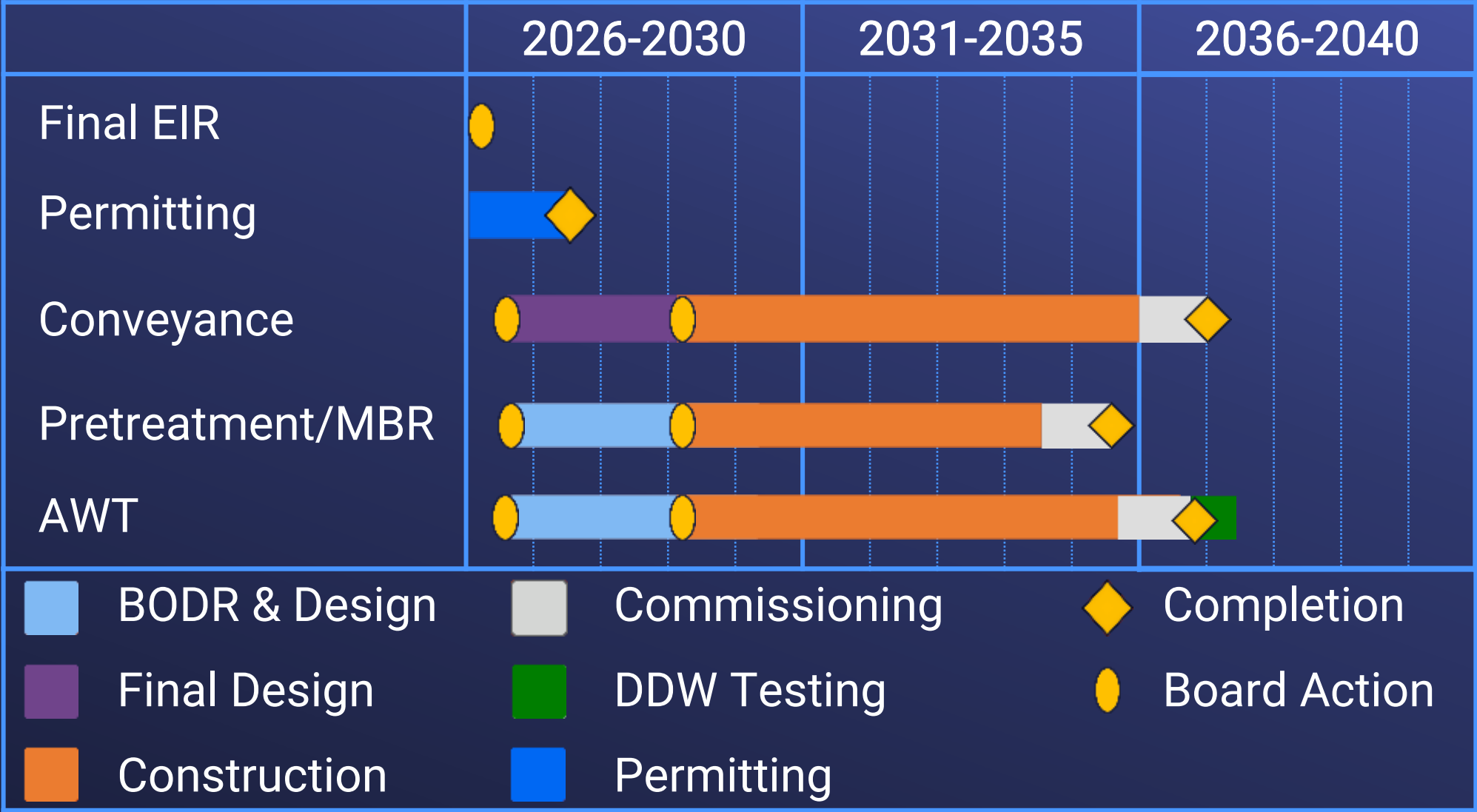
Phase 1 (115 MGD) Program Annual O&M Costs

Assets	O&M Costs (\$ M/yr)
Advanced Water Treatment (AWT)	110
DPR Process Facilities at Weymouth	2
Conveyance	30
Recharge Facilities	1
PMIS & BIM	3
Contingency	22
Metropolitan Grand Total	167
LACSD Grand Total	27

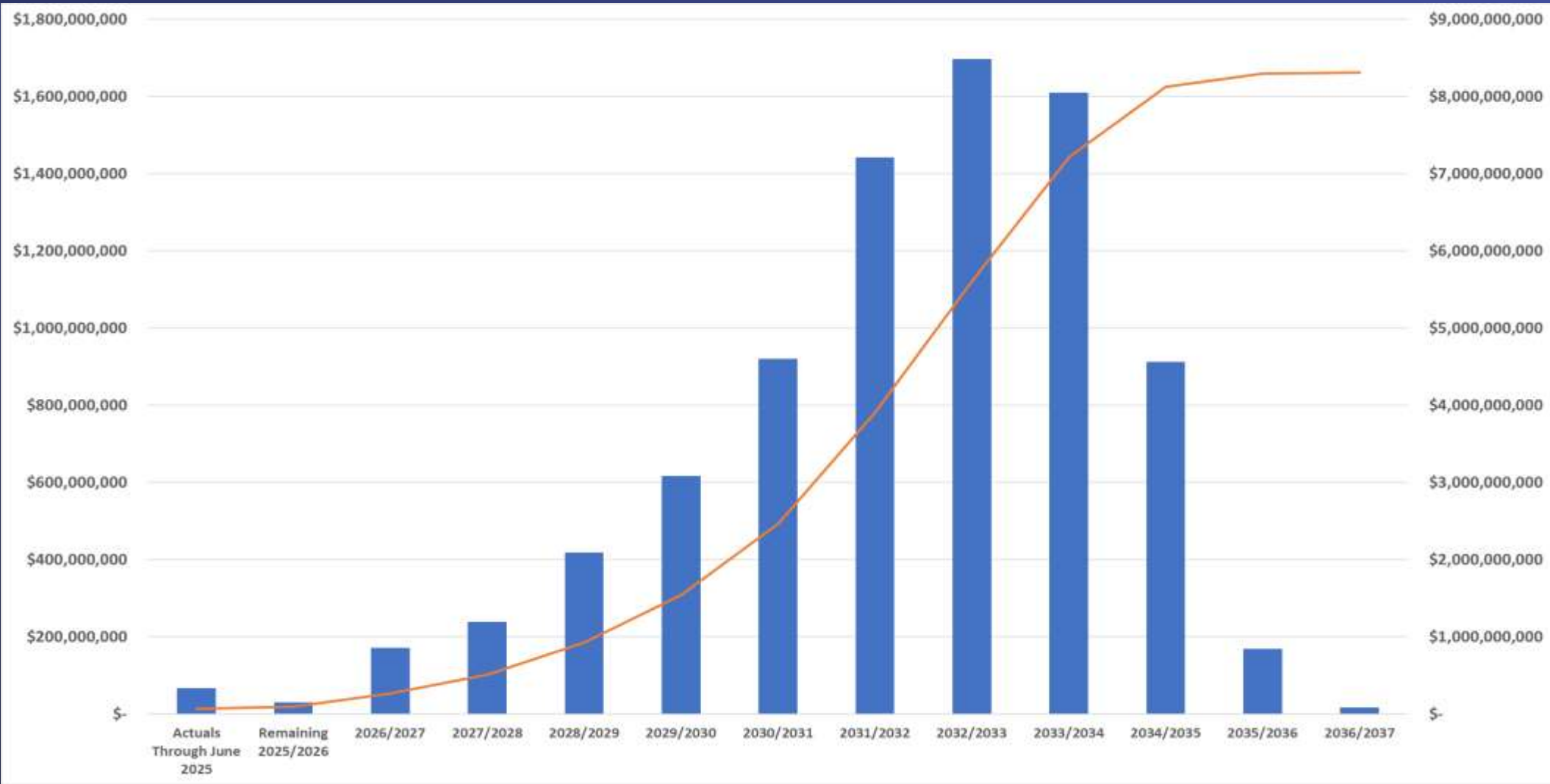
Program Phase 1 Total O&M = \$194 Million/yr

Note: Significant O&M costs start with facilities commissioning as early as 08/2035 & likely starting in 2037

Phase 1 (115 MGD) Program Schedule



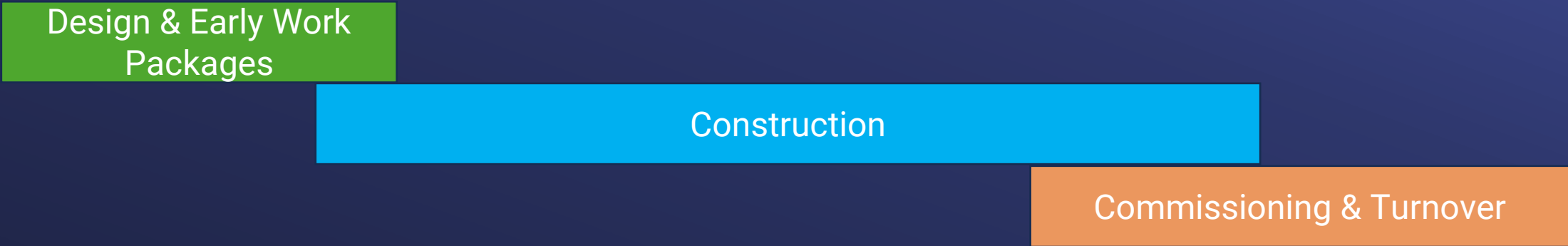
Phase 1 (115 MGD) Program Cash Flow Expenditures



Baseline Fiscal-Year Cash Flow Expenditures (\$ Million)

MGD	Current	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37
115	67	30	172	239	418	617	920	1,443	1,697	1,610	912	169	17

Total = \$8,311 million



Program Delivery Life Cycle Phases

*Excludes LACSD’s Pretreatment/MBR Facilities

Comparison of Program Costs 2023/24 vs. 2025

2023/24 Phase 1 -115 MGD Program Cost Estimate

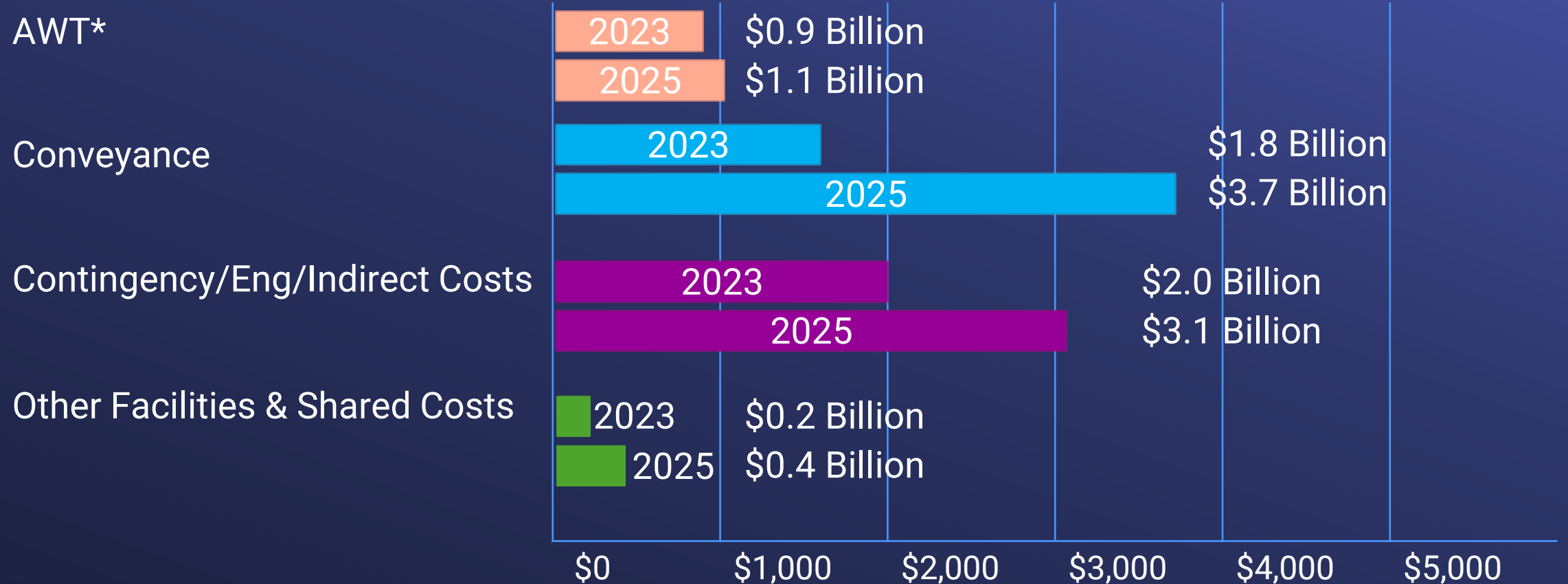
Description	Cost (\$M) ¹
Treatment Facilities	\$2,120
Conveyance Facilities	\$2,120
Recharge Facilities	\$180
DPR Facilities to Weymouth	\$140
Subtotal	\$4,560
Design/CM	\$1,370
Property/Permitting	\$390
Mitigation Measures/Community Benefits	\$70
Total	\$6,390

¹ Costs are in 2023 dollars and include a 35% contingency and no escalation; LACSD's Pretreatment Facilities costs and property value of AWPf treatment site were included

Phase 1- 115 MGD Program Cost Comparison (2023/2025)

2023 Cost estimate: \$6.4B /\$4.9B*

2025 Cost Estimate: \$8.3B*



*Excludes LACSD's facility costs

2025 Cost Update Considerations

- Escalation & higher cost of materials
- Scope refinements
- BABAA guidelines & added tariffs allowances
- Potential state/federal grants and partner contributions revenues not included

Consumer Price Index (CPI)

Los Angeles, Long Beach, Anaheim

2022/23	2023/24	2024/25
10.4%	3.2%	4.8%

Overall CPI Impact

- AWT: 8.4% increase
- Conveyance: 18.4% increase

AWT - Key Drivers for Cost Increases

- **Materials & Market Conditions** (+\$61 M)
 - Increased due to escalation since 2023
 - Updated pipeline, lime, steel rebar & piping material costs
- **Scope Refinements** (+\$187 M)
 - Added RO equalization tank & pump station
 - Larger product water clearwell, surge tanks & pump station for DPR
 - Additional site restoration needs
 - Updated power system requirements
 - Updated chemical system & ancillary facilities

Conveyance - Key Drivers for Cost Increases

➤ **Materials & Market Conditions** (+\$920 M)

- Escalation since June 2022
- Higher cost of coated steel
- Unit rates for trenchless operations

➤ **Scope Refinements** (+\$595 M)

- More trenchless, utility relocations, soils handling & deeper alignments in R1/R2
- Sectionalizing valves, depth of cover, shaft type & concrete encasements
- Pipeline lining change from CML to polyurethane
- Lateral facilities
- Azusa pipeline rehabilitation
- Pump station appurtenances
- SCE power substation

➤ **Contractor Markups** (+\$370 M)

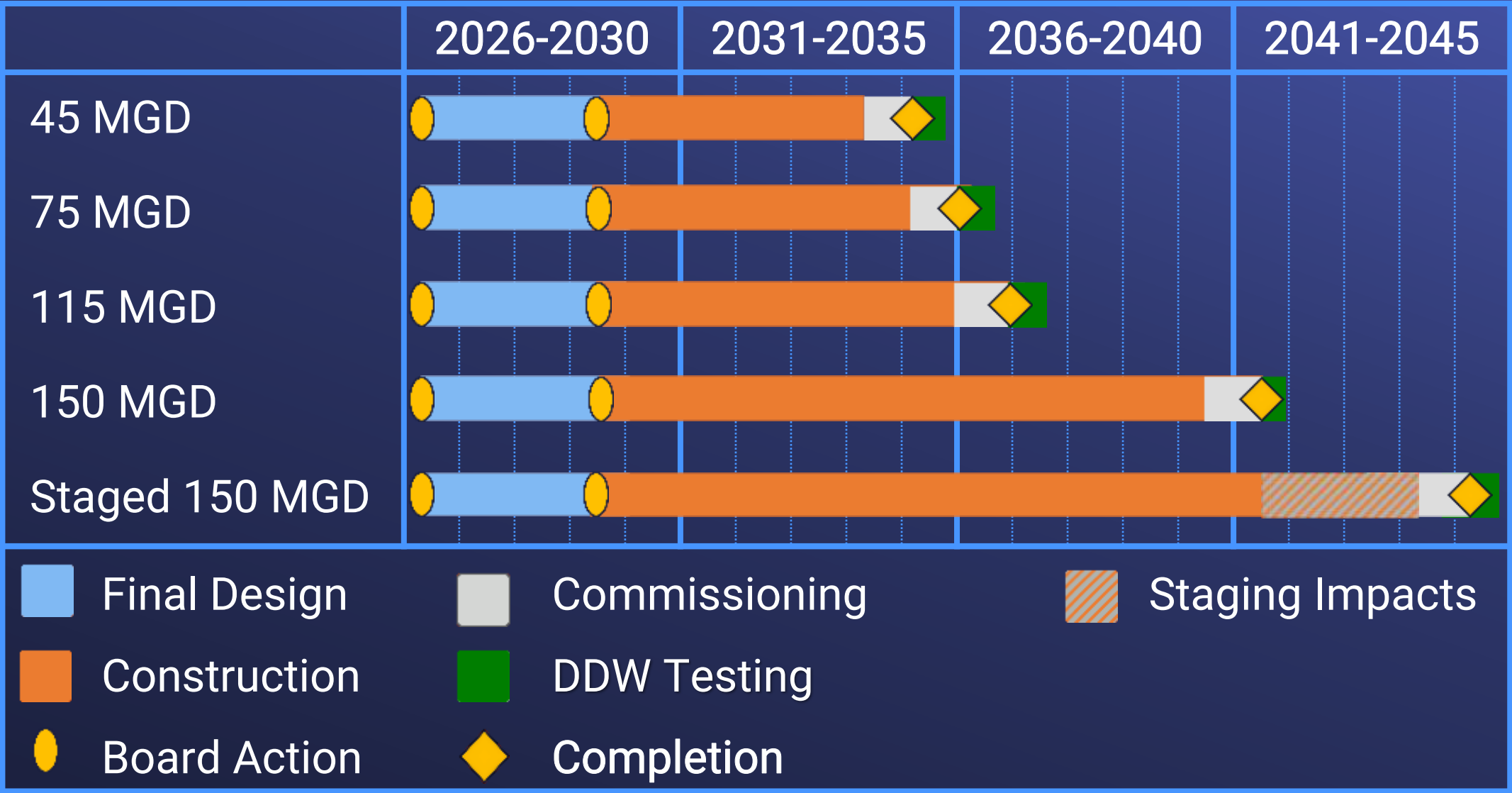
Staged Options for Program Implementation

Program Cost Summary with Staged Options

Capacity	LACSD's Share of Cost* (\$Million)	Metropolitan's Share of Costs (\$ Million)	Total * Program Cost (\$Million)	Online Year
45 MGD	697	2,881	3,578	2035
75 MGD	962	7,139	8,101	2036
115 MGD	1,085	8,311	9,396	2036
150 MGD	1,474	9,841	11,315	2041
150 MGD Staged	1,716	10,600	12,316	2045

** Property value of LACSD's Joint AWWP treatment site and Workforce Training Facility site (valued at \$164M) not included*

Program Implementation Schedule with Staged Options



45 MGD

Program Facilities – 45 MGD



Program Capacity:

- 45 MGD IPR

Year Complete:

- 2035

Facilities:

- AWP
- Reaches 1 & 2A
~10 miles
- 3 service connections
- No backbone pump stations

Deliveries to:

- West Basin
- Long Beach

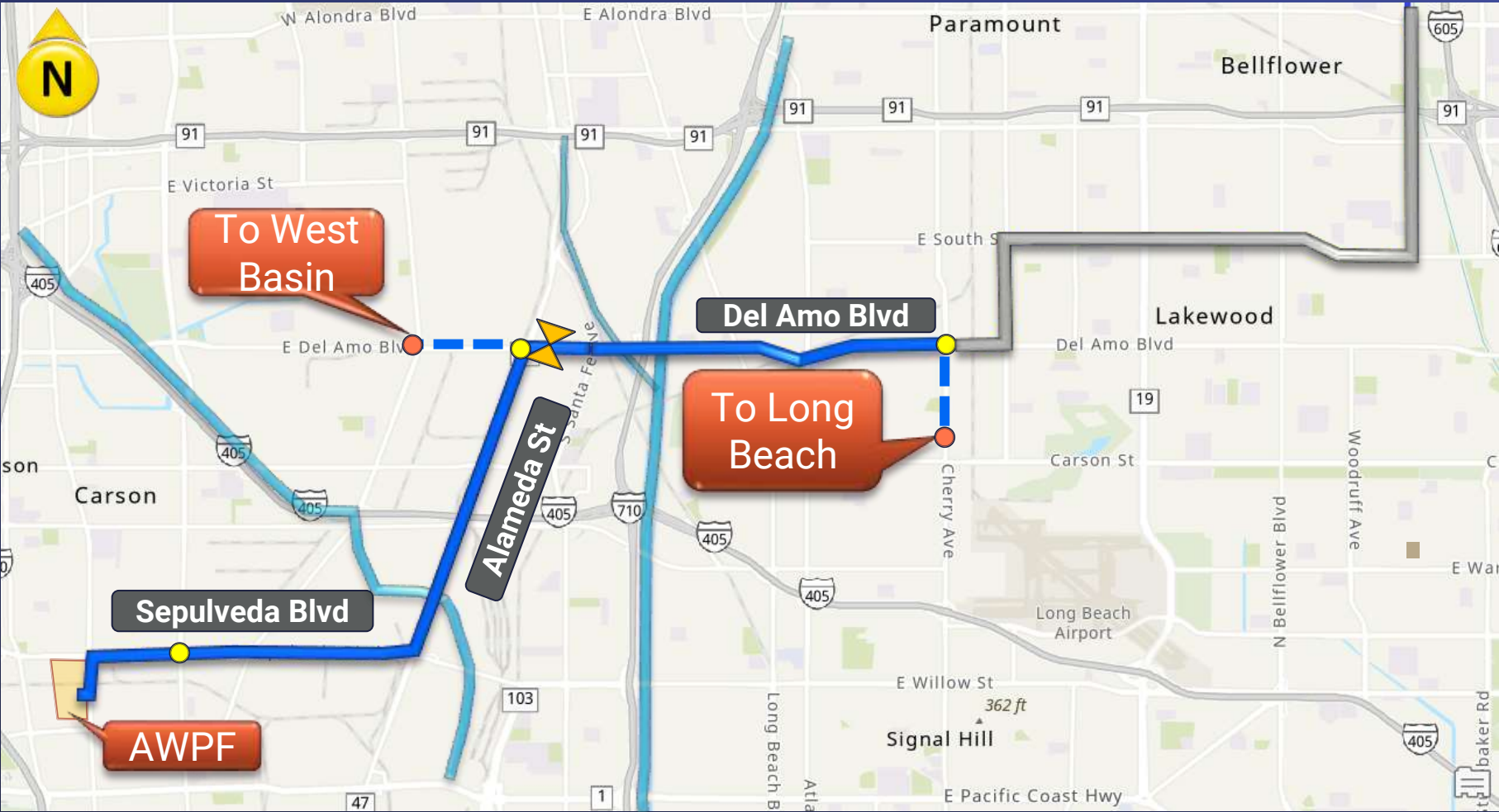
AWPF Legend

MWD

LACSD

Shared

Potential Water Deliveries - 45 MGD



45 MGD Program Capital Costs

Assets	Costs (\$ million)
Advanced Water Treatment (AWT)	654
Conveyance Facilities	1,118
Recharge Facilities	1
Program Management, Engineering and Indirect Costs	532
Program Contingency	486
Other Allowances	34
Other Shared Program Costs	56
Metropolitan Total:	2,881

75 MGD

Program Facilities – 75 MGD



Program Capacity:

- 75 MGD IPR

Year Complete:

- 2036

Facilities:

- AWP
- Reaches 1 to 8A
~37 miles
- 8 service connections
- 1 backbone pump station

Deliveries to:

- West Basin
- Long Beach
- Upper Water
- Three Valleys

AWPF Legend

MWD

LACSD

Shared

75 MGD Program Capital Costs

Assets	Costs (\$ million)
Advanced Water Treatment (AWT)	826
Conveyance Facilities	3,373
Recharge Facilities	101
Program Management, Engineering and Indirect Costs	1,290
Program Contingency	1,413
Other Allowances	78
Other Shared Program Costs	58
Metropolitan Total:	7,139

115 MGD

Program Facilities -115 MGD



AWPF Legend

Program Capacity:

- 90 MGD IPR
- 25 MGD DPR

Year Complete:

- 2036

Facilities:

- AWP
- Reaches 1 to 8B ~39 miles
- 9 service connections
- 2 backbone pump stations
- Azusa Pipeline & 2 pump stations
- Satellite DPR Facility

Deliveries to:

- West Basin
- Long Beach
- Upper Water
- Three Valleys
- SGVMWD
- Weymouth Plant

115 MGD Program Capital Costs

Assets	Costs (\$ M)
Advanced Water Treatment (AWT)	1,098
Conveyance Facilities	3,707
Recharge Facilities	206
Program Management, Engineering & Indirect Costs	1,503
Program Contingency	1,648
Other Allowances	91
Other Shared Program Costs	58
Metropolitan Total:	8,311

Full Program -150 MGD

Program Facilities – 150 MGD



Program Capacity:

- 90 MGD IPR
- 60 MGD DPR

Year Complete:

- 2041

Facilities:

- AWP
- Reaches 1 to 8B
~39 miles
- 9 service connections
- 2 backbone pump stations
- New DPR pipeline & pump station
- Satellite DPR Facility

Deliveries to:

- West Basin
- Long Beach
- Upper Water
- Three Valleys
- SGVMWD
- Weymouth Plant

AWPF Legend

MWD

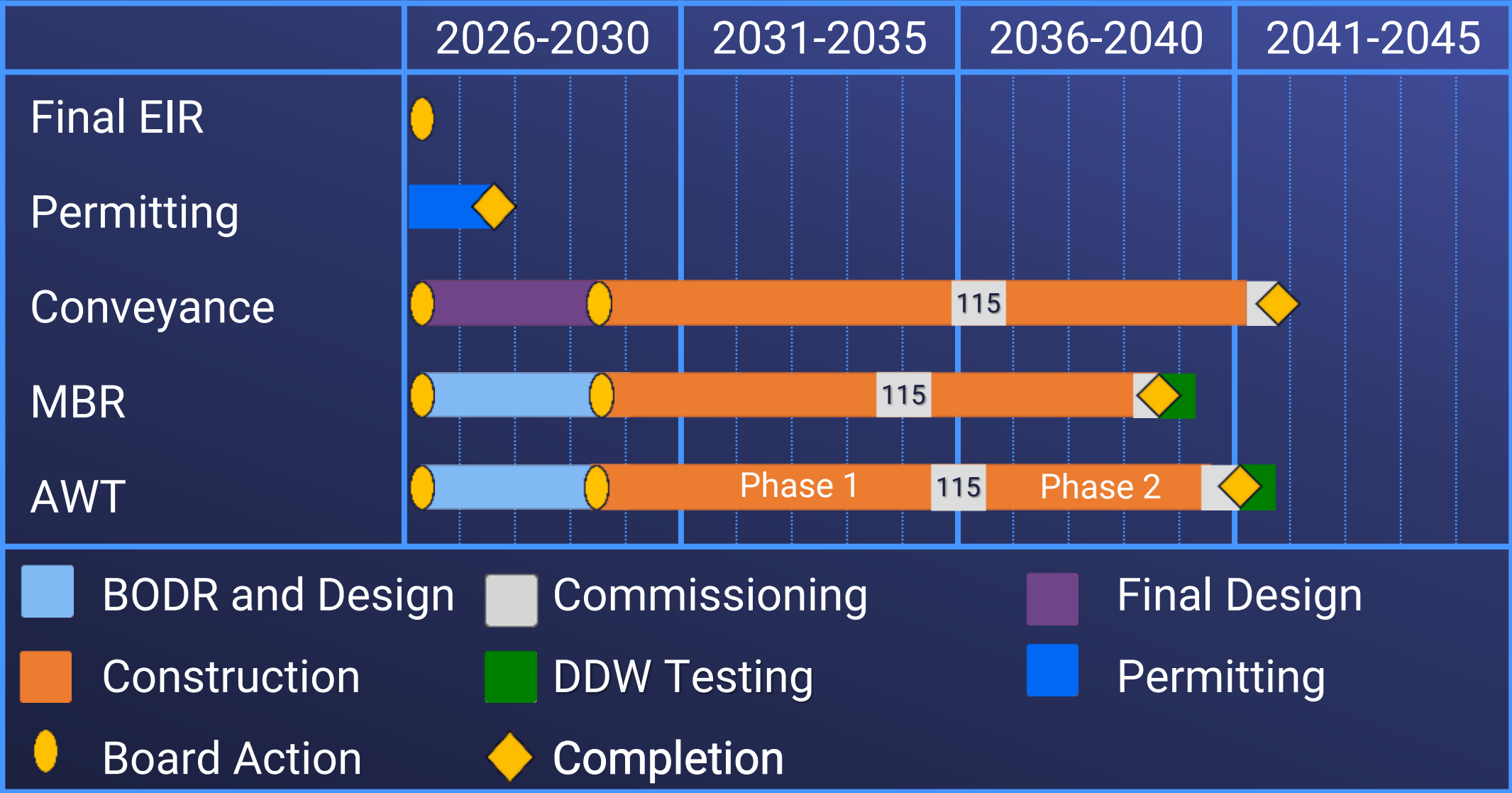
LACSD

Shared

Full-Program Capital Costs – Continuous Design/Construction Approach

Assets	Costs (\$ million)
Advanced Water Treatment (AWT)	1,532
Conveyance Facilities	4,142
Recharge Facilities	265
Program Management, Engineering and Indirect Costs	1,782
Program Contingency	1,951
Other Allowances	108
Other Shared Program Costs	62
Metropolitan Total:	9,841

Full-Program Implementation Schedule – Continuous Construction



Full Program -150 MGD with Staged Implementation

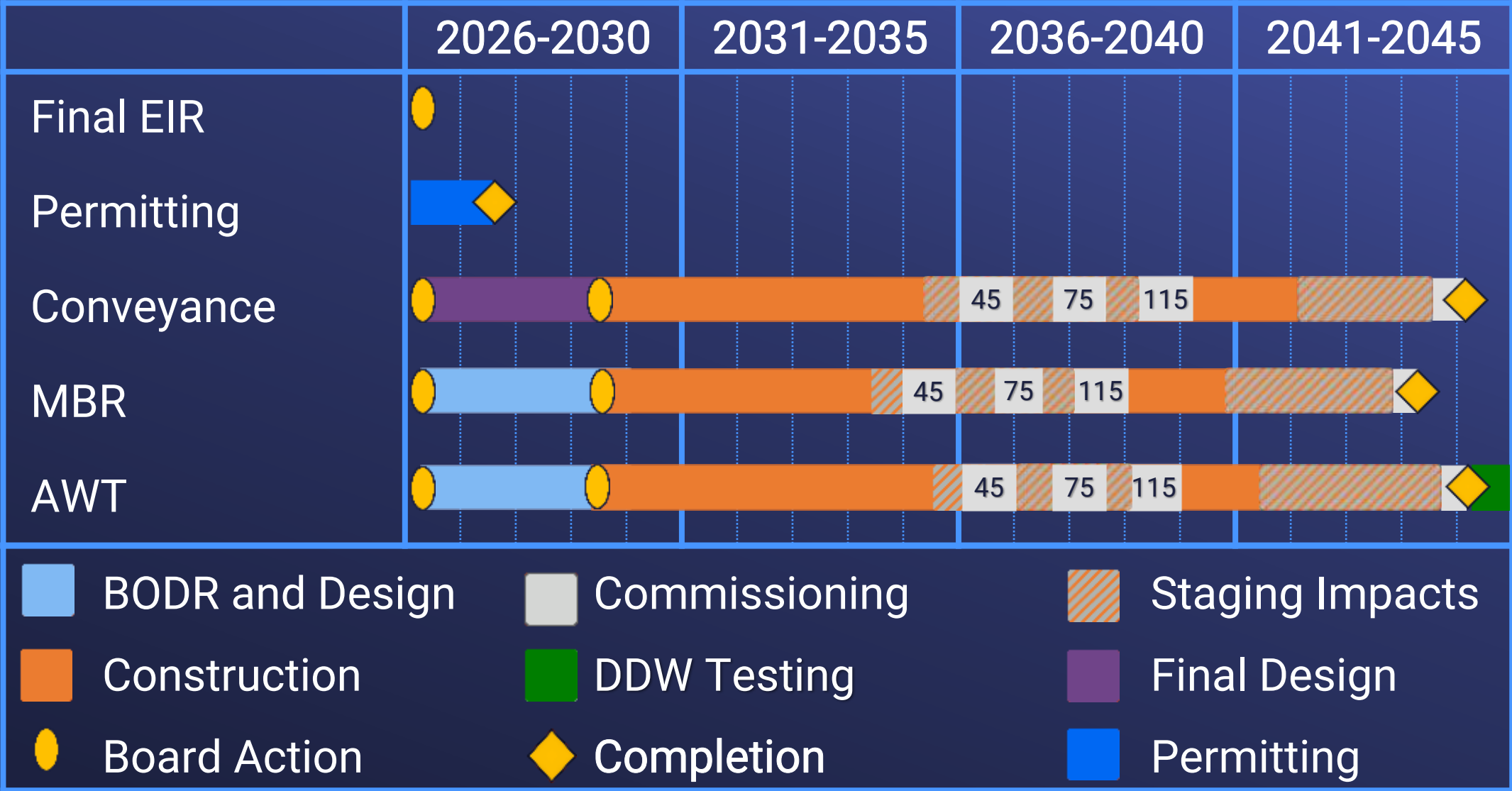
Assumptions – Staged Program Buildout Option

- Design/construction does not begin until prior stage is completed
- New design/contract procurement for each stage
(procurement costs not included)
- No escalation or inflation included
- No reduction in contingency
- Three stages for program implementation
 - 45 to 75 MGD; 75 to 115 MGD; 115 to 150 MGD
- Staging impacts on costs and schedules
 - 6-9 months pause for procurement
 - Mobilization/demobilization between stages
 - 9-12 months system commissioning for each stage

Full-Program Capital Costs – Staged Design/Construction Approach

Assets	Costs (\$ million)
AWT/Conveyance/Recharge Facilities - 150 MGD Costs	9,841
AWT 45/75 MGD Phasing Additional Costs	316
AWT 75/115 MGD Phasing Additional Costs	171
AWT 115/150 MGD Phasing Additional Costs	272
Additional Phasing Costs Total:	759
Metropolitan Total:	10,600

Staged Program Buildout Schedule (150 MGD)



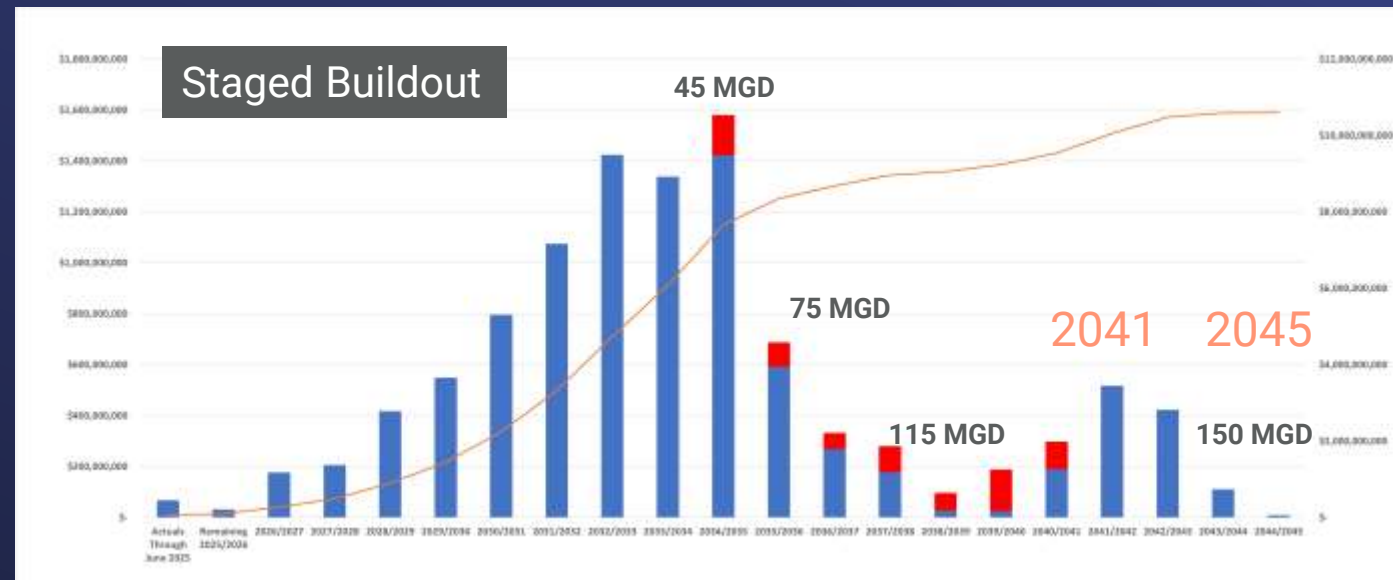
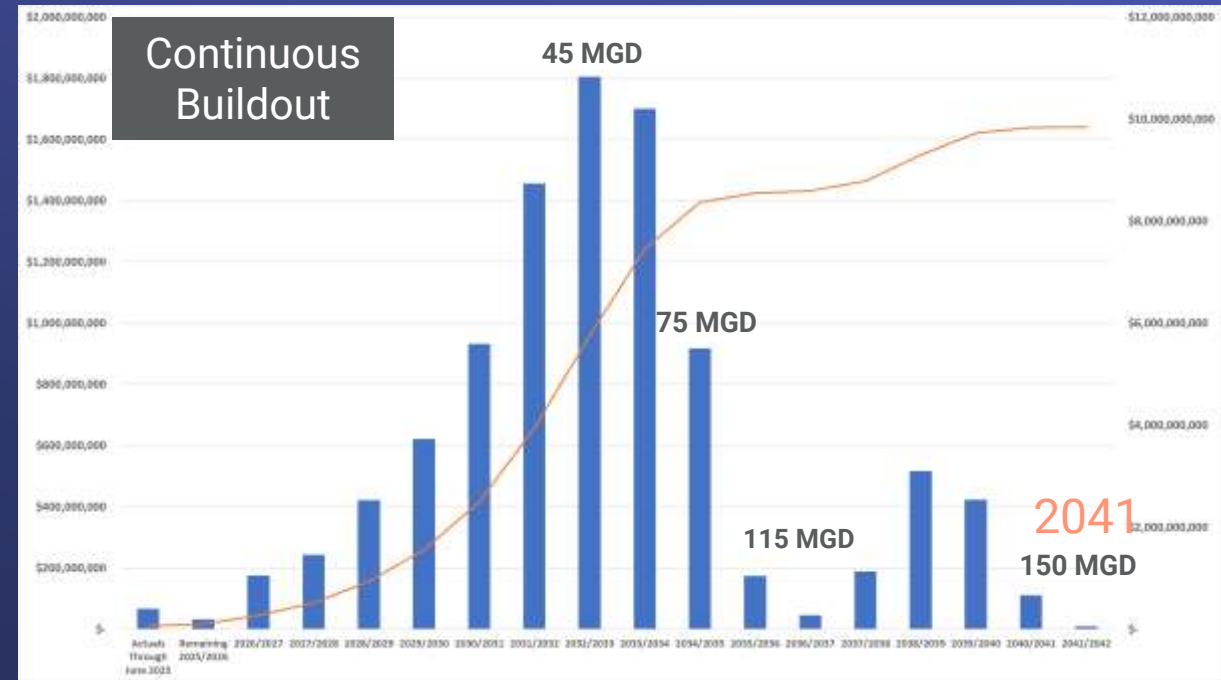
Continuous vs. Staged Full-Program Buildout Costs

Implementation Option	Costs (\$ Million)	Note
Continuous	9,841	Original full program (150 MGD)
Staged	10,600	Implementing in four stages, 45, 75, 115 & 150 MGD
<i>Cost Difference</i>	759	Staged implementation costs 8% higher

Continuous vs. Staged Full-Program Implementation

Staging Impacts

- Additional costs (\$759 M)
- Lower cash flow - first 5 yrs
- Higher cash flow - last 5 yrs (~\$1,000 Million)
- Delayed water deliveries due to procurement & re-commissioning



Staged Program Buildout

- **Pros**
 - Reduces initial resources needed
 - Lowers cost contingencies, soft costs, and mark-ups with each stage
 - Provides stronger revenue generation base model
 - Benefits from lessons learned from previous stage
 - Potentially reduces Metropolitan's risk exposure
- **Cons**
 - Delays full program buildout
 - Defers debt services and expenditure peaks to later in the buildout cycle
 - Requires higher costs for debt services over a longer repayment period
 - Results in overall higher program costs

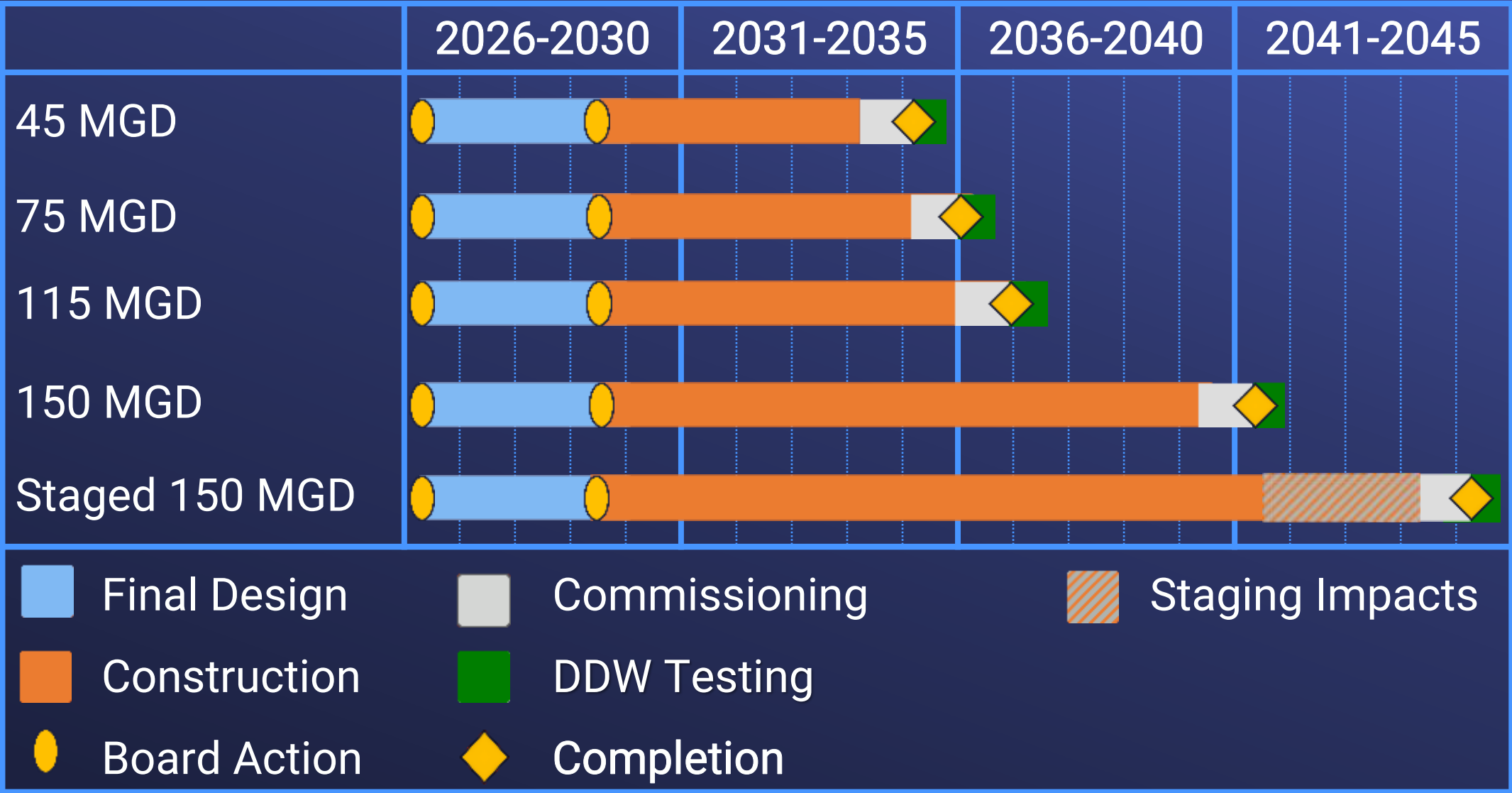
Summary

Cost Summary of Program Staging Options

Capacity	LACSD's Share of Cost* (\$Million)	Metropolitan's Share of Costs (\$ Million)	Total * Program Cost (\$Million)	Online Year
45 MGD	697	2,881	3,578	2035
75 MGD	962	7,139	8,101	2036
115 MGD	1,085	8,311	9,396	2036
150 MGD	1,474	9,841	11,315	2041
150 MGD Staged	1,716	10,600	12,316	2045

** Property value of LACSD's Joint AWWP treatment site and Workforce Training Facility site (valued at \$164M) not included*

Program Implementation Schedule with Staged Options



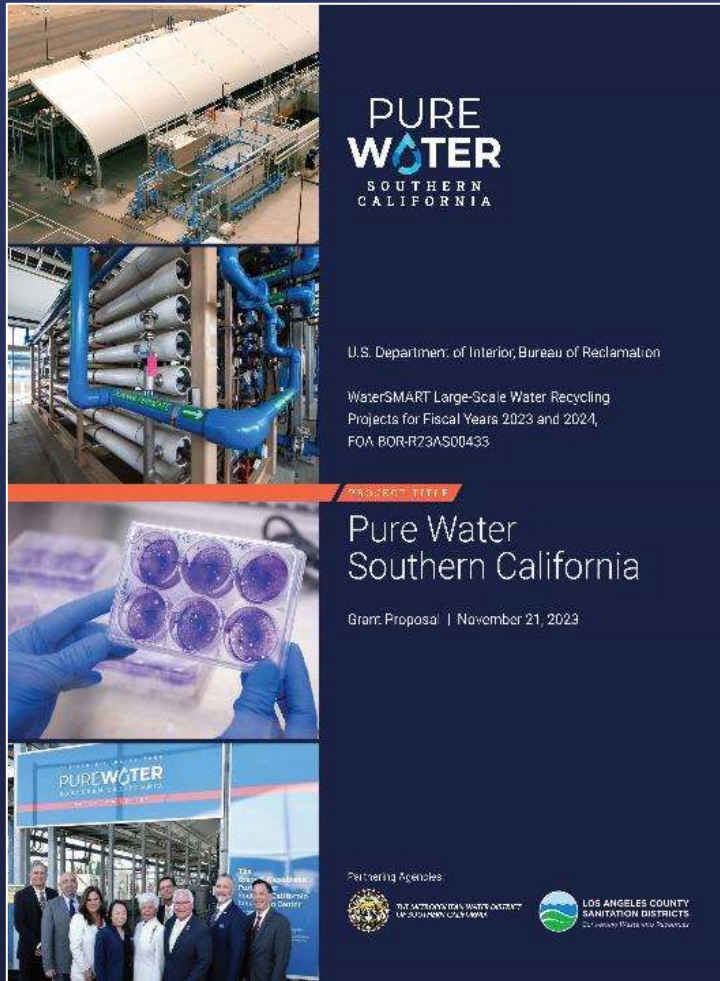
Estimated Biennial Fiscal Cash Flow Expenditures (\$ Million)

Program Delivery Phases



Biennium Budget Cycle	45 MGD	75 MGD	115 MGD	150 MGD	150 MGD Staged
2025/26 (Current FY)	20	28	30	32	32
2026/28	236	381	411	419	383
2028/30	481	953	1,035	1,043	965
2030/32	1,252	2,102	2,363	2,389	1,871
2032/34	732	2,819	3,307	3,506	2,762
2034/36	93	775	1,081	1,092	2,268
2036/38		14	17	234	611
2038/40				939	285
2040/42				120	814
2042/44					533
2044/46					9

Securing Outside Funding & Partner Contributions



- **Secured:**
 - \$80 M State Funding
 - \$16.5 M Partner contributions received to date
 - \$125 M USBR Large-Scale Water Recycled Grant
 - \$5 M USBR Planning Grant
 - \$1 M Pilot Project State Grant
 - \$750K USBR Water Recycling Research Grant
- **Upcoming Opportunities:**
 - State climate bond
 - Additional partnership contributions

Financial Impact and Unit Cost Assumptions

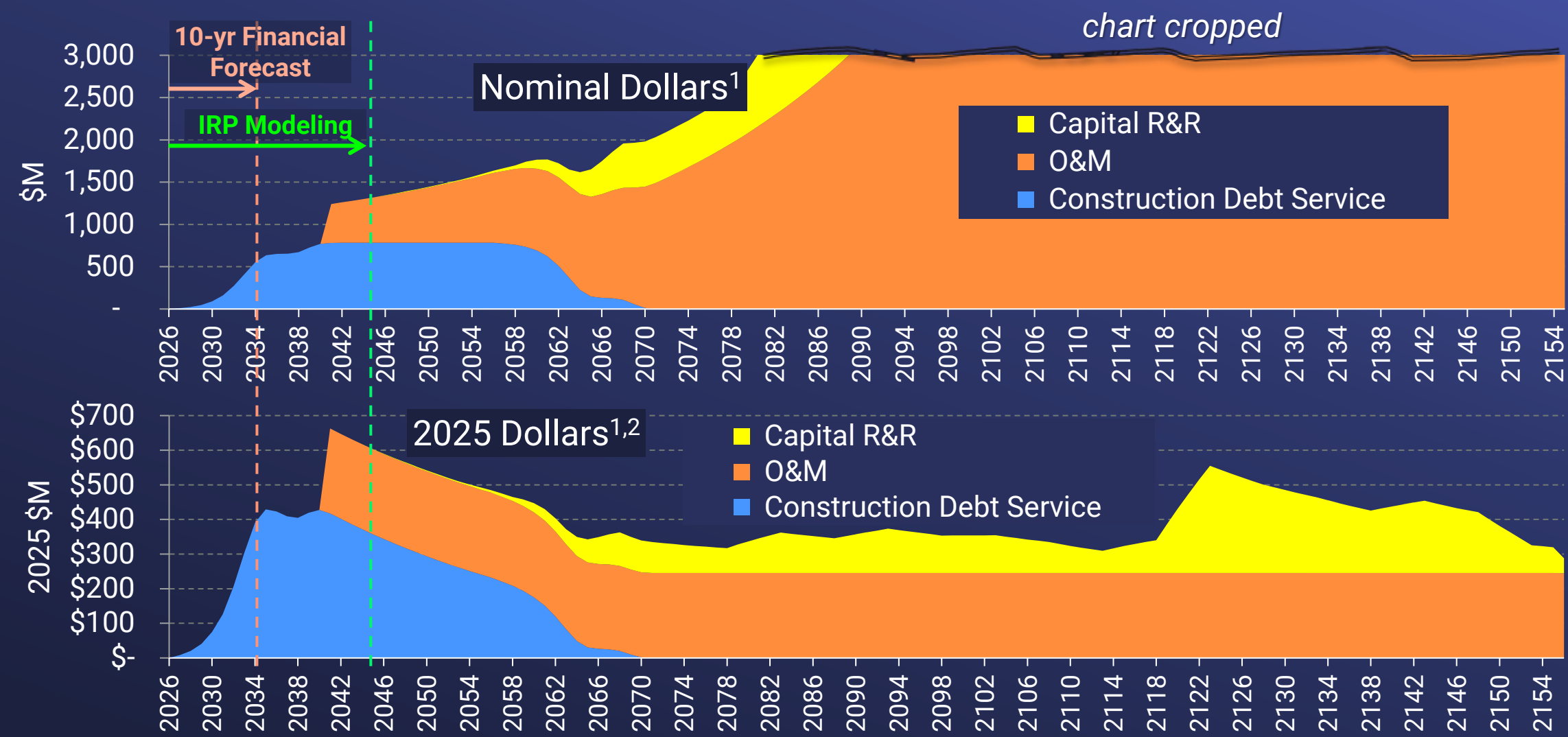
in 2025 dollars

PWSC Project	45 MGD	75 MGD	115 MGD	150 MGD	150 MGD Staged
Capital Construction Cost¹	\$2.7 B	\$6.9 B	\$8.1 B	\$9.6 B	\$10.4 B
Annual Capital Financing Costs ²	\$154 M	\$401 M	\$468 M	\$557 M	\$601 M
Annual O&M Cost	\$89 M	\$125 M	\$167 M	\$245 M	\$245 M
Annual R&R Cost	\$33 M	\$78 M	\$99 M	\$125 M	\$125 M
Production Yield	46,400 AF	77,300 AF	118,500 AF	154,600 AF	154,600 AF
Construction Period	8	10	10	15	19

1. Capital cost to Metropolitan net of \$212 M in State & Federal grants.
2. Assuming capital is 100% debt financed at 4% interest rate / 30-year term.

PWSC Cash Flows

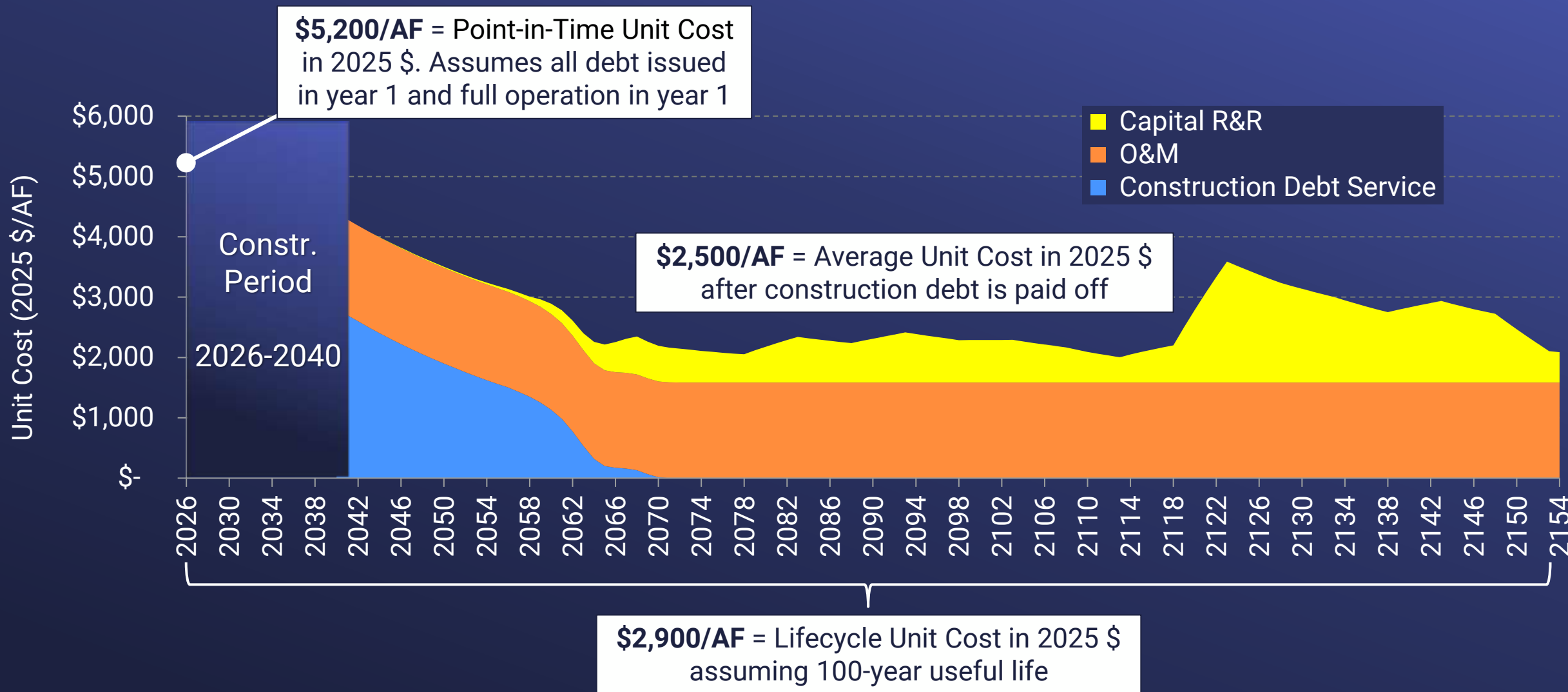
150 MGD, No Upsizing, w/o LACSD Scope, in 2025 dollars



1. Escalation rate 4%
2. Discount rate 4%

PWSC Lifecycle Cost Analysis

150 MGD, No Upsizing, w/o LACSD Scope, in 2025 dollars



Estimated Financial Impact and Unit Cost

in 2025 dollars

Point-in-Time Unit Cost = Assumes all debt issued in year 1 and full operation in year 1

Lifecycle Unit Cost = Avg unit cost over 100-year project life includes replacements and refurbishments costs

Options	45 MGD	75 MGD	115 MGD	150 MGD	150 MGD Staged
Point-in-Time Unit Cost (\$/AF)	\$5,200	\$6,800	\$5,400	\$5,200	\$5,500
Lifecycle Unit Cost (\$/AF)	\$3,100	\$3,400	\$2,800	\$2,900	\$2,900
Overall Melded Cost Increase ¹	14%	31%	38%	47%	50%
Avg. Annual Cost Increase over Construction Period ²	1.8%	3.1%	3.8%	3.2%	2.6%
Avg. Cost Increase per AF of Sales (\$/AF) ³	\$230	\$490	\$600	\$750	\$800

1. Estimated by totaling the annual financing and O&M costs and dividing by Metropolitan's 2025/26 Revenue Requirement of \$1,693 M.

2. The rate increase in any one year can be substantially higher depending on many factors including if the project is partially funded by PAYGO.

3. Assumes adopted FY 2025/26 demand forecast of 1.34 MAF, less 277 TAF of SDCWA exchange transactions

Next Steps – Program Cost Updates

- Receive feedback from Board on information provided today
- Evaluate overall rate impacts
- Continue to investigate federal/state grants & loans
- Evaluate potential agreements/contributions from program partners

