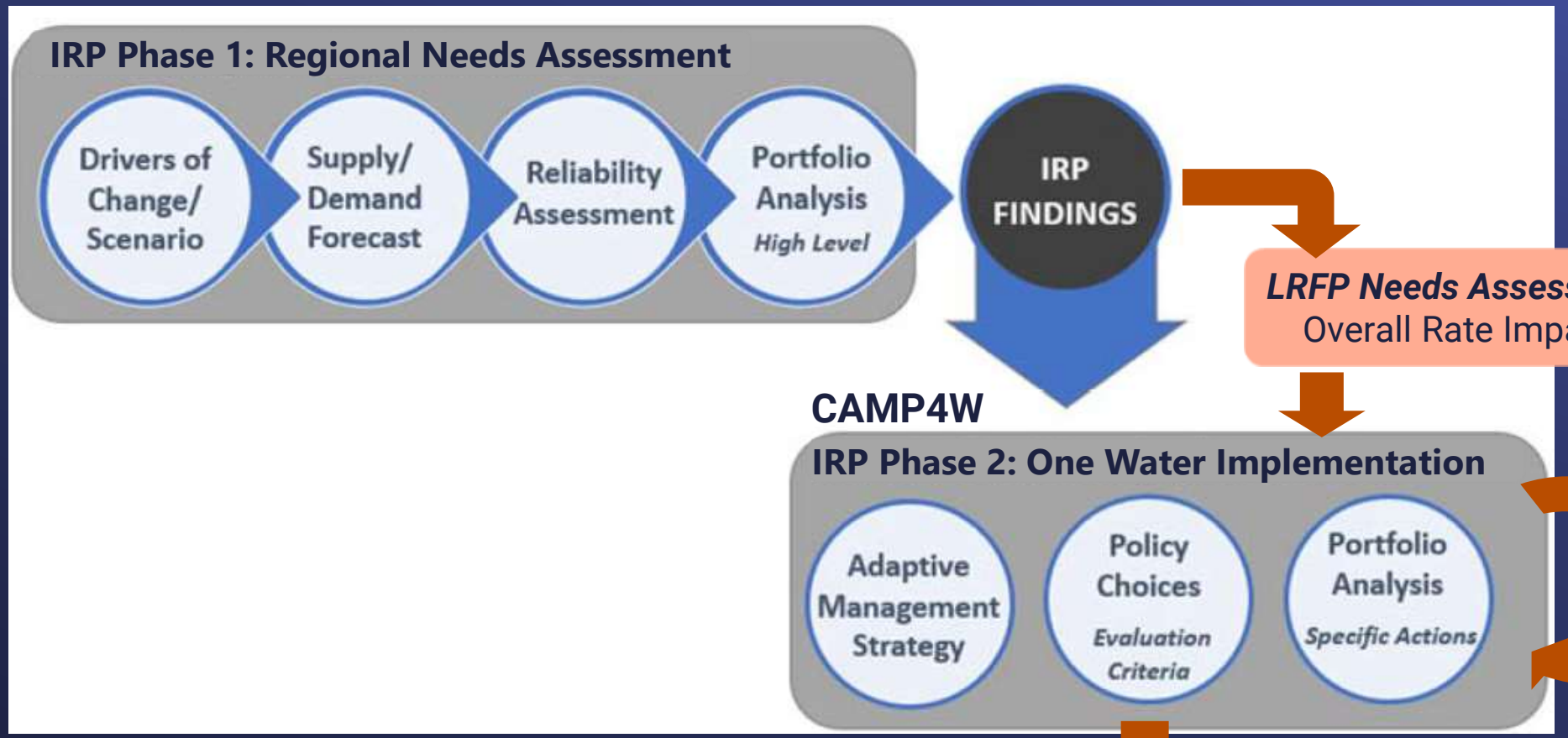
Subcommittee on Long-Term Regional Planning processes and Business Modeling Planning

Review Draft 2023 Long-Range Finance Plan Needs Assessment

Item 3a
September 26, 2023

Integrated Planning Processes



Modeling Overview
LRFP Needs Assessment

Modeling Period

- Starts with the adopted rates for calendar year 2023 and 2024 and project overall annual rate increases to 2032
- Public agencies and water utilities commonly use 5 or 10-year financial forecasts. Beyond a 10-year horizon, forecasts become highly uncertain
- The intent of the LRFP Needs Assessment is to estimate average annual overall rate increases over the 10-year forecast period and provide an indication of the trajectory of rates in the longer-term
- The model assumes that costs are recovered exactly as anticipated, allowing the model to focus on the impacts of resource development costs without introducing additional variation from reserves, debt coverage considerations, and other items that will be incorporated into the final LRFP

Modeling Overview

LRFP Needs Assessment

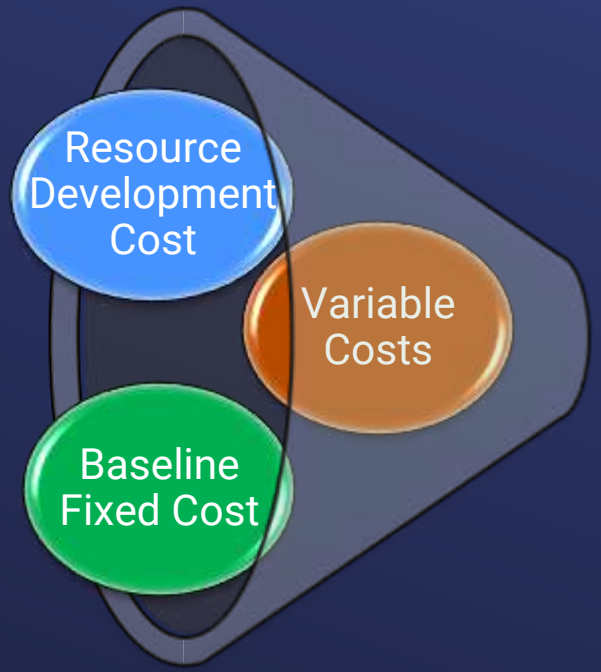
Modeling Process

For each IRP Scenario for each year:

Resource Development (AF)

× Resource Unit Cost ($/AF)

= Resource Development Cost



Revenue Requirement ($)

÷ Water Transactions ($/AF)

= Overall Rate ($/AF)

2020 IRP Needs Assessment Scenarios

Scenario Descriptions

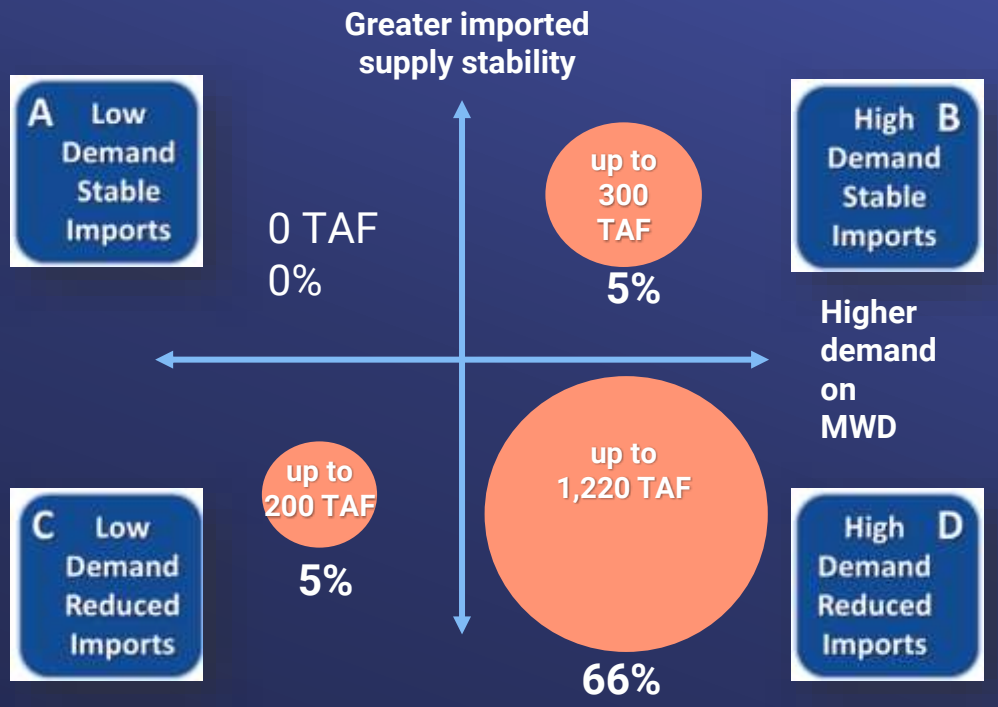
Scenario A – Low Demand/Stable Imports:
Gradual climate change impacts, low regulatory impacts, and slow economic growth.

Scenario B – High Demand/Stable Imports:
Gradual climate change impacts, low regulatory impacts, high economic growth.

Scenario C – Low Demand/Reduced Imports:
Severe climate change impacts, high regulatory impacts, slow economic growth.

Scenario D – High Demand/Reduced Imports:
Severe climate change impacts, high regulatory impacts, and high economic growth.

Summary Matrix of IRP Scenario Results*

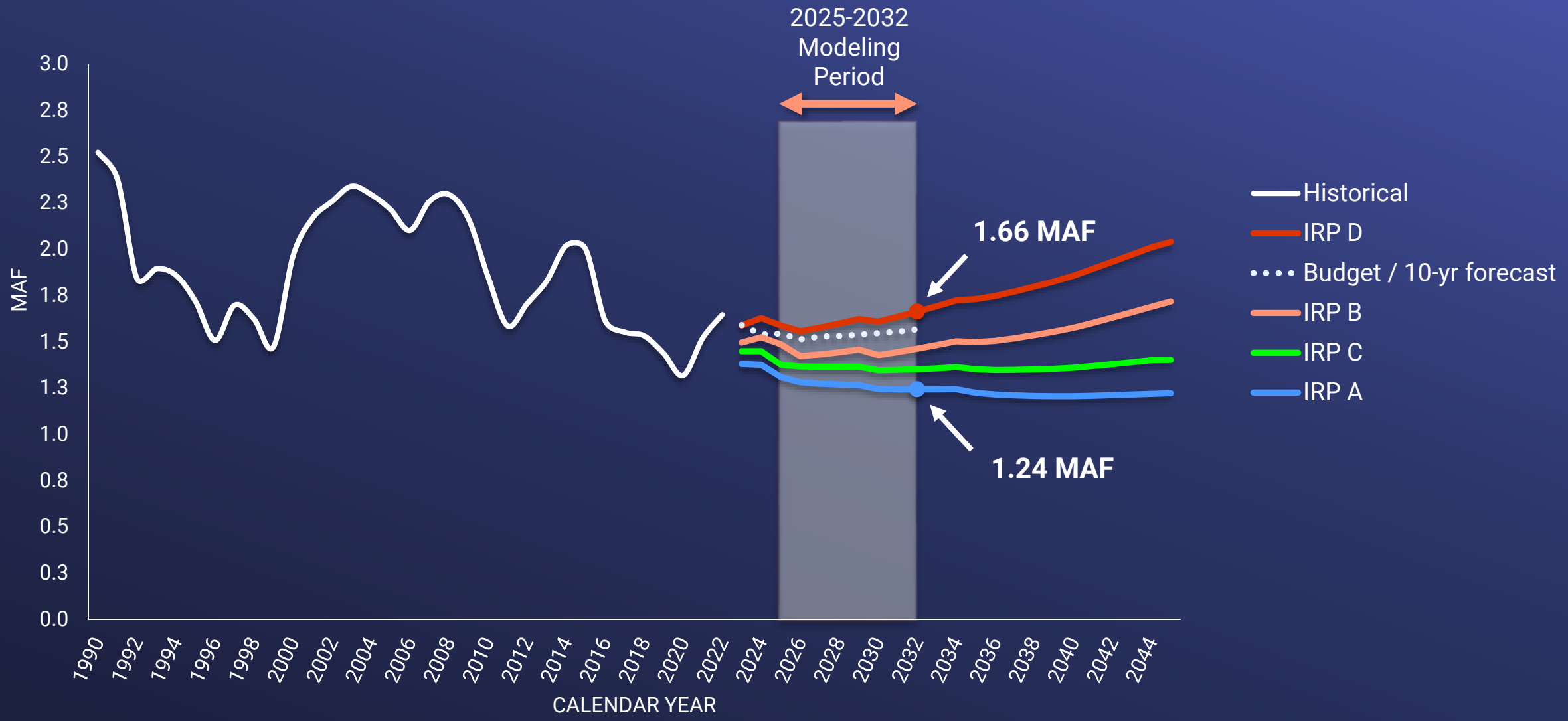


**Max Magnitude of Supply Gap (TAF) and Frequency (%) of a Net Shortage in 2045*

2020 IRP Needs Assessment Scenarios

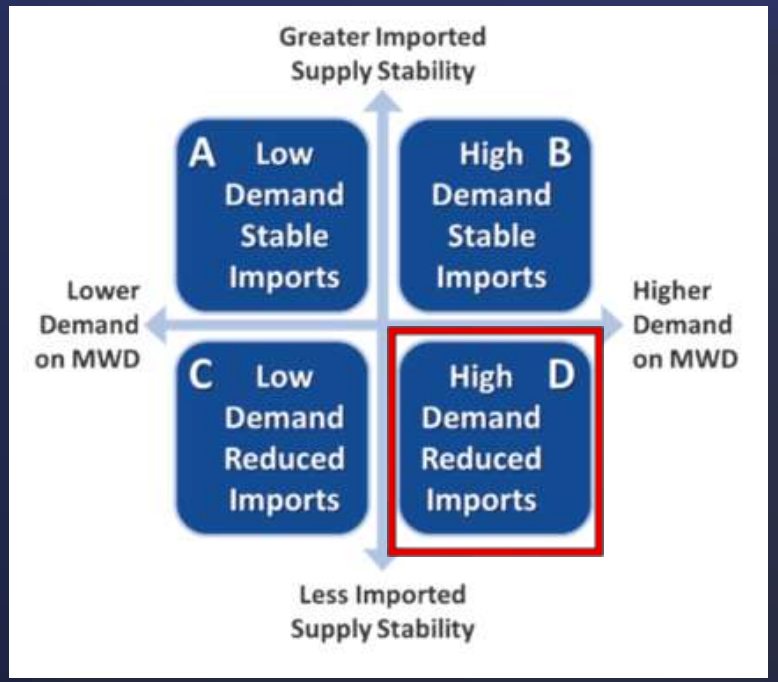
	Max Magnitude of Supply Gap (TAF) and Frequency (%) of a Net Shortage in 2045	
Scenario A	0 AF	**No additional resource development required**
Scenario C	up to 200 TAF 5%	***Minimal*** **resource development required**
Scenario B	up to 300 TAF 5%	***Moderate*** **resource development required**
Scenario D	up to 1,220 TAF 66%	***Significant*** **resource development required**

Projected Water Demands



Resource Portfolios Example

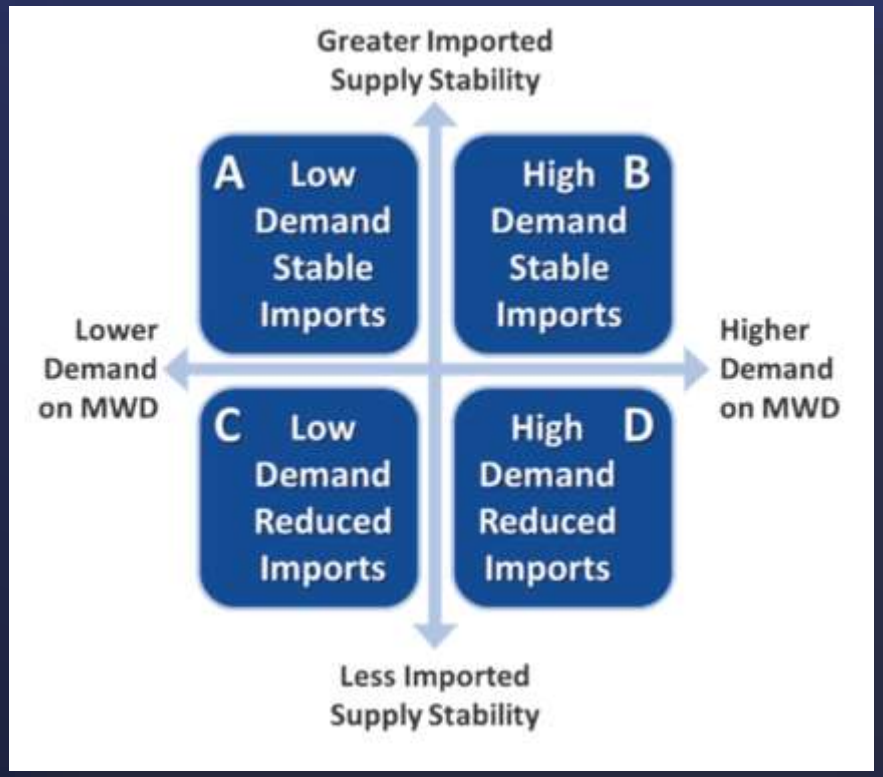
IRP Scenario D



	Additional storage: 0 AF		Additional storage: 250 TAF		Additional storage: 500 TAF	
	Storage	Core Supply	Storage	Core Supply	Storage	Core Supply
2025	0 TAF	100 TAF	23 TAF	100 TAF	45 TAF	100 TAF
2026	0 TAF	150 TAF	45 TAF	150 TAF	91 TAF	150 TAF
2027	0 TAF	150 TAF	68 TAF	150 TAF	136 TAF	150 TAF
2028	0 TAF	150 TAF	91 TAF	150 TAF	182 TAF	150 TAF
2029	0 TAF	150 TAF	114 TAF	150 TAF	227 TAF	150 TAF
2030	0 TAF	150 TAF	136 TAF	150 TAF	273 TAF	150 TAF
2031	0 TAF	300 TAF	159 TAF	200 TAF	318 TAF	200 TAF
2032	0 TAF	300 TAF	182 TAF	200 TAF	364 TAF	200 TAF
2033	0 TAF	300 TAF	205 TAF	200 TAF	409 TAF	200 TAF
2034	0 TAF	300 TAF	227 TAF	200 TAF	455 TAF	200 TAF
2035	0 TAF	300 TAF	250 TAF	200 TAF	500 TAF	200 TAF
2036	0 TAF	450 TAF	250 TAF	400 TAF	500 TAF	400 TAF
2037	0 TAF	450 TAF	250 TAF	400 TAF	500 TAF	400 TAF
2038	0 TAF	450 TAF	250 TAF	400 TAF	500 TAF	400 TAF
2039	0 TAF	450 TAF	250 TAF	400 TAF	500 TAF	400 TAF
2040	0 TAF	450 TAF	250 TAF	400 TAF	500 TAF	400 TAF
2041	0 TAF	650 TAF	250 TAF	550 TAF	500 TAF	500 TAF
2042	0 TAF	650 TAF	250 TAF	550 TAF	500 TAF	500 TAF
2043	0 TAF	650 TAF	250 TAF	550 TAF	500 TAF	500 TAF
2044	0 TAF	650 TAF	250 TAF	550 TAF	500 TAF	500 TAF
2045	0 TAF	650 TAF	250 TAF	550 TAF	500 TAF	500 TAF

Resource Portfolios Summary

IRP Scenarios



Core Supply Needs in 2032			
	No Storage	250 TAF Storage (182 TAF storage in 2032)	500 TAF Storage (364 TAF storage in 2032)
IRP A	0 TAF	0 TAF	0 TAF
IRP B	50 TAF	30 TAF	30 TAF
IRP C	15 TAF	15 TAF	15 TAF
IRP D	300 TAF	200 TAF	200 TAF

Resource Unit Costs

Resource	Range from sources	Modeled Unit Cost[1]
Core Supply[2]	Carlsbad Desal = $2,975/AF Santa Barbara Desal = $3,126/AF Venture Water Pure = $3,266/AF	$3,000/AF
Storage	DVL[3] = $269/AF ($3.8B @ 30yrs 4%, 800 TAF capacity) Chino Basin Storage Study[4] ~ $275-325/AF	Annual cost = $300/AF storage capacity
Flex Supply[5]	SWP Transfer = $605/AF Yuba Accord Transfer = $400/AF	$600/AF

[1] 2023 unit costs are escalated at 3% to future costs

[2] From SDCWA publication dated February 2023, Santa Barbara Recycled Water Assessment Oct 2022 Staff Report

Ventura PW cost was estimated by Metropolitan staff assuming $206 million in total capital costs, $6.7 million in annual O&M costs, and $18.2 million in grants, with the remaining capital costs funded from the EPA's WIFIA loan program at a rate of 2.5% for a 30-year term. Sources: 2019-Ventura-Water-Supply-Projects-Final-EIR (civicplus.com); 3069 (ca.gov). Prices were escalated to 2023 dollars from 2019 with 3% escalator.

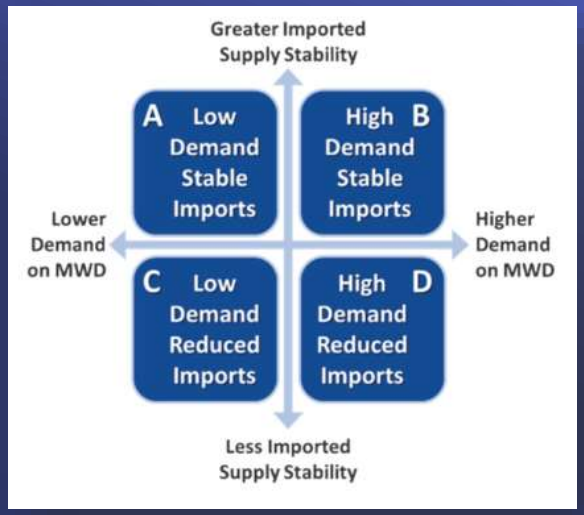
[3] Annual financing cost per AF of capacity constructed based on project cost in today's dollars of $3.8 billion. Assumes 30-year financing at 4%.

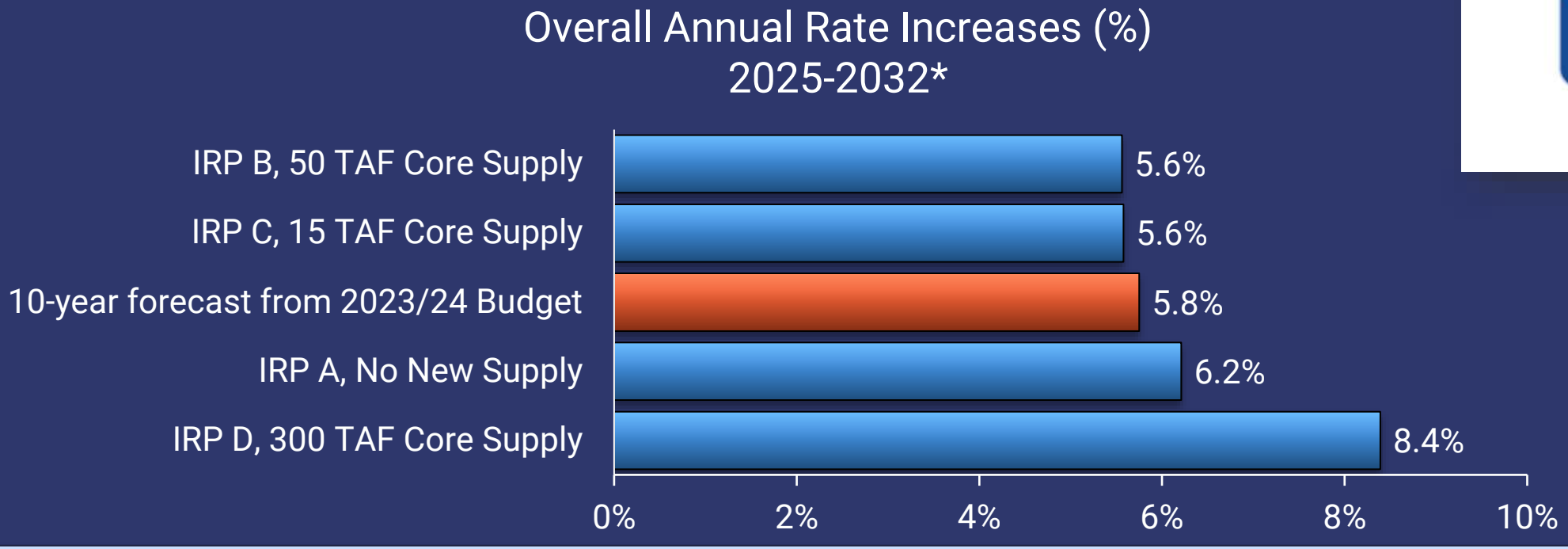
[4] Annual financing cost per AF of capacity constructed and projected annual O&M costs based on average of Chino Basin Storage Study options. Assumes 30-year financing at 4% for capital costs

[5] SWP and Yuba Accord transfers based on 2022 prices escalated to 2023 dollars.

Overall Rate Impact of IRP Scenarios

No additional storage option



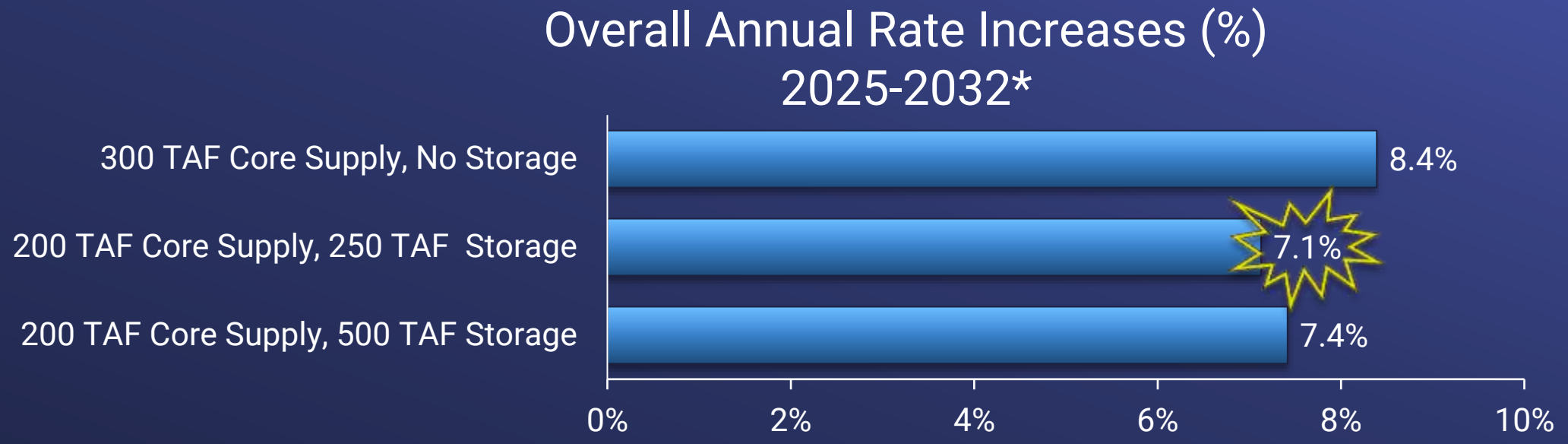


Observations:

1. Developing core supply to meet demands identified in IRP D will have the largest rate impacts.
2. The rate impact shown in IRP A results from lower water sales.

*Increases in different rate elements may vary as a result of the cost-of-service allocation and cost recovery approach for each project. Impacts on a member agency will depend on how and when they take water. For example, the more a project is allocated to supply then the full-service water rate will increase higher than the price for SDCWA exchange agreement deliveries.

Effect of Adding Storage for IRP D Scenario



Observations:

To meet the projected water demand in IRP D, development of 200 TAF of core supply and 250 TAF of storage capacity has lower rate impacts (7.1%) than the no storage and 500 TAF storage options.

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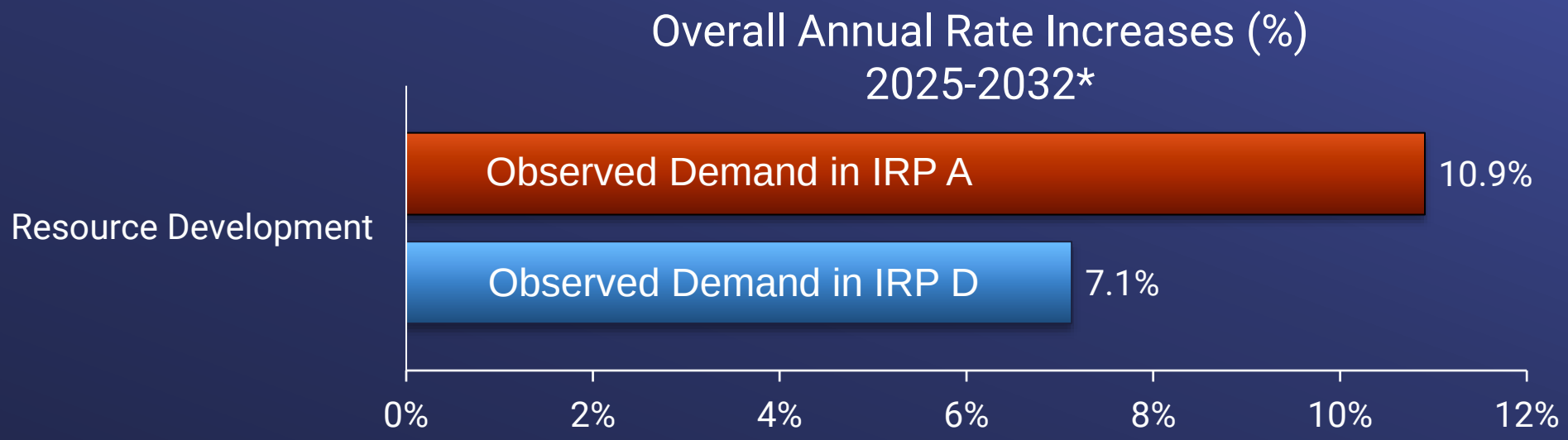
Sensitivity Analysis for Lower Demand

Plan for IRP D Resource Needs with 250 TAF Storage but realize the lower water demands from IRP A



Observations:

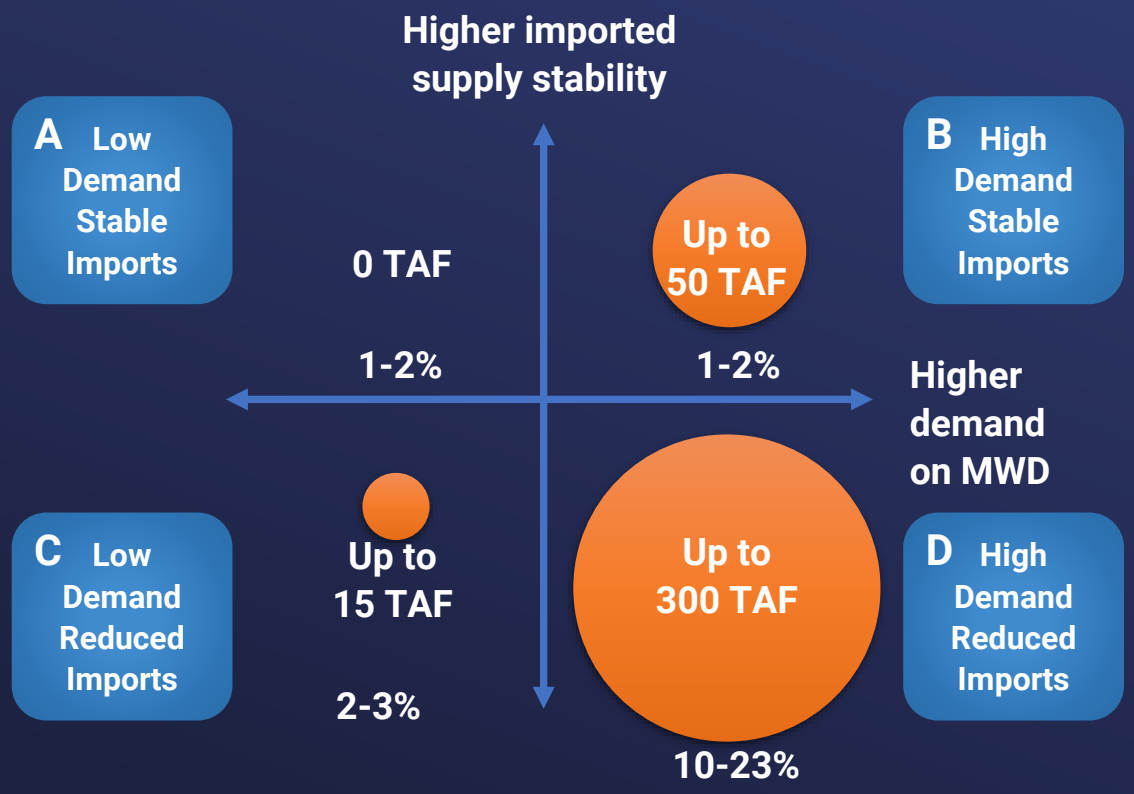
If water demand does not materialize as projected in IRP D and instead occurs as projected in IRP A, development of core supply and storage to meet projected demand in IRP D could result in substantially higher rates.

*Increases in different rate elements may vary as a result of the cost-of-service allocation and cost recovery approach for each project. Impacts on a member agency will depend on how and when they take water. For example, the more a project is allocated to supply then the full-service water rate will increase higher than the price for SDCWA exchange agreement deliveries.

Net Shortage Assessment in 2020 IRP

Plan for IRP A (no additional resources developed) but experience the higher demands from IRP D.

Magnitude (TAF) and Frequency (%)
of a Net Shortage in Forecast Year 2032



1. Water supply shortages will incur economic costs
2. What level of resource development does the Board want to pursue in light of reliability, resilience, and affordability objectives?

Estimated Capital Investment
Examples for IRP D Scenario by 2032

Resource Development		Estimated Capital *
Core Supply	Storage Capacity	
200 TAF	250 TAF **	$5.5 Billion – $6.0 Billion

Engineering challenge

- 1.5x PWSC completed by 2032
- ~1/3 of Diamond Valley Lake completed by 2032

Financial challenge

- Available revenue bond capacity
- Cashflow constraints for debt coverage

* Assumptions: $3,000/AF for core supply (2023 $), 50% costs from O&M
$300/AF for storage capacity (2023 $), 0-50% costs from O&M
Capital financing @ 4%, 30-yr, 2% debt issuance cost

** 182 TAF in 2032

CAMP4W process
Example of projects to consider

- Pure Water of Southern California Project
- Delta Conveyance Project
- Sites Reservoir
- PVID Land Purchases

Can we meet the additional supply needs in IRP D with conservation?

Current Conservation Initiatives

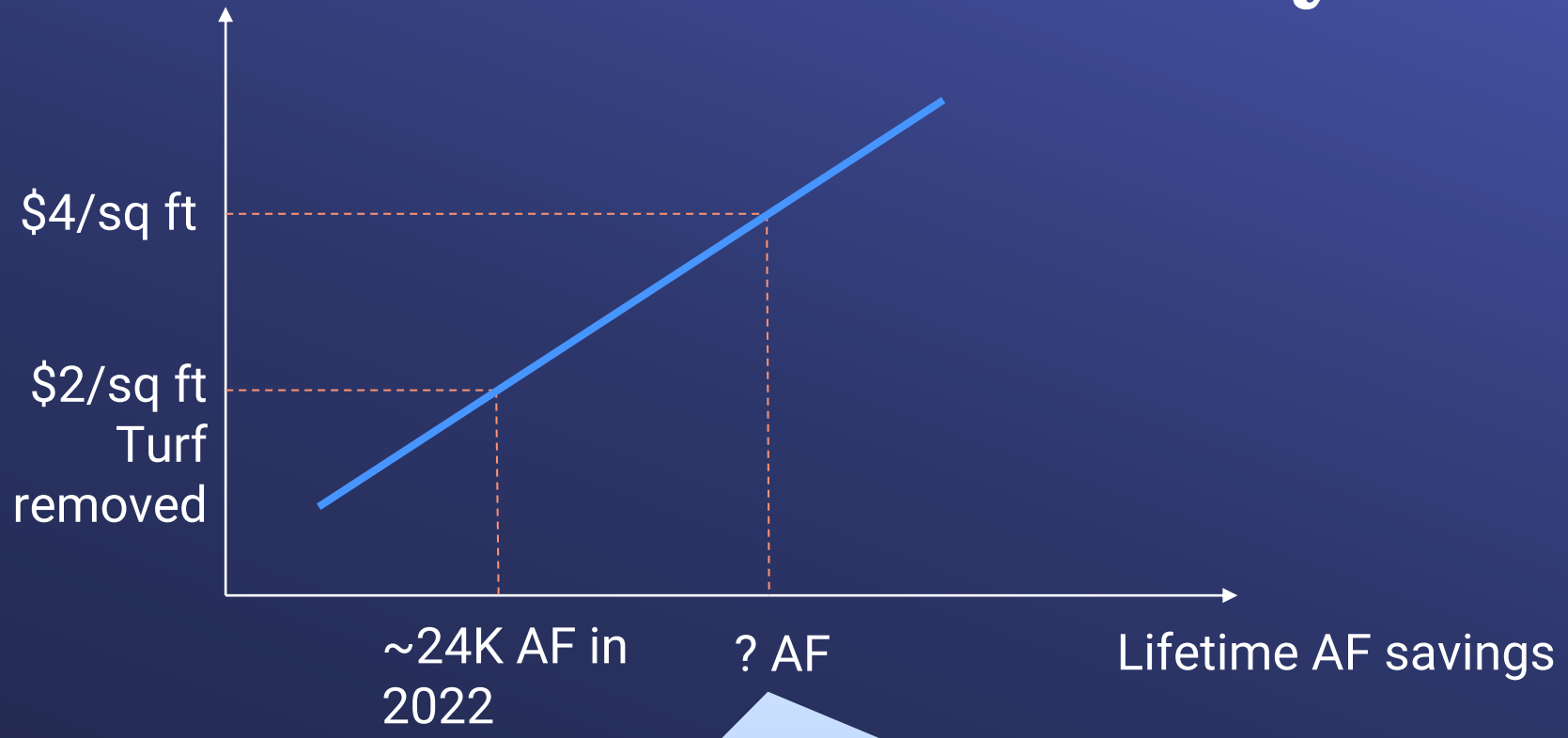
Most Utilized in 2022

Devices	Water Savings (GPD)	Life (Yrs)	Life AF Savings	Rebate	Rate ($/AF)	2022 Quantity (Units)	Total Lifetime AF Savings	Total $
	A	B	C = A x B / 892.74*	D	E = D / C	F	G = C x F	H = D x F
High Efficiency Nozzles	2.36	5	0.0132	$2	$152	22,312	295 AF	**$44,624**
High Efficiency Washer	29.32	14	0.4598	$85	$185	11,762	5,408 AF	**$999,770**
High Efficiency Toilets	9.37	20	0.2100	$40	$190	22,625	4,752 AF	**$905,000**
Showerheads	3.76	5	0.0211	$12	$570	5,029	106 AF	**$60,348**
Flow Control	7.50	10	0.0840	$5	$60	5,223	439 AF	**$26,115**
Weather Based Irrigation Controller	36.99	10	0.4143	$80	$193	9,337	3,869 AF	**$746,960**
Weather Based Controller by Station	15.98	10	0.1790	$35	$196	19,264	3,448 AF	**$674,240**
Commercial Turf Replacement	0.12	30	0.0041	$2	$494	2,933,030	11,883 AF	**$5,866,060**
Residential Turf Replacement	0.09	30	0.0032	$2	$631	3,814,405	12,081 AF	**$7,628,810**
Rain Barrel	1.70	5	0.0095	$35	$3,676	2,452	23 AF	**$85,820**
Total / Weighted Average					**$403 / AF**		**42,301**	**$17,037,747**

* 892.74 is conversion factor for GPD to AFY

Conservation Price Elasticity

How much conservation is available and at what price?



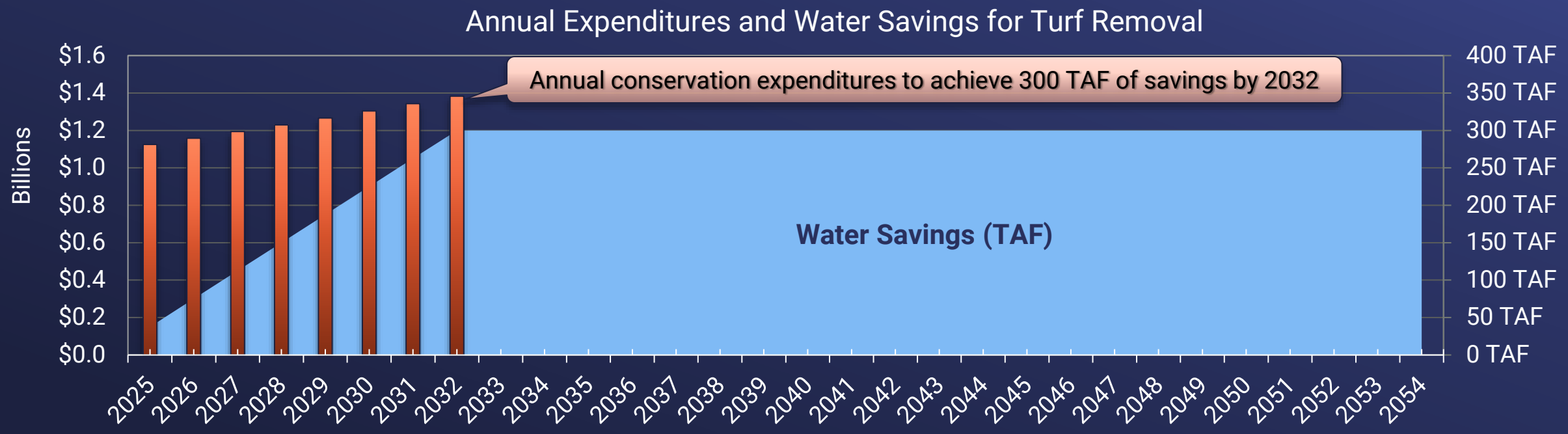
- Insufficient data on availability of additional conservation and at what price.
- Further study needed to identify the available capacity and price elasticity of conservation.

Nature of Conservation Investment

Front-loaded expenditures for water savings over the lifetime

Example: Meeting IRP D core supply needs (300 TAF) with turf removal

- Assumes 300 TAF of conservation is available at $4/sq ft (or ~$1,000/AF of lifetime savings)
- Cumulative savings must grow by 37,500 AF/yr from 2025 - 2032 to meet 2032 target of 300 TAF
- $1,000 saves 1 AF of water over the next 30 years, or 0.033 AF/year. $30,000 saves 1 AF/yr for the next 30 yrs.
- To achieve 300 TAF of annual water savings by 2032, annual conservation expenditure would be ~$1.1B/yr through 2032

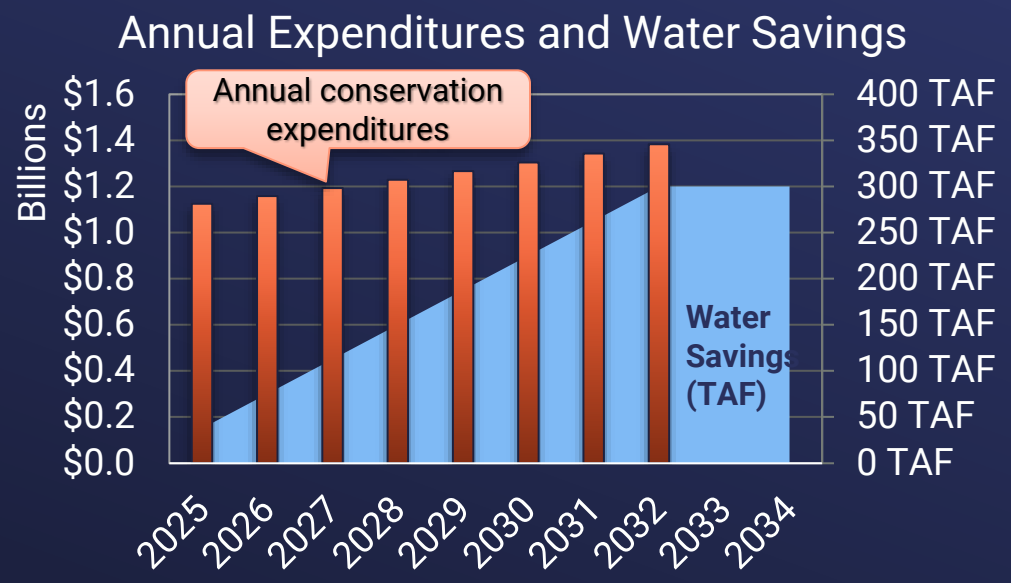


Nature of Conservation Investment …cont.

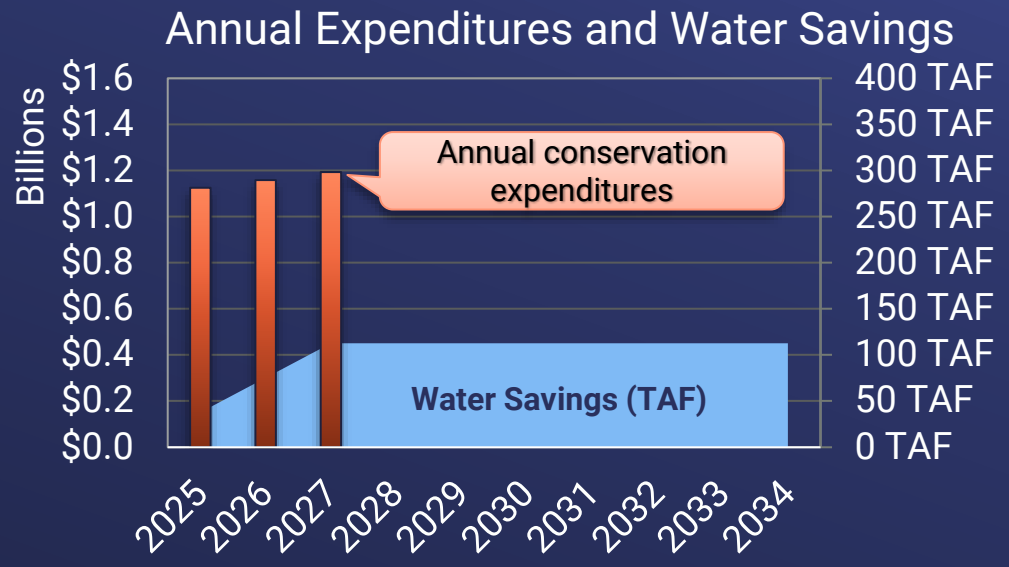
Front-loaded expenditures for water savings over the lifetime

If the water demand are lower than the projected, or the water supply situation improves, MWD can adjust or remove the conservation program along the way.

ORIGINAL CONSERVATION PLAN



ADJUSTED CONSERVATION PLAN

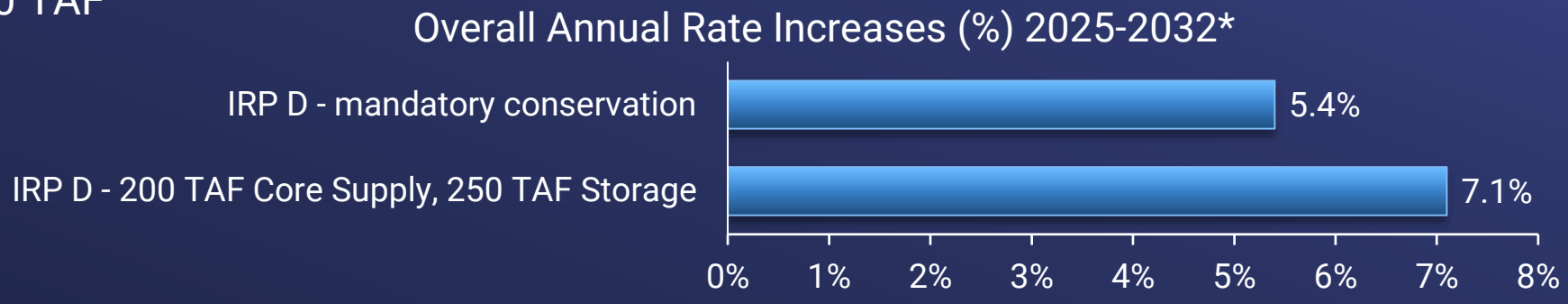


Mandatory Conservation Scenario

Mandatory conservation in response to long-term structural imbalance between supply and demand

Scenario Assumptions

- Assumes regulatory action mandating conservation
- No new resource development – new supply or incentivized conservation
- Mandatory conservation is no cost to Metropolitan ($0/AF in the model)
- Begin with projected demand in IRP D and reduce gradually to meet 2032 resource development goal - 300 TAF

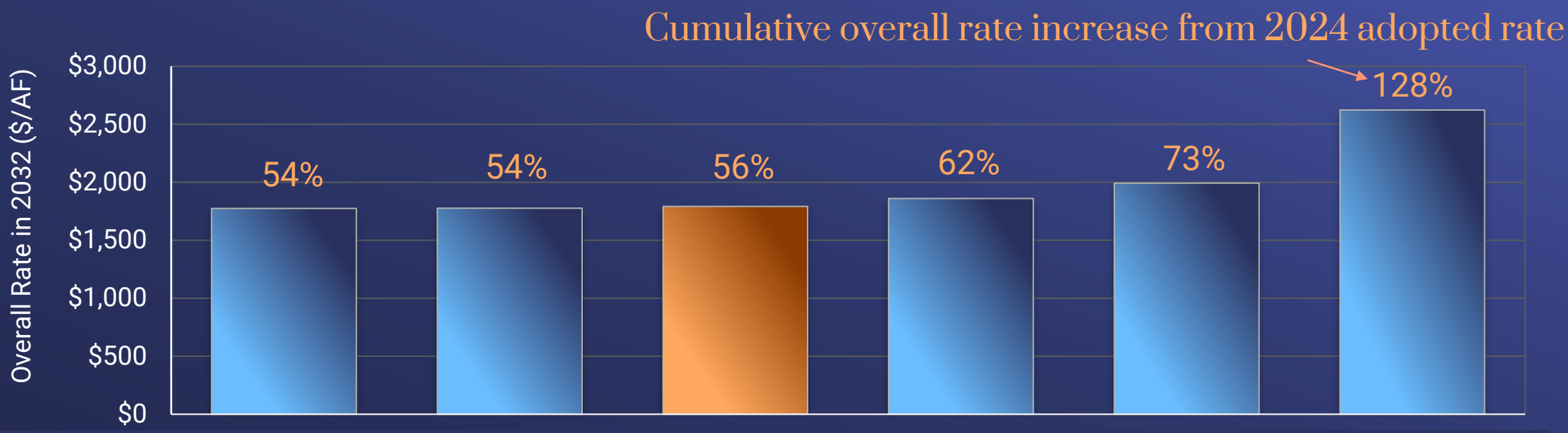


Observations:

1. Lowest rate impact as there is no financial cost to Metropolitan for mandatory conservation. However, member agencies and subagencies will incur compliance and enforcement costs.
2. What are the implications of mandatory conservation on economic growth and quality of life for region?

*Increases in different rate elements may vary as a result of the cost-of-service allocation and cost recovery approach for each project. Impacts on a member agency will depend on how and when they take water. For example, the more a project is allocated to supply then the full-service water rate will increase higher than the price for SDCWA exchange agreement deliveries.

Projected 2032 Overall Rate by IRP Scenario



	IRP B, No Storage	IRP C, No Storage	10-year forecast from 2023/24 Budget	IRP A, No Storage	IRP D, 250 TAF Storage	Plan for IRP D, Observed IRP A Demand
Core Supply	30 TAF	15 TAF	N/A	0	200 TAF	200 TAF
Storage	0	0	N/A	0	182 TAF	182 TAF
Water Demand	IRP B 1.46 MAF	IRP C 1.35 MAF	Budget 1.58 MAF	IRP A 1.24 MAF	IRP D 1.66 MAF	IRP A 1.24 MAF

*Increases in different rate elements may vary as a result of the cost-of-service allocation and cost recovery approach for each project. Impacts on a member agency will depend on how and when they take water. For example, the more a project is allocated to supply then the full-service water rate will increase higher than the price for SDCWA exchange agreement deliveries.

Long-Range Finance Plan Needs Assessment

Capital Financing Considerations

Primary means of funding capital

	Benefits	Considerations
Grant Funding	• "Free" money -- often the cheapest form of funding	• Typically paid on a reimbursement basis • Often contain a local-match requirement • Federal grants may "federalize" the project receiving grant funds
PAYGO Funding	• Flexible • Avoids bond interest expense; but has an opportunity cost of investment earnings • No contractual obligations with lenders • Lowers rates over time	• Project costs borne entirely by existing or past customers • Project delivery delays may occur if insufficient PAYGO funding exists
Debt Funding	• Allows acceleration of future funds for project capital funding • Intergenerational equity	• Cost of borrowing is interest • Contractual obligations to lenders • Reduced future flexibility

Debt Financing Overview

Metropolitan has or can issue several types of debt:

- Revenue Bonds (primary means of debt financing)
- General Obligation Bonds (historically issued for SWP costs)
- Certificates of Participation (JPA financings and/or if Revenue Bond capacity is unavailable)

When issuing debt, Metropolitan takes into consideration several factors:

- Timing of when debt is needed
- Impact on credit ratings
- Current market interest rates
- Compliance with rate covenants and additional bonds tests
- Overall Metropolitan debt capacity

Next Steps for CAMP4W Process

- Determine what level of resource development the Board wants to pursue in light of resiliency, reliability, financial sustainability, affordability and equity objectives
- Further detailed study is recommended to understand capacity and price elasticity for conservation
- Evaluate rate impacts for specific projects and portfolios of projects to meet the board-approved reliability objectives

LRFP Needs Assessment

Updated LRFP Timeline

- August 2023
  - Draft LRFP Needs Assessment introduced at FAIRP
- September 2023
  - Member Agency / Caucus Workshops
  - FAIRP: Draft LRFP Needs Assessment
  - Member Agency Manager CAMP Workshop (9/21)
  - CAMP4W workshop on LRFP & business model (9/26)
- October 2023
  - FAIRP: Draft LRFP Needs Assessment
- November 2023 & beyond
  - FAIRP: Draft LRFP Needs Assessment
  - Continued feedback loop with CAMP4W & finalize LRFP in FY 2024/25


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928