ENCINA
WASTEWATER
AUTHORITY

ENCINA WASTEWATER AUTHORITY POTABLE REUSE STRATEGIC PLAN

May 2025

Woodard & Curran

9665 Chesapeake Drive | Suite 320
San Diego, California 92123
800.426.4262

TABLE OF CONTENTS

Contents

TABLE OF CONTENTS I

INTRODUCTION VI

EXECUTIVE SUMMARY ES-1

1. BACKGROUND 1-1

1.1 Potable Reuse Project Benefits 1-1
1.2 Preferred Options 1-2

2. OUTREACH EFFORTS 2-1

2.1 Advocacy Agencies 2-1
2.2 San Diego County Water Authority 2-2
2.3 Congressman Mike Levin 2-2

3. TREATMENT ANALYSIS 3-1

3.1 Pilot Study Update 3-1

4. UPDATED COST ESTIMATES 4-1

4.1 Cost Classification 4-1
4.2 Construction Cost Allowances 4-1
4.3 Implementation Cost Allowances 4-2
4.4 Capital Financing Assumptions 4-2
4.5 Operations and Maintenance (O&M) Costs 4-3

5. EWPCF SECONDARY IMPROVEMENTS 5-1

6. UPDATED AWTF TREATMENT TRAINS 6-1

7. UPDATED CONVEYANCE COSTS 7-1

7.1 Infrastructure for Conveyance 7-1
7.2 Conveyance Costs 7-3

8. UPDATED COST SUMMARY 8-1

8.1 Cost of Water Comparison 8-5

9. FINANCING OPTIONS/FUNDING STRATEGY 9-1

9.1 Financing and Funding Environment 9-1
9.2 Financing and Funding Strategy 9-1

10. REGULATORY OUTLOOK/STRATEGY 10-1

10.1 Regulatory and Compliance Environment 10-1
10.2 Federal Financing Compliance 10-1
10.3 Nutrient Management Requirements 10-1

10.4 Ocean Discharge Reduction Requirements 10-2
10.5 Conservation Regulations 10-2
11. PROJECT GOVERNANCE 11-1
12. STRATEGIES 12-1
12.1 Project Strategies 12-1
12.2 Regulatory Strategies 12-1
12.3 Piloting Strategies 12-1
12.4 Financing Strategies 12-1
12.5 Governance Strategies 12-2
13. NEXT STEPS 13-1

TABLES

Table 2-1: Advocacy Agency Participation and Potential Water Use for the Encina Potable Reuse Project
Table 5-1: EWPCF Secondary Treatment Upgrades with MBR Costs
Table 6-1: IPR AWTF for Surface Water Augmentation at Lake Hodges Costs
Table 6-2: DPR AWTF for Raw Water Augmentation at Second Aqueduct Costs
Table 6-3: DPR AWTF for Treated Water Augmentation at Carlsbad Desal Costs
Table 7-1: AWTF Purified Water Conveyance to End Use Costs
Table 8-1: Detailed Cost Summaries
Table 8-2: Cost Comparison of Water Supply Options with Percent Increase Since 2019
Table 8-3 SDCWA Rate Projections ($/af)
Table 8-4: Projected Cost Comparison of Water Supply Options and SDCWA Rate Projections (2030–2050)
Table 10-1: California Water Efficiency Standards and Allowable Indoor Gallons Per Capita Per Day (GPCD)

FIGURES

Figure 7-1: Proposed Alignment for Conveyance to Lake Hodges Reservoir
Figure 7-2: Proposed Alignments for Conveyance to SDCWA Aqueduct No. 2
Figure 7-3: Proposed Alignment for Conveyance to Carlsbad Desalination Plant
Figure 8-1: Capital Cost Summary Update, 2023 Dollars
Figure 8-2: Cost of Water Summary Update, 2023 Dollars
Figure 8-3: Lake Hodges 22,000 AFY Capital Cost
Figure 8-4: Second Aqueduct 18,000 AFY
Figure 8-5: Lake Hodges 18,000 AFY Capital Cost Option
Figure 8-6: Estimated Cost Per Acre Foot Of Supply Options
Figure 10-1: Projected Flow Impacts at EWPCF: Influence of Water Efficiency Standards and Conservation Regulations

APPENDICES

Appendix A: Letters from the General Manager to the Member Agencies
Appendix B: Workshop Presentations
Appendix C: Letter from Mike Levin

LIST OF ACRONYMS

AB	Assembly Bill
AF	Acre Feet
AFY	Acre Feet Per Year
AOP	Advanced Oxidation Process
ARPA	American Rescue Plan Act

AWT	Advanced Water Treatment
AWTF	Advanced Water Treatment Facility
BABA	Build America, Buy America Act
BAC	Biologically Active Carbon
BAF	Biologically Active Filtration
CASA	California Association Of Sanitation Agencies
CCI	Construction Cost Indexes
CDP	Carlsbad Desalination Plant
CEQA	California Environmental Quality Act
CPI	Consumer Price Index (S. California Basis)
DAC	Disadvantaged Communities
DPR	Direct Potable Reuse
DRP	Direct Reuse Project
DWPR	Desalination And Water Purification Research Program
DWR	Department Of Water Resources
ENR	Engineering News Record
EPA	Environmental Protection Agency
EQ	Equalization
ESDC	Engineering Services During Construction
Encina	Encina Wastewater Authority
EWPCF	Encina Water Pollution Control Facility
FTE	Full-Time Equivalent
FY	Fiscal Year
GPCD	Gallon Per Capita Per Day
HRT	Hydraulic Retention Time
IIJA	Infrastructure Investment And Jobs Act
IPR	Indirect Potable Reuse
IRA	Inflation Reduction Act
IRWM	Integrated Regional Water Management
LF	Linear Feet
MBR	Membrane Bioreactor
MF /UF	Microfiltration/Ultrafiltration
MLSS	Mixed Liquor Suspended Solids
NDN	Nitrification-Denitrification
NEPA	National Environmental Policy Act
NOFO	Notice Of Funding Opportunity
NPDES	National Pollutant Discharge Elimination System
NSDCWRC	Northern San Diego County Water And Wastewater Agencies
NSDWRC	Northern San Diego Water Reuse Coalition
OPCC	Opinion Of Probable Construction Cost

OWNSD	One Water North San Diego
RAS	Return Activated Sludge
RFI	Request For Information
RO	Reverse Osmosis
RWA	Regional Water Authority
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SDCWA	San Diego County Water Authority
SGM	Sustainable Groundwater Management
SRF	State Revolving Fund
SRT	Solids Retention Time
SWA	Sweetwater Authority
SWRCB	California State Water Resources Control Board
TM	Technical Memoranda
TSS	Total Suspended Solids
USBR	U.S. Bureau Of Reclamation
UV	Ultraviolet
WIFIA	Water Infrastructure Finance And Innovation Act
WRF	Water Research Foundation
WRFP	Water Recycling Funding Program
WTP	Wastewater Treatment Plant

INTRODUCTION

In 2018, a Water Reuse Feasibility Study (Feasibility Study) was completed to identify a path to maximize beneficial reuse of effluent from the Encina Water Pollution Control Facility (EWPCF). Following completion of the Feasibility Study in 2018, several outreach meetings were held to determine the future of this project. Encina Wastewater Authority (Encina) began development of this Strategic Plan to guide additional discussions around the development of a water reuse project. In addition, pilot work has been on-going at the Encina Water Pollution Control Facility (EWPCF) to determine the best available technologies and practices for future treatment enhancements. Through this planning effort, Encina and its partners have developed a funding strategy, completed partners and stakeholder outreach efforts, developed a regulatory strategy, refined the needs and approach to EWPCF improvements, and updated cost estimates. Those efforts are described in this plan. An outline of the project details can be used to move forward with project implementation, including feasibility study updates, environmental review, funding applications, pilot studies, design, public outreach, and construction. This Strategic Plan is intended to serve as a roadmap for future implementation to the next project lead(s).

This plan was developed with the input from stakeholders including the Encina Board of Directors, Encina member agencies, North San Diego County Water Reuse Coalition (NSDCWRC), San Diego County Water Authority (SDCWA), Trussel Technologies, and Woodard & Curran, Inc.

EXECUTIVE SUMMARY

The Encina Wastewater Authority (Encina) Potable Reuse Strategic Plan outlines a comprehensive approach to developing a potable reuse project aimed at maximizing the beneficial reuse of effluent from the Encina Water Pollution Control Facility (EWPCF). This plan serves as a roadmap for future implementation, detailing the project's background, outreach efforts, pilot project status, updated cost estimates, financing options, regulatory outlook, and governance strategies.

Encina's centralized location and experience in water treatment present a unique opportunity for large-scale recycled water production (18,000-to-22,000-acre feet per year). The plan highlights the benefits of potable reuse, including water supply sustainability, fiscal advantages, reduced ocean discharges, and alignment with regional climate goals. Previous studies and pilot projects have laid the groundwork for this strategic plan.

This plan was initiated following the completion of the 2018 Feasibility Study and summarizes work-to-date to evaluate this project including the following:

- Significant outreach has been conducted with Encina member agencies, local water authorities, and advocacy agencies. Workshops and meetings have been held to gather feedback and foster collaboration. Local Congressman Mike Levin has also shown support for the project. (Section 2)
- A three-year pilot project, partially funded by a grant from the U.S. Bureau of Reclamation, is underway to evaluate and optimize treatment technologies for nutrient removal and potable reuse. The pilot includes a membrane bioreactor (MBR) and reverse osmosis (RO) system, with ongoing efforts to improve performance and pathogen removal. (Section 3)
- Cost estimates have been revised to reflect current economic conditions and updated project components. The plan provides detailed cost breakdowns for various treatment and conveyance options, highlighting the financial implications of different project scales and funding scenarios. (Sections 4-8)
- The plan discusses the dynamic funding environment, influenced by federal programs like the Infrastructure Investment and Jobs Act (IIJA) and the Inflation Reduction Act (IRA). It outlines potential federal and state funding sources, including WaterSMART grants, State Revolving Fund (SRF) loans, WIFIA loans, and Proposition 4 funding. The plan emphasizes the need for strategic planning to secure competitive funding. (Section 9)
- The regulatory landscape for potable reuse is evolving, with new requirements for direct potable reuse (DPR) and nutrient management in the discharges of coastal treatment facilities with ocean outfalls. The plan addresses compliance with federal and state regulations, including NEPA and the Build America, Buy America Act (BABA). It also highlights the potential impact of future regulations on nutrient removal and ocean discharge reduction. (Section 10)

Going forward, Encina's Governing Board has directed staff to find other entities to serve as the primary lead for the project's implementation. Therefore, this plan suggests various governance structures, including leadership by Encina member agencies, regional coalitions, or private entities. Future planning and implementation activities should be pursued on a cost-share basis with local and regional water suppliers.

The Strategies section (Section 12) outlines potential next steps for project development, regulatory compliance, piloting, financing, and governance. It emphasizes the importance of regional collaboration, staying informed on regulatory changes, and pursuing funding opportunities. The plan also suggests engaging with elected officials and advocacy groups to support the project's advancement.

1. BACKGROUND

Encina's wastewater flows and facilities represent a unique opportunity and a centralized location for large-scale production of recycled water that could capture economies of scale to the benefit of the region. Encina's experience in water treatment and water quality may well make it suitable to take on the responsibility for operating the Advanced Water Treatment Facility (AWTF) required for potable reuse. The presence and available capacity of a deep ocean outfall is conducive to siting the AWTF near the EWPCF for disposal of waste streams. Demand for non-potable reuse in the region is not projected to be sufficient to fully utilize the available effluent at the EWCPF, especially considering the seasonal nature of irrigation demands. Therefore, potable reuse would be necessary to maximize resource recovery and minimize discharges of EWPCF effluent to the Pacific Ocean.

1.1 Potable Reuse Project Benefits

The benefits of developing a potable reuse project at or near the EWPCF include:

Water Supply benefits:	Wastewater benefits:	Fiscal benefits:
•Addressing sustainability and resiliency objectives of local agencies •Addressing future water efficiency regulations •Reduced staff demands for advanced treatment operations and management •Cost competitiveness with imported or desalinated •Reducing regional imported water purchases	•Reduced ocean discharges •Positioning for future regulatory requirements (i.e., nutrient removal) •Consistency with regional goals and commitments on climate change action	•More cost-effective than sea water desalination projects •Power generation – potential to incorporate the EWPCF power generation and reduce grid power demands by ~30%

As such, Encina has researched potable reuse at length within the following studies:

- Advanced Treatment and Water Reuse Analysis (2012)
- South Parcel Conceptual Development Plan (2013)
- South Parcel Land Utilization Policy (2016)
- Encina Water Reuse Feasibility Study (2018)
- OWNSD Pilot (2021 –present)

Encina's 2020 Strategic Business Plan required completion of a water reuse feasibility study to identify a path to maximize beneficial reuse of effluent from the EWPCF. The Feasibility Study served to advance

Encina's mission of resource recovery and contributing to sustaining and enhancing the region's water resources.

During the course of the Feasibility Study, a series of technical and regulatory issues were analyzed, and alternative project concepts were developed. The analysis is documented in a series of technical memoranda (TM) within the Feasibility Study.

1.2 Preferred Options

In the 2018 Feasibility Study, nine project options for introducing advanced treated water were evaluated. Note that all options include the baseline assumption of reserving 12.5 mgd of the available 31 mgd effluent for nonpotable reuse by Encina Member Agencies. Brine losses are also accounted for, depending on whether the reverse osmosis treatment step includes seawater (assumed 60% recovery and 40% brine) or not (assumed 85% recovery and 15% brine). It is estimated that a potable reuse project would result in a new local supply of between 18,000 afy and 22,000 afy depending on the amount of non-potable reuse and amount of wastewater generated within the EWPCF service area. The alternatives considered in the 2018 study are summarized below.

1. Carlsbad Desalination Plant (CDP) Influent
    - Net 11.1 mgd of potable reuse through raw water augmentation by mixing effluent with seawater to serve as CDP source water.
2. CDP Product Water
    - 15.7 mgd potable reuse through treated water augmentation by mixing with the CDP finished water.
3. Olivenhain Reservoir
    - 15.7 mgd potable reuse through reservoir augmentation at the Olivenhain Reservoir
4. San Dieguito Reservoir and Olivenhain Reservoir
    - 15.7 mgd potable reuse through the following:
        - Groundwater augmentation in the San Dieguito Valley groundwater basin (up to 2 mgd)
        - Reservoir augmentation at the San Dieguito Reservoir (up to 3.1 mgd)
        - Reservoir augmentation at the Olivenhain Reservoir (9.7 mgd to 15.7 mgd)
5. San Dieguito Reservoir and CDP Influent
    - 12.6 mgd potable reuse through the following:
        - Groundwater augmentation at the San Dieguito Valley groundwater basin (up to 2 mgd)

- Reservoir augmentation at the San Dieguito Reservoir (up to 3.1 mgd)
- Raw water augmentation at the CDP as source water (7.5 mgd to 12.6 mgd)

6. San Dieguito Reservoir and CDP Product Water
    - 15.7 mgd potable reuse through the following:
        - Groundwater augmentation at the San Dieguito Valley groundwater basin (up to 2 mgd)
        - Reservoir augmentation at the San Dieguito Reservoir (up to 3.1 mgd)
        - Treated water augmentation at the CDP mixing with finished water (9.7 to 15.7 mgd)
7. San Dieguito Reservoir and Second Aqueduct
    - 15.7 mgd potable reuse through the following:
        - Groundwater augmentation at the San Dieguito Valley groundwater basin (up to 2 mgd)
        - Reservoir augmentation at the San Dieguito Reservoir (up to 3.1 mgd)
        - Raw water augmentation into the Second Aqueduct, Pipeline No. 5 (9.7 to 13.7 mgd)
8. Twin Oaks WTP Influent and San Marcos Basin
    - 15.7 mgd potable reuse through the following:
        - Groundwater augmentation at the San Marcos groundwater basin (up to 2 mgd)
        - Raw water augmentation at the Twin Oaks WTP as source water (13.7 to 15.7 mgd)
9. Second Aqueduct and San Marcos Basin
    - 15.7 mgd potable reuse through the following:
        - Groundwater augmentation at the San Marcos groundwater basin (up to 2 mgd)
        - Raw water augmentation into the Second Aqueduct, Pipeline No. 5 (13.7 to 15.7 mgd)

Qualitative evaluation was conducted for each alternative and included the following criteria:

- Regulatory certainty and permitting effort.
- Treatment and engineered storage.
- Operations

- Conveyance infrastructure
- Stakeholder and institutional challenges

Based on the results from the screening evaluation during the 2018 Feasibility Study and subsequent stakeholder meetings, the three most favorable options were considered in this Strategic Plan:

1. Surface Water Augmentation – AWTF with conveyance (~75,000 LF of 36-inch pipe) to Lake Hodges
2. Raw Water Augmentation – AWTF with conveyance (~40,000 LF of 36-inch pipe) to Second Aqueduct
3. Treated Water Augmentation – AWTF with conveyance (~14,000 LF of 36-inch pipe) to the Carlsbad Desal Pipeline and ~7,000 Hp pump station.

It is important to note though, that at the time of the initiation of the Strategic Plan, information from the SDCWA indicated that there was no available capacity in the Carlsbad Desal Pipeline to use that infrastructure for conveyance. More recent information from the SDCWA indicates that capacity may exist, and use of the Carlsbad Desal Pipeline should be considered.

2. OUTREACH EFFORTS

A stakeholder involvement plan was developed early in the Feasibility Study. Initial outreach activity was directed at Encina Member Agencies through a letter from Encina's General Manager (**Appendix A**) to each individual Member Agency. The NSDCWRC was a convenient stakeholder group to approach next because it was already an established structure that included most of the northern San Diego County retail water agencies. In addition, the City of San Diego and SDCWA were included due to their ownership/involvement in some of the facilities being considered in the Reuse Study Options.

The Feasibility Study recommended workshops to allow local water purveyors, Encina staff, and the consulting teams to review progress and provide feedback on recommendations and as such, several workshops were conducted prior to this Strategic Plan effort. Additional workshops were held with the One Water North San Diego Coalition. The first workshop was held on April 25, 2023, and a second workshop to develop strategies included in this plan was held on August 8, 2024. Workshop presentations are included as **Appendix B**.

Further, Encina provided an update to its own Executive Committee on June 27, 2023, which was a public meeting.

2.1 Advocacy Agencies

At the initiation of the Strategic Plan process, Encina's General Manager began providing presentations at City Council and Board of Director public meetings, requesting each entity become an "Advocacy Agency" for the project.

The role of Advocacy Agencies includes:

- Cooperating with Encina in refining project concepts and costs
- Reviewing and providing input on outreach materials and deliverables
- Advocating and soliciting additional regional partners (wholesale and retail)
- Participating in project concepts, regulatory, and pursuit of funding
- Engaging in discussion of potential institutional arrangements
- Considering financial participation in future phases

No funding was requested from Advocacy Agencies at that time. However, the Advocacy Agencies were requested to include this project in their 2020 Urban Water Management Plans (UWMPs). The Encina Potable Reuse project was included in the UWMPs for the following agencies:

TABLE 2-1: ADVOCACY AGENCY PARTICIPATION AND POTENTIAL WATER USE FOR THE ENCINA POTABLE REUSE PROJECT

Agency	Potential Water Use
City of Carlsbad	3,500 afy
Olivenhain Municipal Water District	2,500 afy
Vallecitos Water District	5,500 afy
San Dieguito Water District	2,000 afy
Santa Fe Irrigation District	3,000 afy
City of Poway	2,000afy
Total	18,500 afy

2.2 San Diego County Water Authority

Discussions about this project between Encina and the SDCWA have occurred as meetings between the General Managers and their teams. The intention of these meetings has included data exchanges, progress updates, and general information sharing about the project. Recent meetings were held on November 9, 2023, and June 30, 2024. SDCWA's interest in future water supplies is likely to be for raw water, as opposed to potable water, therefore the Carlsbad Desal augmentation option may not be favorable.

2.3 Congressman Mike Levin

In March 2023, Congressman Mike Levin and his staff visited Encina to learn more about the project. The visit included a presentation with information about the project as well as a facility tour. Following the visit, Congressman Levin provided a letter of support for the project. The letter may be used in future funding applications and is included as **Appendix C.**

3. TREATMENT ANALYSIS

In the 2018 Feasibility Study, improvements to the EWPCF secondary process were identified with the goal of providing improved source water quality for future potable reuse. The recommended improvements included primary effluent flow equalization, aeration basin modifications to convert the biological process from conventional activated sludge to a nitrification-denitrification (NDN) process, two new secondary clarifiers, addition of tertiary filters, and addition of a separate treatment process for highly concentrated centrate from the solids dewatering facility to further improve effluent nutrient water quality.

The recommendation for improvements has since been updated to include MBR that eliminates the need for two additional clarifiers and tertiary filters significantly reducing land requirements while producing higher quality water at the AWTF needed for potable reuse. The complete MBR system will include the MBR equipment installed in concrete tanks as well as a building to house system equipment such as permeate pumps, RAS pumps, and chemical storage and feed for membrane cleaning. The costs that were developed as part of the 2018 Feasibility Study for primary flow equalization, aeration basin improvements, and sidestream treatment for the centrate were carried forward and escalated from 2018 to 2025 dollars. Costs for two additional secondary clarifiers and new tertiary filters were removed and replaced with the costs for adding MBR. Costs for the MBR equipment, tanks, and building were developed using actual construction costs for a similar MBR facility, then scaling the costs up to the size needed at the EWPCF using a flow factor.

With the addition of MBR to the EWPCF, several modifications were made to the downstream AWTF treatment train alternatives. For the Indirect Potable Reuse (IPR) AWTF for Surface Water Augmentation alternatives, the microfiltration/ultrafiltration (MF/UF) process was removed due to the high effluent water quality produced by the MBR system, suitable for feed directly into the reverse osmosis (RO) system without MF/UF pretreatment. For the DPR treatment train alternatives (i.e., the AWTF for Raw Water Augmentation at Second Aqueduct alternative and AWTF for Treated Water Augmentation at Carlsbad Desal alternative), assumptions were updated based on the finalized California DPR regulations, which were made effective on October 1, 2024. The finalized California DPR regulations provide prescriptive requirements for ozone and biologically active carbon (BAC) pretreatment, define pathogen log reduction requirements, and define engineered storage buffer requirements for peak attenuation among other requirements. MF/UF is still required for the DPR treatment trains due to the potential for BAC effluent to foul the RO membranes as well as the need for *Cryptosporidium* log reduction credit from the MF/UF process. However, the MF/UF system sizing was reduced due to the improved water quality of the MBR upstream. A second MF/UF system (after the engineered storage buffer and chlorination) is no longer required for the treated water augmentation DPR alternative since the required log reduction credits for DPR are achieved without it.

3.1 Pilot Study Update

In 2021, with support from Trussell Technologies Inc. (Trussell), Encina launched a 3-year pilot project to explore the feasibility of a full-scale beneficial reuse initiative. This project is partially funded by a grant from the U.S. Bureau of Reclamation (USBR) and includes in-kind support from Encina, Trussell, and Veolia.

The pilot project uses a 10 gallons-per-minute (gpm) treatment train consisting of a fully nitrifying Veolia ZeeWeed 500D-3M membrane bioreactor (MBR), followed by a 2-stage Biwater reverse osmosis (RO) system. In 2023, a NeoTech Aqua D438 Ultraviolet (UV) reactor with advanced oxidation process (AOP) using sodium hypochlorite was added to the pilot train downstream of RO to facilitate disinfection. The pilot is fed with effluent water from Encina's primary clarifiers using a submersible pump located in a primary

effluent channel. Then, primary effluent is treated by the pilot systems and the product water is returned to the primary effluent mixing box which feeds the full-scale aeration basins.

The objective of this piloting is to evaluate and optimize these technologies for their future full-scale implementation into a potable reuse treatment train at Encina's facility.

To best serve Encina's needs, a full scale MBR should be operated, relative to current conditions, with higher mixed liquor suspended solids (MLSS), higher solids retention time (SRT), and lower hydraulic retention time (HRT) to minimize footprint, reduce solids production/handling, and produce a high-quality effluent with respect to turbidity, nutrients, total suspended solids (TSS), organics, and pathogens. Therefore, Trussell and Veolia are working together with Encina staff to optimize the HRT, SRT, and flux to maintain good overall MBR performance and high-quality filtrate.

In parallel with MBR optimization, Trussell is conducting challenge testing on the MBR, RO, and UV/AOP systems with an emphasis on chemical and pathogen attenuation. This includes satisfying the pre-commissioning testing requirements presented in WRF 4997 for Tier 2 pathogen credits which is a key hurdle for implementing an MBR for potable reuse. Throughout the project, Encina operations staff are assisting in operations to gain familiarity with the advanced treatment processes and collecting regular water quality and process data.

4. UPDATED COST ESTIMATES

Though cost estimates were developed for the 2018 Feasibility Study, it was necessary to revise them due to escalation and changes in process assumptions based on the adopted DPR regulations (see Section 3). New cost estimates were developed for processes not included in the 2018 Feasibility Study, however the cost for other treatment processes were simply escalated to March 2025 dollars using the Engineering News Record (ENR) Construction Cost Indexes (CCI). Soft costs and other allowances (see Section 4.2 and 4.3) were applied to the raw construction cost estimates, resulting in a capital cost estimate for use in this Strategic Plan. O&M costs were escalated using the Consumer Price Index (S. California Basis) (CPI) for maintenance and labor for December 2024 California.

4.1 Cost Classification

An opinion of probable construction cost (OPCC) for each option was developed as a Class 4 opinion, which is expected to be within a +30% to -20% accuracy range under a competitive bidding environment. Cost opinions were developed relying heavily on historical bid-based and cost-based methods to develop raw construction costs. From the raw construction costs, several construction cost factors were applied to develop opinions of total construction costs, followed by implementation factors to develop opinions of total capital costs.

4.2 Construction Cost Allowances

From the raw construction cost subtotal, the construction cost factors listed below were applied to develop an opinion of total construction costs.

- **Construction contingency of 25%** – The construction contingency is defined as unknown costs due to lack of detailed engineering during the preliminary design phase that are estimated as a percentage of defined project costs (i.e., raw construction cost subtotal). As the level of project definition and understanding increases and the level of unknown decreases, the construction contingency typically decreases. For this Study, a construction contingency of 25% was applied to the raw construction cost estimates. This is also intended to include Owner's reserve for change orders, which may be a result of the Owner's direction to implement additional work, differing field conditions that require additional work, or an error in the project contract documents.
- **Tax on Materials = 8%, applied to 50% of construction subtotal** – A Class 4 estimate uses installed unit cost metrics that include both raw materials and installation (i.e., labor and equipment) costs. Therefore, tax on materials was estimated as 8.0% (local tax) and applied to 50% of the construction cost subtotal.
- **Shipping rate = 15% applied to 40% of the construction cost subtotal** – A Class 4 estimate uses installed unit cost metrics that include both raw materials and installation (i.e., labor and equipment) costs. Therefore, shipping costs for equipment delivery were estimated as 15% and applied to 40% of the construction cost subtotal.
- **Overhead and Profit = 15%** – Overhead and profit (O&P) represents the general contractor's operating costs and estimated profit levels. The O&P factor typically varies between 10% and 25%, depending on the size of the project and market conditions, with larger projects typically having lower O&P factors. An O&P factor of 15% was applied to the construction cost subtotal.

At this conceptual planning stage, costs not considered include, but are not limited to, additional planning, administration, legal, and property acquisition.

4.3 Implementation Cost Allowances

To generate the opinions of total capital costs for the project, implementation costs such as design, environmental review, construction management, engineering services during construction, and other administrative costs associated with the project are included. Implementation costs are typically estimated as a percentage of total construction cost, including all allowances described in Section 4.2. The implementation allowances used are summarized below.

- **Environmental Documentation and Permits = 5%** – Environmental documentation and permits involves producing environmental studies and acquiring any permits necessary to construct a project. A factor of 5% was applied to the total construction cost for environmental documentation and permits.
- **Design Engineering Services = 10%** – Design engineering services include field investigations (e.g., surveys, geotechnical reports, hazard materials investigations), preliminary and final design, contract document development (i.e. plans and specifications), preparation of detailed cost estimates, and project scheduling. An engineering design services factor of 10% was applied to the total construction cost.
- **Construction Management = 5%** – Costs for construction management, including inspection, can vary greatly with project size and complexity and whether the Owner performs this work with in-house staff or through a consultant. A construction management factor of 5% was applied to the total construction cost.
- **Engineering Services During Construction = 5%** – Engineering services during construction (ESDC) typically include submittal and request for information (RFI) reviews, design clarifications, and startup support services. An ESDC factor of 5% was applied to the total construction cost.

4.4 Capital Financing Assumptions

Financing assumptions used to annualize capital costs are:

- Capital costs would be 100% financed.
- Annual interest rate: 2.0%
- Term of Financing: 30 years
- Discount Rate: 0%

Funding assumptions included:

- 20% grant funding for capital costs
- $500/ AF incentives from Metropolitan Water District of Southern California Local Resources Program/ SDCWA LWSD

4.5 Operations and Maintenance (O&M) Costs

Operations and maintenance (O&M) requirements were derived from experience on similar projects and standard engineering methods. The three components used to develop annual O&M costs were:

- **Labor** – Labor costs associated with new treatment and conveyance facilities O&M are calculated on an hourly basis, with 2080 hours per year assumed to be one full-time equivalent (FTE). The required labor hours are estimated based on experience with prior projects and other current systems in operation. The average hourly cost of an O&M personnel, including overhead, is estimated to be $75.
- **Power** – The unit cost of electricity used is $0.25/kWh. Any offsets available from power produced at the EWPCF were not considered.
- **Equipment Rehabilitation/Replacement and Consumables** - Consumables are major components of operation expenditures and include resources that are intended and expected to be used up relatively quickly. Examples of consumables include chemicals, gaskets, and potable water. Where specific consumable line items could not be quantified, consumable costs were estimated as 1% of the raw construction cost.

5. EWPCF SECONDARY IMPROVEMENTS

The EWPCF secondary improvements were modified from the 2018 Feasibility Study to include a MBR prior to the advanced water treatment processes as discussed in Section 3. The aeration basin improvements apply to the entire EWPCF, while the Primary Equalization (EQ) and MBR are only sized to support 18,000 afy to 22,000 afy of potable reuse. The updated EWPCF secondary improvement costs are summarized in **Table 5-1**.

TABLE 5-1: EWPCF SECONDARY TREATMENT UPGRADES WITH MBR COSTS

Item	Cost, 2025 Dollars
Primary Effluent Flow Equalization	
Flow EQ Basin x 2	$7,138,000
Primary Effluent Pipe	$1,983,000
Pump Station/Modulating Valve	$1,322,000
Aeration Basins	
Baffling	$793,000
Blower Upgrades	$3,701,000
Anoxic Zone Mixers	$1,269,000
Fine Bubble Aeration Equipment	$2,644,000
Internal Mixed Liquor Recycle Pumps	$608,000
Piping/Basin Modifications for Internal Mixed Liquor Recycle	$132,000
Scum and Foam Control	$661,000
Demo of Existing Aeration Equipment	$132,000
Air Piping/valving/dissolved oxygen control	$1,454,000
MBR	
MBR Equipment	$36,093,000
MBR Tanks	$16,482,000
MBR Building	$6,910,000
MBR Sidestream for Centrate	
Sidestream Treatment	$20,034,000
Equipment Installation	
Installation of Aeration Basin Retrofit Equip.	$14,246,100
Total Raw Construction Cost	**$115,602,100**
Construction Contingency (25%)	$28,900,525
Subtotal	$144,502,625
Tax (8%)	$5,780,105
Shipping (15%)	$8,670,158
General Contractor Overhead and profit (15%)	$21,675,394

Item	Cost, 2025 Dollars
Total Construction Cost	**$180,628,000**
Environmental Documentation and Permits (5%)	$9,031,400
Engineering Services (Design) (10%)	$18,062,800
Construction Management (5%)	$9,031,400
Engineering Services During Construction (5%)	$9,031,400
Total Capital Cost	**$225,785,000**

6. UPDATED AWTF TREATMENT TRAINS

The updated AWTF treatment trains for each reuse option are listed below, the secondary process improvements include the proposed MBR process. The AWTF is only sized to support between 18,000 afy to 22,000 afy of potable reuse Updated AWTF costs for the three potable reuse options are summarized in the following **Table 6-1** thru **Table 6-3**.

TABLE 6-1: IPR AWTF FOR SURFACE WATER AUGMENTATION AT LAKE HODGES COSTS

Item	Cost, 2023 Dollars
AWTF	
RO System	$21,320,000
Advanced Oxidation and Disinfection	$5,576,000
Chemicals (Storage and Feed Systems)	$2,962,300
Free Chlorine System	$5,924,500
Storage Tank	$5,808,000
Process Building	$19,520,000
Admin and Maintenance Building	$5,600,000
Electrical Building	$5,600,000
Mechanical Allowance	$3,578,300
Electrical Allowance	$10,734,800
I&C Allowance	$7,156,600
Yard Piping	$9,378,100
Sitework	$4,689,000
EWPCF/AWTF Conveyance	
Feed from EWPCF	$1,740,000
Feed Pump	$714,000
Waste Disposal to EWPCF	$2,552,000
Waste Disposal Pump	$882,000
Total Raw Construction Cost	**$113,736,000**
Construction Contingency (25%)	$28,434,000
Subtotal	$142,170,000
Tax (8%)	$5,686,800
Shipping (15%)	$8,530,200
General Contractor Overhead and profit (15%)	$21,325,500
Total Construction Cost	**$177,713,000**
Environmental Documentation and Permits (5%)	$8,885,700
Engineering Services (Design) (10%)	$17,771,300
Construction Management (5%)	$8,885,700

Item	Cost, 2023 Dollars
Engineering Services During Construction (5%)	$8,885,700
Total Capital Cost	**$222,141,000**

TABLE 6-2: DPR AWTF FOR RAW WATER AUGMENTATION AT SECOND AQUEDUCT COSTS

Item	Cost, 2025 Dollars
AWTF	
Ozone	$16,195,000
BAF	$12,915,000
MF System	$13,730,900
Interprocess Tank	$782,000
RO System	$19,530,200
Advanced Oxidation and Disinfection	$5,107,900
Chemicals (Storage and Feed Systems)	$2,713,600
Free Chlorine System	$5,427,100
Storage Tank	$5,321,000
Process Building	$19,520,000
Admin and Maintenance Building	$5,600,000
Electrical Building	$5,600,000
Mechanical Allowance	$7,640,200
Electrical Allowance	$22,920,500
I&C Allowance	$15,280,300
Yard Piping	$15,828,400
Sitework	$7,914,200
EWPCF/AWTF Conveyance	
Feed from EWPCF	$1,740,000
Feed Pump	$714,000
Waste Disposal to EWPCF	$2,552,000
Waste Disposal Pump	$882,000
Total Raw Construction Cost	**$187,914,000**
Construction Contingency (25%)	$46,978,500
Subtotal	$234,893,000
Tax (8%)	$9,395,700
Shipping (15%)	$14,093,600
General Contractor Overhead and profit (15%)	$35,234,000
Total Construction Cost	**$293,616,000**
Environmental Documentation and Permits (5%)	$14,680,800

Item	Cost, 2025 Dollars
Engineering Services (Design) (10%)	$29,361,600
Construction Management (5%)	$14,680,800
Engineering Services During Construction (5%)	$14,680,800
Total Capital Cost	**$367,020,000**

TABLE 6-3: DPR AWTF FOR TREATED WATER AUGMENTATION AT CARLSBAD DESAL COSTS

Item	Cost, 2025 Dollars
AWTF	
Ozone	$16,195,000
BAF	$12,915,000
MF System	$13,730,900
Interprocess Tank	$782,000
RO System	$19,530,200
Advanced Oxidation and Disinfection	$5,107,900
Chemicals (Storage and Feed Systems)	$2,713,600
Engineered Storage Buffer	$7,981,000
Free Chlorine System	$5,427,100
Storage Tank	$5,321,000
Process Building	$19,520,000
Admin and Maintenance Building	$5,600,000
Electrical Building	$5,600,000
Mechanical Allowance	$7,640,200
Electrical Allowance	$22,920,500
I&C Allowance	$15,280,300
Yard Piping	$16,626,500
Sitework	$8,313,200
EWPCF/AWTF Conveyance	
Feed from EWPCF	$1,740,000
Feed Pump	$714,000
Waste Disposal to EWPCF	$2,552,000
Waste Disposal Pump	$882,000
Total Raw Construction Cost	**$197,092,000**
Construction Contingency (25%)	$49,273,000
Subtotal	$246,365,000
Tax (8%)	$9,854,600
Shipping (15%)	$14,781,900

Item	Cost, 2025 Dollars
General Contractor Overhead and profit (15%)	$36,954,800
Total Construction Cost	**$307,956,000**
Environmental Documentation and Permits (5%)	$15,397,800
Engineering Services (Design) (10%)	$30,795,600
Construction Management (5%)	$15,397,800
Engineering Services During Construction (5%)	$15,397,800
Total Capital Cost	**$384,945,000**

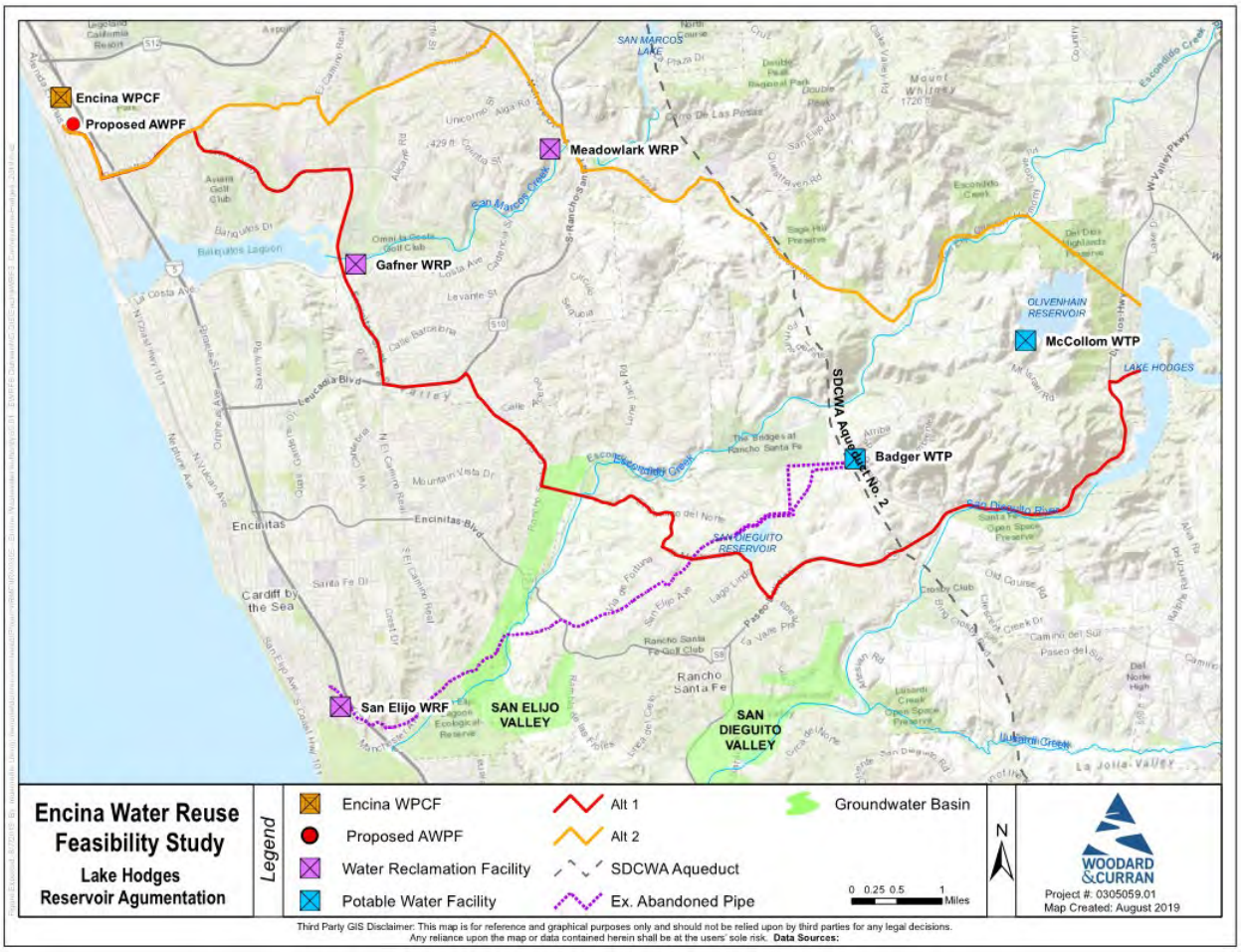
7. UPDATED CONVEYANCE COSTS

7.1 Infrastructure for Conveyance

7.1.1 Lake Hodges Option

Two alignments were considered for the conveyance facilities to Lake Hodges. Alternative 1 includes approximately 96,000 linear feet (LF) of 36-inch pipeline, plus 3,000 LF of trenchless crossings. Alternative 2 includes 75,000 LF of 36-inch pipeline and 3,000 LF of trenchless crossings, plus 8,900 LF of tunnel boring machine activity for going under hill topography. This option would require a new pump station. See **Figure 7-1** for assumed alignments.

FIGURE 7-1: PROPOSED ALIGNMENT FOR CONVEYANCE TO LAKE HODGES RESERVOIR



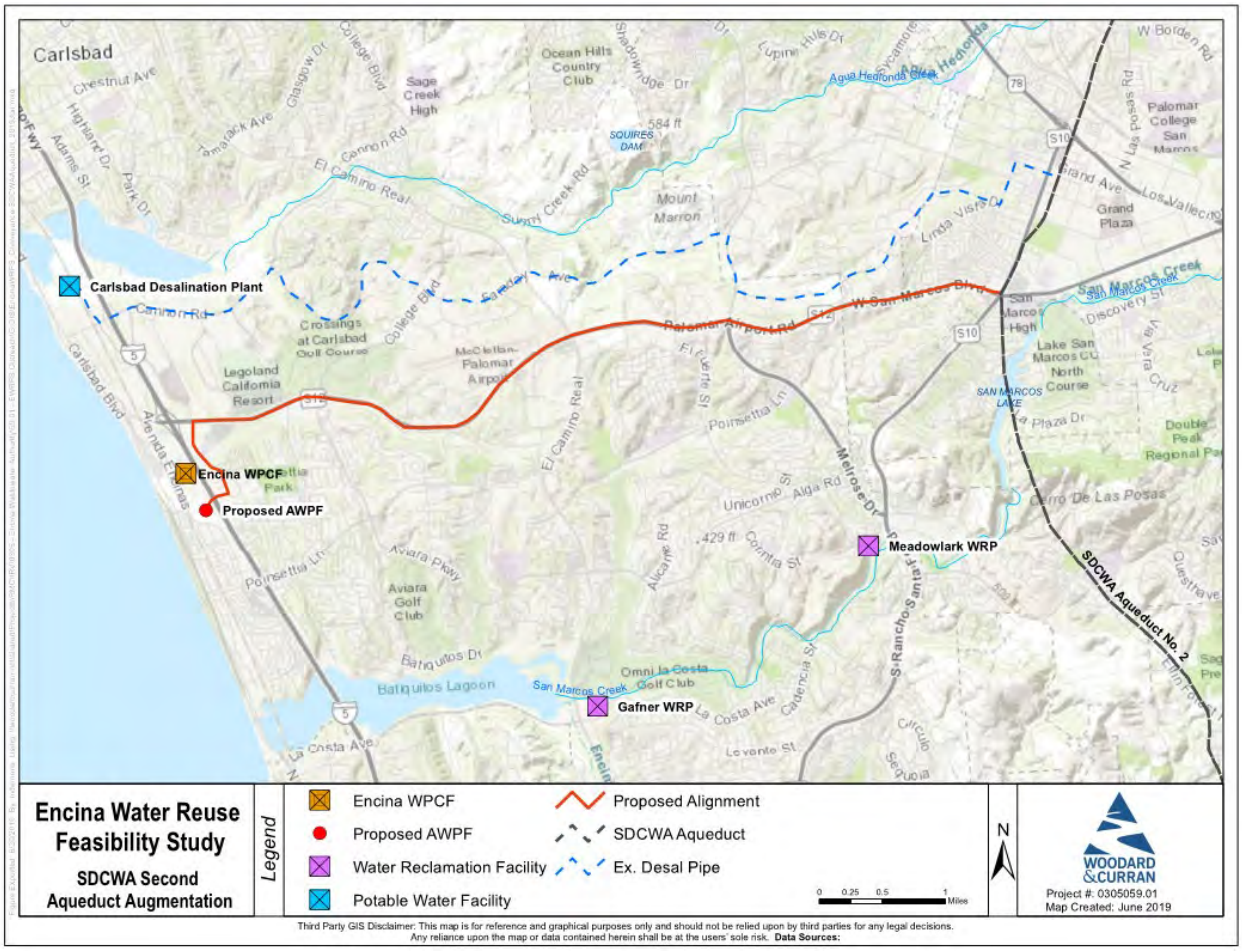
7.1.2 Second Aqueduct Option

The conveyance facilities to the SDCWA Aqueduct No. 2 include approximately 40,000 LF of 36-inch pipeline, plus 500 LF of trenchless crossing under I-5. See **Figure 7-2** for assumed alignments.

This option would also require new facilities including:

- AWT pump stations (3 pumps, 5,600 horsepower)
- Pipeline to RWA site (30 inch, 7.6 miles)
- Booster pump station (3 pumps, 2,000 horsepower)

FIGURE 7-2: PROPOSED ALIGNMENTS FOR CONVEYANCE TO SDCWA AQUEDUCT NO. 2



7.1.3 Carlsbad Desal Plan Option

The conveyance facilities to the Carlsbad Desal Plant includes approximately 14,000 LF of 36-inch pipeline, plus 1,700 LF of trenchless crossing under I-5. See **Figure 7-3** for assumed alignments.

This option will provide a maximum flow of 15.8 mgd from the proposed AWTF to the Carlsbad Desalination

Plant clearwell immediately upstream of the existing booster station for treated drinking water augmentation. The clearwell at the Desalination Plant may be undersized and may be unable to accept additional flow. Therefore, cost estimates include clearwell construction/expansion to allow for blending and addition of baffling to provide mixing of the AWTF effluent with the desalinated product water.

FIGURE 7-3: PROPOSED ALIGNMENT FOR CONVEYANCE TO CARLSBAD DESALINATION PLANT

7.2 Conveyance Costs

The conveyance costs for the 3 preferred options were escalated from the 2019 update to 2025 dollars, as summarized in **Table 7-1**. Conveyance facilities are sized to accommodate 22,000 afy.

TABLE 7-1: AWTF PURIFIED WATER CONVEYANCE TO END USE COSTS

Item	1-Lake Hodges Conveyance Costs, 2025$	2-Aqueduct 2 Conveyance Costs, 2025$	3-Carlsbad Desalination Conveyance Costs, 2025$
Total Raw Construction Cost	**$143,298,000**	**$107,936,000**	**$96,641,000**
Construction Contingency (25%)	$35,824,500	$26,984,000	$24,160,250
Subtotal	$179,122,500	$134,920,000	$120,801,250
Tax (8%)	$7,164,900	$5,396,800	$4,832,050
Shipping (15%)	$10,747,350	$8,095,200	$7,248,075
General Contractor Overhead and profit (15%)	$26,868,375	$20,238,000	$18,120,188
Total Construction Cost	**$223,903,000**	**$168,650,000**	**$151,002,000**
Environmental Documentation and Permits (5%)	$11,195,150	$8,432,500	$7,550,100
Engineering Services (Design) (10%)	$22,390,300	$16,865,000	$15,100,200
Construction Management (5%)	$11,195,150	$8,432,500	$7,550,100
Engineering Services During Construction (5%)	$11,195,150	$8,432,500	$7,550,100
Total Capital Cost	**$279,879,000**	**$210,813,000**	**$188,753,000**

8. UPDATED COST SUMMARY

The total capital costs are annualized using the financing assumptions presented in Section 4.4 above and combined with the O&M costs to develop a unit cost of water per acre-foot produced. An overview of the OPCCs and costs of water for the three Options are provided in **Figure 8-1** and **Figure 8-2**.

FIGURE 8-1: CAPITAL COST SUMMARY UPDATE, 2025 DOLLARS

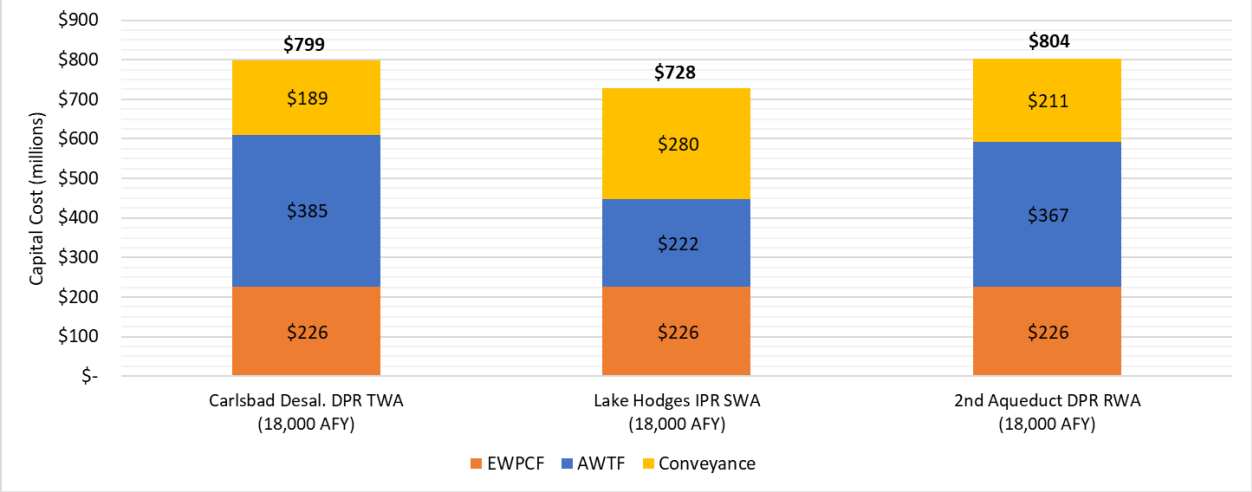
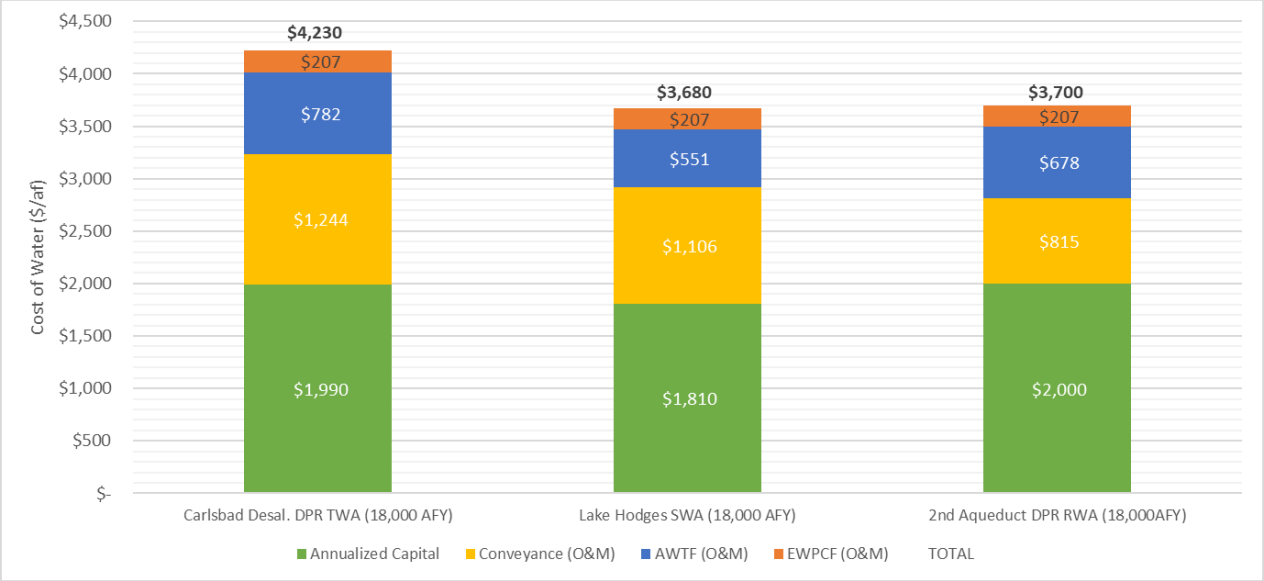


FIGURE 8-2: COST OF WATER SUMMARY UPDATE, 2025 DOLLARS



The table below shows cost summaries in additional detail.

TABLE 8-1: DETAILED COST SUMMARIES

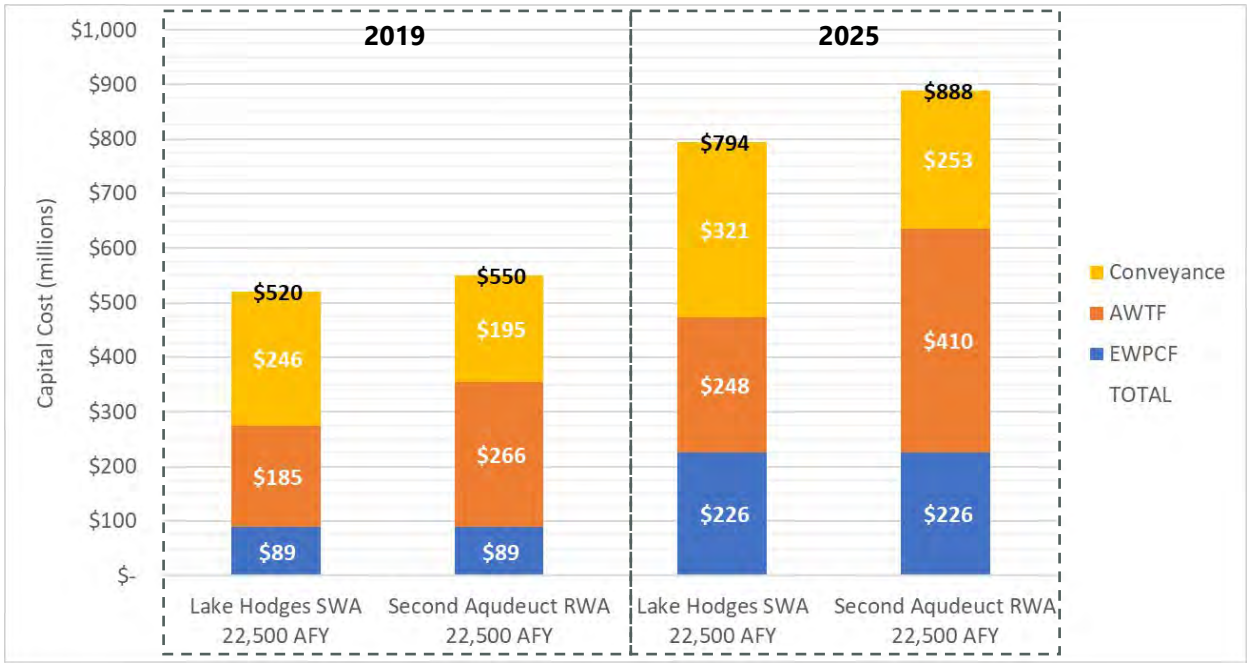
Item	Lake Hodges SWA Project Costs, 2025$	Aqueduct 2 RWA Project Costs, 2025$	Carlsbad Desalination TDWA Project Costs, 2025$	Notes
EWPCF Secondary Improvements - MBR	$225,785,000	$225,785,000	$225,785,000	at 31 mgd flow rate
Advanced Water Treatment Facility	$222,141,000	$367,020,000	$384,945,000	at 20.5 mgd influent rate
Conveyance	$279,879,000	$210,813,000	$188,753,000	
Total Capital Cost	$727,805,000	$803,618,000	$799,483,000	
Annual O&M Costs				
EWPCF Secondary Improvements	$3,718,000	$3,718,000	$3,718,000	24/7/365 operations
Advanced Water Treatment Facility	$9,915,000	$12,206,000	$14,076,000	24/7/365 operations
Conveyance	$19,901,000	$14,669,000	$22,396,000	
Total Annual O&M Cost	$33,540,000	$30,600,000	$40,190,000	
Cost of Water				
Annualized Capital Cost	$32,496,000	$35,881,000	$35,697,000	2.0% rate, 30-yr term
Total Annual Cost	$66,036,000	$66,481,000	$75,887,000	for first 30 years
Unit Cost of Water	**$3,680**	**$3,700**	**$4,230**	per acre-foot

Costs have increased significantly since originally estimated during the 2018 Feasibility Study. The figures below provide a comparison of the estimated costs presented in 2018 versus the most recent 2025 estimates. The alternatives shown were the most favorable two options identified in the feasibility study, Lake Hodges and Second Aqueduct, therefore costs for these two options are shown.

The "Conveyance" portion of the cost describes transferring water from the plant to end uses. The "AWTF" portion of the cost describes costs associated with advanced water treatment. The "EWPCF" portion includes costs of upgrading the EWPCF facility including a MBR prior to the advanced water treatment processes. In an effort to show a potential range of costs, these figures illustrate cost differences between 2019 and 2025.

Figure 8-3 illustrates the capital costs (in millions) to build either a 22,000-afy facility via the Lake Hodges or Second Aqueduct options. The graph shows the costs in 2019 and 2025.

FIGURE 8-3: LAKE HODGES AND SECOND AQUEDUCT 22,000 AFY CAPITAL COST COMPARISON



The following figures illustrate the estimated change in cost per unit ($/af) cost since 2019.

Figure 8-4 shows the Second Aqueduct option at 18,000 afy with no funding support and 22,000 afy with 20% grant funding in 2019 and 2025.

FIGURE 8-4: SECOND AQUEDUCT 18,000 AFY

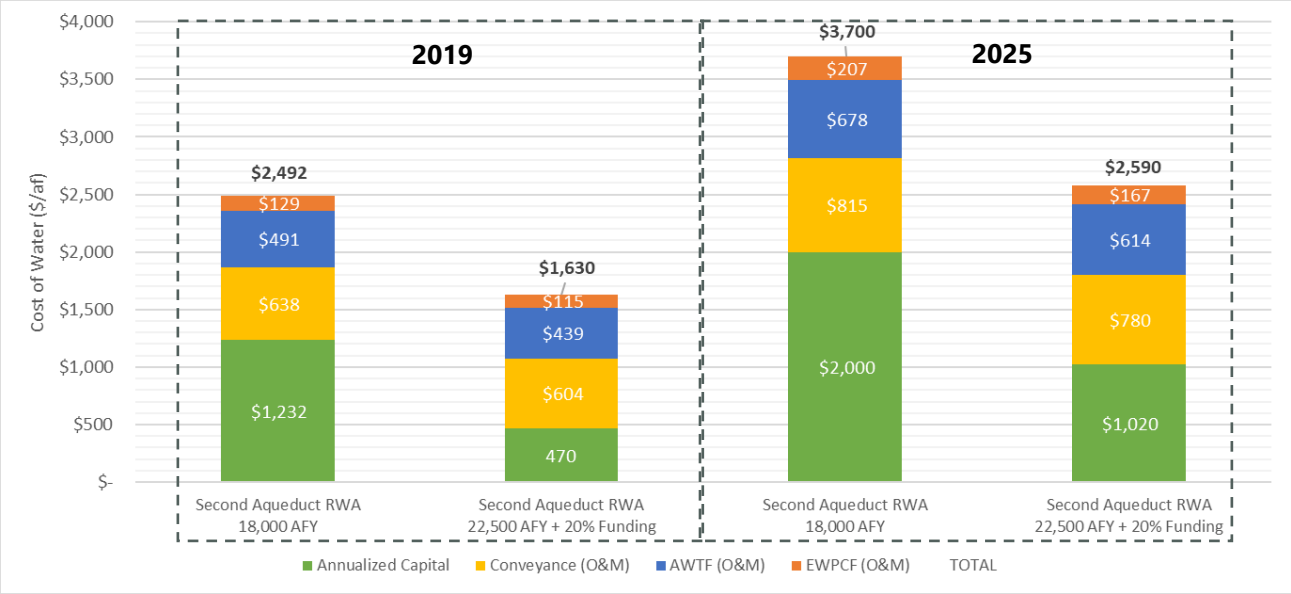


Figure 8-5 shows the Lake Hodges option at 18,000 afy with no funding support and 22,000 afy with 20% grant funding in 2019 and 2025.

FIGURE 8-5: LAKE HODGES 18,000 AFY CAPITAL COST OPTION

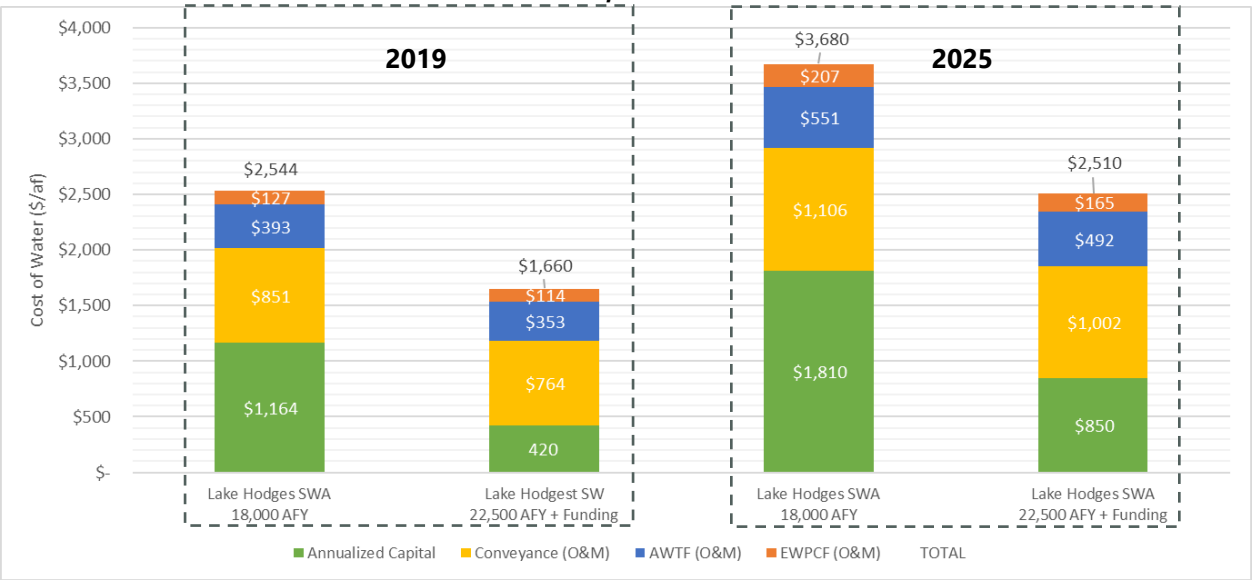


Table 8-2 below shows the cost comparison including the percent increase since 2019.

TABLE 8-2: COST COMPARISON OF WATER SUPPLY OPTIONS WITH PERCENT INCREASE SINCE 2019

Project Option	2019 Cost ($/AF)	2025 Cost	Percent Increase
Second Aqueduct RWA 18,000 AFY	$2,492	$3,700	48%
Second Aqueduct RWA 22,000 AFY + 20% Funding	$1,630	$2,590	59%
Lake Hodges SWA 18,000 AFY	$2,544	$3,680	45%
Lake Hoges SWA 22,000 AFY + 20% Funding	$1,660	$2,520	52%

8.1 Cost of Water Comparison

The Strategic Plan analysis also included a cost comparison with SDCWA rate projections. Please note, the water produced through this project would not fully replace supplies from SDCWA and because SDCWA calculates rates based on a 7-year rolling average, cost substitution would take time. Therefore, the rates below should not be considered an either/or comparison. The projections in **Table 8-3** are intended to show the compared cost each water supply for perspective.

The SDCWA rates included below are published in the 2021 SDCWA's Long-Range Financial Plan. While it is acknowledged that these projections are likely lower than what users can realistically expect based on current conditions, these rates are the official published projections at this time. These rates are considered "all-in" in that they include both fixed and variable costs. No user pays this exact rate as the rates are calculated by system so that each user pays its share of fixed cost, however, these projections are the best representation for comparison of new water supplies.

The cost of desalinated water from the Carlsbad Desalination plant is included because those rates are the best comparison to a new, local source of supply. The intention of including those rates is for comparison purposes only.

TABLE 8-3 SDCWA RATE PROJECTIONS ($/AF)

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
SDCWA High	$1,833	$2,017	$2,196	$2,408	$2,571	$2,703	$2,807	$2,908	$2,993	$3,092
SDCWA Low	$1,833	$1,913	$1,988	$2,077	$2,165	$2,212	$2,269	$2,334	$2,376	$2,462
Carlsbad Desal		$2,891	3,101	3,186	$3,736					

Source: SDCWA 2021 Long Range Financial Plan

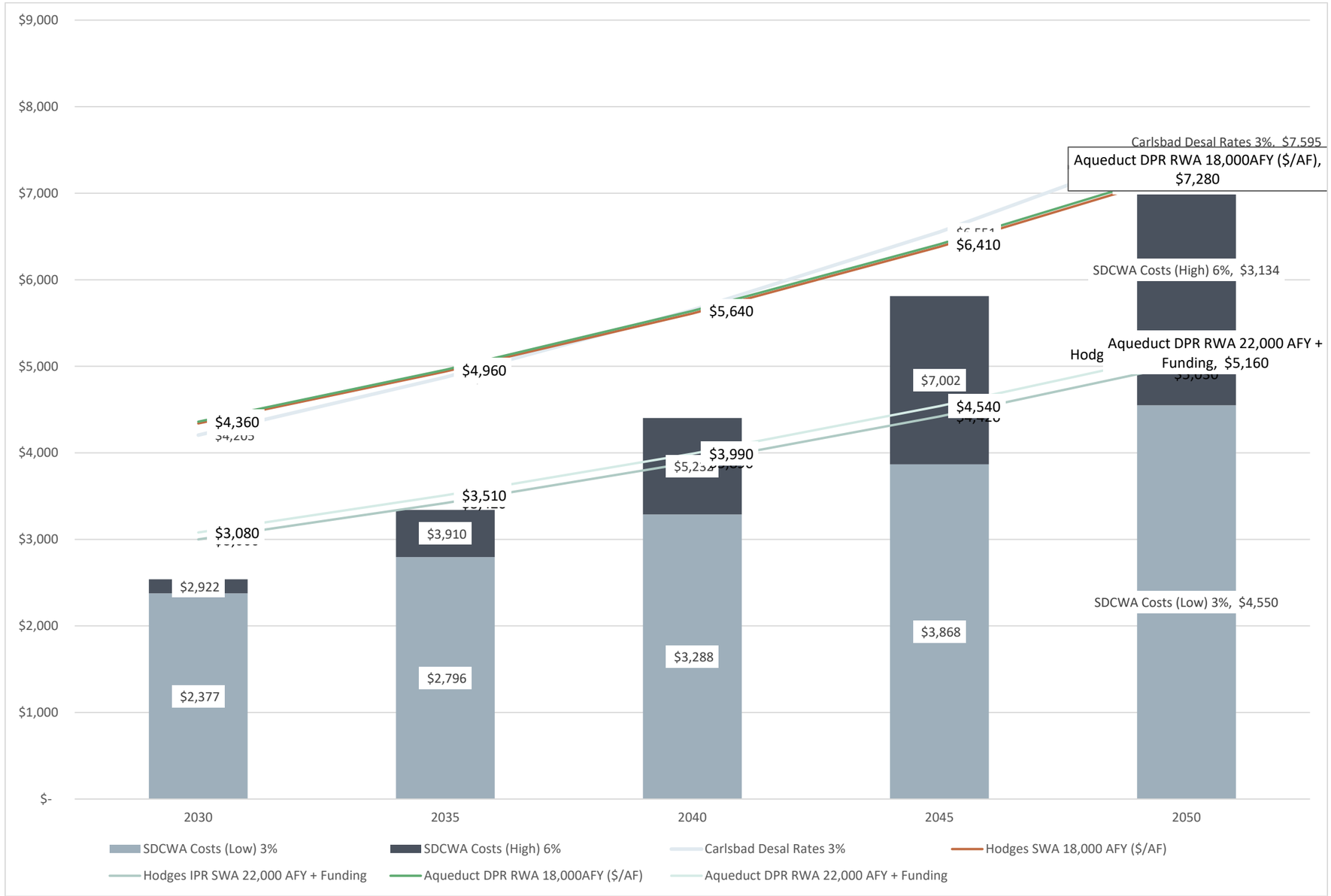
Based on the table above, rates were projected past 2031 using a high escalation of 6% and a low escalation of 3%. Rates for Carlsbad Desalination Plant water escalated at 3%.

Table 8-4 shows the estimated cost per acre foot of the various options compared to the SDCWA rate projections escalated out to 2050.

TABLE 8-4: PROJECTED COST COMPARISON OF WATER SUPPLY OPTIONS AND SDCWA RATE PROJECTIONS (2030–2050)

	2030	2035	2040	2045	2050
SDCWA Costs (Low) 3%	$2,377	$2,796	$3,288	$3,868	$4,550
SDCWA Costs (High) 6%	$2,922	$3,910	$5,232	$7,002	$9,370
Carlsbad Desal Rates 3%	$4,205	$4,875	$5,651	$6,551	$7,595
Hodges SWA 18k AFY	$4,340	$4,940	$5,610	$6,380	$7,240
Hodges IPR SWA 22k AFY+Funding	$3,000	$3,420	$3,890	$4,420	$5,030
Aqueduct DRP RWA 18k AFY	$4,360	$4,960	$5,640	$6,410	$7,280
Aqueduct DRP RWA 22k AFY+Funding	$3,080	$3,510	$3,990	$4,540	$5,160

FIGURE 8-6: ESTIMATED COST PER ACRE FOOT OF SUPPLY OPTIONS



9. FINANCING OPTIONS/FUNDING STRATEGY

Funding opportunities and availability for this project are difficult to predict as there is not a timeline for implementation. Most funding streams have a project timeline requirement that must be met in order to qualify.

Therefore, the information below summarizes the state of funding availability at this time to outline potential funding strategies in the future.

9.1 Financing and Funding Environment

Public funding for infrastructure projects in California is in a dynamic situation. Through the investments from the Infrastructure Investment and Jobs Act (IIJA) and Inflation Reduction Act (IRA), state and local governments are experiencing a historic level of funding across many areas of need, including for water-related projects. While American Rescue Plan Act (ARPA) funding has largely been distributed and focused IRA funding is still making its way out, IIJA is nearing the middle of its third year of availability, with two more years ahead.

In California, two recent budget years witnessed very significant surpluses, resulting in increased planned funding across policy areas, including climate, water, and transportation. Much of this investment was planned over a multi-year period in order to allow programs the ability to solicit, review, and award applications, as well as for applicants to prepare projects for funding requests. However, the state's fiscal situation has changed dramatically over this period, resulting in reductions and delays to this available funding.

Public agencies also need to consider various factors in funding pursuits. For example, inflationary and supply chain pressures are resulting in rapidly increasing project costs as exemplified in the ENR CCI. Not only do rising costs dilute the value of secured grant funding and loan financing, but they also drive home the need for certainty in funding and delivery timelines. Additionally, new federal law regarding domestic sourcing of products and materials provides additional challenges.

9.2 Financing and Funding Strategy

9.2.1 Federal Programs

Pursuit of financing and funding over the next few years will generally experience a return to pre-BIL and IRA levels of funding. As these sources are exhausted, public agencies can expect to see increased competitiveness of limited funds and a need for planning and preparation for anticipated program solicitations from federal agencies. Several examples are included below:

- U.S. Bureau of Reclamation—The BIL provides a significant investment in water reuse, desalination, storage and supply, and drought programs at USBR, particularly through the WaterSMART suite of programs. USBR has been very active in solicitations for the various programs over the first three years of BIL and will likely augment funding for most programs by the end of 2025. Public agencies should plan to take advantage of solicitations currently open or planned through 2025, with particular attention to those programs requiring USBR-approved feasibility studies to establish eligibility to apply.

- U.S. Environmental Protection Agency—The U.S. Environmental Protection Agency (EPA) is the agency responsible for distributing the annual capitalization grants for the states' SRF programs. While these grants have been augmented during BIL, the long-term outlook is for a reduction due to the use of these funds for congressionally directed spending (described below). Public agencies should plan on reduced SRF loan and grant capacity at the State Water Resources Control Board (SWRCB)and plan projects with more lead time or investigate other financing options.

  The EPA's Water Infrastructure Finance and Innovation Act (WIFIA) Program is becoming an alternative to traditional SRF financing—offering more assistance and accelerated timelines, although with slightly higher interest rates. The WIFIA Program has received additional capitalization through the BIL and normally enjoys a consistent level of appropriations support.

  The EPA is also in the process of distributing several billion dollars in IRA financing with a particular focus on clean energy, climate resilience, and environmental justice communities. Much of the investment from the IRA is being distributed through networks of nonprofit organizations in the form of grants, loans and loan guarantees, and other resources for community and state financial institutions (serving as green banks). Much of the IRA investment will continue to be available beyond the expiration of the BIL.

- Congressionally Directed Spending—One avenue of funding that is particularly impacted by an impasse to approve annual federal appropriations is congressionally directed spending—or earmarks—through federal agencies for specific projects. It is likely that earmark funding opportunities will continue in future fiscal years, although political dynamics may change project eligibility, funding amount, and other criteria. Earmark funding is very difficult to plan on for project delivery timelines as the funding requests are included as part of the larger budget process negotiated between Congress and the President and normally require approved projects submit additional applications once approved by Congress that can further delay receipt of funds.

9.2.2 California State Programs

Public agencies faced a considerable amount of uncertainty regarding state grant funding in the second half of 2024. California's 2024 budget shortfall was addressed, in part, through reductions, eliminations, and delays to anticipated grant funding. Projections from the California Department of Finance and Legislative Analyst Office share outlooks for continued deficits for at least the next two fiscal years, meaning public agencies should not anticipate any significant amount of grant funding absent Proposition 4, which was approved by voters in November 2024. Strategy comments for state opportunities are described below:

- Proposition 4—Voters approved Proposition 4 in November 2024. Public agencies can expect to see low to moderate investments in grant programs from DWR (Department of Water Resources) and SWRCB, among other departments. While there may be changes to the names of some programs, traditional programs such as the Water Recycling Funding Program (WRFP), Integrated Regional Water Management (IRWM) Program, and Sustainable Groundwater Management (SGM) Program, can expect to solicit for at least one round of funding with proceeds from Proposition 4. This is dramatically different than previous bonds which supported several rounds of funding. It can be expected that funding will be made available in solicitations starting in the second half of 2025 and extending through at least 2026. Agencies should be prepared for high

levels of competition for the limited funding, by ensuring planning documents reference projects, delivery schedules can be met, and any local match funding is identified. The next opportunity for another bond measure will be 2028, with any approved bond funding being available in late 2029.

- State Water Resources Control Board—As described above, the EPA is likely to be providing much-reduced capitalization grants for the state's SRF programs. With the SWRCB's emphasis on assisting disadvantaged communities (DACs), it can be expected much of the reduced loan and grant capacity will be prioritized for projects in those areas. Public agencies should identify projects with benefits for DACs as a strategy to secure limited funding available.

- California Infrastructure and Economic Development Bank (I-Bank)—The California I-Bank has traditionally provided loan financing for a wide range of project types at an interest rate comparable to WIFIA. In the absence of grant funding or SRF loan capacity, the I-Bank should be considered an alternative similar to WIFIA, albeit with some stricter repayment requirements, but without federal environmental documentation. With investments from the IRA, the I-Bank will also serve as California's green bank, providing bridge financing for projects, among other products. Public agencies can consider I-Bank financing for project needs generally under $25 million and the benefit of closing a loan within six months.

Grant funding for infrastructure projects in California is currently facing some challenges. While there has been significant investment from federal programs like the Infrastructure Investment and Jobs Act (IIJA) and the Inflation Reduction Act (IRA), the state's fiscal situation has led to reductions and delays in available funding. This means that while there are still opportunities for grant funding, they are becoming more competitive and uncertain. Therefore, the project will need to meet competitive funding criteria.

Interest rates through WIFIA, I-Bank, and SRF will continue to be lower than traditional loans and will likely be a useful tool in funding the project.

In an effort to demonstrate the potential impact of grants and loans on the full cost of the project, the analysis in Section 4, capital financing calculations include an annual interest rate of 2.0%. Project costs are also shown with a 20% grant funding component for comparison of scenarios.

10. REGULATORY OUTLOOK/STRATEGY

10.1 Regulatory and Compliance Environment

With the adoption of regulations for DPR, the stage is set for projects to take advantage of the opportunity for more sustainable water supplies. While it is likely state legislation in the future may seek to make changes to DPR requirements, there should be a period for public agencies to prove the process and technology. For many agencies, new regulations around emerging contaminants will also be a challenge over the next few years as compliance timelines advance.

In the meantime, there are other compliance and regulatory issues that are key to consider and monitor in the pursuit of public financial assistance for projects.

10.2 Federal Financing Compliance

Projects receiving federal financing assistance must comply with relevant federal laws and regulations, several of which are different than state requirements and deserve consideration. The National Environmental Policy Act (NEPA) is often a key piece of regulatory compliance, requiring applicants to go beyond the California Environmental Quality Act (CEQA) requirements. The additional components required by NEPA can add workload and time to project planning.

Similarly, federal funding now includes more stringent domestic sourcing requirements from the Build America, Buy America (BABA) Act. Funding agencies such as the EPA and USBR continue to develop BABA waivers for specific programs and procurement activities. However, the likely potential for the need to combine several different federal and state funding sources will require close monitoring of different BABA applicability situations and waiver requirements.

Additionally, BABA pertains to the SRF as the funding is federal (but administered through the State). EPA has a waiver for projects funded by SRF if planning and design was submitted to the State prior to May 2022, however this project would not be eligible for that waiver,

10.3 Nutrient Management Requirements

Following a significant algal bloom in the San Francisco Bay Area in 2022 that resulted in a massive fish kill, the area's Regional Water Quality Control Board (RWQCB) has been working with the dischargers on a regulatory framework for nutrient removal. In July 2024, the San Francisco RWQCB adopted a permit that will, for the first time, require nutrient reductions for all wastewater treatment plants discharging in the San Francisco Bay.

Under the San Francisco Bay Area permit, sewage treatment plants have 10 years to complete necessary improvements. Some already have completed improvements or are undertaking construction. Many others are planning improvements. And some will require major upgrades that could take years to complete.

Because all areas of the State are different, at this point, the SWRCB will work through the RWQCBs, rather than taking a one-size-fits-all approach to solving the problem of nutrients. Likely using the San Francisco Bay permit as an example, this approach will be utilized to offer sewage treatment agencies many options to comply, ranging from optimizing existing systems to constructing entirely new treatment processes. Nature-based approaches, such as treatment of wetlands, can provide multiple environmental and

community benefits in addition to nutrient removal. Wastewater recycling can reduce nutrient discharges while augmenting water supplies. The regional water board encourages multi-benefit projects and the use of innovative technologies. There is also flexibility for dischargers to find and implement cost-effective options.

If a regulation were to take effect in Encina's region, that could result in significant costs to Encina and its members. If the EWPCF upgrades were completed in line with this project, it could significantly reduce the potential cost of complying with this regulation. Encina is working with industry groups to provide input on the impacts of such a regulation and will continue to engage in this process.

10.4 Ocean Discharge Reduction Requirements

There have been efforts in the California State Legislature to reduce treated wastewater discharges from facilities into the ocean. In the last iteration in 2019, legislation would have reduced these discharges by 50 percent in 2030 and 95 percent by 2040. The legislation's mandated target was designed to provide greater supplies of clean, safe drinking water in wet or dry years and to have the ability to have surplus water to store in groundwater aquifers and surface storage reservoirs.

While public agencies are not opposed to efforts to reduce ocean discharges, the legislation thus far introduced has provided targets and mandates that don't reflect the geographic, technical, operational, and utilization challenges that impact the issue.

There is no current legislation similar to the last effort in 2019, but the issue remains critical for many agencies. Additionally, in the absence of adequate investments of public financial assistance through grants and loans, the fiscal challenges of any mandates will be acute.

While this issue is not urgent, it is an important consideration for this project as reuse would significantly reduce ocean discharges, limiting Encina's liability under future regulations.

10.5 Conservation Regulations

In 2018, the California State Legislature passed Assembly Bill (AB) 1668 and Senate Bill (SB) 606, directing the SWRCB to adopt efficiency standards and performance measures for commercial, industrial, and institutional water use. *Making Conservation a California Way of Life* is a regulatory framework approved by SWRCB in 2024. The new regulation establishes individualized efficiency targets for each Urban Retail Water Supplier based on the characteristics of the supplier's service area. This change could impact the amount of wastewater in-flow received at the EWPCF. If local users reduce their indoor water consumption, sanitary sewer flows will likely decrease. Consequently, increased water conservation would result in the reduction of supply for production of recycled (or other nonpotable) water use.

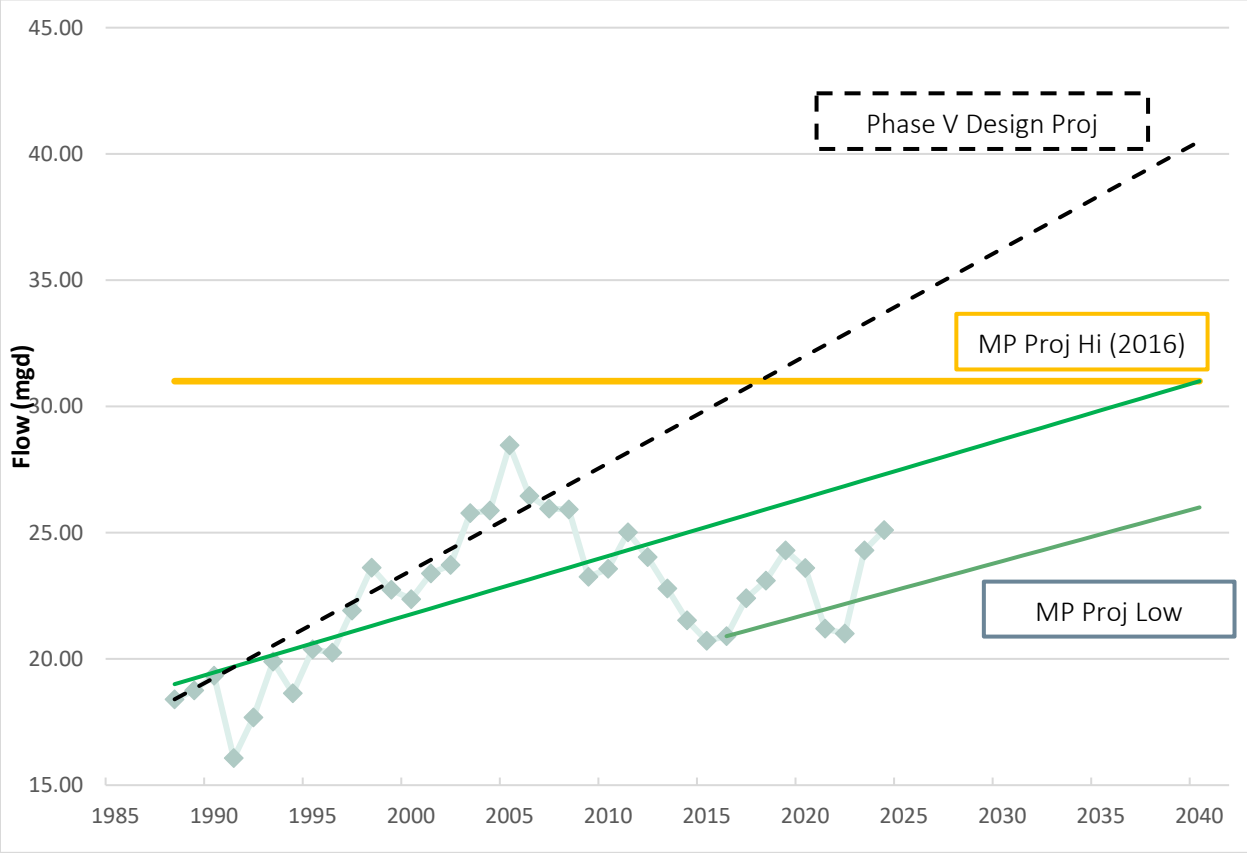
Per the regulations, each Urban Water Supplier will have a target based on indoor use, water loss, and outdoor use. The indoor use standard is based on a gallon per capita per day (gpcd) amount that decreases over time to encourage more efficient use as described below in **Table 10-1.**

TABLE 10-1: CALIFORNIA WATER EFFICIENCY STANDARDS AND ALLOWABLE INDOOR GALLONS PER CAPITA PER DAY (GPCD)

Year	Allowable GPCD
2020-2024	55 gallons
2025-2029	47 gallons
2030 and on	42 gallons

Though this regulation was passed after projections were completed, significant reductions in flow were anticipated. **Figure 10-1** shows Flow Projects at the EWPCF facility.

FIGURE 10-1: PROJECTED FLOW IMPACTS AT EWPCF: INFLUENCE OF WATER EFFICIENCY STANDARDS AND CONSERVATION REGULATIONS



11. PROJECT GOVERNANCE

Moving forward, project governance in relation to implementation of this reuse project is a significant issue. Encina has funded and/or supported the 2018 Feasibility Study, Strategic Plan, and pilot study. However, Encina's Governing Board has directed staff to find other entities to serve as the primary lead for the project's implementation..

Because the production of a new water supply by Encina is not required to comply with its NPDES permit or any other state or federal requirement, implementation of the Regional Water Authority (RWA) option beyond wastewater treatment and disposal will need to transition to the responsibility of water purveyors, a coalition, a lead agency, or a private entity. As such, future planning and implementation activities should be pursued on a cost share basis with participating local and regional water suppliers.

The pilot project is in operation at Encina's facility and Encina can continue to support that effort on a limited basis, with additional support from the USBR grant, Trussel, and Veolia.

At the time of this study, water supplies are sufficient to meet demands in the area. Conservation regulations are also on the verge of adoption from the SWRCB, further limiting the interest in developing new supplies.

During the NSDCWRC meeting, the opportunity to step into a leadership role was presented, but the members declined to do so. A representative from SDCWA also stated that the agency is not in a position to take over this project at this time.

12. STRATEGIES

The data described in this plan is intended to serve as a roadmap for future implementation of this project or one of similar scope, magnitude and complexity. The strategies in this section were developed to support continued pursuit of this project, to position for future grant funding, to prepare for new regulations, and to manage the local cost of water. The following strategies can be implemented in the development of this project going forward.

12.1 Project Strategies

This project requires regional collaboration therefore, regional approaches to the project itself are necessary. As the region's need for water supply adjusts, this project could become more or less necessary. Additionally, should circumstances change that would allow for wheeling or selling of water supplies to other states, the demand for this supply could increase. As such, as other treated water projects move forward, this project should be considered as an option to piggyback on them. For instance, if the Carlsbad Desal Pipeline has capacity (as described in Section 1), this project should consider shifting away from the Second Aqueduct or Lake Hodges project and to a project that would allow for use of that infrastructure.

12.2 Regulatory Strategies

The direction of impactful regulations, most specifically nutrient removal, described above will be meaningful to the future of this project. As such, special attention should be paid to regulatory and legislative measures proposed in the next five years. As such, the following strategies should be implemented:

- The lead agency(s) should stay up to speed on regulatory and legislative affairs to the extent possible
- The lead agency(s) should retain its membership with CASA (California Association of Sanitation Agencies) and the WateReuse Association and engage with other parties on important issues.
- The lead agency(s) should continue to meet with elected officials who represent the region to educate them on wastewater processes and water supply circumstances.

12.3 Piloting Strategies

Encina worked with Trussel to submit an application for an additional 3-year USBR Desalination and Water Purification Research Program (DWPR) grant (USBR DWPR Program FY 2025 NOFO R24AS00421). The grant would help fund continued MBR pilot studies to continue to optimize MBR performance in terms of nutrient removal and system size. Additional work on MBR pathogen removal would also be conducted, if awarded.

Other long-term (future) pilot study opportunities could include the addition of ozone and BAC to the pilot treatment train to demonstrate the performance of a DPR treatment train.

12.4 Financing Strategies

As financing opportunities involve specific timelines, financing for this project will need to be aligned with funding opportunities as they are available, therefore phasing the engineering and/or construction of the project will become necessary to fit into funding opportunities. For example, at a time in which a pipeline design phase is approaching, the lead agency(s) can seek funding opportunities that specifically allow for

design within the scope of the project and can accommodate the project schedule. The lead agency(s) should stay up to date on funding opportunities specifically:

- WaterSMART Grants
- Infrastructure Invest and Jobs Act Funding
- SRF Loans
- WIFIA Loans
- Inflation Reduction Act
- Proposition 4 Funding
- I-Bank Loans

Additionally, a critical part of the funding strategy may be congressionally directed spending. In order to keep this project front-of-mind to congressional representatives, it will be critical to continue to educate elected officials and request their support. Doing so will be a significant effort and will likely require the services of a lobbying or advocacy firm as week as support and partnership with other local agencies. Partnerships in advocacy may also be considered, as has been done for the NSDWRC .

12.5 Governance Strategies

At the time of this plan, no agency had stepped forward to lead the project into its next phase. Various opportunities for governance exist, including the following serving as lead agency(s):

- An Encina member agency
- NSDCWRC
- Another coalition (to be formed)
- Joint Powers Authority (to be formed)
- SDCWA
- A private entity

At such a time that an agency{s) is prepared to move forward, a governance structure must be developed with Encina, interested parties, potential users, and potential funders.

13. NEXT STEPS

This plan was developed via a coordinated effort by Encina, its member agencies, and the NSDCWRC through a series of workshops and strategy meetings. The draft plan was circulated before the plan was received and filed by the Encina Board of Directors in May 2025.

As there is currently no lead agency for this project, the next step is to identify one and provide that entity with the data used to develop the plan, as well as the results of the pilot project.

APPENDIX A: LETTERS FROM THE GENERAL MANAGER TO THE MEMBER AGENCIES

ENCINA WASTEWATER AUTHORITY

A Public Agency

6200 Avenida Encinas
Carlsbad, CA 92011-1095
Telephone (760) 438-3941
FAX (760) 438-3861 (Plant)
(760) 431-7493 (Admin)

October 28, 2016

Mr. Terry L. Smith
Engineering Manager
City of Carlsbad Public Works, Utilities Division – Engineering
5950 El Camino Real
Carlsbad, CA 92008-8802

Subject: **Confirmation of Water Reuse Projections for Use in Encina Water Reuse Feasibility Study**

Dear Mr. Smith:

As you know, Encina Wastewater Authority (EWA) has begun a Water Reuse Feasibility Study (Study) to identify a path to maximize beneficial reuse of effluent from the Encina Water Pollution Control Facility (EWPCF). A key aspect of the Study will be to coordinate with EWA's Member Agencies and other stakeholders to ensure that the ultimate reuse project using EWPCF effluent is compatible with other current and planned reuse efforts in the region. As an early coordination step, EWA is requesting comments from its Member Agencies on the projected demands presented below. We note that there will be additional coordination and stakeholder engagement activities over the course of the Study, which is expected to be completed by mid-2017.

RECYCLED WATER (NON-POTABLE REUSE)

There are three Water Reclamation Facilities (WRFs) that are owned and/or operated by EWA's Member Agencies; a brief description of each one and a summary of known planning[1] is provided below:

- The Carlsbad WRF has a current capacity of 7 mgd (following completion of the recent expansion), which matches its distribution system capacity. It receives secondary effluent from EWPCF and treats it to tertiary levels for recycling. Recently, the City informed EWA that they may further expand their capacity to 10 mgd by 2040.
- Leucadia Wastewater District's Gafner WRF has a current capacity of 1 mgd and plans to expand to 2.5 mgd by 2025. It receives secondary effluent from EWPCF and treats it to tertiary levels for recycling. To increase capacity to 3.7 mgd, a pipeline must be constructed to connect to the adjacent recycled water distribution systems of Carlsbad MWD and Olivenhain MWD.
- Vallecitos Water District's Meadowlark WRF has a current tertiary treatment capacity of 5 mgd, although wastewater flow availability currently limits production of recycled water to just under 4 mgd on an average daily basis. It receives wastewater flows that are diverted prior to reaching

[1]Documents reviewed include: North San Diego Water Reuse Coalition's 2015 Regional Recycled Water Project Program Environmental Impact Report, as amended; and the Member Agencies' 2015 Urban Water Master Plans.

EWPCF, and returns solids to EWPCF for treatment. Plans to expand capacity to 7 mgd also include potential for incorporating advanced treatment for a potable reuse project.

The current and projected WRF treatment capacity information is presented along with current and projected peak summer recycled water demands in Table 1. Based on this information, together with the projections for EWPCF flows developed in EWA's Process Master Plan[2], the Study will explore the feasibility of additional water reuse options for the balance of the EWPCF flow *after* meeting the projected peak summer demands for the Member Agencies' WRFs.

Table 1. Recycled water projections and planned allocation of EWPCF flows.

Recycled Water (RW) Production Facility	Tertiary Treatment Capacity (mgd)			Peak Summer Demand Max. Month (mgd)		
	2015	2025	2040	2015	2025	2040
Carlsbad WRF	4.0	7.0	7.0	4.0	8.0	10.0
Gafner WRF	1.0	2.5	3.7	0.5	1.0	2.5
Meadowlark WRF	5.0	5.0	7.0	4.0	5.0	6.5
TOTAL	**10.0**	**14.5**	**17.7**	**8.5**	**14.0**	**19.0**

EWA Water Reuse Feasibility Study	Flow (mgd)		
	2015	2025	2040
Annual Average Influent Flow to EWPCF	20.3	25.1	31.1
EWPCF Flows Reserved for RW Production in Summer	4.5	9.0	12.5
Available for Additional Reuse	**15.8**	**16.1**	**18.6**

POTABLE REUSE (INDIRECT AND/OR DIRECT)

Based on the work of the North San Diego Water Reuse Coalition, we understand that the following potable reuse project is being considered by EWA Member Agencies:

- Vallecitos Water District is studying the San Marcos Valley Groundwater Basin for a possible indirect potable reuse groundwater replenishment project. The basin lies beneath San Marcos Valley in northwestern San Diego County, spanning 3.3 square miles. The basin is recharged predominantly by rainfall percolation in the valley and ephemeral stream flow, and has an estimated recharge capacity of 4,600 AFY. By 2025, approximately 1,100 AFY (approximately 1 mgd) of purified water to recharge the basin could come from the Meadowlark WRF, which currently treats water to tertiary levels. By 2035, this could be increased to 2,200 AFY (approximately 2 mgd). The total amount of water produced will likely be greater given that activities such as conjunctive use (groundwater and untreated surface water) may be implemented.

Also, we note that EWA's Study will take into consideration the Potable Water Reuse Feasibility Study completed earlier this year by Santa Fe Irrigation District, San Elijo Joint Powers Authority, and San Dieguito Water District. We understand that this study presents a regional potable reuse project concept for delivering advanced treated water from the San Elijo WRF to the San Dieguito Reservoir. It is

[2] Carollo Engineers, EWPCF Process Master Plan Technical Memorandum No. 1 – Flows and Loadings, May 2016.

ENCINA WASTEWATER AUTHORITY
6200 Avenida Encinas • Carlsbad, CA 92009-1095 • Telephone (760) 438-3941
Plant Fax (760) 438-3861 • Administrative Offices Fax (760) 431-7493
Serving North San Diego County

envisioned that up to 1 mgd could be delivered as a short-term indirect potable reuse project under the forthcoming surface water augmentation regulations. By 2025, this could potentially be increased up to 4 mgd.

If you have any comments on the information presented in this letter or any questions regarding EWA's Study, please call me at (760) 438-3941 or email me at mikes@encinajpa.com.

Sincerely,

Michael F. Steinlicht
General Manager

ENCINA WASTEWATER AUTHORITY
6200 Avenida Encinas • Carlsbad, CA 92009-1095 • Telephone (760) 438-3941
Plant Fax (760) 438-3861 • Administrative Offices Fax (760) 431-7493

ENCINA WASTEWATER AUTHORITY

A Public Agency

6200 Avenida Encinas
Carlsbad, CA 92011-1095
Telephone (760) 438-3941
FAX (760) 438-3861 (Plant)
(760) 431-7493 (Admin)

October 28, 2016

Mr. Glenn Pruim
Director of Public Works
City of Encinitas
505 South Vulcan Avenue
Encinitas, CA 92024

Subject: **Confirmation of Water Reuse Projections for Use in Encina Water Reuse Feasibility Study**

Dear Mr. Pruim:

As you know, Encina Wastewater Authority (EWA) has begun a Water Reuse Feasibility Study (Study) to identify a path to maximize beneficial reuse of effluent from the Encina Water Pollution Control Facility (EWPCF). A key aspect of the Study will be to coordinate with EWA's Member Agencies and other stakeholders to ensure that the ultimate reuse project using EWPCF effluent is compatible with other current and planned reuse efforts in the region. As an early coordination step, EWA is requesting comments from its Member Agencies on the projected demands presented below. We note that there will be additional coordination and stakeholder engagement activities over the course of the Study, which is expected to be completed by mid-2017.

RECYCLED WATER (NON-POTABLE REUSE)

There are three Water Reclamation Facilities (WRFs) that are owned and/or operated by EWA's Member Agencies; a brief description of each one and a summary of known planning[1] is provided below:

- The Carlsbad WRF has a current capacity of 7 mgd (following completion of the recent expansion), which matches its distribution system capacity. It receives secondary effluent from EWPCF and treats it to tertiary levels for recycling. Recently, the City informed EWA that they may further expand their capacity to 10 mgd by 2040.
- Leucadia Wastewater District's Gafner WRF has a current capacity of 1 mgd and plans to expand to 2.5 mgd by 2025. It receives secondary effluent from EWPCF and treats it to tertiary levels for recycling. To increase capacity to 3.7 mgd, a pipeline must be constructed to connect to the adjacent recycled water distribution systems of Carlsbad MWD and Olivenhain MWD.
- Vallecitos Water District's Meadowlark WRF has a current tertiary treatment capacity of 5 mgd, although wastewater flow availability currently limits production of recycled water to just under 4 mgd on an average daily basis. It receives wastewater flows that are diverted prior to reaching

[1]Documents reviewed include: North San Diego Water Reuse Coalition's 2015 Regional Recycled Water Project Program Environmental Impact Report, as amended; and the Member Agencies' 2015 Urban Water Master Plans.

EWPCF, and returns solids to EWPCF for treatment. Plans to expand capacity to 7 mgd also include potential for incorporating advanced treatment for a potable reuse project.

The current and projected WRF treatment capacity information is presented along with current and projected peak summer recycled water demands in Table 1. Based on this information, together with the projections for EWPCF flows developed in EWA's Process Master Plan[2], the Study will explore the feasibility of additional water reuse options for the balance of the EWPCF flow *after* meeting the projected peak summer demands for the Member Agencies' WRFs.

Table 1. Recycled water projections and planned allocation of EWPCF flows.

Recycled Water (RW) Production Facility	Tertiary Treatment Capacity (mgd)			Peak Summer Demand Max. Month (mgd)		
	2015	2025	2040	2015	2025	2040
Carlsbad WRF	4.0	7.0	7.0	4.0	8.0	10.0
Gafner WRF	1.0	2.5	3.7	0.5	1.0	2.5
Meadowlark WRF	5.0	5.0	7.0	4.0	5.0	6.5
TOTAL	**10.0**	**14.5**	**17.7**	**8.5**	**14.0**	**19.0**

EWA Water Reuse Feasibility Study	Flow (mgd)		
	2015	2025	2040
Annual Average Influent Flow to EWPCF	20.3	25.1	31.1
EWPCF Flows Reserved for RW Production in Summer	4.5	9.0	12.5
Available for Additional Reuse	**15.8**	**16.1**	**18.6**

POTABLE REUSE (INDIRECT AND/OR DIRECT)

Based on the work of the North San Diego Water Reuse Coalition, we understand that the following potable reuse project is being considered by EWA Member Agencies:

- Vallecitos Water District is studying the San Marcos Valley Groundwater Basin for a possible indirect potable reuse groundwater replenishment project. The basin lies beneath San Marcos Valley in northwestern San Diego County, spanning 3.3 square miles. The basin is recharged predominantly by rainfall percolation in the valley and ephemeral stream flow, and has an estimated recharge capacity of 4,600 AFY. By 2025, approximately 1,100 AFY (approximately 1 mgd) of purified water to recharge the basin could come from the Meadowlark WRF, which currently treats water to tertiary levels. By 2035, this could be increased to 2,200 AFY (approximately 2 mgd). The total amount of water produced will likely be greater given that activities such as conjunctive use (groundwater and untreated surface water) may be implemented.

Also, we note that EWA's Study will take into consideration the Potable Water Reuse Feasibility Study completed earlier this year by Santa Fe Irrigation District, San Elijo Joint Powers Authority, and San Dieguito Water District. We understand that this study presents a regional potable reuse project concept for delivering advanced treated water from the San Elijo WRF to the San Dieguito Reservoir. It is

[2] Carollo Engineers, EWPCF Process Master Plan Technical Memorandum No. 1 – Flows and Loadings, May 2016.

ENCINA WASTEWATER AUTHORITY
6200 Avenida Encinas • Carlsbad, CA 92009-1095 • Telephone (760) 438-3941
Plant Fax (760) 438-3861 • Administrative Offices Fax (760) 431-7493
Serving North San Diego County

envisioned that up to 1 mgd could be delivered as a short-term indirect potable reuse project under the forthcoming surface water augmentation regulations. By 2025, this could potentially be increased up to 4 mgd.

If you have any comments on the information presented in this letter or any questions regarding EWA's Study, please call me at (760) 438-3941 or email me at mikes@encinajpa.com.

Sincerely,

Michael F. Steinlicht
General Manager

ENCINA WASTEWATER AUTHORITY
6200 Avenida Encinas • Carlsbad, CA 92009-1095 • Telephone (760) 438-3941
Plant Fax (760) 438-3861 • Administrative Offices Fax (760) 431-7493

ENCINA WASTEWATER AUTHORITY

A Public Agency

6200 Avenida Encinas
Carlsbad, CA 92011-1095
Telephone (760) 438-3941
FAX (760) 438-3861 (Plant)
(760) 431-7493 (Admin)

October 28, 2016

Mr. Elmer Alex
Principal Engineer/Engineering Department/Utilities
City of Vista/Buena Sanitation District
200 Civic Center Drive
Vista, CA 92084

Subject: **Confirmation of Water Reuse Projections for Use in Encina Water Reuse Feasibility Study**

Dear Mr. Alex:

As you know, Encina Wastewater Authority (EWA) has begun a Water Reuse Feasibility Study (Study) to identify a path to maximize beneficial reuse of effluent from the Encina Water Pollution Control Facility (EWPCF). A key aspect of the Study will be to coordinate with EWA's Member Agencies and other stakeholders to ensure that the ultimate reuse project using EWPCF effluent is compatible with other current and planned reuse efforts in the region. As an early coordination step, EWA is requesting comments from its Member Agencies on the projected demands presented below. We note that there will be additional coordination and stakeholder engagement activities over the course of the Study, which is expected to be completed by mid-2017.

RECYCLED WATER (NON-POTABLE REUSE)

There are three Water Reclamation Facilities (WRFs) that are owned and/or operated by EWA's Member Agencies; a brief description of each one and a summary of known planning[1] is provided below:

- The Carlsbad WRF has a current capacity of 7 mgd (following completion of the recent expansion), which matches its distribution system capacity. It receives secondary effluent from EWPCF and treats it to tertiary levels for recycling. Recently, the City informed EWA that they may further expand their capacity to 10 mgd by 2040.
- Leucadia Wastewater District's Gafner WRF has a current capacity of 1 mgd and plans to expand to 2.5 mgd by 2025. It receives secondary effluent from EWPCF and treats it to tertiary levels for recycling. To increase capacity to 3.7 mgd, a pipeline must be constructed to connect to the adjacent recycled water distribution systems of Carlsbad MWD and Olivenhain MWD.
- Vallecitos Water District's Meadowlark WRF has a current tertiary treatment capacity of 5 mgd, although wastewater flow availability currently limits production of recycled water to just under 4 mgd on an average daily basis. It receives wastewater flows that are diverted prior to reaching

[1]Documents reviewed include: North San Diego Water Reuse Coalition's 2015 Regional Recycled Water Project Program Environmental Impact Report, as amended; and the Member Agencies' 2015 Urban Water Master Plans.

EWPCF, and returns solids to EWPCF for treatment. Plans to expand capacity to 7 mgd also include potential for incorporating advanced treatment for a potable reuse project.

The current and projected WRF treatment capacity information is presented along with current and projected peak summer recycled water demands in Table 1. Based on this information, together with the projections for EWPCF flows developed in EWA's Process Master Plan[2], the Study will explore the feasibility of additional water reuse options for the balance of the EWPCF flow *after* meeting the projected peak summer demands for the Member Agencies' WRFs.

Table 1. Recycled water projections and planned allocation of EWPCF flows.

Recycled Water (RW) Production Facility	Tertiary Treatment Capacity (mgd)			Peak Summer Demand Max. Month (mgd)		
	2015	2025	2040	2015	2025	2040
Carlsbad WRF	4.0	7.0	7.0	4.0	8.0	10.0
Gafner WRF	1.0	2.5	3.7	0.5	1.0	2.5
Meadowlark WRF	5.0	5.0	7.0	4.0	5.0	6.5
TOTAL	**10.0**	**14.5**	**17.7**	**8.5**	**14.0**	**19.0**

EWA Water Reuse Feasibility Study	Flow (mgd)		
	2015	2025	2040
Annual Average Influent Flow to EWPCF	20.3	25.1	31.1
EWPCF Flows Reserved for RW Production in Summer	4.5	9.0	12.5
Available for Additional Reuse	**15.8**	**16.1**	**18.6**

POTABLE REUSE (INDIRECT AND/OR DIRECT)

Based on the work of the North San Diego Water Reuse Coalition, we understand that the following potable reuse project is being considered by EWA Member Agencies:

- Vallecitos Water District is studying the San Marcos Valley Groundwater Basin for a possible indirect potable reuse groundwater replenishment project. The basin lies beneath San Marcos Valley in northwestern San Diego County, spanning 3.3 square miles. The basin is recharged predominantly by rainfall percolation in the valley and ephemeral stream flow, and has an estimated recharge capacity of 4,600 AFY. By 2025, approximately 1,100 AFY (approximately 1 mgd) of purified water to recharge the basin could come from the Meadowlark WRF, which currently treats water to tertiary levels. By 2035, this could be increased to 2,200 AFY (approximately 2 mgd). The total amount of water produced will likely be greater given that activities such as conjunctive use (groundwater and untreated surface water) may be implemented.

Also, we note that EWA's Study will take into consideration the Potable Water Reuse Feasibility Study completed earlier this year by Santa Fe Irrigation District, San Elijo Joint Powers Authority, and San Dieguito Water District. We understand that this study presents a regional potable reuse project concept for delivering advanced treated water from the San Elijo WRF to the San Dieguito Reservoir. It is

[2] Carollo Engineers, EWPCF Process Master Plan Technical Memorandum No. 1 – Flows and Loadings, May 2016.

ENCINA WASTEWATER AUTHORITY
6200 Avenida Encinas • Carlsbad, CA 92009-1095 • Telephone (760) 438-3941
Plant Fax (760) 438-3861 • Administrative Offices Fax (760) 431-7493
Serving North San Diego County

envisioned that up to 1 mgd could be delivered as a short-term indirect potable reuse project under the forthcoming surface water augmentation regulations. By 2025, this could potentially be increased up to 4 mgd.

If you have any comments on the information presented in this letter or any questions regarding EWA's Study, please call me at (760) 438-3941 or email me at mikes@encinajpa.com.

Sincerely,

Michael F. Steinlicht
General Manager

ENCINA WASTEWATER AUTHORITY
6200 Avenida Encinas • Carlsbad, CA 92009-1095 • Telephone (760) 438-3941
Plant Fax (760) 438-3861 • Administrative Offices Fax (760) 431-7493

ENCINA WASTEWATER AUTHORITY

A Public Agency

6200 Avenida Encinas
Carlsbad, CA 92011-1095
Telephone (760) 438-3941
FAX (760) 438-3861 (Plant)
(760) 431-7493 (Admin)

October 28, 2016

Mr. Paul J. Bushee
General Manager
Leucadia Wastewater District
1960 La Costa Avenue
Carlsbad, CA 92009

Subject: **Confirmation of Water Reuse Projections for Use in Encina Water Reuse Feasibility Study**

Dear Mr. Bushee:

As you know, Encina Wastewater Authority (EWA) has begun a Water Reuse Feasibility Study (Study) to identify a path to maximize beneficial reuse of effluent from the Encina Water Pollution Control Facility (EWPCF). A key aspect of the Study will be to coordinate with EWA's Member Agencies and other stakeholders to ensure that the ultimate reuse project using EWPCF effluent is compatible with other current and planned reuse efforts in the region. As an early coordination step, EWA is requesting comments from its Member Agencies on the projected demands presented below. We note that there will be additional coordination and stakeholder engagement activities over the course of the Study, which is expected to be completed by mid-2017.

RECYCLED WATER (NON-POTABLE REUSE)

There are three Water Reclamation Facilities (WRFs) that are owned and/or operated by EWA's Member Agencies; a brief description of each one and a summary of known planning[1] is provided below:

- The Carlsbad WRF has a current capacity of 7 mgd (following completion of the recent expansion), which matches its distribution system capacity. It receives secondary effluent from EWPCF and treats it to tertiary levels for recycling. Recently, the City informed EWA that they may further expand their capacity to 10 mgd by 2040.
- Leucadia Wastewater District's Gafner WRF has a current capacity of 1 mgd and plans to expand to 2.5 mgd by 2025. It receives secondary effluent from EWPCF and treats it to tertiary levels for recycling. To increase capacity to 3.7 mgd, a pipeline must be constructed to connect to the adjacent recycled water distribution systems of Carlsbad MWD and Olivenhain MWD.
- Vallecitos Water District's Meadowlark WRF has a current tertiary treatment capacity of 5 mgd, although wastewater flow availability currently limits production of recycled water to just under 4 mgd on an average daily basis. It receives wastewater flows that are diverted prior to reaching

[1]Documents reviewed include: North San Diego Water Reuse Coalition's 2015 Regional Recycled Water Project Program Environmental Impact Report, as amended; and the Member Agencies' 2015 Urban Water Master Plans.

EWPCF, and returns solids to EWPCF for treatment. Plans to expand capacity to 7 mgd also include potential for incorporating advanced treatment for a potable reuse project.

The current and projected WRF treatment capacity information is presented along with current and projected peak summer recycled water demands in Table 1. Based on this information, together with the projections for EWPCF flows developed in EWA's Process Master Plan[2], the Study will explore the feasibility of additional water reuse options for the balance of the EWPCF flow *after* meeting the projected peak summer demands for the Member Agencies' WRFs.

Table 1. Recycled water projections and planned allocation of EWPCF flows.

Recycled Water (RW) Production Facility	Tertiary Treatment Capacity (mgd)			Peak Summer Demand Max. Month (mgd)		
	2015	2025	2040	2015	2025	2040
Carlsbad WRF	4.0	7.0	7.0	4.0	8.0	10.0
Gafner WRF	1.0	2.5	3.7	0.5	1.0	2.5
Meadowlark WRF	5.0	5.0	7.0	4.0	5.0	6.5
TOTAL	**10.0**	**14.5**	**17.7**	**8.5**	**14.0**	**19.0**

EWA Water Reuse Feasibility Study	Flow (mgd)		
	2015	2025	2040
Annual Average Influent Flow to EWPCF	20.3	25.1	31.1
EWPCF Flows Reserved for RW Production in Summer	4.5	9.0	12.5
Available for Additional Reuse	**15.8**	**16.1**	**18.6**

POTABLE REUSE (INDIRECT AND/OR DIRECT)

Based on the work of the North San Diego Water Reuse Coalition, we understand that the following potable reuse project is being considered by EWA Member Agencies:

- Vallecitos Water District is studying the San Marcos Valley Groundwater Basin for a possible indirect potable reuse groundwater replenishment project. The basin lies beneath San Marcos Valley in northwestern San Diego County, spanning 3.3 square miles. The basin is recharged predominantly by rainfall percolation in the valley and ephemeral stream flow, and has an estimated recharge capacity of 4,600 AFY. By 2025, approximately 1,100 AFY (approximately 1 mgd) of purified water to recharge the basin could come from the Meadowlark WRF, which currently treats water to tertiary levels. By 2035, this could be increased to 2,200 AFY (approximately 2 mgd). The total amount of water produced will likely be greater given that activities such as conjunctive use (groundwater and untreated surface water) may be implemented.

Also, we note that EWA's Study will take into consideration the Potable Water Reuse Feasibility Study completed earlier this year by Santa Fe Irrigation District, San Elijo Joint Powers Authority, and San Dieguito Water District. We understand that this study presents a regional potable reuse project concept for delivering advanced treated water from the San Elijo WRF to the San Dieguito Reservoir. It is

[2] Carollo Engineers, EWPCF Process Master Plan Technical Memorandum No. 1 – Flows and Loadings, May 2016.

ENCINA WASTEWATER AUTHORITY
6200 Avenida Encinas • Carlsbad, CA 92009-1095 • Telephone (760) 438-3941
Plant Fax (760) 438-3861 • Administrative Offices Fax (760) 431-7493
Serving North San Diego County

envisioned that up to 1 mgd could be delivered as a short-term indirect potable reuse project under the forthcoming surface water augmentation regulations. By 2025, this could potentially be increased up to 4 mgd.

If you have any comments on the information presented in this letter or any questions regarding EWA's Study, please call me at (760) 438-3941 or email me at mikes@encinajpa.com.

Sincerely,

Michael F. Steinlicht
General Manager

ENCINA WASTEWATER AUTHORITY
6200 Avenida Encinas • Carlsbad, CA 92009-1095 • Telephone (760) 438-3941
Plant Fax (760) 438-3861 • Administrative Offices Fax (760) 431-7493

ENCINA WASTEWATER AUTHORITY

A Public Agency

6200 Avenida Encinas
Carlsbad, CA 92011-1095
Telephone (760) 438-3941
FAX (760) 438-3861 (Plant)
(760) 431-7493 (Admin)

October 28, 2016

Mr. Tom Scaglione
Interim General Manager
Vallecitos Water District
201 Vallecitos De Oro
San Marcos, CA 92069

Subject: **Confirmation of Water Reuse Projections for Use in Encina Water Reuse Feasibility Study**

Dear Mr. Scaglione:

As you know, Encina Wastewater Authority (EWA) has begun a Water Reuse Feasibility Study (Study) to identify a path to maximize beneficial reuse of effluent from the Encina Water Pollution Control Facility (EWPCF). A key aspect of the Study will be to coordinate with EWA's Member Agencies and other stakeholders to ensure that the ultimate reuse project using EWPCF effluent is compatible with other current and planned reuse efforts in the region. As an early coordination step, EWA is requesting comments from its Member Agencies on the projected demands presented below. We note that there will be additional coordination and stakeholder engagement activities over the course of the Study, which is expected to be completed by mid-2017.

RECYCLED WATER (NON-POTABLE REUSE)

There are three Water Reclamation Facilities (WRFs) that are owned and/or operated by EWA's Member Agencies; a brief description of each one and a summary of known planning[1] is provided below:

- The Carlsbad WRF has a current capacity of 7 mgd (following completion of the recent expansion), which matches its distribution system capacity. It receives secondary effluent from EWPCF and treats it to tertiary levels for recycling. Recently, the City informed EWA that they may further expand their capacity to 10 mgd by 2040.
- Leucadia Wastewater District's Gafner WRF has a current capacity of 1 mgd and plans to expand to 2.5 mgd by 2025. It receives secondary effluent from EWPCF and treats it to tertiary levels for recycling. To increase capacity to 3.7 mgd, a pipeline must be constructed to connect to the adjacent recycled water distribution systems of Carlsbad MWD and Olivenhain MWD.
- Vallecitos Water District's Meadowlark WRF has a current tertiary treatment capacity of 5 mgd, although wastewater flow availability currently limits production of recycled water to just under 4 mgd on an average daily basis. It receives wastewater flows that are diverted prior to reaching

[1]Documents reviewed include: North San Diego Water Reuse Coalition's 2015 Regional Recycled Water Project Program Environmental Impact Report, as amended; and the Member Agencies' 2015 Urban Water Master Plans.

EWPCF, and returns solids to EWPCF for treatment. Plans to expand capacity to 7 mgd also include potential for incorporating advanced treatment for a potable reuse project.

The current and projected WRF treatment capacity information is presented along with current and projected peak summer recycled water demands in Table 1. Based on this information, together with the projections for EWPCF flows developed in EWA's Process Master Plan[2], the Study will explore the feasibility of additional water reuse options for the balance of the EWPCF flow *after* meeting the projected peak summer demands for the Member Agencies' WRFs.

Table 1. Recycled water projections and planned allocation of EWPCF flows.

Recycled Water (RW) Production Facility	Tertiary Treatment Capacity (mgd)			Peak Summer Demand Max. Month (mgd)		
	2015	2025	2040	2015	2025	2040
Carlsbad WRF	4.0	7.0	7.0	4.0	8.0	10.0
Gafner WRF	1.0	2.5	3.7	0.5	1.0	2.5
Meadowlark WRF	5.0	5.0	7.0	4.0	5.0	6.5
TOTAL	**10.0**	**14.5**	**17.7**	**8.5**	**14.0**	**19.0**

EWA Water Reuse Feasibility Study	Flow (mgd)		
	2015	2025	2040
Annual Average Influent Flow to EWPCF	20.3	25.1	31.1
EWPCF Flows Reserved for RW Production in Summer	4.5	9.0	12.5
Available for Additional Reuse	**15.8**	**16.1**	**18.6**

POTABLE REUSE (INDIRECT AND/OR DIRECT)

Based on the work of the North San Diego Water Reuse Coalition, we understand that the following potable reuse project is being considered by EWA Member Agencies:

- Vallecitos Water District is studying the San Marcos Valley Groundwater Basin for a possible indirect potable reuse groundwater replenishment project. The basin lies beneath San Marcos Valley in northwestern San Diego County, spanning 3.3 square miles. The basin is recharged predominantly by rainfall percolation in the valley and ephemeral stream flow, and has an estimated recharge capacity of 4,600 AFY. By 2025, approximately 1,100 AFY (approximately 1 mgd) of purified water to recharge the basin could come from the Meadowlark WRF, which currently treats water to tertiary levels. By 2035, this could be increased to 2,200 AFY (approximately 2 mgd). The total amount of water produced will likely be greater given that activities such as conjunctive use (groundwater and untreated surface water) may be implemented.

Also, we note that EWA's Study will take into consideration the Potable Water Reuse Feasibility Study completed earlier this year by Santa Fe Irrigation District, San Elijo Joint Powers Authority, and San Dieguito Water District. We understand that this study presents a regional potable reuse project concept for delivering advanced treated water from the San Elijo WRF to the San Dieguito Reservoir. It is

[2] Carollo Engineers, EWPCF Process Master Plan Technical Memorandum No. 1 – Flows and Loadings, May 2016.

ENCINA WASTEWATER AUTHORITY
6200 Avenida Encinas • Carlsbad, CA 92009-1095 • Telephone (760) 438-3941
Plant Fax (760) 438-3861 • Administrative Offices Fax (760) 431-7493
Serving North San Diego County

envisioned that up to 1 mgd could be delivered as a short-term indirect potable reuse project under the forthcoming surface water augmentation regulations. By 2025, this could potentially be increased up to 4 mgd.

If you have any comments on the information presented in this letter or any questions regarding EWA's Study, please call me at (760) 438-3941 or email me at mikes@encinajpa.com.

Sincerely,

Michael F. Steinlicht
General Manager

ENCINA WASTEWATER AUTHORITY
6200 Avenida Encinas • Carlsbad, CA 92009-1095 • Telephone (760) 438-3941
Plant Fax (760) 438-3861 • Administrative Offices Fax (760) 431-7493

APPENDIX B: WORKSHOP PRESENTATIONS

ENCINA WASTEWATER AUTHORITY

One Water North San Diego

Coalition Group Meeting

April 25, 2023

Agenda

- Welcome and Introductions
- Handouts
- Outreach Efforts Status:
  - Status of Advocacy Agency
  - Congressman Levin
- Strategic Plan Scope
- Facilitated Discussion

ENCINA WASTEWATER AUTHORITY

Advocacy Agencies

Agency	Included supply in UWMP	Advocacy Agency Support
Carlsbad	✓	✓
Olivenhain	✓	✓
Vallecitos	✓	✓
San Dieguito WD	✓	✓
Santa Fe ID	✓	✓
Poway	✓	TBD
SDCWA	Indirectly	In talks

ENCINA WASTEWATER AUTHORITY

Role of Advocacy Agencies

- Discuss and develop Project concepts & alternatives
- Refine Project concepts
- Complete funding and regulatory strategies
- Update concept designs and cost estimates
- Complete Potable Reuse Strategic Plan

ENCINA WASTEWATER AUTHORITY

SDCWA Response

- EWA staff met with SDCWA management on March 8
- Follow up email:
  - SDCWA is currently going through review of the 2018 Water Reuse Feasibility Study in conjunction with the "Treated Water Assessment"
  - SDCWA is currently conducting the Water Authority's 2023 Facilities Master Plan
  - SDCWA will be in touch to set up a meeting with an eye towards development of our 2023 Facilities Master Plan and schedule
- Recommendations for engagement with SDCWA?
  - Advocacy Agencies
  - EWA

ENCINA WASTEWATER AUTHORITY

HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515

March 22, 2023

I would like to highlight the significance of the Encina Wastewater Authority's (EWA) One Water North San Diego Project. The One Water North San Diego Project offers innovative solutions that show potential to create local, sustainable water sources and help offset reliance on imported water. With climate change and persistent drought impacting water availability in our region, this project is key for ensuring a reliable water supply for our community.

The wastewater flows and facilities at the Encina Water Pollution Control Facility (EWPCF) represent a unique opportunity for large-scale production of purified water. The One Water North San Diego Project is estimated to be able to produce approximately 20,000 acre-feet per year of purified water for potable reuse in North San Diego County at EWPCF. Key assets available at the EWPCF site to support a potable reuse project include an ocean outfall, available land for an advanced treatment facility, treated secondary effluent, and technically capable staff.

Additionally, EWA currently generates 85 percent of its own power and that same process can be expanded to benefit water reuse efforts to create purified drinking water. By realizing the full potential of power generation at EWA for the One Water North San Diego Project, up to 30 percent of the power demands for the facility can be offset. This could result in a more cost-effective water supply that is produced and controlled locally.

The success of the project requires collaboration with local partners such as cities and water districts. I encourage these partners to contribute to this collaborative regional effort. As I continue my work on the House Natural Resources Committee, I remain committed to providing federal support to projects in the district that advance water recycling efforts. I look forward to the positive impacts the project will have in our region. Please contact me or my staff if you have any further questions.

Sincerely,

Mike Levin
Member of Congress

ENCINA WASTEWATER AUTHORITY

The Schedule

Years	1	2	3	4	5	6	7	8	9	10
Planning										
Funding										
Regulatory										
Environmental										
Design/Construction										
Stakeholder/Public Outreach										

ENCINA WASTEWATER AUTHORITY

ENCINA WASTEWATER AUTHORITY

2018 Feasibility Study

Woodard & Curran

25 mgd AWTF Layout

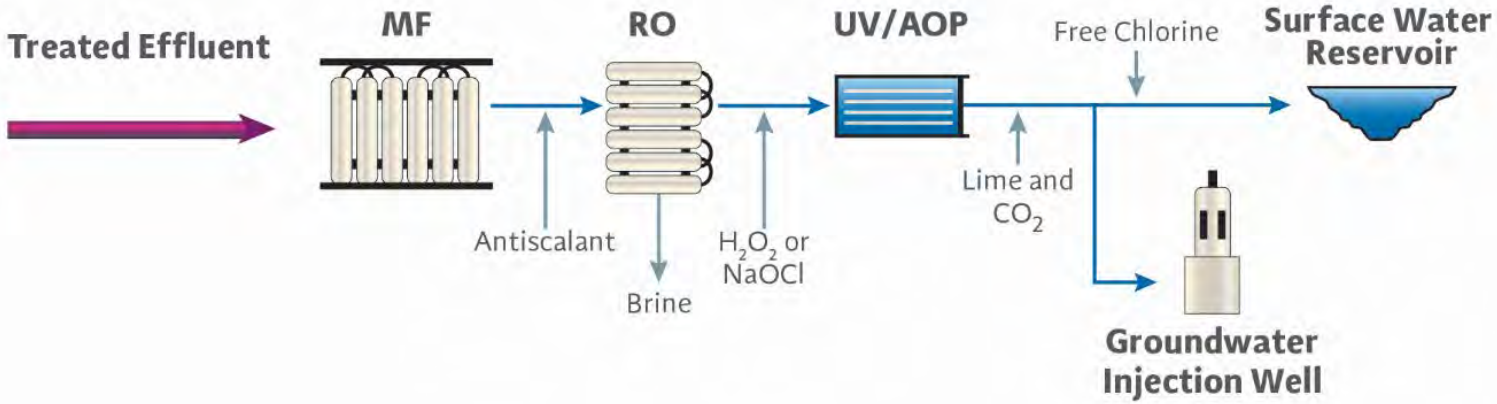
ENCINA WASTEWATER AUTHORITY

AWTF Treatment Train Options

Full Advanced Treatment (FAT)

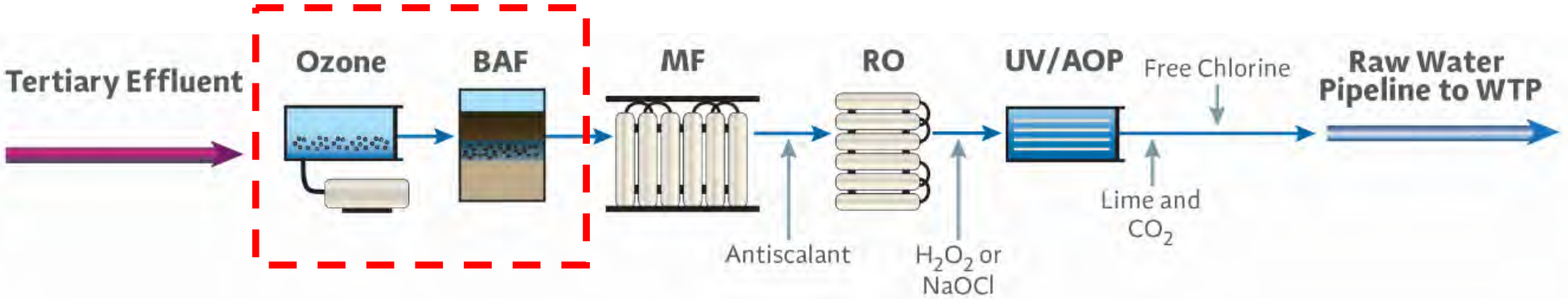
Groundwater Recharge: Injection

Surface Water Augmentation



FAT + Ozonation with Biologically Active Filtration (O_3/BAF)

Raw Water Augmentation



ENCINA WASTEWATER AUTHORITY

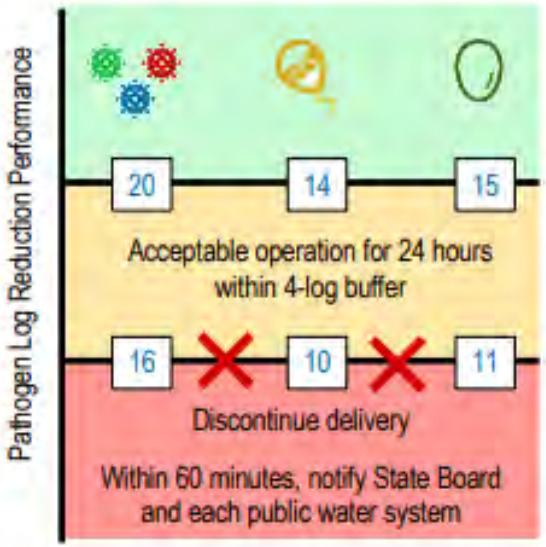
Log Reduction Values

Surface Water Augmentation

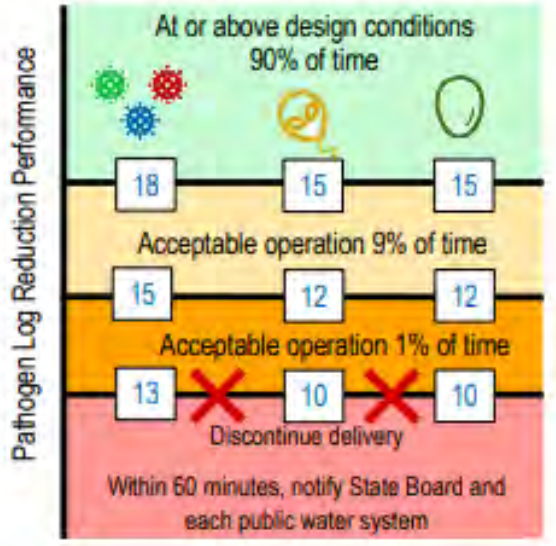
- 12 Virus
- 10 Giardia
- 10 Crypto

Raw Water Augmentation

Draft Criteria for DPR (Aug 2021)



Expert Panel Recommendations (June 2022)



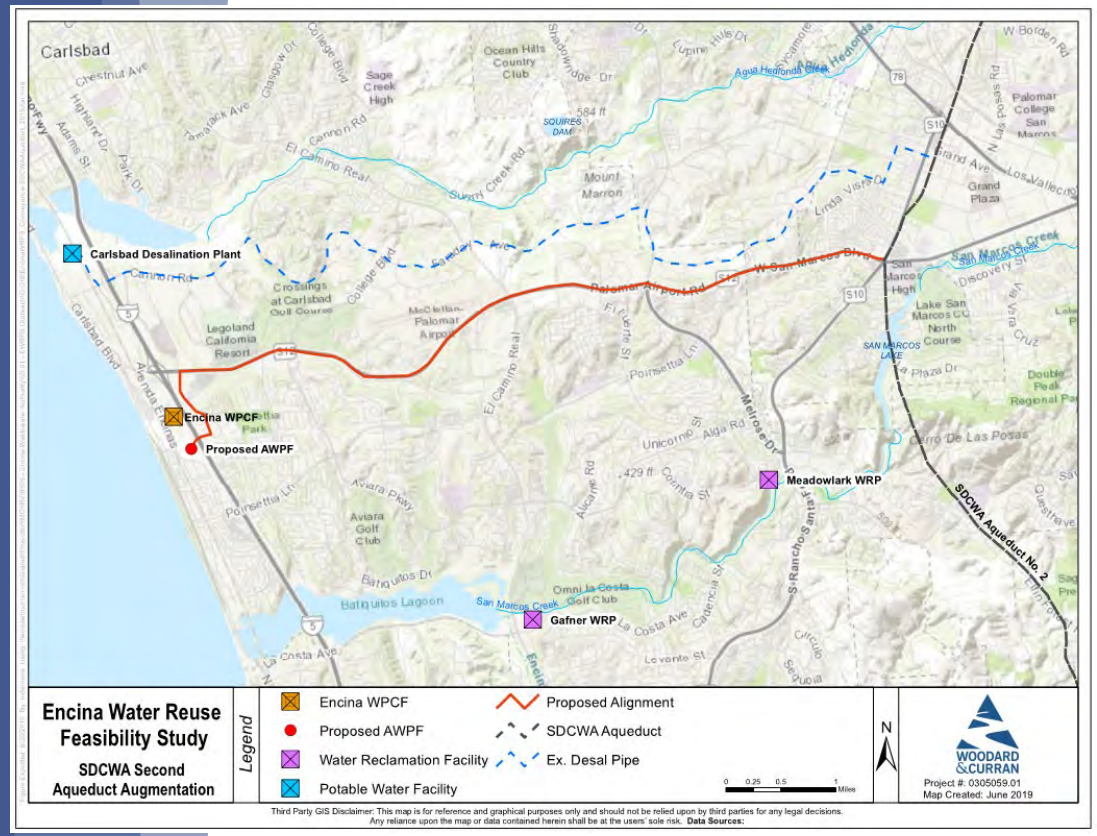
ENCINA WASTEWATER AUTHORITY

Current Most Favorable Options

Option ID	Option Description	Projected 2040 Peak Production (mgd)								Total Potable Reuse (mgd)	Total Reuse (mgd)
		Recycled Water	Ground-water	Large Res.	Small Res.	Source Water	Treated Water	SE	Brine		
A	Carlsbad Desalination Plant (CDP) Influent	12.5	-	-	-	11.1	-	0	7.4	**11.1**	**23.6**
B	CDP Product Water	12.5	-	-	-	-	15.7	0	2.8	**15.7**	**28.2**
C ★	Lake Hodges – (Olivenhain Reservoir)	12.5	-	15.7	-	-	-	0	2.8	**15.7**	**28.2**
D	San Dieguito Reservoir + Olivenhain Reservoir	12.5	2.0	10.6	3.1	-	-	0	2.8	**15.7**	**28.2**
E	San Dieguito Reservoir + CDP Influent	12.5	2.0	-	3.1	7.5	-	0	8.0	**12.6**	**28.2**
F	CDP Product Water	12.5	-	-	-	-	15.7	0	2.8	**15.7**	**28.2**
G	San Dieguito Reservoir + 2nd Aqueduct (Raw)	12.5	2.0	-	3.1	10.6	-	0	2.8	**15.7**	**28.2**
H ★	Second Aqueduct (Raw) + San Marcos	12.5	-	-	-	15.7	-	0	2.8	**15.7**	**28.2**
I	Twin Oaks WTP Influent + San Marcos	12.5	2.0	-	-	13.7	-	0	2.8	**15.7**	**28.2**

ENCINA WASTEWATER AUTHORITY

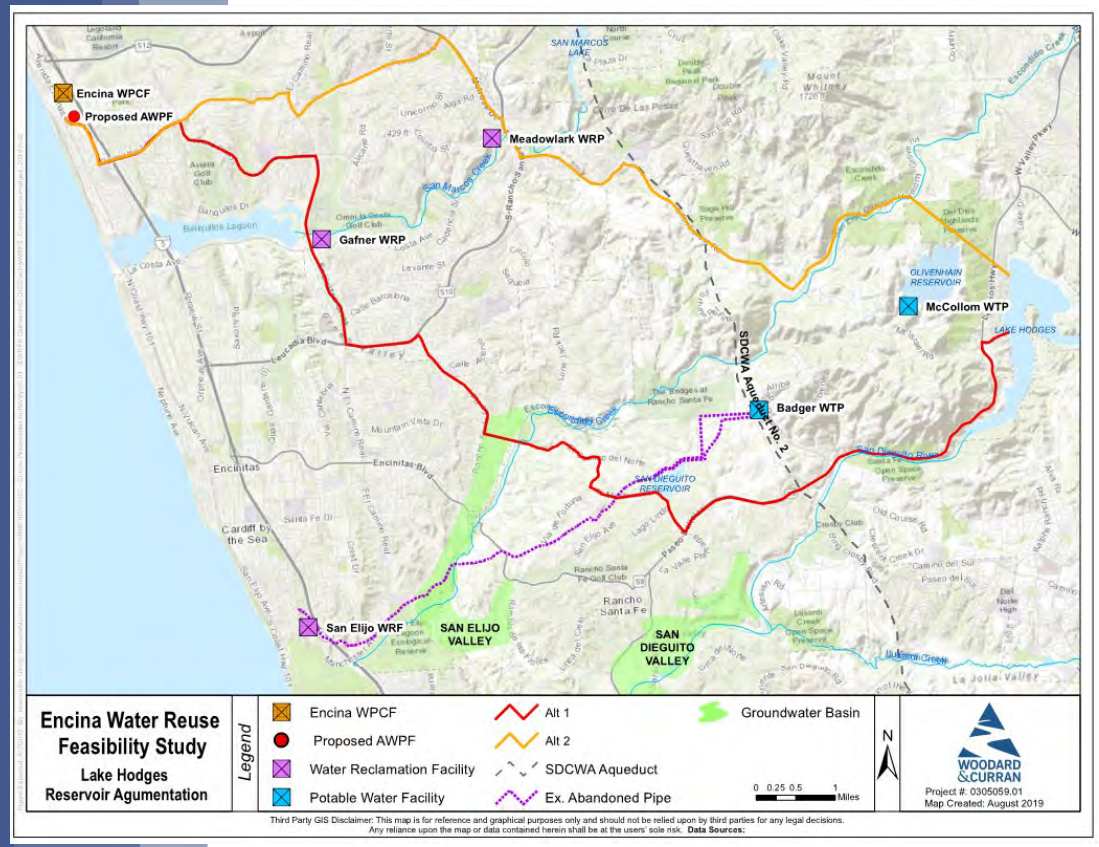
Alignment for SDCWA Aqueduct No. 2



- 39,600 LF of 30”Ø pipe
  - o 500 LF trenchless crossing (I-5)
  - o Upsize to 36” Ø to accommodate potential higher flows

ENCINA WASTEWATER AUTHORITY

Alignment Alternatives for Lake Hodges / Olivenhain Res.



<u>Alternative 1</u>

- 96,400 LF of 30/36" pipe
  - 3,000 LF trenchless crossings

<u>Alternative 2</u>

- 75,000 LF of 30/36" pipe
  - 3,000 LF trenchless crossings
  - 8,900 LF TBM

Note: Assumed 50% of purified water would need to be pumped up to Olivenhain Res. (i.e., using the equivalent of 3,200 to 4,000 hp).

ENCINA WASTEWATER AUTHORITY

Alignment for Carlsbad Desal

- 30/36" Pipe to Desal Plant
- 13,200 LF pipe
- 1,700 LF trenchless crossings
- PS at Desal Plant wet well 8,000/11,000 hp

ENCINA WASTEWATER AUTHORITY

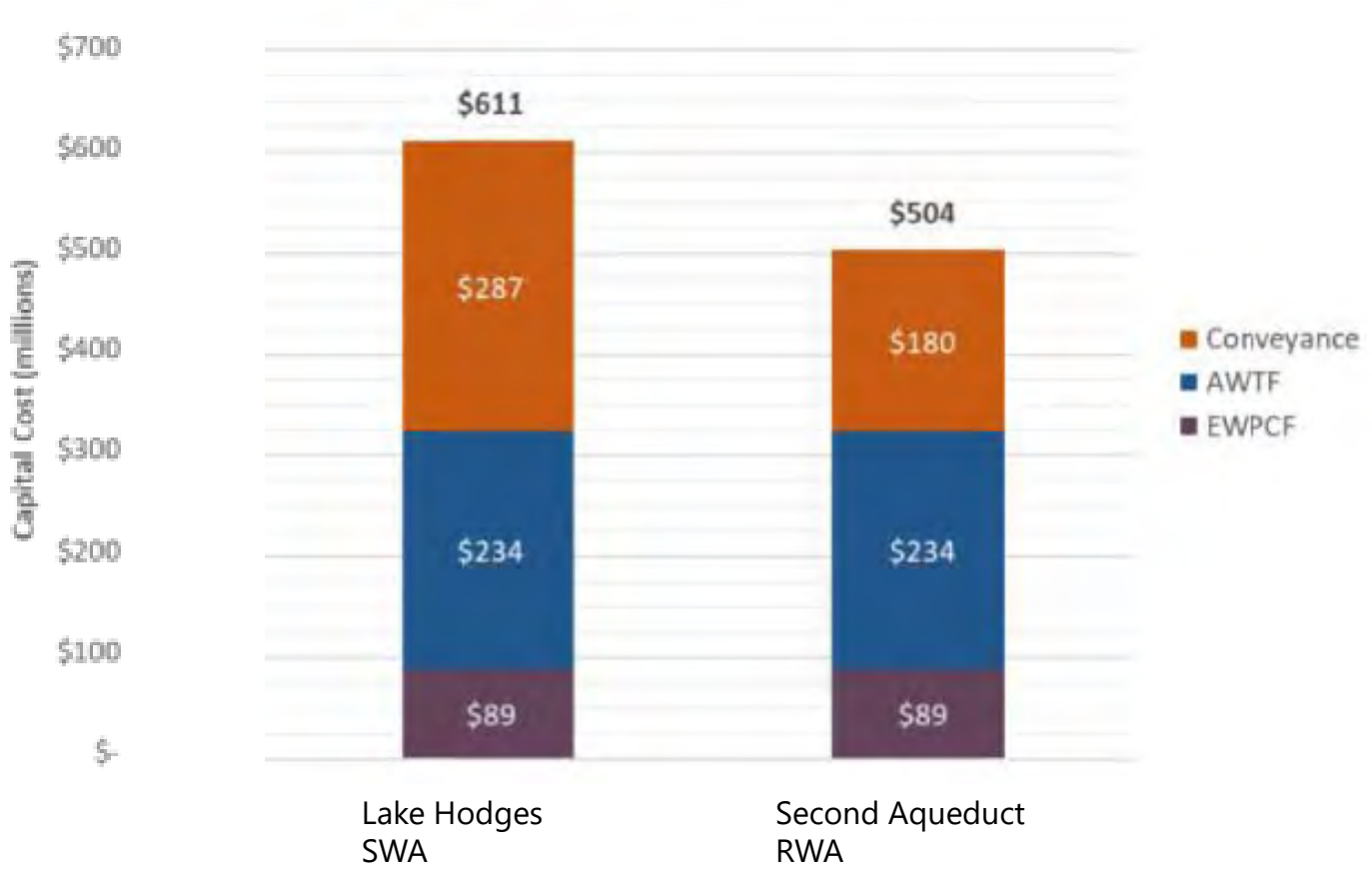
Strategic Plan Scope

Potable Reuse Strategic Plan Development

1. Funding strategy
2. Partner outreach
3. Regulatory strategy
4. EWPCF improvements
5. Strategic Plan
   - Refine next steps
   - Identify Pilot studies
   - Update cost estimates
   - Compile Report

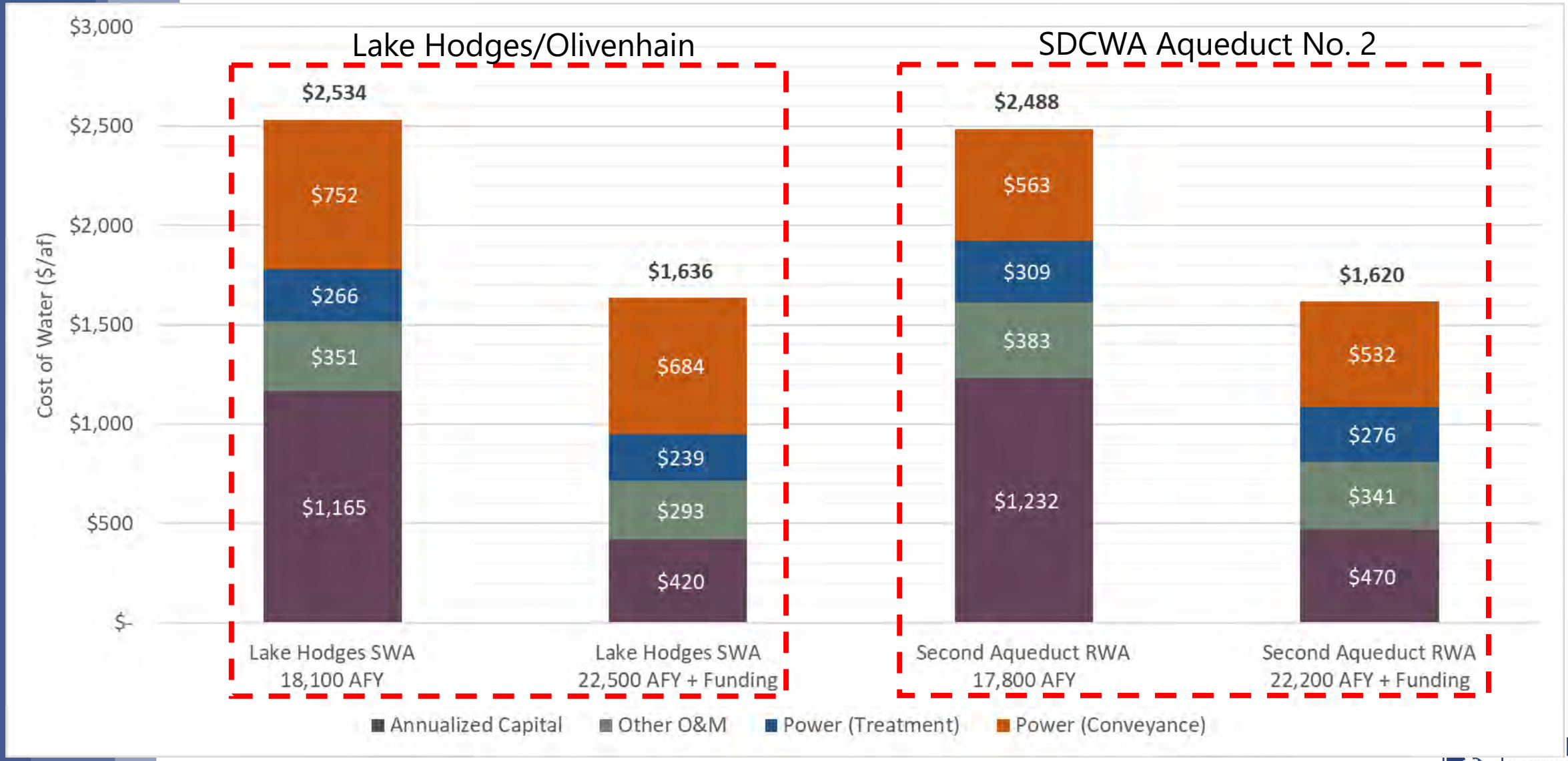
ENCINA WASTEWATER AUTHORITY

Capital Cost Summary (2018$)



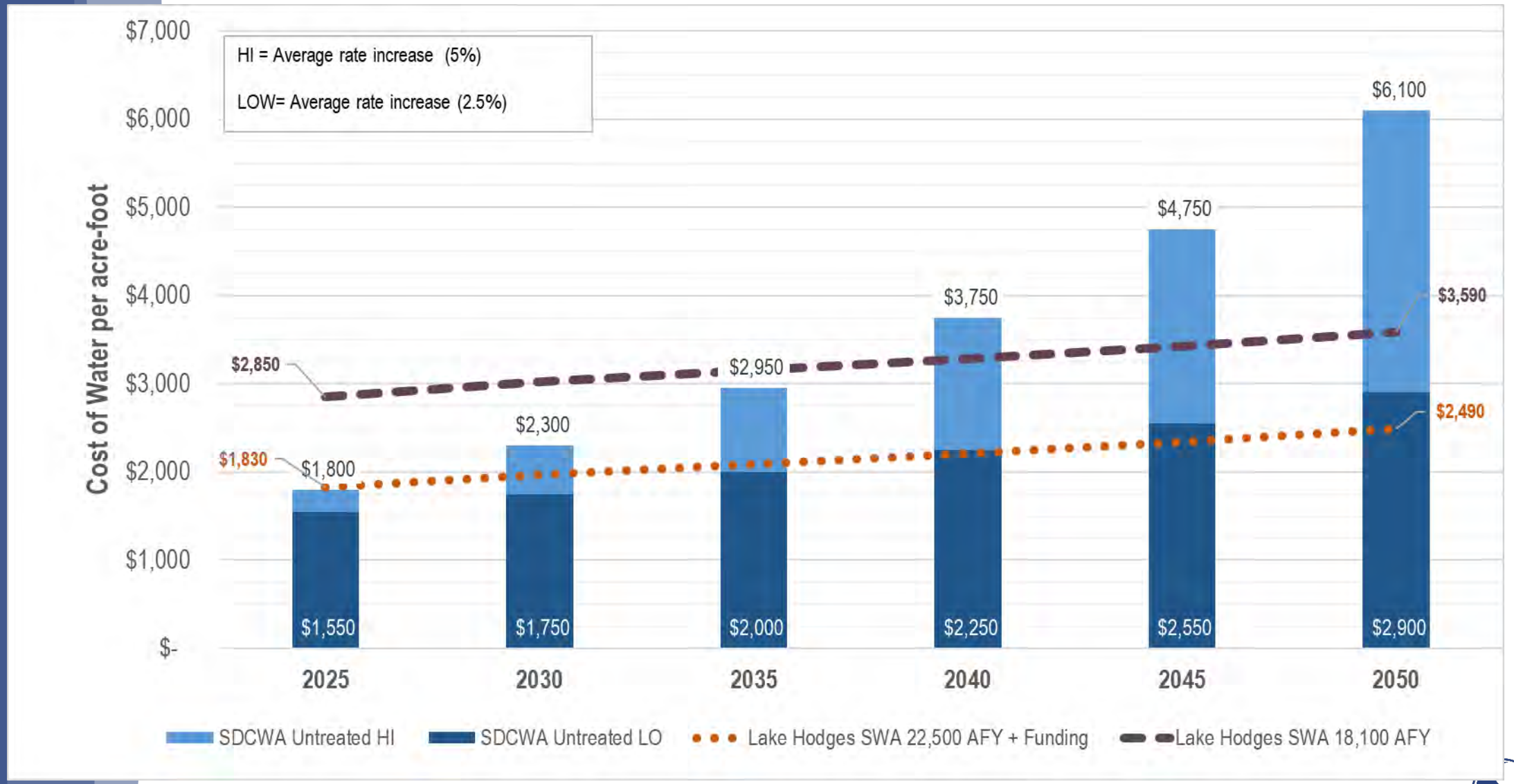
ENCINA WASTEWATER AUTHORITY

Unit Cost of Recycled Water (2018$)



NA
WASTEWATER AUTHORITY

Comparative Cost of Water (2018 dollars)



ENCINA WASTEWATER AUTHORITY

USBR Large Scale Grant Program

- Section 40905 of the Bipartisan Infrastructure Law (BIL), P.L. 117-58 provides authority for Reclamation's Large-Scale Water Recycling Program
- The program will provide $450 million over the next five years to projects in Reclamation states
- Projects will have a total project cost greater than or equal to $500,000,000, at 25% Federal cost share, with no per-project maximum
- Will require a feasibility study submitted to USBR

ENCINA WASTEWATER AUTHORITY

Break

Facilitated Discussion

Discussion

- What are your recommendations for engagement with the San Diego County Water Authority? How will the Advocacy Agencies engage SDCWA?
- Now that we have moved based our original concepts and regulations have changed, do you think there are other tasks or another direction we need to take in the strategic plan? Are there changes you would you suggest to the scope?
- What level of effort do you need from EWA and the consulting team in order to keep your Board of Directors/City Council informed or to solicit feedback from them?
- When the time comes to request funding, what is the best strategy to do so? What should we be doing now for you to be able to ask for funding as early as your next budget cycle?
- At what milestones should we meet and hold discussions?

ENCINA WASTEWATER AUTHORITY

Next Steps

- Scheduling on-going meetings with this group
- Come back with Strategic Plan discussion topics including:
  - Update costs for both options
  - Input from group for what CWA projected water costs we should be using

ENCINA WASTEWATER AUTHORITY

ENCINA
WASTEWATER
AUTHORITY

Thank you!

ENCINA
WASTEWATER
AUTHORITY

One Water North San Diego

Strategic Plan

Agenda

- Cost Estimates
  - Cost Comparison
- Regulatory Outlook
- Pilot Study Update
- Finance Outlook
- Governance Outlook
- Strategy Discussion
- Next Steps

ENCINA WASTEWATER AUTHORITY

Cost Estimates

ENCINA WASTEWATER AUTHORITY

Woodard & Curran

Methodology

- Cost estimates were completed as part of the Feasibility Study in 2019.
  - Adjusted for major modifications to the potable reuse options including the new DPR regulations
  - Then raw construction costs were extracted and escalated to November 2023 dollars
  - The soft costs and allowances were applied to the raw construction costs
- The capital cost escalations were completed using the Engineering New Record (ENR) Construction Cost Indexes (CCI)
- O&M costs were escalated per the California Consumer Price Index (CPI) for maintenance and labor escalations.

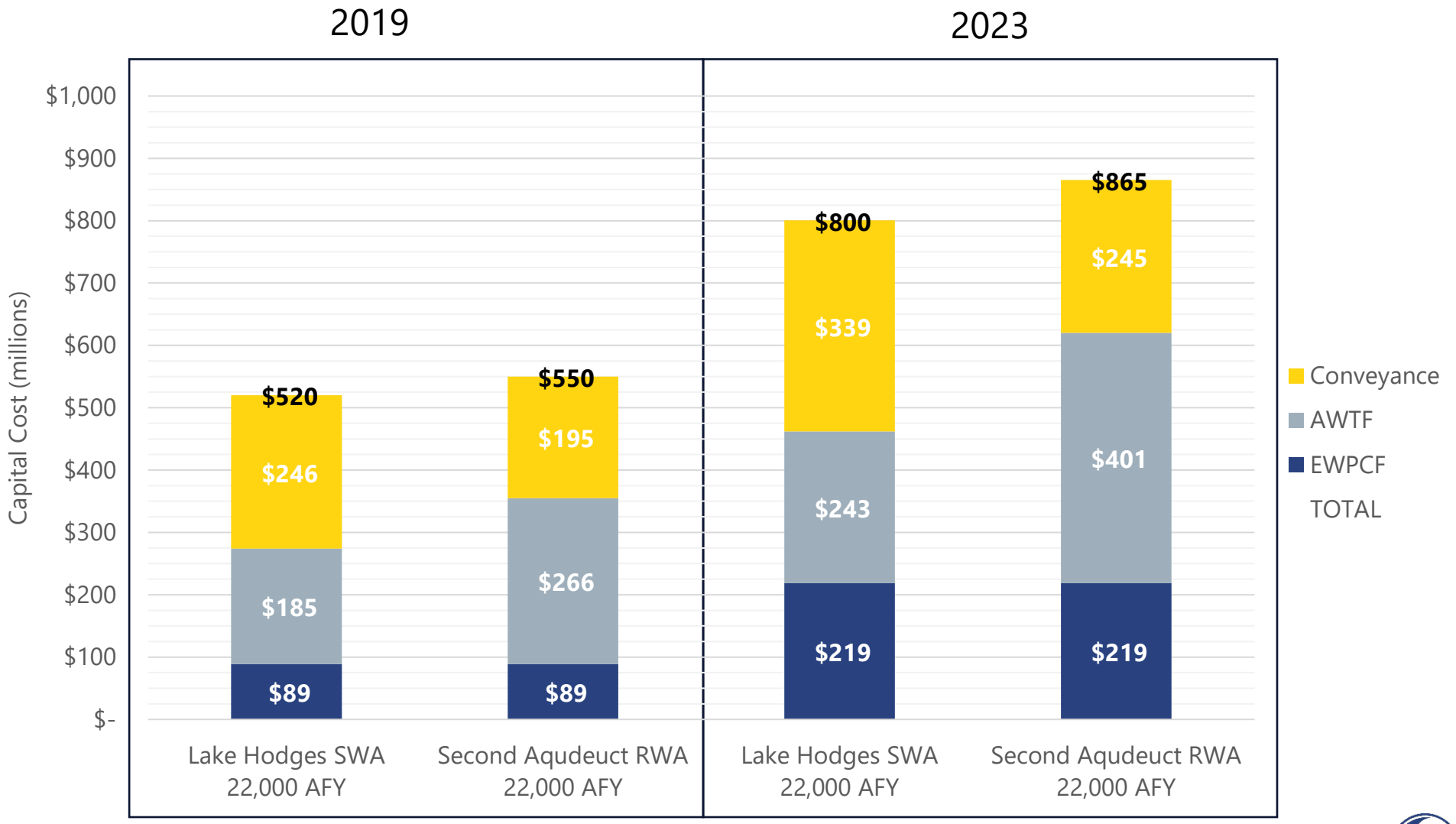
ENCINA WASTEWATER AUTHORITY

Methodology

- Additional cost estimates were developed for the updated potable reuse project opportunities based on
  - material and labor databases
  - historical project data
  - current vendor and material cost information
  - other cost benchmarks specific to the project locale.
- O&M costs are based on
  - estimated lab hours
  - equipment power needs
  - chemical and other consumable demands

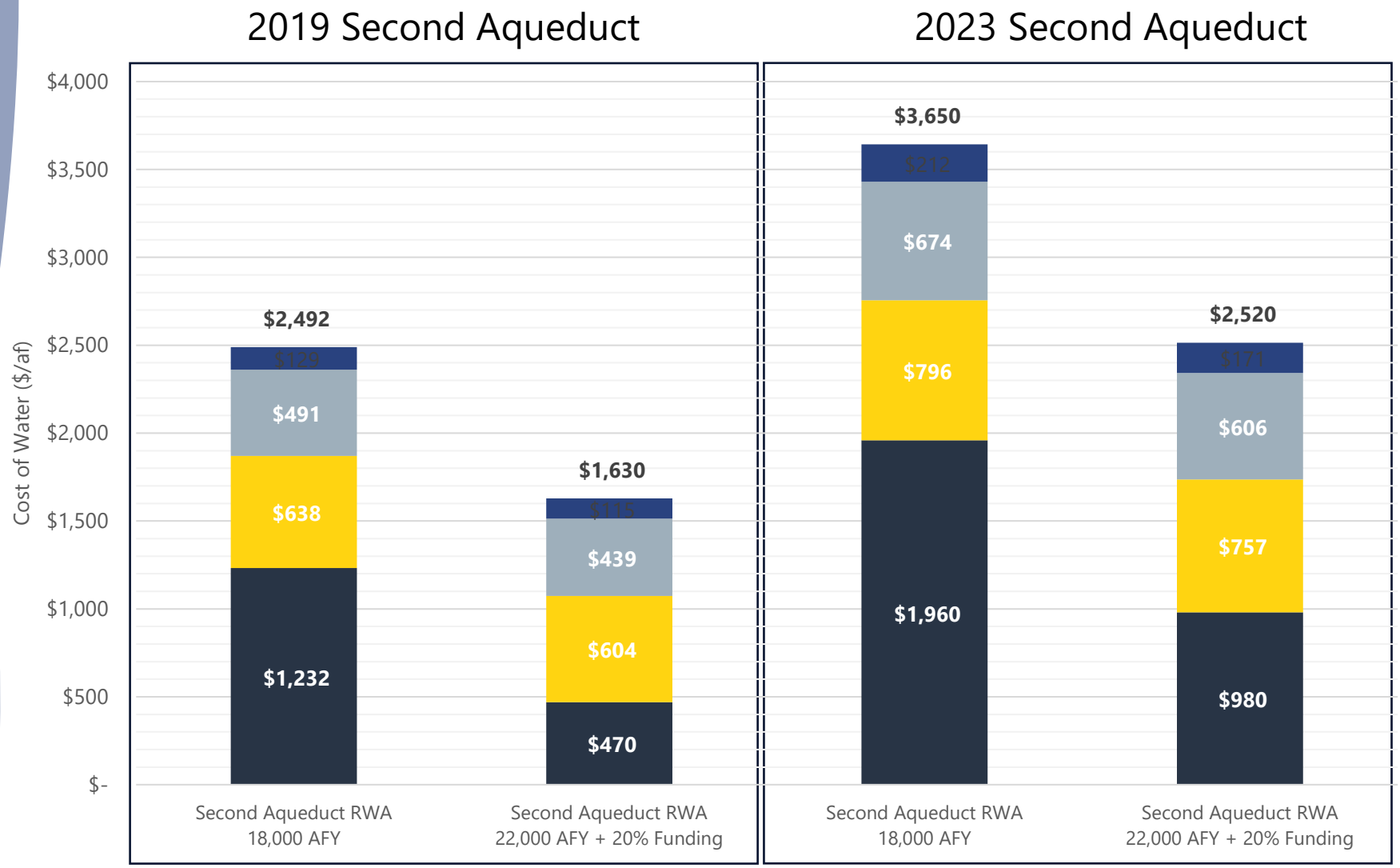
ENCINA WASTEWATER AUTHORITY

Capital Costs ($million)



ENCINA WASTEWATER AUTHORITY

Second Aqueduct RWA Unit Cost ($/af)



18,000 AFY: 47% increase

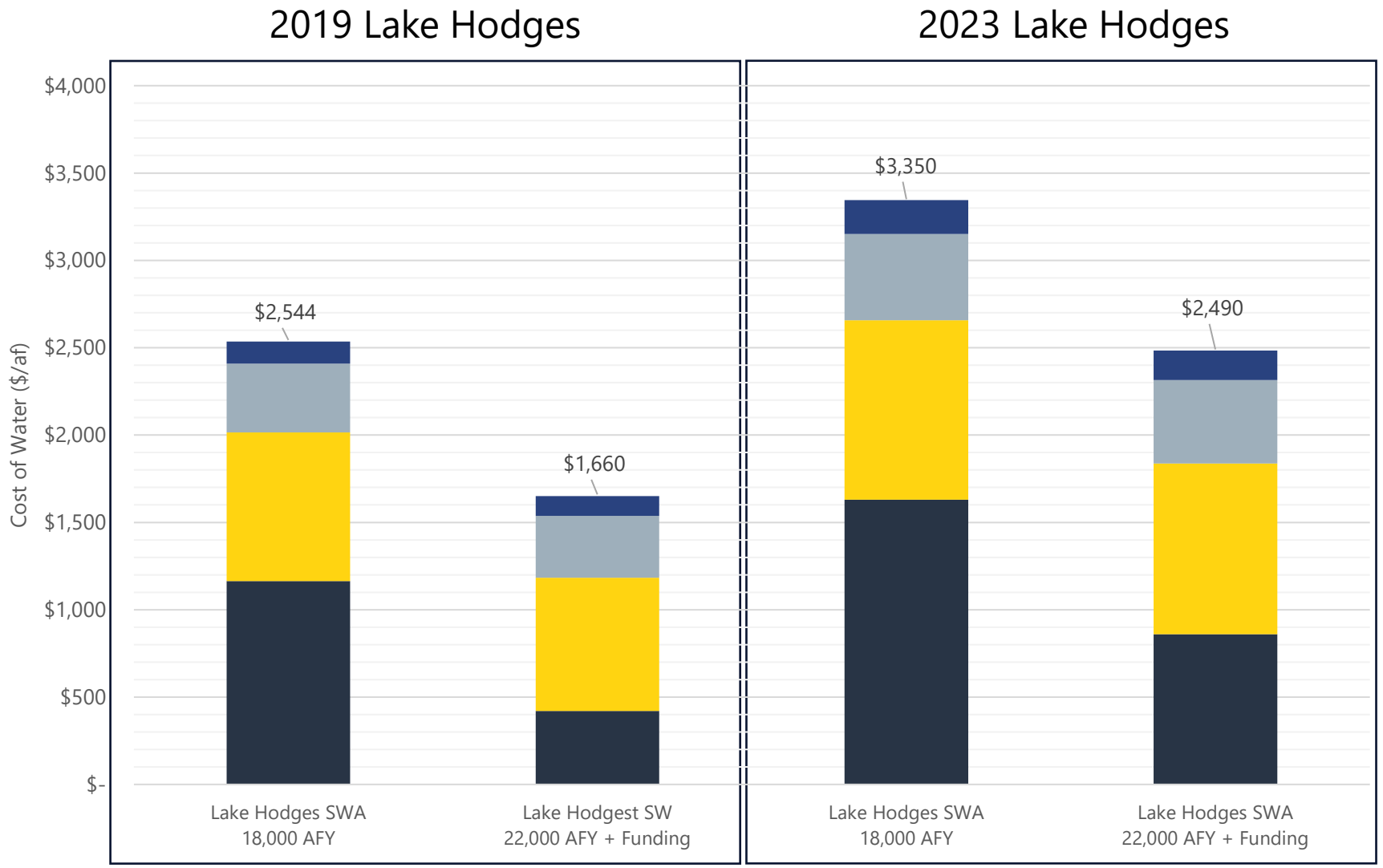
22,000 AFY+20% Funding: 55% increase

- EWPCF (O&M)
- AWTF (O&M)
- Conveyance (O&M)
- Annualized Capital

TOTAL

ENCINA WASTEWATER AUTHORITY

Lake Hodges SWA Unit Cost – ($/af)



18,000 AFY:
32% increase

22,000 AFY+
20% Funding:
50% increase

ENCINA WASTEWATER AUTHORITY

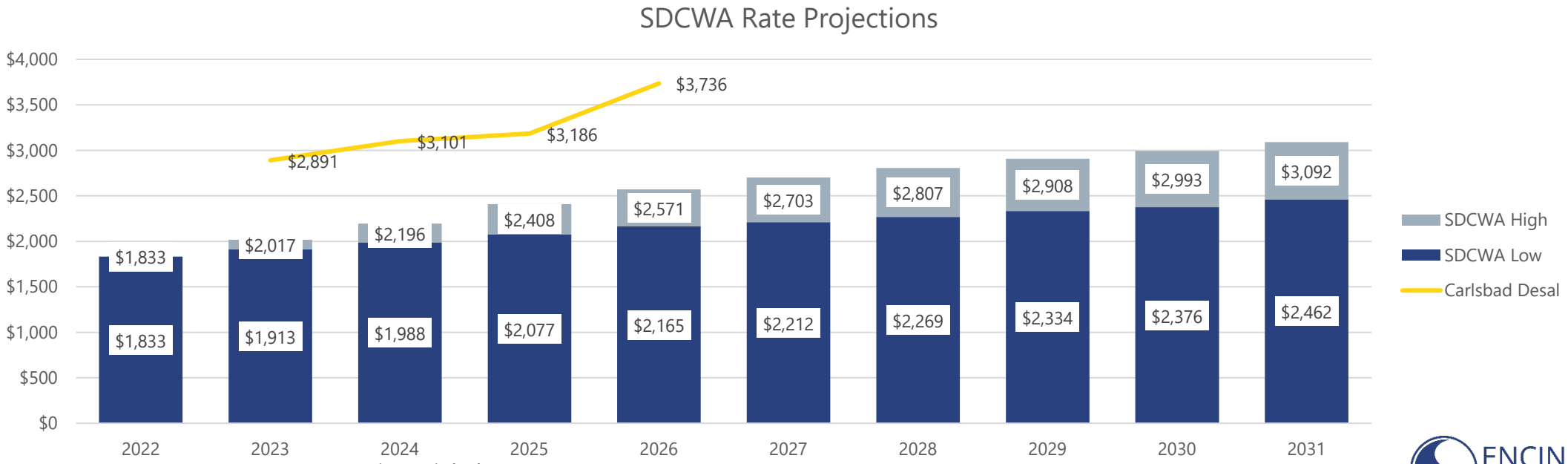
ENCINA WASTEWATER AUTHORITY

Cost Comparison

Woodard & Curran

SDCWA Rate Projections ($/af)

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
SDCWA High	$1,833	$2,017	$2,196	$2,408	$2,571	$2,703	$2,807	$2,908	$2,993	$3,092
SDCWA Low	$1,833	$1,913	$1,988	$2,077	$2,165	$2,212	$2,269	$2,334	$2,376	$2,462
Carlsbad Desal		$2,891	3,101	3,186	$3,736					

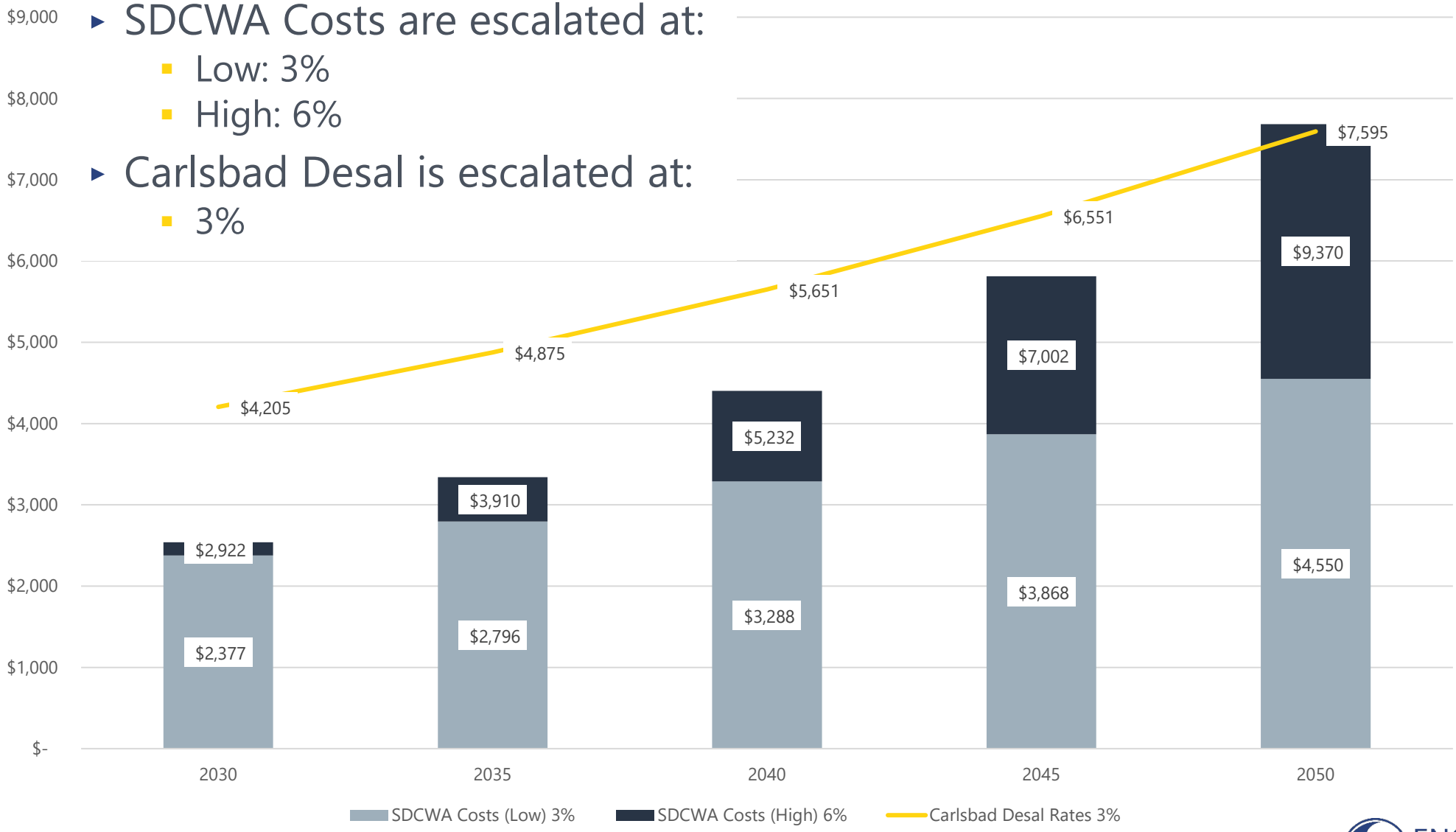


Source: SDCWA 2021 Long Range Financial Plan

ENCINA WASTEWATER AUTHORITY

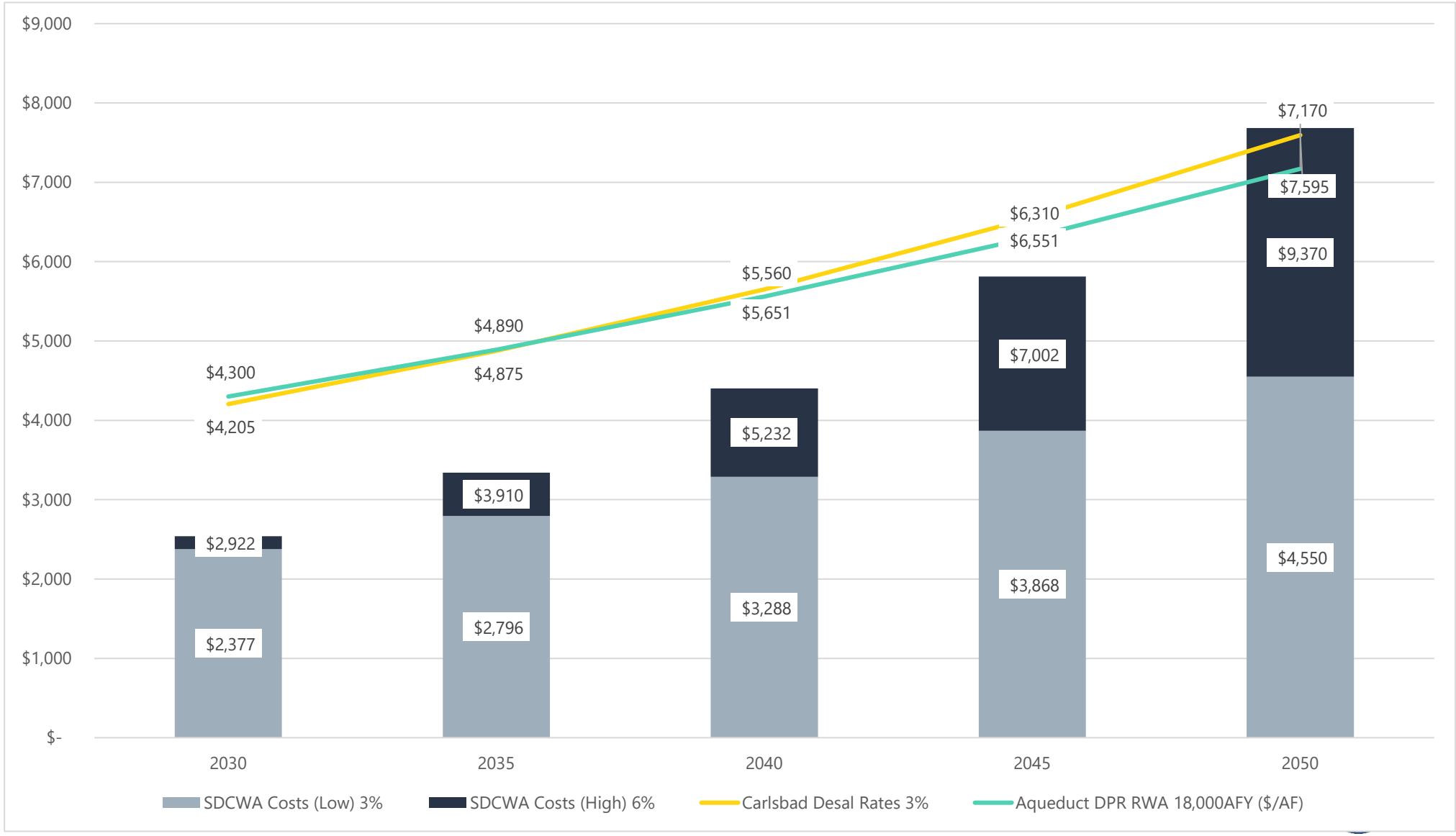
SDCWA Rates Escalated ($/af)

- SDCWA Costs are escalated at:
  - Low: 3%
  - High: 6%
- Carlsbad Desal is escalated at:
  - 3%

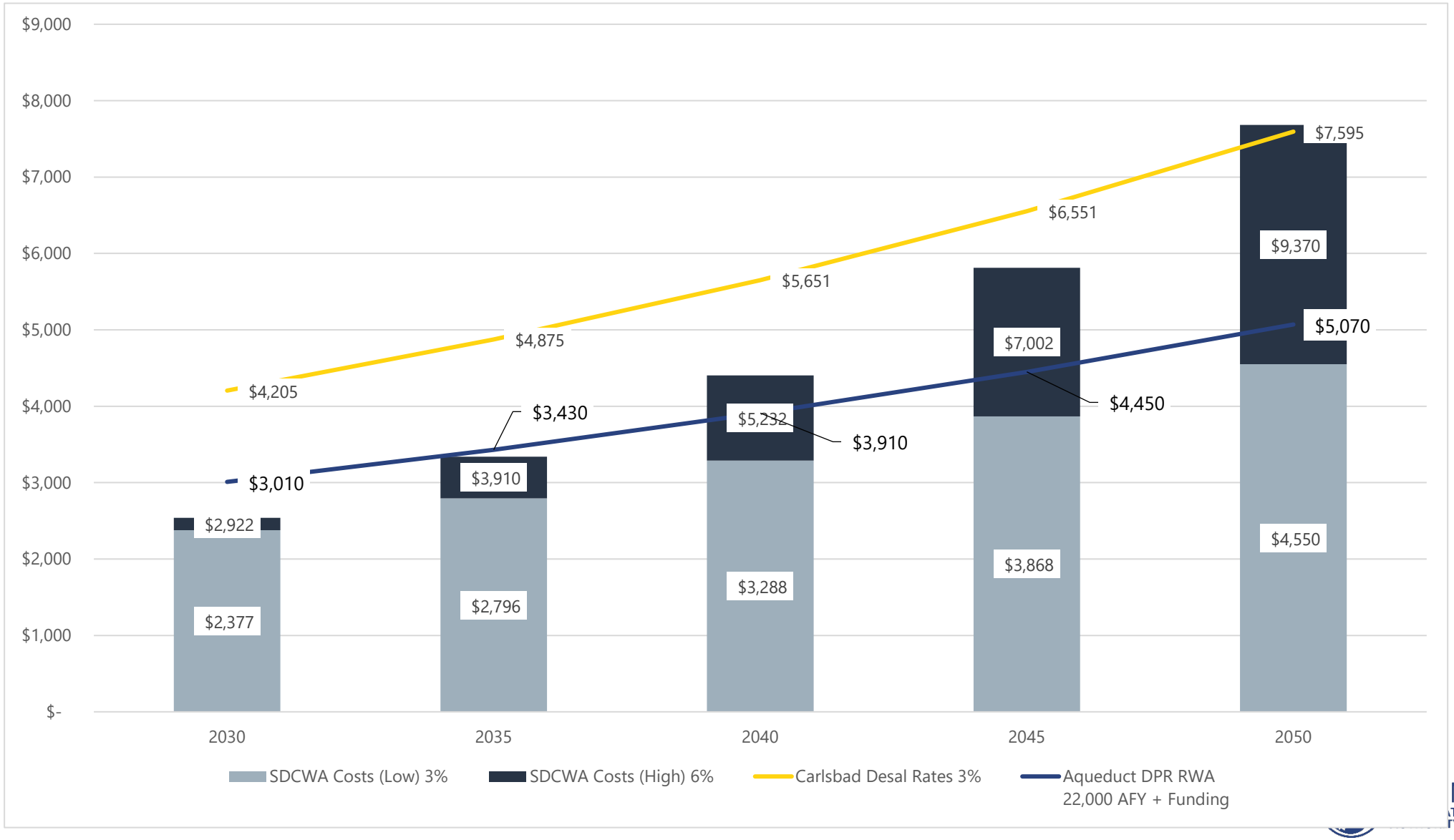


ENCINA WASTEWATER AUTHORITY

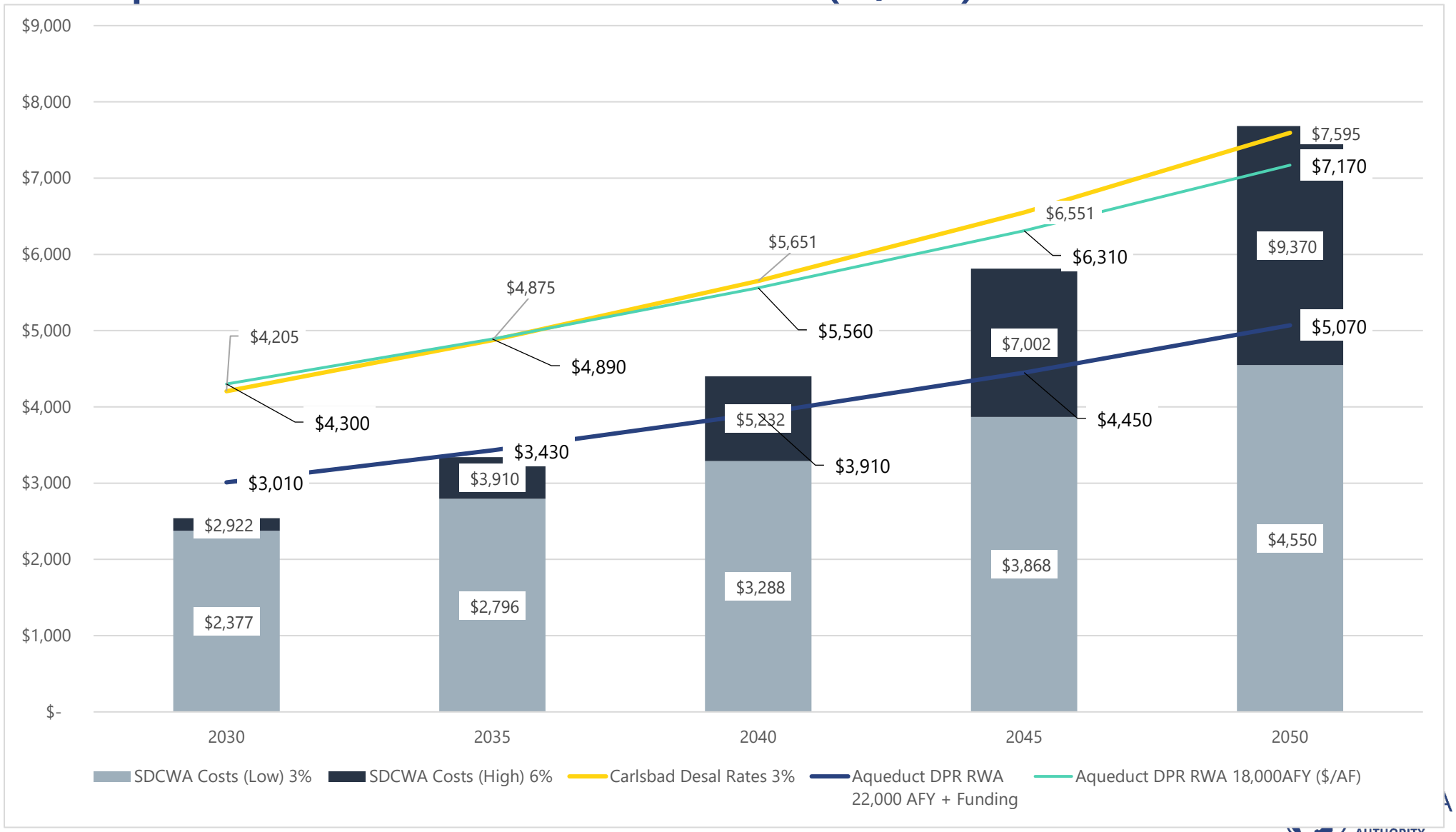
Aqueduct RWA (18K AFY)
Comparative Cost of Water ($/af)



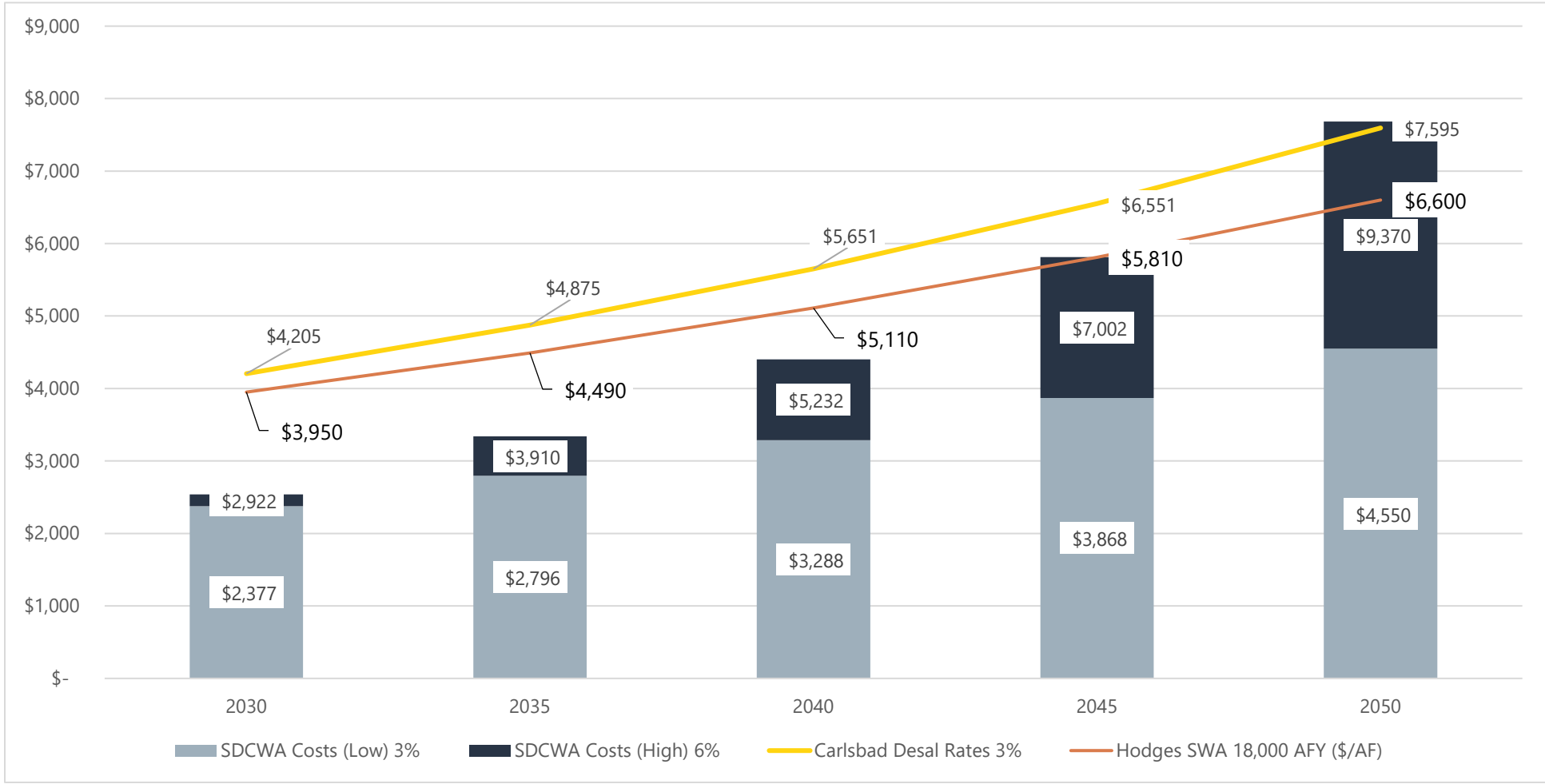
Aqueduct RWA (22K AFY + Funding) Comparative Cost of Water ($/af)



Aqueduct RWA
Comparative Cost of Water ($/af)

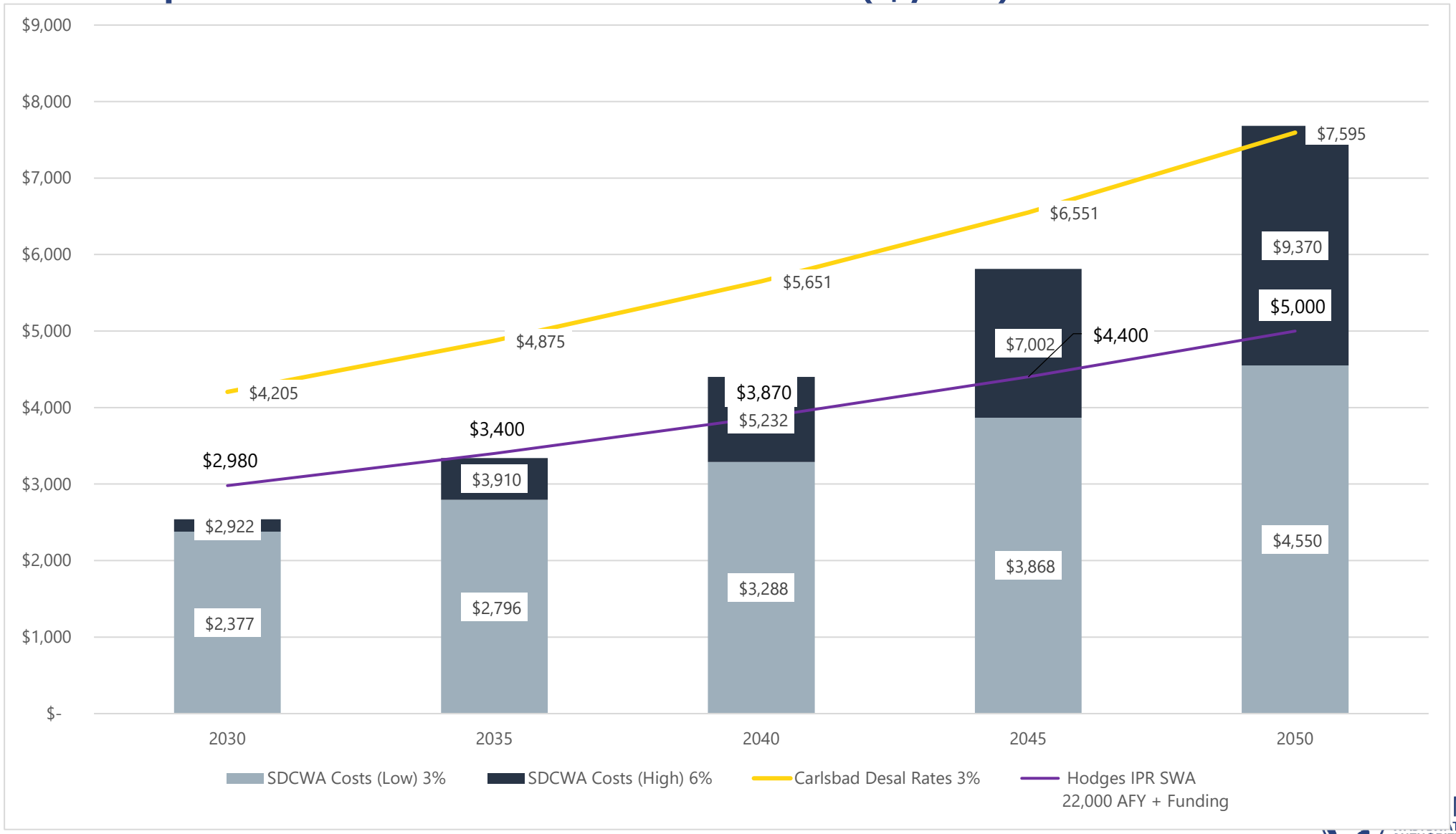


Lake Hodges SWA (18K AFY) Comparative Cost of Water ($/af)

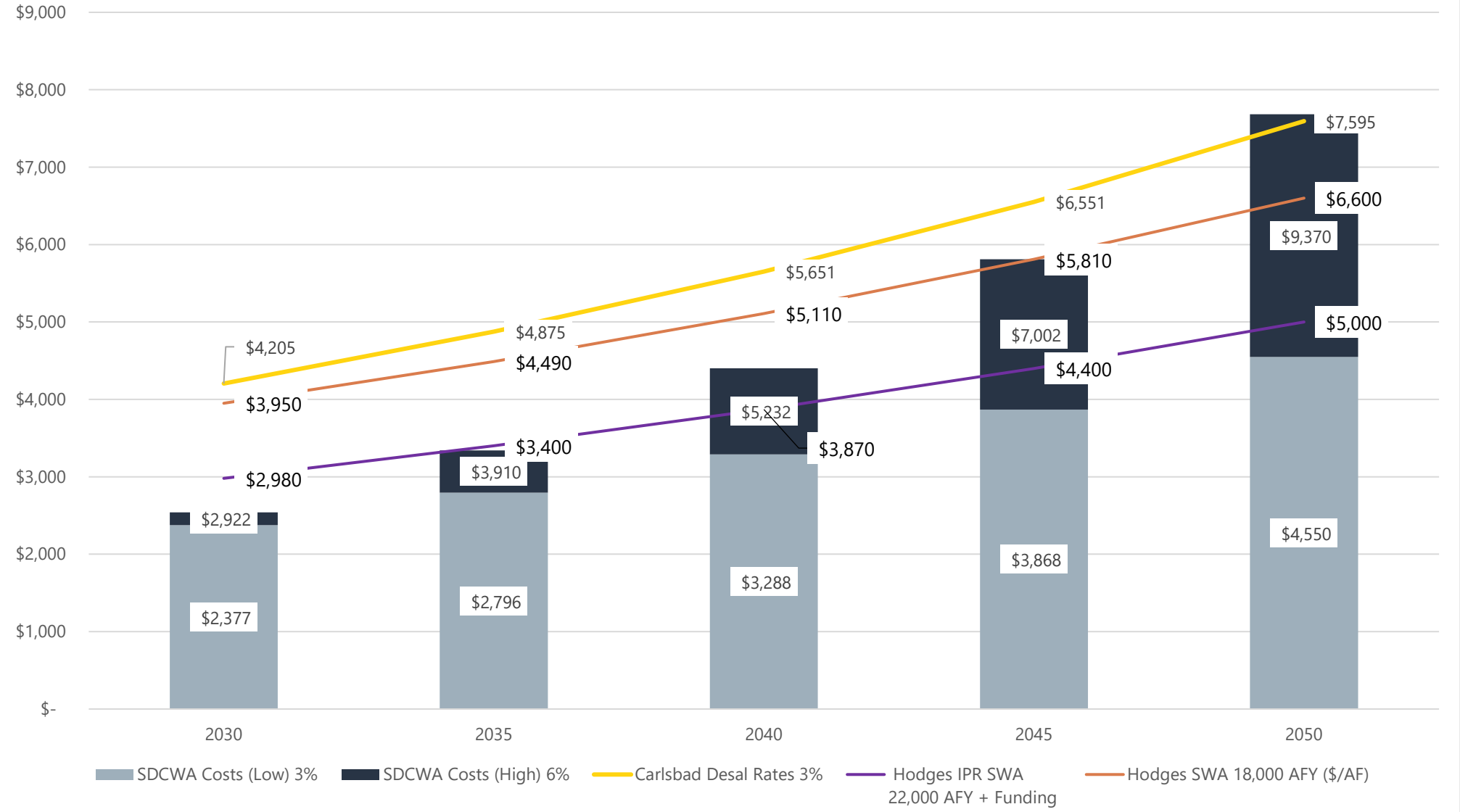


ENCINA WASTEWATER AUTHORITY

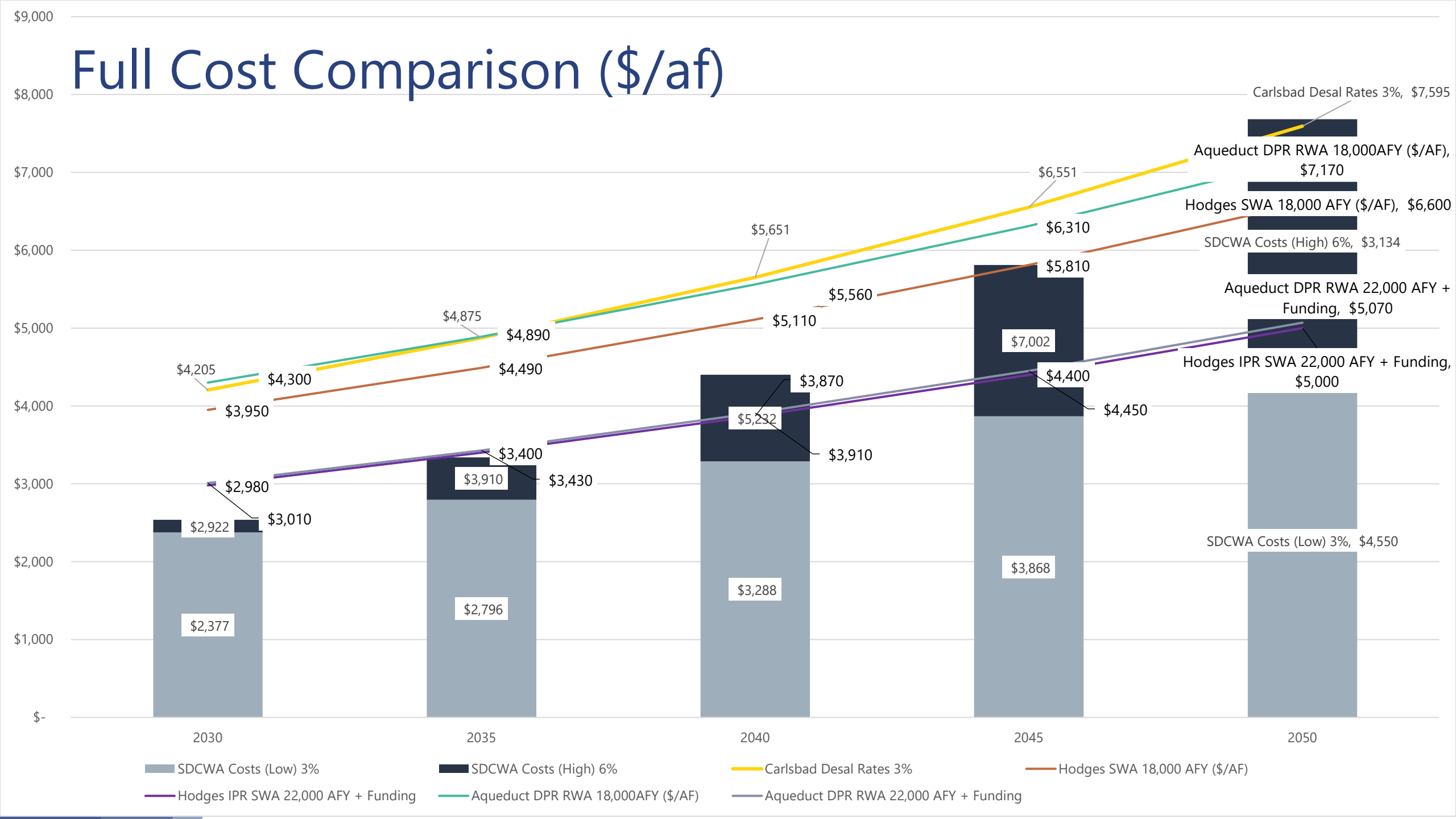
Lake Hodges SWA (22K AFY + Funding) Comparative Cost of Water ($/af)



Lake Hodges SWA
Comparative Cost of Water ($/af)



Full Cost Comparison ($/af)



Strategy Discussions

ENCINA WASTEWATER AUTHORITY

Woodard & Curran

Regulatory Outlook

Regulatory Outlook

- DPR regulations support moving this project forward
  - We updated cost estimates to reflect adopted DPR regulations (which we did not have in 2019)
  - Requires validation plan and validation testing results prior to approving the Title 22 ER
- Ocean discharge requirements:
  - 2019 legislation would have reduced discharges by 50 percent in 2030 and 95 percent by 2040
  - No current legislation but an issue to watch
- Conservation Regulations
  - Will reduce flows
  - 42 gallons per capita per day by 2030
- Concerns over ocean acidification grow:
  - SF RWQCB adopted a permit requiring nutrient reduction for wastewater treatment plants discharging to the Bay
  - Environmental NGOs sent letter calling for urgent legislative and regulatory action
  - Anticipate additional discussion when California Ocean Plan is taken up next year
  - CASA responded expressing concerns and EWA was a signatory of a collaborative letter

ENCINA WASTEWATER AUTHORITY

ENCINA
WASTEWATER
AUTHORITY

Strategy Discussion

ENCINA WASTEWATER AUTHORITY

Pilot Study Updates

Woodard & Curran

Overall Pilot Testing Objectives

1. Optimizing MBR process for EWA to develop design parameters for facility cost estimates
2. Provide opportunity for training EWA's staff on Advanced treatment technologies supporting AWT Certification
3. Evaluate water quality in the context of potable reuse
   - Perform challenge tests and ongoing water quality monitoring
4. Support long term planning for potable reuse

MBR

RO

UV/AOP

ENCINA WASTEWATER AUTHORITY

Specific Testing Objectives

- MBR Operations Optimization Testing
  - Optimize the process for EWA's wastewater
  - Minimize basin requirements (HRT/SRT) while preserving a high effluent quality
- MBR Pathogen Validation
  - Demonstrate LRVs through the MBR process for a future potable reuse project
- RO Challenge Testing
  - Demonstrate LRVs through the RO process using novel strontium analyzer technology
- UV/AOP Challenge Testing
  - Optimize UV/AOP reactor design for EWA's wastewater

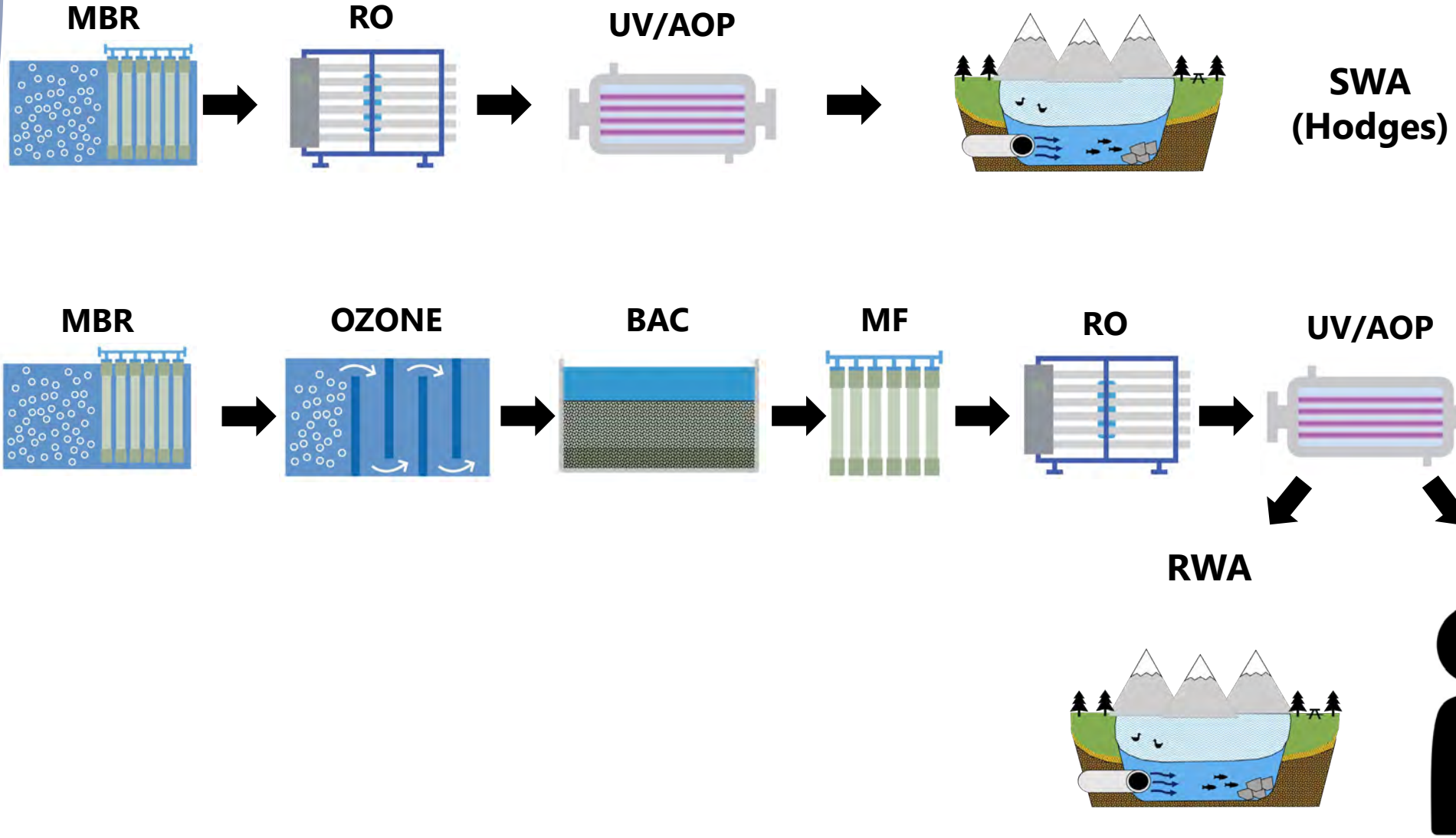
ENCINA WASTEWATER AUTHORITY

DPR Regulations and Pilot Testing

- Final DPR Regs approved in Dec 2024
  - Requirement for validation protocols and reports approved prior to the Title 22 ER
  - This testing is required to demonstrate that various treatment criteria are being met prior to approval (pathogens, chemicals)
  - De facto requirement for a pilot or demonstration facility

ENCINA WASTEWATER AUTHORITY

Current vs Potential Future Pilot Treatment Train



Funding Opportunities for DPR Pilot

- Current USBR Funding:
  - WDRR Grant for $800k through September 2025
- Current in-kind:
  - $820k in MBR equipment from Veolia (4-year rental)
  - $75k in RO equipment from Trussell (3-year rental)
  - $40k in UV/AOP equipment (2-year rental)
  - Veolia has expressed interest in continuing to provide the MBR pilot for further testing, RO and UV/AOP will continue to be provided as well
  - Advantages to keep testing momentum and benefit from low-cost pilot opportunity
- Supplemental funding opportunities:
  - USBR
    - 2025 Desalintation and Water Purification Research Program
    - 2025 WaterSMART
  - Water Research Foundation
    - 2025 RFPs
    - 2026 Unsolicited Research Program
  - National Alliance for Water Innovation (NAWI)

ENCINA WASTEWATER AUTHORITY

Financing Outlook

Financing Outlook

- Issues that could impact financing:
  - Federal financing compliance:
    - NEPA and CEQA compliance
    - Build America, Buy America impacts procurement
  - Inflation
  - Supply Chain

ENCINA WASTEWATER AUTHORITY

Financing Outlook – Federal

- Reclamation:
  - WaterSMART
  - Infrastructure Investment and Jobs Act (IIJA or BIL)
- US EPA
  - SRF loans (EPA funded, state administered)
  - WIFIA
  - Inflation Reduction Act (IRA)
- Congressional directed spending
  - Federal appropriations

ENCINA WASTEWATER AUTHORITY

Financing Outlook - California

- Proposition 4 (if approved):
  - Water Recycling Funding Program (WRFP), Integrated Regional Water Management (IRWM) Program, and Sustainable Groundwater Management (SGM)
- State Water Resource Control Board
  - SRF loans (EPA funded, state administered)
- California Infrastructure and Economic Development Bank
  - I-Bank

ENCINA WASTEWATER AUTHORITY

ENCINA
WASTEWATER
AUTHORITY

Strategy Discussion

Governance Outlook & Discussion

Governance Outlook

- EWA Board will not support continuing to fund the project moving forward
- Need new approach
  - Coalition agencies assess viability of direct delivery system
  - SDCWA looks at a QSA exchange project
- Something else?
- Is anyone else ready to lead?

ENCINA WASTEWATER AUTHORITY

ENCINA
WASTEWATER
AUTHORITY

Strategy Discussion

Next Steps

Next Steps

- Prepare Strategic Plan based on today's discussion
- Distribute to this group
- Incorporate Comments
- Finalize Strategic Plan

ENCINA WASTEWATER AUTHORITY

ENCINA
WASTEWATER
AUTHORITY

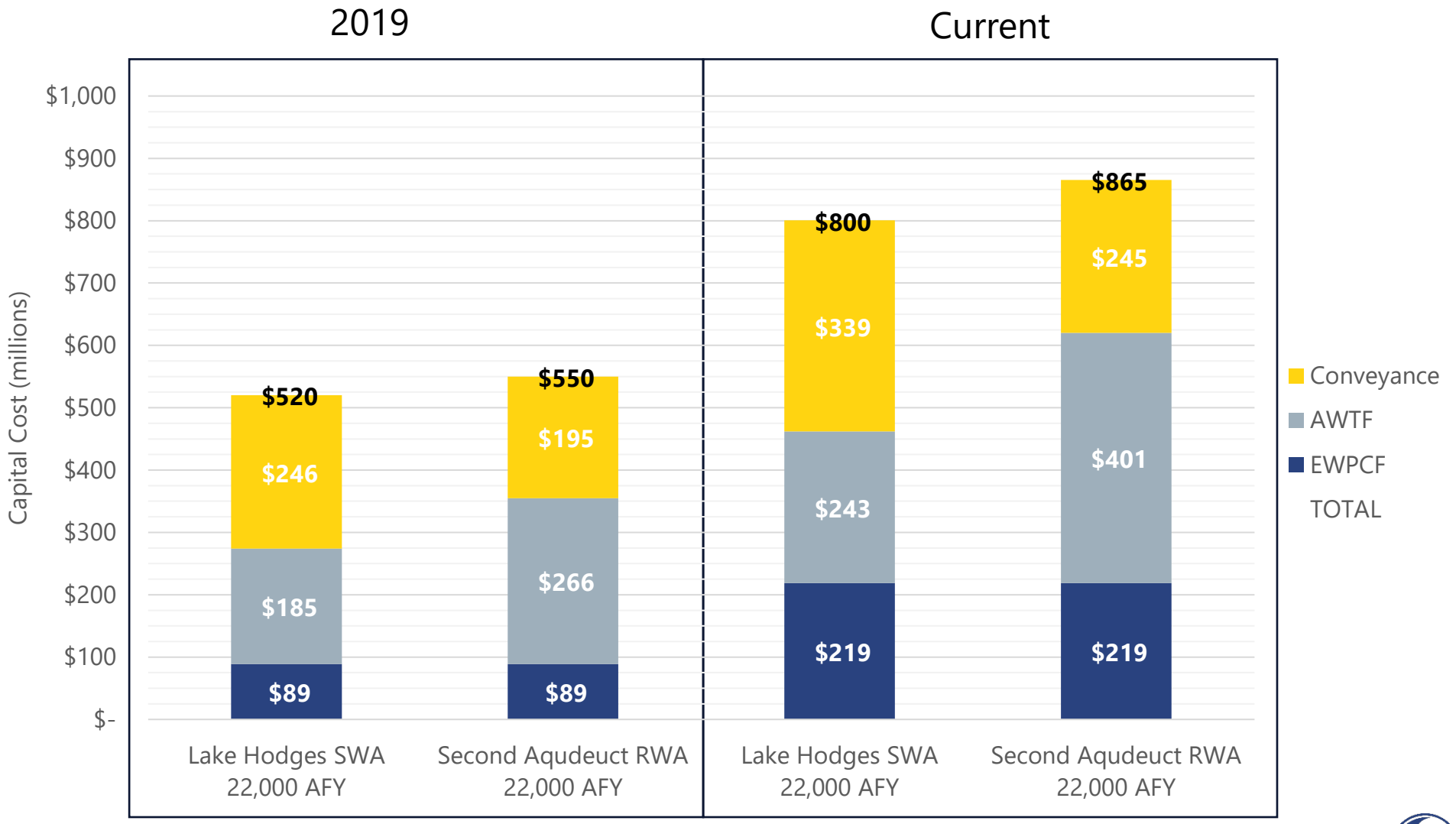
Thank you!

ENCINA
WASTEWATER
AUTHORITY

One Water North San Diego

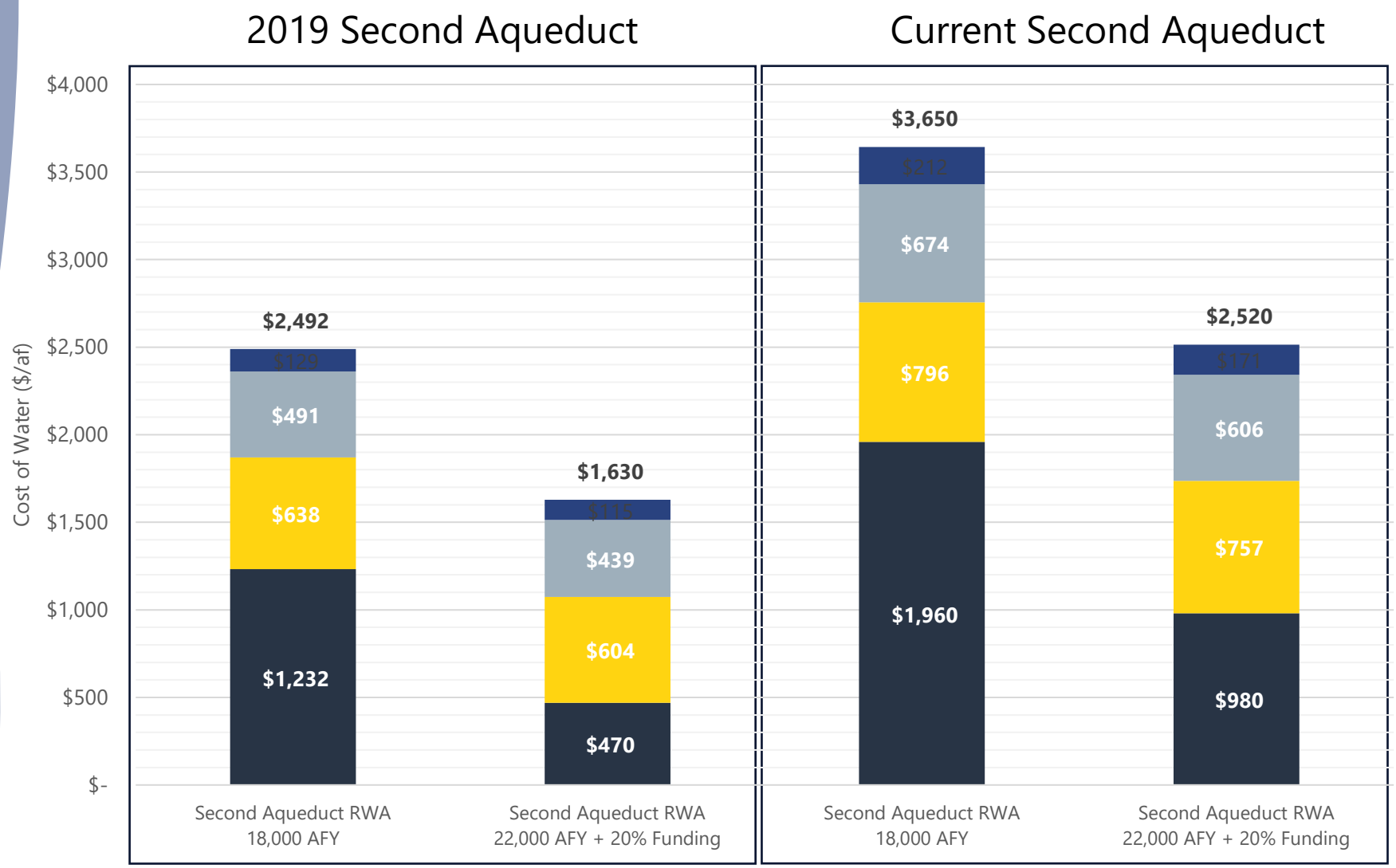
Cost Escalation Review

Capital Costs ($million)



ENCINA WASTEWATER AUTHORITY

Second Aqueduct RWA Unit Cost ($/af)

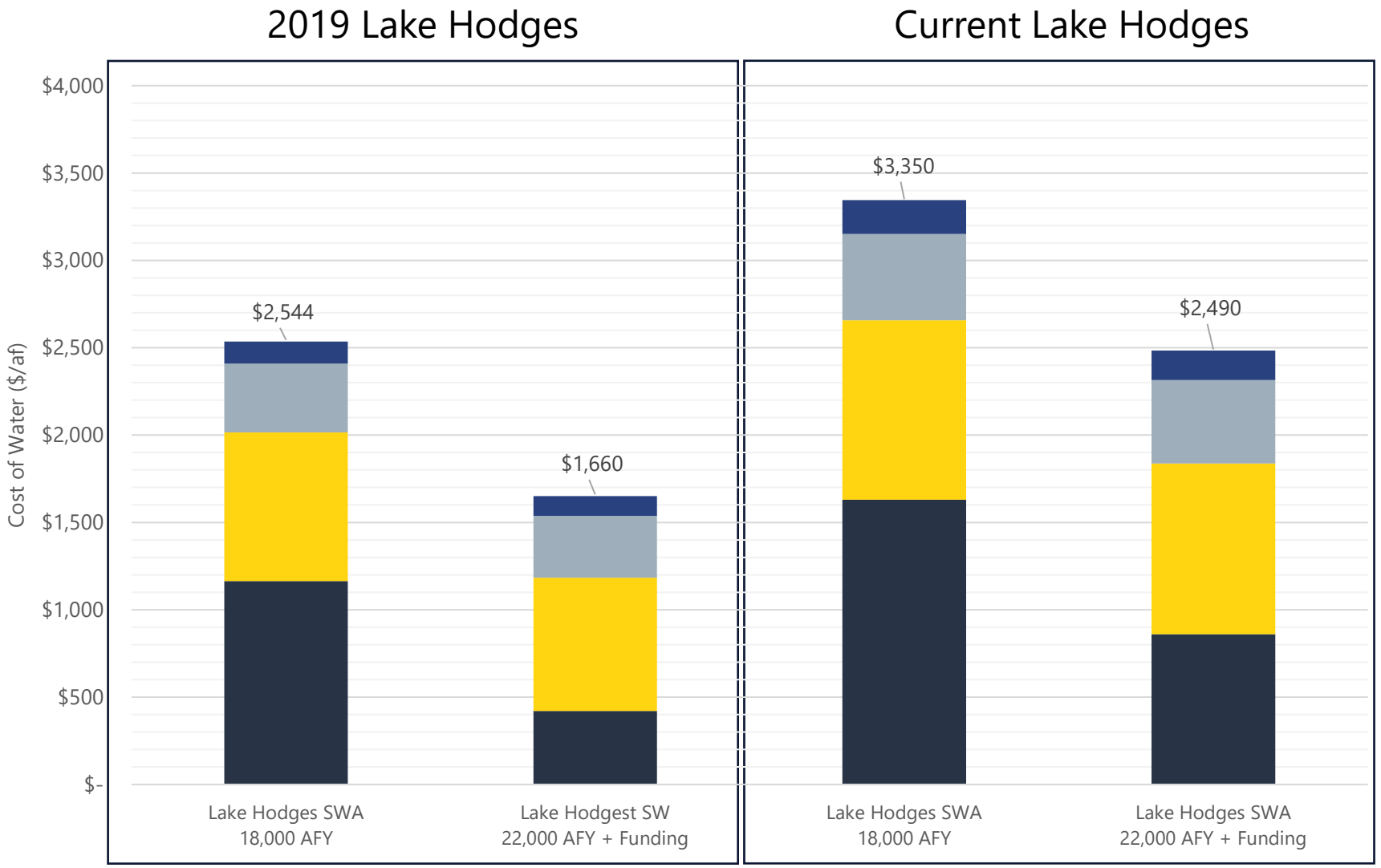


18,000 AFY: 47% increase

22,000 AFY+20% Funding: 55% increase

ENCINA WASTEWATER AUTHORITY

Lake Hodges SWA Unit Cost – ($/af)



18,000 AFY:
32% increase

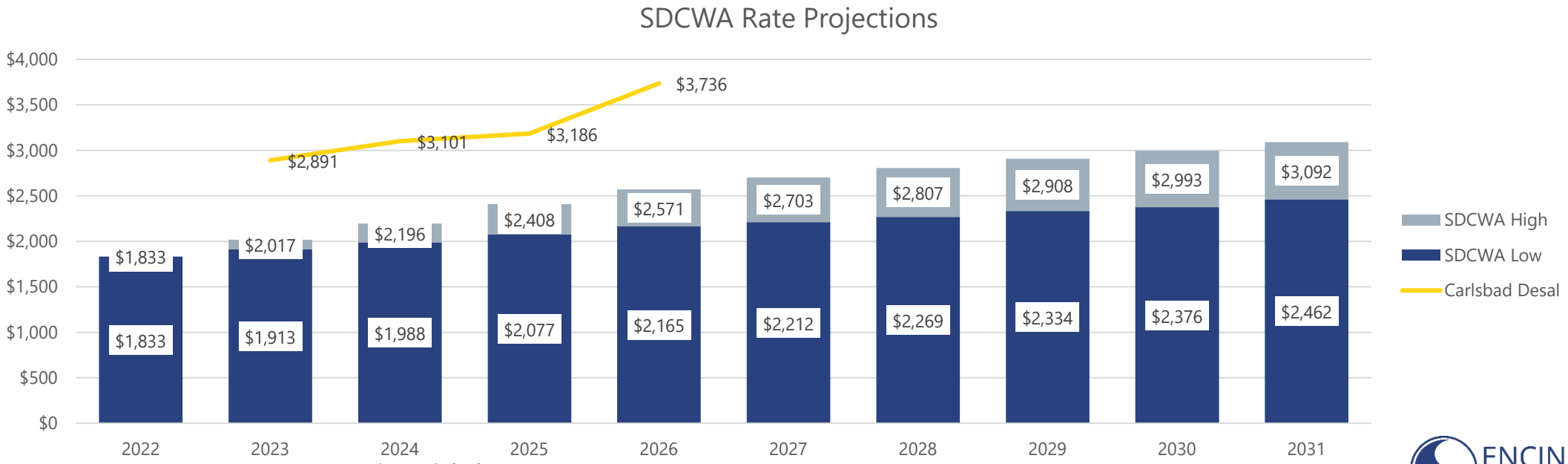
22,000 AFY+
20% Funding:
50% increase

ENCINA WASTEWATER AUTHORITY

SDCWA Comparison

SDCWA Rate Projections ($/af)

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
SDCWA High	$1,833	$2,017	$2,196	$2,408	$2,571	$2,703	$2,807	$2,908	$2,993	$3,092
SDCWA Low	$1,833	$1,913	$1,988	$2,077	$2,165	$2,212	$2,269	$2,334	$2,376	$2,462
Carlsbad Desal		$2,891	3,101	3,186	$3,736					

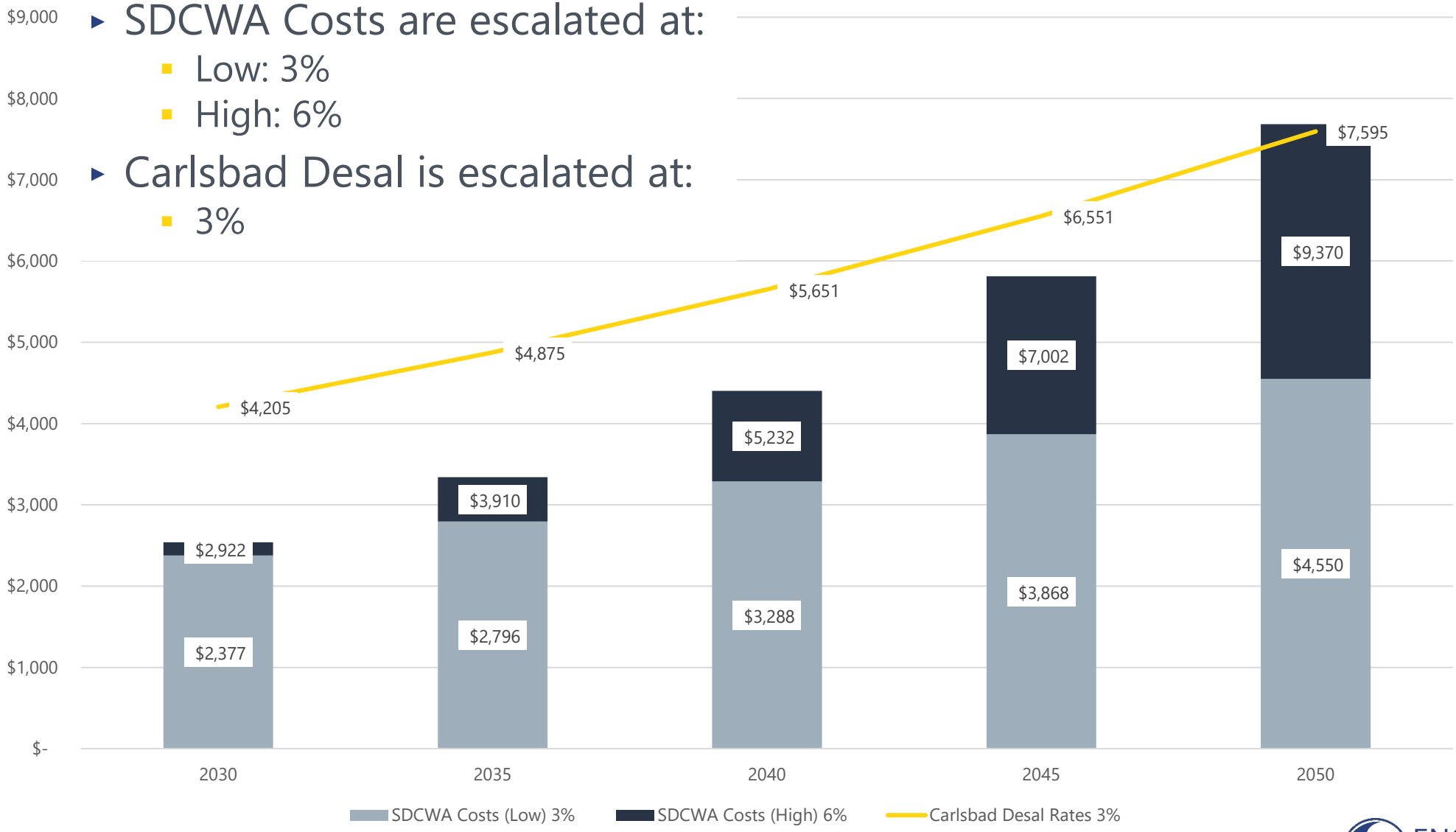


Source: SDCWA 2021 Long Range Financial Plan

ENCINA WASTEWATER AUTHORITY

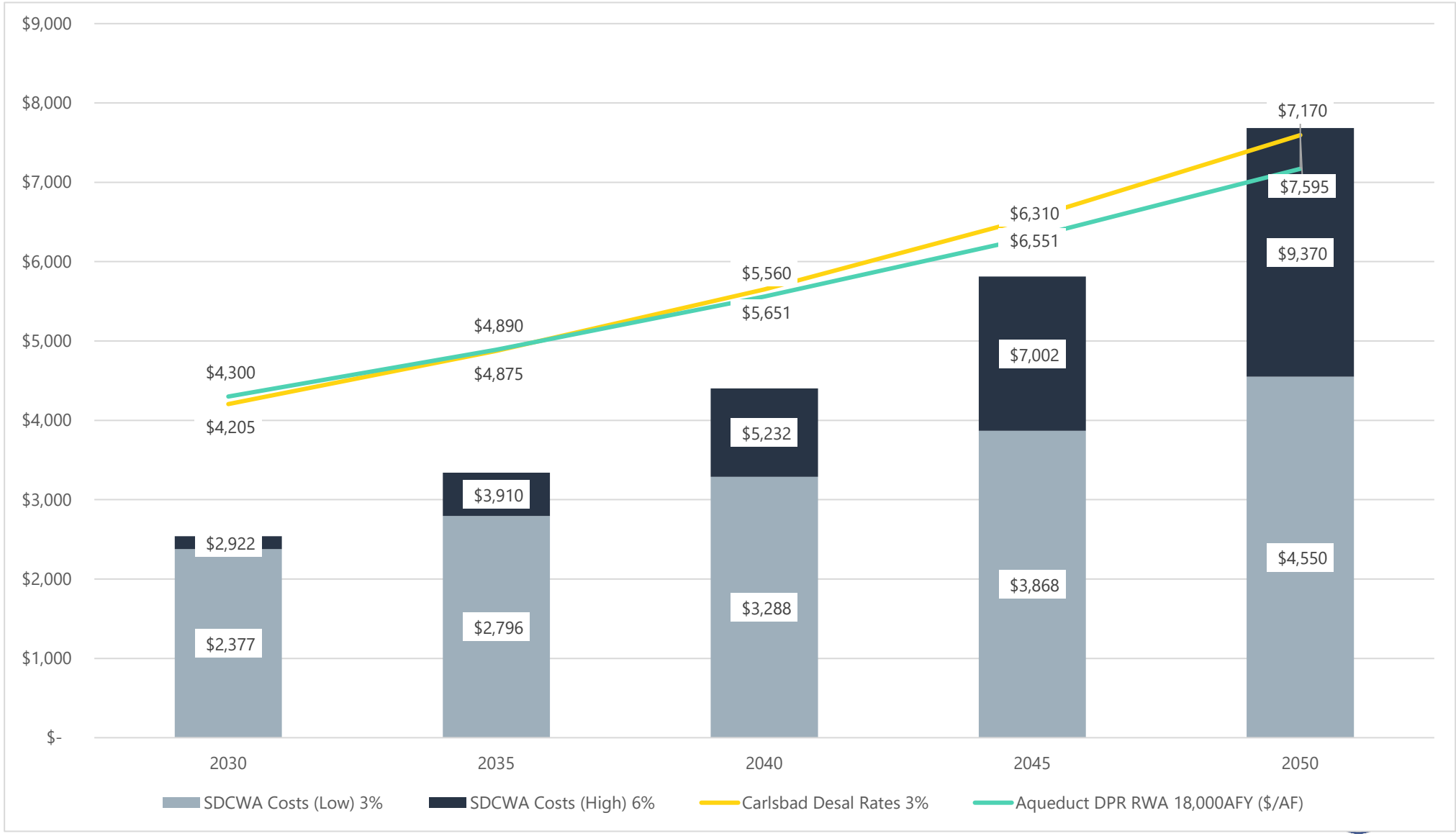
SDCWA Rates Escalated ($/af)

- SDCWA Costs are escalated at:
  - Low: 3%
  - High: 6%
- Carlsbad Desal is escalated at:
  - 3%

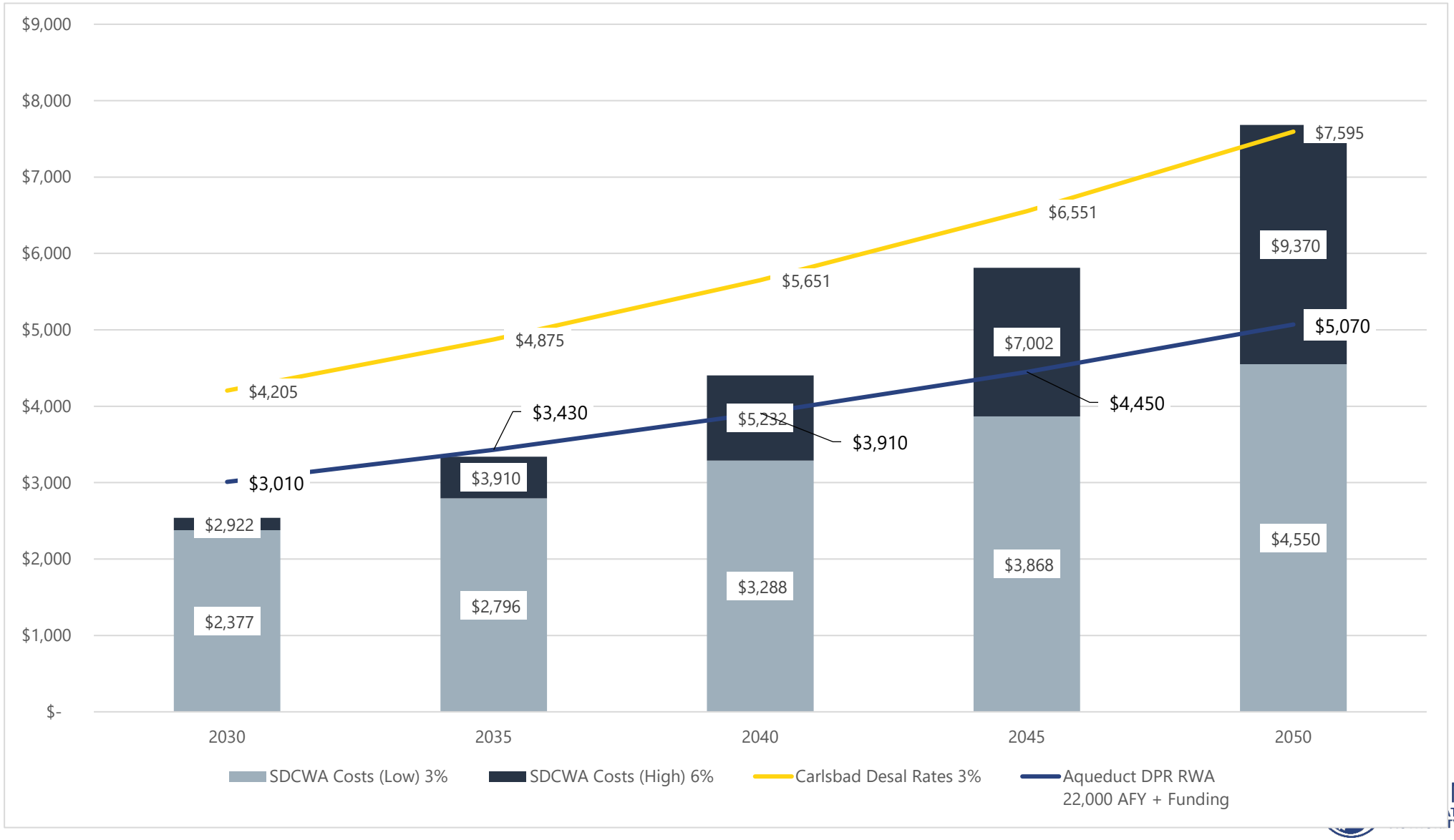


ENCINA WASTEWATER AUTHORITY

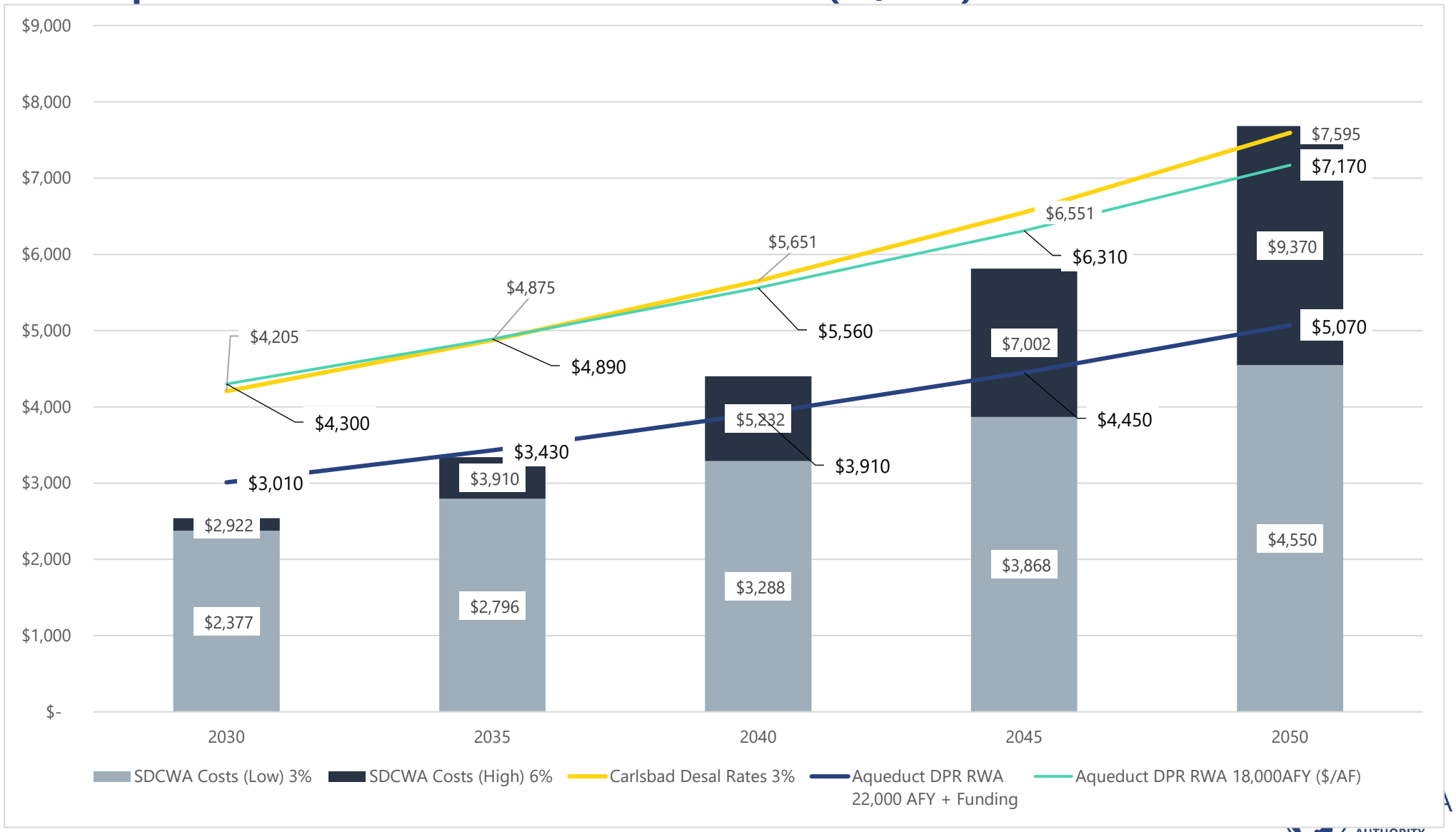
Aqueduct RWA (18K AFY)
Comparative Cost of Water ($/af)



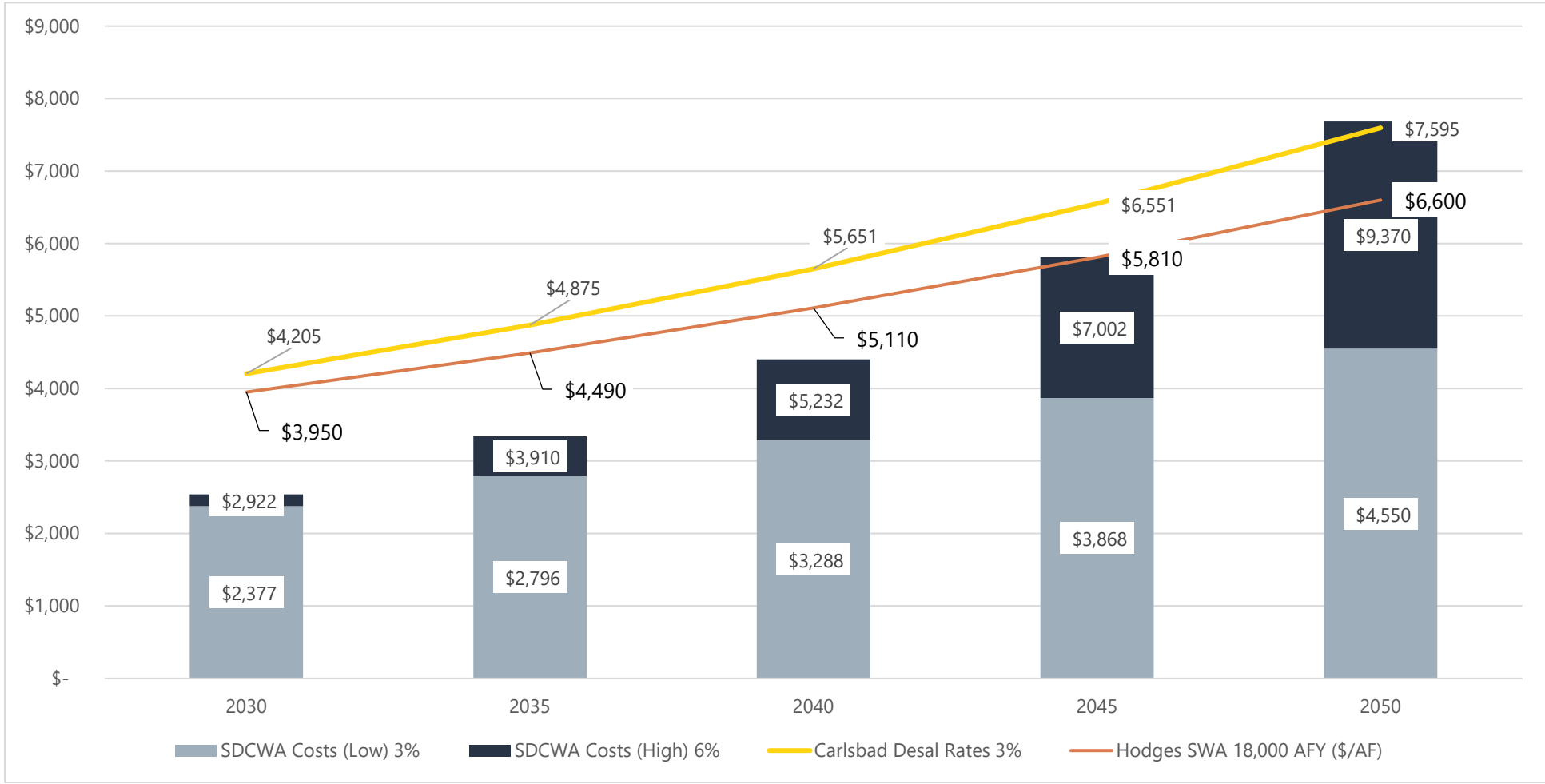
Aqueduct RWA (22K AFY + Funding) Comparative Cost of Water ($/af)



Aqueduct RWA
Comparative Cost of Water ($/af)

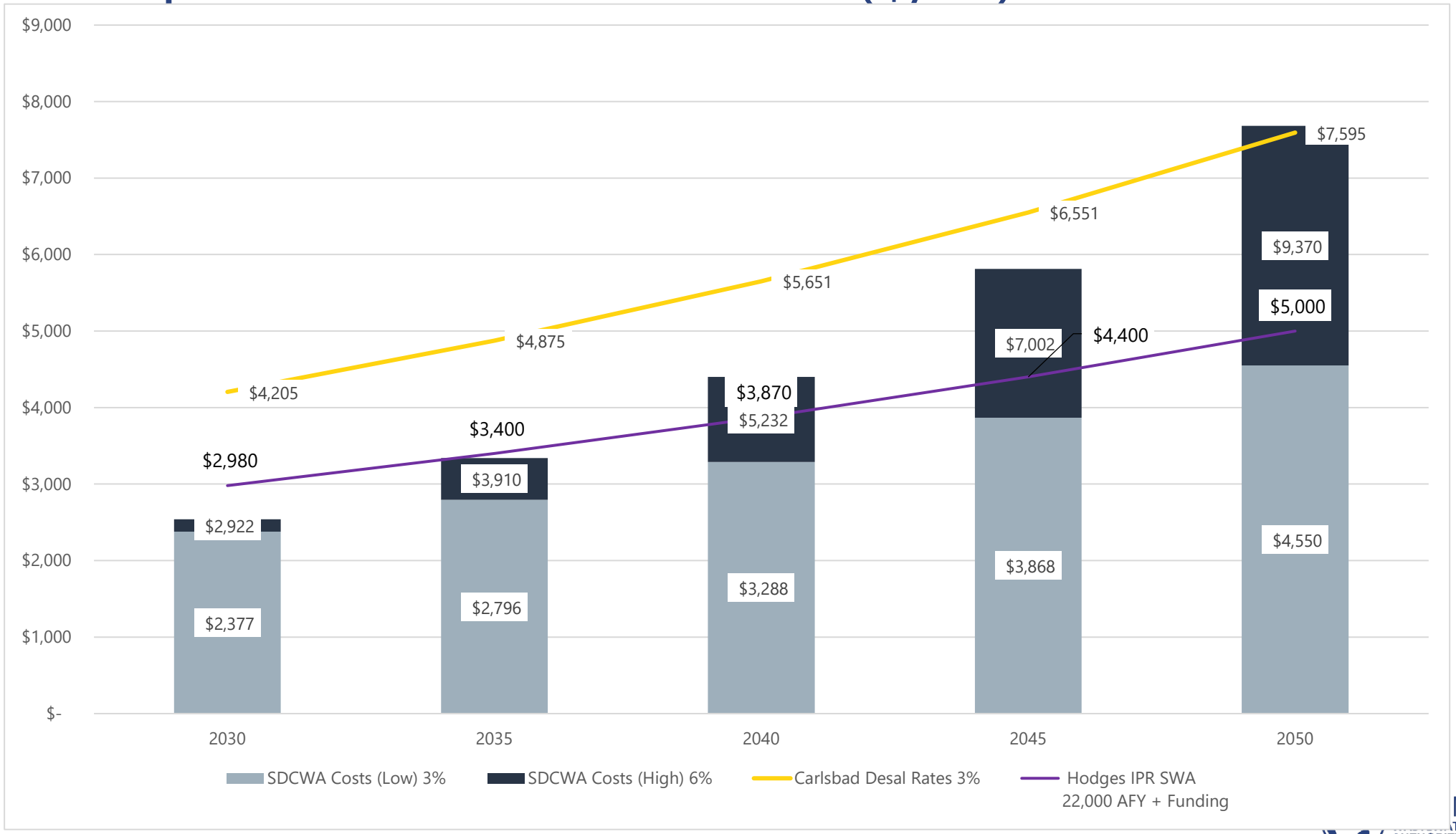


Lake Hodges SWA (18K AFY) Comparative Cost of Water ($/af)

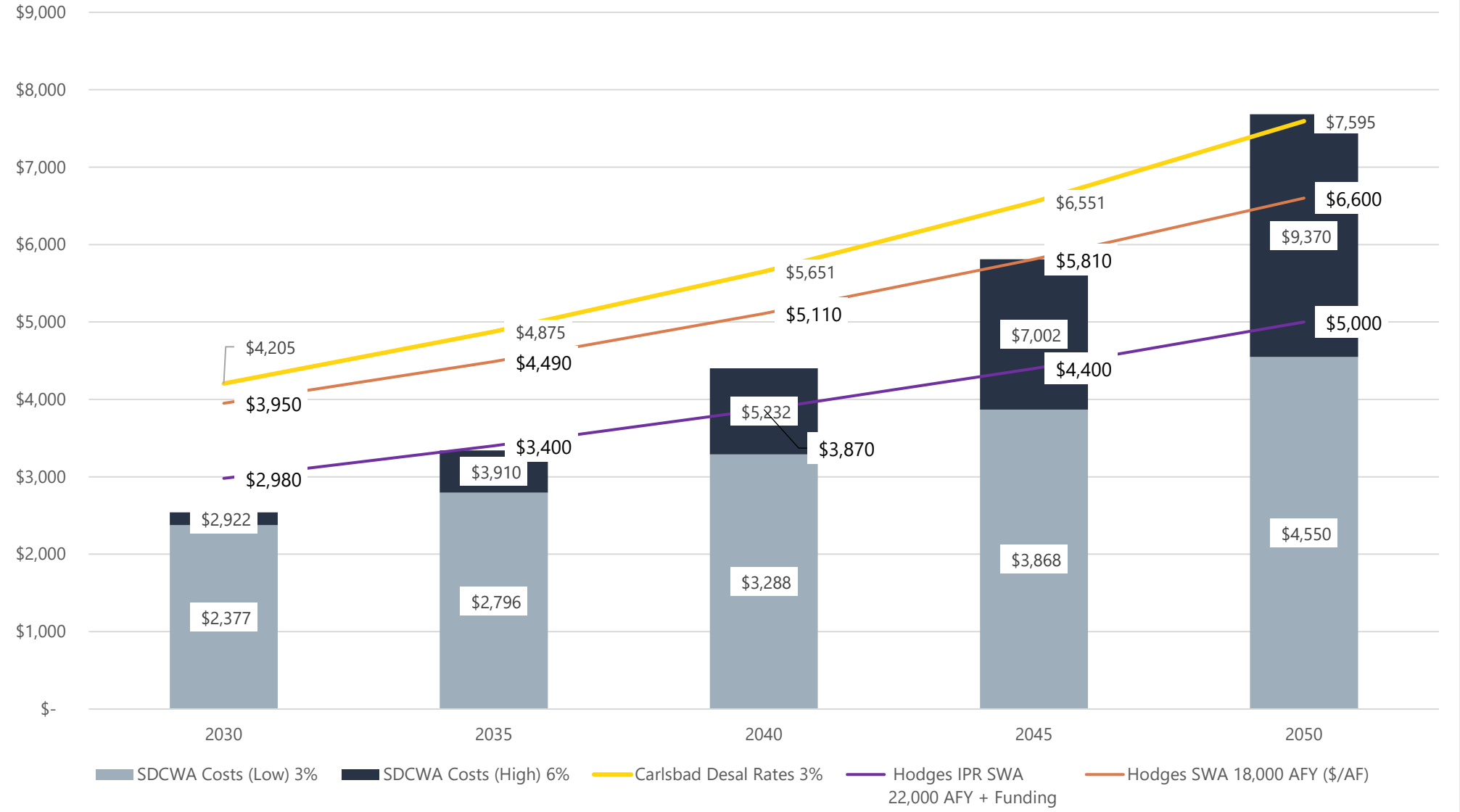


ENCINA WASTEWATER AUTHORITY

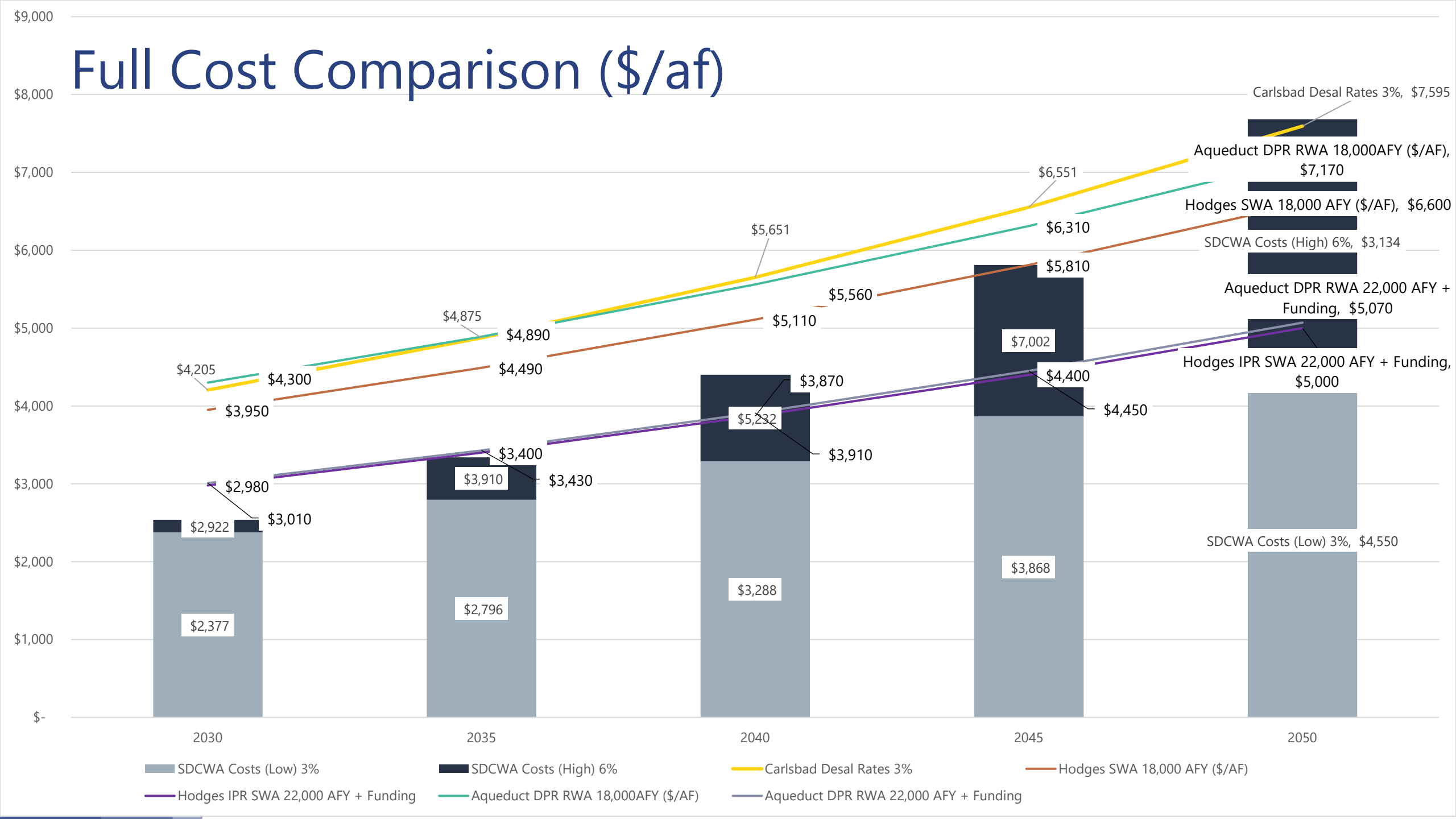
Lake Hodges SWA (22K AFY + Funding) Comparative Cost of Water ($/af)



Lake Hodges SWA
Comparative Cost of Water ($/af)



Full Cost Comparison ($/af)



ENCINA
WASTEWATER
AUTHORITY

Thank you!

APPENDIX C: LETTER FROM MIKE LEVIN

HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515

March 22, 2023

I would like to highlight the significance of the Encina Wastewater Authority's (EWA) One Water North San Diego Project. The One Water North San Diego Project offers innovative solutions that show potential to create local, sustainable water sources and help offset reliance on imported water. With climate change and persistent drought impacting water availability in our region, this project is key for ensuring a reliable water supply for our community.

The wastewater flows and facilities at the Encina Water Pollution Control Facility (EWPCF) represent a unique opportunity for large-scale production of purified water. The One Water North San Diego Project is estimated to be able to produce approximately 20,000 acre-feet per year of purified water for potable reuse in North San Diego County at EWPCF. Key assets available at the EWPCF site to support a potable reuse project include an ocean outfall, available land for an advanced treatment facility, treated secondary effluent, and technically capable staff.

Additionally, EWA currently generates 85 percent of its own power and that same process can be expanded to benefit water reuse efforts to create purified drinking water. By realizing the full potential of power generation at EWA for the One Water North San Diego Project, up to 30 percent of the power demands for the facility can be offset. This could result in a more cost-effective water supply that is produced and controlled locally.

The success of the project requires collaboration with local partners such as cities and water districts. I encourage these partners to contribute to this collaborative regional effort. As I continue my work on the House Natural Resources Committee, I remain committed to providing federal support to projects in the district that advance water recycling efforts. I look forward to the positive impacts the project will have in our region. Please contact me or my staff if you have any further questions.

Sincerely,

Mike Levin
Member of Congress

Woodard & Curran

woodardcurran.com