Placer County Water Agency

Water Connection Charge Cost Study Lower Zone 6 - 2026 Update

-September 17, 2026-

An update to the Water Connection Charge Study Lower Zone (Zone 6)

-December 2024-

Prepared by:

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PCWA
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Executive Summary

This report provides a focused update to the December 2024 Water Connection Charge (WCC) Study for Lower Zone 6. At the direction of the Board of Directors on October 2, 2025, staff evaluated actual construction bid results for four major capital improvement projects representing approximately one-quarter of the expansion capital program. The updated bid information was incorporated into the existing WCC model while maintaining all other assumptions established in the December 2024 Study, including system capacity, projected development, units of capacity, allocation methodology, and absorption. Based on these updated construction costs and associated financing requirements, staff recommends increasing the retail Water Connection Charge from $25,815 to $30,052 per Unit of Capacity.

The review indicates that the actual bid prices varied from the escalated cost assumptions used in the 2024 WCC Study. Without updating the WCC, new development would under-contribute toward the revised cost of expansion facilities, shifting a portion of growth costs to future customers until the comprehensive WCC update is completed. Therefore, an adjustment to the WCC is required to appropriately distribute costs to all future customers. This review addresses Board support of this topic on February 5, 2026, to correct the WCC to collect the appropriate level of funds for necessary infrastructure. Agency staff intend to commence on a larger WCC effort immediately following this focused update to address a full program update.

Background and Purpose

The 2024 WCC Study established the cost basis for new system capacity using the Incremental Cost Method, a widely accepted approach wherein new development pays the proportionate cost of backbone facilities required to serve growth. The total cost basis was derived from:

- The expansion Capital Improvement Plan (CIP)
- Debt service and future borrowing assumptions
- Remaining system capacity, Units of Capacity (UOCs)
- Absorption rate of the UOCs

Summary of Past Efforts

The current WCC is based on a December 2024 Study and adopted under PCWA Resolution 24-26. The 2024 Study is based on:

- 40-year CIP horizon.
- Costs were escalated using Handy-Whitman indices for water-sector infrastructure.

- Remaining system capacity from Auburn/Bowman, Foothill/Sunset/Ophir, plus 30 MGD from the future Ophir WTP, established 30,737 total UOCs.
- The WCC model couples capital spending, debt service, and UOC absorption to determine per UOC cost.

Previous Cost Basis Calculation

The prior cost basis incorporated:

- $614.3M in escalated capital project costs
- $109.4M in future debt interest
- $33.6M existing WCC related debt
- $16.3M CalAm surcharge **credit**
- Net cost basis: $741.0M

This produced a retail WCC of $25,815 per UOC, as presented below.

	Current WCC
Retail	$25,815
Wholesale: Lincoln	$20,075
Wholesale: Cal Am	$22,982

The report was presented to the Board on December 19, 2024, and placed into effect on January 1, 2025. Pursuant to the Agency's Rules and Regulations, effective January 1 of each year, the WCC for each drinking water system shall be increased in proportion to any increase in the Engineering News Record (ENR), Construction Cost Index for the San Francisco region, that occurred over the twelve-month period from June to June of the preceding year. However, the ENR did not increase to warrant an increase on January 1, 2026, and the current fee of $25,815 per UOC is currently in effect.

Analysis

The analysis confirms actual bid prices vary from previous study assumptions as a whole, with the major difference being Ophir WTP. All other cost-basis inputs remain valid, assuming the same starting point of 2024, including:

- Capacity: 35.35 MGD total
- UOCs: 30,737
- UOC absorption: 950 per year
- Inflation: 3% long-term

- Debt Interest: 4.75%
- Retail/Wholesale split
- Cash balance $55.9M
- Debt Reserve $10M
- $33.6M existing WCC-related debt
- $16.3M CalAm surcharge **credit**

Recent Bid Projects

Since the adoption of the 2024 WCC Study, the Agency has bid four projects listed in the CIP list. These four were the first major projects with market-tested bids that provide a checkpoint of real-world dollar amounts to verify the escalation assumptions present in the 2024 WCC Study.

Project	Functional Area	Bid Year	2024 Estimated Cost ($M)	Updated Project Costs ($M)[2]	Difference ($M)
Ophir WTP – 10 MGD	Treatment	2026	$129.18	$206	$76.820
Foothill WTP Valve Station	Treatment	2024	$1.097	$1.545	$0.448
ARPS and ORPS Standby Power[1]	Treatment	2025	$7.749	$5.9	- $1.849
Placer Parkway Pipeline	Transmission	2026	$8.884	$8.68	- $0.204

[1] American River Pump Station (ARPS) and Ophir Road Pump Station (ORPS) received a $2.3 M grant - total project costs were $8.2 M.

[2] The updated costs include incurred costs pre-bid, construction (bid) costs, and soft costs for construction.

The bid projects result in programmatic changes of $75.4 million in the Treatment Functional Area category and a credit of $0.2 million in the Transmission Functional Area category.

Program Changes

Recent updates to the capital improvement program reflect $689.5 million in escalated capital project costs, representing a $75.2 million increase from the prior basis.

Item	2024 Study	2026 Update
Capital Program	$614M	$689M
Debt (Net Present Value of interest)	$109M	$168M
Cost Basis[1]	$741M	$874M
Retail WCC	**$25,815**	**$30,052**

[1]Includes existing debt service and transmission surcharge credits on top of Capital Costs and NPV of new debt.

The increased capital costs occur primarily during the early phases of the capital program. Because these facilities must be constructed before sufficient WCC revenues are collected, the financing model requires additional borrowing to maintain the minimum $10 million reserve established in the WCC model. The resulting increase in capital costs are directly proportionate to the financing costs, which are incorporated into the updated cost basis using the same methodology applied in the December 2024 Study. This update shows the new borrowing totals $286 million, which is in three issuances: $136 million in 2026, $45 million in 2031, and $105 million in 2038. A comparison of the required debt issuance is below.

Debt issuance	Year	2024 Study ($M)	2026 Update ($M)	Increase ($M)
1	2026	60	136	76
2	2031	30	45	15
3	2038	105	105	0
Total		195	286	85

Updated Cost Basis Summary

Treatment, transmission, storage, groundwater, planning, and surcharge components have been recalculated based on updated costs. The resulting incremental fee per UOC across all functional areas is summarized in the table provided, with the total escalated cost basis increasing from $741.0 million to $874.1 million.

Using the revised capital costs and financing assumptions while maintaining all other assumptions from the December 2024 Study, staff recalculated the Water Connection Charges shown below.

Functional Area	Original Cost Basis	Cost Basis [A]	Available Capacity (UOC) [B]	Incremental Fee per UOC [A] / [B]
Treatment	$324,608,659	$441,021,985	30,737	$14,348
Transmission	$290,542,460	$304,364,876	30,737	$9,902
Storage	$67,249,000	$67,249,000	13,781	$4,880
Groundwater	$11,000,000	$11,000,000	13,781	$798
Planning (retail)	$1,705,406	$1,705,406	13,781	$124
Planning (wholesale)	$1,049,218	$1,049,218	16,957	$62
Cal-Am Surcharge	$44,879,563	$47,675,418	15,440	$3,088
Total	**$741,034,305**	**$874,065,903**		

These changes result in a revised retail Water Connection Charge (WCC) of $30,052 per UOC.

Recommendations

The table below shows the build-up calculation of the WCC, by functional category and customer type. The WCC is the summation of the individual functional categories attributable to each class of customer, which results in a proposed fee of $30,052 per Retail UOC, $24,312 per Wholesale UOC for the City of Lincoln, and $27,400 per Wholesale UOC for Cal-Am.

Functional Category	Retail	Wholesale: Lincoln	Wholesale: Cal-Am
Treatment	$14,348	$14,348	$14,348
Transmission	$9,902	$9,902	$9,902
Storage	$4,880	N/A	N/A
Groundwater	$798	N/A	N/A
Planning	$124	$62	$62
Cal Am Surcharge	N/A	N/A	$3,088
Total	**$30,052**	**$24,312**	**$27,400**

The dollar and percentage change from the existing WCC, by customer class, is summarized below.

	Current WCC	Proposed WCC	$ Change	% Change
Retail	$25,815	$30,052	$4,237	16.4%
Wholesale: Lincoln	$20,075	$24,312	$4,237	21.1%
Wholesale: Cal Am	$22,982	$27,400	$4,418	19.2%

APPENDIX A:

Water Connection Charge Study – Lower Zone (Zone 6) dated December 2024

Placer County Water Agency

Water Connection Charge Study
Lower Zone (Zone 6)

Final Report / December 2024

Financial Analysis Support by:

RAFTELIS

Prepared by:

PCWA

RAFTELIS

November 21, 2024

Carrie Parks
Deputy Director of Financial Services
Placer County Water Agency
144 Ferguson Road
Auburn, CA 91362

Subject: Water Connection Charge Study Report for Lower Zone 6

Dear Ms. Parks,

Raftelis Financial Consultants, Inc. (Raftelis) is pleased to provide this Water Connection Charge (WCC) Study Report (Report) for the Lower Zone (also called Zone 6) to Placer County Water Agency (PCWA or Agency). This report details the approach, estimates, and calculations used to derive the resulting WCC per unit of capacity (UOC). PCWA engineering staff provided foundational data and direction with Raftelis supporting staff with calculations, review of assumptions and methodology, and advice toward fee modifications and evaluation of alternatives.

Sincerely,



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Senior Manager

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Table of Contents

1. EXECUTIVE SUMMARY 1
1.1. BACKGROUND OF THE STUDY 1
1.2. CAPACITY FEES 1
1.3. WCC HISTORY 1
1.4. 2024 STUDY ASSUMPTIONS 2
1.5. RECOMMENDED FEES 2
2. BACKGROUND AND LEGAL FRAMEWORK 3
2.1. ECONOMIC BASIS AND RATIONALE 3
2.2. CAPACITY FEES: LEGAL FRAMEWORK AND CALIFORNIA REQUIREMENTS 4
3. METHODOLOGY 4
3.1. RECOMMENDED METHODOLOGY – INCREMENTAL COST METHOD 5
3.2. ESTIMATED PROJECT COSTS 6
4. COST BASIS AND EQUIVALENT UNITS 7
4.1. COST BASIS 7
4.2. EQUIVALENT UNITS AND FUTURE DEMAND 8
5. PROPOSED WATER CONNECTION CHARGE 10
5.1. INCREMENTAL UNIT CHARGE 10
5.2. LONG TERM ESCALATION 11

List of Tables

Table 3-1: Capital Improvement Project Cost Escalation 7
Table 4-1: WCC Cost Basis 8
Table 4-2: System Capacity Summary 9
Table 4-3: Units of Capacity 9
Table 5-1: Incremental Charge per UOC, by Functional Category 10
Table 5-2: Calculated WCC by Customer Class 10
Table 5-3: Current vs Proposed WCC by System Area 11

List of Appendices

APPENDIX A: Capital Improvement Plan Map
APPENDIX B: Projected Expansion Capital Project List
APPENDIX C: Debt Assumptions
APPENDIX D: Detail Tables

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1. Executive Summary

1.1. Background of the Study

Placer County Water Agency ("PCWA" or "Agency") was created through an Act from the California State Legislature in 1957. The Agency, with a jurisdiction encompassing the entire County of Placer, is governed by an elected five-member Board of Directors. The Agency currently serves more than 38,000 retail treated water customers in all of Zone 6 also known as the Western Water System.

Capacity fees are one-time fees, collected as a condition of establishing a new connection to the Agency's treated water system or the expansion of an already existing connection. The purpose of these fees is for development to pay for its fair share of the costs of water facilities. These fees are designed to be proportional to the demand placed on the system by the new or expanded connection. The primary objective of establishing a full cost-recovery capacity fee is to provide an equitable means by which new system users or existing customers requiring additional system capacity contribute their fair share to the costs associated with the water facilities required to serve them. PCWA uses the term Water Connection Charge (WCC) in place of capacity fee.

PCWA retained Raftelis to complete an update to the WCC for the Lower Zone 6. Raftelis worked collaboratively with Agency staff, who led analyses internally, with Raftelis providing high-level insight, analysis review, alternatives for evaluation, and vetting recommended fees. This report provides details of the analysis in which updated WCCs are determined in accordance with Government Code Section 66013. This report serves as formal technical documentation in support of modifications to the WCC for Lower Zone 6.

The recommended capacity fees for the service area do not exceed the estimated reasonable costs of providing the facilities for which they are collected and are of proportional benefit to the property being charged.

1.2. Capacity Fees

Capacity fees, or Water Connection Charges, are also commonly known as developer fees, development impact fees, connection fees, tap fees, and system development charges, among others. All are one-time capital charges assessed against a new connection to recover the proportional share of capital facility investment previously constructed by a utility (or will be constructed) to accommodate growth *or* required to be constructed or expanded to accommodate development. Capacity fees are codified in the California Government Code Sections 66000-60025. Capacity fees must reflect the link between the fee imposed on, and the benefit received by, a new connection to the system. The fee charged may not exceed the reasonable share of costs associated with providing the service. Capacity fees rely on one of three different methodologies further explained in Section 3.

1.3. WCC History

Over the past 24 years, PCWA has periodically reviewed and reevaluated the WCC and updated the WCC model. The WCC model is monitored annually and updated as needed. During this period, the WCC model has been revised in 2005, 2014, and most recently in 2017. Since 2017, there have been some changes in the assumptions that warrant the WCC to be analyzed again.

Based on the observations and data collected over the past several years, the Agency has determined available capacity for resale needs to be updated to establish a new baseline year for maximum day demands and annual

demands, reflect current water treatment plant capacities, and address the effects of the drought and conservation efforts on demands within the water systems. While the capital plan has not changed substantially, the timing of various large developments have changed in addition to decreased treated water demands – deferring timing of the capital plan. For example, the 2017 analysis assumed Ophir WTP construction in 2020; however, the first phase of the treatment plant is now forecasted in 2030 due to increased water efficiencies.

1.4. 2024 Study assumptions

Available Capacity

In 2023, PCWA adopted the year 2021 to be the new baseline reference year, reserving a committed demand and setting available capacity for sale. At the beginning of 2024, a report to the Board of Directors summarized that there was 5.35 million gallons per day (MGD) in the Lower Zone 6 area, 2.4 MGD in the Foothill and Sunset WTP, and approximately 3 MGD in the Auburn and Bowman WTP. This analysis assumes a remaining amount of 4,650 UOCs and an additional 26,087 UOCs with the construction of the Ophir WTP.

Absorption

The absorption, or the anticipated annual rate at which the UOCs will be realized, is estimated at 950 UOC's, and broken down by retail or wholesale service area. A breakdown is provided in Section 4.2

Capital Plan

The 2024 capital plan includes projects located from Auburn to west Placer County, utilizes approximately 5 MGD of existing capacity from the Auburn, Bowman, Foothill and Sunset WTPs, and constructs the proposed Ophir WTP, 26 miles of pipelines, five storage tanks, and two groundwater wells. These facilities are illustrated in a map attached as Appendix A and listed with cost estimates in Appendix B. The project listing is organized by the three phases of the Ophir WTP program, in addition to system transmission projects. Each project includes a project identifier, project name, size, length (if applicable), type of project, and anticipated construction year start. The total cost of this program is estimated to be $614 million and is distributed in a cash flow model through 2060. Project cost estimates were developed as outlined in Section 3.2.

1.5. Recommended fees

PCWA's current calendar year 2024 WCC is $22,821 for one Unit of Capacity (UOC) for retail customers. Based on the existing approach, a UOC represents a unit of measure for the maximum daily demand on the capacity of the Agency's treated water system that is required to serve a customer. There are two main wholesale customers for whom different capacity charges are derived. The Agency provides water to the City of Lincoln (Lincoln) and California American Water Company (Cal-Am). WCCs are calculated for retail customers as well as both wholesale entities to reflect the specific costs associated with extending additional service in their service areas.

Since the Lower Zone is nearing existing capacity and has significant long-term development planned for in the service area, it is reasonable and appropriate to continue to determine WCCs based on the incremental cost method. Raftelis worked closely with PCWA engineering and finance staff to determine the value of the expansion capital program, construction in progress, future external debt borrowing estimates for certain facilities, and nuances within the planned CIP projects benefiting wholesale versus retail customers. PCWA staff also provided information on existing system capacities and allocated capacity.

The cost of the expansion-related capital improvements in current dollars is $614.3 million, including $50.8 million for a transmission Cal-Am surcharge. Added to this cost is the net present value (NPV) of future debt financing

interest costs of $109.4 million, existing WCC debt service of $33.6 million, and a Cal-Am surcharge credit of $16.3 million for a total NPV of $741 million excluding a beginning cash balance. As of January 1, 2024, the Agency had a WCC cash balance of $50.9 million, which is included in the analysis less a minimum of $10 million in debt reserves.

The resulting proposed updated Lower Zone WCC is $25,815 per retail UOC. As previously stated, the Study relies on, and maintains, the incremental cost method to determine the Lower Zone 6 WCC. The model utilized in this Study considers both the total costs of capital and the total incremental UOCs served through expanded facilities, as well as the estimated annual new connections (referred to as the *absorption rate*) and the associated cash flow of WCC revenues and project expenditures. The numbers shown in all tables are rounded; therefore, hand calculations based on the displayed numbers, such as summing or multiplying, may not equal the exact results shown.

2. Background and Legal Framework

PCWA was created through an Act from the California State Legislature in 1957. The Agency, with a jurisdiction encompassing the entire County of Placer, is governed by an elected five-member Board of Directors. The Agency serves more than 38,000 retail treated water customers in all of Zone 6 or Western Water System. It provides wholesale water to the City of Lincoln and California American Water Company.

2.1. Economic Basis and Rationale

For publicly owned systems, most of the assets are typically paid for by the contributions of existing customers through rates, charges, securing debt, and taxes. In service areas that incorporate new customers, the infrastructure developed by previous customers is generally extended to serve new customers. If little to no capacity remains, an agency will look to expand existing facilities or construct new facilities to serve new users.

The basic economic philosophy behind capacity fees is that the costs of providing service should be paid for by those that receive the benefit. To effect fair distribution of the value of the system, or expanded facilities, the charge should reflect a reasonable estimate of the cost of providing capacity to new users and not unduly burden existing users through a comparable rate increase. Accordingly, many utilities make this philosophy one of their primary guiding principles when developing their capacity fee structure.

The philosophy that service should be paid for by those who receive benefit is often shortened to "growth-should-pay-for-growth." The principal is summarized in the American Water Works Association (AWWA) Manual M26: *Water Rates and Related Charges*:

> *"The purpose of designing customer-contributed-capital system charges is to prevent or reduce the inequity to existing customers that results when these customers must pay the increase in water rates that are needed to pay for added plant costs for new customers. Contributed capital reduces the need for new outside sources of capital, which ordinarily has been serviced from the revenue stream. Under a system of contributed capital, many water utilities are able to finance required facilities by use of a 'growth-pays-for-growth' policy."*

This principle, in general, applies to water systems. In the excerpt above, customer-contributed-capital system charges are equivalent to WCCs.

2.2. Capacity Fees: Legal Framework and California Requirements[1]

Understanding and complying with local laws and regulations governing the establishment, calculation, and implementation of WCCs is important when establishing capacity fees. The following sections summarize the regulations applicable to the development of WCCs for the Agency.

Connection charges must be established based on a reasonable relationship to the needs and benefits brought about by the development or expansion. Courts have long used a standard of reasonableness to evaluate the legality of development charges. This is sometimes referred to as the *rational nexus test* which requires a reasonable relationship between the amount of the charge and the cost to serve the new development. The basic statutory standards governing capacity fees are embodied by California Government Code Sections 66013, 66016, 66022 and 66023. Government Code Section 66013 contains requirements specific to determining utility development charges:

> *"Notwithstanding any other provision of law, when a local agency imposes fees for water connections or sewer connections, or imposes capacity charges, those fees or charges shall not exceed the estimated reasonable cost of providing the service for which the fee or charge is imposed, unless a question regarding the amount the fee or charge in excess of the estimated reasonable cost of providing the services or materials is submitted to, and approved by, a popular vote of two-thirds of those electors voting on the issue."*

Section 66013 also includes the following general requirements:

- Local agencies must follow a process set forth in the law, making certain determinations regarding the purpose and use of the charge; they must establish a nexus or relationship between a development project and the public improvement being financed with the charge.
- The connection charge revenue must be segregated from the General Fund in order to avoid commingling of connection charges and the General Fund.

3. Methodology

A system development charge (SDC), more commonly known as a capacity fee, is generally a one-time charge paid by a new water system customer for the cost of backbone facilities necessary to provide water system capacity to that new customer. However, it may also be assessed to an existing customer requiring increased water system capacity. Revenues generated by this charge are used to pay for an equitable share of existing facilities, growth-related water facilities, or sometimes the combination of the two. Backbone facilities refer to those components of the system that are necessary to provide service to all customers ("general benefit"), inclusive of sources of supply, treatment, pumping, major water transmission lines, and daily storage. Smaller water distribution pipelines are not included as part of backbone facilities.

[1] Raftelis is not a law firm and this section should not be construed as legal advice

A connection charge may be developed as a single charge for the entire backbone system or as individual charges for each backbone component. PCWA has historically calculated the WCC as a single charge, with the charge components identified within the charge's build-up as demonstrated in this study report.

According to the AWWA Manual M1 capacity charges (referred to in the M1 as *System Development Charges*) generally use one of three approaches: *Buy-in method, incremental cost method, or combined cost approach.* The selection of a given method is largely driven by system characteristics, with other considerations including agency policies, state regulations, and philosophical considerations on what constitutes fairness and equitable cost allocation and recovery.

3.1. Recommended Methodology – Incremental Cost Method

The Incremental Cost Method assigns to new development the incremental cost of system expansion needed to serve new development. The financial objective is to provide system expansion to serve new development without an undue impact on existing user rates. Generally, this method is most appropriate for agencies where, like PCWA's Lower Zone 6 system, the existing system has "limited or no capacity to serve new development and new or incremental facilities are needed to serve development now and into the future[2]."

When utilizing the Incremental Cost Method, it is important to have a capital improvement plan (CIP) that identifies the costs associated with new capacity, the timing of the expenditure, and the proposed source(s) of funds for those capital improvements. The Incremental Cost Method is designed to equitably distribute these capital costs to new customers in proportion to the new customer's usage of the facilities and the investment required to develop the facilities. The valuation of the incremental assets are developed, adjusted for any grants or other capital contributions, and then divided by the capacity (in this study represented in million gallons per day (MGD) for treatment capacity and gallons per day (gpd) for purposes of a UOC) to derive a cost per unit of measure of new facilities. The result is a capacity charge for new customers that reflects the capital investment required and the "incremental" cost of providing an additional unit of capacity.

Figure 3- shows the framework for calculating a capacity fee using the Incremental Cost Method. If it costs X dollars ($X) to provide 100 additional units of capacity for average usage and a new connector uses one of those equivalent units, then the new user would pay $X/100 to connect to the system. In other words, new customers pay the cost of one more unit of capacity.

Figure 3-1: Formula for Incremental-Cost Method



When using the incremental method, there is typically a cash flow timing difference, because the facilities have to be built (and financed) before new customers can connect to them. Therefore, it is common to include carrying costs of financing instruments in the incremental cost. In addition, it is important to consider service area in the

[2] AWWA Manual M1

development of a connection charge under the incremental method as the Agency does, to discriminate between areas with significant cost of service that differ from the service territory as a whole.

PCWA's existing Lower Zone 6 water system has treatment capacity of 80 MGD. MGD is the unit of measure of identifying and allocating system capacity for purposes of the WCC. Of the existing 80 MGD, approximately 75 MGD is currently allocated to, and utilized by, existing users. This leaves little remaining capacity for future users. PCWA anticipates significant growth in the lower zone, with additional treatment, storage, and mainline transmission facilities required to serve future users. New development is estimated to average 950 UOCs per year over the long-term.

To accommodate system growth, PCWA staff have developed a long-term expansion-related infrastructure program that will create an additional 30 MGD of capacity, constructed in three phases over the next 40 years. At its core, the program relies on the expansion of the Ophir Water Treatment Plant (WTP) in three 10 MGD phases, plus associated transmission, storage, and related assets. While California Code 66013 (b)(3) does not define a specific period over which to include future projects, these periods can be as long as a master planning period. Under the incremental cost method approach in this Study, the full 40-year expansion capital program and total incremental units of capacity are utilized in deriving the proposed WCC.

3.2. Estimated Project Costs

The WCC methodology was last updated in 2017, incorporating changes to land use assumptions for future development and changes to the proposed phasing for the Ophir WTP. This study utilized a comprehensive capital plan completed by the Agency in 2015. Project cost estimates from this 2015 capital plan were escalated to 2017 dollars by using the Engineering News Record Construction Cost Index or San Francisco (ENR-CCI-SF). PCWA has also used this methodology to escalate costs for earlier studies.

For this Study, project costs were similarly escalated from the Agency's 2015 comprehensive capital plan to 2024 dollars using the Handy Whitman index, rather than ENR-CCI-SF. For projects where detailed cost estimates were available, these estimates were used in lieu of escalation. The Handy Whitman tracks cost trends specific to water utilities across six regions in the country. In addition, it breaks down these costs indices into 24 subcategories such as electric pumping equipment or cast iron mains for distribution. Handy Whitman has increased by more than ENR-CCI-SF over the last decade, and Staff indicated that it more accurately reflected the inflation seen in project cost estimates since 2015. Project costs have been indexed to the January 1, 2024, value of Handy Whitman. The Handy Whitman index for the escalation period cannot be published due to copyright-protection, but is available to view at PCWA's office.

Six categories of cost escalators were created by functional area, grouping related components of the Handy Whitman index and averaging them. This allows for more precise escalation factors that can be tailored to each capital project category. The six functional areas and their corresponding Handy Whitman components used are:

- Treatment: includes Pumping Plant Electric Pumping Equipment; Water Treatment Plant Structures & Improvements; Large Treatment Plant Equipment; Small Treatment Plant Equipment; Flocculating Equipment – Installed; Clarifier Equipment – Installed; and Filter Gallery Piping - Installed
- Transmission - Pump Station: includes Pumping Plant Structures and Improvements and Pumping Plant Electric Pumping Equipment
- Transmission – Pipeline: includes Cast Iron Mains and Steel Mains
- Storage: includes Water Treatment Plant Structures & Improvements
- Groundwater: includes Pumping Plant Structures & Improvements and Pumping Plant Electric Pumping Equipment

- Planning: averages all 24 Handy Whitman subcategories

The cost of the capital program was estimated by applying the appropriate category of Handy Whitman (Column B of the table below) to the November 2015 project cost estimate (Column A of the table below), then reducing that number by the remaining project budget as of December 31, 2023, to obtain future program costs (Column C of the table below). The escalated capital program totals to $614.3 million using Handy Whitman and is shown by functional area in Table 3-1 below.

Table 3-1: Capital Improvement Project Cost Escalation

Project Category (Functional Area)	Overall Project Cost – 2015 [A]	Overall Project Cost - 2024, Handy Whitman [B]	Project Cost, Planning Horizon - 2024, Handy Whitman [C]
Treatment	$146,725,000	$255,553,000	$254,618,720
Transmission	$147,551,000	$284,419,000	$278,658,746
Storage	$42,928,400	$67,249,000	$67,249,000
Groundwater	$9,000,000	$11,000,000	$11,000,000
Planning	$3,000,000	$2,825,000	$2,754,624
Total Cost Estimate	**$349,204,400**	**$621,046,00**	**$614,281,091**

A total of $50.7 million is included in the overall Transmission costs of $278.7 million, which represents Cal-Am contributions to fund expansion projects where they are sole beneficiaries.

4. Cost Basis and Equivalent Units

As discussed under the Recommended Methodology section, the WCC is calculated using the Incremental Cost Method. This section steps through the cost basis of the WCC.

4.1. Cost Basis

The initial step in the Incremental Cost Method is to determine the value of the planned expansion projects as detailed in the section above. For the Lower Zone WCC calculation, this includes the improvement costs attributable to retail and wholesale systems, totaling $614.3 million as shown in Table 3-1 above. A detailed list of expansion projects is shown in Appendix B.

Expansion projects costs are estimated in current 2024 dollars and future costs are reduced by previous loaded budgets, as loaded costs are not included in the WCC cash balance. The net present value (NPV) of assumed future debt financing costs of $109.4 million (representing estimated costs of lifetime interest payments) is added to account for the cash flow timing, offsetting some of the risk PCWA and current ratepayers take on if the expansion capital projects are funded and constructed, but development patterns do not occur as anticipated[3]. Existing debt service within the WCC fund of $33.6 million is added to the cost basis and apportioned solely to treatment and

[3] Per the Manual M1: When a utility issues long-term debt to pay for a growth-related capital project, the associated debt service is generally paid using system development charge [WCC] receipts. In doing so, the utility may be able to better align the cash flows related to the debt service with the timing of the new connections and receipts derived from system development charges.

transmission components. Finally, a transmission credit of $16.3 million for the Cal-Am surcharge is subtracted out, which accounts for a portion of the West Placer Pipeline capacity within the retail system that Cal-Am does not need to pay for in addition to the surcharge. The adjusted total cost basis is $741 million, including the $50.7 million of the Cal-Am Surcharge, applicable to Cal-Am customers only. However, each functional area has a different cost basis identified as not all components are applicable to each type of future service (i.e. retail versus wholesale). The cost basis for each functional area is shown in the right-most column of Table 4-1.

Table 4-1: WCC Cost Basis

Functional Area	2024 Project Costs (Current $)	NPV of Future Debt Financing Costs (Interest Only)	Existing Debt Service	Less Transmission Credit for Cal Am Surcharge	Cost Basis
Treatment	$254,618,720	$52,252,019	$17,737,919	N/A	**$324,608,659**
Transmission	$227,897,646	$46,768,408	$15,876,406	N/A	**$290,542,460**
Storage (retail only)	$67,249,000	N/A	N/A	N/A	**$67,249,000**
Groundwater (retail only)	$11,000,000	N/A	N/A	N/A	**$11,000,000**
Planning (retail only)	$1,705,406	N/A	N/A	N/A	**$1,705,406**
Planning (wholesale only)	$1,049,218	N/A	N/A	N/A	**$1,049,218**
Cal Am Surcharge	$50,761,100	$10,417,027	N/A	($16,298,564)	**$44,879,563**
Total	**$614,281,091**	**$109,437,453**	**$33,614,325**	**($16,298,564)**	**$741,034,305**

The beginning balance of the WCC fund is $55.9 million. Interest income is assumed to be earned each year based on the average of the beginning and ending balance in the WCC fund and an interest rate of two percent (2%). In addition to funding CIP spending, the WCC Fund also pays the annual debt service on outstanding debt issued for growth related projects. The analysis assumes new debt will be issued whenever necessary to fund CIP spending and to maintain a minimum WCC balance of $10 million.

4.2. Equivalent Units and Future Demand

The second step in calculating the WCC is to determine the additional units of capacity provided by the expansion-capital program. Dividing the value of the improvements by the additional capacity provides a unit cost for the WCC. Capacity can be expressed in different units of measure and PCWA uses the term UOC. UOCs relate the relative capacity of individual parcels and service connections of various meter sizes purchased from the system. This approach ensures a fair apportioning of costs relative to the benefit received by a new connection. As defined in the Agency's Rules, Regulations, Rates and Charges Governing the Distribution and Use of Water, a UOC is a unit of measure for the maximum daily demand on the capacity of the Agency's treated water system that is required to serve a customer and is defined as 1,150 gallons per day (gpd) of peak demand (also referred to as maximum day demand (MDD)). To calculate the UOCs that can be served through capital improvements in the planning horizon, the additional capacity developed in MGD is divided by 1,150 gpd. Although the projects in the expansion CIP are related to the expansion of the Ophir Water Treatment Plant and other facilities, a modest amount of capacity remains in the existing system. The UOCs able to be served by this modest remaining capacity is added to the incremental UOCs at 30 MGD of expansion, to be consistent with the previous study methodology and current WCC calculation. Zone 6's remaining and additional capacity and corresponding UOCs is shown below in Table 4-2. MGD is converted to UOCs by multiplying by one million and then dividing by 1,150 gallons per day (gpd), the estimated MDD of one UOC.

Table 4-2: System Capacity Summary

Capacity Summary	MGD	UOCs
Remaining Auburn-Bowman	2.93	2,549
Remaining Foothill-Sunset-Ophir	2.42	2,101
Future Ophir WTP	30.00	26,087
Total Available Capacity	**35.35**	**30,737**

The units by functional area are shown in Table 4-3. Transmission and Treatment are systemwide, and therefore have the most UOCs related to providing future capacity to retail and wholesale UOCs. Storage and Groundwater apply only to retail UOCs based on existing water supply agreements. Planning is divided into retail and wholesale costs, and lastly, specific costs that only apply to future Cal-Am UOCs. These Cal-Am costs relate to additional capacity in transmission pipeline segments oversized specifically to serve the Cal-Am service area.

Table 4-3: Units of Capacity

Functional Area	Available Capacity (UOCs)
Treatment	30,737
Transmission	30,737
Storage (retail only)	13,781
Groundwater (retail only)	13,781
Planning (retail only)	13,781
Planning (wholesale only)	16,957
Cal Am Surcharge	15,440

The timing of when an entity needs water is an important step in determining the cash flow of WCC revenues and project expenditures. Zone 6's future capacity partners and associated allocation are shown in Table 4-4. Values are rounded to the nearest whole unit.

Table 4-4: UOC Absorption

Purchaser	Assumed Program Capacity (UOCs)	Avg UOC's per year
Retail	13,781	440
Wholesale – Lincoln	10,870	350
Wholesale – Cal-Am	6,087	160
Wholesale – Roseville	0	0
Total	**30,737**	**950**

5. Proposed Water Connection Charge

5.1. Incremental Unit Charge

The final step in determining the WCC is to divide the cost basis for each functional category (Column A of Table 5-1) by the relevant UOCs (Column B of Table 5-1). Column C of Table 5-1 shows the incremental fee per UOC by functional area.

Table 5-1: Incremental Charge per UOC, by Functional Category

Functional Category	Cost Basis [A]	Available Capacity (UOC) [B]	Incremental Fee per UOC [C] = [A] / [B]
Treatment	$324,608,659	30,737	**$10,561**
Transmission	$290,542,460	30,737	**$9,452**
Storage (retail only)	$67,249,000	13,781	**$4,880**
Groundwater (retail only)	$11,000,000	13,781	**$798**
Planning (retail only)	$1,705,406	13,781	**$124**
Planning (wholesale only)	$1,049,218	16,957	**$62**
Cal Am Surcharge	$44,879,563	15,440	**$2,907**
Total	$741,034,305		

Table 5-2 shows the build-up calculation of the WCC, by functional category and customer type. The WCC is the summation of the individual functional categories attributable to each class of customer which results in a proposed fee of $25,815 per Retail UOC, $20,075 per Wholesale UOC for the City of Lincoln, and $22,982 per Wholesale UOC for Cal-Am. Appendix D details the dollar and percentage changes for each customer type and by functional category.

Table 5-2: Calculated WCC by Customer Class

Functional Category	Retail	Wholesale: Lincoln	Wholesale: Cal-Am
Treatment	$10,561	$10,561	$10,561
Transmission	$9,452	$9,452	$9,452
Storage	$4,880	N/A	N/A
Groundwater	$798	N/A	N/A
Planning	$124	$62	$62
Cal Am Surcharge	N/A	N/A	$2,907
Total	**$25,815**	**$20,075**	**$22,982**

The dollar and percentage change from the existing WCC, by customer class is summarized in Table 5-3.

Table 5-3: Current vs Proposed WCC by System Area

	Current WCC	Proposed WCC	$ Change	% Change
Retail	$22,821	$25,815	$2,994	13.1%
Wholesale: Lincoln	$18,501	$20,075	$1,574	8.5%
Wholesale: Cal Am	$19,893	$22,982	$3,089	15.5%

The analysis assumes new debt is only issued when needed and appropriately sized to minimize debt service costs. The analysis shows that new money borrowing totals $195 million, which is in three issuances: $60 million in 2026 , $30 million in 2031, and $105 million in 2038. See Appendix D for more information on proposed debt issuances and assumptions.

The debt service is to be shared with all future customers, except through the partner buyin, where the partners pre-pay through the Ophir WTP program. This analysis includes $40 million pursuant to a funding agreement between PCWA and the City of Lincoln, dated June 20, 2023, that provides the City of Lincoln WCC capacity. Per the contract, upon PCWA's award of a construction contract for Ophir WTP, the cash balance of the $40 million, with interest, will be converted to Partner Capacity using the Partner WCC at the time of conversion. This partner funding is in addition to a WCC cash balance of $55.9 million as of January 1, 2024.

5.2. Long Term Escalation

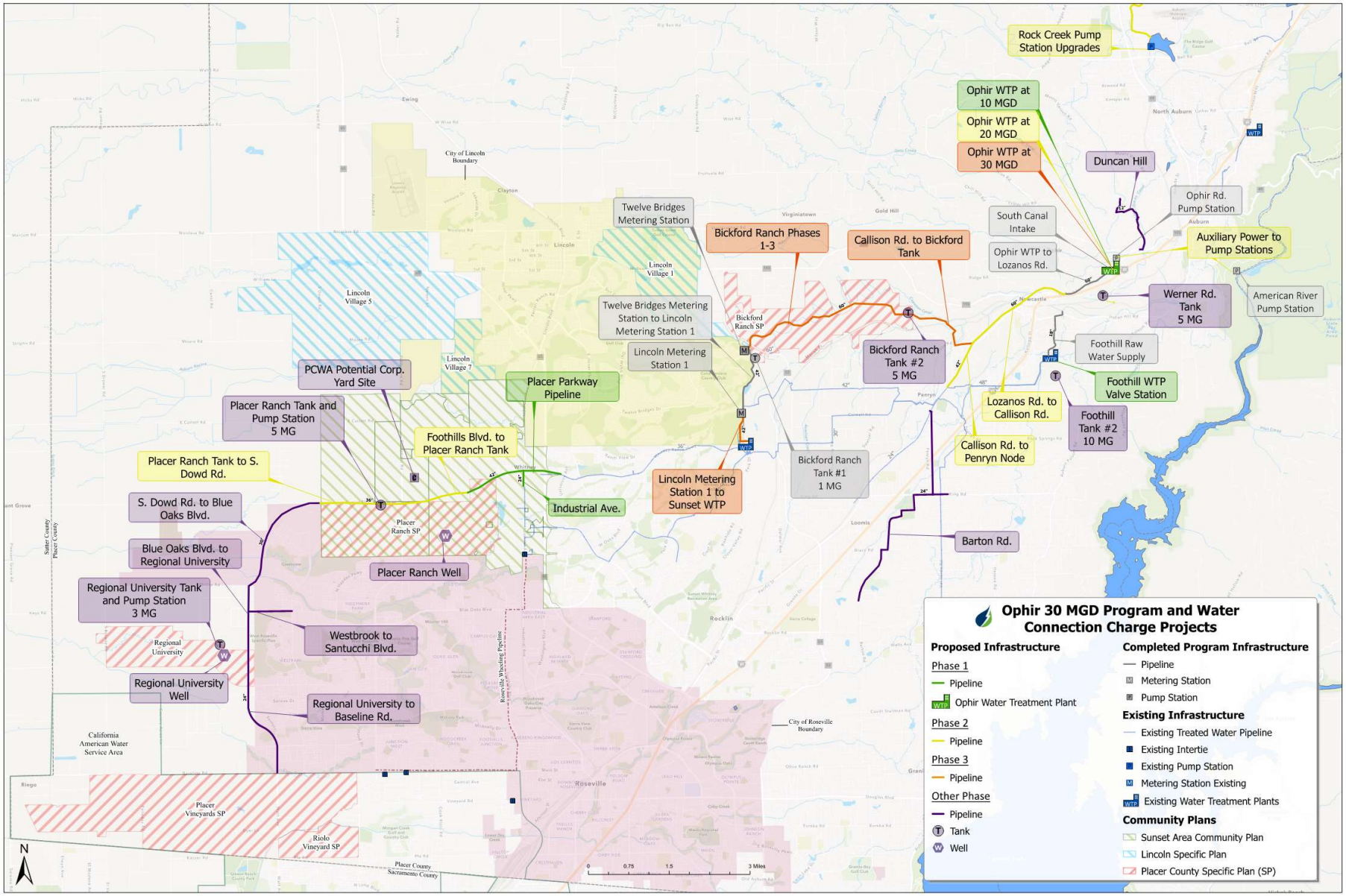
This WCC is based on the value of expansion-related capital improvements as of January 1, 2024. This analysis assumes 3% inflation for both CIP costs and corresponding WCC revenue for the next 20 years. Interest on cash reserves is estimated at 2%. The projects planned here are large-scale, long-term, and the charge will need to increase as construction costs increase to recover sufficient revenue. Since the program is intended to go through 2060, it is anticipated that these inflation rates will differ from actual rates and warrant a periodic revisit of the study.

PCWA reviews and/or adjusts the WCC annually pursuant to the current rules and Regulations (Section 40700). Effective January 1 of each year, the WCC for each drinking water system shall be increased in proportion to any increase in the ENR CCI of San Francisco, that occurred over the twelve-month period from June to June of the preceding year. The proportionate increase will apply to the WCC and to each WCC component. The increase will occur each year without action by the Board. Independently, the Board may approve changes to the existing WCC at any time based upon separate engineering and financial analysis and upon due process for public notification and comment. While PCWA determined the Handy Whitman index for the Pacific Region the best index to adjust cost estimates for this WCC Study, the ENR CCI-SF will remain the annual escalation index at this time.

Raftelis recommends that the need to escalate the WCC should be examined annually with a comprehensive study completed approximately every five years to account for changes in development conditions, project components, financial outlook, or policy developments.

APPENDIX A:
Capital Improvement Plan Map

Appendix A: Capital Improvement Plan Map



APPENDIX B:
Capital Improvement Plan List

Appendix B: Valuation of Future Capital Improvement Projects

Project ID	Project Name	Scheduled Construction Year Start	Project Type (Functional Area)	2024 Costs and Beyond (2024 Dollars)
1-1	Ophir WTP at 10 MGD	2024	Treatment	$129,179,317
1-2	Foothill WTP Valve Station	2030	Treatment	$1,097,493
1-3	Pipeline - Placer Parkway Pipeline	2025	Transmission	$8,884,145
1-4	Pipeline - Industrial Ave.	2028	Transmission	$1,646,000
2-1	Ophir WTP at 20 MGD	2037	Treatment	$75,930,000
2-2	Pipeline - Lozanos Road to Callison Road	2032	Transmission	$33,785,000
2-3	Pipeline - Callison Road to Penryn Node	2035	Transmission	$17,671,000
2-4	Pipeline - Foothills Blvd to Placer Ranch Tank	2038	Transmission	$15,760,000
2-5	Pipeline - Placer Ranch Tank to S. Dowd Rd	2041	Transmission	$11,691,000
2-6	Auxiliary Power at ARPS and OPS	2037	Treatment	$7,748,910
2-8	Rock Creek PS and Ophir Combie Upsize	2034	Treatment	$4,000,000
3-1	Ophir WTP at 30 MGD	2048	Treatment	$36,663,000
3-2	Pipeline - Callison Road to Bickford Ranch Tank	2043	Transmission	$19,173,000
3-3	Pipeline - Bickford Ranch Phase 1	2052	Transmission	$22,901,000
3-4	Pipeline - Bickford Ranch Phase 2	2056	Transmission	$15,291,000
3-5	Pipeline - Bickford Ranch Phase 3	2057	Transmission	$4,152,000
3-6	Pipeline - Lincoln Metering Station 1 to Sunset WTP	2059	Transmission	$5,882,000
4-1	Pipeline - Barton Road_La Vista to Brace	2022	Transmission	$6,358,882
4-2	Pipeline - Barton Road_Brace to King	2047	Transmission	$11,664,000

Project ID	Project Name	Scheduled Construction Year Start	Project Type (Functional Area)	2024 Costs and Beyond (2024 Dollars)
4-3	Pipeline - Barton Road_King to Penryn Tank	2059	Transmission	$8,002,000
4-4	Pipeline - Duncan Hill	2025	Transmission	$2,833,719
4-5	Pipeline - S. Dowd Rd to Blue Oaks	2044	Transmission	$24,190,000
4-6	Pipeline - Blue Oaks to Regional University	2025	Transmission	$4,650,000
4-7	Pipeline - Westbrook to Santucchi Blvd.	2024	Transmission	$3,088,000
4-8	Miscellaneous Pipelines, Oversizing, and Projects	2024	Transmission	$10,000,000
4-9	Well - Placer Ranch	2047	Groundwater	$5,500,000
4-10	Well - Regional University	2031	Groundwater	$5,500,000
4-11	Werner Road Tank #1	2040	Storage	$12,482,000
4-12	Bickford Ranch Tank #2	2051	Storage	$12,733,000
4-13	Placer Ranch Tank	2050	Storage	$12,482,000
4-14	Placer Ranch Pump Station	2050	Transmission	$10,000,000
4-15	Regional University Tank	2028	Storage	$7,307,000
4-16	Regional University Pump Station	2028	Transmission	$10,000,000
4-17	RiverArc	2020	Planning	$325,000
4-18	Water System Planning/Modeling	2024	Planning	$2,429,624
4-19	Pipeline - Regional University to Baseline Road	2058	Transmission	$11,036,000
4-20	Foothill Tank #2	2030	Storage	$22,245,000
4-21	West Placer Corp Yard	2055	Transmission	$20,000,000
Total of All Projects				**$614,281,091**

APPENDIX C:
Debt Assumptions

Appendix C: Debt Issuance Assumptions

Issuance #1	
Issued Year	2026
Amount Borrowed	$60,000,000
Interest Rate	4.75%
Term	30
Discount Rate	2.25%
NPV Interest Only	**$39,263,253**
Issuance Cost	0.60%
Net Proceeds	**$59,640,000**

Issuance #2	
Issued Year	2031
Amount Borrowed	$30,000,000
Interest Rate	4.75%
Term	30
Discount Rate	2.25%
NPV Interest Only	**$17,564,658**
Issuance Cost	0.60%
Net Proceeds	**$29,820,000**

Issuance #3	
Issued Year	2038
Amount Borrowed	$105,000,000
Interest Rate	4.75%
Term	30
Discount Rate	2.25%
NPV Interest Only	**$52,609,543**
Issuance Cost	0.60%
Net Proceeds	**$104,370,000**

APPENDIX D:
Report Detail Tables

Table D-1: Current vs Proposed WCC – Retail

Functional Category	Current	Proposed	$ Change	% Change
Treatment	$10,572	$10,561	($11)	-0.1%
Transmission	$7,834	$9,452	$1,618	20.7%
Storage	$3,538	$4,880	$1,342	37.9%
Groundwater	$688	$798	$110	16.0%
Planning	$189	$124	($65)	-34.5%
Cal Am Surcharge	N/A	N/A		
Total	**$22,821**	**$25,815**	**$2,994**	**13.1%**

Table D-2: Current vs Proposed WCC – Lincoln

Functional Category	Current	Proposed	$ Change	% Change
Treatment	$10,572	$10,561	($11)	-0.1%
Transmission	$7,834	$9,452	$1,618	20.7%
Storage	N/A	N/A	N/A	N/A
Groundwater	N/A	N/A	N/A	N/A
Planning	$95	$62	($33)	-34.9%
Cal Am Surcharge	N/A	N/A	N/A	N/A
Total	**$18,501**	**$20,075**	**$1,574**	**8.5%**

Table D-3: Current vs Proposed WCC – Cal-Am

Functional Category	Current	Proposed	$ Change	% Change
Treatment	$10,572	$10,561	($11)	-0.1%
Transmission	$7,834	$9,452	$1,618	20.7%
Storage	N/A	N/A	N/A	N/A
Groundwater	N/A	N/A	N/A	N/A
Planning	$95	$62	($33)	-34.9%
Cal Am Surcharge	$1,392	$2,907	$1,515	108.8%
Total	**$19,893**	**$22,982**	**$3,089**	**15.5%**