Placer County Water Agency

Water Connection Charge Cost Study - 2017 Update

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Prepared by:

PCWA
water • energy • stewardship

Financial Analysis and Contributions by:

MONTAGUE DEROSE
AND ASSOCIATES, LLC

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Background

The Agency's Water Connection Charge (WCC) has been based upon a model that takes into consideration water connection demand (anticipated connections/absorption), annual capital plan outlay for expansion projects, debt service payments and borrowing to meet cash flow needs. Over the past 16 years, the Agency has periodically reviewed and re-evaluated the WCC and updated the WCC model.

During the years 2000 – 2007 the WCC model was monitored annually and updated as needed. A period of substantial building and development growth coupled with significant construction cost increases occurred during this period.

In spring 2005, the Agency's capital plan was expanded to a full build-out scenario and the WCC model was updated with the resulting calculated WCC amount of almost $25,000 for 5/8" water meter. As the WCC model is based on future assumptions and the result was more than double the existing WCC, the Agency's Finance Committee and Board of Directors provided direction to phase-in the adjustment over 5+ years starting in August 2005.

Thus based on this analysis, in August 2005 the Board approved a 19% increase in the WCC from $9,286 to $11,373 and added an annual construction cost escalation based on the McGraw Hill Engineering News Record (ENR) construction cost index. This increase was based on the revised capital plan and reflected significant construction cost escalations, which were significant in the preceding years.

From 2007 to 2013, both development construction and the Agency's capacity expanding capital projects were scaled back significantly. The economic downturn, which started in 2007, hit our area hard and prompted the Board to halt the proposed WCC phase-in. However, from 2007 to 2015, the WCC was adjusted based on the change in the ENR construction cost index. If the 2005 Phase-in had been fully implemented, the WCC amount would have been over $29,000 by 2015.

In 2015, the Agency comprehensively updated its infrastructure plan to serve new development and it's WCC. The update identified and incorporated a feasible phasing plan for constructing Ophir Water Treatment Plant (WTP) and associated transmission pipelines. At the time, the Placer Ranch project was processing its development plan with the City of Roseville. The capital plan included pipelines to the Sunset Area just west of Highway 65, with most development areas beyond this limit being planned outside of PCWA retail service. The analysis assumed a continuation of the historical paradigm in which PCWA would provide all of the financing to construct the infrastructure plan. A spectrum of growth scenarios were analyzed, with absorption rates varying from 600 equivalent dwelling units (EDUs) per year to 1,800 EDUs per year.

The 2015 analysis was conducted with input by a work group of the development community and land use agencies. The primary findings of the analysis were:

- The proposed Ophir WTP and transmission pipelines could be phased in approximately 10 million gallons per day (MGD) increments of capacity, for a total of 30 MGD;
- Phasing of the infrastructure and associated cash flow is instrumental to having a feasible financial plan for providing capacity to serve new development;
- Without phasing, the necessary amount of borrowing exceeds PCWA's debt capacity;
- Slower growth rates increased borrowing costs and at the slowest growth rate of 600 EDUs per year the infrastructure plan was not financially viable;
- The calculated WCC for the remaining growth rates were in a range similar to the WCC in effect at the time.

In response to these findings, the Board adopted a WCC that did not change the overall amount, but distributed the costs by infrastructure components based on the updated capital plan. These infrastructure components were treatment, transmission, storage, and planning. There was a shift in the 2015 update towards a higher percentage of treatment because many of the transmission pipelines in west Placer County were removed as a result of conversion to planned wholesale service areas. Additionally, groundwater was removed as a component because planned retail service areas over the groundwater basin were substantially reduced.

In addition to updating the capital plan for WCC projects, the Board adopted a lot size based WCC assessment. The means of assessment was in response to trends towards smaller lots in planned development projects, with the intent of offering a more equitable system that proportionally distributes costs over the wide size range of residential properties in the PCWA service area. After more than a year of implementation, this modification has been well received by the development community and found to be practical for PCWA to administer.

A recommendation of the Agency's financial consultant supporting the 2015 effort was to monitor conditions and assumptions affecting the analysis and conduct periodic updates as appropriate. A commitment was made to the work group that PCWA would adhere to this recommendation and bring such changes to them for consideration and input.

Recent Changes

Since 2015, there have been some changes in land use planning and the assumption of how much of the proposed future development will be within PCWA's retail service area, along with changes to the proposed phasing plan for Ophir WTP, that warrant an update of the infrastructure plan and the WCC analysis.

West Placer Pipeline

In 2016, the Placer County Board of Supervisors took action on the proposed Placer Ranch development without its annexation by the City of Roseville, moving this proposed development into PCWA's retail service area. Furthermore, it is unlikely that California-American Water Company's (CAW) franchise service area will be expanded in west Placer County, leaving much of this area as PCWA retail water service. Based on these conditions, adding a major transmission pipeline to the infrastructure plan that extends from the current water distribution system through the Sunset Area, and continuing this pipeline to the Regional University project, is needed to provide service to anticipated PCWA retail areas.

In addition to serving developments in PCWA retail service areas, the West Placer Pipeline also benefits proposed development in the CAW franchise area generally south of Baseline Road. The Placer Vineyard development proposed in this area would generate a large amount of demand a significant distance away from existing water distribution facilities. In accordance with the current water supply agreement, a WCC surcharge is proposed to cover the CAW share of the West Placer Pipeline. This surcharge, which is proposed to include financing costs, will provide funding for the Agency to construct the appropriately sized pipeline to meet buildout needs of the CAW franchise area as development progresses westward. The total cost estimate for the West Placer Pipeline, without financing, is $43.4 million, with $28 million of this amount covered by the proposed surcharge.

The West Placer Pipeline is planned to be aligned in the proposed Placer Parkway corridor as it develops westward from the Highway 65 interchange. Prior to the parkway reaching Foothills Boulevard, this pipeline is proposed to be aligned through the Placer Ranch development and be constructed along with development improvements. Placer County anticipates moving forward with construction of Placer Parkway soon to help encourage development in the Sunset Area. Therefore, the cash flow needed for this portion of the pipeline, in excess of $10 million, is incorporated in the near-term of the WCC analysis. Given that this cash flow need would be well ahead of anticipated demands on the pipeline, the Agency has inquired with Placer County about options for financing it under their infrastructure programs. The County Treasurer has indicated possible options to support funding this request.

Ophir WTP Cost Estimate

The Ophir WTP phasing plan in the 2015 analysis was based on constructing a package plant for the first phase, producing up to 8 MGD, with 10 MGD and 12 MGD phases of conventional plant

construction following. The phasing plan was though necessary to minimize upfront costs, but comes with high total costs and the need to permanently operate two separate plants on the same site.

The Ophir WTP is currently under design and the Agency's design consultant has proposed a phasing plan of three 10 MGD phases of conventional plant construction. This plan has been found to be financially feasible in the WCC analysis, even with higher upfront costs, and eliminates the need of using the package plant phasing. The feasibility of this plan is subject to financial partnership by wholesale customers, as discussed below. The estimated total cost of Ophir WTP under this plan is $140 million for all three phases, producing 30 MGD. The estimated cost of the first 10 MGD phase is $75 million.

This change in the phasing for Ophir WTP represents a significant change in the timing of cash flow in the WCC analysis, with approximately a $24 million higher upfront cost in the first phase, but a lower total cost by approximately $45 million.

Capital Plan and Cost Estimates

The Agency developed a WCC Update in 2015, hiring a consultant (West Yost & Associates) to prepare a Water Connection Charge Capital Improvement Program Update Report. The capital plan to be funded by the WCC totaled $367 million, with 26 listed projects from Auburn to west Rocklin. The aforementioned changes caused the Agency to revise the infrastructure plan with the changes from the 2015 capital plan to the 2017 capital plan include:

- 23 out of the original 26 projects have been kept,
- 13 new projects have been added, and
- Approximately $12 million increase in total costs.

The 2017 capital plan includes projects located from Auburn to west Placer County, utilizes approximately 3 MGD of capacity from the Auburn WTP, exhausts a small amount of capacity that remains in the Foothill and Sunset WTPs, and constructs the proposed Ophir WTP, 24 miles of pipelines, six storage tanks, and three groundwater wells. These facilities are illustrated in a map attached as **Attachment 1** and listed with cost estimates in **Attachment 2**. The project listing is organized by the three phases of Ophir WTP or as retail distribution projects. Additionally, cost estimates are detailed by the amounts assigned to the benefit of retail areas, the Ophir WTP program, which benefits both retail and wholesale areas, and surcharge for the benefit of the CAW franchise area. Each project includes a project identifier, project name, size, length (if applicable), type of project, source of information used for project cost development and changes from the last WCC. The total cost of this program is estimated to be $379 million and is distributed in a cash flow model through 2050. **Attachment 3** is a chart illustrating the anticipated cash flow along with the forecasted EDUs per year.

Project cost estimates were developed in earlier studies, such as the 2015 WCC Update and other engineering documents, were escalated to November 2015 cost levels using an Engineering News Record (ENR) Construction Cost Index (CCI) of 10,092 (20-city average). Additionally, the capital plan includes active projects with recent engineer's Opinion of Probable Construction Cost (OPCC). These construction costs are considered to be preliminary construction cost estimates that are suitable for budgeting purposes, without further adjustment to account for the time difference between November 2015 and the date of analysis leading to this document.

Projects added or revised in the 2017 capital plan are estimated with methodology derived from the 2015 update, utilizing consistent cost estimating assumptions of cost curves and soft costs. **Attachment 4** summarizes the cost curves for pipelines and tanks, expanding on 2015 cost curves to differentiate between developed and undeveloped areas, previously uncharacterized in the 2015 update.

The 2017 capital plan has provisions for capacity beyond this development horizon of 30 MGD of capacity from Ophir WTP. One of these provisions includes oversizing of the transmission pipelines from Ophir WTP towards west Placer County. The alignment of these pipelines in Taylor Road and through the proposed Bickford Ranch development is the only feasible transmission route for water from this treatment plant. These pipelines are proposed to be oversized from 42-inches to 60-inches to provide for future treatment plant expansion. This oversizing is provided for in the adopted environmental documents for these pipelines; however, any expansion of Ophir WTP beyond its currently planned 30 MGD capacity would need further environmental analysis and review.

Though this capital plan is centered on capacity from Ophir WTP, a small amount of funding is included for planning the proposed Sacramento River supply, titled RiverArc. The feasibility of this supply option is under development, but may be a favorable alternative for the CAW franchise area. If the RiverArc project becomes reality, the need for this project combined with an expanded Ophir WTP will depend on land use plans beyond 2050, combined with consideration of future water demand rates. PCWA's 2015 Urban Water Management Plan (UWMP) indicates that both of these sources of added capacity will eventually be needed.

In addition to oversizing the pipeline in Taylor Road and through Bickford Ranch, the West Placer Pipeline has been sized to meet the full demands of PCWA retail service areas and the CAW franchise area, as being served from Ophir WTP.

Growth Trends and Retail v. Wholesale Service Areas

The current footprint of PCWA retail service area east of Highway 65, once one of the fastest growing areas in the Sacramento region, is transitioning towards buildout. The City of Rocklin's final large-scale master planned community, Whitney Ranch, is nearing buildout and the City is prudently preparing for this condition in a 10-year horizon. This transition is reflected in the EDU commitments made by PCWA since coming out of the recession in 2013 as follows:

- 2013 – 1,032 EDUs
- 2014 – 1,651 EDUs
- 2015 – 1,243 EDUs
- 2016 – 669 EDUs

The majority of remaining development in PCWA retail service areas are "greenfield" type development, which have transportation and high upfront infrastructure cost challenges. These development areas include Bickford Ranch, Placer Ranch, other portions of the Sunset Area, and Regional University. With some uncertainty regarding the pace at which these projects will develop, PCWA needs to exercise caution in debt financing water supply infrastructure that relies on WCC based revenue from these greenfield development projects.

Another consideration is balancing water supply needs between retail and wholesale service areas. The estimated treated water demand of the above stated greenfield developments plus some amount for infill is 25 MGD. The wholesale need for new PCWA treated water capacity is estimated in the 2015 UWMP to be as much as 70 MGD. This imbalance suggests that a large portion of the 30 MGD of capacity created by Ophir WTP will go to wholesale areas. For purposes of this analysis, staff has assumed an equal split in this capacity, considering some large infrastructure to wholesale areas will be installed near the end of the capital program.

Given the wholesale reliance on this capital plan, combined with the uncertainty of WCC based revenue from greenfield development projects, financial partnership in this program is appropriately sought from wholesale customers. The option of such partnership is provided for in water supply agreements with the City of Lincoln, CAW, and the City of Roseville. Offer letters including estimated cost have been sent to all three potential partners.

The WCC analysis is significantly more complicated when assumptions about how capacity is distributed between retail and wholesale areas are incorporated and further complicated when pre-payments resulting from partnerships are also incorporated. A framework to illustrate this distribution of costs and resulting WCC calculations has been developed. This framework is attached to this memorandum as **Attachment 5**.

Summary of Available and Proposed Capacity

The Zone 1 system is supplied from the PG&E Drum-Spaulding system, and from PCWA's Middle Fork American River projects. Water is currently treated at PCWA's Bowman, Auburn, Foothill and Sunset Water Treatment Plants for delivery to Zone 1 customers. Upper Zone 1 can only be served from Bowman WTP (7 MGD) and Auburn WTP (8 MGD). PCWA provides treated water to its Lower Zone 1 service area primarily from the Foothill WTP (58 MGD) and the Sunset WTP (5 MGD).

PCWA has planned for additional provisional water treatment capacity within its Foothill and Sunset WTPs, which is referred to as "bridging" capacity. This bridging capacity includes an additional 3 MGD at Sunset WTP, which is presently available, and brings the total system capacity to 66 MGD. PCWA has plans for modifications to the Foothill WTP, which could add up to an additional 5 MGD of bridging capacity. This additional capacity is gained by operating both water treatment plants at their operational limits for short intervals so that PCWA may meet max day demands to bridge the time between now and when PCWA completes its next major treated water supply project, the Ophir WTP. This bridging capacity is not intended for long-term use and is not accounted for in available EDUs resulting from the capital plan.

Every PCWA Board meeting staff prepares a Water Supply-Demand Report to summarize newly requested connections, committed demands, and remaining capacity. On December 15, 2016, the Water Supply-Demand Report identified remaining capacity of the Foothill-Sunset system at 3.027 MGD (2,632 EDUs), including 3 MGD of bridging capacity at Sunset WTP. The capacity after discounting the bridging amount is 0.027 MGD (23 EDUs). The capacity available in the Auburn-Bowman system is 3.612 mgd (3,141 EDUs). This amount of capacity is likely more than is needed for buildout demand of the upper system. PCWA estimates that new demand anticipated from new development and infill within the Auburn-Bowman system will likely not exceed 1,000 EDUs within the horizon of this capital plan. Therefore, the balance of this available capacity is left for system redundancy, which can also be supplied to the lower system through an interconnection. The capital plan includes a planned transmission project connecting the Upper and Lower Zone 1, transferring an estimated 2 MGD to the Lower Zone 1. With all planned improvements, Zone 1 will have sufficient treatment and conveyance capacity to support development of 28,850 EDUs.

The following table summarizes, and further itemizes, PCWA's capacity as of December 15, 2016:

Supply-Demand Report, 12/15/16	MGD	EDUs
Foothill-Sunset-Ophir	3.027	2,632
Auburn-Bowman	3.612	3,141
Available Capacity Summary	**MGD**	**EDUs**
Estimated Auburn-Bowman Buildout [1]	1.150	1,000
Remaining Foothill/Sunset Capacity	0.027	23
Estimated Auburn-Bowman Capacity [2]	2.00	1,739
Ophir WTP	30.00	26,087
Total Available Capacity	**33.18**	**28,850**

[1]Estimated Auburn-Bowman build-out within this planning horizon is approximately 1,000 EDUs, accounting for Baltimore Ravine Specific Plan plus infill. The Auburn-Bowman excess capacity was calculated assuming this. An estimate of 2.0 MGD is unavailable for distribution without the Duncan Hill Pipeline.

[2] Made available via Duncan Hill Pipeline to Lower Zone 1. This pipeline is currently within the capital plan.

Financial Analysis

The purpose of this analysis is to calculate a cost-based WCC rate to be charged to new connections. The WCC rate must produce sufficient revenues together with other available funds to support PCWA's growth related Capital Investment Program (CIP), pay existing debt service obligations, and pay the debt service on any new debt issue that may be required to fund the CIP. This study not only provides details underlying the WCC calculation, it also provides an administrative record of the process.

The study analysis utilizes the CIP project cash flows and the estimated number of EDU connections as shown in **Attachment 3**. For purposes of the financial analysis, several clarifying assumptions have been made. The analysis includes the construction of 30 MGD of new treatment plant capacity plus other projects required to serve 28,850 EDUs.

The 30 MGD treatment plant is phased in 10 MGD increments over about 20 years. The new connections to be served are attributable to infill development in currently served areas, as well as development in greenfield areas within PCWA's service area. Some of the projected growth was assumed to occur within the service areas of PCWA's wholesale customers. Two of those customers, the City of Lincoln and the City of Roseville, are assumed to purchase additional capacity through a funding partnership program. A third wholesale customer, CAW, was assumed to purchase additional capacity on a "project by project" basis as land development projects moved forward within CAW's service area. However, CAW could choose to purchase additional capacity through a funding partnership program the same as Lincoln and Roseville.

The rate calculation assumes a beginning balance in the WCC Fund of $36 million. Interest income is assumed to be earned each year based on the average of the beginning and ending balances 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 positive balance in the WCC Fund. New debt issues are assumed to be for a 30 year term and pay an annual interest rate of five percent (5%). Debt issues are sized to include issuance costs and a debt service reserve contribution equal to the annual debt service payment. The debt service payment assumes equal annual principal and interest payments.

The calculated WCC is based on recovering costs from new connections on a pay-as-you-connect basis. Those costs include CIP spending, debt service on previously issued debt, and the net present value of future interest payments on any new debt. The interest on new debt is discounted at two percent (2%). The outstanding principal on any new debt is assumed to be called in the year following the sale of the last connection. The pre-payment amounts received from wholesale customers are treated as capital contributions and are deducted from the costs

to be recovered through the WCC. The net costs divided by the number of EDUs (excluding the partner EDUs) determine the WCC rate.

The CIP also includes transmission pipelines, water storage tanks, groundwater wells, and planning projects. The CIP used in this analysis is estimated at $356,415,000, which includes project spending in 2017 and subsequent years. This amount does not include project budgets funded prior to 2017, which amount to $15,507,679, or projects anticipated to be constructed by others, which amount to $6,599,321, with the CIP project totaling $378,522,000. Therefore, the amount used in the WCC analysis is less than the total project costs provided in **Attachment 2**.

The following table shows the CIP costs by function, which will not be completed until 2050:

Treatment	$ 155,180,000
Transmission	143,003,000
Groundwater	9,000,000
Storage	46,232,000
Planning	3,000,000
Total	$ 356,415,000

The CIP costs include several transmission pipeline segments that are being oversized to serve the long term needs of the CAW service area. The cost of this additional capacity for CAW is $28,033,900, which will not be fully recovered during the planning timeframe of the current CIP. Consequently, the cost for this capacity is excluded from the calculated WCC rate and will be recovered through a separate surcharge applicable only to CAW.

It is the practice of PCWA to limit the use of debt financing for large projects. Smaller projects and routine additions are funded from revenues, when possible. For the purpose of this analysis, it was assumed only treatment and transmission projects will be debt financed. The balance of CIP projects will be funded exclusive from WCC revenues. The financing plan for treatment and transmission CIP projects also includes the debt services payments on existing debt, as well as an offset for partner funding.

The analysis assumes new debt is only issued when needed and appropriately sized to minimize debt service cost. The analysis shows that new money borrowing totals $110 million, which is in three issuances: $30 million in 2020, $52 million in 2023 and $28 million in 2030. The capital plan creates 28,850 EDUs of capacity with the assumption that half will be used by PCWA's retail service area and half by wholesale entities, thus, 15,807 EDUs are assumed to be used in PCWA's retail service areas. The debt service is to be shared with all customers, except through the partner buy-in, where the partners pre-pay through the Ophir WTP program. This analysis assumes the City of Lincoln will buy-in at 2,174 EDUs (2.5 MGD) and the City of Roseville will buy-in at 2,609 EDUs (3 MGD); resulting in 24,067 EDUs (28,850 EDUs – 2,174

EDUs and 2,609 EDUs) to recover remaining costs, including debt financed portions. The partner rate used in the current analysis to determine the partner funding amount is based on a subset of the CIP projects identified as the "Ophir WTP Program" and appropriately does not include debt service. The proposed cost for partnering is $11,557 per EDU, based on a thorough separate PCWA staff analysis, and has been presented to the City of Lincoln, City of Roseville, and CAW for consideration and advance planning purposes. This analysis assumes a partnership buy-in of 4,783 EDUs (5.5 MGD), providing an anticipated $55,272,609 in revenue.

The amounts shown in table below summarizes the WCC calculation and separates the debt financed and revenue funded portions.

Debt financed portion:	Amount	EDUs	WCC
Treatment & Transmission, less CWA portion	$ 270,149,100		
NPV of interest costs on financing	82,232,752		
Existing debt service	69,092,517		
Subtotal	421,474,369		
Less Partner funding	(55,272,609)		
Subtotal	$ 366,201,760	24,067	$ 15,216
Revenue funded costs:			
Groundwater – retail only	9,000,000	15,807	569
Storage – retail only	46,232,000	15,807	2,925
Planning – retail only	1,500,000	15,807	95
Planning – retail & wholesale	1,500,000	24,067	62
Total Cost and Retail rate	$ 424,433,760		$ 18,867

The next table summarizes the cost per EDU by treatment and transmission, which is split based on CIP cost.

	CIP Cost	Percent	$/EDU
Treatment	$ 155,180,000	57.44%	$8,740
Transmission – retail portion	114,969,100	42.56%	6,476
Total	$ 270,149,100	100.00%	$ 15,216

Consistent with the current wholesale water supply agreements, which allow incremental capacity to be purchased on a pay-as-you connect basis, the wholesale WCC rate consisting of treatment and transmission costs plus one-half of planning costs, which totals $15,295 ($15,216 + $79). A partner rate of $11,557 per EDU is an alternative to the pay-as-you-connect WCC which is based on appropriate project costs per EDU [$301,496,237 / 26,087 EDUs]. The retail WCC rate is the summation of all components, resulting in a total cost of $18,867.

The aforementioned calculation intentionally excluded the costs attributed to the West Placer Pipeline, which solely benefit CAW and total $28,033,900. PCWA has agreed to oversize five segments in this transmission pipeline to provide CAW with the estimated build-out capacity needed to serve several large new developments in their service territory. The estimated number of EDUs for the new development is nearly double the number of CAW EDUs used in the current WCC analysis. Based on the current absorption rates, the cost recovery period for the oversizing will extend beyond the planning timeframe of the CIP.

The surcharge calculation based on the costs included in the current analysis is as follows:

Surcharge Calculation:	Amount	EDUs	WCC
Transmission component	$ 143,003,000		
Less retail portion	(114,969,100)		
West Placer Pipe Capacity for CWA	28,033,900		
Financing costs	8,533,485		
Subtotal	$ 36,567,385	15,424	$ 2,371
Less WCC Transmission Credit (see below)			(1,219)
Surcharge Amount			$ 1,152

WCC Transmission Credit Calculation:			
Transmission – retail	$ 114,969,100		
Total Treatment and Transmission	270,149,100		
Percentage	42.56%		
Fully burdened amount per EDU			$ 15,216
Transmission amount			6,476
Retail portion of West Placer Pipe	$ 15,400,100		
Retail portion of Transmission	81,829,600		
West Placer Pipeline percentage		18.82%	
WCC Transmission Credit for inclusion above			($1,219)

Summary of Results

The results of the financial analysis provide a retail WCC totaling $18,867, a wholesale WCC totaling $15,295, a partnership option totaling $11,557, and a CAW transmission surcharge of $1,152 under the wholesale WCC. A CAW transmission surcharge under a partnership option was not conducted in this analysis and would be determined separately within a facility agreement. The reason for the difference in the surcharge is that a credit is applied when the wholesale WCC is paid as that amount already includes costs for a portion of the West Placer Pipeline capacity, a portion which is not covered in the cost of the partnership option.

The comparison of the existing retail WCC to that resulting from this analysis is as follows:

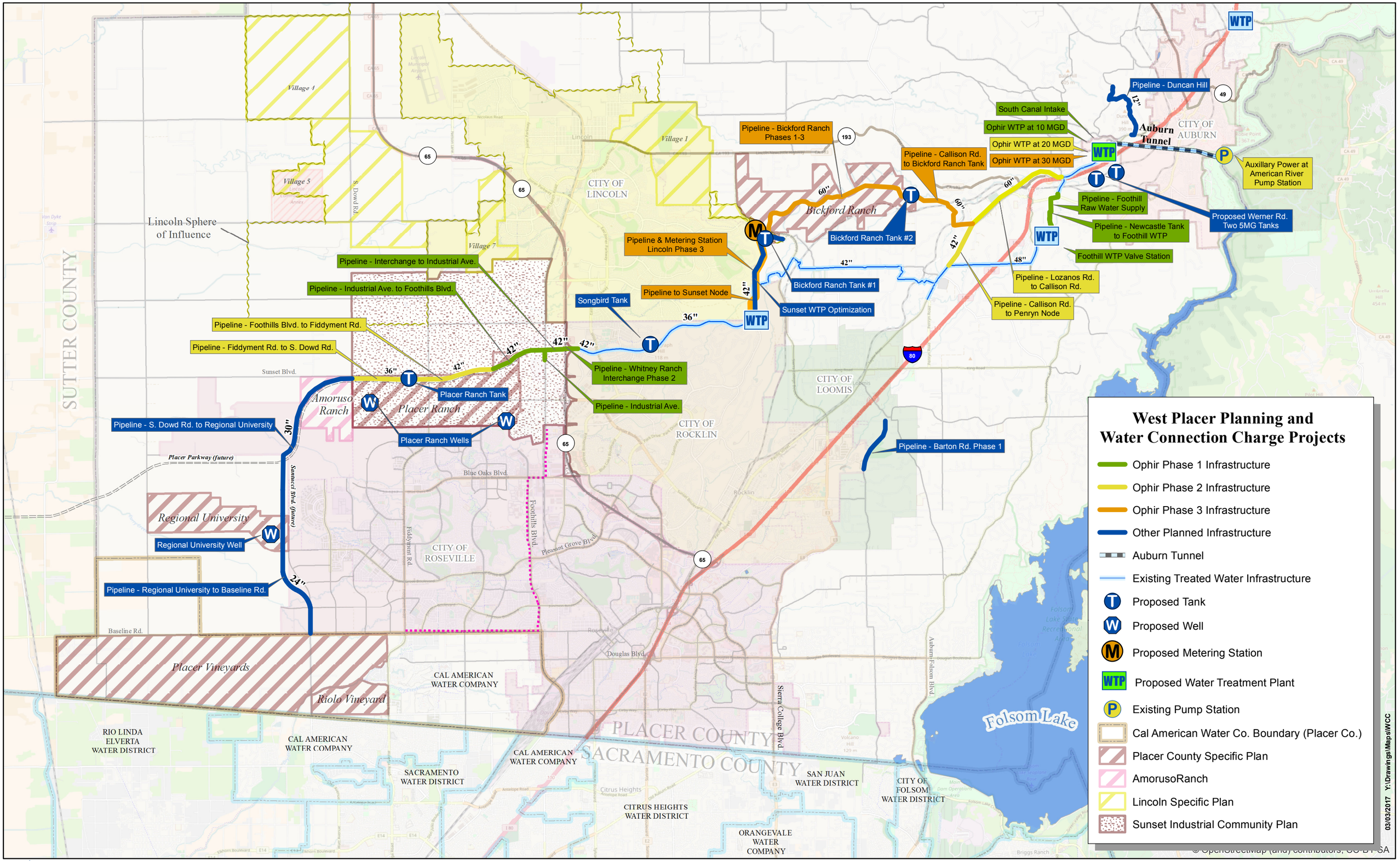
	Existing	Current Analysis
Treatment	$ 10,452	8,740
Transmission	5,318	6,476
Groundwater	0	569
Storage	2,384	2,925
Planning	183	157
Total	$ 18,337	18,867

The comparison of the existing wholesale WCC applicable under the City of Lincoln and CAW water supply agreements is as follows, along with the partner option:

	Existing	Wholesale	Partner
Treatment	$ 10,452	8,740	6,897
Transmission	5,318	6,476	4,594
Planning	92	79	66
Total[1]	15,862	15,295	11,557
CAW Surcharge[2]	563	1,152	
Total[2]	$ 16,425	16,447	

1. Applicable to City of Lincoln and CAW.
2. Applicable only to CAW.

ATTACHMENT 1


Pipeline - Duncan Hill
12"
Auburn Tunnel
CITY OF AUBURN
South Canal Intake
Ophir WTP at 10 MGD
Ophir WTP at 20 MGD
Ophir WTP at 30 MGD
WTP
Auxillary Power at American River Pump Station
Pipeline - Bickford Ranch Phases 1-3
Pipeline - Callison Rd. to Bickford Ranch Tank
Pipeline - Foothill Raw Water Supply
Proposed Werner Rd. Two 5MG Tanks
Pipeline - Newcastle Tank to Foothill WTP
Foothill WTP Valve Station
Bickford Ranch
Bickford Ranch Tank #2
Pipeline & Metering Station Lincoln Phase 3
Pipeline - Lozanos Rd. to Callison Rd.
Pipeline - Callison Rd. to Penryn Node
Bickford Ranch Tank #1
Sunset WTP Optimization
Pipeline to Sunset Node
Songbird Tank
Pipeline - Interchange to Industrial Ave.
Pipeline - Industrial Ave. to Foothills Blvd.
Pipeline - Foothills Blvd. to Fiddyment Rd.
Pipeline - Fiddyment Rd. to S. Dowd Rd.
Pipeline - Whitney Ranch Interchange Phase 2
Pipeline - Industrial Ave.
Placer Ranch Tank
Placer Ranch Wells
Amoruso Ranch
Placer Ranch
Pipeline - S. Dowd Rd. to Regional University
Pipeline - Barton Rd. Phase 1
Regional University
Regional University Well
Pipeline - Regional University to Baseline Rd.
Placer Vineyards
Riolo Vineyard
Lincoln Sphere of Influence
SUTTER COUNTY
CITY OF LINCOLN
CITY OF LOOMIS
CITY OF ROCKLIN
CITY OF ROSEVILLE
PLACER COUNTY
SACRAMENTO COUNTY
CAL AMERICAN WATER COMPANY
RIO LINDA ELVERTA WATER DISTRICT
SACRAMENTO WATER DISTRICT
CITRUS HEIGHTS WATER DISTRICT
SAN JUAN WATER DISTRICT
CITY OF FOLSOM WATER DISTRICT
ORANGEVALE WATER COMPANY
Folsom Lake
Village 1
Village 4
Village 5
Village 7
Placer Parkway (future)
Sunset Blvd. (future)
Sunset Blvd.
Blue Oaks Blvd.
Baseline Rd.
Douglas Blvd.
Pleasant Grove Blvd.
Foothills Blvd.
Fiddyment Rd.
S. Dowd Rd.
Sierra College Blvd.
Auburn-Folsom Blvd.
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Ophir Phase 1 Infrastructure
Ophir Phase 2 Infrastructure
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Other Planned Infrastructure
Auburn Tunnel
Existing Treated Water Infrastructure
Proposed Tank
Proposed Well
Proposed Metering Station
Proposed Water Treatment Plant
Existing Pump Station
Cal American Water Co. Boundary (Placer Co.)
Placer County Specific Plan
AmorusoRanch
Lincoln Specific Plan
Sunset Industrial Community Plan
03/03/2017 Y:\Drawings\Maps\WCC
© OpenStreetMap (and) contributors, CC-BY-SA
PCWA water • energy • stewardship
0 1.25 2.5 5 Miles
N

ATTACHMENT 2

Placer County Water Agency
Water Connection Charge Capital Plan Costs
2017 Update

Project ID	Project Name	Pipe Diameter (in) or Tank Volume (MG)	Pipe Length (ft)	Project Type	2015 WCC Estimate[1]	2017 WCC Estimate[2]				Source	Change from 2015
						Total Estimate	Retail Only	Surcharge	Ophir WTP Program		
Ophir WTP Phase 1 Infrastructure											
1-1	Ophir WTP at 10 MGD	NA	NA	Treatment	$47,718,881	$74,735,000	$0	-	$74,735,000	B&V Estimate December 2015	Design change, equal three phase conventional plant
1-2	South Canal Intake	NA	NA	Treatment	$3,070,119	$5,750,000	$0	-	$5,750,000	Engineer's Opinion of Probable Construciton Cost (OPCC) (2016)	Required additions ; Wet screen, transfer basin & overflow.
1-3	Pipeline-Foothill Raw Water Supply	33, 39, 45	8,000	Treatment	n/a	$5,710,000	$0	-	$5,710,000	Engineer's OPCC (2015), split 50/50 between Rates and WCC	Not included in 2015 Study
1-4	Foothill WTP Valve Station	NA	NA	Treatment	$722,000	$740,000	$740,000	-	$0	2015 WCC Report, ENR applied	Included in the Phase 1A infrastructure
1-5	Pipeline - Newcastle Tank to Foothill WTP	18	6,620	Transmission	$3,877,000	$3,974,000	$3,974,000	-	$0	2015 WCC Report, ENR applied	Included in the Phase 1B infrastructure
1-6	Pipeline - Whitney Ranch Interchange Phase 2	2 x 24	In Bridge	Transmission	$2,000,000	$2,050,000	$0	-	$2,050,000	2015 WCC Report, ENR applied	n/a
1-7	Pipeline - Whitney Ranch Interchange to Industrial Blvd.	42	2,000	Transmission	$1,978,000	$2,027,000	$0	-	$2,027,000	2015 WCC Report, ENR applied	n/a
1-8	Pipeline - Industrial Ave to Foothills Blvd	42	5,250	Transmission	n/a	$5,359,000	$3,335,500	$2,023,500	$0	Length from 2015 WCC Report, $/lf of undeveloped area. ENR applied	Not included in 2015 Study, required for Placer Parkway Ph. 1
1-9	Pipeline - Industrial Ave.	24	1,450	Transmission	n/a	$1,000,000	$0	-	$1,000,000	Length and Unit costs from 2015 WCC Report, ENR applied	Not included in 2015 Study, required for Placer Ranch
Ophir WTP Phase 2 Infrastructure											
2-1	Ophir WTP at 20 MGD	NA	NA	Treatment	$96,291,000	$43,760,000	$0	-	$43,760,000	B&V Estimate December 2015	Design change, equal three phase conventional plant
2-2	Pipeline - Lozanos Road to Callison Road	60	9,100	Transmission	$20,023,282	$20,524,000	$0	-	$20,524,000	2015 WCC Report (2008 Engineers OPCC), ENR applied	n/a
2-3	Pipeline - Callison Road to Penryn Node	42	6,800	Transmission	$10,473,718	$10,735,000	$0	-	$10,735,000	2015 WCC Report (2008 Engineers OPCC), ENR applied	n/a
2-4	Pipeline - Foothills Blvd to Fiddyment Rd	42	9,380	Transmission	n/a	$9,574,000	$4,814,700	$4,759,300	$0	Length estimated. $/lf of undeveloped area. ENR applied	Not included in 2015 Study
2-5	Pipeline - Fiddyment Rd to S. Dowd Rd	36	8,480	Transmission	n/a	$7,102,000	$3,242,700	$3,859,300	$0	Length estimated. $/lf of undeveloped area. ENR applied	Not included in 2015 Study
2-6	Auxiliary Power at American River Pump Station	NA	NA	Treatment	$20,000,000	$6,360,000	$0	-	$6,360,000	Engineer's OPCC (1/2016)	Eliminated Aux. Power at Ophir Road, already has 2nd source
Ophir WTP Phase 3 Infrastructure											
3-1	Ophir WTP at 30 MGD	NA	NA	Treatment	$38,988,000	$21,130,000	$0	-	$21,130,000	B&V Estimate December 2015	Design change, equal three phase conventional plant
3-2	Pipeline - Callison Road to Bickford Ranch Tank	60	8,150	Transmission	$14,486,000	$11,647,000	$0	-	$11,647,000	Length and Unit costs from 2015 WCC Report, ENR applied	Upsized from a 42" to a 60", revised CE source from old OPCC
3-3	Pipeline - Bickford Ranch Phase 1	60	9,735	Transmission	$9,626,000	$13,912,000	$0	-	$13,912,000	Length from 2015 WCC Report, $/lf of undeveloped area. ENR applied	Upsized from a 42" to a 60"
3-4	Pipeline - Bickford Ranch Phase 2	60	6,500	Transmission	$6,428,000	$9,289,000	$0	-	$9,289,000	Length from 2015 WCC Report, $/lf of undeveloped area. ENR applied	Upsized from a 42" to a 60"
3-5	Pipeline - Bickford Ranch Phase 3	60	1,765	Transmission	$1,746,000	$2,522,000	$0	-	$2,522,000	Length from 2015 WCC Report, $/lf of undeveloped area. ENR applied	Upsized from a 42" to a 60"
3-6	Pipeline & Metering Station - Lincoln Phase 3	42	6,040	Transmission	$5,400,000	$8,000,000	$3,000,000	-	$5,000,000	Engineer's OPCC (2016 City of Lincoln)	Upsized from a 30" to a 42", increased Pump Station
3-7	Pipeline to Sunset Node	42	3,500	Transmission	n/a	$3,573,000	$0	-	$3,573,000	Unit costs from 2015 WCC Report, length estimated. ENR applied	Not included in 2015 Study
Other Planned Infrastructure											
4-1	Foothill WTP #2 Optimization	NA	NA	Treatment	$500,000	$6,000,000	$6,000,000	-	$0	Engineers OPCC (2016)	WTP #2 optimization, 2015 had WTP #1 optimizations
4-2	Sunset WTP Optimization	NA	NA	Treatment	$500,000	$3,500,000	$3,500,000	-	$0	Engineers OPCC (2016)	Added additional optimizations necessary
4-3	Pipeline - Barton Road_Phase 1	24	5,650	Transmission	$15,109,000	$3,916,000	$3,916,000	-	$0	Unit costs from 2015 WCC Report, length estimated. ENR applied	Split into 3 phases, keeping first phase for immediate benefit. Consider adding other phases at later time
4-4	Pipeline - Duncan Hills	12	8,300	Transmission	n/a	$3,410,000	$3,410,000	-	$0	Engineers OPCC (2016)	Not included in 2015 Study
4-5	Pipeline - S. Dowd Rd to Regional University	30	20,300	Transmission	n/a	$14,695,000	$4,007,200	$10,687,800	$0	Length estimated. $/lf of undeveloped area. ENR applied	Not included in 2015 Study
4-7	Miscellaneous Pipelines, Oversizing, and Projects	NA	NA	Transmission	$10,000,000	$10,250,000	$10,250,000	-	$0	2015 WCC Report, ENR applied	n/a
4-8	Well-Placer Ranch (2)	NA	NA	Groundwater	n/a	$6,000,000	$6,000,000	-	$0	Estimated 1 mgd well at $3m	Not included in 2015 Study
4-9	Well-Regional University	NA	NA	Groundwater	n/a	$3,000,000	$3,000,000	-	$0	Estimated 1 mgd well at $3m	Not included in 2015 Study
4-10	Werner Road Tank #1	5	NA	Storage	$7,774,000	$7,968,000	$7,968,000	-	$0	2015 WCC Report, ENR applied	n/a
4-11	Werner Road Tank #2	5	NA	Storage	$7,774,000	$7,968,000	$7,968,000	-	$0	2015 WCC Report, ENR applied	n/a
4-12	Bickford Ranch Tank #1	1	NA	Storage	n/a	$2,342,000	$2,342,000	-	$0	Unit costs from 2015 WCC Report. ENR applied	Not included in 2015 Study
4-13	Bickford Ranch Tank #2	5	NA	Storage	$7,930,000	$8,128,000	$8,128,000	-	$0	2015 WCC Report, ENR applied	n/a
4-14	Songbird Tank	10	NA	Storage	$12,506,000	$14,200,000	$14,200,000	-	$0	Engineers OPCC (2016)	n/a
4-15	Placer Ranch Tank	5	NA	Storage	n/a	$7,968,000	$7,968,000	-	$0	Unit costs from 2015 WCC Report. ENR applied	Not included in 2015 Study
4-16	RiverArc Planning and Environmental	NA	NA	Planning	n/a	$500,000	$500,000	-	$0	2015 WCC Report, cost split with Water System Planning/Modeling	Not included in 2015 Study, split from Planning/Modeling
4-17	Water System Planning/Modeling	NA	NA	Planning	$3,000,000	$2,500,000	$762,500	-	$1,737,500	2015 WCC Report, cost split with RiverArc Planning	Added RiverArc Planning as component
4-18	Pipeline - Regional University to Baseline Road	24	11,300	Transmission	n/a	$6,704,000	$0	$6,704,000	$0	Length from 2015 WCC Report, $/lf of undeveloped area. ENR applied	Not included in 2015 Study
				Total	**$347,921,000**	**$378,522,000**	**$109,026,600**	**$28,033,900**	**$241,461,500**		
Infrastructure Removed											
X-1	Lincoln Way Pipeline to Electric Street Tank	30	3,300	Treatment	$995,000	n/a					Required if Auburn WTP expands past 10 mgd, not planned
X-2	Luther Road Pipeline	24	7,400	Treatment	$5,003,000	n/a					No longer critical infrastructure
X-3	Sunset Tank #2	10	NA	Transmission	$12,844,000	n/a					Replaced with storage in Placer Ranch
				Total	**$18,842,000**						

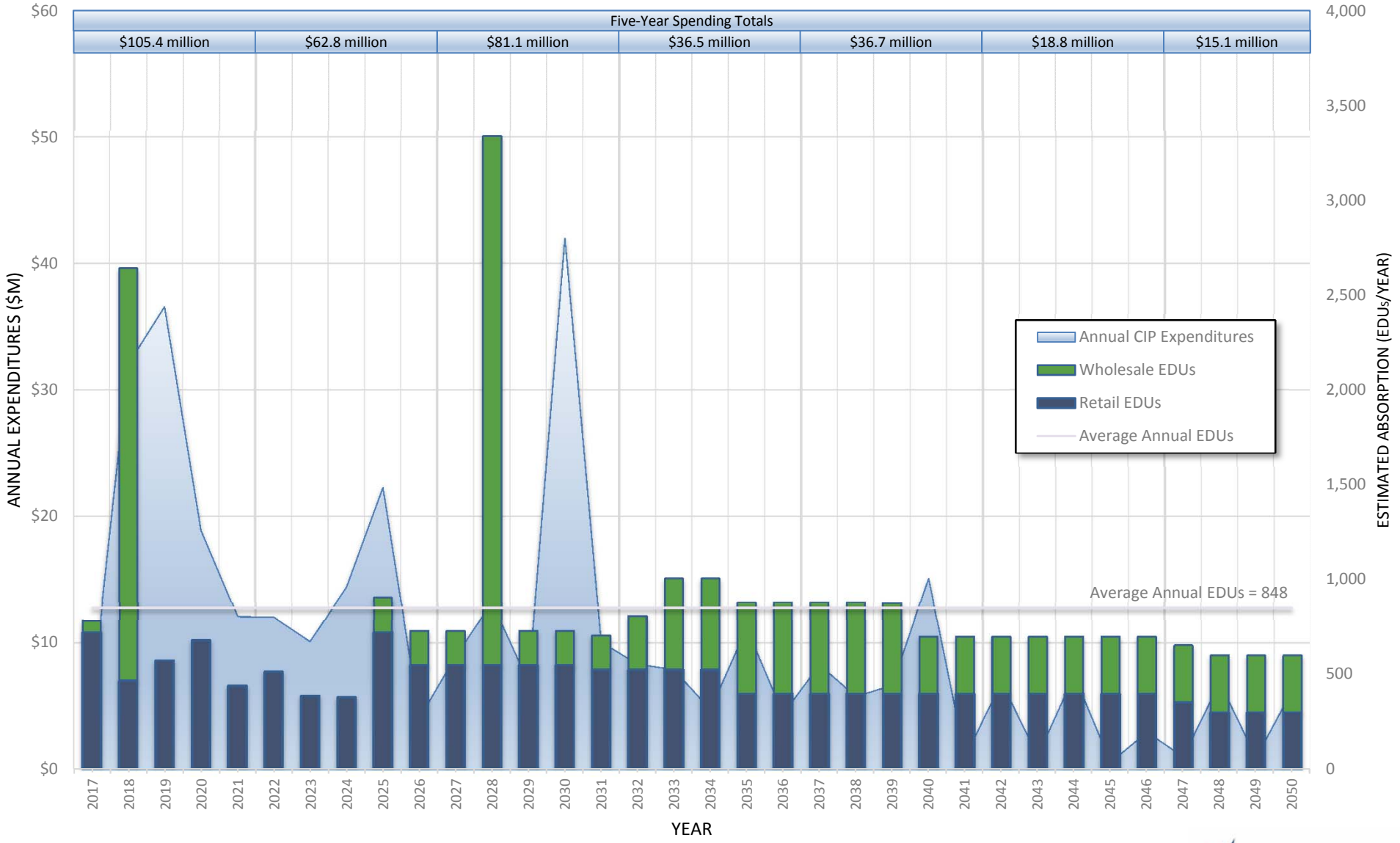
Legend

[1] Costs based on August 2014 ENR CCI of 9,846 (20-city Average)

[2] Costs based on November 2015 ENR CCI of 10,092 (20-city Average)

ATTACHMENT 3

Cash Flow for the 2017 Water Connection Charge Update



Note: Expenditures do not include Bickford Ranch Tank #1 and Lincoln-Penryn Phase 3 pipeline; projects are assumed to be paid via fee-credit. Additionally, any pre-2017 expenditures for program projects are excluded in this cash flow.

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ATTACHMENT 4

Placer County Water Agency
Summary of Water Connection Charge Unit Costs
2017 Update

Unit Construction Costs for Pipelines

Pipeline Diameter, Inches	Developed Areas		Undeveloped Areas	
	Unit Construction Cost, $/linear foot	Unit Construction Cost, $/linear foot/diameter-inch	Unit Construction Cost, $/linear foot	Unit Construction Cost, $/linear foot/diameter-inch
24	400	16.67	342	14.27
30	490	16.33	418	13.93
36	570	15.83	483	13.43
42	690	16.43	589	14.03
48	775	16.15	660	13.75
60	970	16.15	825	13.75

Costs based on August 2014 ENR CCI of 9,846 (20-city Average)

Construction Costs for Concrete Water Storage Reservoirs

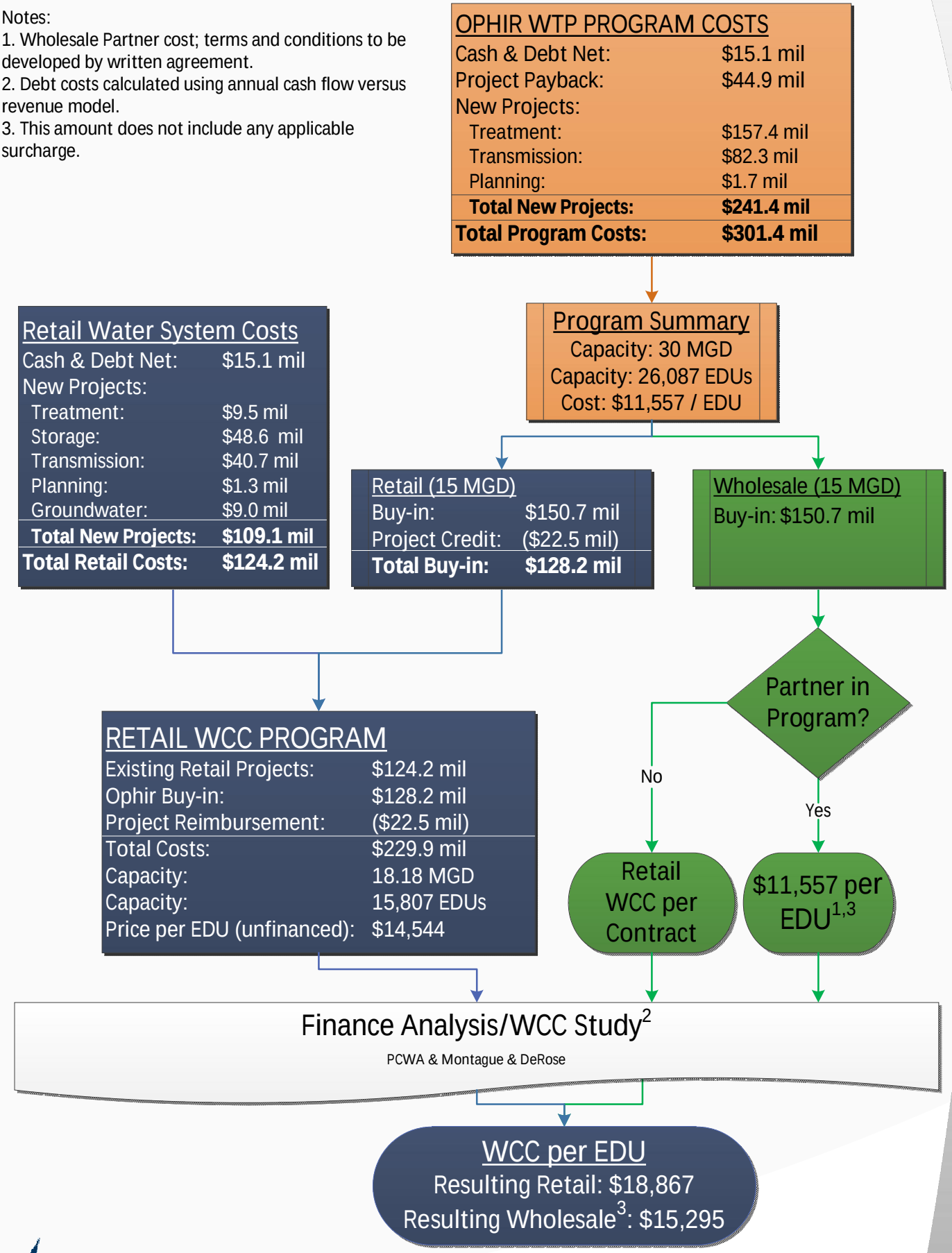
Capacity, MG	Estimated Construction Costs	
	Unit Cost, $/gallon	Total Construction Costs, $M
1.3	$1.04	$1.3
5	$0.92	$4.6
10	$0.76	$7.6

Costs based on August 2014 ENR CCI of 9,846 (20-city Average)

ATTACHMENT 5

Water Connection Charge Framework Flow Diagram

Notes:
1. Wholesale Partner cost; terms and conditions to be developed by written agreement.
2. Debt costs calculated using annual cash flow versus revenue model.
3. This amount does not include any applicable surcharge.



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