

CITY OF DAVIS

WATER RATE
COST OF SERVICE STUDY

Final Report
March 12, 2013

BARTLE WELLS ASSOCIATES
Independent Public Finance Consultants
1889 Alcatraz Avenue
Berkeley, California 94703
www.bartlewells.com
Tel: 510/653-3399

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS & ABBREVIATED TERMS

AF: Acre feet

AMR: Automated radio-read metering

AWWA: American Water Works Association

BMP: Best Management Practices

BWA: Bartle Wells Associates

CBFR: Consumption Based Fixed Rate structure

CCF: Hundred cubic feet (equivalent to 748 gallons)

City: City of Davis

COPs: Certificates of Participation

CPG: Conaway Preservation Group

CPI: Consumer Price Index

CPUC: California Public Utility Commission

CUWCC: California Urban Water Conservation Council

DWR: Department of Water Resources

DWWSP: Davis Woodland Water Supply Project

Local R&R: Local capital repairs and replacements

MG: Million gallons

MGD: Million gallons per day

Proposition 218: California Constitution Article XIII C

R&R: Repairs and replacements

WAC: Water Advisory Committee

WDCWA: Woodland Davis Clean Water Agency

SECTION 1: INTRODUCTION AND EXECUTIVE SUMMARY

Study Overview

The City of Davis (City) provides water service to a population of approximately 65,600 in an area encompassing roughly 10.5 square miles. Located 11 miles west of Sacramento, Davis is the largest city in Yolo County, California. The University of California at Davis is the largest employer in the City and operates and maintains its own water system, separate from the City's. Many of the students attending UC Davis live in off-campus housing in the City.

Currently, the City's source of water supply is groundwater, pumped from local wells. The City is considering participation in the proposed Davis Woodland Water Supply Project (DWWSP) to obtain surface water supplies. A mail-in ballot election is scheduled for March 5, 2013.

The City's water utility is operated as a self-supporting enterprise fund. Revenues are derived primarily from water service charges and must be adequate to fund the water system's operating and capital programs. The water rates were last adjusted in 2008.

In November 2011, the City convened a citizen's advisory group, the Water Advisory Committee (WAC), to advise the city on water rates and other water policy issues. In February 2012, the City retained Bartle Wells Associates (BWA) to work with the City and the WAC to develop a long-term financial plan and to conduct a comprehensive cost-of-service water rate study. The purpose of the rate study is to review the City's current water rates and develop alternative rate structures to fund a regional water quality project to ensure a sustainable and reliable water supply.

The water rates were developed through an extensive process with considerable input from stakeholders, including City staff, the WAC, the Davis Chamber of Commerce, members of the public and the City Council. The study incorporates American Water Works Association (AWWA) recommended methodologies tailored to meet the City's unique characteristics and develops water rates that proportionately allocate the cost of providing water service from each customer class. The objectives of the water rate study are to:

- Recover the City's annual revenue requirement and costs of providing water service
- Provide adequate funding for the City's local and surface water project capital needs
- Develop a water rate structure that proportionately allocates the cost of service to all customers and encourages water use efficiency and conservation (generally referred to throughout this report as "conservation")

- Comply with the legal requirements of Proposition 218 and other pertinent California law
- Phase in rate increases gradually to the extent possible to minimize the impacts on customers

This executive summary provides a brief background of the surface water supply project, discusses the development of an innovative Consumption Based Fixed (CBFR) Rate structure, reviews the costs and expenses of the water system, summarizes procedural requirements of Proposition 218, details the rate study process, and provides final study conclusions and rate recommendations.

Surface Water Supply Project

The City currently relies on groundwater for all of its water supply. Today both the quality and quantity of the groundwater is declining with elevated concentrations of minerals affecting both the water and wastewater systems. Due to the mineral concentrations in the City's water, many users have installed and utilize water softeners in an effort to improve the water quality. The City is concerned about the long-term viability of the current water supply and the potential damage to the groundwater aquifer from over-pumping. Moreover, the existing groundwater supply will not meet increasingly stringent wastewater discharge regulations or future drinking water standards. After years of analyzing various water supply alternatives, the City is pursuing the DWWSP as a participant in the Woodland Davis Clean Water Agency (WDCWA), a joint powers agency of the Cities of Davis and Woodland.

The proposed surface water project includes a jointly-owned and operated intake facility on the Sacramento River, raw water pipelines connecting to a new regional water treatment plant, and separate pipelines delivering treated water to Davis and Woodland. If approved, the City would utilize treated surface water as the primary water supply and continue to use groundwater as a supplemental supply to meet peak water demands especially during the hot summer months. Davis' share of the cost of the surface water project is currently estimated at $113.8 million. The project was submitted to voters for their consideration in an all- mailed ballot election and was approved on March 5, 2013.

Water Advisory Committee (WAC)

In November 2011, the City Council convened the WAC to advise the City on water rates and other water policy issues. Since February 2012, BWA has make presentations at 12 WAC meetings, in which committee members analyzed project alternatives, rate structure options, conservation assumptions, and potential impacts on customers. The complete proceedings of the WAC can be accessed via the City's website at www.cityofdavis.org.

In October 2012, after a thorough examination of various project alternatives, the WAC recommended that the City pursue the 30 million gallon per day (mgd) DWWSP (Davis' share: 12 mgd) as the preferred water supply project. In November 2012, the WAC recommended to the City Council to increase the water rates to fund the water supply project and to implement a new rate structure called the consumption-based fixed rate (CBFR) structure.

Current Rate Structure

The existing water rates are based on a traditional rate structure which includes both a fixed charge based on meter size and a volumetric component based on current period consumption. The current water rates are summarized on Table 5.

1. **Fixed base charge** - varies based on meter size and is levied regardless of water consumption. The typical or most common method to levy fixed charges is by meter size. Meter size is used as a proxy for the estimated demand that each customer can place on the water system. A significant portion of a water system's design and in turn, the utility's operating and capital costs are related to meeting capacity requirements.

   The basic service charge recognizes the fact that even when a customer does not use any water, the City incurs fixed costs in connection with maintaining the ability or readiness to serve each connection. Fixed costs include staffing, customer service, debt service, system maintenance, and repairs. All customers, residential and non-residential, are charged the same fixed charges – based on their meter size.

2. **Metered volumetric charge** - billed per each hundred cubic feet (ccf) of metered water use consumed in the prior two-month billing period. A hundred cubic feet (ccf) unit of water is equal to 748 gallons of water. The amount of water and rate per unit allotted in each tier varies based on customer class. All customer classes, except for City/municipal use, are billed according to two-tiered inclining volumetric rate structure. The City/municipal use rate is a single-tier, uniform block rate.

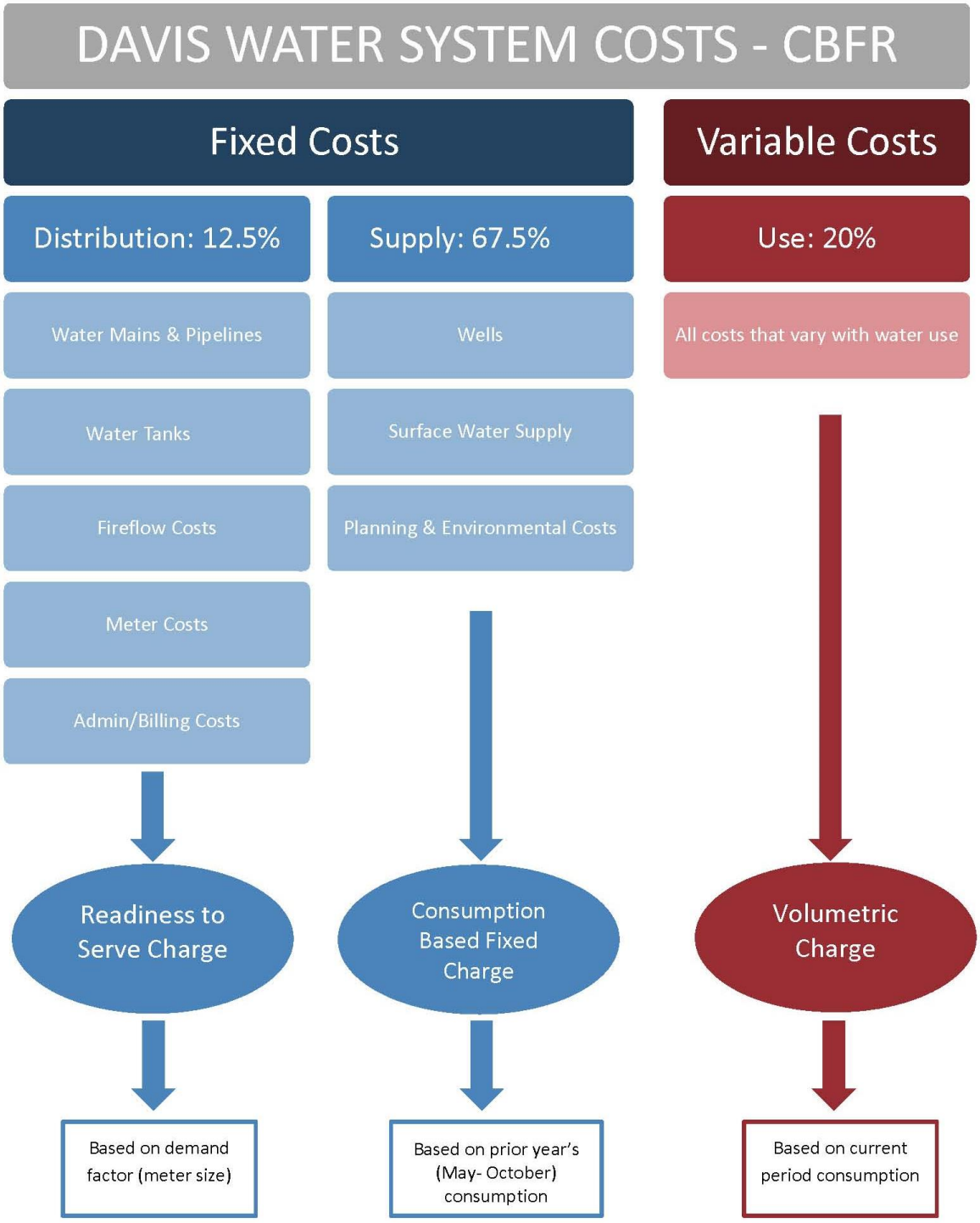
   The metered volumetric charge is intended to recover costs that vary based on the amount of water consumed. These costs can include utilities, chemicals, and water purchases. Conservation is most often achieved through the variable rate component. The most common variable rate structures that promote conservation pricing are: (1) uniform block, (2) inclining block, (3) water budget or allocation based rates, and (4) seasonal block rates.

Consumption-Based Fixed Rate (CBFR) Structure

Two members of the WAC, Frank Loge and Matt Williams, developed an innovative, new method, the CBFR structure which recovers to recover a portion of the fixed costs of providing water service based on each customer's actual consumption. Instead of using the conventional method of meter size as the basis for recovering all or a portion of the water system's fixed costs, CBFR is structured so that each ratepayer's proportionate share of the fixed costs related to water supply and treatment is based on their actual water usage from the previous summer months of May through October (when consumption is typically at its peak). As shown on Figure 1, the CBFR rate structure is comprised of three components: (1) a distribution charge, (2) a variable charge, and (3) a supply charge. The rates for each of these components apply to all water customers within the City. BWA and City staff worked with Mssrs. Loge and Williams to refine the CBFR structure to ensure the proportionate allocation of water rates and the costs of service in compliance with Proposition 218. BWA completed a comprehensive cost of service analysis and rate study design to proportionately allocate the costs of providing water service among all customer classes.

In December 2012, after considering the WAC's recommendation, the City Council recommended submitting to property owners for their consideration a hybrid rate approach. The City Council determined it was appropriate to adopt five years of rate increases and to delay the implementation of the CBFR rate structure until January 1, 2015. The delayed implementation would allow customers time to understand and adjust their consumption patterns in anticipation of the new rate structure. The hybrid approach was included in the notice of the public hearing on the proposed water rates mailed to property owners. This report details the hybrid approach and the transition from a traditional water rate structure to the new CBFR structure over the next five years.

Figure 1. CBFR Rate Structure



Procedural Requirements of Proposition 218

Proposition 218, the "Right to Vote on Taxes Act", was approved by California voters in November 1996 and is codified as Articles XIIIC and XIIID of the California Constitution. Proposition 218 establishes requirements for imposing any new or increasing any existing property-related fees and charges. For many years, there was no legal consensus on whether water service fees met the definition of "property-related fees." In July 2007, the California Supreme Court essentially confirmed that Proposition 218 applies to water service fees.

The City must follow the procedural requirements of Proposition 218 for all water rate increases. These requirements include:

1. **Noticing Requirement:** The City must mail a notice of the proposed rate increases to all affected property owners. The notice must specify the amount of the fee, the basis upon which it was calculated, the reason for the fee, and the date/time/location of a public rate hearing at which the proposed rates will be considered/adopted.
2. **Public Hearing:** The City must hold a public hearing prior to adopting the proposed rate increases. The public hearing must be held not less than 45 days after the required notices are mailed.
3. **Rate Increases Subject to Majority Protest**: At the public hearing, the proposed rate increases are subject to majority protest. If more than 50% of affected property owners submit written protests against the proposed rate increases, the increases cannot be adopted.

Proposition 218 also established a number of substantive requirements that apply to water rates and charges, including:

1. **Cost of Service** - Revenues derived from the fee or charge cannot exceed the funds required to provide the service. In essence, fees cannot exceed the "cost of service".

2. **Intended Purpose** - Revenues derived from the fee or charge can only be used for the purpose for which the fee was imposed.

3. **Proportional Cost Recovery** - The amount of the fee or charge levied on any customer shall not exceed the proportional cost of service attributable to that customer.

4. **Availability of Service** - No fee or charge may be imposed for a service unless that service is used by, or immediately available to, the owner of the property.

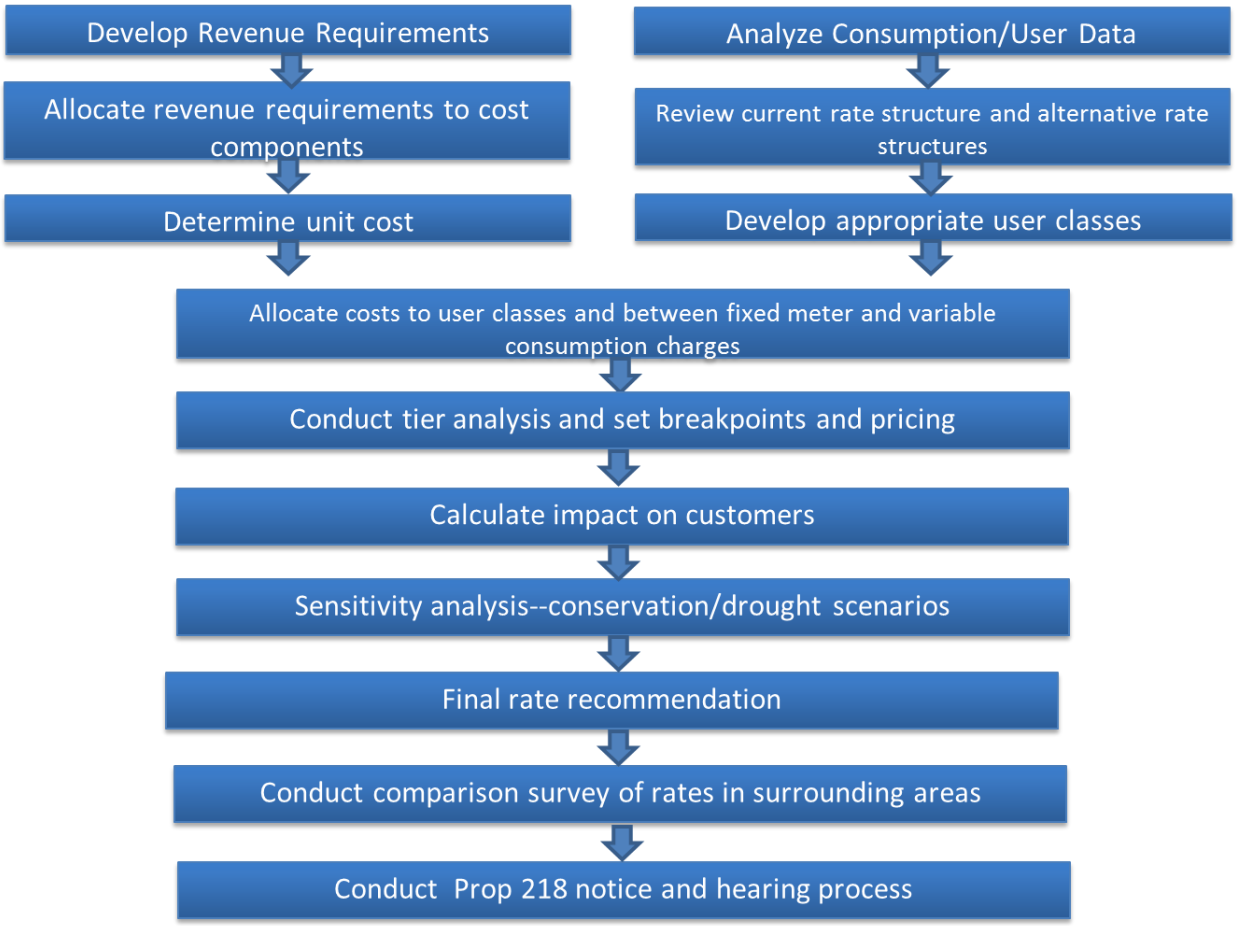
5. **General Government Services** - No fee or charge may be imposed for general

governmental services where the service is available to the public at large.

Charges for water, sewer, and refuse collection are exempt from additional voting requirements of Proposition 218, provided the charges do not exceed the cost of providing service and are adopted pursuant to procedural requirements of Proposition 218.

Rate Study Process

This section details the development of the City's water rates and compliance with Proposition 218 through a comprehensive cost of service and rate design study process as shown in the following chart.



The following is a brief description of the water financial plan and rate design process:

- **Financial Plan Projections/Revenue Requirements:** Revenue requirements are analyzed through the development of a long-term financial plan. Based on the best information currently available, the financial plan incorporates projected operation and

maintenance costs, capital expenditures, debt service, growth, and conservation assumptions to estimate annual revenue requirements. The plan serves as a roadmap for funding the water enterprise's future operating and capital programs while maintaining long-term fiscal stability. The financial plan projections determine the annual water revenue requirements to be recovered through water rates and other revenue sources.

- **Cost of Service:** The cost of service process builds on the financial plan analysis and assigns water system costs to functional cost components which are then allocated to the various customer classes. This process is intended to proportionately allocate costs associated with each customer class based on the demand that they place on the system.

- **Rate Design:** Rate design involves developing a rate structure that proportionately recovers costs from water system customers. Final rate recommendations are designed to (a) fund the utility's short- and long-term costs of providing service; (b) proportionately allocate costs to all customers and customer classes; (c) provide a prudent balance of revenue stability and conservation incentive; and (d) comply with the substantive requirements of Proposition 218.

Findings and Recommendations

As noted earlier, the findings and recommendations presented in this report were developed with substantial input and overview from City staff, the WAC, the Chamber of Commerce, members of the public and City Council. The financial projections and rate recommendations include modifications to the water rates, user classifications, and cost allocations. The final rates are designed to recover the water utility's cost of service and proportionately recover costs from all customer classes. Rate increases are phased in over a five-year period to buffer impacts on ratepayers. The first rate adjustments will take effect on May 1, 2013. Rate increases thereafter will be effective on January 1, beginning on January 1, 2014 through January 1, 2018.

Financial Plan Projections/Revenue Requirements

BWA developed various financial plan scenarios to determine the effect on the water utility's finances and on ratepayers. The scenarios were developed to minimize impacts on customers while covering operating and capital costs, meeting debt service coverage, building reserves, and maintaining the long-term viability of the water enterprise. The three scenarios evaluated are:

- **Scenario 1: Baseline Expenses Only:** This scenario does not include any operating or capital costs related to the surface water project. The projected revenues will adequately fund the water enterprise in the short-term, however, this scenario may not be viable over a long-term horizon from a water supply perspective.
- **Scenario 2: WDCWA 30 mgd (Davis: 12 mgd) Partial Pay-As-You-Go:** This scenario includes all operating and capital expenditures for the surface water project and assumes that a portion of capital costs are funded on a pay-as-you-go (cash) basis.
- **Scenario 3: WDCWA 30 mgd (Davis: 12 mgd) All Debt:** This scenario includes all operating and capital expenditures for the surface water project and assumes that all capital costs are debt-financed.

Table 1 summarizes the annual revenue adjustments and revenue requirements for each of the three scenarios. In January 2013, the City Council voted to pursue Scenario 3: WDCWA 30 mgd (Davis: 12 mgd) All Debt.

Table 1. Revenue Requirement Comparison

	1-May-13	1-Jan-14	2014/15	2015/16	2016/17	2017/18
Scenario 1: Baseline Expenses Only (No WDCWA Participation)						
Revenue Adjustment	8%	8%	15%	15%	9%	9%
Revenue Requirement	$10,726,500	$11,475,000	$13,196,000	$15,175,000	$16,541,000	$18,030,000
Scenario 2: WDCWA 30 mgd (Davis: 12 mgd) Partial Pay-As-You-Go						
Revenue Adjustment	21%	21%	25%	25%	13%	13%
Revenue Requirement	$12,073,500	$14,169,000	$17,711,000	$22,139,000	$25,017,000	$28,269,000
Scenario 3: WDCWA 30 mgd (Davis: 12 mgd) All Debt - *Council Selected Scenario*						
Revenue Adjustment	15%	15%	25%	25%	8%	8%
Revenue Requirement	$11,474,500	$12,971,000	$16,214,000	$20,268,000	$21,889,000	$23,640,000

Cost of Service Analysis

The cost of service analysis for the traditional rate structure is based on AWWA's "Commodity Demand" methodology as outlined in the AWWA Manual M1. The cost of service analysis for the CBFR structure is also based on the Commodity Demand methodology with costs further allocated among the three CBFR components: distribution charge, a variable charge and a supply charge.

BWA initially presented rate recommendations based on a traditional fixed - volumetric rate structure and proposed aligning the fixed charges with the AWWA meter capacity ratios. The proposed AWWA meter ratios are detailed on Table 2. These capacity-based meter ratios are

widely used in California rate setting and are consistent with meter ratios adopted by the California Public Utilities Commission (CPUC) for private water companies.

Table 2. Meter Ratios

Meter Size	Current Bi-Monthly Base Rate	Current Meter Ratios	Proposed AWWA Meter Ratios
5/8" or 3/4"	$23.00	1.00	1.00
1"	$32.40	1.41	1.67
1½"	$55.80	2.43	3.33
2"	$84.00	3.65	5.33
3"	$160.00	6.96	10.67
4"	$244.00	10.61	16.67
6"	$476.00	20.70	33.33
8"	$758.00	32.96	53.33

For the variable charges, BWA proposed maintaining an inclining block tier rate structure for single family residential customers and adding a third tier to provide more conservation incentive at moderate to high levels of use. The tier breakpoints are designed to provide sufficient indoor and outdoor water use for a typical single family residential household. The addition of the third tier is projected to impact the top 10 percent of all single family residential bills which account for 11 percent of total water consumption as summarized on Table 3.

Table 3. Single Family Residential Inclining Tiers

CURRENT BI-MONTHLY TIERS				PROPOSED BI-MONTHLY TIERS			
		Bills Ending in Tier %	Water Use in Tier			Bills Ending in Tier %	Water Use in Tier
Tier 1	0 - 36 ccf	73.9%	76.0%	Tier 1	0 - 36 ccf	73.9%	76.0%
Tier 2	Over 36 ccf	26.1%	24.0%	Tier 2	37 - 58 ccf	15.9%	12.8%
				Tier 3	Over 58 ccf	10.1%	11.2%

For all other customer classes, BWA recommended eliminating the current two-tiered rate structure and implementing a single uniform block rate. Uniform block rates for non-residential customers are common in the industry because it is difficult to design tiers that accommodate a variety of uses. For example, a commercial customer who uses a lot of water does not necessarily indicate that the customer is using water inefficiently. Inclining tiered rates are

more practical to implement for single family residential customers because the overall consumption patterns for this class is fairly homogenous. To proportionately allocate the costs amongst all customer classes, the unit cost for each customer class varies based on peak demand.

Consumption-Based Fixed Rate Structure

The CBFR rate structure is comprised of three components - a distribution charge, a variable charge, and a supply charge. The rates for each of these components will apply to all water customers within the City (See Figure 1).

1. **Distribution Charge:** The distribution charge is a fixed "readiness to serve" charge based on meter size and is structured to recover a portion of the City's fixed costs related to the water distribution system. The charge recovers the fixed costs related to water mains and pipelines, water tanks, fire flow, meters, and customer service for meter reading and billing. The distribution charge comprises approximately 13 percent of an average monthly bill.

2. **Variable Charge:** The variable charge is based on a customer's consumption during the current billing period. The charge is structured to recover the costs that vary directly with water usage, such as electricity for treatment and pumping, chemicals for treatment, and other variable costs. Under the CBFR rate structure, the variable charge for all customers is based on a uniform tier. The variable charge comprises approximately 20% of an average monthly bill.

3. **Supply Charge:** The supply charge is structured to recover certain fixed costs related to water supply and treatment, including existing and future groundwater sources (wells), construction and operation of the 12 million gallon per day (mgd) surface water treatment plant, a portion of surface water rights, and water system planning and environmental compliance expenses. The supply charge is based on a customer's prior year's water usage during the 6-month peak period (May through October). The supply charge comprises approximately 67% of an average monthly bill.

   The supply charge is calculated by using the projected annual revenue requirement for water supply and treatment and dividing it by the total projected 6-month peak period (May through October) water use of the entire system to produce a per-ccf rate. Each individual customer's fee is then calculated by taking the per-ccf rate and multiplying it by the individual customer's prior year's 6-month peak period water use. For instance, if a customer uses 100 ccf during May through October and the CBFR supply rate is

$0.32/ccf, then the supply charge will be 100 ccf x $0.32 = $32 per month. Each year, the CBFR amount is recalculated based on actual consumption during the prior 6-month May through October peak consumption period.

Final Rate Recommendation

After considering the WAC's recommendation to fund the water supply project and implement the CBFR rates, the City Council voted on a hybrid approach to notice five years of rate increases and delay the implementation of the CBFR rate structure until January 1, 2015 to educate ratepayers on the new CBFR rate structure. The first two rate increases (May 1, 2013 and January 1, 2014) are based on the traditional fixed-volumetric rate structure and include BWA's recommended adjustments to the meter ratios, variable charges, and the addition of a third tier. The remaining rate increases from January 2015 onward are based on the CBFR structure. The final proposed rates which were included in the Proposition 218 notice are shown on Table 4.

Table 4. Final Proposed Water Rates

Rates Effective	1-May-13	1-Jan-14	1-Jan-15	1-Jan-16	1-Jan-17	1-Jan-18
DISTRIBUTION (FIXED) CHARGE						
Meter Size						
3/4"	$17.33	$19.68	$10.21	$11.38	$11.90	$13.67
1"	$27.13	$31.05	$15.22	$17.19	$18.09	$20.92
1-1/2"	$50.68	$58.51	$26.78	$30.76	$32.62	$38.01
2"	$80.27	$92.80	$42.02	$48.41	$51.40	$59.96
3"	$152.91	$177.97	$76.19	$89.09	$95.19	$111.72
4"	$236.26	$275.42	$116.33	$136.53	$146.12	$171.73
6"	$464.71	$543.02	$224.63	$265.13	$284.43	$335.05
8"	$737.57	$862.88	$353.27	$418.17	$449.16	$529.67
VARIABLE CHARGE ($/ccf of Current Billing Period Use)						
Single Family Residential Tiered Rates ($/ccf)						
Tier 1: 0 - 18	$1.23	$1.53	-	-	-	-
Tier 2: 18 - 29 ccf	$1.37	$1.69	-	-	-	-
Tier 3: 30 + ccf	$2.33	$2.87	-	-	-	-
All Other Customer Classes Uniform Rate ($/ccf)						
Multi Family Residential	$1.81	$2.24	-	-	-	-
Commercial	$1.51	$1.87	-	-	-	-
Irrigation	$2.37	$2.94	-	-	-	-
CBFR UNIFORM RATES ($/ccf of Current Billing Period Use)						
All Classes	-	-	$0.86	$1.02	$1.12	$1.32
CBFR SUPPLY CHARGES ($/ccf of Prior Year Peak Period Water Consumption)						
All Classes	-	-	$0.32	$0.40	$0.45	$0.54

SECTION 2: WATER ENTERPRISE OVERVIEW

City of Davis Current Water Supply

The City of Davis currently relies on groundwater from the Sacramento Valley groundwater basin for all of its water supply. The City's water system was developed in the 1950s, when groundwater sources easily kept pace with community demands. However, today both the quality and quantity of the groundwater is declining due to elevated concentrations of minerals which affect both the water and wastewater treatment systems. The City has been drilling deeper wells to get to better quality water lower down in the aquifer. These deep aquifer wells are more expensive to construct and may not be sufficient for future water needs. Additionally, in the future, the current groundwater supplies will likely not meet increasingly stringent wastewater discharge regulations or impending drinking water standards.

Woodland Davis Clean Water Agency - Surface Water Project

To meet the long-term viability of the City's water supply and to prevent potential issues with the groundwater aquifer from over-pumping, the City is proposing to develop joint surface water supply project with the City of Woodland to draw water from the Sacramento River as a participant of the Woodland Davis Clean Water Agency (WDCWA). The Cities of Davis and Woodland formed the joint powers agency (WDCWA) in September 2009 to implement and oversee the surface water supply project. The WDCWA is overseen by a six-member Board comprised of two City Council Members from each city, and two non-voting members, one each from UC Davis and Yolo County.

The proposed surface water project includes a jointly-owned and operated intake on the Sacramento River, raw water pipelines connecting to a new regional water treatment plant, and separate pipelines delivering treated water to Davis and Woodland. The new water supply will be used in lieu of groundwater supplies except during the summer months when there is a peak demand for water. During that time, groundwater supplies will be used as a supplement to meet peak water demands.

The regional water treatment facility will be constructed to supply up to 30 million gallons of water per day (mgd), with an option for future expansion to 34 million gallons per day. Of that amount, Woodland's share of treated surface water will be 18 million gallons per day, with Davis' share at 12 million gallons per day. Approximately 5.1 miles of pipeline will transport "raw" water from the surface water intake on the Sacramento River to the water treatment plant located south of Woodland. From there, the treated water will travel 7.8 miles via

pipeline to Davis, and 1.4 miles to Woodland. The City's share of the project's costs is detailed in the "Surface Water Project Costs" section.

The City's participation in the surface water project was submitted to the voters for their approval through a Citywide mailed ballot election. The measure passed on March 5, 2013.

Current Water Rates

The City bills water service on a bi-monthly basis on a combined bill that includes charges for water, sewer, sanitation, storm water, a municipal service tax, and a public safety charge. The current water rates are based on a traditional rate structure and include two components:

1. A **fixed base charge** that varies based on meter size and is levied regardless of water consumption. This basic service charge recognizes the fact that even when a customer does not use any water, the City incurs fixed costs in connection with the ability or readiness to serve each connection. Fixed costs include staffing, customer service, debt service, system maintenance, and repairs. All customers, residential and non-residential, are charged the same base charges.

2. A **metered variable charge** billed per each hundred cubic feet (ccf) of metered water use. A hundred cubic feet (ccf) of water is equal to 748 gallons of water. All customer classes, except for City/municipal use, are billed according to two-tiered inclining volumetric rate structure. (City/municipal irrigation is subject to a single tier volumetric rate). The amount of water allotted in each tier varies based on customer class. The quantity charge is intended to recover costs that vary based on the amount of water consumed. These variable costs can include utilities, chemicals, and water purchases.

The current water rates are shown on Table 5:

Table 5. Current Water Rates

	Monthly		Bi-Monthly	
BASE RATE				
Meter Size				
5/8" or 3/4"		$11.50		$23.00
1"		$16.20		$32.40
1-1/2"		$27.90		$55.80
2"		$42.00		$84.00
3"		$80.00		$160.00
4"		$122.00		$244.00
6"		$238.00		$476.00
METERED RATE CHARGE - PER HUNDRED CUBIC FEET (CCF)				
Use Classification	**Use Tiers**	**Unit Charge**	**Use Tiers**	**Unit Charge**
Single Family Residential	Tier 1: 0 - 18 ccf	$1.50	Tier 1: 0 - 36 ccf	$1.50
(Use per dwelling unit)	Tier 2: Over 18 ccf	$1.90	Tier 2: Over 36 ccf	$1.90
Multi-Family Residential	Tier 1: 0 - 7 ccf	$1.42	Tier 1: 0 - 14 ccf	$1.42
(Use per dwelling unit)	Tier 2: Over 7 ccf	$1.90	Tier 2: Over 14 ccf	$1.90
Small Commercial/Industrial	Tier 1: 0 - 57.5 ccf	$1.41	Tier 1: 0 - 115 ccf	$1.41
Up to 1-1/2" meters	Tier 2: Over 57.5 ccf	$1.90	Tier 2: Over 115 ccf	$1.90
Large Commercial/Industrial	Tier 1: 0 - 309.5 ccf	$1.51	Tier 1: 0 - 619 ccf	$1.51
2" meters and larger	Tier 2: Over 309.5 ccf	$1.90	Tier 2: Over 619 ccf	$1.90
Irrigation	Tier 1: 0 - 181.5 ccf	$1.41	Tier 1: 0 - 363 ccf	$1.41
(Use per acre)	Tier 2: Over 181.5 ccf	$1.90	Tier 2: Over 363 ccf	$1.90
Municipal	All Consumption	$1.41	All Consumption	$1.41

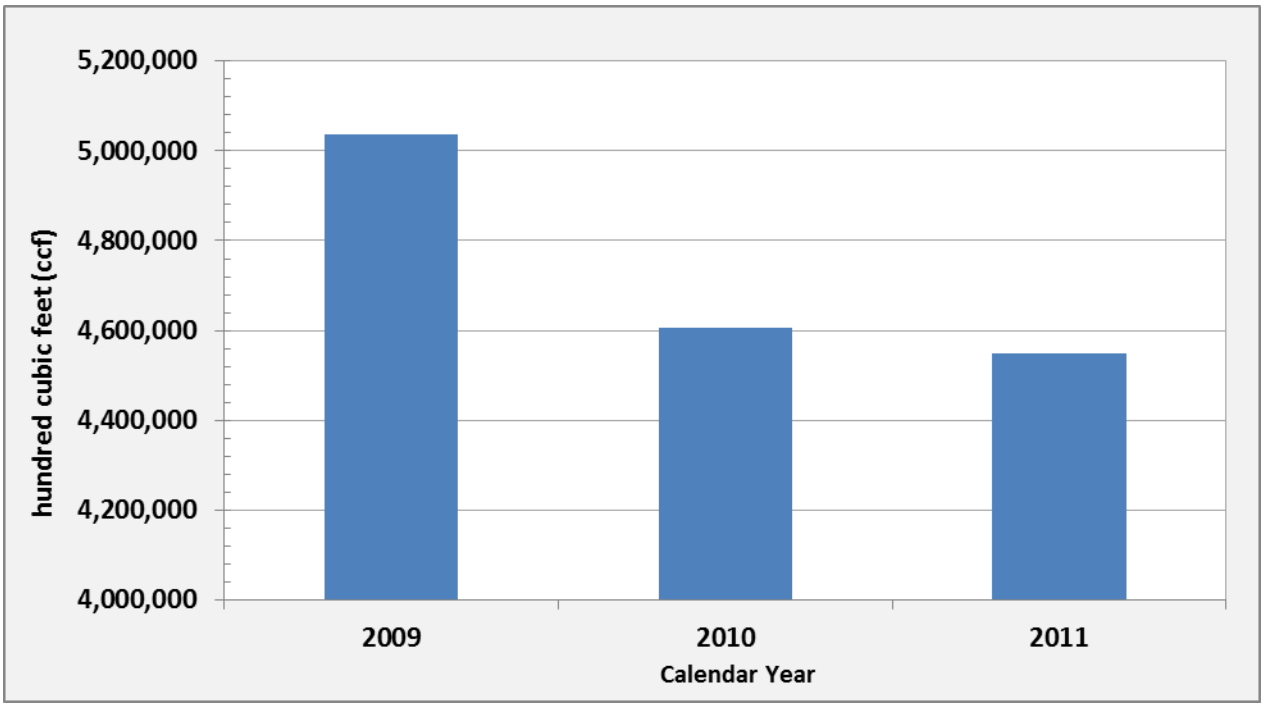
* CCF = hundred cubic feet (1 ccf = 748 gallons)

Water Consumption

BWA evaluated the water consumption within the City for calendar years 2009 through 2011 as shown on Figure 2. During this period, total usage declined approximately 10 percent. Like many other California cities and water utilities in the State, the City has experienced a significant decrease in water usage which can generally be attributed to a combination of

factors including the success of conservation programs, the economic slowdown, foreclosures, and a milder summer climate.

Figure 2. Total Annual Water Consumption



Customers and Usage by Class

The City provides water service to a population of approximately 65,600, (not including UC Davis which is served by its own water system). Residential accounts (single family and multi-family residential) account for nearly 93 percent of all water customers and represent 77 percent of total water usage as shown in Tables 6 and 7, respectively. Commercial customers (small commercial, large commercial, and city domestic) comprise nearly 4 percent of all accounts and represent 10 percent of total consumption. Irrigation accounts make up 3 percent of all accounts and represent 13 percent of the annual usage within the City.

Table 6. Current Water Accounts

Meter Size	Single Family Residential	Multi-Family Residential	Small Commercial	Large Commercial	Irrigation	City Domestic	City Irrigation	Total Customers	% of Total
5/8" or 3/4"	11,892	85	143	0	27	6	28	12,181	74.1%
1"	2,744	201	265	0	65	7	82	3,364	20.5%
1½"	95	76	151	0	104	5	25	456	2.8%
2"	5	77	0	106	53	7	47	295	1.8%
3"	0	51	0	20	2	0	17	90	0.5%
4"	1	22	0	3	4	1	9	40	0.2%
6"	0	0	0	3	0	0	0	3	0.0%
8"	0	4	0	0	0	0	0	4	0.0%
Total	14,737	516	559	132	255	26	208	16,433	100.0%
% of Total	*89.7%*	*3.1%*	*3.4%*	*0.8%*	*1.6%*	*0.2%*	*1.3%*	*100.0%*	

Table 7. 2011 Water Consumption

Customer Class	Total	% of Total
Single Family Residential	2,534,160	55.7%
Multi-Family Residential	982,053	21.6%
Small Commercial	256,142	5.6%
Large Commercial	171,796	3.8%
Irrigation	328,000	7.2%
City Domestic	12,512	0.3%
City Irrigation	265,275	5.8%
Total	4,549,938	100.0%

SECTION 3: FINANCIAL PLAN PROJECTIONS/ REVENUE REQUIREMENTS

BWA developed multi-year financial plan projections through 2049/50 to estimate annual revenue requirements and necessary rate adjustments to fund the water system's operating and capital needs. As a self-supporting enterprise fund, the majority of revenues are derived from water service charges (rates). As noted earlier, the City is considering a $113.8 million surface water project to ensure the long-term viability of the water supply. This section details the revenue and expenditure assumptions used to estimate and project the water utility's annual revenue requirements. The financial projections are included as Appendix B of this report.

Water Fund Reserves

As of July 1, 2012, the water enterprise held a working capital of nearly $6.2 million in operations, capital, and replacement reserve funds as shown in Table 8.

Table 8. Estimated Water Fund Reserves

Fund	Description	July 1, 2012
511	Maintenance & Operation	$3,272,975
512	Capital Replacement Reserve	6,520,871
513	Capital Expansion Reserve	(3,568,309)
	Total	6,225,537

Source: Final Budget 2012-13 Summary of Fund Balances, Revenues, and Expenditures/Encumbrances by Fund, 6/20/12

Maintaining a prudent minimal level of fund reserves provides a financial cushion for dealing with unanticipated expenses, revenue shortfalls, debt requirements, and emergency capital repairs. The fund reserve target should escalate over time as the City's revenues and expenses gradually increase. It is acceptable if reserves fall below the target on a temporary basis, provided action is taken to achieve the target over the longer term.

Recommended Operating Fund (Fund 511) Reserve Balance

BWA recommends continuation of the current minimum water fund operating reserve balance equivalent to 25 percent (or 3 months) of annual operating and maintenance expenses. This is a reasonable level of operating reserves and consistent with water industry practices.

Recommended New Rate Stabilization Fund Reserve

BWA recommends the establishment of a rate stabilization reserve fund to allow smoothing of the phase-in of the rate increases. Funds can be drawn from this reserve to provide adequate debt service coverage to comply with bond covenants. The reserves in the rate stabilization fund can be used as revenues of the water utility for the calculation of ongoing debt service coverage. Based on the financial projections, BWA recommends this fund have a balance target of $5 million. This fund will initially be funded from existing unrestricted fund balances in the amount of $5 million beginning in fiscal year 2013/14.

Recommended Capital Replacement and Expansion Fund Reserve Target

BWA recommends the existing capital reserves (Funds 512 and 513) have a combined minimum capital fund target of $2 million. This minimum balance is designed to provide emergency funding for unexpected capital projects.

Projected Future Growth

The City anticipates a moderate level of future growth. The projections include growth of 0.5 percent per year through fiscal year 2015/16. Beginning in fiscal year 2016/17 and continuing thereafter, 1.0 percent annual growth is assumed.

Revenues

Water utility funding comes from "Operating Revenues" and "Debt Proceeds."

Operating Revenues:

- **Water Rates**: Revenues from rates are derived from the fixed and volumetric water rates paid by customers. Without taking into account any rate increases, water sales for fiscal year 2012/13 are projected at nearly $9.98 million, representing 93 percent of the water utility's total revenues. Future annual water rate revenues are projected based on the required revenue increases with adjustments made for customer growth and consumption reductions due to conservation based on standard elasticity factors.

- **Interest Earnings:** Interest is earned on water utility reserve funds. For fiscal year 2012/13, interest revenues are estimated at $62,000. Based on current market interest rates, the financial projections assume a 1 percent rate for interest earnings through fiscal year 2014/15, a 1.5 percent rate through fiscal year 2017/18, and a 2.0 percent rate thereafter.

- **Water Meter Replacement Charge Revenues:** Water meter replacement charges are included in the new rates. These charges are based on the estimated cost of replacing an automatic read meter on a 15-year lifecycle. The meter replacement charge is escalated by 3 percent each year beginning in fiscal year 2014/15. The charges are further discussed in "Section 4 - Water Meter Replacement Charge."

- **Other Revenues:** All Other Revenues fall into this category. These revenues include capacity fees, sale of surplus/salvage, water shut off and reconnection fees, fire hydrant use permits, water meter installation fees, cross connection certification fees, encroachment permits, North Davis Meadows water service, and other investments. Other Revenues are estimated at $640,000 for fiscal year 2012/13. Future revenues are projected to increase annually by cost inflation, which is estimated at 3 percent each year.

Debt Proceeds: All debt proceeds in the financial projections are assumed to be from issuance of water revenue bonds. Proceeds shown are the amount the City would receive after financing and issuance costs are paid. Borrowing assumptions are included in the "Financing Alternatives" section. It should be noted that the City and WDCWA are pursuing low-cost project funding from the state and federal governments. However, to be conservative, the financial projections assume 100 percent revenue bond financing.

Baseline Operating Expenses

Operating costs are expenditures that the City incurs in the daily operations of the water system. For transparency, operating expenses were allocated between baseline expenditures for the City's local water system and surface water project operating costs. Baseline operating expenses are the water system's basic operating and capital costs that are incurred outside of the surface water project and are detailed on Table 9. These include employee salaries and wages, well and tank operations, general office, building maintenance, city vehicles, equipment, professional services, lab analysis, utilities, mechanical, conservation, and other miscellaneous expenses. Salaries and wages, other baseline expenses, and expenditures for the East Area

Tank and wells are based on City staff budget projections through fiscal year 2016/17 and include additional costs for conservation programs.

In general, all baseline expenses, except for salaries and wages, are escalated by 3 percent to be conservative. The average change in the Consumer Price Index (CPI) (All Urban Consumers, West Region) over the last 10 years has been 2.2 percent. Labor costs generally increase at a different rate than general inflation. Based on discussion with City staff on current and expected staffing levels, future salaries and wages are escalated by 3.8 percent.

Table 9. Baseline Operating Expenses

	Budget	Projected							
	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Baseline Expenses without Surface Water Project									
Labor - Salaries/Wages (1)	3,696,000	3,836,000	3,981,000	4,132,000	4,288,000	4,450,000	4,619,000	4,795,000	4,977,000
Other Baseline Expenses (2)	2,932,000	3,233,000	3,348,000	3,467,000	3,591,000	3,303,000	3,402,000	3,504,000	3,609,000
Additional for East Area Tank	60,000	61,000	63,000	64,000	66,000	67,000	69,000	71,000	73,000
Additional for Well 32	324,267	405,333	415,467	425,853	436,500	447,412	461,000	475,000	489,000
Additional for Well 34	0	405,333	415,467	425,853	436,500	447,412	461,000	475,000	489,000
JPA Contribution	2,767,268	0	0	0	0	0	0	0	0
Local R&R Projects (not incl Water Main Replacements) (3)	2,000,000	1,844,440	4,189,860	2,922,080	638,000	4,295,500	2,201,220	7,955,630	7,379,360
Water Main Replacements from Assessment	0	0	0	722,400	1,538,160	2,182,840	1,486,800	3,168,890	0
Existing Debt Service	1,147,489	1,110,000	1,110,000	910,000	910,000	910,000	910,000	910,000	910,000
Water Meter Replacement Program	0	0	452,000	466,000	480,000	494,000	509,000	524,000	540,000
Total Baseline Expenses	12,927,024	10,895,107	13,974,793	13,535,187	12,384,159	16,597,164	14,119,020	21,878,520	18,466,360

1 - Source: OM Costs (City of Davis). Assumes Labor costs account for 56% of total baseline expenses. Escalated by 3.8% annually

2 - Source: OM Costs (City of Davis). Other Baseline Expenses = Budget Baseline less Labor Costs. Costs are escalated by 3% beginning in 2017/18.

3 - Estimates for Local Projects R&R are estimated based on historical average beginning 2020/21. Includes $3M (2012 dollars, escalated by 4%) to replace intermediate well in 2016/17.

Water Meter Replacement Program: The annual costs for the water meter replacement program are based on the estimated cost of replacing an automatic read meter on a 15-year lifecycle. The automatic meter read (AMR) retrofit will provide more timely and accurate consumption information which is critical as the new CBFR rate structure will base about 87% of the customer's charge on metered consumption data. The charges are further discussed in "Section 6 - Water Meter Replacement Charge."

Local Capital Improvement Projects

The City's ongoing local capital repairs and replacements ("local R&R") program does not include any capital projects for the surface water project. As presented in Table 10, City staff developed a local R&R plan through 2019/20 that includes projects for water main replacements, well improvements, anode installation, the installation of automated meters, main upsizing, well irrigation, tank improvements, and the replacement of deep wells. These projects are necessary to maintain the integrity of the current water system.

Capital cost inflation is commonly linked to the Engineering News Record Construction Cost Index (ENR CCI) which has generally increased at a rate between 3 to 4 percent over the last 10 years. Capital costs have therefore been escalated by 4.0 percent to be conservative. Total escalated local R&R expenditures through fiscal year 2019/20 are estimated at $38.9 million. Beginning in fiscal year 2020/21, local R&R projects are estimated at $3 million per year based on the annual average of previous years and are escalated by 4 percent each year thereafter. The financial plan for Scenario 3: All Debt assumes that all local R&R projects through fiscal year 2019/20 will be debt financed.

Table 10. Local Repairs & Replacements (R&R) Capital Improvement Program

Project (1)	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Well 34 (Corp Yard) (8174)		$2,200,000							$2,200,000
EM Valve Replacements (8158)			200,000						200,000
Water Main Replacements (8190)	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	2,400,000
Water Main Replacements from Assessment			645,000	1,326,000	1,804,000	1,180,000	2,419,000		7,374,000
Anode Installation (8186)		250,000	250,000	250,000	250,000				1,000,000
AMR (8187) (2)	929,500	929,500	1,859,000						3,718,000
Water Main Corr Prev (8210)		200,000							200,000
SCADA (8183)	250,000								250,000
East Area Main Upsizing (8224)	294,000								294,000
Well Irrigation Ph 1&2 (8225)						775,000	1,573,000	926,000	3,274,000
Aquifer Storage and Recovery (8223)									0
Decommission Wells									0
Make Improvements at Elevated Tank						537,000			537,000
Improve West Area Tank Overflow Capacity						135,000			135,000
Replacement Deep Wells							4,200,000	4,200,000	8,400,000
Subtotal Local Project R&R	1,773,500	3,879,500	3,254,000	1,876,000	2,354,000	2,927,000	8,492,000	5,426,000	29,982,000
ESCALATED PROJECT COSTS									
Escalation - 4% annually	1.04	1.08	1.12	1.16	1.21	1.26	1.31	1.36	
Total Local Project R&R Escalated	1,844,440	4,189,860	3,644,480	2,176,160	2,848,340	3,688,020	11,124,520	7,379,360	38,895,180

1 - Source: CIP 5 Year Water (City of Davis)
2 - Future meter replacements will be funded by separate Water Meter Replacement Charge.

Surface Water Project Costs

The financial plan includes the latest capital and operating costs for the surface water project based on estimates from West Yost Associates. Construction is expected to begin in fiscal year 2012/13 and will continue through fiscal year 2016/17.

Surface Water Project Capital Costs

Total project costs for the City's share of the 30 mgd (Woodland : 18 mgd, Davis: 12 mgd) surface water project are shown on Table 11. Davis' share of capital costs are estimated at $113.8 million. Approximately $14.7 million of the total cost is allocated for local facility projects (capital projects that only benefit the City). These capital costs are related to the new water supply project and are separate from the local R&R capital projects previously described. The surface water project capital costs included in the cash flow projections have been

escalated based on the 2012 OMB Circular No. A-94 from the Executive Office of the President, Office of Management and Budget. Use of this escalation rate for the surface water projects was by consensus of the WAC. To be conservative, BWA used a higher 4 percent annual rate for escalating all other (non-surface water project) capital costs. (The 2012 OMB Circular No. A-94 rates vary between 0.53 percent and 1.80 percent per year.) Table 12 summarizes the project capital costs in both current and escalated costs.

In addition to local R&R projects/surface water project costs shown, a 4 million gallon (MG) storage tank is planned for fiscal year 2024/25 at an escalated cost of $12 million.

Table 11. WDCWA Surface Water Project: City of Davis Estimated Capital Costs

Cost Category	Total Davis' Share
Agency Administration	$1,708,000
Program Management	1,655,000
Pre-Design	2,849,000
Water Supply	382,000
Environmental & Permitting	767,000
Land/RW Acquisitions (1)	1,997,000
Capital Contingency	3,514,000
Construction Phase	
Design, CM, Eng. Services During Construction, etc.	9,441,000
Intake Facility Construction	5,516,000
Raw Water Pipelines Construction	9,008,000
Regional Water Treatment Facility Construction	38,964,000
Davis Treated Water Pipeline Construction	19,843,000
Costs Expended (Sept 2009 - June 2011)	3,476,000
Local Facility Costs	14,655,000
Total Estimated Capital Costs - Davis' Share	$113,775,000

1 - RWTF site fill costs were transferred from Regional Water Treatment Facility Construction cost category in the old estimate to the Land/RW Acquisitions cost category in the current estimate.

Surface Water Project Operating Costs

Following the construction of the surface water project, payments to the WDCWA for regional treatment operations and agency administration will begin in fiscal year 2016/17 and are estimated at $2.4 million per year. The surface water operating and agency administration costs included in the cash flow projections have been escalated based on the 2012 Office of

Management and Budget (OMB) Circular No. A-94 from the Executive Office of the President, Office of Management and Budget to account for cost inflation (per WAC consensus).

In addition to capital and operations costs, the City must pay their portion of the water rights which have been purchased from the Conaway Preservation Group (CPG). In December 2010, the WDCWA executed a Water Agreement with the CPG for a total of 10,000 acre-feet (AF) per year. The City's payments begin in fiscal year 2015/16 at $1.2 million per year. Table 12 summarizes the capital expenses, operating costs, agency administrative costs, and the water rights purchases in both current and escalated dollars.

Table 12. Surface Water Project (Davis : 12 mgd): Davis' Share of Project Costs by Year

	Projected Expenditures Sept. 2009 - June 30, 2012	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Current Dollars (1)										
Regional Project Facility Costs	$6,032,649	$4,752,000	$12,015,000	$32,120,000	$35,380,000	$8,820,167	$0	$0	$0	$99,119,816
Davis Local Facility Costs	0	1,500,000	9,501,000	3,654,000	0	0	0	0	0	14,655,000
Agency Administrative Costs	0	0	0	0	0	255,833	260,000	260,000	260,000	1,035,833
Water Purchase Costs	0	0	0	0	1,199,000	1,199,000	1,199,000	1,199,000	1,199,000	5,995,000
Operation & Maintenance Costs	0	0	0	0	0	2,148,000	2,577,000	2,577,000	2,577,000	9,879,000
Total Current	6,032,649	6,252,000	21,516,000	35,774,000	36,579,000	12,423,000	4,036,000	4,036,000	4,036,000	130,684,649
Projected Escalated Dollars (2)										
Regional Project Facility Costs	$6,032,649	$4,752,000	$12,079,000	$32,636,000	$36,523,000	$9,255,000	$0	$0	$0	$101,277,649
Davis Local Facility Costs	0	1,500,000	9,552,000	3,713,000	0	0	0	0	0	14,765,000
Agency Administrative Costs	0	0	0	0	0	268,000	277,000	282,000	287,000	1,114,000
Water Purchase Costs (3)	0	0	0	0	1,199,000	1,223,000	1,247,000	1,272,000	1,297,000	6,238,000
Operation & Maintenance Costs	0	0	0	0	0	2,254,000	2,750,000	2,798,000	2,849,000	10,651,000
Total	6,032,649	6,252,000	21,631,000	36,349,000	37,722,000	13,000,000	4,274,000	4,352,000	4,433,000	134,045,649

1 - Costs shown are in April 2012 dollars. Source: West Yost Associates
2 - Inflation rate consistent with August 31, 2011 Davis-Woodland Water Supply Project Updated Cost Estimate and Comparison TM. Real rates based on 2012 Discount Rates for OMB Circular No. A-94 from the Executive Office of the President, Office of Management and Budget dated January 3, 2012.
3 - Source: Table A Purchase Installment Agreement Payment Schedule 2016-2039

Existing Debt Service

The water utility has three outstanding debt issues – a 2002 Department of Water Resources Loan for $5 million, a 2009 California Infrastructure and Economic Development Bank (IBank) Loan for $10 million, and a 2011 Wells Fargo Line of Credit with a current balance of $8 million. Table 13 details the City's current debt service payments for the DWR and IBank loans.

2002 Department of Water Resources (DWR) Loan: In 2002, the City entered into a loan agreement with the DWR for $5 million to assist in the funding of the City's Water Storage Tank project. The loan cannot exceed $5 million and bears interest at 2.6 percent per year. Annual debt service payments are $324,000 with the last payment due in 2022.

2009 IBank Loan: In July 2009, the City entered into an enterprise fund installment sale agreement with the IBank to finance the East Area Tank and other components of the Davis Wells Capacity Environmental Impact Report (EIR) project. The loan cannot exceed $10 million and bears interest at 4.0 percent per year. Annual debt service payments are $324,000 with the last payment due in 2038.

2011 Wells Fargo Line of Credit: In February 2011, the City executed a credit agreement with Wells Fargo Bank for a non-revolving line of credit in the amount of not to exceed $15 million to finance engineering and planning costs related to the surface water project. Outstanding principle balance bears interest from the date the City draws the amount while any unused amount is charged an unused commitment fee. The City has drawn down about $8 million to date. The City expects to refinance the Wells Fargo line of credit into a long-term, fixed-rate obligation with debt service estimated at $544,000 per year beginning in fiscal year 2013/14.

Table 13. Existing Debt Service

Issue	Terms		Annual Debt Service							
	Amount	Due	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
2002 DWR Loan #2 - West Area Tank	$5,000,000	2022	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000
2009 I-Bank Loan - East Area Tank	$10,000,000	2038	586,000	586,000	586,000	586,000	586,000	586,000	586,000	586,000
Total Existing Debt			910,000	910,000	910,000	910,000	910,000	910,000	910,000	910,000

Financing Alternatives

The financial plan assumes conservatively that all debt financing will be via issuance of tax exempt municipal revenue secured debt. This is a conservative "worst case" scenario for financial planning purposes. However, the City and WDCWA are applying for Federal and State grant and loan funding to minimize the overall cost of the project. All new debt will be structured around the City's existing debt.

Revenue-secured debt whether issued as revenue bonds, Certificates of Participation (COPs), or other similar debt obligations such as direct bank loans are the most common types of debt financing used by municipal water utility enterprises. Although there are some technical differences between bonds, COPs and other debt instruments, all function almost exactly the same from the issuer's standpoint. Debt repayment is secured by an agency's binding legal pledge to raise rates and charges as necessary to repay debt and achieve a specified debt service coverage ratio. Revenue bonds are typically issued with terms of up to 30 years and offer relatively low tax-exempt municipal interest rates. Many agencies are required to obtain

voter-approval for the direct issuance of revenue bonds. However, voter approval is not required for issuance of COPs, bank loans, or other similar revenue-secured debt.

As shown on Tables 14 and 15 , NHA Advisors, the City's financial advisor, provided debt service estimates for Scenario 2 (WDCWA 30 mgd (Davis: 12 mgd) Partial Pay-As-You-Go) and Scenario 3 (WDCWA 30 mgd (Davis: 12 mgd) All Debt). Scenario 2 includes a total of seven debt issues through fiscal year 2024/25 to generate a total of $133.2 million in funding for projects. Total debt service payments for Scenario 2 are estimated at $296.4 million. Scenario 3 includes a total of nine debt issues through fiscal year 2024/25 to generate a total of $166.9 million in funding for projects. Total debt service payments for Scenario 3 are estimated at $375.4 million. Debt proceeds shown in the cash flow projections are aligned with the capital funding requirements for the surface water project. The City's actual debt issuances from year to year may vary based on actual financing needs, the availability of low-cost State and/or Federal financing and other factors.

Table 14. Scenario 2: Borrowing Assumptions and Debt Service Estimates

Scenario 2: Borrowing Assumption and Debt Service Estimates (1)									
Fiscal Year of Issuance	2013/14	2013/14	2014/15	2015/16	2016/17	2018/19	2024/25	2012/13	Total Debt Proceeds
Net Proceeds	$6,085,000	$19,752,000	$35,450,000	$36,546,000	$10,318,000	$5,000,000	$12,042,000	$8,000,000	$133,193,000
Cost of Issuance	$150,000	$175,000	$200,000	$225,000	$250,000	$250,000	$250,000	$150,000	
Underwriter's Discount	0.75%	0.75%	0.75%	0.75%	0.75%	0.75%	0.75%	0.75%	
Coupon	4.75%	5.00%	5.50%	6.00%	6.25%	6.25%	6.50%	4.50%	
Term	30 years	30 years	30 years	30 years	30 years	30 years	30 years	30 years	
								Wells Fargo	**Total Annual**
Fiscal Year	**Net Debt Service**							**Credit Line Refi**	**Debt Service**
2013/14								$544,000	544,000
2014/15	421,826	1,392,500						544,000	2,358,326
2015/16	421,839	1,391,250	2,644,710					544,000	5,001,798
2016/17	421,614	1,389,250	2,640,285	2,889,264				544,000	7,884,412
2017/18	421,151	1,391,500	2,644,485	2,888,964	855,691			544,000	8,745,790
2018/19	420,451	1,392,750	2,641,760	2,891,864	856,941			544,000	8,747,765
2019/20	424,514	1,393,000	2,642,385	2,892,664	857,566	418,000		544,000	9,172,128
2020/21	423,101	1,392,250	2,641,085	2,891,364	852,566	418,000		544,000	9,162,365
2021/22	421,451	1,390,500	2,642,860	2,887,964	857,253	418,000		544,000	9,162,028
2022/23	424,564	1,392,750	2,642,435	2,887,464	856,003	418,000		544,000	9,165,215
2023/24	422,201	1,388,750	2,644,810	2,889,564	854,128	418,000		544,000	9,161,453
2024/25	424,601	1,388,750	2,644,710	2,888,964	856,628	418,000		544,000	9,165,653
2025/26	421,526	1,392,500	2,642,135	2,890,664	853,191	418,000	$868,382	544,000	10,030,397
2026/27	423,214	1,389,750	2,642,085	2,889,364	854,128	418,000	1,038,382	544,000	10,198,922
2027/28	424,426	1,390,750	2,644,285	2,890,064	854,128	418,000	1,037,332	544,000	10,202,985
2028/29	425,164	1,390,250	2,643,460	2,892,464	853,191	418,000	1,035,632	544,000	10,202,160
2029/30	420,426	1,388,250	2,644,610	2,891,264	856,316	418,000	1,038,282	544,000	10,201,147
2030/31	420,451	1,389,750	2,642,460	2,891,464	853,191	418,000	1,034,957	544,000	10,194,272
2031/32	420,001	1,389,500	2,642,010	2,887,764	854,128	418,000	1,035,982	544,000	10,191,385
2032/33	424,076	1,392,500	2,642,985	2,890,164	853,816	418,000	1,036,032	544,000	10,201,572
2033/34	422,439	1,388,500	2,640,110	2,888,064	857,253	418,000	1,035,107	544,000	10,193,472
2034/35	420,326	1,392,750	2,643,385	2,891,464	854,128	418,000	1,033,207	544,000	10,197,260
2035/36	422,739	1,389,750	2,642,260	2,889,764	854,753	418,000	1,035,332	544,000	10,196,597
2036/37	424,439	1,389,750	2,641,735	2,887,964	853,816	418,000	1,036,157	544,000	10,195,860
2037/38	420,426	1,392,500	2,641,535	2,890,764	856,316	418,000	1,035,682	544,000	10,199,222
2038/39	420,939	1,392,750	2,641,385	2,887,564	856,941	418,000	1,033,907	544,000	10,195,485
2039/40	420,739	1,390,500	2,641,010	2,888,364	855,691	418,000	1,035,832	544,000	10,194,135
2040/41	424,826	1,390,750	2,640,135	2,892,564	852,566	418,000	1,036,132	544,000	10,198,972
2041/42	422,964	1,388,250	2,643,485	2,889,564	852,566	418,000	1,034,807	544,000	10,193,635
2042/43	420,389	1,393,000	2,640,510	2,889,364	855,378	418,000	1,036,857		9,653,497
2043/44	(5,199)	(10,500)	2,641,210	2,891,364	855,691	418,000	1,036,957		7,827,522
2044/45			(18,066)	2,889,964	853,503	418,000	1,035,107		5,178,509
2045/46				(17,336)	853,816	418,000	1,036,307		2,290,787
2046/47					(5,559)	418,000	1,035,232		1,447,673
2047/48						418,000	1,036,882		1,454,882
2048/49						418,000	1,035,932		1,453,932
2049/50						418,000	1,037,382		1,455,382
2050/51							1,035,907		1,035,907
2051/52							1,036,507		1,036,507
2052/53							1,033,857		1,033,857
2053/54							1,037,957		1,037,957
2054/55							(10,443)		(10,443)
								Total Debt Service	**$296,354,376**

1 - Debt service estimates based on NHA Advisors projections

Table 15. Scenario 3: Borrowing Assumptions and Debt Service Estimates

Scenario 3: Borrowing Assumption and Debt Service Estimates (1)											
Fiscal Year of Issuance	2013/14	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2024/25	2012/13	Total Debt Proceeds
Net Proceeds	$8,096,440	$25,820,860	$39,993,480	$38,699,160	$12,103,340	$3,688,020	$11,124,520	$7,379,360	$12,042,000	$8,000,000	166,947,180
Cost of Issuance	$150,000	$175,000	$200,000	$225,000	$250,000	$250,000	$250,000	$250,000	$250,000	$150,000	
Underwriter's Discount	0.75%	0.75%	0.75%	0.75%	0.75%	0.75%	0.75%	0.75%	0.75%	0.75%	
Coupon	4.75%	5.00%	5.50%	6.00%	6.25%	6.25%	6.25%	6.25%	6.50%	4.50%	
Term	30 years	30 years	30 years	30 years	30 years	30 years	30 years	30 years	30 years	30 years	
										Wells Fargo	**Total Annual**
Fiscal Year	**Net Debt Service**									**Credit Line Refi**	**Debt Service**
2013/14										$544,000	544,000
2014/15	$419,408	$1,393,971								544,000	2,357,380
2015/16	569,408	1,843,971	$2,383,371							544,000	5,340,751
2016/17	567,283	1,846,471	2,383,371	$2,526,298						544,000	7,867,423
2017/18	569,921	1,842,721	3,073,371	3,101,298	$837,088					544,000	9,968,398
2018/19	567,083	1,842,971	3,070,421	3,101,798	1,012,088	$267,113				544,000	10,405,473
2019/20	569,008	1,841,971	3,070,546	3,100,198	1,011,150	322,113	$770,925			544,000	11,229,911
2020/21	570,458	1,844,721	3,073,471	3,101,498	1,014,588	323,675	930,925	$517,158		544,000	11,920,493
2021/22	566,433	1,845,971	3,073,921	3,100,398	1,012,088	324,925	930,925	627,158		544,000	12,025,818
2022/23	567,171	1,845,721	3,071,896	3,101,898	1,013,963	325,863	935,300	625,283		544,000	12,031,093
2023/24	567,433	1,843,971	3,072,396	3,100,698	1,014,900	321,488	933,738	623,095		544,000	12,021,718
2024/25	567,221	1,845,721	3,075,146	3,101,798	1,009,900	322,113	931,550	625,595		544,000	12,023,043
2025/26	566,533	1,845,721	3,074,871	3,104,898	1,014,275	322,425	933,738	627,470	$868,382	544,000	12,902,313
2026/27	570,371	1,843,971	3,071,571	3,099,698	1,012,400	322,425	934,988	623,720	1,038,382	544,000	13,061,525
2027/28	568,496	1,845,471	3,075,246	3,101,498	1,014,588	322,113	930,300	624,658	1,037,332	544,000	13,063,700
2028/29	566,146	1,844,971	3,075,346	3,099,698	1,010,525	321,488	934,988	624,970	1,035,632	544,000	13,057,763
2029/30	568,321	1,842,471	3,071,871	3,104,298	1,010,525	325,550	933,425	624,658	1,038,282	544,000	13,063,400
2030/31	569,783	1,842,971	3,074,821	3,099,698	1,014,275	323,988	930,925	623,720	1,034,957	544,000	13,059,138
2031/32	565,533	1,846,221	3,073,646	3,101,198	1,011,463	322,113	932,488	627,158	1,035,982	544,000	13,059,800
2032/33	565,808	1,841,971	3,073,346	3,103,198	1,012,400	324,925	932,800	624,658	1,036,032	544,000	13,059,138
2033/34	570,371	1,845,471	3,073,646	3,100,398	1,011,775	322,113	931,863	626,533	1,035,107	544,000	13,061,275
2034/35	568,983	1,846,221	3,074,271	3,102,798	1,014,588	323,988	934,675	627,470	1,033,207	544,000	13,070,200
2035/36	566,883	1,844,221	3,074,946	3,099,798	1,010,525	325,238	930,925	627,470	1,035,332	544,000	13,059,338
2036/37	569,071	1,844,471	3,070,396	3,101,398	1,009,900	320,863	930,925	626,533	1,036,157	544,000	13,053,713
2037/38	565,308	1,841,721	3,070,621	3,101,998	1,012,400	321,175	934,363	624,658	1,035,682	544,000	13,051,925
2038/39	565,833	1,845,971	3,075,071	3,101,298	1,012,713	320,863	930,925	626,845	1,033,907	544,000	13,057,425
2039/40	570,408	1,841,721	3,073,196	3,103,998	1,010,838	324,925	930,925	627,783	1,035,832	544,000	13,063,625
2040/41	568,796	1,844,221	3,074,996	3,104,498	1,011,775	323,050	934,050	627,470	1,036,132	544,000	13,068,988
2041/42	566,233	1,842,971	3,074,921	3,102,498	1,010,213	320,550	929,988	625,908	1,034,807	544,000	13,052,088
2042/43	567,721	1,842,971	3,072,696	3,102,698	1,011,150	322,425	934,050	623,095	1,036,857		12,513,663
2043/44	(5,304)	(11,779)	3,073,046	3,104,498	1,014,275	323,363	930,613	624,033	1,036,957		10,089,700
2044/45			(20,379)	3,102,298	1,014,275	323,363	929,988	623,408	1,035,107		7,008,058
2045/46				(19,703)	1,011,150	322,425	931,863	626,220	1,036,307		3,908,262
2046/47					(5,100)	325,550	930,925	627,158	1,035,232		2,913,765
2047/48						(5,075)	932,175	626,220	1,036,882		2,590,202
2048/49							(9,700)	623,408	1,035,932		1,649,640
2049/50								(7,217)	1,037,382		1,030,165
2050/51									1,035,907		1,035,907
2051/52									1,036,507		1,036,507
2052/53									1,033,857		1,033,857
2053/54									1,037,957		1,037,957
2054/55									(10,443)		(10,443)
										Total Debt Service	**$375,438,101**

1 - Debt service estimates based on NHA Advisors projections

The City continues to evaluate alternative funding options to reduce project costs and is applying for State Revolving Fund (SRF) low interest loans from the State Department of Public Health. The State Revolving Fund program offers 20-year fixed-rate loans for eligible water projects. The program can currently be used to fund up to $50 million of projects per year. The interest rate is set at roughly one half of the state's general obligation bond rate; current interest rates are below 2.7%. Debt service repayment starts one year after the project is completed. Debt repayment is typically secured by an agency's legal pledge to raise rates and

fees as needed to repay debt service. The City anticipates that funding a portion of the surface water project with Federal and/or State low-cost loans and grants will lower overall water rates.

Debt Service Coverage

When issuing bonds, the City will have to legally abide by a number of debt covenants designed to ensure adequate repayment security. Key among these is a debt service coverage covenant that requires the City to raise water rates as needed to achieve 110% coverage on annual debt service per NHA Advisors. This means that annual net revenues (total revenues less operations and maintenance expenses) must be at least 110% of combined annual debt service payments on all parity (i.e. first lien) water obligations. Operating expenses include baseline operating expenses, operating costs for the surface water project, and CPG water rights payments. Coverage ratios are a financial measure of the water utility's ability to repay outstanding debt and are a standard legal covenant for securing water revenue bonds or similar debt financing.

Future Conservation and Price Elasticity

As previously noted, total water consumption declined over the three-calendar year (2009-2011) period analyzed in this study. The recommended new water rate structure is designed to encourage and reward conservation City-wide. Additionally, due to the effects of water price elasticity, any increases in the water rates are expected to spur additional conservation. The impacts of this additional conservation due to price elasticity have been estimated and built into the cash flow projections.

The responsiveness of water consumption to water rates is difficult to accurately forecast. The price elasticity of demand is the percentage change in quantity of water consumed for each percent change in price. Water price elasticity is usually negative, signifying that the price and the quantity demanded move in opposite directions such that an increase in price results in a decrease in quantity demanded. For example, a price elasticity factor of -1 means that for every 1 percent increase in price, a corresponding 1 percent decrease in consumption would be seen.

Price elasticity varies by customer classes, regions, and time of year. This study applies standard price elasticity factors to estimate conservation as shown on Table 16.

Table 16. Price Elasticity Assumptions

	2012/13	1-May-13	1-Jan-14	1-Jan-15	1-Jan-16	1-Jan-17	1-Jan-18
Elasticity Assumptions							
Single Family Residential							
Tier 1	-0.20	-0.20	-0.20	-0.20	-0.20	-0.10	-0.10
Tier 2	-0.20	-0.20	-0.20	-0.20	-0.20	-0.10	-0.10
Tier 3	-0.80	-0.80	-0.80	-0.80	-0.60	-0.40	-0.40
Multi Family Residential	-0.20	-0.20	-0.20	-0.20	-0.20	-0.10	-0.10
Commercial	-0.40	-0.40	-0.40	-0.40	-0.30	-0.20	-0.20
Irrigation	-0.80	-0.80	-0.80	-0.80	-0.60	-0.40	-0.40

Source: Elasticity factors based on a presentation titled "Introduction to Conservation Oriented Water Rate Structure and Budget-Based Rates" by Peter Mayer, P.E., Aquacraft Engineering & Management on Auguest 13, 2008.

Water demand for outdoor discretionary uses (such as lawn watering, garden irrigation, and car washing) is generally more elastic than indoor non-discretionary water uses. To reflect the elasticity of outdoor usage, the projections apply separate price elasticity factors to each single family residential tier. Elasticity for all customer classes is adjusted down beginning in 2016/17, assuming that overall conservation will become less elastic after customers have adjusted their consumption patterns in response to the rate increases and rate structure modifications. Price elasticity is assumed to apply only to increases above the Consumer Price Index (CPI).

Cash Flow Scenarios

BWA developed various cash flow scenarios to determine the impacts on the water utility's finances and on ratepayers. The rate increases were phased in to minimize impacts on customers while covering operating and capital costs, meeting debt service coverage, building reserves, and maintaining the long-term viability of the water enterprise. Three scenarios were evaluated:

- **Scenario 1: Baseline Expenses Only:** This scenario does not include any operating or capital costs related to the surface water project. Although the revenues will adequately fund the water enterprise in the short-term, it is assumed that this scenario is not viable for the long-term horizon.
- **Scenario 2: WDCWA 30 mgd (Davis: 12 mgd) Partial Pay-As-You-Go:** This scenario includes all operating and capital expenditures for the surface water project and assumes that a portion of capital costs are funded on a pay-as-you-go basis.
- **Scenario 3: WDCWA 30 mgd (Davis: 12 mgd) All Debt:** This scenario includes all operating and capital expenditures for the surface water project and assumes that all portion of capital costs are debt-financed.

The cash flow projections were based on the best information currently available and include the following assumptions:

Revenues

- The first rate adjustments take effect on May 1, 2013. Rate increases thereafter will be effective on January 1, beginning on January 1, 2014.
- Slow to moderate growth is projected in the next 5 years. The projections include growth of 0.5 percent per year through fiscal year 2015/16. Beginning in fiscal year 2016/17 and continuing thereafter, 1.0 percent annual growth is assumed.
- The interest earning rate is estimated at 0.5 percent each year beginning in fiscal year 2012/13 and gradually increases to 2 percent.
- Other Revenues are escalated by 3 percent each year based on historical trends.
- Service charges are designed to recover about 40%, and volume charges will recover about 60% of water sales revenues.
- The water meter replacement charges begin in fiscal year 2013/14.
- The same price elasticity factors were applied to each cash flow scenario.

Expenses

- Salaries and wages are escalated by 3.8 percent per year.
- Other Baseline expenses are escalated by 3 percent per year.
- CPG water rights payments begin in fiscal year 2015/16.
- All baseline and local R&R capital projects are included.
- Debt service for refunding the 2011 Wells Fargo line of credit is estimated at $544,000 beginning in fiscal year 2013/14.

Scenario I: Baseline Expenses Only (No WDCWA Participation)

This scenario calculates the revenue requirements and necessary rate increases for the water utility without the surface water project. While this option represents the lowest rate increases

over the next five years, it does not adequately plan for the future. The annual revenue requirements, rate adjustments, and an estimated single family residential bill based on the current median usage of 11 ccf is shown on Table 17. The rate projections assume no change in the rate structure.

Table 17. Scenario 1: Baseline Expenses Only

	1-May-13	1-Jan-14	1-Jan-15	1-Jan-16	1-Jan-17	1-Jan-18
Revenue Adjustment	8%	8%	15%	15%	9%	9%
Revenue Requirement	$10,726,500	$11,475,000	$13,196,000	$15,175,000	$16,541,000	$18,030,000
Estim. Median SFR Bill (11 ccf/mo)	$30.10	$32.36	$37.21	$42.79	$46.64	$50.84

As shown on Table 18, for Scenario 1: Baseline Expenses only, total consumption is projected to decrease approximately 8 percent for the period between fiscal year 2013/14 through fiscal year 2017/18 based on the projected rate increases, elasticity factors and growth assumptions.

Table 18. Scenario 1: Elasticity and Conservation Assumptions

	1-May-13	1-Jan-14	1-Jan-15	1-Jan-16	1-Jan-17	1-Jan-18
Annual Rate Increase	8%	8%	15%	15%	9%	9%
CPI Assumption	3%	3%	3%	3%	3%	3%
Net Rate Increase for Elasticity	5%	5%	12%	12%	6%	6%
Elasticity Assumptions						
Single Family Residential						
Tier 1	-0.20	-0.20	-0.20	-0.20	-0.10	-0.10
Tier 2	-0.20	-0.20	-0.20	-0.20	-0.10	-0.10
Tier 3	-0.80	-0.80	-0.80	-0.60	-0.40	-0.40
Multi Family Residential	-0.20	-0.20	-0.20	-0.20	-0.10	-0.10
Commercial	-0.40	-0.40	-0.40	-0.30	-0.20	-0.20
Irrigation	-0.80	-0.80	-0.80	-0.60	-0.40	-0.40
Customer Growth Assumption						
Single Family Residential	0.25%	0.25%	0.5%	0.5%	1.0%	1.0%
Multi Family Residential	0.25%	0.25%	0.5%	0.5%	1.0%	1.0%
Commercial	0.25%	0.25%	0.5%	0.5%	1.0%	1.0%
Irrigation	0.00%	0.00%	0.0%	0.0%	0.0%	0.0%
Annual Consumption Projection (ccf/year) Based on 2011 Usage						
Single Family Residential						
Tier 1	1,923,010	1,910,510	1,874,210	1,838,600	1,845,954	1,853,338
Tier 2	328,936	326,798	320,589	314,498	315,756	317,019
Tier 3	270,766	261,695	237,881	221,943	218,836	215,772
Subtotal Single Family Residential	2,522,712	2,499,003	2,432,680	2,375,041	2,380,546	2,386,129
Multi Family Residential	980,548	974,174	955,665	937,507	941,257	945,022
Commercial	435,791	429,036	410,587	397,859	397,063	396,269
Irrigation	571,917	551,328	498,401	462,516	451,416	440,582
Total	4,510,968	4,453,541	4,297,333	4,172,923	4,170,282	4,168,002
Annual Change	*1.3%*	*1.3%*	*3.5%*	*2.9%*	*0.1%*	*0.1%*
Cumulative Use Reduction	*0.9%*	*2.1%*	*5.6%*	*8.3%*	*8.3%*	*8.4%*

Scenario 2: WDCWA 30 mgd (Davis: 12 mgd) Partial Pay-As-You-Go

Scenario 2 includes all operating and capital expenditures for the surface water project and assumes that approximately 33 percent of capital projects (essentially the local R&R projects) are funded on a pay-as-you-go basis, thereby reducing the amount of total projects financed. This scenario assumes that $57.9 million in local R&R projects and surface water project capital costs through fiscal year 2024/25 are funded on a pay-as-you-go basis directly from water rates. The total amount of project funding from revenue bonds in this scenario is $125.2 million. The

annual revenue requirements, rate adjustments, and an estimated single family residential bill based on median usage of 11 ccf is shown on Table 19. The rate projections are based on the traditional rate structure for May 1, 2013 and January 1, 2014. Beginning in fiscal year 2014/15, the rates assume the CBFR structure.

Table 19. Scenario 2: WDCWA 30 mgd (Davis: 12 mgd) Partial Pay-As-You-Go

	1-May-13	1-Jan-14	1-Jan-15	1-Jan-16	1-Jan-17	1-Jan-18
Revenue Adjustment	21%	21%	25%	25%	13%	13%
Revenue Requirement	$12,073,500	$14,169,000	$17,711,000	$22,139,000	$25,017,000	$28,269,000
Est. Median SFR Bill Monthly Use: 11 ccf/mo May-Oct Use: 17 ccf/mo	$33.57	$39.65	$57.09	$72.61	$83.87	$94.26

As shown on Table 20, for Scenario 2: WDCWA 30 mgd (Davis: 12 mgd) Partial Pay-As-You-Go, total consumption is projected to decrease roughly 22 percent for the period between fiscal year 2013/14 through fiscal year 2017/18 based on the projected rate increases, elasticity factors and growth assumptions.

Table 20. Scenario 2: Elasticity and Conservation Assumptions

	1-May-13	1-Jan-14	1-Jan-15	1-Jan-16	1-Jan-17	1-Jan-18
Annual Rate Increase	21%	21%	25%	25%	13%	13%
CPI Assumption	3%	3%	3%	3%	3%	3%
Net Rate Increase for Elasticity	18%	18%	22%	22%	10%	10%
Elasticity Assumptions						
Single Family Residential						
Tier 1	-0.20	-0.20	-0.20	-0.20	-0.10	-0.10
Tier 2	-0.20	-0.20	-0.20	-0.20	-0.10	-0.10
Tier 3	-0.80	-0.80	-0.80	-0.60	-0.40	-0.40
Multi Family Residential	-0.20	-0.20	-0.20	-0.20	-0.10	-0.10
Commercial	-0.40	-0.40	-0.40	-0.30	-0.20	-0.20
Irrigation	-0.80	-0.80	-0.80	-0.60	-0.40	-0.40
Customer Growth Assumption						
Single Family Residential	0.25%	0.25%	0.5%	0.5%	1.0%	1.0%
Multi Family Residential	0.25%	0.25%	0.5%	0.5%	1.0%	1.0%
Commercial	0.25%	0.25%	0.5%	0.5%	1.0%	1.0%
Irrigation	0.00%	0.00%	0.0%	0.0%	0.0%	0.0%
Annual Consumption Projection (ccf/year) Based on 2011 Usage						
Single Family Residential						
Tier 1	1,870,749	1,808,079	1,737,564	1,669,799	1,669,799	1,669,799
Tier 2	319,997	309,277	297,215	285,624	285,624	285,624
Tier 3	240,510	206,478	171,170	149,431	144,948	140,600
Subtotal Single Family Residential	2,431,256	2,323,834	2,205,949	2,104,854	2,100,371	2,096,023
Multi Family Residential	953,900	921,944	885,988	851,434	851,434	851,434
Commercial	411,888	383,262	351,451	330,012	326,712	323,445
Irrigation	507,843	434,714	358,204	310,921	298,484	286,545
Total	4,304,887	4,063,754	3,801,592	3,597,221	3,577,001	3,557,447
Annual Change	*5.8%*	*5.6%*	*6.5%*	*5.4%*	*0.6%*	*0.5%*
Cumulative Use Reduction	*5.4%*	*10.7%*	*16.4%*	*20.9%*	*21.4%*	*21.8%*

Scenario 3: WDCWA 30 mgd (Davis: 12 mgd) All Debt

Scenario 3 includes all operating and capital expenditures for the surface water project and assumes that all local R&R and all capital projects for the surface water project are debt financed. This scenario includes $158.9 million in revenue bonds to fund local R&R projects and surface water project capital costs through fiscal year 2024/25. The annual revenue requirements, rate adjustments, and an estimated single family residential bill based on median usage of 11 ccf per month and average usage of 15 ccf per month is shown on Table 21. The

rate projections are based on the traditional rate structure for May 1, 2013 and January 1, 2014. Beginning in fiscal year 2014/15, the rates assume the CBFR structure.

Table 21. Scenario 3: WDCWA 30 mgd (Davis: 12 mgd) All Debt

	1-May-13	1-Jan-14	1-Jan-15	1-Jan-16	1-Jan-17	1-Jan-18
Revenue Adjustment	15%	15%	25%	25%	8%	8%
Revenue Requirement	$11,474,500	$12,971,000	$16,214,000	$20,268,000	$21,889,000	$23,640,000
Est. Median SFR Bill Monthly Use: 11 ccf/mo May-Oct Use: 17 ccf/mo	$30.89	$36.48	$52.31	$63.40	$70.12	$83.27

As shown on Table 23, for Scenario 3: WDCWA 30 mgd (Davis: 12 mgd) All Debt, total consumption is projected to decrease nearly 18 percent for the period between fiscal year 2013/14 through fiscal year 2017/18 based on the projected rate increases, elasticity factors and growth assumptions.

Table 22. Scenario 3: Elasticity and Conservation Assumptions

	1-May-13	1-Jan-14	1-Jan-15	1-Jan-16	1-Jan-17	1-Jan-18
Annual Rate Increase	15%	15%	25%	25%	8%	8%
CPI Assumption	3%	3%	3%	3%	3%	3%
Net Rate Increase for Elasticity	12%	12%	22%	22%	5%	5%
Elasticity Assumptions						
Single Family Residential						
Tier 1	-0.20	-0.20	-0.20	-0.20	-0.10	-0.10
Tier 2	-0.20	-0.20	-0.20	-0.20	-0.10	-0.10
Tier 3	-0.80	-0.80	-0.80	-0.60	-0.40	-0.40
Multi Family Residential	-0.20	-0.20	-0.20	-0.20	-0.10	-0.10
Commercial	-0.40	-0.40	-0.40	-0.30	-0.20	-0.20
Irrigation	-0.80	-0.80	-0.80	-0.60	-0.40	-0.40
Customer Growth Assumption						
Single Family Residential	0.25%	0.25%	0.5%	0.5%	1.0%	1.0%
Multi Family Residential	0.25%	0.25%	0.5%	0.5%	1.0%	1.0%
Commercial	0.25%	0.25%	0.5%	0.5%	1.0%	1.0%
Irrigation	0.00%	0.00%	0.0%	0.0%	0.0%	0.0%
Annual Consumption Projection (ccf/year) Based on 2011 Usage						
Single Family Residential						
Tier 1	1,893,976	1,853,256	1,780,979	1,711,521	1,720,079	1,728,679
Tier 2	323,970	317,005	304,642	292,761	294,225	295,696
Tier 3	253,957	230,212	190,846	166,609	164,943	163,294
Subtotal Single Family Residential	2,471,903	2,400,473	2,276,467	2,170,891	2,179,247	2,187,669
Multi Family Residential	965,743	944,980	908,126	872,709	877,073	881,458
Commercial	422,511	403,287	369,814	347,255	347,255	347,255
Irrigation	536,321	484,834	399,503	346,769	339,834	333,037
Total	4,396,478	4,233,574	3,953,910	3,737,624	3,743,409	3,749,419
Annual Change	*3.8%*	*3.7%*	*6.6%*	*5.5%*	*-0.2%*	*-0.2%*
Cumulative Use Reduction	*3.4%*	*7.0%*	*13.1%*	*17.9%*	*17.7%*	*17.6%*

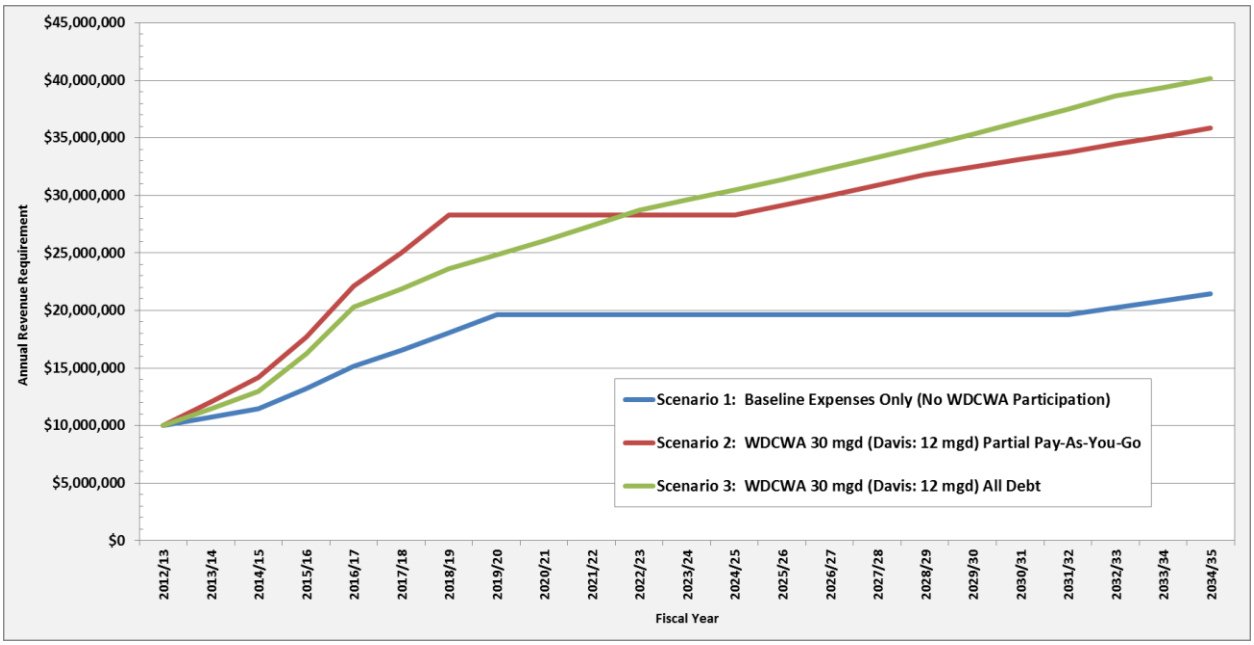
Comparison of Revenue Requirements

Table 23 and Figure 3 compares the annual revenue adjustments and revenue requirements for the three cash flow scenarios. By financing all local R&R and surface water project capital projects, Scenario 3 (WDCWA 30 mgd (Davis: 12 mgd) ALL DEBT) allows the City to more gradually phase in rate increases. In January 2013, the City Council selected Scenario 3 for development of the final rates.

Table 23. Scenario Comparison: Revenue Requirements

	1-May-13	1-Jan-14	2014/15	2015/16	2016/17	2017/18
Scenario 1: Baseline Expenses Only (No WDCWA Participation)						
Revenue Adjustment	8%	8%	15%	15%	9%	9%
Revenue Requirement	$10,726,500	$11,475,000	$13,196,000	$15,175,000	$16,541,000	$18,030,000
Scenario 2: WDCWA 30 mgd (Davis: 12 mgd) Partial Pay-As-You-Go						
Revenue Adjustment	21%	21%	25%	25%	13%	13%
Revenue Requirement	$12,073,500	$14,169,000	$17,711,000	$22,139,000	$25,017,000	$28,269,000
Scenario 3: WDCWA 30 mgd (Davis: 12 mgd) All Debt - *Council Selected Scenario*						
Revenue Adjustment	15%	15%	25%	25%	8%	8%
Revenue Requirement	$11,474,500	$12,971,000	$16,214,000	$20,268,000	$21,889,000	$23,640,000

Figure 3. Annual Revenue Requirement Comparison



SECTION 4: COST OF SERVICE

The financial plan and cash flow projections detailed in the previous section determined the amount of revenue needed to be generated from water rates. The cost of service analysis builds on the revenue requirements by providing a basis for recovering revenues from customers based on the unique demands they place on the water system. Proposition 218 requires that agencies providing "property-related services" (including water utility service) set rates and charges that are based on the cost of providing those services.

The rates proposed in this report were developed using generally accepted cost-based principles and methodologies for establishing water rates, charges, and fees contained and discussed in the *AWWA's M1 Manual, Principles of Water Rates, Fees, and Charges, Sixth Edition, 2012.* In developing water rates, it is important to know that there is no "one-size-fits-all" approach for establishing cost-based water rates. "Rather, as the first edition of the M1 Manual noted "the (M1 Manual) is aimed at outlining the basic elements involved in water rates and suggesting alternative rules of procedure for formulating rates, thus permitting the exercise of judgment and preference to meet local conditions and requirements." [1]

The rates and cost of service approach recommended in this report are unique to Davis and are the result of an extensive public process. During this process, input was received from many sources including City staff, the WAC, the Davis Chamber of Commerce, members of the public, and the City Council.

Fixed vs. Variable Charges

Water utilities can recover costs from a combination of fixed and variable charges. The percentage of revenues derived from the fixed and variable charges varies for each agency and should be proportional to each system's expenditures and must not exceed the cost of providing service. A higher level of fixed charges provides better revenue stability and less dependence on volumetric sales. On the other hand, higher dependence on volumetric revenues provides a better conservation incentive.

Fixed costs from an accounting stand point are the expenses required to provide basic service and do not vary with the production or consumption of water. Examples include debt service, labor, system maintenance, and repairs. These fixed costs are essential for providing water service to all customers at any given time. In contrast, variable costs fluctuate based on the

[1] AWWA Manual M1 Manual, Principles of Water Rates, Fees, and Charges, Sixth Edition, 2012, page 5.

amount of water produced. Examples include utilities, chemicals, conservation efforts, and water purchases. Typically, the majority of a water system's costs are fixed, and therefore fixed rates are assumed to generate sufficient revenue to meet the utility's fixed expenses. However, in California agencies typically recover more of their fixed costs through variable charges to provide conservation incentive.

The California Urban Water Conservation Council (CUWCC) was created to promote efficient water use statewide through partnerships among urban water agencies, public interest organizations, and private entities. The CUWCC's goal is to integrate urban water conservation Best Management Practices (BMP) into the planning and management of California's water resources. BMP 1.4 (previously BMP 11) on pricing recommends rate structures that recover at least 70 percent of rate revenues from volumetric rates. The CUWCC provides other options for complying with BMP 1.4 and recognizes that the 70 percent volumetric guideline is not appropriate for all signatories.

Current Revenue Allocations

Based on 2011 revenue projections, the water enterprise currently collects approximately 26 percent of total revenues from the fixed base charge and 67 percent from the metered charges as summarized on Table 24. Other revenues account for nearly 7 percent of total revenues.

Table 24. Current Fixed vs. Variable Revenue Allocation (1)

	Amount	% of Total
Fixed Revenues		
Base Service Charges	$2,808,000	26.3%
Other Revenues (2)	691,000	6.5%
Variable Revenues		
Metered Charges	7,170,000	67.2%
Total Revenues	10,669,000	100.0%

1 - Based on fiscal year 2010/11 revenues

2 - Other revenues include interest, capacity fees, charges for North Davis Meadows water service, and other miscellaneous fees

Revenue stability is a major concern for utilities State-wide due to the recent downward trend in water consumption. An increase in the amount of revenue collected through the fixed charges would provide increased revenue stability and better align revenue recovery with actual costs. BWA determined the proportionate allocation of costs through a commodity demand analysis.

Commodity Demand Cost Allocation

The American Water Works Association (AWWA) recommends two primary methods to classify costs among various customers: (1) the Base-Extra Capacity method in which costs are allocated to the different customer classes proportionate to their use of the water system; and (2) the Commodity-Demand method in which costs are proportionately allocated to each customer class based on their peak demand. Although the two methods vary in the way that costs are allocated, both result in rates designed to recover the reasonable cost of service during periods of both average and peak demands. BWA selected the commodity demand method for use in the Davis rate study based on prior experience with cost of service analysis for similar cities.

To determine the proportionate allocation of revenue recovery, this study allocates system costs using the commodity-demand method. In the commodity-demand method, costs are separated into four components: (a) commodity costs, (b) demand costs, (c) customer costs, and (d) direct fire-protection costs. *Commodity costs* typically vary with the quantity of water produced. Examples include chemicals, utilities, and water purchases (if bought on a unit volume basis). Commodity costs also include costs related to reservoirs and other costs that vary with average daily demand. *Demand costs* recover the costs of facilities needed to meet the peak use, or demands, placed on the system by each customer class. Demand costs include capital-related system costs designed to meet peak requirements and the associated operation and maintenance expenses. Examples include the water distribution pipeline system which is sized to meet peak demands. These costs can be further broken down into costs associated with meeting specific demands, such as maximum-month, maximum-day, excess maximum hour, or other periods of time that may be appropriate to the utility. *Customer costs* include the fixed costs associated with serving customers. These costs are incurred regardless of the amount of water a customer consumes. Examples include billing, meter reading, customer accounting and collecting expenses, and maintenance and capital costs for meters. *Direct fire-protection* costs comprise costs applied exclusively for fire protection. Examples include public fire hydrants and related mains and valves.

Functional Cost Components

The total cost of water service is analyzed by system function to proportionately distribute costs of service to the various customer classes. Water utility costs are assigned to three basic functional cost components: commodity costs, demand costs, and customer administrative costs. Because the expenses related to direct fire protection were relatively small, they were combined with the demand cost component.

Expenses were broken down into three general categories of costs by function: (1) baseline

operating costs; (2) local R&R projects and water system fixed assets; and (3) surface water projects capital costs. Tables 25 through 27 show the results of the commodity demand cost allocation to each cost component for each of the expense categories.

Table 25. Commodity Demand Allocation: Baseline Operating Expenses

	2011/12 Budget	Commodity %	Demand %	Cust Admin %	Total %	Commodity $	Demand $	Cust Admin $	Total $
BASELINE OPERATING EXPENSES									
Fund 511 - Water									
1110-7252 Miscellaneous	$351,260	45%	35%	20%	100%	$158,067	$122,941	$70,252	$351,260
7520 Utility Resources Management	370,745	30%	70%	0%	100%	111,224	259,522	0	370,745
7522 Water Production	2,869,635	100%	0%	0%	100%	2,869,635	0	0	2,869,635
7523 Water Distribution	2,053,439	50%	50%	0%	100%	1,026,720	1,026,720	0	2,053,439
7526 Cross-Connection Control	121,296	0%	100%	0%	100%	0	121,296	0	121,296
7527 Fire Hydrant Maintenance	702,217	0%	100%	0%	100%	0	702,217	0	702,217
7528 Water Conservation	0	50%	50%	0%	100%	0	0	0	0
7529 New Services/Meter Install	16,906	0%	100%	0%	100%	0	16,906	0	16,906
7531 North Davis Meadows	86,732	50%	50%	0%	100%	43,366	43,366	0	86,732
7536 Water Support - City Facilities	45,395	0%	100%	0%	100%	0	45,395	0	45,395
7565 Water Inter-Department Charges	234,119	10%	10%	80%	100%	23,412	23,412	187,295	234,119
7602 - 8543 Miscellaneous	329,924	45%	35%	20%	100%	148,466	115,473	65,985	329,924
8835 Debt Service	163,789	55%	43%	2%	100%	90,084	70,429	3,276	163,789
9895 Transfer to Capital Replacement Fund 512	2,767,268	55%	43%	2%	100%	1,521,997	1,189,925	55,345	2,767,268
Subtotal Fund 511	$10,112,725					$5,992,970	$3,737,602	$382,153	$10,112,725
Allocation						*59%*	*37%*	*4%*	*100%*
Fund 512 - Water Capital Replacement									
7520 Utility Resources Management	$70,000	30%	70%	0%	100%	$21,000	$49,000	$0	$70,000
8110-8217 Capital Replacement Misc.	2,981,603	60%	37%	3%	100%	1,790,341	1,098,404	92,857	2,981,603
8543 JPA Contribution	4,275,000	60%	39%	1%	100%	2,570,996	1,680,437	23,567	4,275,000
8836 - 8840 Debt Service	1,042,154	55%	43%	2%	100%	573,185	448,126	20,843	1,042,154
9895 Transfer from Fund 511	(2,767,268)	55%	43%	2%	100%	(1,521,997)	(1,189,925)	(55,345)	(2,767,268)
Subtotal Fund 512	$5,601,489					$3,433,525	$2,086,042	$81,922	$5,601,489
Allocation						*61%*	*37%*	*1%*	*100%*
Fund 513 - Water Capital Expansion									
8110-8185 Capital Expansion	$349,533	0%	100%	0%	100%	$0	$349,533	$0	$349,533
8543-8552 JPA Contribution	0	0%	100%	0%	100%	0	0	0	0
8836 Debt Service	302,416	0%	100%	0%	100%	0	302,416	0	302,416
9895 Contribution transfer	(150,000)	0%	100%	0%	100%	0	(150,000)	0	(150,000)
8223-8225 Capital Expansion	1,015,000	0%	100%	0%	100%	0	1,015,000	0	1,015,000
Subtotal Fund 513	$1,516,949					$0	$1,516,949	$0	$1,516,949
Allocation						*0%*	*100%*	*0%*	*100%*
Total All Baseline Operating Expenses	**$17,231,163**					**$9,426,495**	**$7,340,593**	**$382,153**	**$17,149,241**
Total Commodity-Demand Allocation						***55%***	***43%***	***2%***	***100%***

Table 26. Commodity Demand Allocation: Local R&R Projects and Water System Fixed Assets

	Total	Commodity %	Demand %	Cust Admin %	Total %	Commodity $	Demand $	Cust Admin $	Total $
WATER SYSTEM FIXED ASSETS (Book Value)									
Land Water - Well and Tank Site	$770,390	90%	10%	0%	100%	$693,351	$77,039	$0	$770,390
Buildings - Water	40,274	0%	50%	50%	100%	0	20,137	20,137	40,274
Water Production System	44,962,382	100%	0%	0%	100%	44,962,382	0	0	44,962,382
Water Distribution System	42,684,165	20%	80%	0%	100%	8,536,833	34,147,332	0	42,684,165
Water Maintenance System	57,896	20%	80%	0%	100%	11,579	46,317	0	57,896
Vehicles - Water	14,445	33%	33%	34%	100%	4,767	4,767	4,911	14,445
Total Water Assets	$88,529,552					$54,208,912	$34,295,592	$25,048	$88,529,552
Commodity-Demand Allocation						*61.2%*	*38.7%*	*0.0%*	*100.0%*
LOCAL CIP PROJECTS R&R (FY 2012 through 2020)									
Well 34 (Corp Yard) (8174)	$2,200,000	100%	0%	0%	100%	$2,200,000	$0	$0	$2,200,000
EM Valve Replacements (8158)	200,000	60%	40%	0%	100%	120,000	80,000	0	200,000
Water Main Replacements (8190)	2,400,000	20%	80%	0%	100%	480,000	1,920,000	0	2,400,000
Water Main Replacements from Assessment	7,374,000	20%	80%	0%	100%	1,474,800	5,899,200	0	7,374,000
Anode Installation (8186)	1,000,000	20%	80%	0%	100%	200,000	800,000	0	1,000,000
AMR (8187)	3,718,000	30%	20%	50%	100%	1,115,400	743,600	1,859,000	3,718,000
Water Main Corr Prev (8210)	200,000	20%	80%	0%	100%	40,000	160,000	0	200,000
SCADA (8183)	250,000	60%	40%	0%	100%	150,000	100,000	0	250,000
East Area Main Upsizing (8224)	294,000	20%	80%	0%	100%	58,800	235,200	0	294,000
Well Irrigation Ph 1&2 (8225)	3,274,000	100%	0%	0%	100%	3,274,000	0	0	3,274,000
Aquifer Storage and Recovery (8223)	0	100%	0%	0%	100%	0	0	0	0
Decommission Wells	0	100%	0%	0%	100%	0	0	0	0
Make Improvements at Elevated Tank	537,000	20%	80%	0%	100%	107,400	429,600	0	537,000
Improve West Area Tank Overflow Capacity	135,000	20%	80%	0%	100%	27,000	108,000	0	135,000
Replacement Deep Wells	8,400,000	100%	0%	0%	100%	8,400,000	0	0	8,400,000
Total Local Project R&R	$29,982,000					$17,647,400	$10,475,600	$1,859,000	$29,982,000
Commodity-Demand Allocation						*59%*	*35%*	*6%*	*100%*
Average Fixed Assets and Local CIP Projects R&R Allocation						***60%***	***37%***	***3%***	***100%***

Table 27. Commodity Demand Allocation: WDCWA Surface Water Project Costs

	Total	Commodity %	Demand %	Cust Admin %	Total %	Commodity $	Demand $	Cust Admin $	Total $
WDCWA SURFACE WATER PROJECT 30 MGD (DAVIS: 12 MGD) PROJECT COSTS									
Agency Administration	$1,708,000	60%	30%	10%	100%	$1,024,800	$512,400	$170,800	$1,708,000
Program Management	1,655,000	60%	40%	0%	100%	993,000	662,000	0	1,655,000
Pre-Design	2,849,000	60%	40%	0%	100%	1,709,400	1,139,600	0	2,849,000
Water Supply	382,000	100%	0%	0%	100%	382,000	0	0	382,000
Environmental & Permitting	767,000	60%	40%	0%	100%	460,200	306,800	0	767,000
Land/RW Acquisitions (1)	1,997,000	60%	40%	0%	100%	1,198,200	798,800	0	1,997,000
Capital Contingency	3,514,000	60%	40%	0%	100%	2,108,400	1,405,600	0	3,514,000
Construction Phase									
Design, CM, Eng. Services During Const., etc.	9,441,000	60%	40%	0%	100%	5,664,600	3,776,400	0	9,441,000
Intake Facility Construction	5,516,000	60%	40%	0%	100%	3,309,600	2,206,400	0	5,516,000
Raw Water Pipelines Construction	9,008,000	60%	40%	0%	100%	5,404,800	3,603,200	0	9,008,000
Regional Water Treatment Facility Construction	38,964,000	60%	40%	0%	100%	23,378,400	15,585,600	0	38,964,000
Davis Treated Water Pipeline Construction	19,843,000	60%	40%	0%	100%	11,905,800	7,937,200	0	19,843,000
Costs Expended (Sept 2009 - June 2011)	3,476,000	60%	40%	0%	100%	2,085,600	1,390,400	0	3,476,000
Local Facility Costs	14,655,000	60%	37%	3%	100%	8,799,781	5,398,812	456,407	14,655,000
Total Capital Costs	$113,775,000					$68,424,581	$44,723,212	$627,207	$113,775,000
Commodity-Demand Allocation						***60%***	***39%***	***1%***	***100%***

Table 28. Commodity Demand Allocation: Total All Expenses

	2019/20 Est. Amount	Commodity %	Demand %	Cust Admin %	Total %	Commodity $	Demand $	Cust Admin $	Total $
City of Davis Water System Baseline Expenses									
Baseline Operating Expenses	$10,856,000	59%	37%	4%	100%	$6,419,000	$4,023,000	$432,000	$10,874,000
Fixed Assets and Local CIP Projects R&R (1)	3,000,000	59%	38%	3%	100%	1,781,000	1,129,000	90,000	$3,000,000
Subtotal	$13,856,000					$8,200,000	$5,152,000	$522,000	$13,874,000
Commodity-Demand Allocation						*59.0%*	*37.0%*	*4.0%*	*100.0%*
Davis' Share of Surface Water Project Expenses									
Surface Water Project Expenses	$13,146,000	60%	39%	1%	100%	$7,894,000	$5,181,000	$71,000	$13,146,000
Subtotal	$13,146,000					$7,894,000	$5,181,000	$71,000	$13,146,000
Commodity-Demand Allocation						*60.0%*	*39.0%*	*1.0%*	*100.0%*
Total All Expenses	**$27,002,000**					**$16,094,000**	**$10,333,000**	**$593,000**	**$27,020,000**
Total Commodity-Demand Allocation						***60.0%***	***38.0%***	***2.0%***	***100.0%***

1 - Based on average annual replacement projects = $3,000,000

Table 28 shows the total allocation combining all water system expenses. Commodity costs represent 60 percent of all expenses, demand costs account for 38 percent, and customer administrative costs comprise 2 percent. These allocations are the basis for how costs are assigned to the fixed and variable rate components (60 percent to variable and 40 percent to fixed).

Customer Classes

Once the costs of operating the system assets have been properly categorized by function, they can be classified and allocated to the various customer classes by determining the characteristics of those classes and the customer class' contribution to the incurred costs. This analysis includes a review of such matters as system operations and water usage data. The impact that these matters have on system operations determines how the costs are allocated among various customer classes.

Based on review of water consumption data, customer classes with similar peaking and usage characteristics were grouped together. BWA recommends consolidating the existing seven customer classes into four customer classes as shown on Table 29. The proposed categories combine the current small and large commercial classes into a single "Commercial" category. Additionally, City domestic accounts (e.g. City Hall) will be charged the "Commercial" rate, and City/Municipal (irrigation) will be billed the "Irrigation" rate.

Table 29. Proposed Customer Classes

Current Classes	Recommended Classes
Single Family Residential	Single Family Residential
Multi-Family Residential	Multi-Family Residential
Commercial - Small: Under 1-1/2" meter - Large: Over 2" meter	Commercial
Irrigation - City - All Other Customers	Irrigation
City Domestic Accounts	Combine with Commercial

Customer Water Consumption Analysis

BWA analyzed 2011 water consumption data for all customer classes to evaluate usage patterns and proposed rate structure adjustments for a more proportionate allocation of the costs of providing water service and to encourage water conservation. Water consumption patterns over the course of a year show that each customer class has different peak demands. Table 30 shows bi-monthly annual consumption and peaking ratios by class. Figure 4 shows annual water usage graphically. It is important to note that the City is in the process of metering all of its City and park accounts and therefore not all usage may be fully captured in the data.

Table 30. 2011 Water Consumption (ccf) by Proposed Customer Classes

Customer Class	Jan/Feb	Mar/Apr	May/Jun	Jul/Aug	Sept/Oct	Nov/Dec	Total
Single Family Residential	211,655	319,455	541,267	682,622	501,043	278,118	2,534,160
Multi-Family Residential	137,573	155,415	188,376	198,744	174,755	127,190	982,053
Commercial	48,339	59,123	86,082	100,993	84,548	61,365	440,450
Irrigation	9,398	40,158	145,113	205,218	146,349	47,039	593,275
Total	406,965	574,151	960,838	1,187,577	906,695	513,712	4,549,938
Percent of Total	*8.9%*	*12.6%*	*21.1%*	*26.1%*	*19.9%*	*11.3%*	*100.0%*

Figure 4. 2011 Bi-Monthly Water Consumption (ccf) by Class

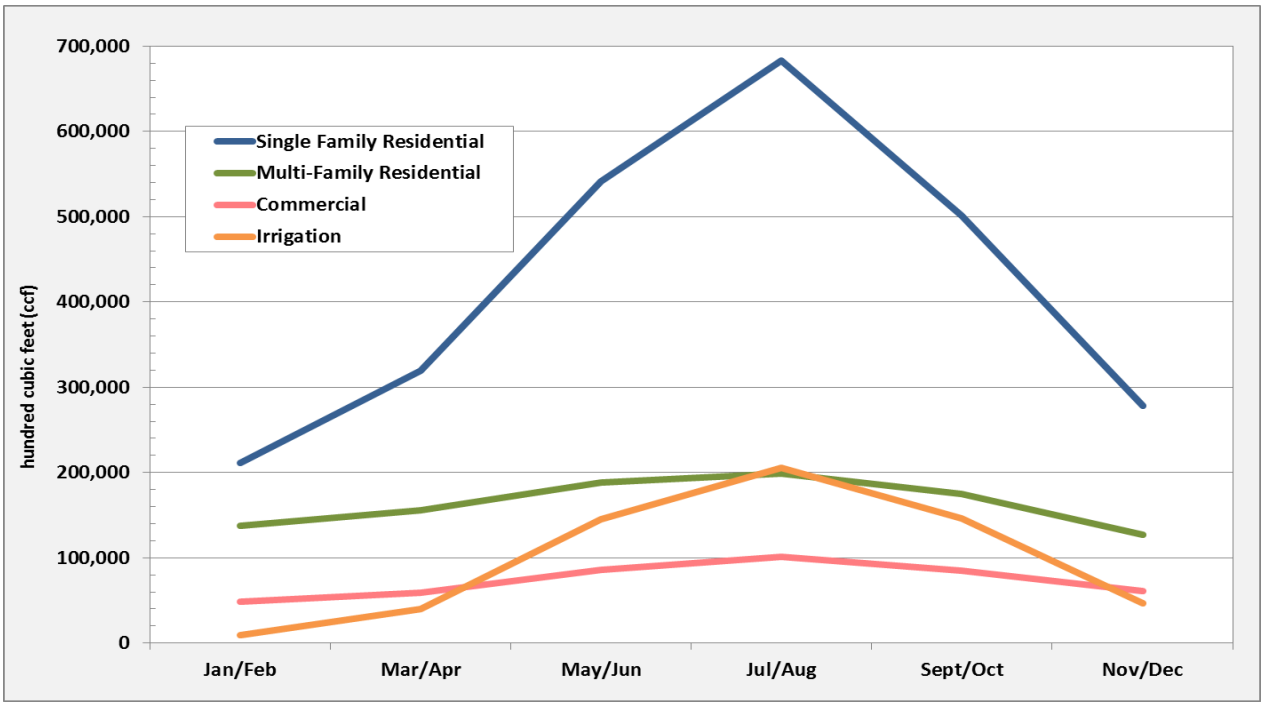


Table 31 shows the peaking ratio for each customer class. The peak ratio is calculated by taking the highest use month over average annual use. Irrigation accounts have the highest peaking factor, followed by single family residential customers. As expected, these classes tend to use more water during the summer months for outdoor use.

Table 31. 2011 Average and Peaking Ratios by Proposed Customer Classes

Customer Class	Total (ccf)	% of Total	Peak (ccf)	Average (ccf)	Ratio	Total x Ratio	% of Total
Single Family Residential	2,534,160	55.7%	682,622	422,360	1.62	4,095,732	57.4%
Multi-Family Residential	982,053	21.6%	198,744	163,676	1.21	1,192,464	16.7%
Commercial	440,450	9.7%	100,993	72,744	1.39	611,496	8.6%
Irrigation	593,275	13.0%	205,218	98,879	2.08	1,231,305	17.3%
Total	4,549,938	100.0%	1,187,577	757,658	1.57	7,130,997	100.0%

Unit Costs of Service Components

In order to provide adequate service to its customers at all times, the water system must be capable of not only providing the average amount of water used, but also supplying water at peak or maximum rates of demand. Therefore, rates are designed to recover system expenses needed to provide both average and peak use. Table 32 shows the allocation of the $9,978,000 2012/13 revenue requirement to each customer class, assuming that 50 percent of expenses are allocated to average costs and 50 percent are allocated to peaking costs. Table 32 also calculates the relative peaking impacts for each customer class.

Table 32. 2011 Allocation of Average and Peaking Costs

	Allocation to Average Costs		Allocation to Peaking Costs		Total Allocation		Peaking Impact
Customer Class	$	%	$	%	$	%	Total less Avg
Single Family Residential	2,778,703	55.7%	2,865,463	57.4%	5,644,165	56.6%	0.9%
Multi-Family Residential	1,076,820	21.6%	834,274	16.7%	1,911,093	19.2%	-2.4%
Commercial	482,953	9.7%	427,816	8.6%	910,769	9.1%	-0.6%
Irrigation	650,525	13.0%	861,448	17.3%	1,511,972	15.2%	2.1%
Total	4,989,000	100.0%	4,989,000	100.0%	9,978,000	100.0%	0.0%
1 - Assumes costs allocated 50%/50% to average and peak.							

To proportionately recover costs from each customer class, system expenses are allocated to each class based on their calculated peaking impact as detailed in Table 33. The peaking impact is the percentage of the total allocation less the percentage of the allocation to average costs. Demand costs are recovered from the fixed charges. All customer classes are charged the same fixed charge based on meter size. Commodity costs are recovered from the consumption or variable charges.

Table 33. Fixed and Variable Charges: Rate Derivation (Based on Scenario 3)

		Example	2012/13	1-May-13	1-Jan-14	1-Jan-15	1-Jan-16	1-Jan-17	1-Jan-18
REVENUE REQUIREMENT ALLOCATION									
Annual Revenue Requirement (Scenario 3)		$9,978,000	$9,978,000	$11,474,500	$12,971,000	$16,214,000	$20,268,000	$21,889,000	$23,640,000
Admin Cust Bill Chg		$394,000	$408,000	$421,000	$421,000	$436,000	$453,000	$471,000	$490,000
$/Meter per Month		$2.00	$2.06	$2.12	$2.12	$2.18	$2.24	$2.31	$2.38
Net Revenue Requirement	Allocation	$9,584,000	$9,570,000	$11,053,500	$12,550,000	$15,778,000	$19,815,000	$21,418,000	$23,150,000
% From Meter Charges	39%								
Fixed Meter Chg Revenue		$3,716,245	$3,710,816	$4,286,051.02	$4,866,327	$6,118,000	$7,683,367	$8,304,939	$8,976,531
Total 3/4" Meter Equivalents		22,821	22,821	22,821	22,821	22,821	22,821	22,821	22,821
Monthly cost per 3/4" Meter		$13.57	$13.55	$15.65	$17.77	$22.34	$28.06	$30.33	$32.78
% from Comm Chg	61%	$5,867,755	$5,859,184	$6,767,449	$7,683,673	$9,660,000	$12,131,633	$13,113,061	$14,173,469
ADJUSTMENTS									
Peaking Adustments	Peaking Impact								
Single-Family Residential	0.9%	$81,667	$81,548	$94,189	$106,941	$134,448	$168,848	$182,507	$197,266
Multi-Family Residential	-2.4%	-$228,309	-$227,976	-$263,316	-$298,965	-$375,862	-$472,031	-$510,218	-$551,478
Commercial	-0.6%	-$51,900	-$51,825	-$59,858	-$67,962	-$85,443	-$107,305	-$115,985	-$125,365
Irrigation	2.1%	$198,542	$198,252	$228,985	$259,986	$326,858	$410,488	$443,696	$479,576
Adjustments to get Uniform Meter charges for All Classes									
Single Fam Adjustment (%)		-3.240%	-3.240%	-3.240%	-3.240%	-3.240%	-3.240%	-3.240%	-3.240%
Multi Fam Adjustment (%)		2.615%	2.615%	2.615%	2.615%	2.615%	2.615%	2.615%	2.615%
Commercial Adjustment (%)		0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Irrigation Adjustment (%)		2.487%	2.487%	2.487%	2.487%	2.487%	2.487%	2.487%	2.487%
Single Fam Adjustment ($)		-310,522	-310,068	-358,133	-406,620	-511,207	-642,006	-693,943	-750,060
Multi Fam Adjustment ($)		250,669	250,303	289,104	328,245	412,673	518,261	560,187	605,488
Commercial Adjustment ($)		0	0	0	0	0	0	0	0
Irrigation Adjustment ($)		238,311	237,963	274,851	312,062	392,328	492,710	532,569	575,636
FIXED METER CHARGES									
	% of Total								
Adjusted Meter Revenues	Water Use	Meter Revs							
Single Family Res (w Peaking)	55.7%	$2,462,011	$2,458,414	$2,839,507	$3,223,939	$4,053,172	$5,090,227	$5,502,018	$5,946,947
Multi Family Res (W Peaking)	21.6%	$323,131	$322,659	$372,676	$423,132	$531,966	$668,076	$722,122	$780,518
Commercial (W Peaking)	9.7%	$307,845	$307,396	$355,047	$403,115	$506,801	$636,473	$687,962	$743,595
Irrigation (W/O Peaking)	13.0%	$246,257	$245,897	$284,015	$322,467	$405,409	$509,138	$550,327	$594,830
Total	100.0%	$3,339,244	$3,334,366	$3,851,245	$4,372,653	$5,497,349	$6,903,914	$7,462,429	$8,065,890
	No. of Equiv								
Cost for 3/4" Meter Equivalent	Meters								
Single Family Res	16,825	$12.19	$12.18	$14.06	$15.97	$20.07	$25.21	$27.25	$29.45
Multi Family Res	2,208	$12.20	$12.18	$14.07	$15.97	$20.08	$25.21	$27.25	$29.46
Commercial	2,105	$12.19	$12.17	$14.06	$15.96	$20.06	$25.20	$27.24	$29.44
Irrigation	1,683	$12.20	$12.18	$14.07	$15.97	$20.08	$25.21	$27.25	$29.46
Total	22,821								
Annual Growth Rate			0.50%	0.25%	0.25%	0.50%	0.50%	1.00%	1.00%
Cumulative growth			0.50%	0.75%	1.00%	1.51%	2.02%	3.04%	4.07%
Calculated Raw Meter Charges	No. of								
Meters	Meters	Charge per Meter							
3/4-in	12,181	$12.19	$12.12	$13.96	$15.81	$19.78	$24.71	$26.45	$28.30
1-in	3,364	$20.32	$20.19	$23.26	$26.35	$32.96	$41.19	$44.08	$47.17
1-1/2-in	456	$40.65	$40.39	$46.53	$52.70	$65.92	$82.38	$88.16	$94.34
2-in	295	$65.03	$64.62	$74.45	$84.32	$105.47	$131.80	$141.05	$150.95
3-in	90	$130.07	$129.23	$148.89	$168.63	$210.95	$263.61	$282.11	$301.90
4-in	40	$203.23	$201.93	$232.65	$263.48	$329.61	$411.88	$440.80	$471.72
6-in	3	$406.47	$403.85	$465.29	$526.97	$659.22	$823.77	$881.59	$943.45
8-in	4	$650.34	$646.16	$744.47	$843.15	$1,054.75	$1,318.03	$1,410.55	$1,509.52
Total	16,433								
VARIABLE (CONSUMPTION) RATES									
Adjusted Consumption Revenues									
Single Family Res		$2,957,618	$2,953,297	$3,411,105	$3,872,924	$4,869,083	$6,114,899	$6,609,584	$7,144,079
Multi Family Res		$1,517,158	$1,514,942	$1,749,782	$1,986,680	$2,497,676	$3,136,738	$3,390,495	$3,664,672
Commercial		$568,020	$567,190	$655,113	$743,807	$935,122	$1,174,385	$1,269,391	$1,372,042
Irrigation (W Peaking)		$1,201,960	$1,200,205	$1,386,255	$1,573,936	$1,978,770	$2,485,063	$2,686,101	$2,903,316
Total		$6,244,756	$6,235,634	$7,202,255	$8,177,347	$10,280,651	$12,911,086	$13,955,571	$15,084,110
	2011								
Calculated Raw Consumption Rates	CCF/YR	Avg Cost per CCF							
Single Family Res	2,534,160	1.17	1.17	1.35	1.53	1.92	2.41	2.61	2.82
Multi Family Res	982,053	1.54	1.54	1.78	2.02	2.54	3.19	3.45	3.73
Commercial	440,450	1.29	1.29	1.49	1.69	2.12	2.67	2.88	3.12
Irrigation (With Peaking)	593,275	2.03	2.02	2.34	2.65	3.34	4.19	4.53	4.89
Total	4,549,938								

Table 34. Proposed Rates Adjusted for Conservation

	1-May-13	1-Jan-14	1-Jan-15	1-Jan-16	1-Jan-17	1-Jan-18
FIXED METER CHARGES						
Calculated Raw Fixed Charges						
3/4-in	$13.96	$15.81	$19.78	$24.71	$26.45	$28.30
1-in	$23.26	$26.35	$32.96	$41.19	$44.08	$47.17
1-1/2-in	$46.53	$52.70	$65.92	$82.38	$88.16	$94.34
2-in	$74.45	$84.32	$105.47	$131.80	$141.05	$150.95
3-in	$148.89	$168.63	$210.95	$263.61	$282.11	$301.90
4-in	$232.65	$263.48	$329.61	$411.88	$440.80	$471.72
6-in	$465.29	$526.97	$659.22	$823.77	$881.59	$943.45
8-in	$744.47	$843.15	$1,054.75	$1,318.03	$1,410.55	$1,509.52
Final Fixed Charges After Rounding (1)						
3/4-in	$13.46	$15.81	$19.78	$23.64	$25.41	$29.82
1-in	$22.43	$26.35	$32.97	$39.40	$42.35	$49.70
1-1/2-in	$44.88	$52.71	$65.93	$78.80	$84.71	$99.41
2-in	$71.80	$84.33	$105.50	$126.09	$135.53	$159.05
3-in	$143.61	$168.67	$210.99	$252.17	$271.07	$318.11
4-in	$224.39	$263.55	$329.67	$394.02	$423.54	$497.04
6-in	$448.79	$527.10	$659.34	$788.04	$847.09	$994.08
8-in	$718.06	$843.37	$1,054.95	$1,260.86	$1,355.34	$1,590.53
VARIABLE CHARGES						
Calculated Single Family Residential Raw Consumption Rates						
Avg SFR Rate ($/CCF)	$1.35	$1.53	$1.92	$2.41	$2.62	$2.83
Adjustment for Estimated Conservation and Rounding						
Estimated Conservation	3%	11%	13%	17%	17%	17%
Adjusted Rate	$1.40	$1.69	$2.17	$2.82	$3.06	$3.30
Variable Charges After Adjustments for Conservation and Rounding (1)						
SFR Tiered Rates ($/ccf)						
Tier 1: 0 - 18	$1.26	$1.53	$1.95	$2.54	$2.75	$2.97
Tier 2: 18 - 29	$1.40	$1.69	$2.17	$2.82	$3.06	$3.30
Tier 3: 30 +	$2.36	$2.85	$3.66	$4.75	$5.16	$5.56
MFR Rate ($/ccf)	$1.81	$2.24	$2.88	$3.73	$4.05	$4.37
Comm Rate ($/ccf)	$1.51	$1.87	$2.40	$3.11	$3.38	$3.65
Irrig Rate ($/ccf)	$2.37	$2.94	$3.77	$4.89	$5.31	$5.73

1 - The final rates reflect some rounding to conform the model-calculated rates for Scenario 3 with the rates presented to the City Council on January 15, 2013 which were based on a straight percent decrease from the model-calculated rates for Scenario 2.

Table 33 summarizes the calculation of the "raw" meter and consumption charges. Table 34 takes the "raw" variable rates from Table 33 and adjusts them to reflect estimated conservation.

Water Meter Replacement Charge

The City is implementing a new automated radio-read metering (AMR) system throughout the service area. Water meters often lose accuracy as they age and should be replaced approximately every 15 years. The new meters are an investment in the system's infrastructure that will bring efficiency to meter reading and ensure accuracy of billing operations. The estimated cost of the annual meter replacement program is projected at $416,000 as shown on Table 35.

Table 35. Water Meter Replacement Program Annual Cost Estimate

Meter Size	Average Useful Life (Yrs)	Est. Replacement Meter Cost (AMR) (1)	Est. Installation Cost (1)	Total Est. Replacement Cost	Annual Cost	Monthly Cost (2)	Total No. of Meters	Annual Amount
5/8" or 3/4"	15	$180	$135	$315	$21.00	$1.75	12,181	$255,801
1"	15	$290	$175	$465	$31.00	$2.58	3,364	$104,149
1½"	15	$467	$195	$662	$44.13	$3.68	456	$20,137
2"	15	$908	$235	$1,143	$76.20	$6.35	295	$22,479
3"	15	$1,012	$280	$1,292	$86.13	$7.18	90	$7,754
4"	15	$1,415	$340	$1,755	$117.00	$9.75	40	$4,680
6"	15	$2,044	$440	$2,484	$165.60	$13.80	3	$497
8"	15	$2,580	$550	$3,130	$208.67	$17.39	4	$835
Total							16,433	$416,332

1 - Source: BWA Estimates

To fund the cost of the meter replacement program, all customers will pay a new monthly charge as a component of the fixed distribution fee based on meter size. Revenues from the new fee will be used for the meter replacement program. The fees are escalated by 3 percent based on estimated inflation beginning in fiscal year 2014/15. The monthly meter replacement charges through fiscal year 2017/18 are listed on Table 36. These charges are included in both the traditional and CBFR fixed charges.

Table 36. Monthly Meter Replacement Charge

Meter Size	1-May-13	1-Jan-14	1-Jan-15	1-Jan-16	1-Jan-17	1-Jan-18
5/8" or 3/4"	$1.75	$1.75	$1.80	$1.85	$1.91	$1.97
1"	$2.58	$2.58	$2.66	$2.74	$2.82	$2.90
1½"	$3.68	$3.68	$3.79	$3.90	$4.02	$4.14
2"	$6.35	$6.35	$6.54	$6.74	$6.94	$7.15
3"	$7.18	$7.18	$7.40	$7.62	$7.85	$8.09
4"	$9.75	$9.75	$10.04	$10.34	$10.65	$10.97
6"	$13.80	$13.80	$14.21	$14.64	$15.08	$15.53
8"	$17.39	$17.39	$17.91	$18.45	$19.00	$19.57

Administrative Billing Charges

Accounting for about 2 percent of total expenses, administrative costs associated with serving customers, regardless of the amount of water consumed, are separated. Table 37 summarizes the calculation of the administrative billing charges (which are included in both the traditional and CBFR fixed charges).

Table 37. Administrative Bill Charges

	2011/12	2012/13	1-May-13	1-Jan-14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Annual Admin/Billing Expenses (1)	$394,000	$408,000	$421,000	$421,000	$436,000	$453,000	$471,000	$490,000	$510,000	$530,000
Less Savings from Automatic Reading (2)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Admin/Billing Expenses	$394,000	$408,000	$421,000	$421,000	$436,000	$453,000	$471,000	$490,000	$510,000	$530,000
Number of Meters										
3/4-in	12,181	12,242	12,273	12,304	12,366	12,490	12,615	12,741	12,868	12,997
1-in	3,364	3,381	3,389	3,397	3,414	3,448	3,482	3,517	3,552	3,588
1-1/2-in	456	458	459	460	462	467	472	477	482	487
2-in	295	296	297	298	299	302	305	308	311	314
3-in	90	90	90	90	90	91	92	93	94	95
4-in	40	40	40	40	40	40	40	40	40	40
6-in	3	3	3	3	3	3	3	3	3	3
8-in	4	4	4	4	4	4	4	4	4	4
Total Number of Meters	16,433	16,514	16,555	16,596	16,678	16,845	17,013	17,183	17,354	17,528
Growth %		0.5%	0.25%	0.25%	0.5%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth (# of units)		81	41	41	82	167	168	170	171	174
Monthly Admin Charge per Account	**$2.00**	**$2.06**	**$2.12**	**$2.12**	**$2.18**	**$2.24**	**$2.31**	**$2.38**	**$2.45**	**$2.52**
Percent Change		*3.0%*	*2.9%*	*0.0%*	*2.8%*	*2.8%*	*3.1%*	*3.0%*	*2.9%*	*2.9%*

1 - FY11/12 expenses escalated by 3% each year and by annual growth percentage

2 - Estimated savings from meter reading is $103,000 (in today's dollars) per City staff. Meters are to be installed in 2013/14. Savings is escalated by 3% each year and by annual growth percentage.

SECTION 5: RATE DESIGN & RATE STRUCTURE ALTERNATIVES

The final step of the water rate study process is the design of water rates to generate the level of revenues needed to meet annual revenue requirements. The evaluation of rate structure alternatives takes into account both the level of rate increases and the structure of the rates. The level of increases refers to the amount of revenue to be collected from a specific rate design. The rate structure refers to the way in which the revenues are collected from the customers.

Rate Development Principles

In reviewing rate structure options, BWA uses the following criteria in developing our recommendations:

1. *Revenue Sufficiency:* Rates should recover the annual cost of service and provide revenue stability.
2. *Proportionality:* Rates should be proportionately allocated among all customer classes based on their estimated demand characteristics, i.e. each user class only pays its proportionate share.
3. *Practical:* Rates should be simple in form and, therefore, adaptable to changing conditions, easy to administer, and easy to understand.
4. *Provide Incentive:* Rates provide price signals which serve as indicators to use water efficiently.

Fixed Charges: Traditional Rate Structure

As previously noted, most water rate structures are comprised of a fixed component and a variable charge. Fixed charges may be called base charges, readiness to serve charges, minimum charges, meter charges, to name a few, and are typically collected on a monthly or bi-monthly basis. Despite the label used, the purpose of the fixed charges is to recover a portion of costs that do not vary based on a customer's actual consumption.

The "traditional" or most common method to levy fixed charges is by meter size. The base meter is the smallest meter, most commonly a 5/8-inch or ¾-inch meter. The ratio at which the meter charge increases is typically a function of either meter investment (estimated cost) or the meter's safe operating capacity. (American Water Works Association, *Principles of Water Rates, Fees and Charges – M1 Manual*). A significant portion of a water system's design and, in turn, the utility's operating and capital costs are related to meeting capacity requirements.

Meter size is used as a proxy for the estimated demand that each customer places on the water system. For example, based on the AWWA meter capacity ratios, a customer that has a 3-inch meter has the capacity equivalency of nearly eleven 3/4-inch meters. And so, in developing fixed meter charges, a customer with a 3-inch meter should have a fixed meter charge that is eleven times greater than the 3/4-inch meter.

BWA's Fixed Charge Recommendation: Meter Ratios

The current fixed service charge is based on a "traditional" rate structure in which the fixed charge is based on meter size for all customers. BWA recommends aligning the fixed charges with the AWWA meter capacity ratios as shown on Table 2. These capacity-based meter ratios are widely used in California rate setting and are consistent with meter ratios adopted by the California Public Utility Commission for private water companies. The recommended AWWA meter ratios will result in larger impacts to the fixed charge for meters 1" and larger.

Variable Rate Structures

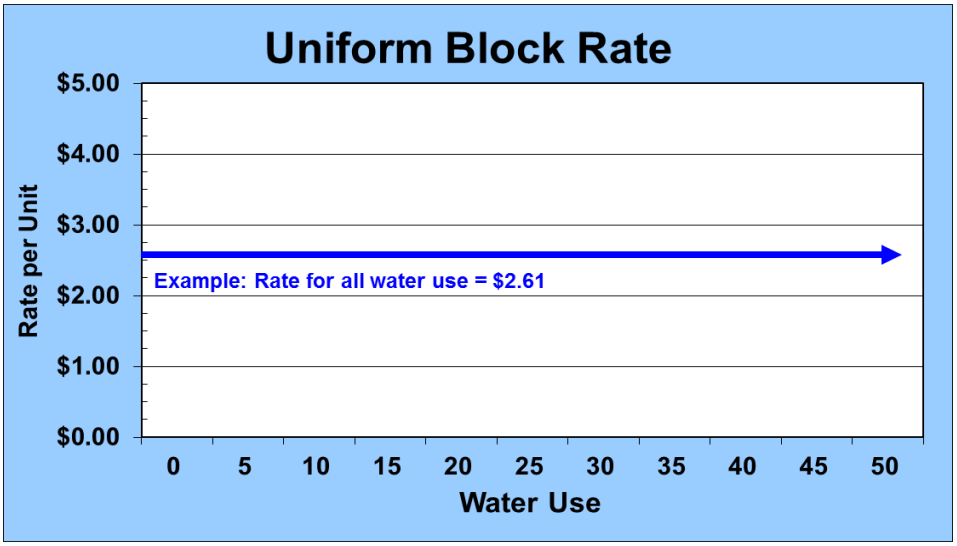
Variable charges are calculated on the basis of the cost of providing water and will also generally recover a portion of the fixed costs for a utility. Variable charges may also be labeled volumetric charges, usage rates, consumption charges, block rates, commodity rates, etc. Regardless of the name, all variable charges are based upon metered water consumption and levied on a per-unit cost.

Conservation is most effectively encouraged through the variable rate component. The CUWCC defines conservation pricing as providing "economic incentives (a price signal) to customers to use water efficiently."

The most common variable rate structures that promote conservation pricing are: (1) uniform block, (2) inclining block, (3) water budget or allocation based rates, and (4) seasonal block rates. The following section provides an overview of these variable charge rate structures that were also presented to the Water Advisory Committee for discussion.

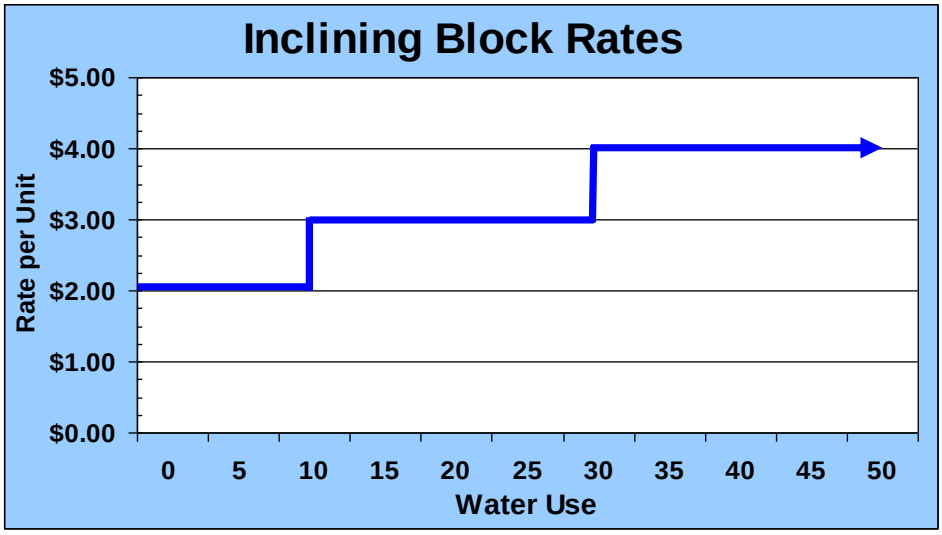
Uniform Block Rate

Under a uniform block rate structure, all water use is billed at the same rate per unit. This rate structure provides a conservation incentive since customers have to pay for each unit of water use. Uniform block rates are commonly applied to a broad customer base with different water needs, such as commercial and multi-family classes. The advantages of a uniform block rate structure are that they are easy to understand and administer and generally garner the least complaints from high water users. The drawbacks are that a single uniform tier does not provide clear price signals to conserve.



Inclining Block Rates

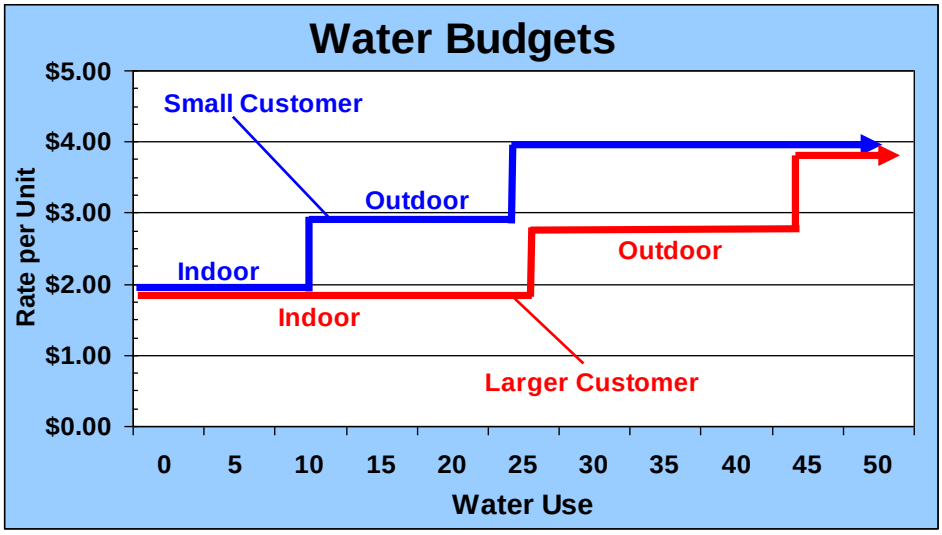
Under this rate structure, customers pay a higher price per unit as water use increases through various usage blocks. For example, the rate might be $2.00 per unit for the first 10 units of water, $3.00 per unit for the next 30 units of water, and $4.00 per unit for water use thereafter. Compared to a uniform rate, this rate structure generally provides increased conservation incentive, particularly on high water use, while helping to minimize rate increases on customers with low water use. Inclining block rates are most commonly applied to single family residential customers because their consumption as a class is, on average, homogenous, and typical usage patterns can be estimated based on industry statistics. The tier breakpoints can also be set based on each agency's unique demand characteristics and can be easily adjusted in drought conditions. However, the application of multi-tiered rates to commercial and multi-family classes can be difficult to structure, given that the consumption patterns of these other customer classes vary widely.



Water Budgets

Under a water budget rate structure, each customer is assigned a "water budget" based on their estimated indoor and outdoor water needs. Water budgets are a form of inclining block rates, except that the block breakpoints are tailored for each individual customer. The tier allocations may be based on, but not limited to (a) customer class, (b) number of occupants, (c) lot size or area of landscape, and (d) evapotranspiration. Customers can be charged lower rates for water use within their indoor water budget, moderate rates for use in their outdoor budget, and higher rates for water use in excess of their budget. This option theoretically tailors each customer's water rate structure to their estimated needs.

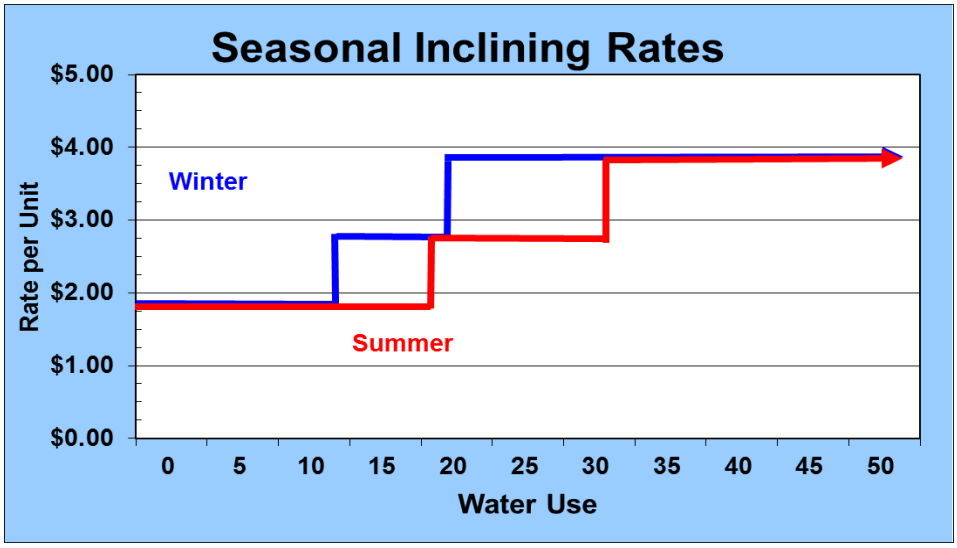
The benefits of water budgets are that they provide a strong incentive to conserve and clear price signals. However, many agencies have opted to only use water budgets for landscape irrigation accounts because water budgets (a) raise issues since two neighbors could pay different rates for the same amount of water use; (b) provide more low-cost water to customers with larger yards, thereby requiring higher rates for all other use; (c) are typically costly and time-consuming to implement and administer, including the high likelihood of variances as customers challenge their water budget; and (d) provide minimal to no additional conservation incentive over standard inclining block rates, but with substantial additional complexity.



Seasonal Rates

A seasonal rate structure is similar to an inclining block rate structure, except that the tier breakpoints or unit cost per tier or both vary based on the change in seasons. Seasonal rates are aimed at reducing discretionary or non-essential (typically outdoor use) during the summer. Seasonal rates can be structured as larger tiers in the summer and/or higher rates, or can be designed to impact only the top tiers. For example, a seasonal price structure can use two rates: a higher rate during the peak (summer) season and a lower rate during the off-peak (winter) season. Another example is adjusting the tier breakpoints, allowing for larger allotments in each tier block during the summer.

The advantage is that a seasonal rate structure tracks actual consumption profiles more closely. However, seasonal rates are more complicated than basic tiered rates in terms of customer understanding and can be more difficult to administer.



The variable rate structure concepts described above may be combined within an agency's rate schedule. For example, an agency may apply an inclining block rate to residential customers, a uniform block for commercial classes, and water budgets for irrigation accounts.

BWA's Variable Rate Recommendation: Single Family Residential

The City's current variable rate structure is based on a two-tiered rate structure for all customer classes, except for Municipal/City consumption which is billed at a single tier. The amount of water in each tier and the Tier 1 charge differs based on customer class, ranging from $1.41 to $1.50. The Tier 2 charge for all classes is $1.90.

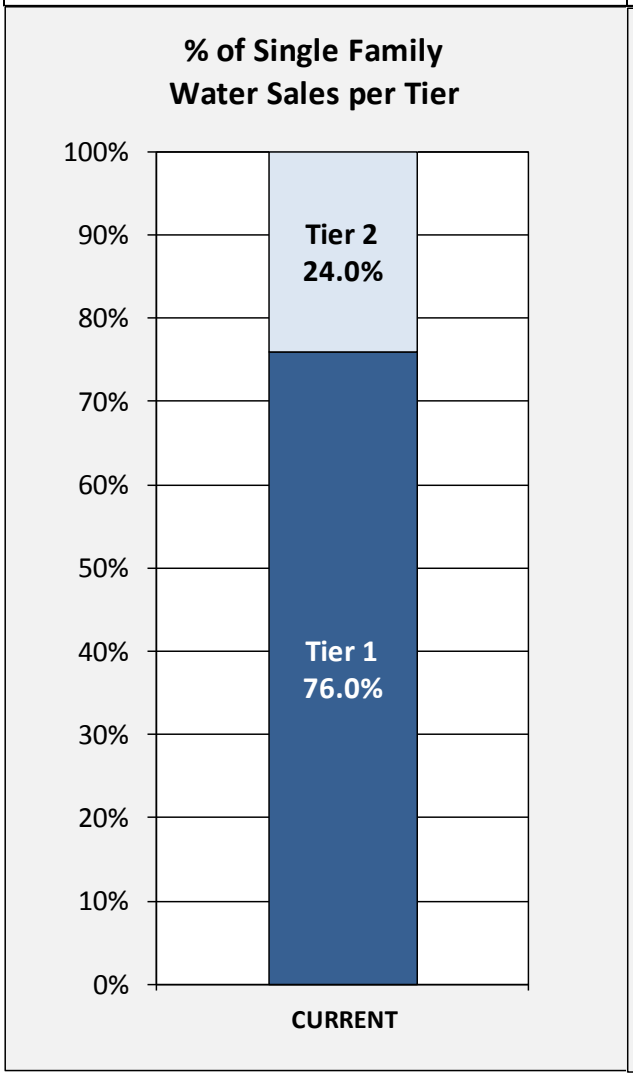
BWA proposes maintaining an inclining block tier rate structure for single family residential customers and adding a third tier to provide more conservation incentive at moderate to high levels of use. A three-tiered rate structure can also easily be transitioned to a water budget rate structure in the future.

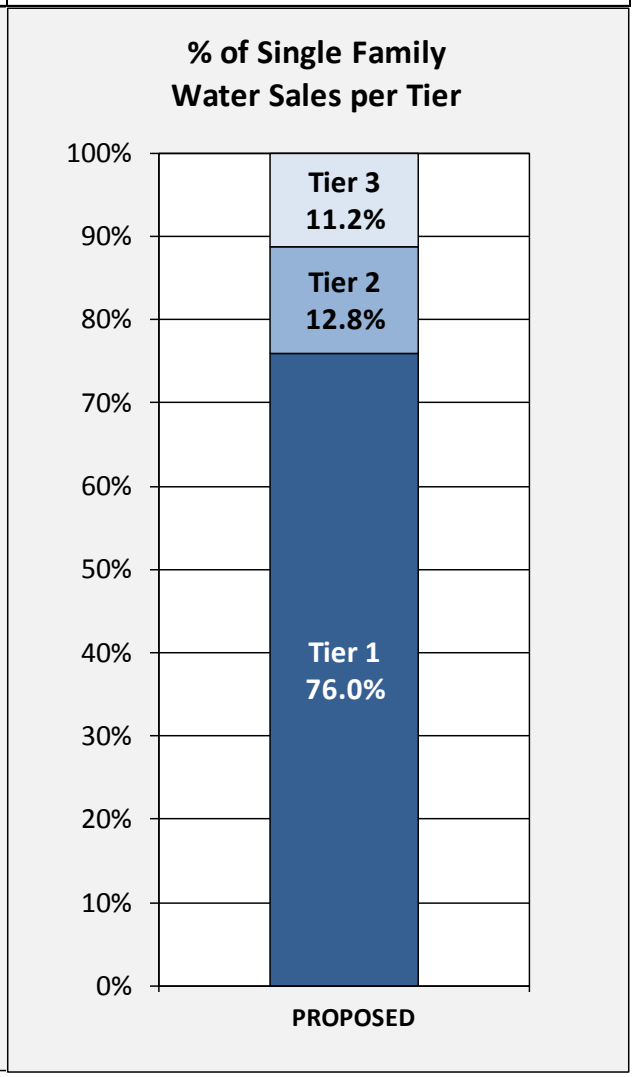
Under the current single family residential tiers, 76 percent of the total single family residential water use is billed at the Tier 1 rate with 24 percent of use billed at the Tier 2 rate. Based on a detailed analysis of the City's water usage data and input from the WAC and City Council, the proposed single family residential rate tier breakpoints are shown on Table 38.

Table 38. Current and Proposed Single Family Residential Inclining Tiers

CURRENT BI-MONTHLY TIERS			
		Bills Ending in Tier %	Water Use in Tier
Tier 1	0 - 36 ccf	73.9%	76.0%
Tier 2	Over 36 ccf	26.1%	24.0%

PROPOSED BI-MONTHLY TIERS			
		Bills Ending in Tier %	Water Use in Tier
Tier 1	0 - 36 ccf	73.9%	76.0%
Tier 2	37 - 58 ccf	15.9%	12.8%
Tier 3	Over 58 ccf	10.1%	11.2%





The tier breakpoints are designed to provide a reasonable amount of water for efficient indoor and outdoor water use within the first two tiers for a typical single family residential household. The addition of the third tier is projected to impact 10 percent of all single family residential bills which account for about 11 percent of total water consumption.

BWA's Variable Rate Recommendation: Multi-Family, Commercial, and Irrigation

BWA recommends eliminating the current two-tiered rate structure for all other (non-SFR) customer classes and implementing a single uniform block rate. Uniform block rates for non-residential customers are common in the industry because it is difficult to design tiers that will accommodate a variety of uses. For example, a commercial customer who uses a lot of water does not necessarily mean that the customer is using water inefficiently. Inclining tiered rates are more practical to implement for single family residential customers because the overall consumption patterns for this class is fairly homogenous. To proportionately allocate costs among all customer classes, the unit cost for each customer class varies based on peak demand.

Traditional Rate Structure: Proposed Water Rates

Table 39 shows the proposed water rates for Scenario 3: WDCWA (Davis: 12 mgd) All Debt. The rates incorporate the rate structure changes described above and recover the proportionate costs of providing water service to each customer class. The rate structure has four customer classes: (1) single family residential, (2) multi-family residential, (3) commercial, and (4) irrigation, and is comprised of two components: (1) a fixed charge and (2) a variable charge.

1. **Fixed Charge:** The fixed charge is based on meter size and is structured to recover a portion of the City's fixed costs of providing water service, including the water distribution system as well as a portion of the surface water rights. The charge also recovers the cost of customer service for meter reading and billing service. The distribution charge comprises approximately 40 percent of an average monthly bill.

2. **Variable Charge:** The variable charge is based on a customer's consumption for a billing period. The charge is structured to recover a portion of the fixed costs of the utility, pumping water, a portion of the surface water rights, managing the City's water resources, deterring water waste, and encouraging efficient water use. For single family residential customers, the variable charge consists of three tiers which impose a higher rate per unit as consumption levels increase. For all other customers, the variable charge is a uniform rate per unit based on customer class. The variable charge comprises approximately 60% of an average monthly bill.

Table 39. Traditional Rate Structure: Proposed Water Rates

Rates Effective	1-May-13	1-Jan-14	1-Jan-15	1-Jan-16	1-Jan-17	1-Jan-18
Meter Replacement Charge						
3/4"	$1.75	$1.75	$1.80	$1.85	$1.91	$1.97
1"	$2.58	$2.58	$2.66	$2.74	$2.82	$2.90
1-1/2"	$3.68	$3.68	$3.79	$3.90	$4.02	$4.14
2"	$6.35	$6.35	$6.54	$6.74	$6.94	$7.15
3"	$7.18	$7.18	$7.40	$7.62	$7.85	$8.09
4"	$9.75	$9.75	$10.04	$10.34	$10.65	$10.97
6"	$13.80	$13.80	$14.21	$14.64	$15.08	$15.53
8"	$17.39	$17.39	$17.91	$18.45	$19.00	$19.57
Administrative Charge						
All	$2.12	$2.12	$2.18	$2.24	$2.31	$2.38
Readiness to Serve Charge						
3/4"	$13.46	$15.81	$19.78	$23.64	$25.41	$29.82
1"	$22.43	$26.35	$32.97	$39.40	$42.35	$49.70
1-1/2"	$44.88	$52.71	$65.93	$78.80	$84.71	$99.41
2"	$71.80	$84.33	$105.50	$126.09	$135.53	$159.05
3"	$143.61	$168.67	$210.99	$252.17	$271.07	$318.11
4"	$224.39	$263.55	$329.67	$394.02	$423.54	$497.04
6"	$448.79	$527.10	$659.34	$788.04	$847.09	$994.08
8"	$718.06	$843.37	$1,054.95	$1,260.86	$1,355.34	$1,590.53
TOTAL DISTRIBUTION (FIXED) CHARGE						
Meter Size						
3/4"	$17.33	$19.68	$23.76	$27.73	$29.63	$34.17
1"	$27.13	$31.05	$37.81	$44.38	$47.48	$54.98
1-1/2"	$50.68	$58.51	$71.90	$84.94	$91.04	$105.93
2"	$80.27	$92.80	$114.22	$135.07	$144.78	$168.58
3"	$152.91	$177.97	$220.57	$262.03	$281.23	$328.58
4"	$236.26	$275.42	$341.89	$406.60	$436.50	$510.39
6"	$464.71	$543.02	$675.73	$804.92	$864.48	$1,011.99
8"	$737.57	$862.88	$1,075.04	$1,281.55	$1,376.65	$1,612.48
VARIABLE CHARGE						
Single Family Residential Tiered Rates ($/ccf)						
Tier 1: 0 - 18	$1.23	$1.53	$2.02	$2.52	$2.75	$3.26
Tier 2: 18 - 29 ccf	$1.37	$1.69	$2.24	$2.80	$3.05	$3.63
Tier 3: 30 + ccf	$2.33	$2.87	$3.81	$4.74	$5.17	$6.15
All Other Customer Classes Uniform Rate ($/ccf)						
Multi Family Residential	$1.81	$2.24	$2.96	$3.70	$4.04	$4.80
Commercial	$1.51	$1.87	$2.47	$3.10	$3.37	$4.01
Irrigation	$2.37	$2.94	$3.89	$4.86	$5.30	$6.30

Traditional Rate Structure: Bill Impacts

Sample bill impacts for the traditional rate structure are included on Table 40. Actual impacts to each customer will vary based on meter size and actual consumption.

Table 40. Traditional Rate Structure: Sample Bill Impacts

	Meter Size	Average Monthly Usage (ccf)	Monthly Current Bill (1)	ESTIMATED MONTHLY BILL IMPACTS Traditional Structure 1-May-13	1-Jan-14	1-Jan-15	1-Jan-16	1-Jan-17	1-Jan-18
Single Family Residential									
Low Use	3/4"	4	$18	$22	$26	$32	$38	$41	$47
Low to Median Use	3/4"	6	$21	$25	$29	$36	$43	$46	$54
Median Use	3/4"	11	$28	$31	$36	$46	$55	$60	$70
Median to High Use	3/4"	18	$39	$40	$47	$60	$73	$79	$93
High Use	3/4"	29	$59	$55	$66	$85	$104	$113	$133
Multi-Family Residential									
Small Apartment Building, 39 units	2"	147	$251	$347	$423	$549	$679	$739	$874
Large Apartment Building, 124 units	4"	408	$701	$976	$1,191	$1,550	$1,916	$2,085	$2,469
Commercial									
Drug Store	1-1/2"	41	$86	$113	$135	$173	$212	$229	$270
Medical Clinic	2"	57	$128	$166	$199	$255	$312	$337	$397
Dentist	3"	81	$205	$275	$329	$421	$513	$554	$653
Business Complex	4"	163	$368	$482	$580	$745	$912	$986	$1,164
Irrigation									
Small City Irrigation	2"	59	$125	$220	$267	$344	$422	$457	$540
Large City Irrig/School District	4"	1176	$2,267	$3,028	$3,738	$4,917	$6,122	$6,669	$7,919

1 - Current bill based on average use

SECTION 6: CONSUMPTION-BASED FIXED RATE STRUCTURE

Consumption-Based Fixed Rate Structure

Two members of the WAC, Frank Loge and Matt Williams, developed a new rate structure for allocating costs, the Consumption-Based Fixed Rate (CBFR) structure, to recover a portion of the fixed costs based on each customer's actual consumption. Instead of using meter size as the basis for recovering all of the water system's fixed costs, CBFR is structured so that each ratepayer's proportionate share of the fixed costs related to water supply and treatment is based on their actual water usage from the previous summer months of May through October (when consumption is typically at its peak).

The CBFR structure is comprised of three components: (1) a distribution charge, (2) a variable charge, and (3) a supply charge. The rates for each of these components will apply to all water customers within the City.

1. **Distribution Charge:** The distribution charge is a fixed charge based on meter size and is structured to recover a portion of the City's fixed costs of providing water service, including the water distribution system. The charge also recovers the costs of customer service for meter reading, billing service, and meter replacement. The distribution charge comprises approximately 13 percent of an average monthly bill.

2. **Variable Charge:** The variable charge is based on a customer's consumption for a billing period. The charge is structured to recover the costs of providing water, including utilities, pumping water, managing the City's water resources, deterring water waste, and encouraging efficient water use. Under the CBFR rate structure, the variable charge for all customer classes are based on a uniform tier. The variable charge comprises approximately 20 percent of an average monthly bill.

3. **Supply Charge:** The supply charge is structured to recover certain fixed costs related to water supply and treatment, including existing and future groundwater sources (wells), construction and operation of the 12 million gallon per day (mgd) surface water treatment plant, surface water rights, and any planning and environmental compliance expenses related to supply and treatment. The supply charge is based on a customer's prior year's water usage during the 6-month peak period (May through October). The supply charge comprises approximately 67 percent of an average monthly bill.

The supply charge is calculated by using the projected annual revenue requirement for water supply and treatment and dividing it by the total projected 6-month peak period (May through October) water use of the entire system to produce a per-ccf rate. Each individual customer's fee is then calculated by taking the per-ccf rate and multiplying it by the individual customer's prior year six-month peak period water use. For instance, if a customer uses 100 ccf during May through October and the CBFR supply charge is $0.32, then the supply charge will be 100 ccf x $0.32 = $32 per month. Each year, the CBFR amount is recalculated based on each customer's actual consumption during the prior 6-month May through October peak consumption period.

If approved, the January 1, 2015 CBFR will be calculated using summer of 2014 water usage. For new accounts, the CBFR charge will be based on estimated consumption until actual peak period (May through October) usage is established at which time a true-up will be accomplished.

CBFR: Cost of Service Analysis

The CBFR structure is a conservation-based water rate structure and establishes a nexus between the way in which customers consume water during the peak consumption period and the way in which the water utility incurs costs to meet its customers' demands. The proportionate cost of providing water service is based on each customer's actual consumption. In essence, those who consume more should pay more. Rates are based on annual revenue requirements to meet projected demand. Projected demand is based on a customer's actual water use during the prior peak (May through October) demand period. CBFR shifts more costs to actual water demand on the basis that those who create a cost burden should pay for it.

The CBFR rate structure is designed to provide fiscal stability for both customers and the water system by recovering 100 percent of the water system's fixed costs in each year of the rate structure's five year, phase-in period. By recovering 100 percent of the system's fixed costs, a water consumer will see reliable, proportional, stable, and sustainable rates for the entire five-year period. Variable costs are recovered through a volumetric use charge.

The rate structure is composed of three components that reflect the DWWSP project approved by the WAC and City Council. The components are:

1) <u>DISTRIBUTION - Monthly Fixed Charge Based on Meter Size (flat fee)</u>
   Charges that cover the costs the City has incurred related to the water distribution system (mains and pipes, storage tanks, fireline facilities and meters). This also covers

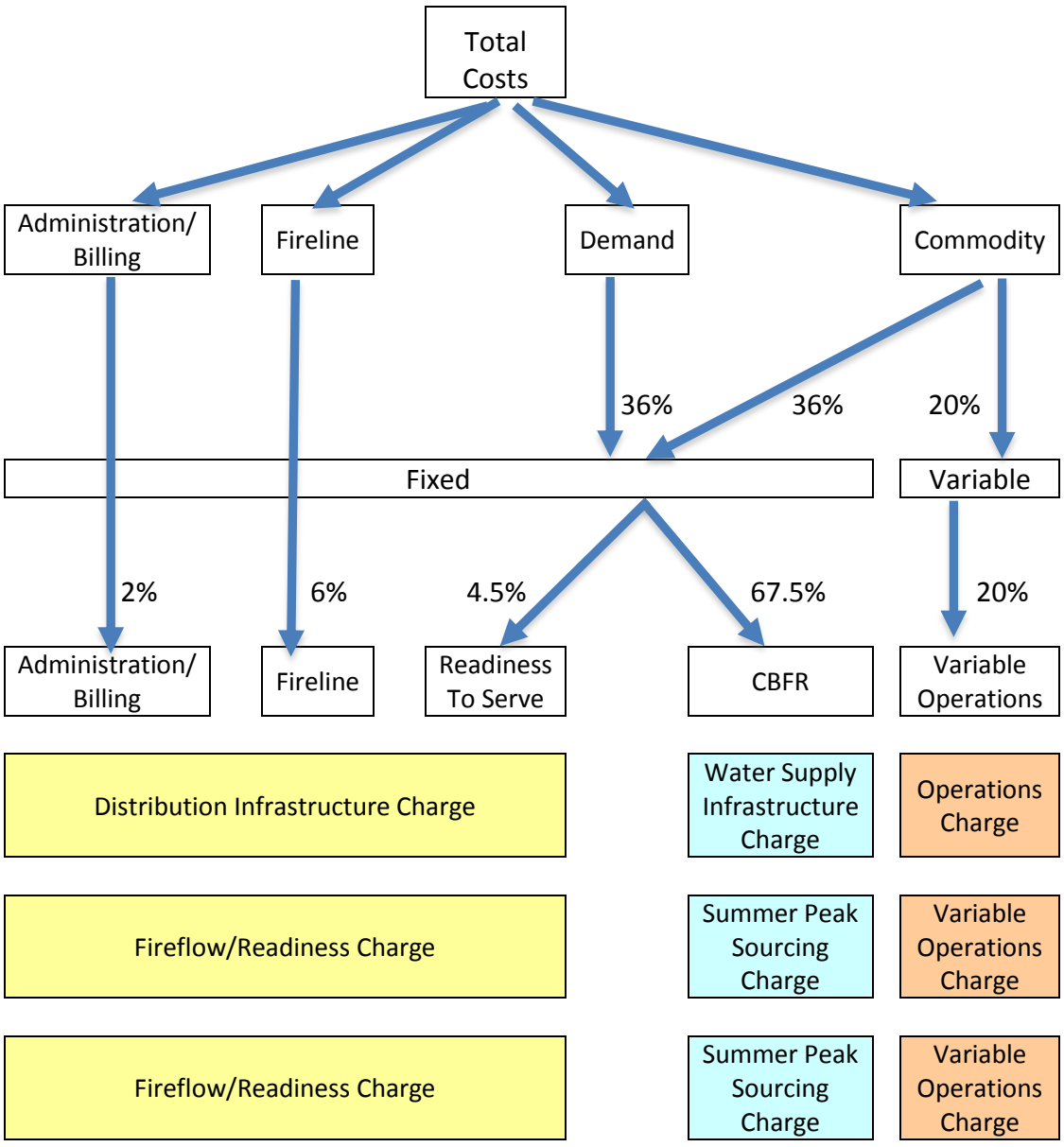
the cost of customer service, which includes meter reading and billing and the meter replacement costs shown on Table 35. This fee is based on meter size.

2) SUPPLY - Monthly CBFR Fee Based on Peak Consumption ($/unit of water)
Charges that cover the fixed costs related to water supply and treatment including existing and future groundwater sources (wells), construction and operation of the 12 million gallon per day (mgd) surface water treatment plant, and water system planning and environmental compliance costs. The Supply fee is calculated by using the projected fixed supply costs of the Water Utility and dividing it by the total projected six-month (May through October) peak period water use of the Water Utility to produce a unit CBRF water rate. The individual CBFR fee per customer is then calculated by taking the per-unit CBFR water rate and multiplying it by the individual customer's prior year's six-month peak period water use. This then becomes the monthly fee. Each year, this CBFR amount is recalculated based on an individual's actual water use during the prior six-month May through October peak period.

3) VARIABLE - Volumetric Rate applied to Monthly Consumption ($/unit of water)
Charges that cover the variable costs that the City incurs to operate the water system as required based on consumption. The new rates for all customers have single-tiered volume rates.

Figure 5 illustrates the allocation of costs to the three components based on the CBFR rate structure.

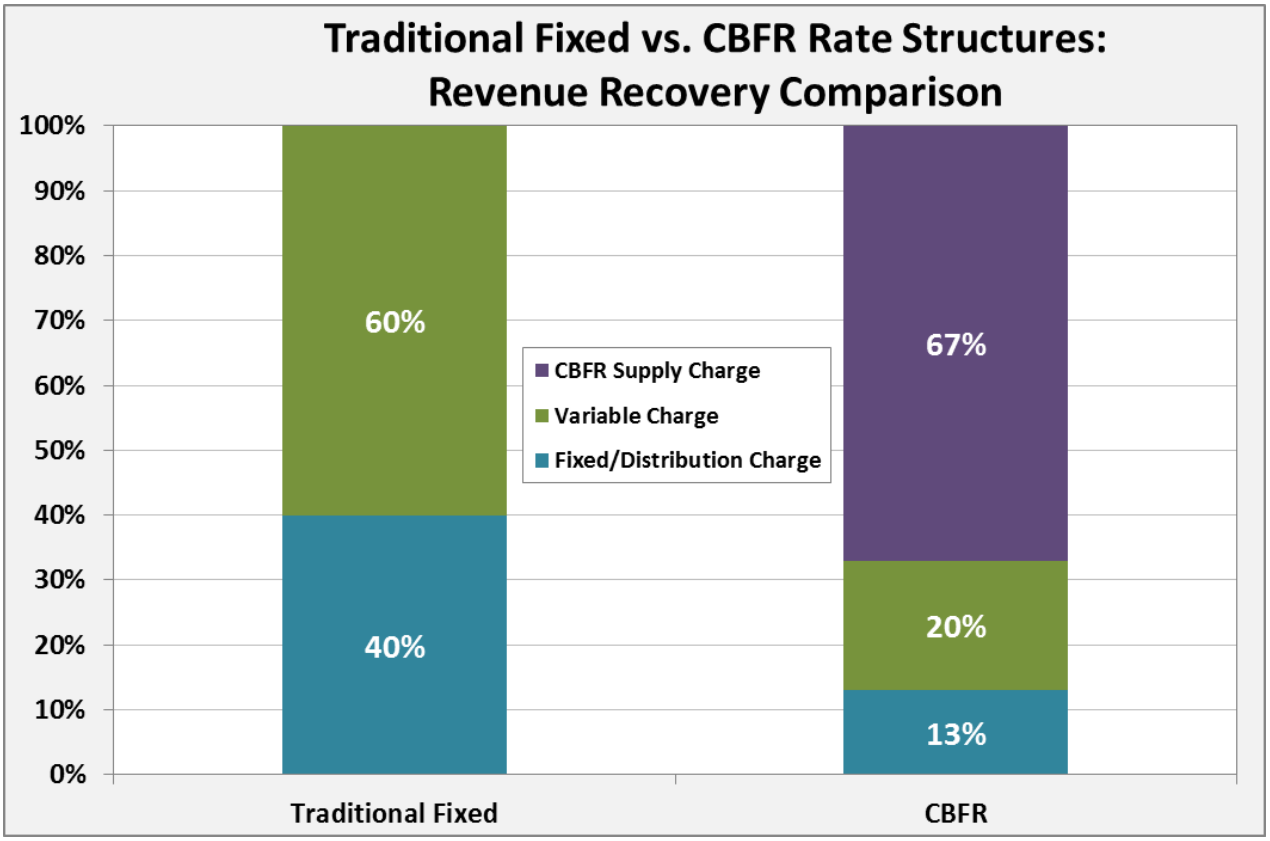
Figure 5. CBFR Structure: Cost Allocation



Traditional Fixed vs. Consumption-Based Fixed Rate Structure

The rates developed under the traditional fixed and CBFR structures are based on the same revenue requirements and assume the same elasticity and growth factors. The difference between the traditional fixed and CBFR is the method in which costs are recovered.

Figure 6. Traditional Fixed vs. CBFR Structures: Revenue Recovery Comparison



As shown on Figure 6. Traditional Fixed vs. CBFR Structures: Revenue Recovery Comparison, the traditional fixed rate structure recovers 40 percent of costs based on meter size which represents each customer's potential demand. Water systems are designed to meet a certain level of capacity and that capacity is determined based on the total potential demand of the customer base. Peaking costs are recovered through the variable charge which recovers 60 percent of total system costs. The variable charge is based on actual water consumed during a specific billing period. The rate per unit varies for each customer class because each user class has a different peaking factor that the system must accommodate.

Under CBFR, actual peak period prior year demand and meter size are used as the basis for recovering the majority of water system costs. Approximately 13 percent of costs are collected on the basis of meter size through the distribution charge. Supply, treatment, and peaking costs are collected through the supply charge which recovers roughly 67 percent of costs. The supply charge is based on each customer's consumption during the prior year's months of May through October. This is the period when City-wide use peaks. All customers, regardless of user class, are charged the same rate per unit. The variable charge recovers 20 percent of total costs and is based on consumption during a given billing period. Like the supply charge, all customers are charged the same rate per unit of water irrespective of user class. In total, CBFR recovers 87 percent of costs based on each customer's actual water consumption.

CBFR Rate Structure: Proposed Water Rates

The proposed CBFR rates are shown on Table 41. Calculation of the CBFR rates is presented in Appendix C. All customers are treated the same under the CBFR structure. The variable charge is based on a uniform tier for all user classes. Ratepayers can estimate their future water bills based on their prior year's water use and can manage a significant portion of their water bills by reducing their consumption levels.

Table 41. CBFR Rate Structure: Proposed Water Rates

Rates Effective	1-May-13	1-Jan-14	1-Jan-15	1-Jan-16	1-Jan-17	1-Jan-18
DISTRIBUTION CHARGES (1)						
5/8" or 3/4"	$8.10	$8.84	$10.21	$11.38	$11.90	$13.67
1 - inch	$11.77	$13.00	$15.22	$17.19	$18.09	$20.92
1 1/2 - inch	$19.97	$22.44	$26.78	$30.76	$32.62	$38.01
2 - inch	$31.16	$35.10	$42.02	$48.41	$51.40	$59.96
3 - inch	$54.70	$62.59	$76.19	$89.09	$95.19	$111.72
4 - inch	$82.83	$95.15	$116.33	$136.53	$146.12	$171.73
6 - inch	$157.86	$182.50	$224.63	$265.13	$284.43	$335.05
8 - inch	$246.63	$286.05	$353.27	$418.17	$449.16	$529.67
VARIABLE CHARGE						
All Classes	$0.55	$0.61	$0.86	$1.02	$1.12	$1.32
SUPPLY CHARGE						
All Classes	$0.20	$0.24	$0.32	$0.40	$0.45	$0.54

1 - Includes meter replacement charge (Table 35) and administrative billing charge (Table 36).

CBFR Rate Structure: Bill Impacts

Table 42 shows estimated bill impacts for a sample of customers. The sample bills assume that no conservation measures are implemented. Actual bills would be lower if customers consumed less water.

Table 42. CBFR Rate Structure: Sample Bill Impacts

	Meter Size	Summer Monthly Usage (ccf)	Average Monthly Usage (ccf)	Monthly Current Bill (1)	ESTIMATED MONTHLY BILL IMPACTS CBFR Rate Structure 1-May-13	1-Jan-14	1-Jan-15	1-Jan-16	1-Jan-17	1-Jan-18
Single Family Residential										
Low Use	3/4"	6	4	$18	$18	$20	$25	$30	$33	$38
Low to Median Use	3/4"	9	6	$21	$22	$25	$33	$39	$43	$51
Median Use	3/4"	17	11	$28	$35	$40	$52	$63	$70	$83
Median to High Use	3/4"	28	18	$39	$52	$60	$79	$97	$108	$83
High Use	3/4"	45	29	$59	$78	$91	$122	$149	$166	$198
Multi-Family Residential										
Small Apartment Building, 39 units	2"	167	147	$251	$312	$365	$489	$599	$667	$795
Large Apartment Building, 124 units	4"	465	408	$701	$865	$1,014	$1,360	$1,669	$1,859	$2,217
Commercial										
Drug Store	1-1/2"	50	41	$86	$113	$135	$158	$193	$214	$254
Medical Clinic	2"	70	57	$128	$166	$199	$225	$275	$304	$362
Dentist	3"	100	81	$205	$275	$329	$338	$412	$456	$543
Business Complex	4"	200	163	$368	$482	$580	$640	$783	$869	$1,035
Irrigation										
Small City Irrigation	2"	100	59	$125	$184	$215	$285	$349	$387	$462
Large City Irrig/School District	4"	2000	1176	$2,267	$3,130	$3,693	$4,968	$6,136	$6,863	$8,204

1 - Current bill based on average use

SECTION 7: CONCLUSIONS AND RECOMMENDATIONS

The final water rate recommendations contained in this report are a result of an extensive, public process with input received from many sources including City staff, the WAC, the Davis Chamber of Commerce, the public and the City Council. The rate study process produced an innovative new rate structure, the Consumption Based Fixed Rate structure. The recommended rates are designed to produce revenues adequate to fund the new $113.8 million surface water project and all other water system costs. Rate increases are phased in over a five-year period to reduce impacts to ratepayers. The recommended rates are shown on Table 43.

Under the recommended rates, a median single-family customer using 11 ccf per month and a peak period average of 17 ccf per month would see their monthly water bill rise from the current $28 to $83 by the end of the five-year phase-in period. Actual rate increases may be lower than the recommended rates if the surface water project cost comes in below estimates and/or the City receives low cost State and/or Federal financing for a portion of the project.

The rates recommended in this report were based on the best information available at the time. Regular updates of the financing and rate projections should be performed as better and more complete information becomes available. Updates should be performed at least annually to reflect the results of local and WDCWA project construction bids, conservation patterns, actual O&M costs, and the actual financing received for the projects.

Table 43. Final Proposed Water Rates

Rates Effective	1-May-13	1-Jan-14	1-Jan-15	1-Jan-16	1-Jan-17	1-Jan-18
DISTRIBUTION (FIXED) CHARGE (1)						
Meter Size						
3/4"	$17.33	$19.68	$10.21	$11.38	$11.90	$13.67
1"	$27.13	$31.05	$15.22	$17.19	$18.09	$20.92
1-1/2"	$50.68	$58.51	$26.78	$30.76	$32.62	$38.01
2"	$80.27	$92.80	$42.02	$48.41	$51.40	$59.96
3"	$152.91	$177.97	$76.19	$89.09	$95.19	$111.72
4"	$236.26	$275.42	$116.33	$136.53	$146.12	$171.73
6"	$464.71	$543.02	$224.63	$265.13	$284.43	$335.05
8"	$737.57	$862.88	$353.27	$418.17	$449.16	$529.67
VARIABLE CHARGE ($/ccf of Current Billing Period Use)						
Single Family Residential Tiered Rates ($/ccf)						
Tier 1: 0 - 18	$1.23	$1.53	-	-	-	-
Tier 2: 18 - 29 ccf	$1.37	$1.69	-	-	-	-
Tier 3: 30 + ccf	$2.33	$2.87	-	-	-	-
All Other Customer Classes Uniform Rate ($/ccf)						
Multi Family Residential	$1.81	$2.24	-	-	-	-
Commercial	$1.51	$1.87	-	-	-	-
Irrigation	$2.37	$2.94	-	-	-	-
CBFR UNIFORM RATES ($/ccf of Current Billing Period Use)						
All Classes	-	-	$0.86	$1.02	$1.12	$1.32
CBFR SUPPLY CHARGES ($/ccf of Prior Year Period Water Consumption)						
All Classes	-	-	$0.32	$0.40	$0.45	$0.54

1 - Includes meter replacement charge (Table 35) and administrative billing charge (Table 36).

Table 44 shows the estimated bill impacts for a sample of customers. The sample bills assume that no conservation measures are implemented. Bill impacts for each customer will vary based on actual use.

Table 44. Final Proposed Water Rates: Sample Bill Impacts

	Meter Size	Summer Monthly Usage (ccf)	Average Monthly Usage (ccf)	Monthly Current Bill (1)	ESTIMATED MONTHLY BILL IMPACTS					
					Traditional Structure		CBFR Structure			
					1-May-13	1-Jan-14	1-Jan-15	1-Jan-16	1-Jan-17	1-Jan-18
Single Family Residential										
Low Use	3/4"	6	4	$18	$22	$26	$25	$30	$33	$38
Low to Median Use	3/4"	9	6	$21	$25	$29	$33	$39	$43	$51
Median Use	3/4"	17	11	$28	$31	$36	$52	$63	$70	$83
Median to High Use	3/4"	28	18	$39	$40	$47	$79	$97	$108	$83
High Use	3/4"	45	29	$59	$55	$66	$122	$149	$166	$198
Multi-Family Residential										
Small Apartment Building, 39 units	2"	167	147	$251	$347	$423	$489	$599	$667	$795
Large Apartment Building, 124 units	4"	465	408	$701	$976	$1,191	$1,360	$1,669	$1,859	$2,217
Commercial										
Drug Store	1-1/2"	50	41	$86	$113	$135	$158	$193	$214	$254
Medical Clinic	2"	70	57	$128	$166	$199	$225	$275	$304	$362
Dentist	3"	100	81	$205	$275	$329	$338	$412	$456	$543
Business Complex	4"	200	163	$368	$482	$580	$640	$783	$869	$1,035
Irrigation										
Small City Irrigation	2"	100	59	$125	$220	$267	$285	$349	$387	$462
Large City Irrig/School District	4"	2000	1176	$2,267	$3,023	$3,738	$4,968	$6,136	$6,863	$8,204

1 - Current bill based on average use

How to Estimate Future Water Charges

To assist customers with calculating their future monthly water bills for the proposed rate structures, the City has provided a rate calculator on the City's website at the cityofdavis.org. The City currently reads meters and bills on a bi-monthly basis. To estimate one's monthly bill, a customer will need to find their water meter size, bi-monthly water use, and last year's six-month water use for May through October. Customers will need to divide their bi-monthly water use by two to get an average monthly water use.

Table 45 provides a bill calculation for monthly bills for the May 1, 2013 proposed rates. The rates are based on the traditional rate structure.

Table 45. Bill Estimation Tool for 2013 (Traditional Rate Structure)

Type of Charge	Distribution Fee (based on meter size)	+	Variable Charge (based on current month's consumption)	=	Total Bill for the Month
Charge Equation	_____ Fee for Your meter	+	_____ x_____ (Monthly Volume x Charge for Your Tier)	=	Total Bill for the Month
Example Calculation (typical home)	$17.33 (3/4" meter)	+	11 ccf x $1.23 Monthly Volumes (ccf) x $ccf	=	Total Bill for the Month
Example Figures (typical home)	$17.33	+	$13.53	=	$30.86

Table 46 provides a bill calculation for monthly bills for the January 1, 2015 proposed rates. The rates are based on the CBFR structure. Actual bills will be based on May through October 2014 water usage.

Table 46. Bill Estimation Tool for 2015 (CBFR Structure)

Type of Charge	Distribution Fee (based on meter size)	+	Variable Charge (based on current month's consumption)	+	Supply Fee (based on summer consumption)	=	Total Bill for the Month
Charge Equation	_____ Fee for Your meter	+	_____ x $0.86 (Monthly Volume)	+	_____ x $0.32 (6 Month Peak Use)	=	Total Bill for the Month
Example Calculation (typical home)	$10.21 (3/4" meter)	+	11 ccf x $0.86 Monthly Volumes (ccf) x $ccf	+	102 ccf x $0.32 Prior Year's May-Oct (ccf) use x $ccf	=	Total Bill for the Month
Example Figures (typical home)	$10.21	+	$9.46	+	$32.64	=	$52.31

APPENDICES

A. Proposition 218 Notice Mailed to Property Owners

B. Scenario 3 (All Debt) Cash Flow Projections

C. CBFR Calculations

Appendix A: Proposition 218 Notice Mailed to Property Owners

Appendix B: Scenario 3 (All Debt) – Cash Flow Projection

	Projected								
	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Assumptions:									
Revenue Increase (First increase May 1, 13 and Jan-1 thereafter)	0.0%	30.0%	25.0%	25.0%	8.0%	8.0%	5.0%	5.0%	5.0%
Interest Earnings Rate	1.0%	1.0%	1.0%	1.5%	1.5%	1.5%	2.0%	2.0%	2.0%
Growth	0.5%	0.5%	0.5%	0.5%	1.0%	1.0%	1.0%	1.0%	1.0%
Monthly SFR Bill based on 15 CCF	$34.00	$44.20	$55.25	$69.06	$74.59	$80.55	$84.58	$88.81	$93.25
Beginning Fund Balance - Fund 511	$6,225,537	$8,054,870	$11,191,317	$14,306,231	$16,585,481	$17,152,234	$16,488,835	$16,649,362	$16,815,452
12 MONTH RATE REVENUE TARGET	9,978,000	12,971,000	16,214,000	20,268,000	21,889,000	23,640,000	24,822,000	26,063,000	27,366,000
Effective Date of Rate Increase		5/1/13 & 1/1/14	1/1/15	1/1/16	1/1/17	1/1/18	1/1/19	1/1/20	1/1/21
REVENUES (1)									
Operating Revenues									
Projected FY Water Sales	9,978,000	12,073,380	14,106,000	17,633,000	20,835,000	22,502,000	24,054,000	25,256,000	26,519,000
Water Meter Replacement Charge Revenues	0	416,330	434,740	451,630	470,370	489,510	509,380	529,750	550,500
Interest	62,000	81,000	112,000	215,000	249,000	257,000	330,000	333,000	336,000
Rate Stablization Fund Draws	0	0	0	0	1,000,000	1,300,000	500,000	600,000	500,000
Other Revenues (2)	640,000	659,000	679,000	699,000	720,000	742,000	764,000	787,000	811,000
Subtotal Operating Revenues	10,680,000	13,229,710	15,331,740	18,998,630	23,274,370	25,290,510	26,157,380	27,505,750	28,716,500
Debt Proceeds									
Debt For Prior Pay-Go Projects	2,011,440	5,867,860	5,284,480	3,809,160	2,848,340	3,688,020	6,124,520	7,379,360	0
Water Revenue Bonds (3)	6,085,000	19,953,000	34,709,000	34,890,000	9,255,000	0	5,000,000	0	0
Subtotal Debt Proceeds	8,096,440	25,820,860	39,993,480	38,699,160	12,103,340	3,688,020	11,124,520	7,379,360	0
TOTAL REVENUES	**18,776,440**	**39,050,570**	**55,325,220**	**57,697,790**	**35,377,710**	**28,978,530**	**37,281,900**	**34,885,110**	**28,716,500**
EXPENSES									
Baseline Expenses w/o Surface Water Project									
Labor - Salaries/Wages (4)	3,836,000	3,981,000	4,132,000	4,288,000	4,450,000	4,619,000	4,795,000	4,977,000	5,166,000
Other Baseline Expenses (5)	3,233,000	3,348,000	3,467,000	3,591,000	3,303,000	3,402,000	3,504,000	3,609,000	3,746,142
Additional for East Area Tank (5)	61,000	63,000	64,000	66,000	67,000	69,000	71,000	73,000	75,000
Additional for Well 32 (5)	405,333	415,467	425,853	436,500	447,412	461,000	475,000	489,000	504,000
Additional for Well 34 (5)	405,333	415,467	425,853	436,500	447,412	461,000	475,000	489,000	504,000
JPA Contribution (6)	0	0	0	0	0	0	0	0	0
Local R&R Projects (not incl Water Main Replacements) (7)	1,844,440	4,189,860	2,922,080	638,000	665,500	2,201,220	7,955,630	7,379,360	3,000,000
Water Main Replacements from Assessment	0	0	722,400	1,538,160	2,182,840	1,486,800	3,168,890	0	0
Existing Debt Service	910,000	910,000	910,000	910,000	910,000	910,000	910,000	910,000	910,000
Water Meter Replacement Program	0	416,330	434,740	451,630	470,370	489,510	509,380	529,750	550,500
Subtotal Baseline Expenses w/o SWP	10,695,107	13,739,123	13,503,927	12,355,789	12,943,534	14,099,530	21,863,900	18,456,110	14,455,642
DWWSP Project									
Pay-As-You-Go Capital Costs	167,000	1,678,000	1,640,000	1,633,000	0	0	0	0	0
Debt Financed Capital Costs (8)	6,085,000	19,953,000	34,709,000	34,890,000	9,255,000	0	0	0	0
CPG Water Purchase (9)	0	0	0	1,199,000	1,223,000	1,247,000	1,272,000	1,297,000	1,323,000
Operation & Maintenance (8)	0	0	0	0	2,254,000	2,750,000	2,798,000	2,849,000	2,899,000
Agency Administration	0	0	0	0	268,000	277,000	282,000	287,000	293,000
Subtotal DWWSP Project Expenses	6,252,000	21,631,000	36,349,000	37,722,000	13,000,000	4,274,000	4,352,000	4,433,000	4,515,000
Debt Service									
Debt Service (Refi WFB Line of Credit) 2012-13 (10)	0	544,000	544,000	544,000	544,000	544,000	544,000	544,000	544,000
Debt Service - 2013-14 (11)	0	0	1,813,380	2,413,380	2,413,755	2,412,642	2,410,055	2,410,980	2,415,180
Debt Service - 2014-15 (11)	0	0	0	2,383,371	2,383,371	3,073,371	3,070,421	3,070,546	3,073,471
Debt Service - 2015-16 (11)	0	0	0	0	2,526,298	3,101,298	3,101,798	3,100,198	3,101,498
Debt Service - 2016-17 (11)	0	0	0	0	0	837,088	1,012,088	1,011,150	1,014,588
Debt Service - 2017-18 (11)	0	0	0	0	0	0	267,113	322,113	323,675
Debt Service - 2018-19 (11)	0	0	0	0	0	0	0	770,925	930,925
Debt Service - 2019-20 (11)	0	0	0	0	0	0	0	0	517,158
Debt Service - 2024-25 (11)	0	0	0	0	0	0	0	0	0
Subtotal Debt Service	0	544,000	2,357,380	5,340,751	7,867,423	9,968,398	10,405,473	11,229,911	11,920,493
TOTAL EXPENSES	16,947,107	35,914,123	52,210,306	55,418,540	33,810,957	28,341,928	36,621,373	34,119,021	30,891,135
Net Revenues	1,829,333	3,136,447	3,114,914	2,279,250	1,566,753	636,602	660,527	766,089	(2,174,635)
Ending Fund Balance	8,054,870	11,191,317	14,306,231	16,585,481	17,152,234	16,488,835	16,649,362	16,815,452	14,140,816
Debt Service Coverage - Min. 1.10	3.01	3.44	2.09	1.44	1.26	1.13	1.13	1.13	1.13
Debt Service Coverage Met	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
Fund Reserve Target (12)	8,985,167	9,055,733	9,128,677	9,204,500	9,742,206	9,940,500	10,029,500	10,121,500	10,223,536
Reserve Fund Target Met	*no*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*

	Projections									
	2021/22	**2022/23**	**2023/24**	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**2028/29**	**2029/30**	**2030/31**
Assumptions:										
Revenue Increase (First increase May 1, 13 and Jan-1 thereafter)	5.0%	5.0%	5.0%	4.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Monthly SFR Bill based on 15 CCF	$97.91	$102.81	$107.95	$112.27	$114.51	$116.80	$119.14	$121.52	$123.95	$126.43
Beginning Fund Balance - Fund 511	$14,140,816	$12,114,503	$11,221,151	$11,227,797	$12,085,912	$12,544,501	$12,902,341	$13,307,953	$13,761,682	$14,244,930
12 MONTH RATE REVENUE TARGET	28,734,000	30,171,000	31,680,000	32,947,000	33,606,000	34,278,000	34,964,000	35,663,000	36,376,000	37,104,000
Effective Date of Rate Increase	1/1/22	1/1/23	1/1/24	1/1/25	1/1/26	1/1/27	1/1/28	1/1/29	1/1/30	1/1/31
REVENUES (1)										
Operating Revenues										
Projected FY Water Sales	27,845,000	29,237,000	30,699,000	32,123,000	33,178,000	33,841,000	34,518,000	35,209,000	35,913,000	36,631,000
Water Meter Replacement Charge Revenues	572,100	595,770	619,870	644,470	670,010	696,090	724,320	753,670	783,560	814,120
Interest	283,000	242,000	224,000	225,000	242,000	251,000	258,000	266,000	275,000	285,000
Rate Stablization Fund Draws	0	0	0	0	0	0	0	0	0	0
Other Revenues (2)	835,000	860,000	886,000	913,000	940,000	968,000	997,000	1,027,000	1,058,000	1,090,000
Subtotal Operating Revenues	29,535,100	30,934,770	32,428,870	33,905,470	35,030,010	35,756,090	36,497,320	37,255,670	38,029,560	38,820,120
Debt Proceeds										
Debt For Prior Pay-Go Projects	0	0	0	0	0	0	0	0	0	0
Water Revenue Bonds (3)	0	0	0	12,042,000	0	0	0	0	0	0
Subtotal Debt Proceeds	0	0	0	12,042,000	0	0	0	0	0	0
TOTAL REVENUES	**29,535,100**	**30,934,770**	**32,428,870**	**45,947,470**	**35,030,010**	**35,756,090**	**36,497,320**	**37,255,670**	**38,029,560**	**38,820,120**
EXPENSES										
Baseline Expenses w/o Surface Water Project										
Labor - Salaries/Wages (4)	5,362,000	5,566,000	5,778,000	5,998,000	6,226,000	6,463,000	6,709,000	6,964,000	7,229,000	7,504,000
Other Baseline Expenses (5)	3,888,495	4,036,258	4,189,636	4,348,842	4,514,098	4,685,634	4,863,688	5,048,508	5,240,351	5,439,484
Additional for East Area Tank (5)	77,000	79,000	81,000	83,000	85,000	88,000	91,000	94,000	97,000	100,000
Additional for Well 32 (5)	519,000	535,000	551,000	568,000	585,000	603,000	621,000	640,000	659,000	679,000
Additional for Well 34 (5)	519,000	535,000	551,000	568,000	585,000	603,000	621,000	640,000	659,000	679,000
JPA Contribution (6)	0	0	0	0	0	0	0	0	0	0
Local R&R Projects (not incl Water Main Replacements) (7)	3,090,000	3,183,000	3,278,000	3,376,000	3,477,000	3,581,000	3,688,000	3,799,000	3,913,000	4,030,000
Water Main Replacements from Assessment	0	0	0	0	0	0	0	0	0	0
Existing Debt Service	910,000	586,000	586,000	586,000	586,000	586,000	586,000	586,000	586,000	586,000
Water Meter Replacement Program	572,100	595,770	619,870	644,470	670,010	696,090	724,320	753,670	783,560	814,120
Subtotal Baseline Expenses w/o SWP	14,937,595	15,116,028	15,634,506	16,172,312	16,728,108	17,305,724	17,904,008	18,525,178	19,166,911	19,831,604
DWWSP Project										
Pay-As-You-Go Capital Costs	0	0	0	0	0	0	0	0	0	0
Debt Financed Capital Costs (8)	0	0	0	12,042,000	0	0	0	0	0	0
CPG Water Purchase (9)	1,350,000	1,377,000	1,404,000	1,432,000	1,461,000	1,490,000	1,520,000	1,551,000	1,582,000	1,613,000
Operation & Maintenance (8)	2,949,000	2,999,000	3,051,000	3,103,000	3,157,000	3,212,000	3,268,000	3,325,000	3,384,000	3,445,000
Agency Administration	299,000	305,000	311,000	317,000	323,000	329,000	336,000	343,000	350,000	357,000
Subtotal DWWSP Project Expenses	4,598,000	4,681,000	4,766,000	16,894,000	4,941,000	5,031,000	5,124,000	5,219,000	5,316,000	5,415,000
Debt Service										
Debt Service (Refi WFB Line of Credit) 2012-13 (10)	544,000	544,000	544,000	544,000	544,000	544,000	544,000	544,000	544,000	544,000
Debt Service - 2013-14 (11)	2,412,405	2,412,892	2,411,405	2,412,942	2,412,255	2,414,342	2,413,967	2,411,117	2,410,792	2,412,755
Debt Service - 2014-15 (11)	3,073,921	3,071,896	3,072,396	3,075,146	3,074,871	3,071,571	3,075,246	3,075,346	3,071,871	3,074,821
Debt Service - 2015-16 (11)	3,100,398	3,101,898	3,100,698	3,101,798	3,104,898	3,099,698	3,101,498	3,099,698	3,104,298	3,099,698
Debt Service - 2016-17 (11)	1,012,088	1,013,963	1,014,900	1,009,900	1,014,275	1,012,400	1,014,588	1,010,525	1,010,525	1,014,275
Debt Service - 2017-18 (11)	324,925	325,863	321,488	322,113	322,425	322,425	322,113	321,488	325,550	323,988
Debt Service - 2018-19 (11)	930,925	935,300	933,738	931,550	933,738	934,988	930,300	934,988	933,425	930,925
Debt Service - 2019-20 (11)	627,158	625,283	623,095	625,595	627,470	623,720	624,658	624,970	624,658	623,720
Debt Service - 2024-25 (11)	0	0	0	0	868,382	1,038,382	1,037,332	1,035,632	1,038,282	1,034,957
Subtotal Debt Service	12,025,818	12,031,093	12,021,718	12,023,043	12,902,313	13,061,525	13,063,700	13,057,763	13,063,400	13,059,138
TOTAL EXPENSES	31,561,413	31,828,121	32,422,224	45,089,355	34,571,421	35,398,249	36,091,708	36,801,941	37,546,311	38,305,742
Net Revenues	(2,026,313)	(893,351)	6,646	858,115	458,589	357,841	405,612	453,729	483,249	514,378
Ending Fund Balance	12,114,503	11,221,151	11,227,797	12,085,912	12,544,501	12,902,341	13,307,953	13,761,682	14,244,930	14,759,308
Debt Service Coverage - Min. 1.10	1.15	1.25	1.33	1.41	1.37	1.36	1.38	1.39	1.41	1.42
Debt Service Coverage Met	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
Fund Reserve Target (12)	10,328,624	10,437,565	10,550,409	10,667,211	10,788,025	10,913,659	11,043,422	11,177,877	11,317,088	11,461,621
Reserve Fund Target Met	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*

	Projected									
	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41
Assumptions:										
Revenue Increase (First increase May 1, 13 and Jan-1 thereafter)	2.0%	2.0%	2.0%	2.0%	2.0%	3.0%	0.0%	0.0%	0.0%	0.0%
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Monthly SFR Bill based on 15 CCF	$128.96	$131.54	$134.17	$136.85	$139.59	$143.78	$143.78	$143.78	$143.78	$143.78
Beginning Fund Balance - Fund 511	$14,759,308	$15,293,324	$15,836,447	$16,374,725	$16,891,906	$17,394,995	$18,008,635	$18,549,524	$18,178,549	$18,774,814
12 MONTH RATE REVENUE TARGET	37,846,000	38,603,000	39,375,000	40,163,000	40,966,000	42,195,000	42,195,000	42,195,000	42,195,000	42,195,000
Effective Date of Rate Increase	1/1/32	1/1/33	1/1/34	1/1/35	1/1/36	1/1/37	1/1/38	1/1/39	1/1/40	1/1/41
REVENUES (1)										
Operating Revenues										
Projected FY Water Sales	37,364,000	38,111,000	38,873,000	39,651,000	40,444,000	41,396,000	42,195,000	42,195,000	42,195,000	42,195,000
Water Meter Replacement Charge Revenues	847,470	881,580	916,950	953,030	991,730	1,031,640	1,072,410	1,116,370	1,161,210	1,207,570
Interest	295,000	306,000	317,000	327,000	338,000	348,000	360,000	371,000	364,000	375,000
Rate Stablization Fund Draws	0	0	0	0	0	0	0	0	0	0
Other Revenues (2)	1,123,000	1,157,000	1,192,000	1,228,000	1,265,000	1,303,000	1,342,000	1,382,000	1,423,000	1,466,000
Subtotal Operating Revenues	39,629,470	40,455,580	41,298,950	42,159,030	43,038,730	44,078,640	44,969,410	45,064,370	45,143,210	45,243,570
Debt Proceeds										
Debt For Prior Pay-Go Projects	0	0	0	0	0	0	0	0	0	0
Water Revenue Bonds (3)	0	0	0	0	0	0	0	0	0	0
Subtotal Debt Proceeds	0	0	0	0	0	0	0	0	0	0
TOTAL REVENUES	**39,629,470**	**40,455,580**	**41,298,950**	**42,159,030**	**43,038,730**	**44,078,640**	**44,969,410**	**45,064,370**	**45,143,210**	**45,243,570**
EXPENSES										
Baseline Expenses w/o Surface Water Project										
Labor - Salaries/Wages (4)	7,789,000	8,085,000	8,392,000	8,711,000	9,042,000	9,386,000	9,743,000	10,113,000	10,497,000	10,896,000
Other Baseline Expenses (5)	5,646,184	5,860,739	6,083,447	6,314,618	6,554,573	6,803,647	7,062,186	7,330,549	7,609,110	7,898,256
Additional for East Area Tank (5)	103,000	106,000	109,000	112,000	115,000	118,000	122,000	126,000	130,000	134,000
Additional for Well 32 (5)	699,000	720,000	742,000	764,000	787,000	811,000	835,000	860,000	886,000	913,000
Additional for Well 34 (5)	699,000	720,000	742,000	764,000	787,000	811,000	835,000	860,000	886,000	913,000
JPA Contribution (6)	0	0	0	0	0	0	0	0	0	0
Local R&R Projects (not incl Water Main Replacements) (7)	4,151,000	4,276,000	4,404,000	4,536,000	4,672,000	4,812,000	4,956,000	5,105,000	5,258,000	5,416,000
Water Main Replacements from Assessment	0	0	0	0	0	0	0	0	0	0
Existing Debt Service	586,000	586,000	586,000	586,000	586,000	586,000	586,000	586,000	586,000	586,000
Water Meter Replacement Program	847,470	881,580	916,950	953,030	991,730	1,031,640	1,072,410	1,116,370	1,161,210	1,207,570
Subtotal Baseline Expenses w/o SWP	20,520,654	21,235,319	21,975,397	22,740,648	23,535,303	24,359,287	25,211,596	26,096,919	27,013,320	27,963,826
DWWSP Project										
Pay-As-You-Go Capital Costs	0	0	0	0	0	0	0	0	0	0
Debt Financed Capital Costs (8)	0	0	0	0	0	0	0	0	0	0
CPG Water Purchase (9)	1,645,000	1,678,000	1,712,000	1,746,000	1,781,000	1,817,000	1,853,000	1,890,000	0	0
Operation & Maintenance (8)	3,506,000	3,569,000	3,634,000	3,699,000	3,766,000	3,833,000	3,902,000	3,973,000	4,044,000	4,117,000
Agency Administration	364,000	371,000	378,000	386,000	394,000	402,000	410,000	418,000	426,000	435,000
Subtotal DWWSP Project Expenses	5,515,000	5,618,000	5,724,000	5,831,000	5,941,000	6,052,000	6,165,000	6,281,000	4,470,000	4,552,000
Debt Service										
Debt Service (Refi WFB Line of Credit) 2012-13 (10)	544,000	544,000	544,000	544,000	544,000	544,000	544,000	544,000	544,000	544,000
Debt Service - 2013-14 (11)	2,411,755	2,407,780	2,415,842	2,415,205	2,411,105	2,413,542	2,407,030	2,411,805	2,412,130	2,413,017
Debt Service - 2014-15 (11)	3,073,646	3,073,346	3,073,646	3,074,271	3,074,946	3,070,396	3,070,621	3,075,071	3,073,196	3,074,996
Debt Service - 2015-16 (11)	3,101,198	3,103,198	3,100,398	3,102,798	3,099,798	3,101,398	3,101,998	3,101,298	3,103,998	3,104,498
Debt Service - 2016-17 (11)	1,011,463	1,012,400	1,011,775	1,014,588	1,010,525	1,009,900	1,012,400	1,012,713	1,010,838	1,011,775
Debt Service - 2017-18 (11)	322,113	324,925	322,113	323,988	325,238	320,863	321,175	320,863	324,925	323,050
Debt Service - 2018-19 (11)	932,488	932,800	931,863	934,675	930,925	930,925	934,363	930,925	930,925	934,050
Debt Service - 2019-20 (11)	627,158	624,658	626,533	627,470	627,470	626,533	624,658	626,845	627,783	627,470
Debt Service - 2024-25 (11)	1,035,982	1,036,032	1,035,107	1,033,207	1,035,332	1,036,157	1,035,682	1,033,907	1,035,832	1,036,132
Subtotal Debt Service	13,059,800	13,059,138	13,061,275	13,070,200	13,059,338	13,053,713	13,051,925	13,057,425	13,063,625	13,068,988
TOTAL EXPENSES	39,095,454	39,912,457	40,760,672	41,641,848	42,535,641	43,465,000	44,428,521	45,435,344	44,546,945	45,584,814
Net Revenues	534,016	543,123	538,278	517,182	503,089	613,640	540,889	(370,974)	596,265	(341,244)
Ending Fund Balance	15,293,324	15,836,447	16,374,725	16,891,906	17,394,995	18,008,635	18,549,524	18,178,549	18,774,814	18,433,570
Debt Service Coverage - Min. 1.10	1.43	1.44	1.46	1.47	1.48	1.50	1.51	1.46	1.55	1.49
Debt Service Coverage Met	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
Fund Reserve Target (12)	11,610,546	11,765,185	11,925,612	12,091,155	12,262,893	12,440,662	12,624,797	12,815,637	13,013,028	13,217,814
Reserve Fund Target Met	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*

Footnotes:

1 - Source: Enterprise Revenue Actuals 08-11. Estimated based on 2010/11 Revenues.

2 - Includes Sale of Surplus/Salvage, Prior Yr Enc Cancelled

3 - BWA estimates. $5M bond issue was added to minimize rate increases.

4 - Source: OM Costs. Assumes Labor costs account for 56% of total baseline expenses. Escalated by 3.8% annually

5 - Source: OM Costs. Other Baseline Expenses = Budget Baseline less Labor Costs. Costs are escalated by 3% beginning in 2017/18.

6 - Source: 2011-12 Budget, Contribution Transfers

7 - Project costs escalated by 4% annually. Projected costs for Local Projects R&R are estimated based on historical average beginning 2020/21.

8 - Source: DWWSP - Project Cost Allocation W5b, Davis Portion of Costs (April 2012 dollars) from West Yost. Includes 4MG tank in 2024/25 - estimated at $10M in current dollars and escalated by 4% each year.

9 - Source: Table A Purchase Installment Agreement Payment Schedule 2016-2039. Costs have been escalated.

10 - Assumes $8M Wells Fargo Line of Credit refinancing in 2012/13.

11 - Debt service estimates from NHA Advisors (2/6/13) and BWA.

12 - Recommended fund reserve target is equivalent to 3 months (25%) of O&M expenses plus $5 million for Rate Stabilization plus $2 million for Capital.

Appendix C: CBFR Calculations

		Rates Effective	1-May-2013	1-Jan-2014	1-Jan-2015	1-Jan-2016	1-Jan-2017	1-Jan-2018	1-Jan-2019	1-Jan-2020	1-Jan-2021	1-Jan-2022	1-Jan-2023
Annual Revenue Requirement													
		Budget 2011/12	**Annualized 2012/13**	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**
Scenario 3: All Debt Revenue Rqmt		$9,978,000	$11,474,500	$12,971,000	$16,214,000	$20,268,000	$21,889,000	$23,640,000	$24,822,000	$26,063,000	$27,366,000	$28,734,000	$30,171,000
			115%	130%	162%	203%	219%	237%	249%	261%	274%	288%	302%
Variable Operations	20.0%		$2,294,900	$2,594,200	$3,242,800	$4,053,600	$4,377,800	$4,728,000	$4,964,400	$5,212,600	$5,473,200	$5,746,800	$6,034,200
Billing Admin			$419,073	$420,091	$434,073	$448,197	$466,694	$485,520	$504,651	$524,260	$545,388	$567,367	$590,232
Meter Replacement			$0	$416,330	$428,820	$441,680	$454,930	$468,580	$482,640	$497,120	$512,030	$527,390	$543,210
Fireline	6.0%		$688,470	$778,260	$972,840	$1,216,080	$1,313,340	$1,418,400	$1,489,320	$1,563,780	$1,641,960	$1,724,040	$1,810,260
Readiness To Serve	4.5%		$516,353	$583,695	$729,630	$912,060	$985,005	$1,063,800	$1,116,990	$1,172,835	$1,231,470	$1,293,030	$1,357,695
Summer Peak Sourcing (CBFR)			$7,555,704	$8,594,754	$10,834,657	$13,638,063	$14,746,161	$15,944,280	$16,746,639	$17,589,525	$18,473,982	$19,402,763	$20,378,613
Fund Reserve Annual Contribution			$0	$0	$0	$0	$0	$400,000	$0	$0	$0	$0	$0
Total Revenue Requirement			$11,474,500	$13,387,330	$16,642,820	$20,709,680	$22,343,930	$24,508,580	$25,304,640	$26,560,120	$27,878,030	$29,261,390	$30,714,210
Volume Stats													
Accounts	**Meter**	**Current**	**2012/2013**	**2013/2014**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**
Accounts		16,433	16,473	16,513	16,593	16,674	16,836	17,000	17,165	17,337	17,510	17,685	17,862
		100.0%	100.2%	100.5%	101.0%	101.5%	102.5%	103.5%	104.5%	105.5%	106.6%	107.6%	108.7%
Monthly Cost for Customer Billing and Administration													
		Current	**2012/2013**	**2013/2014**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**
		$2.06	$2.12	$2.12	$2.18	$2.24	$2.31	$2.38	$2.45	$2.52	$2.60	$2.67	$2.75
Monthly Meter Replacement Charges													
Meter Code	**Meter Size**	**Current**	**2012/2013**	**2013/2014**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**
01	5/8" or 3/4"		$1.75	$1.75	$1.80	$1.85	$1.91	$1.97	$2.03	$2.09	$2.15	$2.21	$2.28
02	1 - inch		$2.58	$2.58	$2.66	$2.74	$2.82	$2.90	$2.99	$3.08	$3.17	$3.27	$3.37
03	1 1/2 - inch		$3.68	$3.68	$3.79	$3.90	$4.02	$4.14	$4.26	$4.39	$4.52	$4.66	$4.80
04	2 - inch		$6.35	$6.35	$6.54	$6.74	$6.94	$7.15	$7.36	$7.58	$7.81	$8.04	$8.28
06	3 - inch		$7.18	$7.18	$7.40	$7.62	$7.85	$8.09	$8.33	$8.58	$8.84	$9.11	$9.38
07	4 - inch		$9.75	$9.75	$10.04	$10.34	$10.65	$10.97	$11.30	$11.64	$11.99	$12.35	$12.72
08	6 - inch		$13.80	$13.80	$14.21	$14.64	$15.08	$15.53	$16.00	$16.48	$16.97	$17.48	$18.00
09	8 - inch		$17.39	$17.39	$17.91	$18.45	$19.00	$19.57	$20.16	$20.76	$21.38	$22.02	$22.68
Monthly Fireline Charges													
Meter Code	**Meter Size**	**Current**	**2012/2013**	**2013/2014**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**
01	5/8" or 3/4"		$2.51	$2.84	$3.55	$4.44	$4.80	$5.18	$5.44	$5.71	$6.00	$6.30	$6.61
02	1 - inch		$4.19	$4.74	$5.92	$7.40	$7.99	$8.63	$9.06	$9.52	$9.99	$10.49	$11.02
03	1 1/2 - inch		$8.38	$9.47	$11.84	$14.80	$15.99	$17.26	$18.13	$19.03	$19.99	$20.99	$22.03
04	2 - inch		$13.41	$15.16	$18.95	$23.68	$25.58	$27.62	$29.00	$30.45	$31.98	$33.58	$35.26
06	3 - inch		$26.82	$30.31	$37.89	$47.37	$51.16	$55.25	$58.01	$60.91	$63.96	$67.15	$70.51
07	4 - inch		$41.90	$47.37	$59.21	$74.01	$79.93	$86.32	$90.64	$95.17	$99.93	$104.93	$110.17
08	6 - inch		$83.80	$94.73	$118.41	$148.02	$159.86	$172.65	$181.28	$190.34	$199.86	$209.85	$220.35
09	8 - inch		$134.08	$151.57	$189.46	$236.83	$255.78	$276.24	$290.05	$304.55	$319.78	$335.76	$352.55
Monthly Readiness To Serve Charges													
Meter Code	**Meter Size**	**Current**	**2012/2013**	**2013/2014**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**
01	5/8" or 3/4"		$1.89	$2.13	$2.66	$3.33	$3.60	$3.88	$4.08	$4.28	$4.50	$4.72	$4.96
02	1 - inch		$3.14	$3.55	$4.44	$5.55	$5.99	$6.47	$6.80	$7.14	$7.49	$7.87	$8.26
03	1 1/2 - inch		$6.29	$7.10	$8.88	$11.10	$11.99	$12.95	$13.60	$14.28	$14.99	$15.74	$16.53
04	2 - inch		$10.06	$11.37	$14.21	$17.76	$19.18	$20.72	$21.75	$22.84	$23.98	$25.18	$26.44
06	3 - inch		$20.11	$22.74	$28.42	$35.53	$38.37	$41.44	$43.51	$45.68	$47.97	$50.36	$52.88
07	4 - inch		$31.43	$35.52	$44.41	$55.51	$59.95	$64.74	$67.98	$71.38	$74.95	$78.69	$82.63
08	6 - inch		$62.85	$71.05	$88.81	$111.02	$119.90	$129.49	$135.96	$142.76	$149.89	$157.39	$165.26
09	8 - inch		$100.56	$113.68	$142.10	$177.63	$191.83	$207.18	$217.54	$228.41	$239.83	$251.82	$264.41
Monthly Fixed Charges													
Meter Code	**Meter Size**	**Current**	**2012/2013**	**2013/2014**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**
01	5/8" or 3/4"	$11.50	$8.27	$8.84	$10.20	$11.86	$12.61	$13.41	$14.00	$14.60	$15.24	$15.90	$16.60
02	1 - inch	$16.20	$12.03	$12.99	$15.20	$17.93	$19.12	$20.39	$21.30	$22.26	$23.25	$24.31	$25.40
03	1 1/2 - inch	$27.90	$20.47	$22.38	$26.69	$32.04	$34.31	$36.73	$38.43	$40.22	$42.09	$44.06	$46.11
04	2 - inch	$42.00	$31.93	$34.99	$41.88	$50.43	$54.01	$57.87	$60.57	$63.40	$66.37	$69.47	$72.73
06	3 - inch	$80.00	$56.23	$62.35	$75.89	$92.75	$99.68	$107.15	$112.30	$117.69	$123.36	$129.30	$135.53
07	4 - inch	$122.00	$85.20	$94.76	$115.83	$142.10	$152.84	$164.42	$172.37	$180.71	$189.46	$198.64	$208.28
08	6 - inch	$238.00	$162.57	$181.70	$223.62	$275.92	$297.15	$320.04	$335.69	$352.10	$369.32	$387.39	$406.36
09	8 - inch	$379.00	$254.15	$284.75	$351.65	$435.15	$468.92	$505.36	$530.20	$556.24	$583.58	$612.28	$642.40
Monthly Combined Fixed Charges (Rounded)[1]													
Meter Code	**Meter Size**	**Current**	**2012/2013**	**2013/2014**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**
01	5/8" or 3/4"	$11.50	$8.27	$8.84	$10.21	$11.38	$11.90	$13.67	$14.00	$14.60	$15.24	$15.90	$16.60
02	1 - inch	$16.20	$12.03	$12.99	$15.22	$17.19	$18.09	$20.92	$21.30	$22.26	$23.25	$24.31	$25.40
03	1 1/2 - inch	$27.90	$20.47	$22.38	$26.78	$30.76	$32.62	$38.01	$38.43	$40.22	$42.09	$44.06	$46.11
04	2 - inch	$42.00	$31.93	$34.99	$42.02	$48.41	$51.40	$59.96	$60.57	$63.40	$66.37	$69.47	$72.73
06	3 - inch	$80.00	$56.23	$62.35	$76.19	$89.09	$95.19	$111.72	$112.30	$117.69	$123.36	$129.30	$135.53
07	4 - inch	$122.00	$85.20	$94.76	$116.33	$136.53	$146.12	$171.73	$172.37	$180.71	$189.46	$198.64	$208.28
08	6 - inch	$238.00	$162.57	$181.70	$224.63	$265.13	$284.43	$335.05	$335.69	$352.10	$369.32	$387.39	$406.36
09	8 - inch	$379.00	$254.15	$284.75	$353.27	$418.17	$449.16	$529.67	$530.20	$556.24	$583.58	$612.28	$642.40

Annual Fixed Charges Revenue

Meter Code	Meter Size	Current	2012/2013	2013/2014	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
01	5/8" or 3/4"	$1,651,279	$1,211,717	$1,298,939	$1,506,947	$1,687,833	$1,782,105	$2,067,116	$2,137,140	$2,251,935	$2,373,388	$2,501,321	$2,637,739
02	1 - inch	$670,546	$486,913	$526,888	$620,383	$704,103	$748,166	$873,637	$898,225	$947,795	$1,000,212	$1,055,920	$1,114,679
03	1 1/2 - inch	$156,838	$112,258	$123,047	$147,967	$170,787	$182,874	$215,167	$219,679	$232,187	$245,418	$259,451	$274,279
04	2 - inch	$158,730	$113,322	$124,483	$150,199	$173,885	$186,418	$219,582	$223,963	$236,764	$250,335	$264,668	$279,854
06	3 - inch	$86,343	$60,875	$67,665	$83,086	$97,628	$105,326	$124,821	$126,683	$134,098	$141,957	$150,284	$159,097
07	4 - inch	$58,341	$40,993	$45,706	$56,382	$66,496	$71,858	$85,275	$86,423	$91,511	$96,903	$102,614	$108,666
08	6 - inch	$8,392	$5,867	$6,573	$8,165	$9,685	$10,491	$12,478	$12,623	$13,373	$14,167	$15,009	$15,901
09	8 - inch	$17,539	$12,229	$13,735	$17,122	$20,367	$22,088	$26,301	$26,583	$28,168	$29,848	$31,629	$33,517
		$2,808,008	$2,044,174	$2,207,035	$2,590,252	$2,930,782	$3,109,326	$3,624,376	$3,731,321	$3,935,830	$4,152,226	$4,380,895	$4,623,731
			17.81%	17.02%	15.98%	14.46%	14.20%	15.33%	15.03%	15.10%	15.17%	15.25%	15.33%
Annual Fireflow Readiness Revenue Target			$ 1,623,896	$ 2,198,376	$ 2,565,363	$ 3,018,017	$ 3,219,969	$ 3,436,300	$ 3,593,601	$ 3,757,995	$ 3,930,848	$ 4,111,827	$ 4,301,397
			F - E	G - F	H - G	I - H	J - I	K - J	L - K	M - L	N - M	O - N	P - O
Annual Meter Replacement Costs			$0	$416,330	$428,820	$441,680	$454,930	$468,580	$482,640	$497,120	$512,030	$527,390	$543,210
Annual CBFR Cost Baseline			$7,555,704	$8,594,754	$10,834,657	$13,638,063	$14,746,161	$16,344,280	$16,746,639	$17,589,525	$18,473,982	$19,402,763	$20,378,613
Annual CBFR Consumption Baseline (ccf)		3,055,110	3,055,110	2,980,972	2,846,802	2,761,821	2,627,805	2,550,952	2,594,396	2,620,340	2,646,543	2,673,009	2,699,740
Cumulative Use Reduction		0.00%	0.00%	-2.43%	-6.82%	-9.60%	-13.99%	-16.50%	-15.08%	-14.23%	-13.37%	-12.51%	-11.63%
CBFR Unit Charge per ccf			$ 2.473	$ 2.883	$ 3.806	$ 4.938	$ 5.612	$ 6.407	$ 6.455	$ 6.713	$ 6.980	$ 7.259	$ 7.548
CBFR Unit Charge per ccf per month			$ 0.20609	$ 0.24027	$ 0.31716	$ 0.41151	$ 0.46763	$ 0.53393	$ 0.53791	$ 0.55939	$ 0.58170	$ 0.60490	$ 0.62903
CBFR Unit Charge per ccf per month (rounded)1			$ 0.210	$ 0.240	$ 0.320	$ 0.400	$ 0.450	$ 0.540	$ 0.540	$ 0.560	$ 0.580	$ 0.610	$ 0.630

Annual CBFR Volumetric Revenue

	Current	2012/2013	2013/2014	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
		$7,698,877	$8,585,199	$10,931,720	$13,256,741	$14,190,147	$16,530,169	$16,811,686	$17,608,685	$18,419,939	$19,566,426	$20,410,034
Annual Summer Peak Sourcing Revenue Target		$7,555,704	$8,594,754	$10,834,657	$13,638,063	$14,746,161	$16,344,280	$16,746,639	$17,589,525	$18,473,982	$19,402,763	$20,378,613

Annual Traditional Volumetric Revenue

	Current	2012/2013	2013/2014	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
MFR	$1,413,771	$580,191	$633,598	$793,399	$902,427	$989,909	$1,165,511	$1,337,690	$1,351,067	$1,364,577	$1,378,223	$1,484,805
Commercial	$583,121	$250,483	$268,539	$320,871	$356,212	$386,440	$449,983	$516,458	$521,622	$526,838	$532,106	$573,254
Irrigation	$1,106,158	$333,946	$350,424	$426,477	$470,921	$500,025	$569,868	$647,577	$647,577	$647,577	$647,577	$690,749
SFR Low	$2,553,567	$1,139,299	$1,244,173	$1,557,968	$1,772,062	$1,943,848	$2,288,673	$2,626,772	$2,653,040	$2,679,570	$2,706,366	$2,915,658
SFR Medium	$628,998	$189,447	$206,886	$259,065	$294,665	$323,230	$380,568	$436,788	$441,156	$445,568	$450,023	$484,824
SFR High	$830,452	$157,955	$166,187	$203,337	$225,732	$242,162	$278,841	$320,033	$323,234	$326,466	$329,730	$355,229
Total	$7,116,068	$2,651,321	$2,869,806	$3,561,117	$4,022,018	$4,385,614	$5,133,443	$5,885,316	$5,937,695	$5,990,595	$6,044,024	$6,504,518
Annual Variable Operations Revenue Target		$ 2,294,900	$ 2,594,200	$ 3,242,800	$ 4,053,600	$ 4,377,800	$ 4,728,000	$ 4,964,400	$ 5,212,600	$ 5,473,200	$ 5,746,800	$ 6,034,200

Annual Total Combined Revenue Generated

	Current	2012/2013	2013/2014	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
	$9,924,076	$12,394,372	$13,662,041	$17,083,089	$20,209,541	$21,685,087	$25,287,988	$26,428,323	$27,482,210	$28,562,761	$29,991,344	$31,538,284
			Orig 218 Amt	$16,642,820	$20,709,680	$22,343,930	$24,108,580					

Projected Surplus or (Deficit)

	Current	2012/2013	2013/2014	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
		$919,872	$274,711	$440,269	($500,139)	($658,843)	$779,408	$1,123,683	$922,090	$684,731	$729,954	$824,074
Annual Variable Cost Baseline		$2,294,900	$2,594,200	$3,242,800	$4,053,600	$4,377,800	$4,728,000	$4,964,400	$5,212,600	$5,473,200	$5,746,800	$6,034,200
		20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
Annual Consumption Baseline		$4,430,007	$4,300,446	$3,791,456	$3,751,945	$3,719,661	$3,548,450	$3,722,018	$3,755,922	$3,790,165	$3,824,751	$3,859,682
Uniform Block Rate per ccf		$0.518	$0.603	$0.855	$1.080	$1.177	$1.332	$1.334	$1.388	$1.444	$1.503	$1.563
Loge-Williams CBFR Tier Rates												
Uniform Block Rate (Rounded)[1]		$0.595	$0.660	$0.860	$1.020	$1.120	$1.320	$1.500	$1.500	$1.500	$1.500	$1.600

(1) Rounded to conform with rates presented to the City Council on January 15, 2013.