



**PALMDALE WATER DISTRICT**  
A CENTURY OF SERVICE

**BOARD OF DIRECTORS**

**ROBERT E. ALVARADO**

Division 1

**DON WILSON**

Division 2

**GLORIA DIZMANG**

Division 3

**KATHY MAC LAREN**

Division 4

**VINCENT DINO**

Division 5

August 12, 2019

**AGENDA FOR A SPECIAL MEETING  
OF THE BOARD OF DIRECTORS  
OF THE PALMDALE WATER DISTRICT  
to be held at the District's office at 2029 East Avenue Q, Palmdale  
THURSDAY, AUGUST 15, 2019**

**5:00 p.m.**

**NOTES:** To comply with the Americans with Disabilities Act, to participate in any Board meeting please contact Dawn Deans at 661-947-4111 x1003 at least 48 hours prior to a Board meeting to inform us of your needs and to determine if accommodation is feasible.

Agenda item materials, as well as materials related to agenda items submitted after distribution of the agenda packets, are available for public review at the District's office located at 2029 East Avenue Q, Palmdale (Government Code Section 54957.5). Please call Dawn Deans at 661-947-4111 x1003 for public review of materials.

**PUBLIC COMMENT GUIDELINES:** The prescribed time limit per speaker is three-minutes. Please refrain from public displays or outbursts such as unsolicited applause, comments, or cheering. Any disruptive activities that substantially interfere with the ability of the District to carry out its meeting will not be permitted, and offenders will be requested to leave the meeting. (PWD Rules and Regulations, Appendix DD, Sec. IV.A.)

Each item on the agenda shall be deemed to include any appropriate motion, resolution, or ordinance to take action on any item.

- 1) Pledge of Allegiance/Moment of Silence.
- 2) Roll Call.
- 3) Adoption of Agenda.
- 4) Presentations:
  - 4.1) Overview of 2019 Rate Study. (RDN Consultants / Finance Manager Williams)

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**DENNIS D. LaMOREAUX**  
General Manager

**ALESHIRE & WYNDER LLP**  
Attorneys



- 5) Action Items - Action Calendar (The public shall have an opportunity to comment on any action item as each item is considered by the Board of Directors prior to action being taken.)
  - 5.1) Consideration and possible action on rate structure for years 2020 – 2024, authorization for staff to begin the Proposition 218 process, and establishment of a Proposition 218 hearing date. (Finance Manager Williams)
- 6) Adjournment.



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DENNIS D. LaMOREAUX,  
General Manager

DDL/dd

# PALMDALE WATER DISTRICT

## SUMMARY OF FINDINGS – 15 AUGUST 2019

WATER RATE ANALYSIS, WATER RATE STRUCTURE MODIFICATIONS,  
MULTI-YEAR WATER RATE PLAN, AND  
PROPOSITION 218 PROCESS PUBLIC OUTREACH SUPPORT

# AGENDA

- Current Challenges
- Process of Rate Study
- PWD Financial Outlook
- What is a Cost of Service Analysis?
- Recommended Rate Adjustments
- Customer Bill Impacts

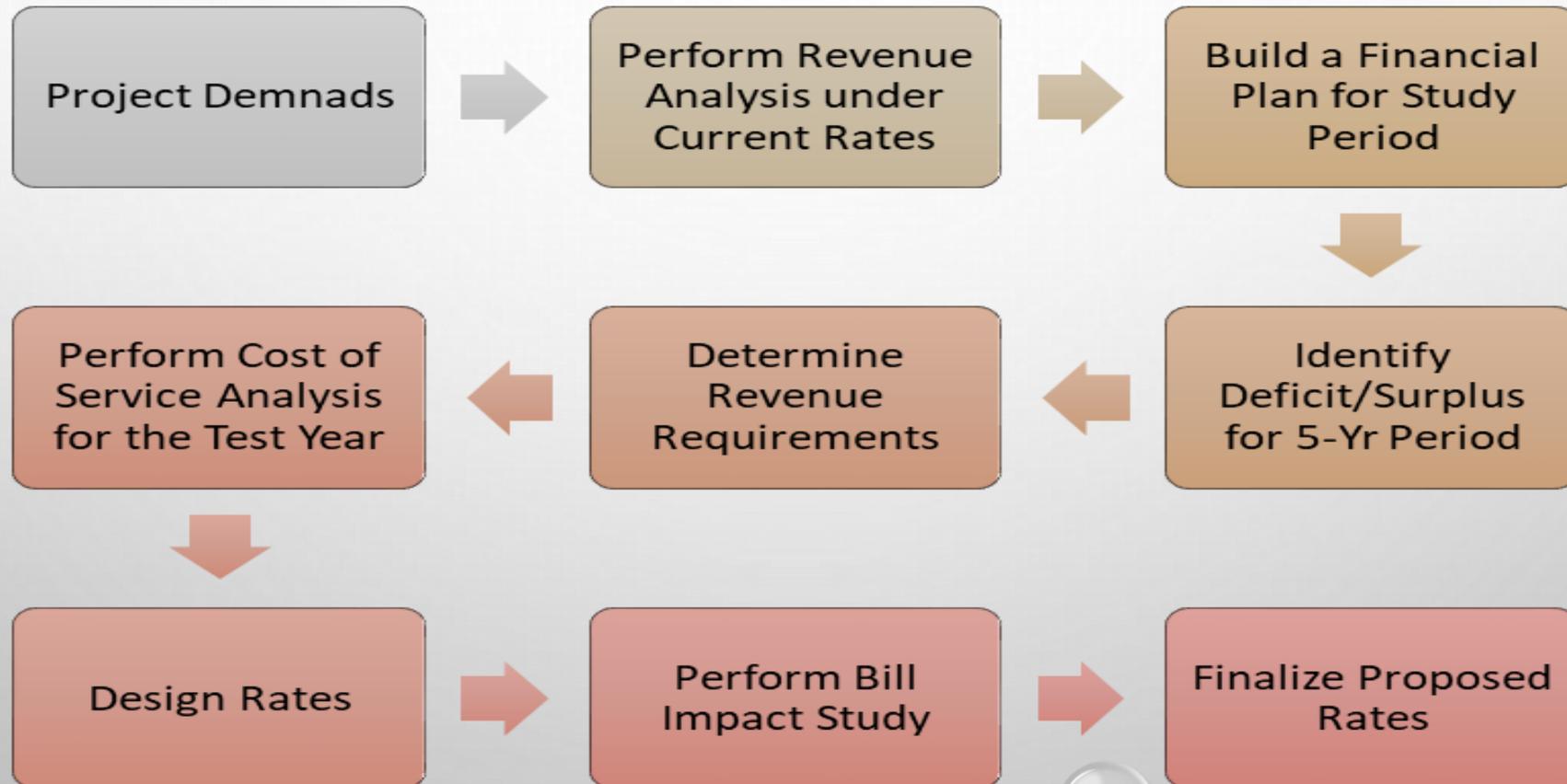


# CURRENT CHALLENGES

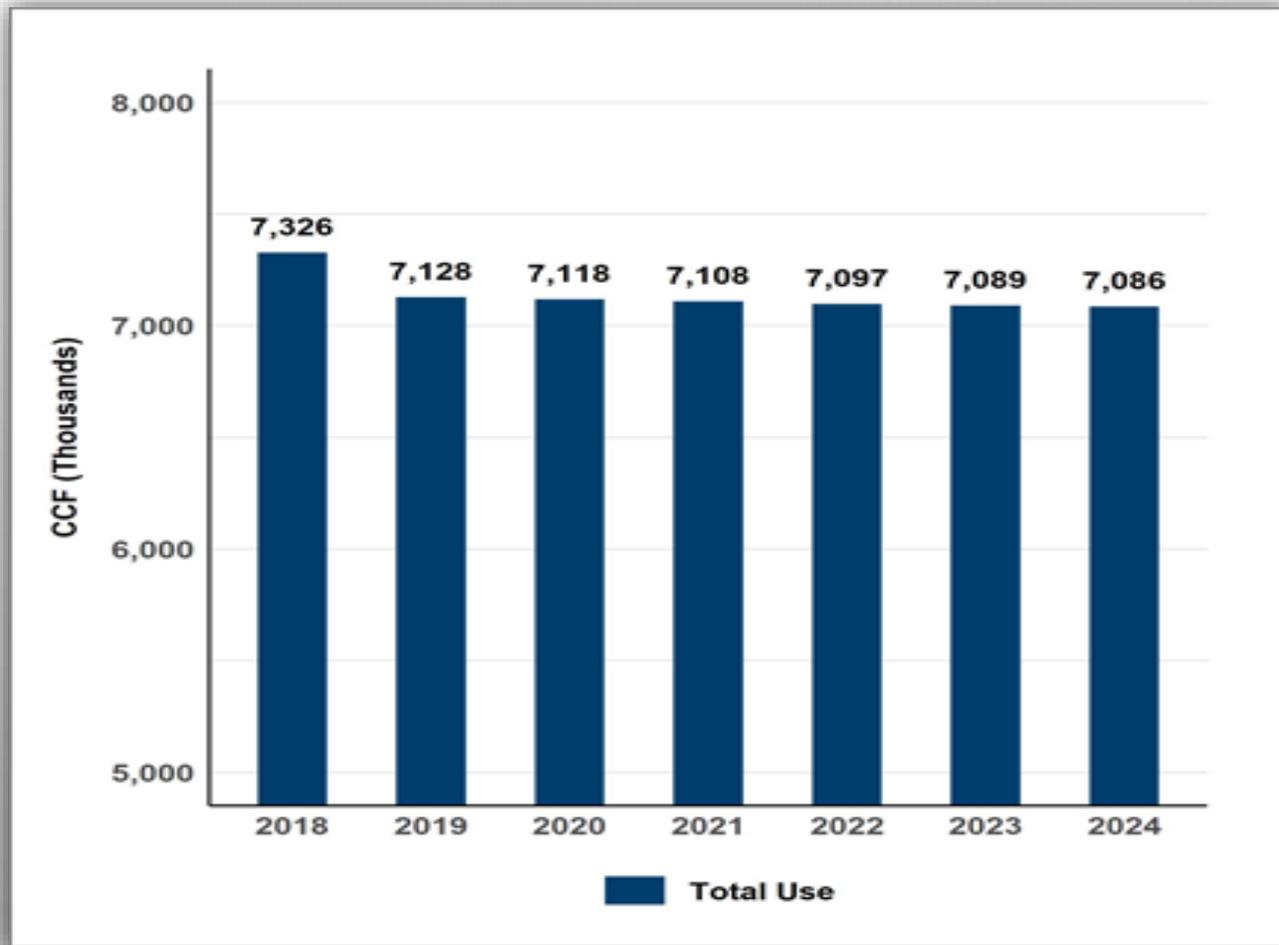
- Increasing Operating and Maintenance (O&M) needs
- Capital improvements and reinvestment in aging infrastructure
- Building reserves to prepare for emergencies
- Regulatory requirements becoming more stringent

# RATE STUDY PROCESS

5-Yr Study Period: CY 2020 – CY 2024, Test Year: CY 2020



# DEMAND PROJECTIONS



Class	Annual Change
Commercial & Industrial	-2
Construction	-2
Irrigation	-1
Multi-Family Residential	2
Single-Family Residential	21



# REVENUE ANALYSIS

Revenue Type	CY 2019	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
Revenues from rates	\$23.1	\$23.1	\$23.1	\$23.1	\$23.0	\$23.0
Other operating revenues	\$1.2	\$1.2	\$1.2	\$1.2	\$1.2	\$1.2
Non-operating revenues	\$2.9	\$2.9	\$2.9	\$3.0	\$3.0	\$3.1
<b>Total</b>	<b>\$27.2</b>	<b>\$27.2</b>	<b>\$27.2</b>	<b>\$27.2</b>	<b>\$27.3</b>	<b>\$27.3</b>





# CIP EXPENSE

Total = \$30 million

	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
Replacement/New Equipment	\$440,217	\$608,922	\$375,113	\$373,115	\$483,704
Studies and Planning	\$604,985	\$125,000	\$200,000	\$125,000	\$125,000
Water Supply	\$512,177	\$786,976	\$806,143	\$1,101,034	\$0
Replacement Capital Projects	\$3,056,808	\$3,985,035	\$4,469,925	\$5,758,578	\$2,554,233
New Capital Projects	\$578,810	\$0	\$529,664	\$0	\$3,120,913
<b>Total CIP Expense</b>	<b>\$5,192,998</b>	<b>\$5,505,934</b>	<b>\$6,380,845</b>	<b>\$7,357,728</b>	<b>\$6,283,850</b>

# DEBT SERVICE

	CY 2019	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
Principal	\$1.9	\$1.9	\$2.0	\$2.7	\$2.6	\$2.8
Interest	\$2.6	\$2.5	\$2.5	\$3.1	\$3.1	\$3.0
<b>Debt Service Total</b>	<b>\$4.5</b>	<b>\$4.5</b>	<b>\$4.5</b>	<b>\$5.8</b>	<b>\$5.7</b>	<b>\$5.8</b>

- 2012 Private Placement
- 2013A Series Water Revenue Bonds
- 2018A Series Water Revenue Bond
- Capital Leases Payable - 2017
- 2021 Bond Issuance - \$20 million

# OTHER OBLIGATIONS

Reserves: District's Goal based on Reserve Policy Resolution No, 18-10 is \$16.2 million  
= **\$950,000 Annual Contribution**

Water Conservation Rebate Program/Change in Investment in PRWA = **\$535,500**

# REVENUE REQUIREMENTS

CY 2020

O&M Expense - \$23.1 million

CIP Expense - \$5.2 million

Debt Service - \$4.5 million

Other Obligations - \$1.5 million

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**Total Cost - \$34.3 million**

Offset by Non-Rate Revenues - \$4.1 million

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**Revenue Requirements - \$30.2 million**

# REVENUE REQUIREMENTS

CY 2020

**Revenues from Rates - \$23.1 million**

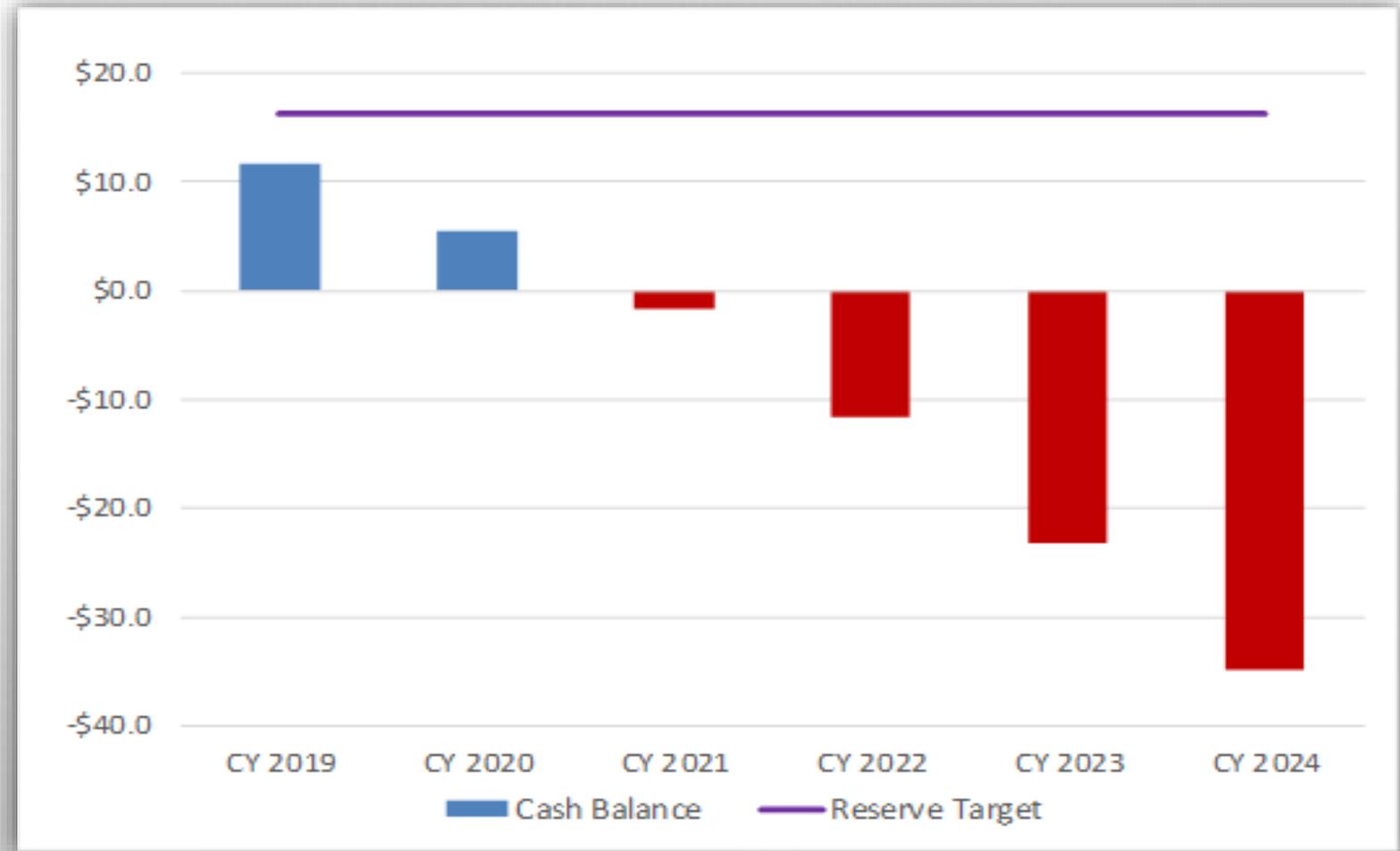
**Revenue Requirements - \$30.2 million**

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**Deficit- \$7.1 million**

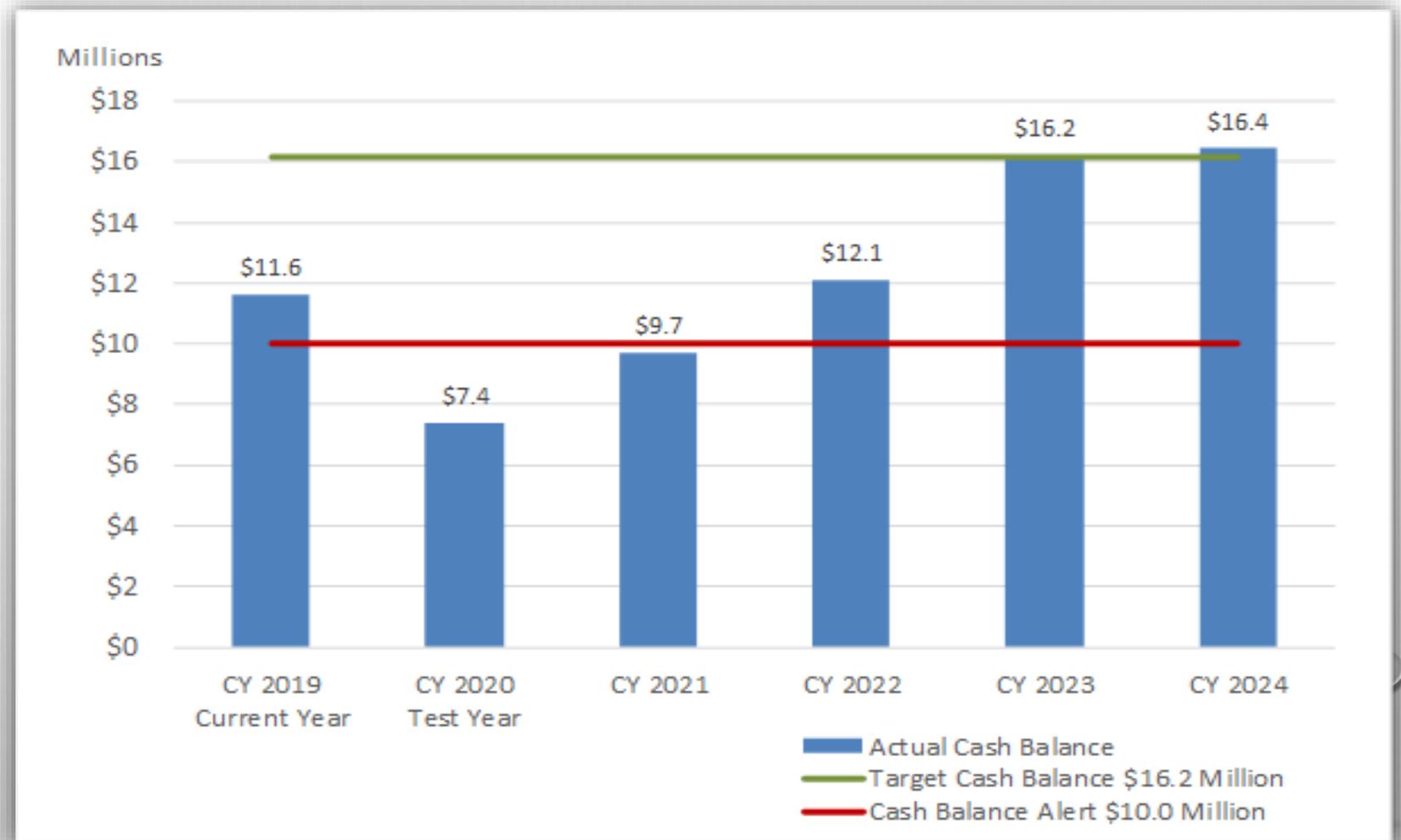
# NO ACTION IS TAKEN

An annual 0 percent rate increase, plus no new bond issuance



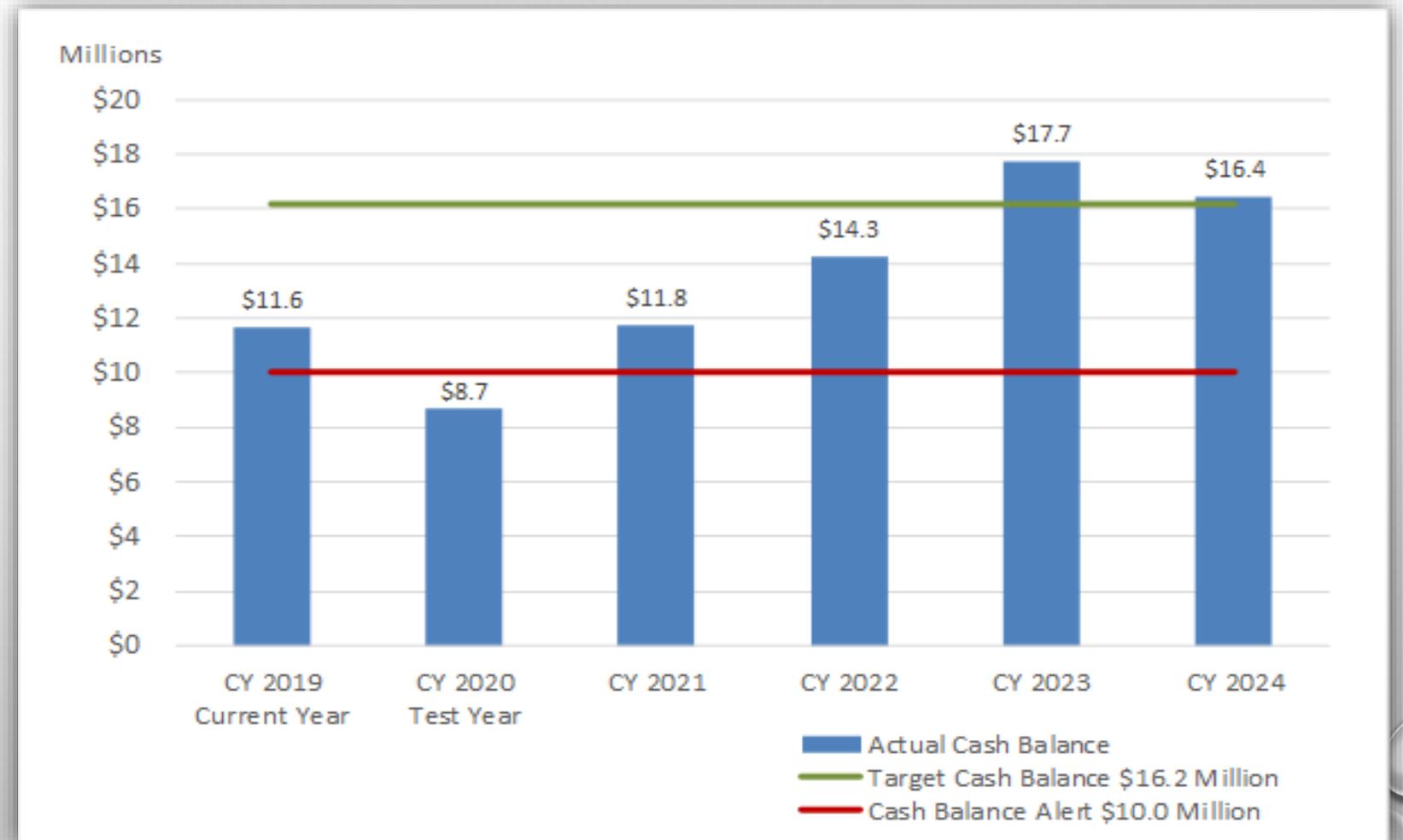
# OPTION 1

An annual  
8.2 percent  
rate Increase



# OPTION 2 (RDN Recommended)

An initial 13.9 percent increase plus 5.5 percent for subsequent years

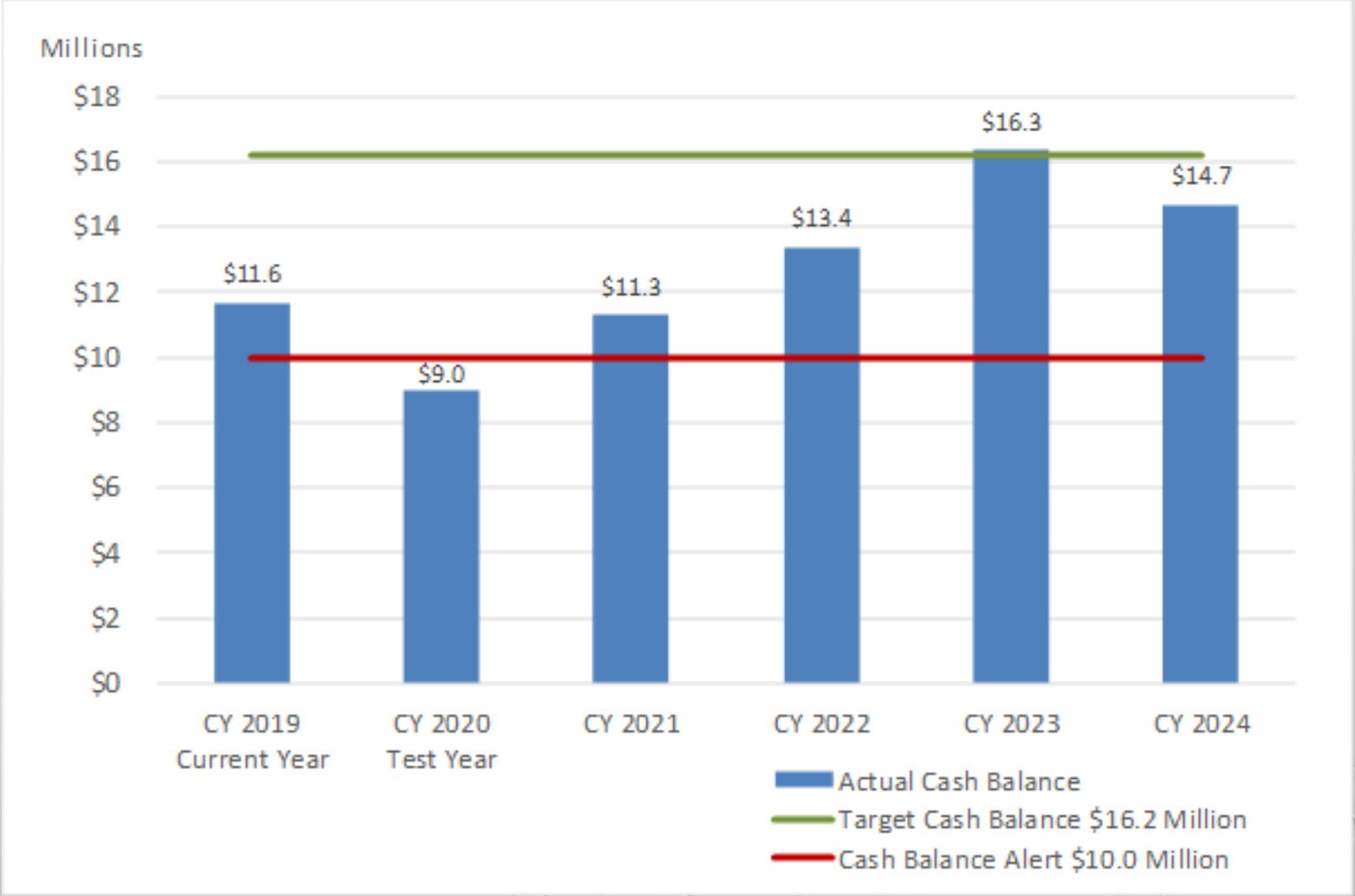


## OPTION 3 (District Proposed)

- Move \$1.2 million CIPs from CY 2020 to CY 2021  
→ prevents District's cash balance from falling too low
- Reduce the target reserve level from \$16.2 million to \$14.6 million → reduces rate increase %

# OPTION 3 (District Proposed)

An initial 9.6 percent increase plus 6.8 percent for subsequent years

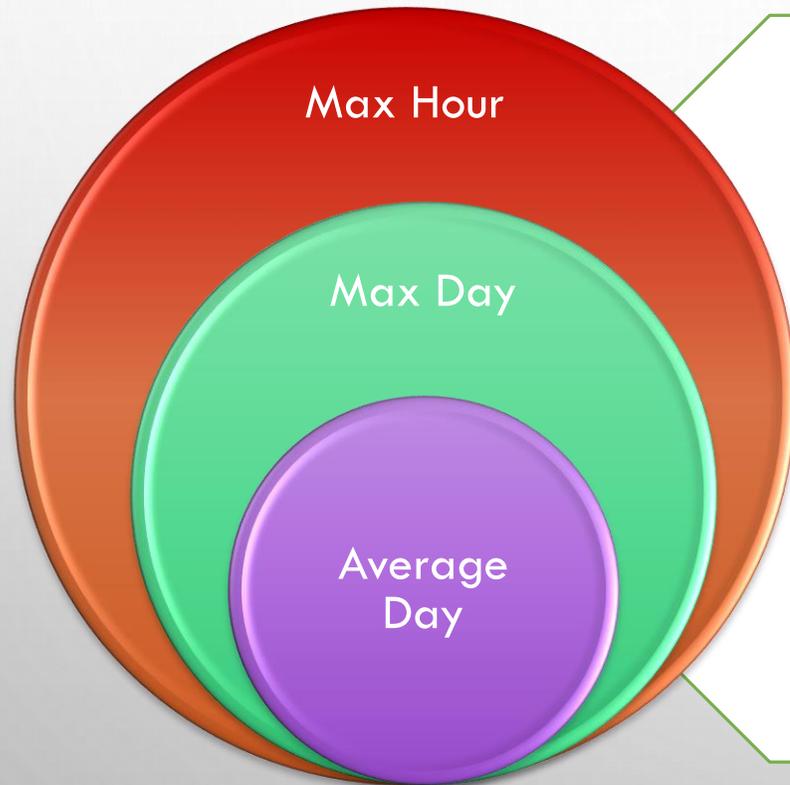


# COST OF SERVICE ANALYSIS

How should costs be allocated equitably among all customers?

*“The amount of the fee or charge imposed upon any parcel shall not exceed the proportional cost of service attributable to the parcel”- Proposition 218*

# COST OF SERVICE ANALYSIS



## Cost Causative Components

- **Water Supply**
- **Peaking Costs**
  - **Average Day**
  - **Max Day**
  - **Max Hour**
- **Customer/Billing**
- **Water Conservation**
- **Public Fire Hydrants**

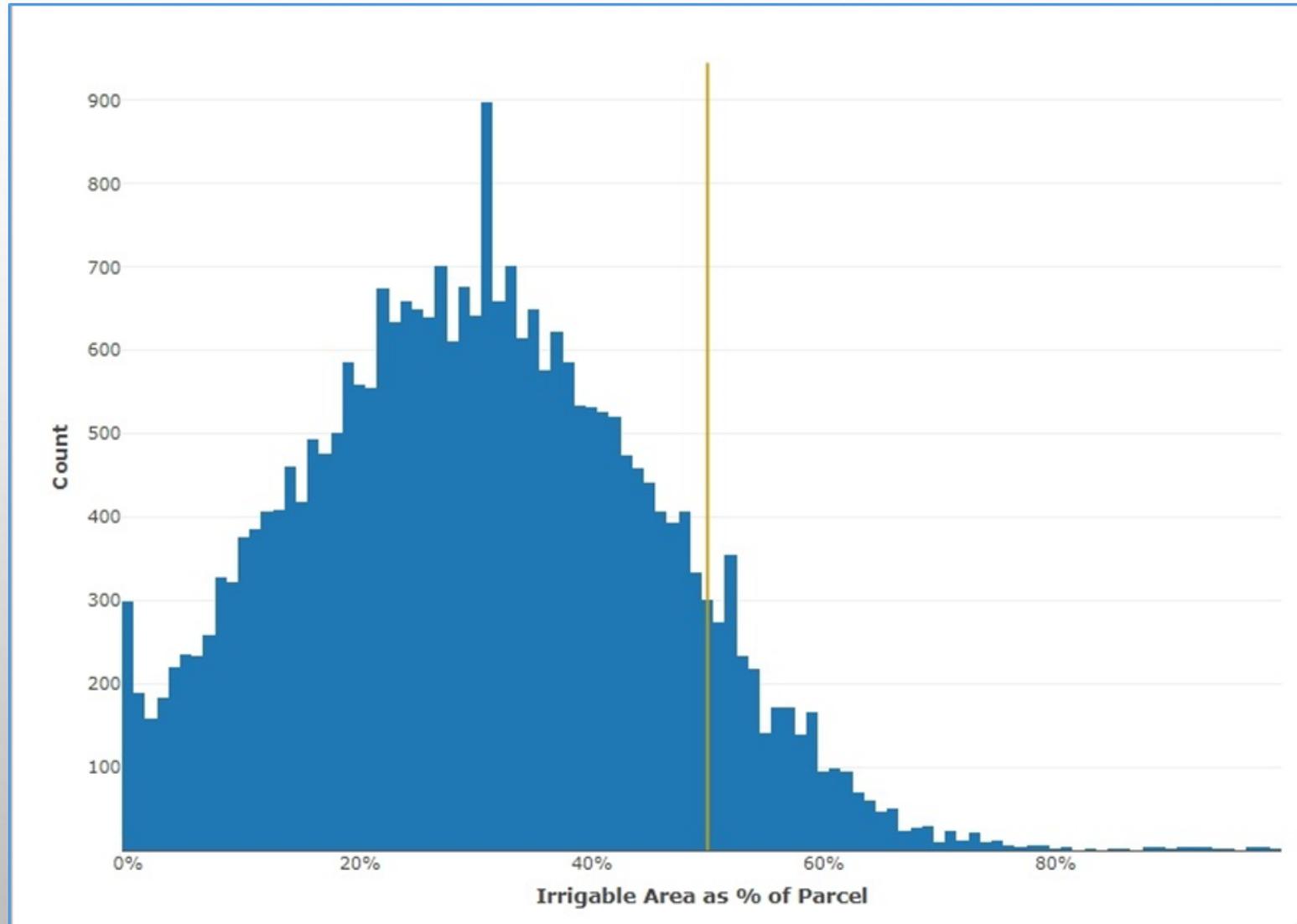
# COST OF SERVICE ANALYSIS

	Peaking Cost							
	Water Supply	Base	Max Day	Max Hour	Meters	Customer Service	Fire Protection Service	Water Conservation
O&M Cost	\$3,861,070	\$8,381,502	\$3,162,820	\$2,302,764	\$708,055	\$3,980,228	\$312,327	\$395,807
CIP Costs/Other Obligations		\$5,248,721	\$2,674,553	\$1,271,394	\$734,226	\$280,144	\$699,054	\$2,131
Water Conservation								\$236,500
<b>Total Expense</b>	<b>\$3,861,070</b>	<b>\$13,630,223</b>	<b>\$5,837,372</b>	<b>\$3,574,158</b>	<b>\$1,442,281</b>	<b>\$4,260,372</b>	<b>\$1,011,381</b>	<b>\$634,438</b>
<b>Cost Distribution</b>	<b>11%</b>	<b>40%</b>	<b>17%</b>	<b>10%</b>	<b>4%</b>	<b>12%</b>	<b>3%</b>	<b>2%</b>

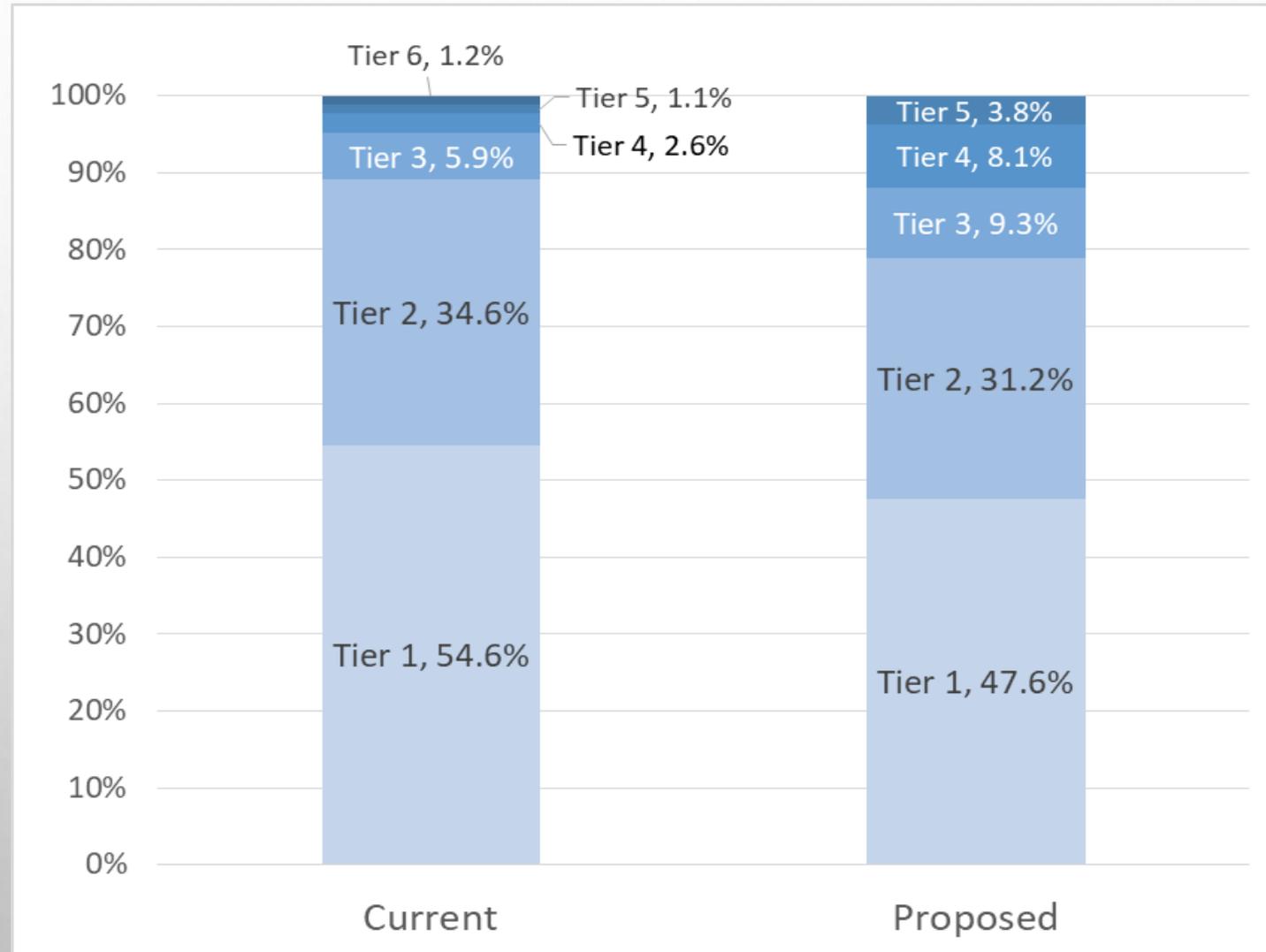
# RECOMMENDED STRUCTURAL CHANGE

- Reduce number of tiers from six to five
- Reduce water allocation per person per day from 66 gallons per person per day to 55 gallons
- Establish of “Irrigable Area” for each parcel using Eagle Arial data
- Change allocation calculation method for Multi-Family residential customers

# RECOMMENDED STRUCTURAL CHANGE

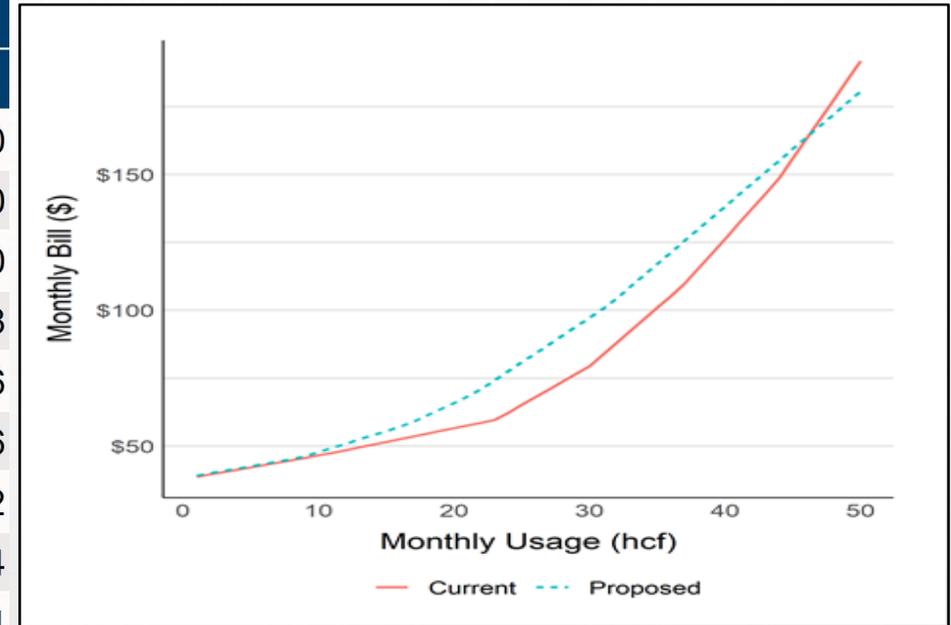


# RECOMMENDED STRUCTURAL CHANGE



# PROPOSED RATES – OPTION 1

Fixed Charge Monthly					
Meter Size	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
5/8-in	\$41.67	\$43.94	\$46.76	\$49.31	\$52.00
3/4-in	\$41.67	\$43.94	\$46.76	\$49.31	\$52.00
1-in	\$41.67	\$43.94	\$46.76	\$49.31	\$52.00
1 1/2-in	\$104.00	\$109.72	\$117.08	\$123.52	\$130.28
2-in	\$158.45	\$167.18	\$178.52	\$188.35	\$198.66
3-in	\$467.01	\$492.79	\$526.65	\$555.71	\$586.16
4-in	\$920.77	\$971.64	\$1,038.62	\$1,095.94	\$1,156.02
6-in	\$1,465.29	\$1,546.25	\$1,652.98	\$1,744.22	\$1,839.84
8-in	\$2,100.56	\$2,216.64	\$2,369.73	\$2,500.55	\$2,637.64
10-in	\$3,915.62	\$4,132.02	\$4,417.59	\$4,661.48	\$4,917.05

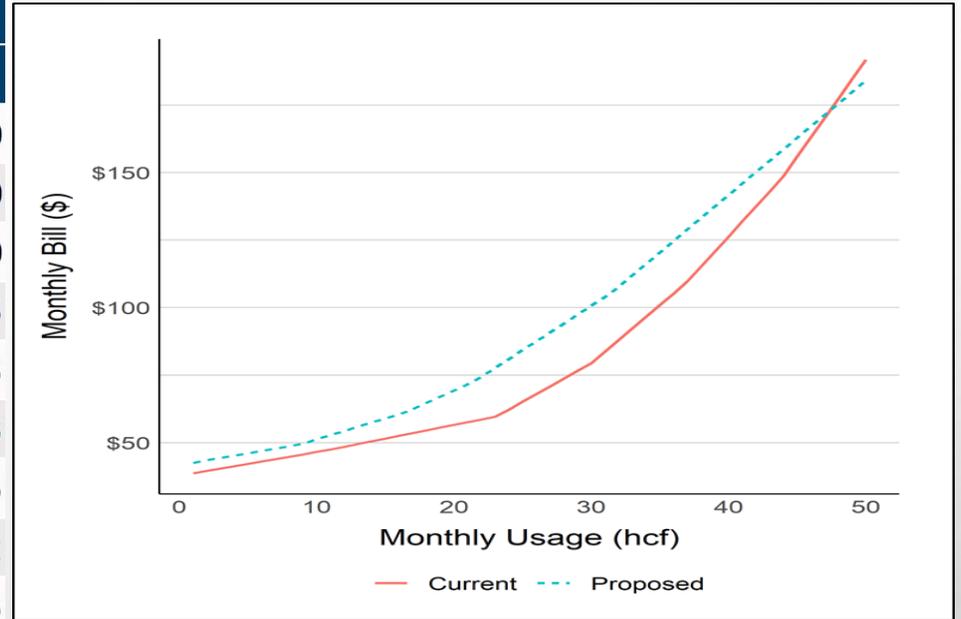


## Volumetric Charges per HCF

Proposed Rates	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
Tier 1	\$0.88	\$0.92	\$0.97	\$1.02	\$1.07
Tier 2	\$1.55	\$1.65	\$1.74	\$1.85	\$1.96
Tier 3	\$2.30	\$2.13	\$2.24	\$2.36	\$2.49
Tier 4	\$3.29	\$3.59	\$3.37	\$3.55	\$3.74
Tier 5	\$4.24	\$4.90	\$5.17	\$5.45	\$5.76

# PROPOSED RATES – OPTION 2

Fixed Charge Monthly					
Meter Size	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
5/8-in	\$38.22	\$41.62	\$45.80	\$49.83	\$54.20
3/4-in	\$38.22	\$41.62	\$45.80	\$49.83	\$54.20
1-in	\$38.22	\$41.62	\$45.80	\$49.83	\$54.20
1 1/2-in	\$92.99	\$101.53	\$112.41	\$122.61	\$133.65
2-in	\$140.84	\$153.88	\$170.60	\$186.19	\$203.06
3-in	\$411.98	\$450.51	\$500.34	\$546.46	\$596.36
4-in	\$810.72	\$886.73	\$985.26	\$1,076.27	\$1,174.75
6-in	\$1,289.21	\$1,410.19	\$1,567.16	\$1,712.04	\$1,868.82
8-in	\$1,847.44	\$2,020.90	\$2,246.05	\$2,453.77	\$2,678.56
10-in	\$3,442.39	\$3,765.77	\$4,185.72	\$4,573.01	\$4,992.11

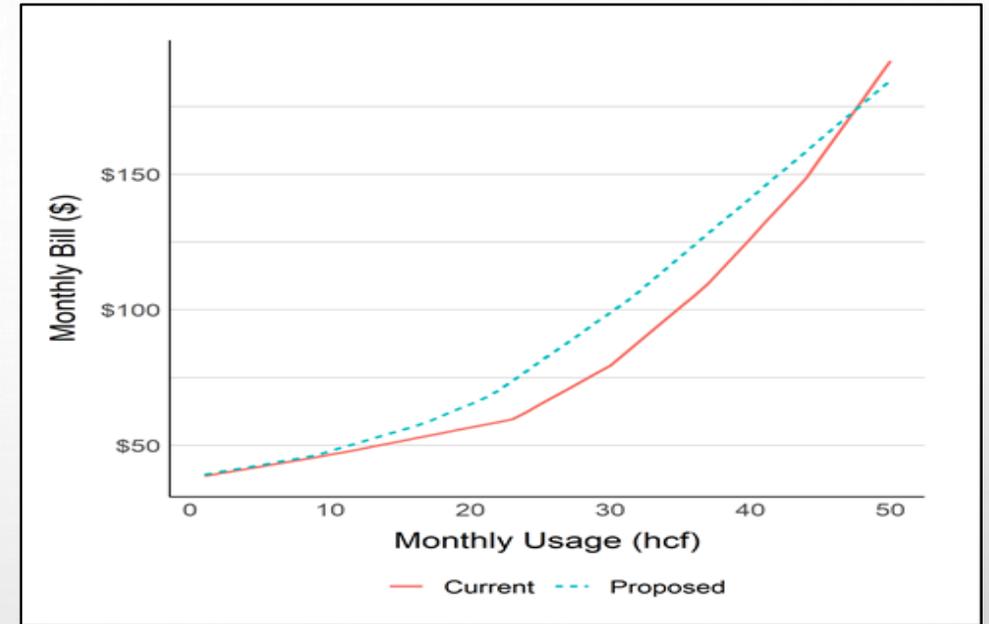


## Volumetric Charges per HCF

Proposed Rates	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
Tier 1	\$0.88	\$0.94	\$1.00	\$1.06	\$1.13
Tier 2	\$1.55	\$1.67	\$1.79	\$1.92	\$2.06
Tier 3	\$2.30	\$2.15	\$2.29	\$2.44	\$2.60
Tier 4	\$3.29	\$3.64	\$3.42	\$3.65	\$3.90
Tier 5	\$4.24	\$4.99	\$5.36	\$5.76	\$6.20

# PROPOSED RATES – OPTION 3

Fixed Charge Monthly					
Meter Size	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
5/8-in	\$38.36	\$41.11	\$45.40	\$48.64	\$52.10
3/4-in	\$38.36	\$41.11	\$45.40	\$48.64	\$52.10
1-in	\$38.36	\$41.11	\$45.40	\$48.64	\$52.10
1 1/2-in	\$93.70	\$100.58	\$112.25	\$120.44	\$129.17
2-in	\$142.05	\$152.54	\$170.65	\$183.16	\$196.49
3-in	\$416.02	\$446.98	\$501.61	\$538.57	\$577.98
4-in	\$818.93	\$879.97	\$988.30	\$1,061.24	\$1,139.00
6-in	\$1,302.42	\$1,399.55	\$1,572.34	\$1,688.45	\$1,812.21
8-in	\$1,866.48	\$2,005.74	\$2,253.71	\$2,420.18	\$2,597.63
10-in	\$3,478.11	\$3,737.70	\$4,200.49	\$4,510.86	\$4,841.69



Volumetric Charges per HCF					
Proposed Rates	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
Tier 1	\$0.88	\$0.92	\$0.98	\$1.03	\$1.09
Tier 2	\$1.52	\$1.62	\$1.73	\$1.85	\$1.97
Tier 3	\$2.13	\$2.17	\$2.30	\$2.43	\$2.58
Tier 4	\$3.60	\$3.73	\$3.00	\$3.19	\$3.39
Tier 5	\$4.34	\$4.91	\$5.24	\$5.57	\$5.95

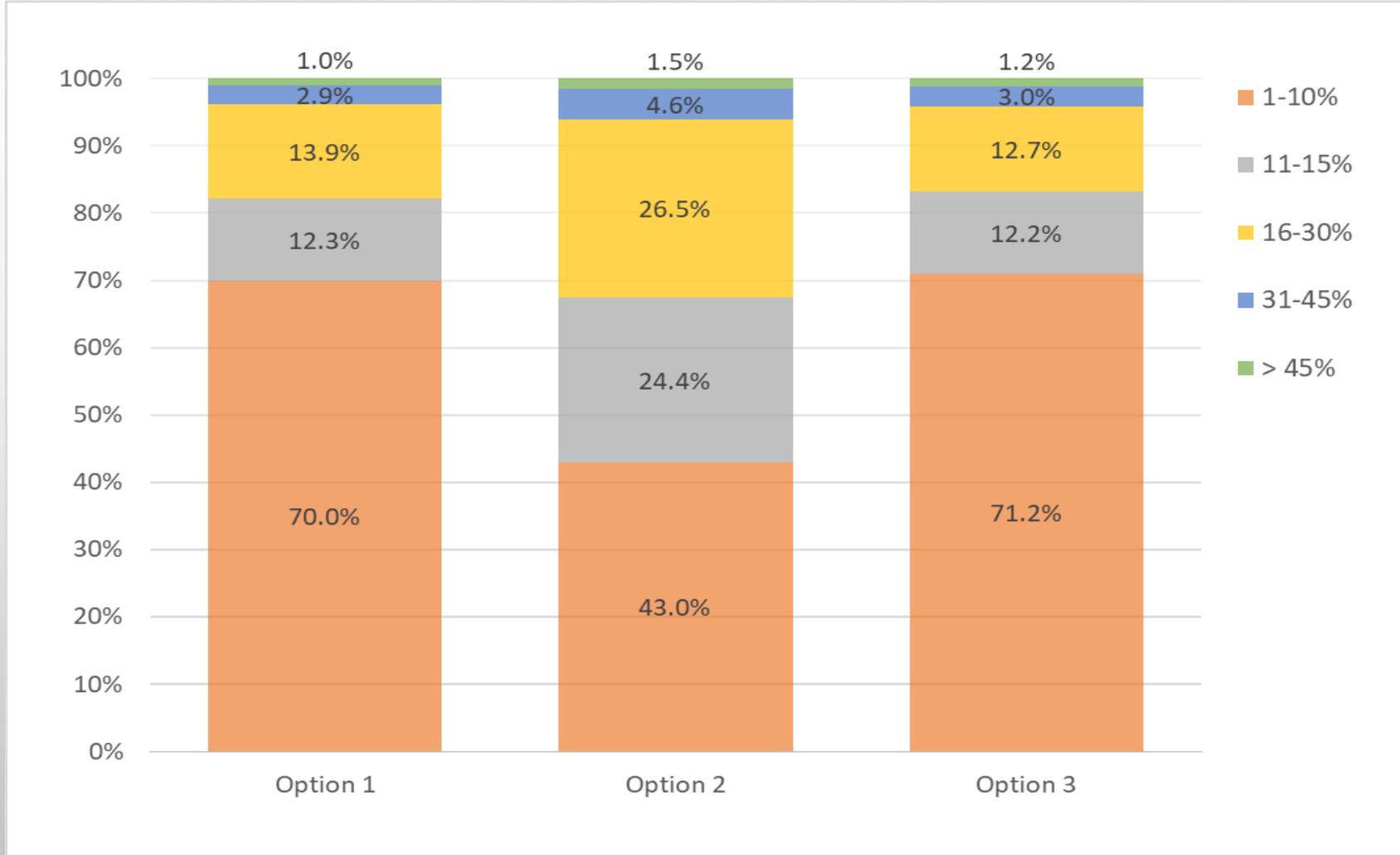
# BILL IMPACTS

CY 2020

Usage	Current	Option 1	Option 2	Option 3
5 hcf	\$42.17	\$42.62	\$46.07	\$42.76
10 hcf	\$46.57	\$47.81	\$51.25	\$47.91
17 hcf	\$53.51	\$58.54	\$61.99	\$58.44
35 hcf	\$100.98	\$117.06	\$120.51	\$119.56
45 hcf	\$156.01	\$159.46	\$162.91	\$162.96

# BILL IMPACTS

CY 2020



# QUESTIONS



**PALMDALE WATER DISTRICT  
BOARD MEMORANDUM**

**DATE:** August 12, 2019 **August 15, 2019**  
**TO:** BOARD OF DIRECTORS **Special Board Meeting**  
**FROM:** Michael Williams, Finance Manager  
**VIA:** Dennis D. LaMoreaux, General Manager  
**RE:** ***AGENDA ITEM NO. 5.1 – CONSIDERATION AND POSSIBLE ACTION ON RATE STRUCTURE FOR YEARS 2020 – 2024, AUTHORIZATION FOR STAFF TO BEGIN THE PROPOSITION 218 PROCESS, AND ESTABLISHMENT OF A PROPOSITION 218 HEARING DATE. (FINANCE MANAGER WILLIAMS)***

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The attached report will be reviewed in detail at the August 15, 2019 Special Board Meeting.

**Supporting Documents:**

- August 12, 2019 Palmdale Water District Financial Planning, Revenue Requirements, Cost of Service and Rate Setting Analysis Summary of Findings



# **PALMDALE WATER DISTRICT**

**Financial Planning, Revenue Requirements,  
Cost of Service, and Rate Setting Analysis**

**SUMMARY OF FINDINGS**

**August 12, 2019**



**PALMDALE WATER DISTRICT**

A CENTURY OF SERVICE



**PALMDALE WATER DISTRICT  
FINANCIAL PLANNING, REVENUE REQUIREMENTS,  
COST OF SERVICE, AND RATE SETTING ANALYSIS**

**SUMMARY OF FINDINGS**

Prepared for:

Palmdale Water District  
2029 E Avenue Q,  
Palmdale, CA 93550

Prepared by:

ROBERT D. NIEHAUS, INC.  
140 East Carrillo Street  
Santa Barbara, CA 93101  
(805) 962-0611

RDN Project Number 280



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## PURPOSE OF STUDY

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In April 2019, Palmdale Water District (PWD) retained Robert D. Niehaus, Inc. (RDN) to develop a comprehensive water rate study which includes Financial Planning, Revenue Requirements, Cost of Service, and Rate Setting Analysis (Study). This Study includes multiple levels of detailed analyses to address District objectives. RDN amended the District's current rates to further improve equity, promote efficiency and conservation, and ensure compliance with Proposition 218 (Prop 218) requirements and other legal mandates.

The District last adopted rate changes in 2014, updating a 2009 water-budget rate structure that established a level of "efficient use" for individual customers defined by each customer's class.

Since the 2014 rates were established, costs have escalated, long-term water supply source stability issues have continued, and new State efficiency regulations have multiplied. RDN collaborated with PWD to evaluate the utility's sustainability given the District's current and future financial conditions.

## LEGAL FRAMEWORK

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Article XIII D, Section 6 (Prop 218) and Article X, Section 2 of the California Constitution govern the principles applicable to this Rate Study. This Rate Study also relies on AB 2882, which governs Allocation-Based Conservation Water Pricing (commonly referred to as "Water Budget Rate Structure"). Additionally, this Rate Study addresses statutes laid out in bills AB-1668 and SB-606 concerning water use efficiency at the District level.

### California Constitution - Article XIII D, Section 6 (Proposition 218)

In November 1996, California voters passed Prop 218, the "Right to Vote on Taxes Act". This constitutional amendment protects taxpayers by limiting the methods by which local governments can create or increase taxes, fees and charges without taxpayer consent. Between 2002 and 2017 California courts have ruled that fees associated with providing water services are "property-related" and thus under the jurisdiction of Prop 218. The principal requirements for fairness of the fees, as they relate to public water service are as follows:

1. Revenues derived from the fee or charge shall not exceed the funds required to provide the property related service.
2. Revenues derived by the fee or charge shall not be used for any other purpose other than that for which the charge was imposed.
3. The amount of the fee or charge imposed upon any parcel shall not exceed the proportional cost of service attributable to the parcel.
4. Reliance by an agency on any parcel map, including, but not limited to, an assessor's parcel map, may be considered a significant factor in determining whether a fee or charge is imposed as an incident of property ownership for purposes of this article.

The rates developed in this Report use a methodology to establish an equitable system of charges that recover the cost of providing service and fairly apportion costs to each customer as required by Prop 218.

## Assembly Bill-AB 1668 and Senate Bill-SB 606

In 2018, the California Legislature adopted AB 1668 and SB 606, establishing a standard for indoor water use, long-term standards for efficient water use of commercial, industrial, and institutional customers, and penalties for customers who don't comply with use restrictions. The bill establishes "55 gallons per capita daily as the standard for indoor residential water use" until January 1, 2025, "52.5 gallons per capita daily or a standard recommended by the department and the board as the standard for indoor residential water use" until January 1, 2030, and establishes "the greater of 50 gallons per capita daily or a standard recommended by the department and the board as the standard for indoor residential water use" thereafter. The bill also establishes principals for determining efficient outdoor water use. "Principles of the model water efficient landscape ordinance" means those provisions of the model water efficient landscape ordinance applicable to the establishment or determination of the amount of water necessary to efficiently irrigate both new and existing landscapes. These provisions include, but are not limited to, all of the following:

- (a) Evapotranspiration adjustment factors, as applicable.
- (b) Landscape area.
- (c) Maximum applied water allowance.
- (d) Reference evapotranspiration.
- (e) Special landscape areas, including provisions governing evapotranspiration adjustment factors for different types of water used for irrigating the landscape.

*"For landscape irrigated through dedicated or residential meters or connections, water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Chapter 2.7 (commencing with Section 490) of Division 2 of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992. An urban retail water supplier using the approach specified in this subparagraph shall use satellite imagery, site visits, or other best available technology to develop an accurate estimate of landscaped areas."*

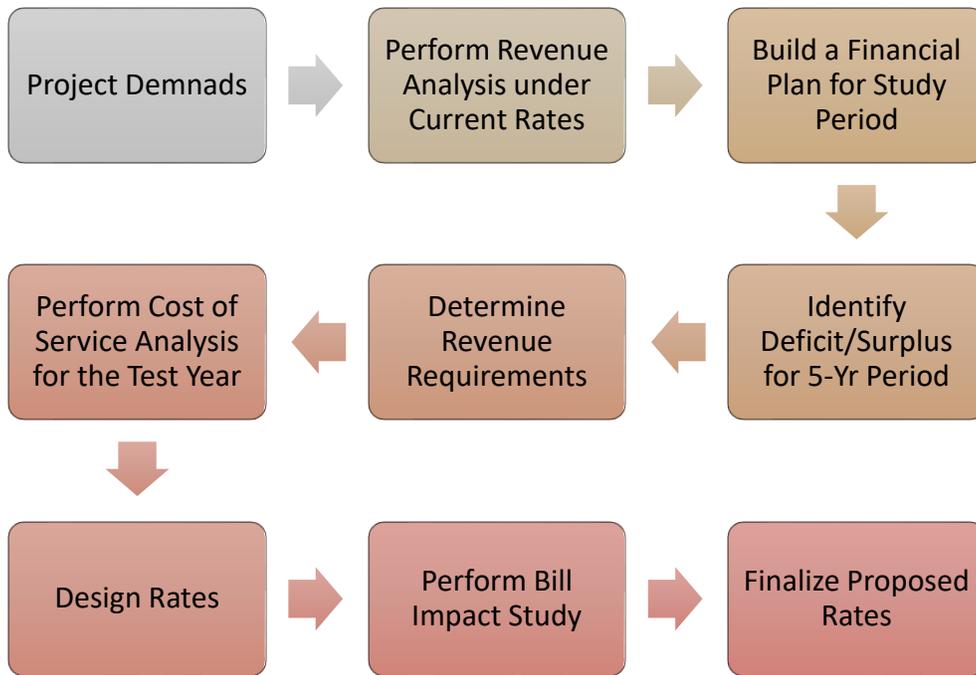
As noted in the referenced statutes, an "Allocation-Based Conservation Water Pricing Rate Structure" is a form of an increasing block rate structure where the amount of water within the first block or blocks is based on the estimated, efficient water needs of the individual customer, currently 55 gallons per day per person. This Rate Study, in conjunction with the District's findings and determinations for individual customers, establishes a water budget for each customer. Each water budget defines how much water is considered efficient. Customers who use water in excess of their water budget pay a higher rate for their "inefficient or wasteful" usage due to the fact that water use in excess of budgeted amounts requires the District to purchase more expensive imported water.

## METHODOLOGY

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The water rates were developed using cost of service principles set forth by the American Water Works Association (AWWA) Principles of Water Rates, Fees, and Charges Manual of Water Supply Practices Manual of Water Supply Practices (M1). Cost of service principles endeavor to distribute costs to customers commensurate with their service requirements placed on the water system. This Study uses the base-extra capacity method, described in the AWWA M1. This method agrees with the Prop 218 requirements and industry standards while meeting other emerging goals and objectives of the utility. Figure 1 presents a typical process of multi-level analyses in order to complete a rate study.

Figure 1. Flow Chart of Rate Study Process



## KEY ASSUMPTIONS

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For a typical rate study, a test year should be selected for which costs are to be analyzed and rates to be established. The study period is set to include the test year plus four subsequent years creating a five-year study period. CY 2020 was chosen to be the test year for the PWD rate study, thus the study period was defined as CY 2020 through CY 2024. The District’s fiscal year starts on January 1st and ends on December 31st. RDN first obtained a large volume of data from the District’s various sources to build a complete customer usage dataset. We utilized Location IDs in the District’s data as a unique identifier since they are the only common field found in every data source. The customer usage dataset was used to perform most analyses included in the Study.

All the analyses performed for the Study were based on an assumption of customer account growth. The District projects a slight increase (0.1 percent) in Single Family Residential (SFR) customers, and a 0.2 percent increase in Multi-Family Residential (MFR) customers. Commercial and Irrigation accounts are expected to decrease slightly by one or two accounts a year, and Industrial and Institutional customers are projected to remain the same throughout the study period. Approximately 93.0 percent of District customers are SFR customers. The account growth for residential customers and other customer classes are displayed in Figure 2 and Figure 3 respectively. The CY 2018 numbers indicate the actual counts of the customers, and the numbers of accounts for the following six years (CY 2019 – CY 2024) were projected based on the assumption.

Figure 2. Residential Customers Account Growth for CY 2018 (Actual), plus CY 2019 – CY 2024

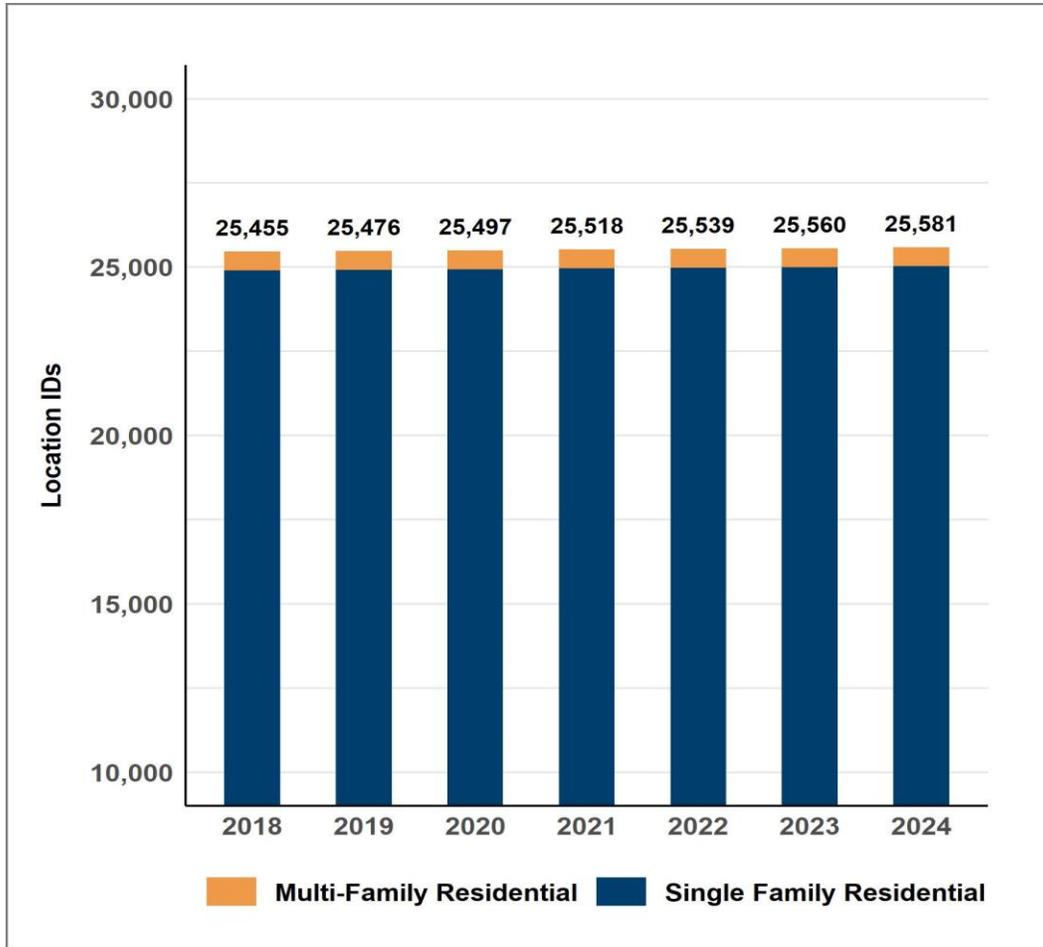


Figure 3. Other Customer Classes Account Growth for CY 2018 (Actual), plus CY 2019 – CY 2024

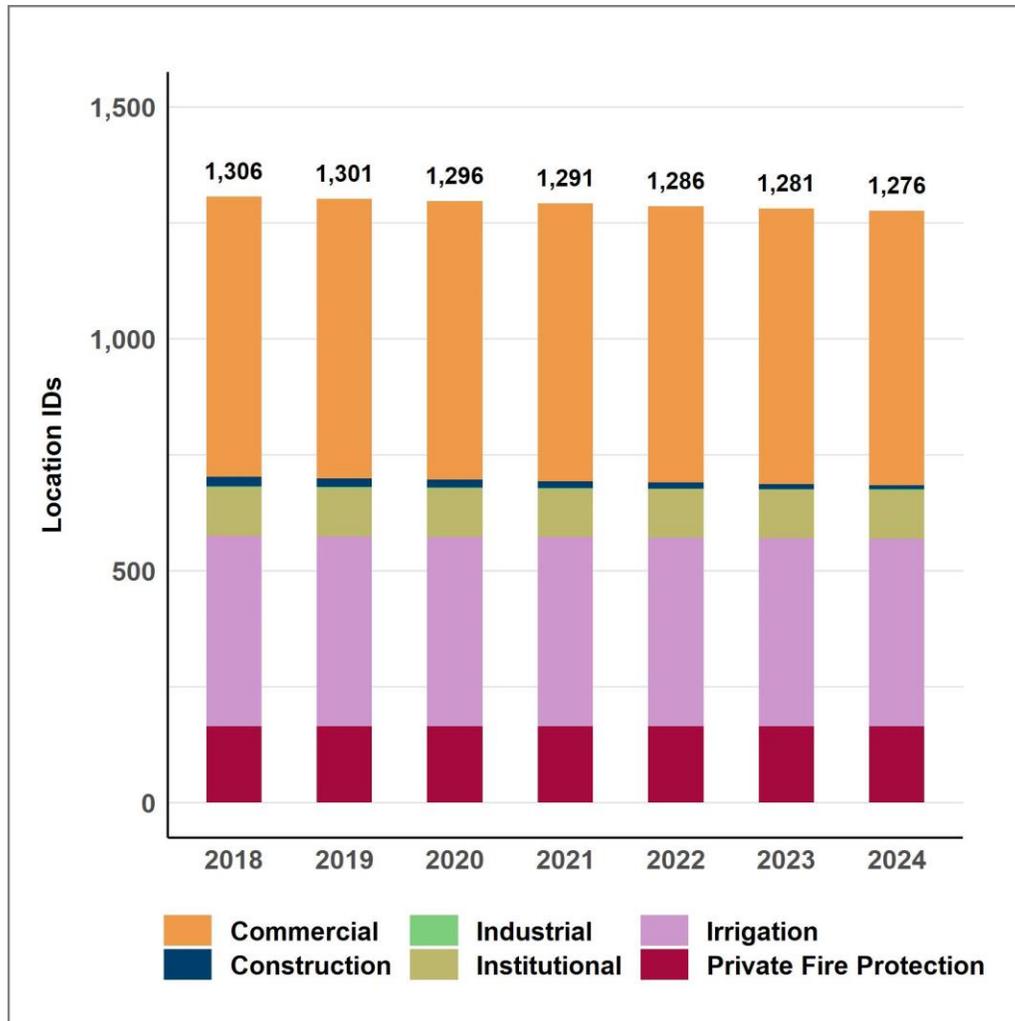


Table 1 displays an annual change in number of customers by customer class. For example, the current number of SFR customers based on the count of Location IDs is 24,914. This number is projected to increase by 21 annually resulting a total number to be 25,014 by the end of CY 2024. A total number of all customers for all customer classes is projected to be 26,857 by the end of the study period, increasing by 80 accounts compared to the current total number of customers, 26,777.

Table 1. Annual Change in Number of Location IDs by Customer Class

Class	Annual Change
Commercial & Industrial	-2
Construction	-2
Irrigation	-1
Multi-Family Residential	2
Single-Family Residential	21

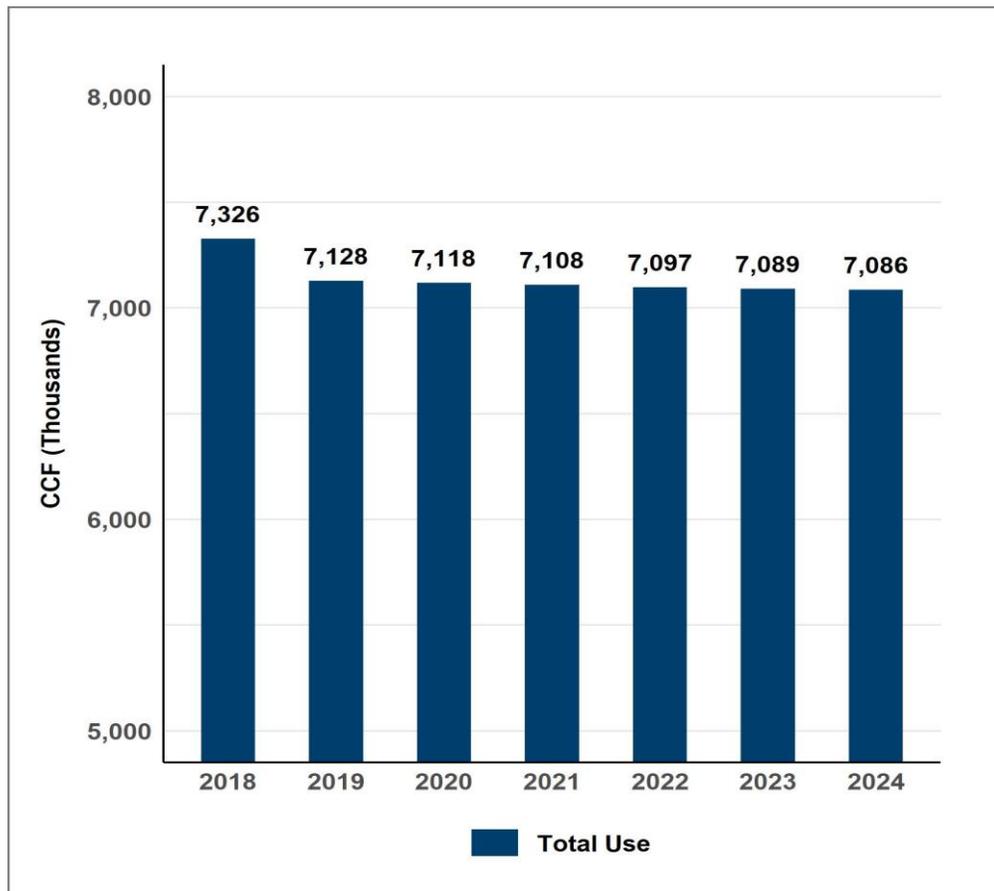
# DEMAND PROJECTIONS

Demand projection is one of the first and the most critical steps in the rate study process. The purpose of this analysis is to project customers’ water demand for the study period and forecast revenues generated from customers’ volumetric charges. RDN linked three different data sources provided by PWD using Location IDs since they are the only common identifier in the all data sources. The data we used to forecast demand for the study period include:

- CY 2010-16 annual consumption reports
- Jan 2017-Jul 2017 monthly consumption reports, and
- Customer billing record data for CY 2018

Our multi-levelled cleaning process ultimately yielded a cohesive annual demand dataset. PWD changed their billing software in 2012, which led to a spurious jump in the number of Location IDs from 2012 to 2013. Therefore, we omitted data from 2010 to 2012 and proceed with the annual data set from 2013 to 2018. Based on the historical data, the average yearly usage per customer was computed to project future demand within the District. An aggregate water consumption was calculated by multiplying the constant per-account water usage with the number of accounts each year forecasted in the previous section. The District’s water demand final forecasts are displayed in Figure 4.

*Figure 4. Annual Demand Projections for CY 2018 (Actual) and CY 2019 – CY 2024*



## REVENUE ANALYSIS

Based on the demand projections, RDN conducted a revenue analysis using the current rates. The District currently collects revenues from fixed charges, volumetric charges, and other operating revenues such as wholesale water and turn-on and -off fees. The revenue analysis also includes non-operating revenues such as property taxes, DWR fixed charge recovery, interest income and grants, among others. Note that the District additionally charges a treatment fee to all customers and elevation fees to some customers, which vary depending on the location of their residence. These are pass-through charges and will be calculated and updated by the District annually. These charges are not included in this Summary Report, however the information can be found on the District's website at [www.palmdalewater.org](http://www.palmdalewater.org). Table 2 displays PWD's current rates, which include monthly fixed charges and volumetric charges. The fixed charges vary depending on the size of meters installed in the customer's property. The District's volumetric rates currently include six tiers. The first two tiers are set at lower rates and intended to cover essential and efficient water use. District customers pay higher rates in the upper tiers for water use beyond their water budget allocation.

*Table 2. PWD Current Rates, CY 2019*

Fixed Charge		
	Meter Size	Per Month
All Customers	5/8 in	\$37.77
	3/4 in	\$37.77
	1 in	\$37.77
	1 1/2 in	\$113.30
	2 in	\$173.74
	3 in	\$314.78
	4 in	\$516.26
	6 in	\$1,019.96
	8 in	\$1,624.40
	10 in	\$2,329.60
Volumetric Charge		
	Tier Width	Per HCF
Tier 1	100% of Indoor	\$0.88
Tier 2	100% of Outdoor	\$1.01
Tier 3	101-130% of (Indoor+Outdoor)	\$2.86
Tier 4	131-160% of (Indoor+Outdoor)	\$4.31
Tier 5	161-190% of (Indoor+Outdoor)	\$5.57
Tier 6	191% and Above (Indoor+Outdoor)	\$7.16

The forecasted revenues for the study period using the current rates based on the projected water demands total approximately \$23.0 to \$23.1 million annually. Other operating revenues and non-operating revenues are estimated to provide supplemental revenue of \$4.1 to \$4.3 million a year. Thus, the District's total revenues for the study period are estimated to be approximately \$27.2 to \$27.3 million annually.

*Table 3. PWD Revenue Forecast (in Million) for CY 2019 (Current) plus CY 2020 – CY 2024*

Revenue Type	CY 2019	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
Revenues from rates	\$23.1	\$23.1	\$23.1	\$23.1	\$23.0	\$23.0
Other operating revenues	\$1.2	\$1.2	\$1.2	\$1.2	\$1.2	\$1.2
Non-operating revenues	\$2.9	\$2.9	\$2.9	\$3.0	\$3.0	\$3.1
<b>Total</b>	<b>\$27.2</b>	<b>\$27.2</b>	<b>\$27.2</b>	<b>\$27.2</b>	<b>\$27.3</b>	<b>\$27.3</b>

## FINANCIAL PLAN

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### Reserves

Prudent fiscal management requires that the District maintain reserve balances to meet working capital requirements, meet unexpected increases in costs and provide for emergencies. Currently, the District maintains two types of reserve funds: legally restricted funds and Board designated funds. The detailed description and purpose of each reserve fund can be found in the District’s reserve policy Resolution No, 18-10. The legally restricted funds include Capital Improvement Fund, Bond Proceed Fund, Debt Service Reserve Fund, and Rate Stabilization Fund. The Board designated funds include Dam Self Insurance, O&M Operating Reserve, O&M Emergency Reserve, and Unrestricted Reserves. The target total reserve amount for the Board designated funds is set at \$16.2 million. The District estimates a reserve balance at the end of CY 2019 to be \$11.6 million (\$11.1 million in the Board designated funds, and an additional \$0.5 million). RDN recommends annual cash contributions of \$100,000 to the Rate Stabilization Fund, and \$850,000 to the District’s O&M Emergency Reserve to reach the target reserve level of \$16.2 million by the end of the study period.

### Operating and Maintenance (O&M) Expense

The itemized O&M expenses were carefully reviewed by the District and also forecasted for the study period using escalation factors, which were computed and analyzed for various expense categories. Escalation Factors were calculated for eight independent variables using historical Consumer Price Index (CPI) data from Los Angeles-Riverside-Orange County, CA between 2000 and the most current calendar year, and projections by the California Department of Transportation (CADOT), the California Department of Finance (CADOFF), and construction costs were determined using data from the California Department of General Services Construction Cost Index (CDGS CCI). Additionally, property tax increases were charted using audited financial statements provided by the County of Los Angeles. All escalation factors were developed by calculating an average growth rate and projecting that rate into future years. Table 4 displays the projected escalation factors for the study period. Due to local contingencies, the Cost of Water Inflation Rate is expected to rise at the highest rate of 7.3 percent per year. The Employee Expenses Inflation Rate, which includes salaries, insurance, and payroll taxes, is only expected to rise 2.6 percent per year during the study period. Table 4 displays escalation factors estimated for PWD for the study period.

**Table 4. Escalation Factors Estimated for PWD, CY 2019 (Current) plus CY 2020 – CY 2024**

	CY 2019	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
Overall Inflation Rate:	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Utility/Chemical Inflation Rate:	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%
Treatment Inflation Rate:	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%
Purchased Water Inflation Rate	7.3%	7.3%	7.3%	7.3%	7.3%	7.3%
Employee Expenses Inflation Rate:	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%
Equipment Inflation Rate:	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%
Fuels and Automobile Inflation Rate:	3.6%	3.6%	3.6%	3.6%	3.6%	3.6%
Construction Inflation Rate:	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
No Escalation:	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 5 displays the total O&M expense and annual percentage increase of overall costs for each of the years included in the Study.

**Table 5. PWD Projected Total Operating and Maintenance Expense (in Million) for CY 2019 (Current) plus CY 2020 – CY 2024**

	CY 2019	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
Total O&M Expense	\$21.8	\$23.1	\$23.8	\$24.6	\$25.3	\$26.1
% Annual Increase		5.8%	3.1%	3.1%	3.1%	3.2%

## Capital Improvement Expense

The District plans to execute a total of \$30.0 million Capital Improvement Projects (CIPs) throughout the study period, CY 2020 - CY 2024. Some of the major projects include the recharge project design, well and booster rehabilitation, sedimentation basin cleaning, and Stanridge water main replacement, among others. The District plans to pay for the CIPs using cash revenue generated from customer’s rates (PAYGO) as well as proceed from the 2021 Revenue Bond for the amount of \$20.0 million. Table 6 displays PWD’s scheduled CIPs by type during the study period.

**Table 6. PWD Scheduled Capital Improvement Projects for CY 2019 (Current) plus CY 2020 – CY 2024**

	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
Replacement/New Equipment	\$440,217	\$608,922	\$375,113	\$373,115	\$483,704
Studies and Planning	\$604,985	\$125,000	\$200,000	\$125,000	\$125,000
Water Supply	\$512,177	\$786,976	\$806,143	\$1,101,034	\$0
Replacement Capital Projects	\$3,056,808	\$3,985,035	\$4,469,925	\$5,758,578	\$2,554,233
New Capital Projects	\$578,810	\$0	\$529,664	\$0	\$3,120,913
<b>Total CIP Expense</b>	<b>\$5,192,998</b>	<b>\$5,505,934</b>	<b>\$6,380,845</b>	<b>\$7,357,728</b>	<b>\$6,283,850</b>

## Debt Service

The District's current debt service obligations are the following. The payments shown below (Table 7) include interest and principal payments.

- 2012 Private Placement (annual payment of \$1.4 million)
- 2013A Series Water Revenue Bonds (annual payment of \$2.3 million until CY 2024 and goes up to \$3.9 million thereafter)
- 2018A Series Water Revenue Bond (annual payment of \$0.6 million until CY 2021 and goes up to \$0.8 million thereafter)
- Capital Leases Payable – 2017 (\$0.2 million until CY 2021, and goes down to \$90,000 in CY 2022, which is the final payment for this loan)

PWD plans to issue another bond in CY 2021 to mitigate rate impacts on their customers. 2021 Revenue Bonds will increase the District's debt service obligations by \$1.2 million annually starting CY 2022.

*Table 7. PWD Debt Service Payments (in Million) for CY 2019 (Current) plus CY 2020 – CY 2024*

	CY 2019	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
Principal	\$1.9	\$1.9	\$2.0	\$2.7	\$2.6	\$2.8
Interest	\$2.6	\$2.5	\$2.5	\$3.1	\$3.1	\$3.0
<b>Debt Service Total</b>	<b>\$4.5</b>	<b>\$4.5</b>	<b>\$4.5</b>	<b>\$5.8</b>	<b>\$5.7</b>	<b>\$5.8</b>

## Revenue Requirements

Table 8 displays PWD's revenue requirements for CY 2020 – CY 2024. Other obligations include CIP expense, contributions to reserves (\$950,000), and other miscellaneous expenses of \$0.5 million. The total expense of each year total is offset by other operating revenues and non-operating revenues to compute a pure portion of revenue requirements, which need to be collected from water rates. Under this financial plan, the rates are adjusted by 8.2 percent annually to compute necessary revenue requirements (this financial plan is later introduced as Option 1 in the Recommended Rates section). The negative net balance indicates that cash reserves are used to supplement the shortfall for the year (CY 2020 and CY 2024), and positive net balance (CY 2021 – CY 2023) indicates that the amount is contributed to the cash reserves in addition to the annual cash contribution scheduled to put aside for the amount of \$950,000.

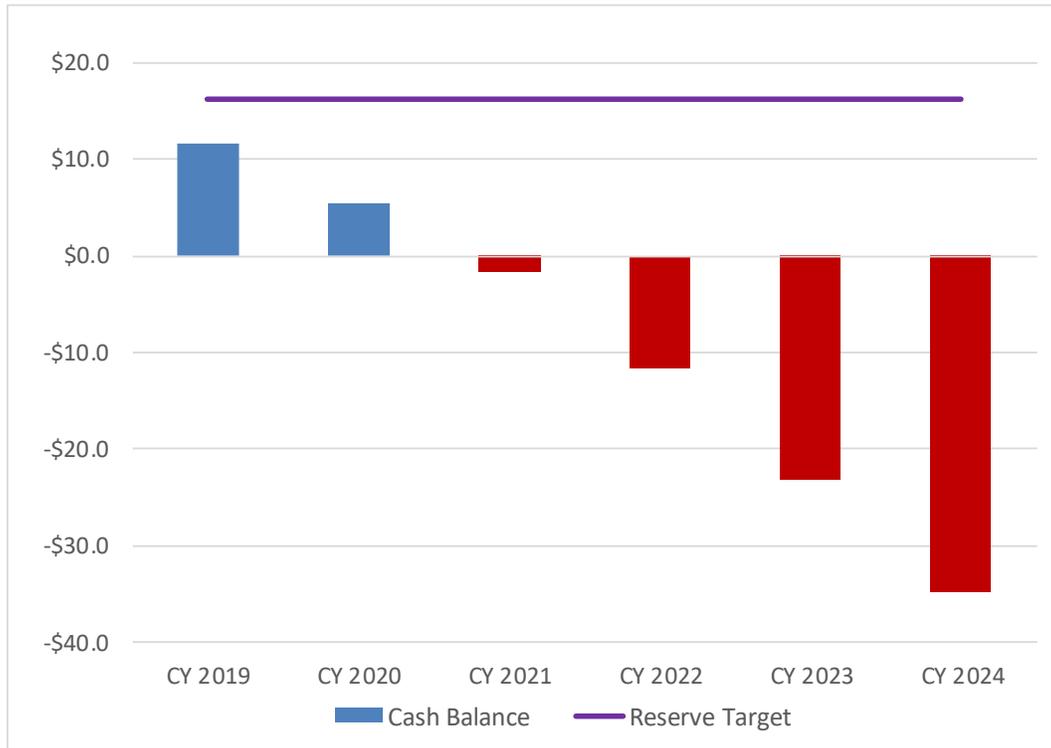
*Table 8. Revenue Requirements for CY 2020 – CY 2024*

Description	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
	<b>Test Year</b>				
Other Operating Revenues	(\$1,172,625)	(\$1,175,258)	(\$1,177,899)	(\$1,180,547)	(\$1,183,204)
O&M Expenses	\$23,104,573	\$23,816,843	\$24,555,534	\$25,323,517	\$26,124,472
Non-operating Revenues	(\$2,896,525)	(\$2,943,971)	(\$2,992,357)	(\$3,039,261)	(\$3,087,047)
Other Obligations	\$11,146,722	\$5,955,151	\$7,287,147	\$7,197,015	\$12,856,747
Net Balance	(\$3,832,971)	\$2,115,528	\$1,591,250	\$2,550,046	(\$2,183,665)
<b>Revenue Requirements</b>	<b>\$26,349,174</b>	<b>\$27,768,294</b>	<b>\$29,263,674</b>	<b>\$30,850,770</b>	<b>\$32,527,303</b>

## Current Financial Condition without Revenue Adjustments

Based on the projected total revenue and necessary costs to be covered for the study period, the District's cash reserves will be completely spent during CY 2021 if no revenue adjustments are made. The revenue shortfall will accumulate to \$34.8 million, which represents a 44.4 percent cumulative deficit. Figure 5 shows the change in the District cash balance if no actions were taken for the study period.

*Figure 5. Cash Balance without Revenue Adjustments (in Million) for CY 2020 – CY 2024*



## COST OF SERVICE ANALYSIS

The purpose of a Cost of Service (COS) analysis is to allocate costs among customers commensurate with their service requirements. RDN employed the “base-extra capacity” cost-of-service method promulgated in AWWA’s M1, whereby costs are first allocated to individual functions or activities then the costs of each function are distributed to appropriate cost causative components, which defined by the cost driving elements. The results of the COS form a reasonable, equitable, basis for designing rates. Figure 6 displays a typical flow of a process for the COS analysis.

*Figure 6. A typical Flow for Cost of Service Analysis Process*



For the system to provide adequate service to its customers at all times, it must be capable of meeting not only the annual volume requirements, but also the peak demand - the maximum rate at which water is consumed. Therefore, the capacities of the various facilities must meet the maximum coincidental demand of all customers. Each water service facility within the system has an underlying average demand, exerted by the customers for whom the base cost component applies. For those facilities designed solely to meet average daily demand, 100 percent of the cost should go to the base cost component. Extra capacity requirements associated with demand in excess of average use consist of Max Day Demand (MDD) and Peak Hourly Demand (PHD). The MDD factor was computed using average month and maximum month usage (September) reported during CY 2018. Based on the MDD factor, RDN estimated the average hourly flow during MDD and multiplied by a peaking factor of 1.5 (the lowest factor recommended by the State Board’s Division of Drinking Water) to compute a PHD factor. Accordingly, the costs associated with the functions which require extra capacity service requirements were distributed to the base, MDD, and PHD cost components for 44.1 percent, 22.5 percent, and 33.3 percent, respectively. The number of bills in one year (the number of accounts multiplied by 12) serves as the basis for distributing billing and customer service costs associated with meter reading, customer billing and collection, and customer services. The number of equivalent meters is used to measure meter related service costs. The result of COS analysis determines how the total revenue requirements should be allocated to the each of the cost components, which are categorized and grouped based on the similar cost driving elements.

*Table 9. PWD Cost of Service Allocation to Cost Causative Components*

Cost Allocation Summary	Water Supply	Base	Max Day	Max Hour	Meters	Customer Service	Fire Protection Service	Water Conservation
Cost of Service Allocation to Cost Components	11%	40%	17%	10%	4%	12%	3%	2%

## RATE DESIGNS

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The last step of a rate study is designing rates. Rates must be designed to equitably recover the rate revenue requirements from each customer given the projected customer demand identified as a result of the COS analysis. In reviewing the District’s water rates and finances, RDN used the following criteria in developing our recommendations:

- 1) Revenue sufficiency: rates should recover the annual cost of service and provide revenue stability.
- 2) Rate impacts: while rates are calculated to generate sufficient revenue to cover all costs, they should be designed to minimize, as much as possible, the impacts on ratepayers.
- 3) Equitability: rates should be fairly allocated among all customers based on their estimated demand characteristics.
- 4) Practicality: rates should be simple in form and, therefore, adaptable to changing conditions, easy to administer, and easy to understand.

### Recommended Changes on the Current Rate Structure

The District currently uses an allocation based water budget rate (WBR) structure for all customers. “Water Budget” is defined as the quantity of water required for an efficient level of water use by that customer in AWWA M1. Under the WBR structure, each customer gets their own allocation of water, which is determined by different parameters. For example, Single Family Residential (SFR) customers currently receives 66 gallons of water per capita per day (GPCD) for essential use. RDN recommends reducing this amount to 55 GPCD to be more closely aligned with the parameter expected to be used in the new State legislation (AB 1668 and SB 606). RDN also recommends the District to change the allocation method for Multi-Family Residential (MFR) customers. The District currently uses historical usage to compute their allocation. We recommend that MFR customers’ water budget should be computed using the same methodology as that of SFR customers since both classes are defined as residential customers. Lastly, RDN recommends eliminating Tier 6 for the proposed rate structure. The tiered pricing should be linked to the actual costs such as water supply cost and peaking cost. RDN determined that there are no costs that can be allocated to the Tier 6 rate in the proposed rate structure.

### Water Budget Rate Structure

The following formula displays a typical indoor water budget calculation. RDN recommends that Gallons per Capita per Day (GPCD) should be reduced from 66 GPCD to 55 GPCD under the proposed rate structure to be consistent with the State new requirement under AB 1668 and SB 606.

#### *Indoor Water Budget*

$$= \frac{\text{GPCD} \times \text{Household Size} \times \# \text{ of Dwelling Units} \times \text{Days of Service}}{748}$$

Where:

- GPCD – Gallons per Capita per Day, currently set at 66.
- Household Size – Number of residents per dwelling unit, set at 4 for SFR customers unless a customer variance has been requested.

- Dwelling Units – The number of dwelling units served by the meter. For example, a SFR customer’s number of dwelling unit is one.
- Days of Service – Number of days of service varies with each billing cycle for each customer. The actual number of days of service will be applied to calculate the indoor water budget for each billing cycle.
- 748 is the conversion unit from gallons to a billing unit of one hundred cubic feet (ccf) currently used by the District.

When using these default numbers to calculate a hypothetical SFR customer’s indoor water budget in a hypothetical month (30 billing days), the water budget for this customer is 10.6 hcf a month.

***SFR Indoor Water Budget (Current)***

$$= \frac{66 \text{ GPCD} \times 4 \text{ persons} \times 1 \text{ unit} \times 30 \text{ days}}{748} = 10.6 \text{ HCF}$$

RDN Recommends reducing GPCD from 66 to 55 for the proposed rate structure. The following equation shows the proposed indoor allocation.

***SFR Indoor Water Budget (Proposed)***

$$= \frac{55 \text{ GPCD} \times 4 \text{ persons} \times 1 \text{ unit} \times 30 \text{ days}}{748} = 8.8 \text{ HCF}$$

The data on the number of dwelling units for all MFR customers are collected from the Los Angeles County website and used in the same equation. The household size for MFR customers is set at 2. The indoor allocation for a hypothetical MFR customer with an apartment complex with 20 units is computed as follows:

***MFR Indoor Water Budget (Proposed)***

$$= \frac{55 \text{ GPCD} \times 2 \text{ persons} \times 20 \text{ units} \times 30 \text{ days}}{748} = 88.2 \text{ HCF}$$

Under the proposed rate structure, both SFR and MFR customers’ outdoor water budget are calculated as follows.

***Outdoor Water Budget (Current and Proposed)***

$$= \frac{\text{Landscape Area (Irrigable)} \times \text{ETO} \times \text{LF (0.7)} \times \text{DF}}{1200}$$

Where:

- Evapotranspiration (ETO) is measured in inches of water during the billing period based on a ten-year rolling average ET from CIMIS weather station # 197.
- Landscape Factor (LF) is set to 70 percent to the amount of water needed for irrigation to encourage conservation, which was the metric set by the District since 2009. This is consistent with the State of California Code of Regulations Title 23, Section 491 and an expected parameter to be used for LF under Assembly Bill No. 1668 (AB 1668) and Senate Bill No. 606 (SB 606), approved in May, 2018.
- Landscape Area (or Irrigable Landscape Area in square feet) is the measured irrigable landscape area served by a customer’s meter.
- 1,200 is the conversion unit from inch\*ft2 to billing unit of one hundred cubic feet (HCF).

- Drought Factor (DF) is currently set at 0. The District may apply this additional parameter to the equation if the State mandates reduction of water usage due to drought.

PWD contracted Eagle Aerial Solutions (EA) to provide the District’s parcel by parcel aerial imagery data within the service area and measure irrigable area for each of those parcels. SFR customer’s landscape area (irrigable area) is currently set at 50 percent of their total property. EA’s imagery includes spatial data for 27,169 parcels and breaks down the total square footage of a parcel into irrigable (pools, irrigated vegetation, horse corrals, and irrigable vegetation but not currently irrigated) and non-irrigable area (impervious, non-irrigable vegetation, undeveloped lands, open water, and artificial turf). PWD incorporated EA’s data to set new allocations for all residential customers. Figure 7 presents a PWD customer distribution under new outdoor allocation as percentage of their parcel.

*Figure 7. PWD Customers Irrigable Area as Percentage of Parcel*

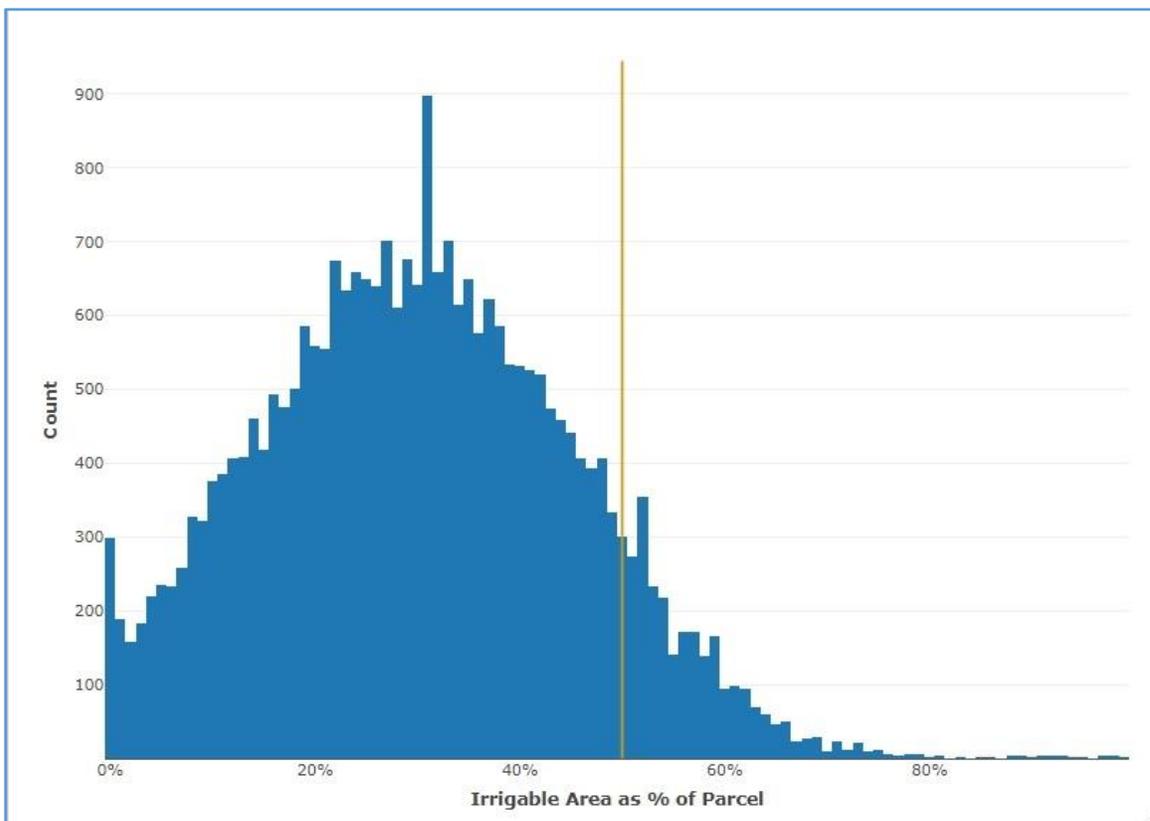
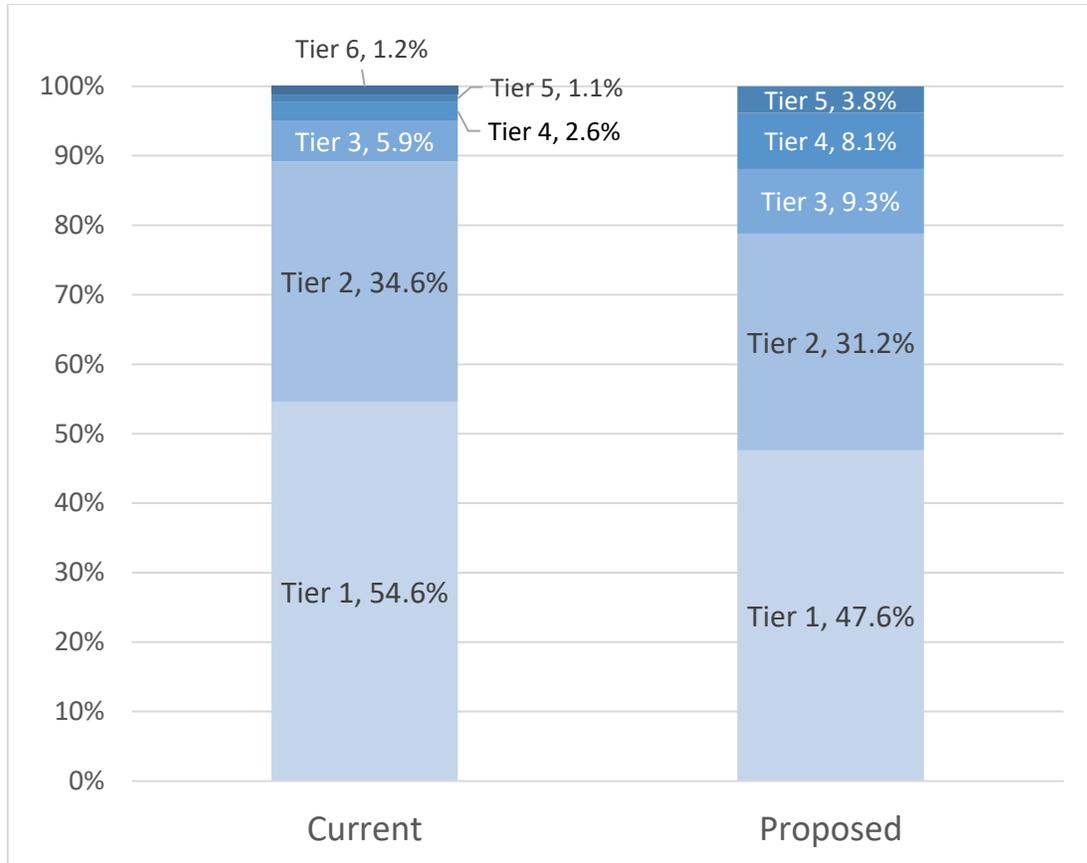


Figure 8 presents District customers’ actual usage distribution by tier. Under the proposed rate structure, the Tier 1 usage will reduce by 7 percent while the Tier 2 usage will only reduce by 3 percent. This indicates that the majority of District customers are not using all of their water allocation for outdoor use currently. Incorporating EA data, which provides District’s customers’ actual landscaped area that is defined as “Irrigable” for each residential parcel will help align the District’s residential customers’ water need and water budget.

**Figure 8. Usage Distribution by Tier Current vs. Proposed**



Irrigation Customers’ Tier 1 (essential usage) is based on the same outdoor usage formula used for residential customers with a Landscape Factor (LF) of 0.42 based on low water use plants. Tier 2 (Efficient usage) uses a LF factor of 0.7, which is consistent with that of residential customers. Irrigation customers are given 100 percent of their parcel as a Landscape (Irrigable) area.

Commercial/Industrial/Institutional Tier 1 (essential use) is based on a 3-year average of minimum monthly usage to reflect the lowest winter month. The average is based on the minimum usage month of the past 3 full calendar years (January to December). Tier 2 (efficient usage) is based on a 3-year rolling 3-month average based on an average of the current month and surrounding two months of the past 3 full calendar years (January to December). For this customer group, efficient water use Tier 2 allocation is computed by subtracted by Tier 1.

***Commercial/Industrial/Institutional Customers Tier 1 (Essential Usage)***

***= 3 yr average minimum monthly usage***

***Commercial/Industrial/Institutional Customers Tier 2 (Efficient Usage)***

***= 3 yr moving average by month – 3 yr average minimum monthly usage***

The proposed width between each tier is set as follows:

- Tier 1 Essential Allocation (Water Budget)

- Tier 2 Efficient Allocation (Water Budget)
- Tier 3 101 – 130% of Total Water Budget (Tier 1 + Tier 2)
- Tier 4 131 – 190% of Total Water Budget (Tier 1 + Tier 2)
- Tier 5 190% and above of Total Water Budget (Tier 1 + Tier 2)

## RECOMMENDED RATES

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### Development of Rate Design Option 1, 2, and 3 for the Test Year

Based on the results from the financial planning and COS analysis, RDN developed two options (Option 1 and 2) for the District to consider. Based on our recommendations, the District requested RDN to create the third option (Option 3) by lowering the reserve target level, and moving a few capital projects scheduled to be executed in CY 2020 to CY 2021. These modifications help prevent the District’s cash balance from declining to a critical level during the test year, CY 2020. A summary of rate adjustments for the three options as follows:

**Option 1:** an annual rate increase of 8.1 percent for the study period, CY 2020 – CY 2024, and build the cash reserve level up to \$16.4 million.

**Option 2:** an initial rate increase of 13.9 percent plus annual rate increase of 5.5 percent for the subsequent years, CY 2021 to CY 2024. This option also builds the reserve level up to \$16.4 million.

**Option 3:** an initial 9.6 percent rate increase and an annual rate increase of 6.8 percent for the subsequent years, and build cash reserves up to \$14.7 million.

Table 10, Table 11, and Table 12 presents the test year rate adjustments for all three options.

**Table 10. Recommended Rates for CY 2020 (Test Year) Option 1**

<b>Fixed Charge</b>		
	<b>Meter Size</b>	<b>Per Month</b>
Residential,	5/8 in	\$38.22
Commercial,	3/4 in	\$38.22
Irrigation	1 in	\$38.22
	1 1/2 in	\$92.99
	2 in	\$140.84
	3 in	\$411.98
	4 in	\$810.72
	6 in	\$1,289.21
	8 in	\$1,847.44
	10 in	\$3,442.39
<b>Volumetric Charge</b>		
	<b>Tier Width</b>	<b>Per HCF</b>
Tier 1	100% of Essential (Water Budget)	\$0.88
Tier 2	100% of Efficient (Water Budget)	\$1.55
Tier 3	101-130% of Total Water Budget (Tier 1 + Tier 2)	\$2.30
Tier 4	131-190% of Total Water Budget (Tier 1 + Tier 2)	\$3.29
Tier 5	191% and above of Total Water Budget (Tier 1 + Tier 2)	\$4.24

**Table 11. Recommended Rates for CY 2020 (Test Year) Option 2**

<b>Fixed Charge</b>		
	<b>Meter Size</b>	<b>Per Month</b>
Residential,	5/8 in	\$41.67
Commercial,	3/4 in	\$41.67
Irrigation	1 in	\$41.67
	1 1/2 in	\$104.00
	2 in	\$158.45
	3 in	\$467.01
	4 in	\$920.77
	6 in	\$1,465.29
	8 in	\$2,100.56
	10 in	\$3,915.62
<b>Volumetric Charge</b>		
	<b>Tier Width</b>	<b>Per HCF</b>
Tier 1	100% of Essential (Water Budget)	\$0.88
Tier 2	100% of Efficient (Water Budget)	\$1.55
Tier 3	101-130% of Total Water Budget (Tier 1 + Tier 2)	\$2.30
Tier 4	131-190% of Total Water Budget (Tier 1 + Tier 2)	\$3.29
Tier 5	191% and above of Total Water Budget (Tier 1 + Tier 2)	\$4.24

**Table 12. District Suggested Rates for CY 2020 (Test Year) Option 3**

Fixed Charge		
	Meter Size	Per Month
Residential,	5/8 in	\$38.36
Commercial,	3/4 in	\$38.36
Irrigation	1 in	\$38.36
	1 1/2 in	\$93.70
	2 in	\$142.05
	3 in	\$416.02
	4 in	\$818.93
	6 in	\$1,302.42
	8 in	\$1,866.48
	10 in	\$3,478.11
Volumetric Charge		
	Tier Width	Per HCF
Tier 1	100% of Essential (Water Budget)	\$0.88
Tier 2	100% of Efficient (Water Budget)	\$1.52
Tier 3	101-130% of Total Water Budget (Tier 1 + Tier 2)	\$2.13
Tier 4	131-190% of Total Water Budget (Tier 1 + Tier 2)	\$3.60
Tier 5	191% and above of Total Water Budget (Tier 1 + Tier 2)	\$4.34

### Development of Fixed Charges Option 1, 2, and 3 for Study Period

Table 13, Table 14, and Table 15 present recommended rate adjustments for fixed charges for all three options. Note that the Option 1 charge starts at \$38.22 in CY 2020 and ends at \$54.20 in CY 2024 when the charges for customers with 1-inch or less meter size are compared. Under Option 2, the same customers pay \$41.67 monthly in CY 2020 and will pay \$52.00 in CY 2024. The Option 3 charge starts at \$38.36 for the same group of customers in CY 2020, and ends at \$52.10 in CY 2024.

**Table 13. RDN Recommend Fixed Charges for CY 2020 – CY 2024, Option 1**

Fixed Charge Monthly					
Meter Size	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
5/8-in	\$38.22	\$41.62	\$45.80	\$49.83	\$54.20
3/4-in	\$38.22	\$41.62	\$45.80	\$49.83	\$54.20
1-in	\$38.22	\$41.62	\$45.80	\$49.83	\$54.20
1 1/2-in	\$92.99	\$101.53	\$112.41	\$122.61	\$133.65
2-in	\$140.84	\$153.88	\$170.60	\$186.19	\$203.06
3-in	\$411.98	\$450.51	\$500.34	\$546.46	\$596.36
4-in	\$810.72	\$886.73	\$985.26	\$1,076.27	\$1,174.75
6-in	\$1,289.21	\$1,410.19	\$1,567.16	\$1,712.04	\$1,868.82
8-in	\$1,847.44	\$2,020.90	\$2,246.05	\$2,453.77	\$2,678.56
10-in	\$3,442.39	\$3,765.77	\$4,185.72	\$4,573.01	\$4,992.11

*Table 14. RDN Recommend Fixed Charges for CY 2020 – CY 2024, Option 2*

Fixed Charge Monthly					
Meter Size	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
5/8-in	\$41.67	\$43.94	\$46.76	\$49.31	\$52.00
3/4-in	\$41.67	\$43.94	\$46.76	\$49.31	\$52.00
1-in	\$41.67	\$43.94	\$46.76	\$49.31	\$52.00
1 1/2-in	\$104.00	\$109.72	\$117.08	\$123.52	\$130.28
2-in	\$158.45	\$167.18	\$178.52	\$188.35	\$198.66
3-in	\$467.01	\$492.79	\$526.65	\$555.71	\$586.16
4-in	\$920.77	\$971.64	\$1,038.62	\$1,095.94	\$1,156.02
6-in	\$1,465.29	\$1,546.25	\$1,652.98	\$1,744.22	\$1,839.84
8-in	\$2,100.56	\$2,216.64	\$2,369.73	\$2,500.55	\$2,637.64
10-in	\$3,915.62	\$4,132.02	\$4,417.59	\$4,661.48	\$4,917.05

*Table 15. District Suggested Fixed Charges for CY 2020 – CY 2024, Option 3*

Fixed Charge Monthly					
Meter Size	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
5/8-in	\$38.36	\$41.11	\$45.40	\$48.64	\$52.10
3/4-in	\$38.36	\$41.11	\$45.40	\$48.64	\$52.10
1-in	\$38.36	\$41.11	\$45.40	\$48.64	\$52.10
1 1/2-in	\$93.70	\$100.58	\$112.25	\$120.44	\$129.17
2-in	\$142.05	\$152.54	\$170.65	\$183.16	\$196.49
3-in	\$416.02	\$446.98	\$501.61	\$538.57	\$577.98
4-in	\$818.93	\$879.97	\$988.30	\$1,061.24	\$1,139.00
6-in	\$1,302.42	\$1,399.55	\$1,572.34	\$1,688.45	\$1,812.21
8-in	\$1,866.48	\$2,005.74	\$2,253.71	\$2,420.18	\$2,597.63
10-in	\$3,478.11	\$3,737.70	\$4,200.49	\$4,510.86	\$4,841.69

### **Development of Volumetric Rates Option 1, 2, and 3 for the Study Period**

Table 16, Table 17, and Table 18 present volumetric rates under Option 1, 2, and 3 for the study period. The Option 1 and 2 rates are exactly the same for the test year, but the Option 1 rates end at higher rates in CY 2024. The Option 3 rates have lower Tier 2 and 3 rates and higher Tier 4 and 5 rates compared to RDN recommended rates. All of the tier rates under the Option 3 end at lower than the Option 1 rates, but slightly higher than the Option 2 rates.

*Table 16. Recommend Volumetric Rates for CY 2020 – CY 2024, Option 1*

Volumetric Charges per HCF					
Proposed Rates	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
Tier 1	\$0.88	\$0.94	\$1.00	\$1.06	\$1.13
Tier 2	\$1.55	\$1.67	\$1.79	\$1.92	\$2.06
Tier 3	\$2.30	\$2.15	\$2.29	\$2.44	\$2.60
Tier 4	\$3.29	\$3.64	\$3.42	\$3.65	\$3.90
Tier 5	\$4.24	\$4.99	\$5.36	\$5.76	\$6.20

*Table 17. Recommend Volumetric Rates for CY 2020 – CY 2024, Option 2*

Volumetric Charges per HCF					
Proposed Rates	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
Tier 1	\$0.88	\$0.92	\$0.97	\$1.02	\$1.07
Tier 2	\$1.55	\$1.65	\$1.74	\$1.85	\$1.96
Tier 3	\$2.30	\$2.13	\$2.24	\$2.36	\$2.49
Tier 4	\$3.29	\$3.59	\$3.37	\$3.55	\$3.74
Tier 5	\$4.24	\$4.90	\$5.17	\$5.45	\$5.76

*Table 18. District Suggested Volumetric Rates for CY 2020 – CY 2024, Option 3*

Volumetric Charges per HCF					
Proposed Rates	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
Tier 1	\$0.88	\$0.92	\$0.98	\$1.03	\$1.09
Tier 2	\$1.52	\$1.62	\$1.73	\$1.85	\$1.97
Tier 3	\$2.13	\$2.17	\$2.30	\$2.43	\$2.58
Tier 4	\$3.60	\$3.73	\$3.00	\$3.19	\$3.39
Tier 5	\$4.34	\$4.91	\$5.24	\$5.57	\$5.95

### Financial Planning Option 1, 2, and 3 for Study Period

Table 19, Table 20, and Table 21 show a financial plan under the three different options. Under Option 1, the cash balance of the District declines far below the \$10.0 million minimum cash reserve alert level during CY 2020. Under Option 2 and 3, the reserve level decline below the alert level, but stay around \$9.0 million. Both financial plans under Option 1 and 2 will reach the reserve target of \$16.2 million by the end of CY 2024. The Option 3 rates will increase the reserve balance to approximately \$14.7 million by adding \$3.0 million to the current balance, which is below the District’s target reserve level by \$1.5 million.

Table 19. Financial Plan, CY 2019 (Current Year) plus CY 2020 – CY 2024, Option 1

Description	CY 2019 Current Year	CY 2020 Test Year	CY 2021	CY 2022	CY 2023	CY 2024
<b>Operating Revenues</b>	<b>\$24,302,036</b>	<b>\$26,158,114</b>	<b>\$28,155,340</b>	<b>\$30,311,634</b>	<b>\$32,651,258</b>	<b>\$35,181,866</b>
Water Sales - Proposed	\$23,132,036	\$24,985,489	\$26,980,083	\$29,133,735	\$31,470,711	\$33,998,662
Other Operating Revenues	\$1,170,000	\$1,172,625	\$1,175,258	\$1,177,899	\$1,180,547	\$1,183,204
<b>O&amp;M Expenses</b>	<b>(\$21,834,755)</b>	<b>(\$23,104,573)</b>	<b>(\$23,816,843)</b>	<b>(\$24,555,534)</b>	<b>(\$25,323,517)</b>	<b>(\$26,124,472)</b>
Net Operating Revenues	\$2,467,282	\$3,053,541	\$4,338,497	\$5,756,100	\$7,327,741	\$9,057,395
Non-operating Revenues	\$2,850,000	\$2,896,525	\$2,943,971	\$2,992,357	\$3,039,261	\$3,087,047
<b>Other Obligations</b>	<b>(\$7,967,239)</b>	<b>(\$11,146,722)</b>	<b>(\$5,955,151)</b>	<b>(\$7,287,525)</b>	<b>(\$7,196,993)</b>	<b>(\$12,856,425)</b>
Debt Service Principal	(\$1,870,195)	(\$1,927,762)	(\$1,998,889)	(\$2,728,646)	(\$2,602,628)	(\$2,810,000)
Debt Service Interest	(\$2,596,719)	(\$2,539,462)	(\$2,469,762)	(\$3,072,379)	(\$3,107,865)	(\$3,031,569)
Change in Investment in PRWA	(\$300,000)	(\$300,000)	(\$300,000)	(\$300,000)	(\$300,000)	(\$300,000)
Water Rebate Program	(\$236,500)	(\$236,500)	(\$236,500)	(\$236,500)	(\$236,500)	(\$236,500)
Contribution to Reserves	\$522,151	(\$950,000)	(\$950,000)	(\$950,000)	(\$950,000)	(\$950,000)
Capital PAYGO	(\$3,485,977)	(\$5,192,998)	\$0	\$0	\$0	(\$5,528,357)
Net Balance	(\$2,649,957)	(\$5,196,656)	\$1,327,317	\$1,460,933	\$3,170,009	(\$711,984)
Beginning of the Year Balance		\$11,649,020	\$7,402,364	\$9,679,681	\$12,090,613	\$16,210,622
<b>Ending Balance</b>	<b>\$11,649,020</b>	<b>\$7,402,364</b>	<b>\$9,679,681</b>	<b>\$12,090,613</b>	<b>\$16,210,622</b>	<b>\$16,448,639</b>

Table 20. Financial Plan, CY 2019 (Current Year) plus CY 2020 – CY 2024, Option 2

Description	CY 2019 Current Year	CY 2020 Test Year	CY 2021	CY 2022	CY 2023	CY 2024
<b>Operating Revenues</b>	<b>\$24,302,036</b>	<b>\$27,487,129</b>	<b>\$28,907,015</b>	<b>\$30,403,068</b>	<b>\$31,990,724</b>	<b>\$33,667,708</b>
Water Sales - Proposed	\$23,132,036	\$26,314,504	\$27,731,757	\$29,225,169	\$30,810,177	\$32,484,504
Other Operating Revenues	\$1,170,000	\$1,172,625	\$1,175,258	\$1,177,899	\$1,180,547	\$1,183,204
<b>O&amp;M Expenses</b>	<b>(\$21,834,755)</b>	<b>(\$23,104,573)</b>	<b>(\$23,816,843)</b>	<b>(\$24,555,534)</b>	<b>(\$25,323,517)</b>	<b>(\$26,124,472)</b>
Net Operating Revenues	\$2,467,282	\$4,382,556	\$5,090,171	\$5,847,534	\$6,667,207	\$7,543,236
Non-operating Revenues	\$2,850,000	\$2,896,525	\$2,943,971	\$2,992,357	\$3,039,261	\$3,087,047
<b>Other Obligations</b>	<b>(\$7,967,239)</b>	<b>(\$11,146,722)</b>	<b>(\$5,955,151)</b>	<b>(\$7,287,525)</b>	<b>(\$7,196,993)</b>	<b>(\$12,856,425)</b>
Debt Service Principal	(\$1,870,195)	(\$1,927,762)	(\$1,998,889)	(\$2,728,646)	(\$2,602,628)	(\$2,810,000)
Debt Service Interest	(\$2,596,719)	(\$2,539,462)	(\$2,469,762)	(\$3,072,379)	(\$3,107,865)	(\$3,031,569)
Change in Investment in PRWA	(\$300,000)	(\$300,000)	(\$300,000)	(\$300,000)	(\$300,000)	(\$300,000)
Water Rebate Program	(\$236,500)	(\$236,500)	(\$236,500)	(\$236,500)	(\$236,500)	(\$236,500)
Contribution to Reserves	\$522,151	(\$950,000)	(\$950,000)	(\$950,000)	(\$950,000)	(\$950,000)
Capital PAYGO	(\$3,485,977)	(\$5,192,998)	\$0	\$0	\$0	(\$5,528,357)
Net Balance	(\$2,649,957)	(\$3,867,641)	\$2,078,991	\$1,552,367	\$2,509,475	(\$2,226,143)
Beginning of the Year Balance		\$11,649,020	\$8,731,379	\$11,760,370	\$14,262,737	\$17,722,212
<b>Ending Balance</b>	<b>\$11,649,020</b>	<b>\$8,731,379</b>	<b>\$11,760,370</b>	<b>\$14,262,737</b>	<b>\$17,722,212</b>	<b>\$16,446,070</b>

*Table 21. Financial Plan, CY 2019 (Current Year) plus CY 2020 – CY 2024, Option 3*

Description	CY 2019 Current Year	CY 2020 Test Year	CY 2021	CY 2022	CY 2023	CY 2024
<b>Operating Revenues</b>	<b>\$24,302,036</b>	<b>\$26,504,813</b>	<b>\$28,200,755</b>	<b>\$30,009,724</b>	<b>\$31,950,590</b>	<b>\$34,025,153</b>
Water Sales - Proposed	\$23,132,036	\$25,332,188	\$27,025,497	\$28,831,826	\$30,770,042	\$32,841,949
Other Operating Revenues	\$1,170,000	\$1,172,625	\$1,175,258	\$1,177,899	\$1,180,547	\$1,183,204
<b>O&amp;M Expenses</b>	<b>(\$21,834,755)</b>	<b>(\$23,104,573)</b>	<b>(\$23,816,843)</b>	<b>(\$24,555,534)</b>	<b>(\$25,323,517)</b>	<b>(\$26,124,472)</b>
Net Operating Revenues	\$2,467,282	\$3,400,241	\$4,383,912	\$5,454,191	\$6,627,072	\$7,900,682
Non-operating Revenues	\$2,850,000	\$2,896,525	\$2,943,971	\$2,992,357	\$3,039,261	\$3,087,047
<b>Other Obligations</b>	<b>(\$7,967,239)</b>	<b>(\$9,580,413)</b>	<b>(\$5,605,151)</b>	<b>(\$6,937,525)</b>	<b>(\$7,324,612)</b>	<b>(\$13,261,919)</b>
Debt Service Principal	(\$1,870,195)	(\$1,927,762)	(\$1,998,889)	(\$2,728,646)	(\$2,602,628)	(\$2,810,000)
Debt Service Interest	(\$2,596,719)	(\$2,539,462)	(\$2,469,762)	(\$3,072,379)	(\$3,107,865)	(\$3,031,569)
Change in Investment in PRWA	(\$300,000)	(\$300,000)	(\$300,000)	(\$300,000)	(\$300,000)	(\$300,000)
Water Rebate Program	(\$236,500)	(\$236,500)	(\$236,500)	(\$236,500)	(\$236,500)	(\$236,500)
Contribution to Reserves	\$522,151	(\$600,000)	(\$600,000)	(\$600,000)	(\$600,000)	(\$600,000)
Capital PAYGO	(\$3,485,977)	(\$3,976,689)	\$0	\$0	(\$477,619)	(\$6,283,850)
Net Balance	(\$2,649,957)	(\$3,283,648)	\$1,722,732	\$1,509,023	\$2,341,721	(\$2,274,191)
Beginning of the Year Balance		\$11,649,020	\$8,965,372	\$11,288,104	\$13,397,127	\$16,338,849
<b>Ending Balance</b>	<b>\$11,649,020</b>	<b>\$8,965,372</b>	<b>\$11,288,104</b>	<b>\$13,397,127</b>	<b>\$16,338,849</b>	<b>\$14,664,658</b>

The followings are three figures presenting the cash reserve balances under the three options relative to the target and minimum target cash balance of the District.

**Figure 9. Financial Plan Cash Reserves Actual vs. Target, CY 2019 (Current Year) plus CY 2020 – CY 2024, Option 1**

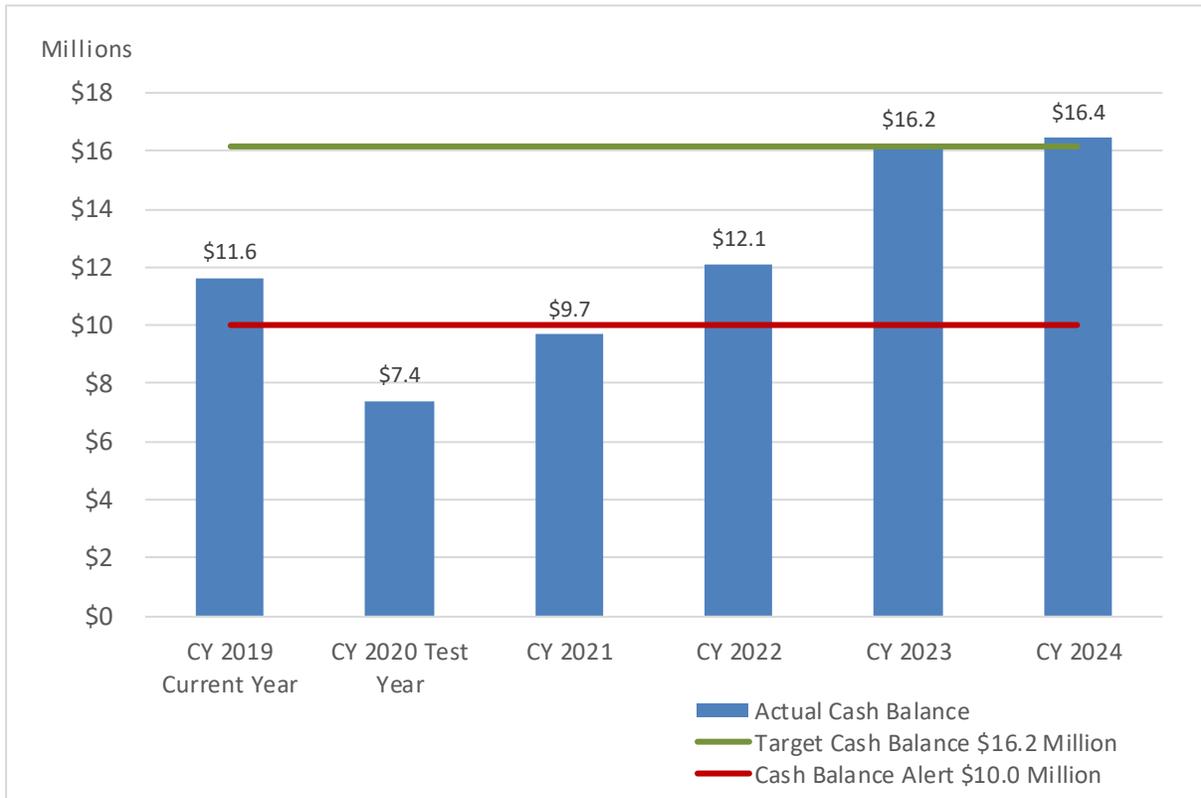


Figure 10. Financial Plan Cash Reserves Actual vs. Target, CY 2019 (Current Year) plus CY 2020 – CY 2024, Option 2

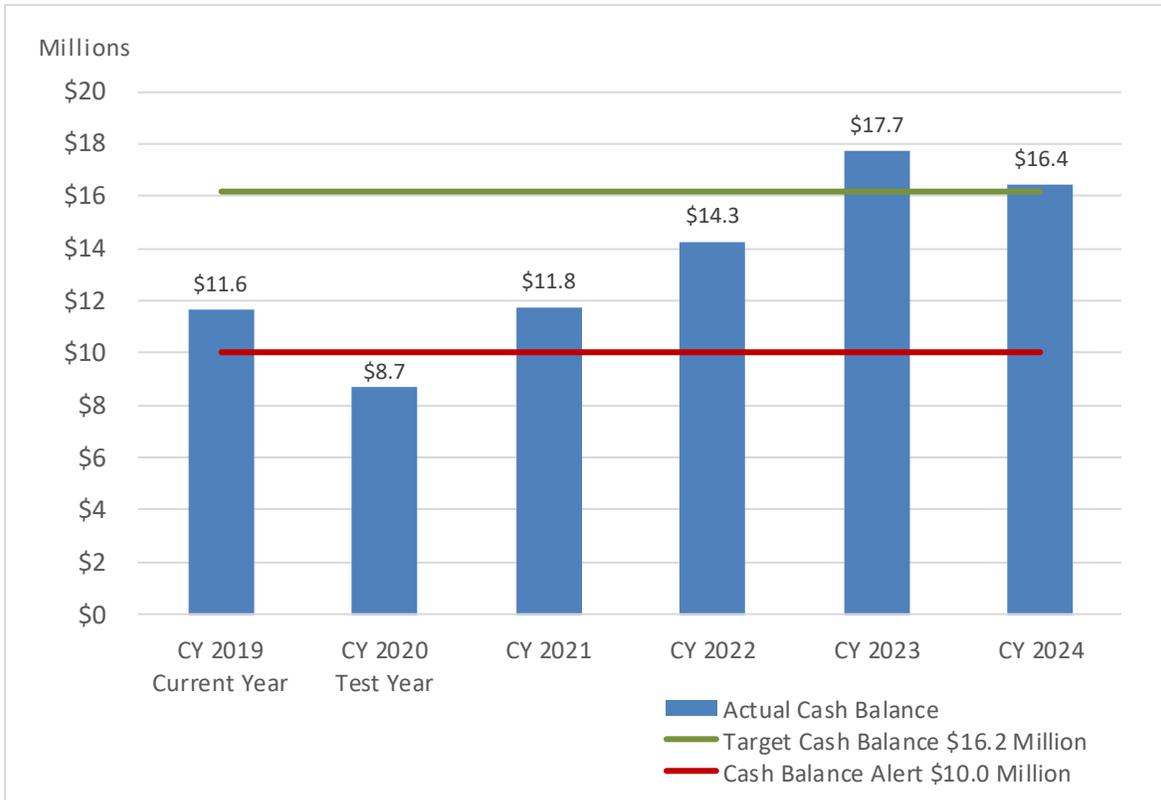
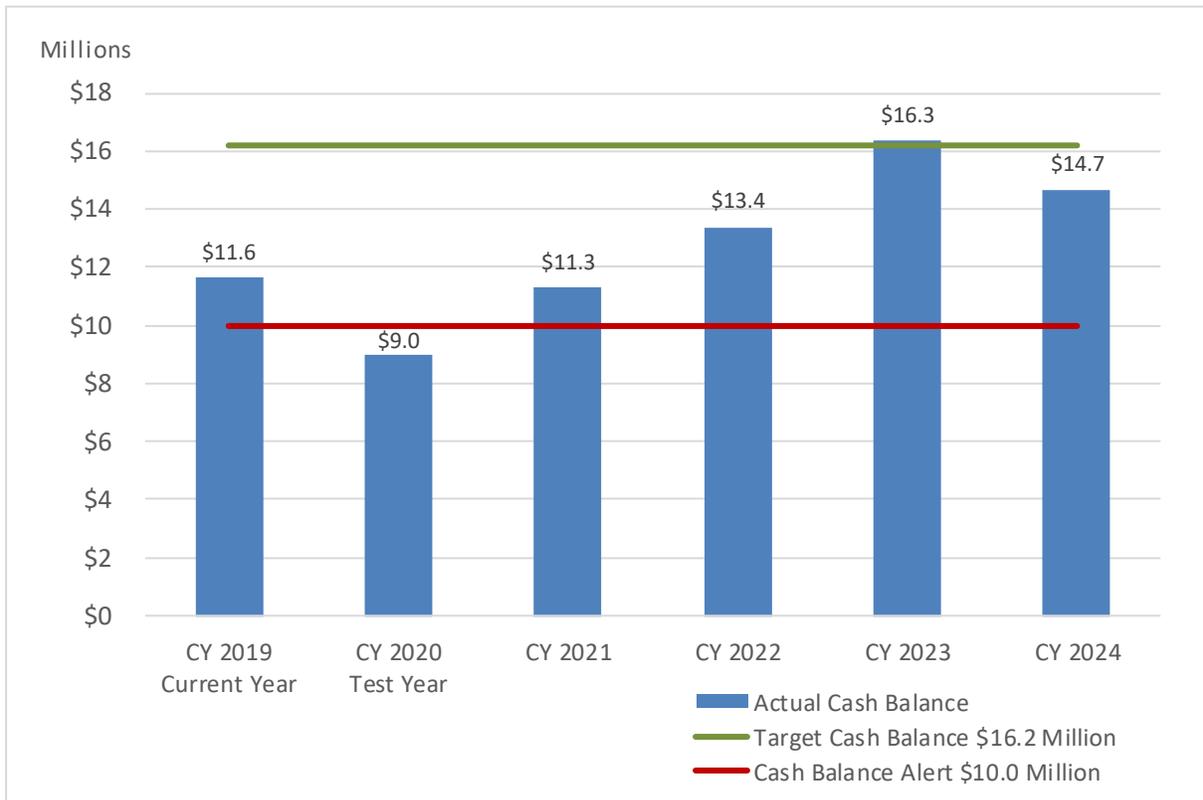


Figure 11. Financial Plan Cash Reserves Actual vs. Target, CY 2019 (Current Year) plus CY 2020 – CY 2024, Option 3



# BILL IMPACTS

RDN performed a bill impact analysis for each option to see which option has the least impact on the customer bills. Note that the bill impacts shown below only reflect the test year rates.

## Bill Impact on a Hypothetical Customer with a Median Parcel Size Lot

This analysis compares a hypothetical customer’s bill under current and proposed rates, which include Option 1, Option 2, and Option 3. Under the current rates, a customer whose parcel is found as a median, receives indoor water allocation of 11 hcf, assuming the customer’s household size is 4, and outdoor water allocation of 13 hcf, totaling 24 hcf of water budget. Under the proposed rates, the same customer receives 9 hcf of water for indoor, and 8 hcf of outdoor water totaling 17 hcf of water budget.

Figure 12. Bill Impact on SFR Customers with a Median Parcel, Option 1

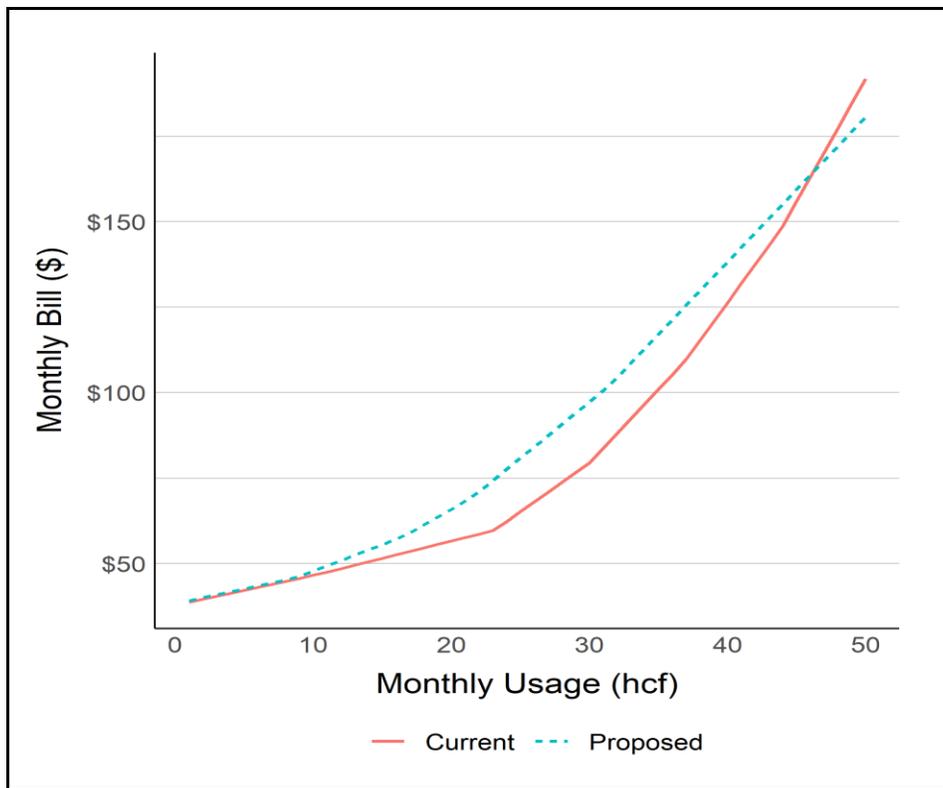


Figure 13. Bill Impact on SFR Customers with a Median Parcel, Option 2

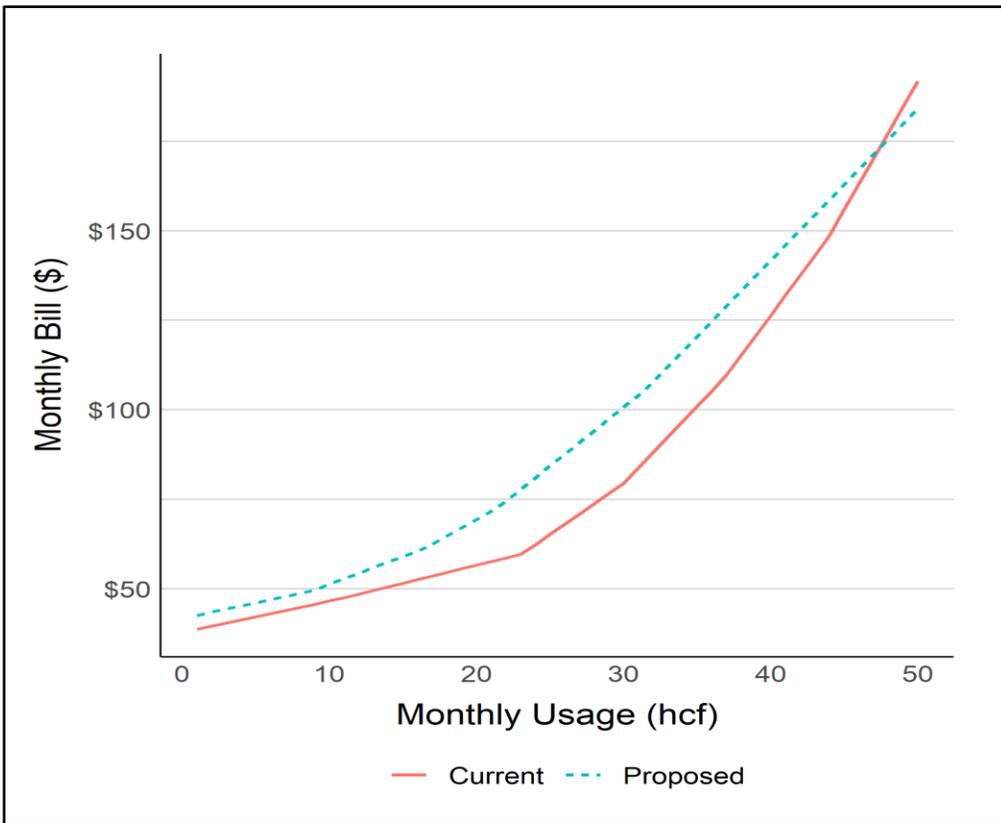
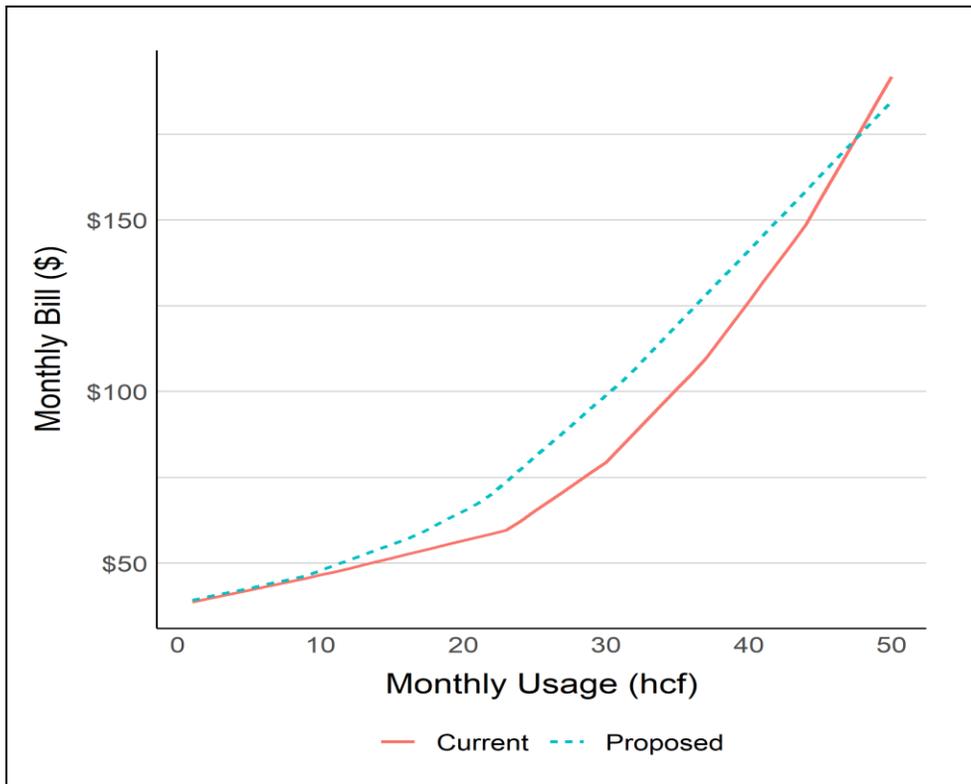


Figure 14. Bill Impact on SFR Customers with a Median Parcel, Option 3



The following Table presents a bill impact of this customer at different usage levels under three options compared to the current rates. The sample bills include 5 hcf, 10 hcf, 17 hcf (proposed water budget), 35 hcf, and 45 hcf of water used.

*Table 22. Bill Comparison for Current vs. Option 1, 2, and 3 (CY 2020)*

Usage	Current	Option 1	Option 2	Option 3
5 hcf	\$42.17	\$42.62	\$46.07	\$42.76
10 hcf	\$46.57	\$47.81	\$51.25	\$47.91
17 hcf	\$53.51	\$58.54	\$61.99	\$58.44
35 hcf	\$100.98	\$117.06	\$120.51	\$119.56
45 hcf	\$156.01	\$159.46	\$162.91	\$162.96

### Bill Impacts on Actual Customers

Figure 15 displays bill impacts on the District’s actual customers by option. Under Option 1, over 82 percent of customers experience 15 percent or less bill increase while 18 percent of customers’ bills will increase 15 percent or more. Under Option 2, 67 percent of customers experience a bill increase of 15 percent or less while 33 percent of customers’ bills will increase by 15 percent or more. The Option 3 rates will increase 83 percent of District’s customers’ bills by 0 - 15 percent while 17 percent of customers’ bills will increase by 16 percent or more when compared to the current rates.

*Figure 15. Bill Impact on Actual Customers*

