

# City of Davis

## 2021 Wastewater Rate Study

COST OF SERVICE & RATE STRUCTURE DISCUSSION

UTILITIES COMMISSION MEETING

6/16/2021



BARTLE WELLS ASSOCIATES  
INDEPENDENT PUBLIC FINANCE ADVISORS

# Presentation Overview

## Last Meeting: Financial Plan Discussion

- Rate Revenue Requirement: 5% annual increases

## Wastewater Cost of Service

- Fixed / Variable Rate Allocation
- Strength-Based Rate Allocation

*What portion of wastewater rate revenue should be fixed vs variable?*

## Wastewater Rate Structure Design

- Winter Water Use Discussion

*Current: November – February*

*Remove November? Add March?*

- Customer Class Discussion

*Commercial Strength Categories*

*Dormitory-Style Multi Family Apartments*

# Current Wastewater Rates

## Fixed Charges

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<b>Base Rate - Monthly \$/account, all users</b>	
Base Rate	<b>\$3.94</b>
<b>Monthly Per Unit Rate (\$/dwelling unit, residential only)</b>	
Single Family	<b>\$18.26</b>
Multi Family	
Condominium	<b>\$12.46</b>
Duplex	<b>\$14.22</b>
3 Units	<b>\$15.02</b>
4 Units	<b>\$15.32</b>
5+ Units	<b>\$12.88</b>
Mobile Home	<b>\$12.85</b>

# Current Wastewater Rates Variable Charges

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<b>Volumetric Rate (\$/ccf* by customer class)</b>	<b>\$/ccf</b>
Residential	\$3.13
Commercial	
C-1 Office, Retail, Motels	\$4.53
C-2 Laundry, Dry Cleaning	\$4.69
C-3 Churches, Schools, Medical/Dental, Manufacturing, Storage	\$4.69
C-4 Convalescent Hospital	\$4.96
C-5 Auto Repair / Auto Dealers / Car Wash	\$5.33
C-6 Restaurants / Fast Food	\$8.12
C-7 Industrial	\$6.74

(1 ccf = 748 gallons)

*\*billable use equal to average monthly winter water use (in ccf) from November - February of prior year, reflects December – March bills*

# Current Wastewater Rates Variable Charge Caps (Residential Only)

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Volumetric Rate (\$/ccf* by customer class)	Water Use Cap
Residential	7
Single Family	24
Multi Family	
Condominium	19
Duplex	36
3 Units	56
4 Units	76
5+ Units	19 ccf/unit
Mobile Home	19 ccf/unit

(1 ccf = 748 gallons)

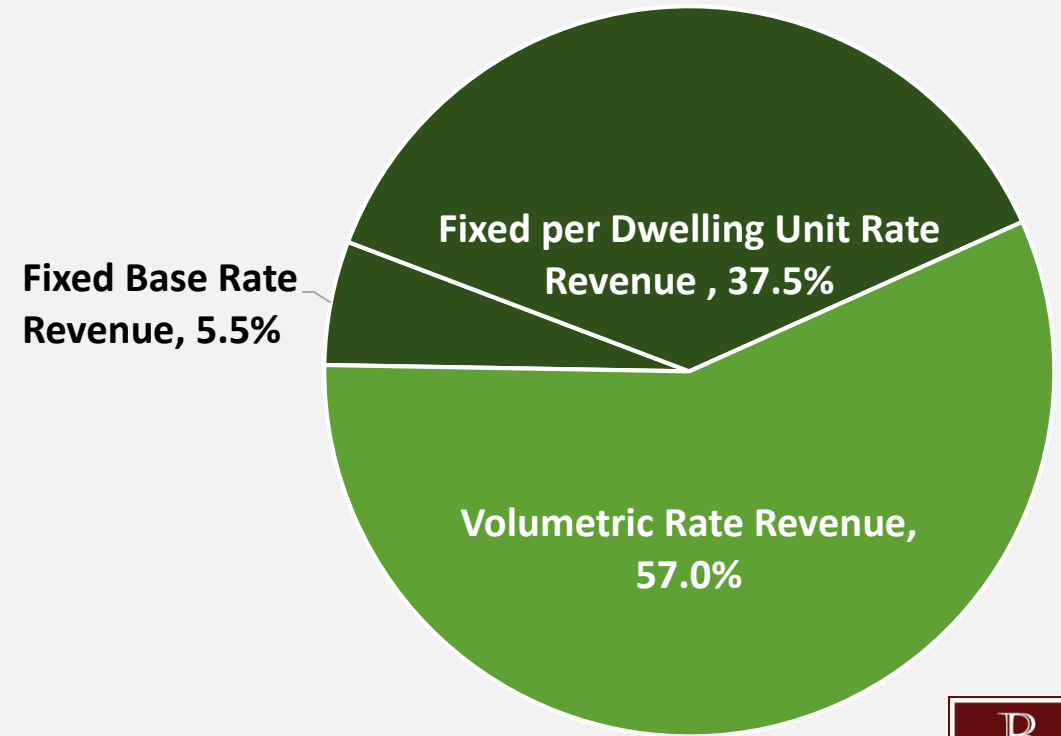
*\*billable use equal to average monthly winter water use (in ccf) from November - February of prior year, reflects December – March bills*



# Current Rate Revenue

## 2019-20 Wastewater Rate Revenue: \$13.6 million

- Last rate study conducted in 2014 – 0% rate increases for 5 years
- Rate structure has three components
  - Fixed Rates total **43%**:
    - Base Rate recovers billing costs from all accounts
    - Unit Rates recover residential fixed costs based on dwelling unit size & number
  - Volumetric rates total **57%**:
    - recover flow and strength-based costs from all users



# Wastewater Rate Study Draft Report Part 2. Financial Plan *May 14, 2021*



## City of Davis 2021 Wastewater Rate Study

Draft Financial Plan Report  
*May 14, 2021*



### Draft 5-Year Cash Flow Projection

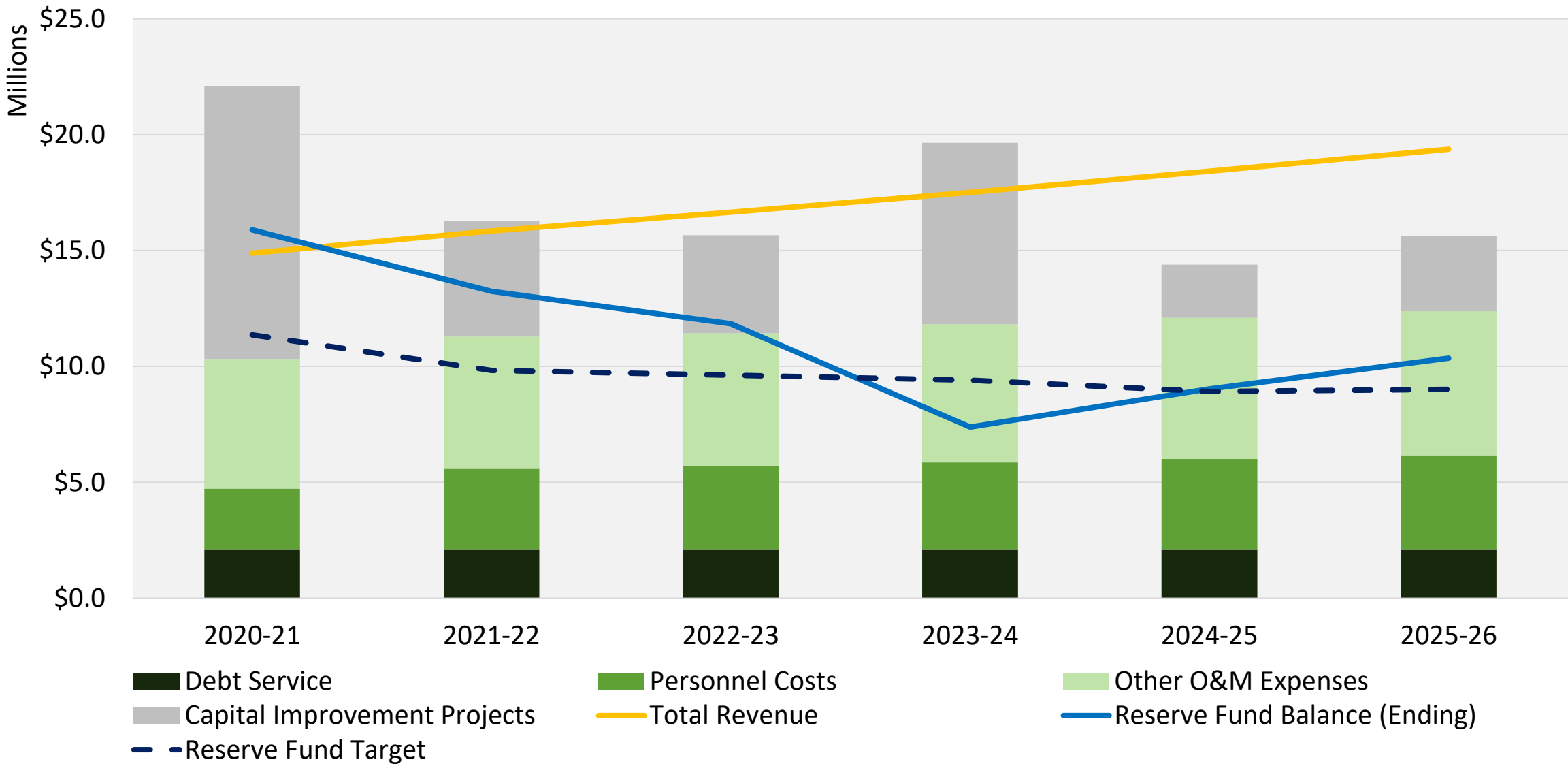
	2021-22	2022-23	2023-24	2024-25	2025-26
Effective Date	5/1/2022	5/1/2023	5/1/2024	5/1/2025	5/1/2026
Rate Revenue Increase	5.0%	5.0%	5.0%	5.0%	5.0%

#### Rate Revenue Drivers Include:

- Sensitivity to customer bills during COVID-19
- Operations, Debt and Capital Improvement Plan funding
  - Cash funding all projects
- Minimum fund balance targets achieved
- Minimum 110% debt service coverage
- Preventing rate increase “spikes”

# 5-Year Cash Flow Projection

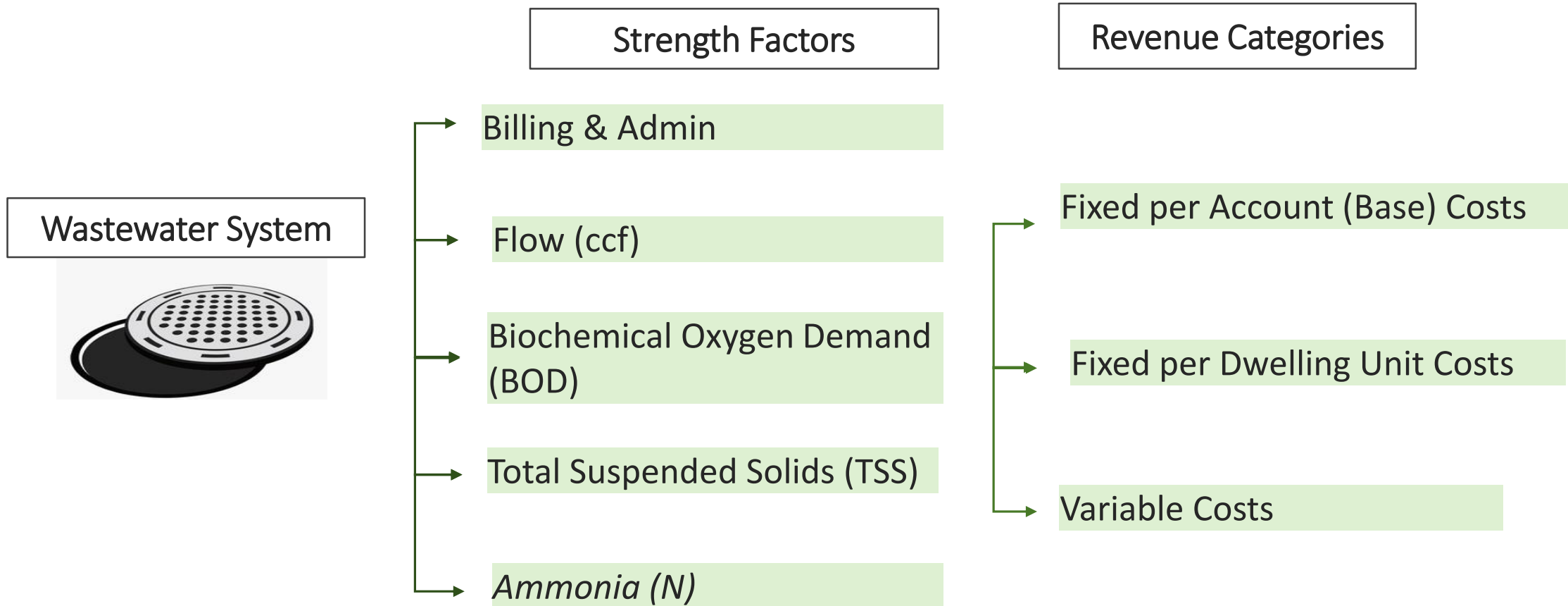
Proposed: 5% Rate Increases





# Wastewater Cost of Service:

*Defines how costs are incurred and how revenues should be recovered*



# Cost of Service Analysis Strength Allocation (Draft)

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Strength Factors
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Cost Allocation	% Flow	% BOD	% TSS	% Ammonia	% Admin	Total
Current Rates	65%	15%	15%	<i>not considered</i>	5%	100%
<b>BWA Draft COS Evaluation</b>	<b>61%</b>	<b>18%</b>	<b>13%</b>	<b>5%</b>	<b>2%</b>	<b>100%</b>

# Cost of Service Analysis Strength Allocation (Draft)

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Example Customer Data	Admin	Flow	BOD	TSS	Ammonia
Single Family	1 bill	7 ccf	250 mg/l	250 mg/l	30 mg N (total)
Multi Family	1 bill	5 ccf	250 mg/l	250 mg/l	30 mg N
Commercial (Low Strength)	1 bill	Varies	130 mg/l	130 mg/l	5 mg N
Restaurant	1 bill	Varies	800 mg/l	550 mg/l	10 mg N

# Cost of Service: Fixed and Variable Allocation

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	% Fixed	% Variable
	Most wastewater system costs are fixed <i>Personnel, equipment, debt service payments</i>	Few system costs are completely tied to volumetric use <i>Treatment, chemicals, electricity, some CIP</i>
<b>BWA Draft Allocation</b>	<b>74%</b>	<b>26%</b>
Current Rates	43%	57%
<i>Alternative 1:</i>	<i>50%</i>	<i>50%</i>
<i>Alternative 2:</i>	<i>60%</i>	<i>40%</i>

# Cost of Service: Fixed and Variable Allocation

## 100% Fixed Rates

Rate revenues are stable & protected from drought

- No conservation incentive
  - Affordability concerns for low income & low water users
- High users may take advantage

## 100% Volumetric Rates

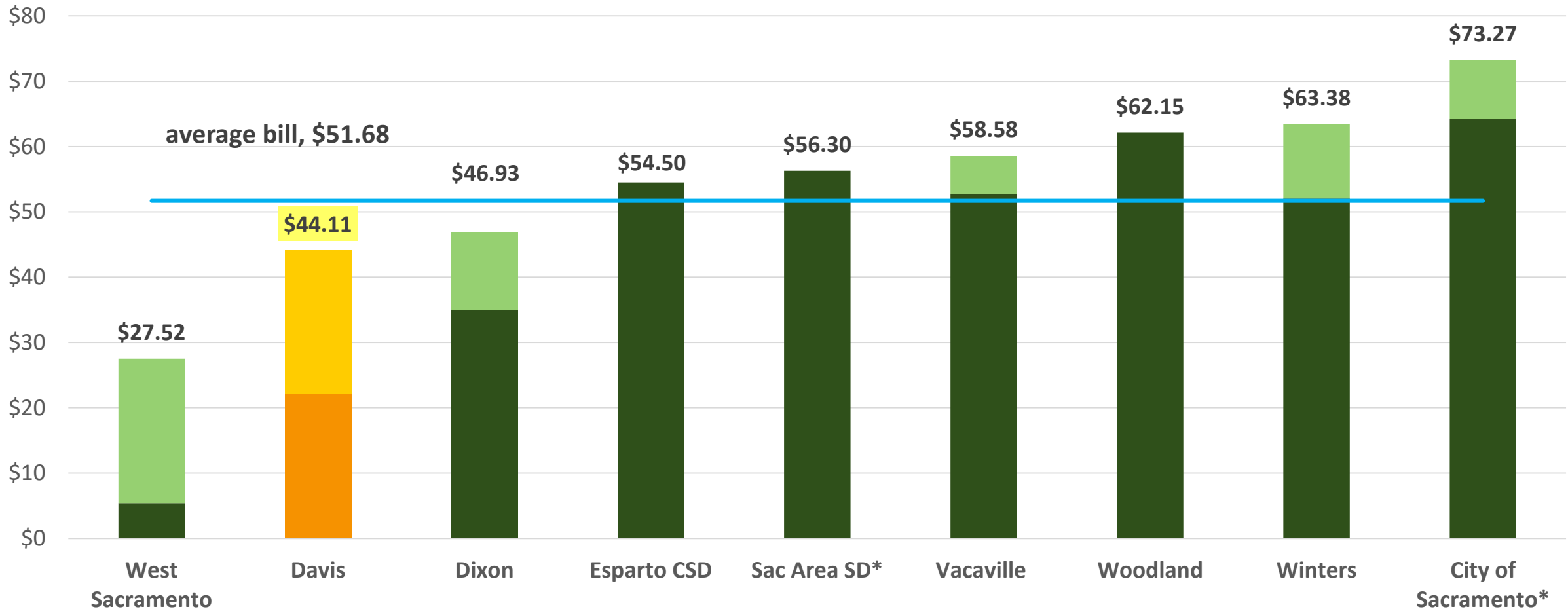
Rate revenues are vulnerable to drought  
Potential for inadequate revenues  
e.g. to pay debt service

Complete customer control over bill

- Large users pay very high bills
- Homes unoccupied in winter pay \$0

Example Residential Bill (7 hcf)	\$ Fixed	\$ Variable	Total
Alternative 1 (50/50)	\$22.06	\$22.06	<b>\$44.11</b>
Alternative 2 (60/40)	\$26.47	\$17.64	<b>\$44.11</b>

# Single Family Wastewater Monthly Bill Survey FY 2021

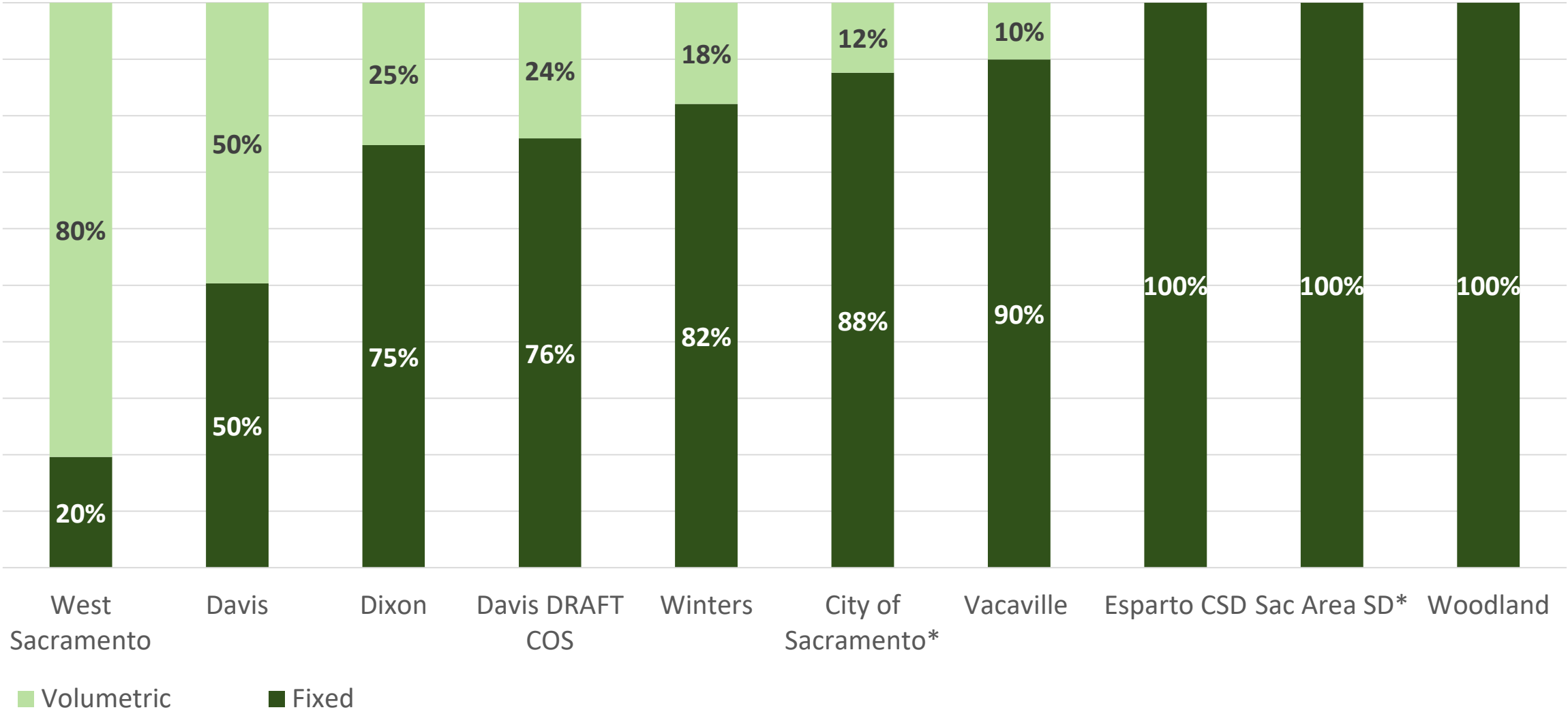


■ Variable Charge  
■ Fixed Charge

*7 ccf average SFR winter water use where applicable*  
*\*Includes Sacramento Regional County Sanitation District Fixed Charge, \$37/month*

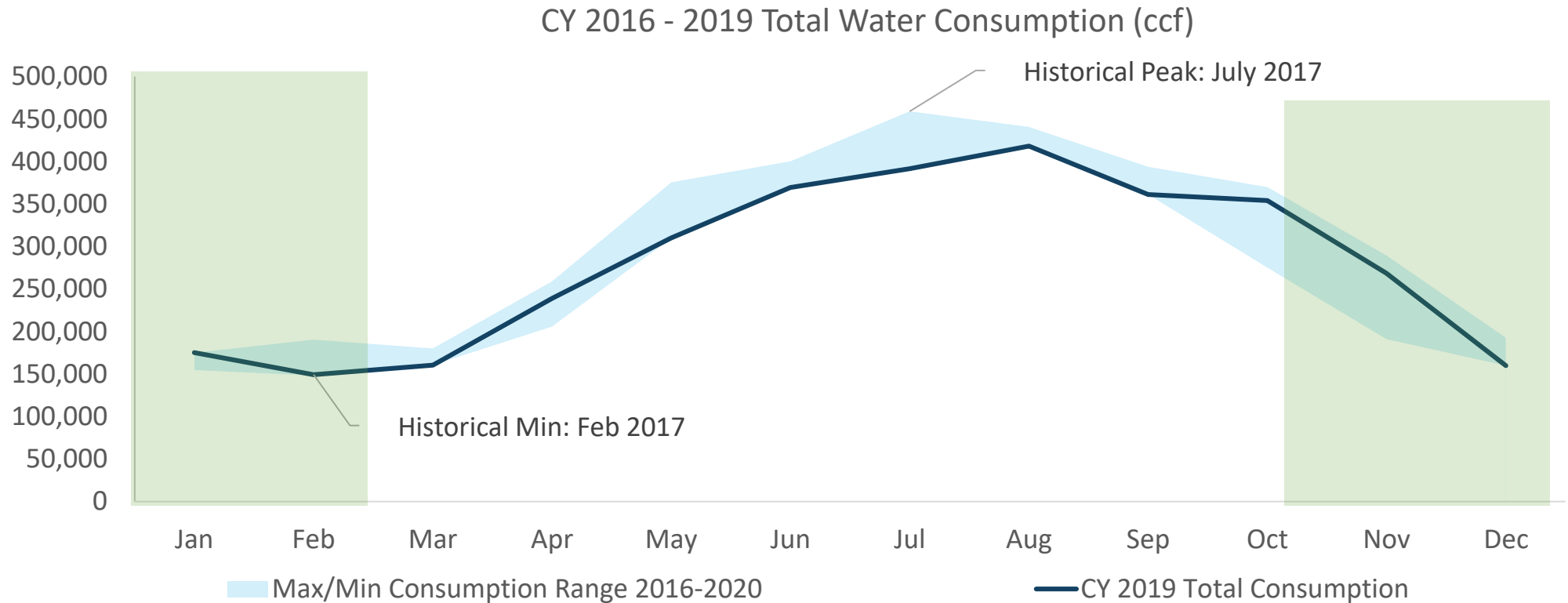


# Single Family Wastewater Monthly Bill Survey FY 2021



# Rate Design: Estimating Sewer Flow

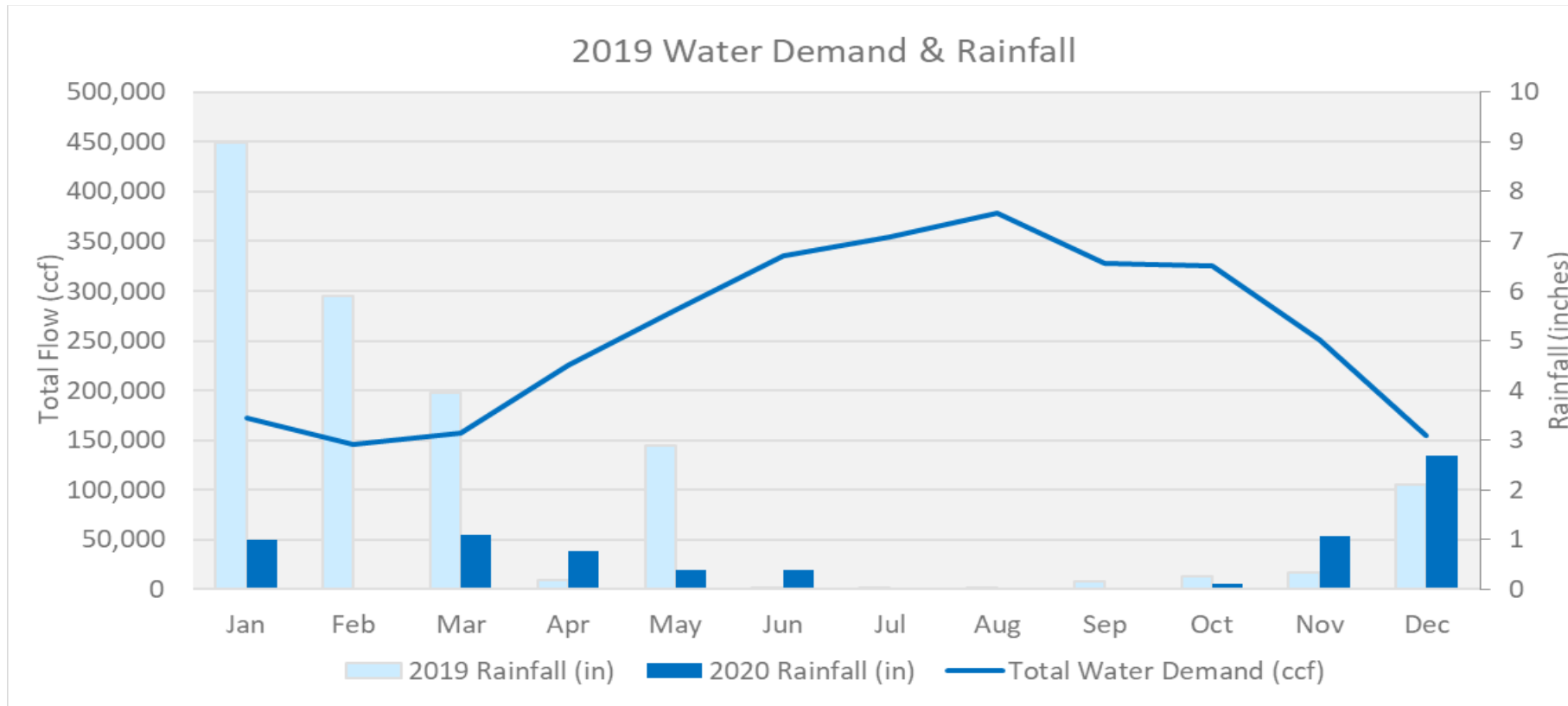
Currently, winter water use from November – February is used to estimate sewer flow for all customers\*



\* Reflected in December – March bills)

# UC Decisions: Estimating Sewer Flow

- Decision: Make adjustments to the current billable water use period?



# UC Decision: Estimating Sewer Flow

Customer Class	Current: Nov - Feb 2019	Option 1 : Dec - Feb	Option 2: Nov - Mar	Option 3: Dec - Mar
	<u>Est. Flow</u>	<u>Est Flow</u>	<u>Est Flow</u>	<u>Est Flow</u>
Residential	1,968,798	1,728,084	1,938,197	1,724,208
Commercial	175,035	163,348	173,981	164,952
<b>Total</b>	<b>2,143,833</b>	<b>1,891,432</b>	<b>2,112,178</b>	<b>1,889,160</b>
<b>Difference</b>		<b>(252,401)</b>	<b>(31,656)</b>	<b>(254,673)</b>

Bill impact is minimal: lower assumed water use for the sewer system, lower assumed sewer flow per customer

# UC Decisions: Estimating Sewer Flow

- Commercial users typically do not peak in summer (may have separate irrigation meters or no irrigation)
- UC Decision: Bill commercial users based on actual monthly water use?**

Customer Class	November – February Current		November – February Hybrid Approach	
		Est Flow		Est Flow
Residential	Nov – Feb	1,968,798	Nov – Feb	1,232,520
Commercial	Nov – Feb	175,035	All Use	218,577
<b>Total (CCF)</b>		<b>2,143,833</b>		<b>2,187,375</b>
<b>Difference (% CCF)</b>				<b>+43,542</b>

# Dormitory-Style Multi Family Customers

The City has some multi family developments with as many as 8 beds per apartment. These customers have a higher wastewater demand per unit than typical multi family users.

Dormitory Style Multi Family Proposed Use Factor Calculation	
7	single family monthly average (ccf)
175	gallons per SFR per day
57	gallons per capita per day, indoor (CA EPA)
3.06	assumed number of people (beds) per SFR
<b>1 bed</b>	<b>= 1/3 Single Family Residence</b>

**Proposed Fixed per Dwelling Unit Factor: 1/3**



# Dormitory-Style Multi Family Customers

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Example Fixed per Dwelling Unit Charge:	
\$18.06 per dwelling unit	Single Family
<i>1/3</i>	<i>Proposed factor</i>
<b>\$6.09 per bed</b>	<b>Dormitory-style Multi Family</b>

*UC Decision: Should the City adopt a separate fixed rate per bed for dormitory style multi family customers?*

# BWA Proposal: Variable Charge Caps

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Customer Class	Average (ccf)	Current Cap (3.1 – 4.8x average)	Draft Proposal (2.5x average)
Single Family	18	24	<b>18</b>
Multi Family			
Condominium		19	10
Duplex	10	36	28
3 Units	28	56	45
4 Units	45	76	53
5+ Units	53	19 ccf/unit	18
Mobile Home	588	19 ccf/unit	18
Dormitory-Style			6

(1 ccf = 748 gallons)

# UC Decisions: Commercial Customer Classes

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The current commercial customer classes can be condensed into four strength categories:

Commercial		Current Rate	Strength Category
C-1	Office, Retail, Motels	\$4.53	Low
C-2	Laundry, Dry Cleaning	\$4.69	Low
C-3	Churches, Schools, Medical/Dental, Manufacturing, Storage	\$4.69	Standard/Domestic
C-4	Convalescent Hospital	\$4.96	Standard/Domestic
C-5	Auto Repair / Auto Dealers / Car Wash	\$5.33	Medium
C-6	Restaurants / Fast Food	\$8.12	High

# Example Schedule of Commercial User Categories

## Low Strength

Banks & Financial Institutions  
 Barber Shops  
 Hair Salon (hair cutting only)  
 Dry Cleaners  
 Laundromats  
 Offices - Business and Professional  
 Offices - Medical/Dental (without surgery)  
 Post Offices  
 Retail Stores  
 Schools

## Domestic Strength

Residential - All  
 Appliance Repair  
 Art Gallery  
 Auto Dealers - without Service Facilities  
 Beauty Shops ( hair cutting w/additional treatments)  
 Nail Salons  
 Pet Groomers  
 Bars & Taverns  
 Camp Ground or RV Park  
 Churches, Halls & Lodges  
 Fire Stations  
 Hospitals - General, Convalescent & Veterinarian  
 Medical Offices - with Surgery  
 Dental Offices  
 Hotels, Motels, B&Bs, and Vacation Rentals (W/O restaurant)  
 Libraries  
 Rest Homes  
 Warehouses  
 Car Washes - Self Service  
 Gym or Health Club

## Medium Strength

Auto Dealers - with Service Facilities  
 Machine Shops  
 Service Stations, Garages, Auto Repair Shops  
 Restaurants - W/O Dish Washer & Garbage Disposal  
 Coffee Shops - W/O Dish Washer & Garbage Disposal  
 Mini Marts - W/O Dish Washer & Garbage Disposal  
 Mini Mart with Gas Pumps - W/O Dish Washer & Garbage Disposal  
 Catering - W/O Dish Washer & Garbage Disposal  
 Hotel/Motel with Restaurant  
 Ice Cream Shop  
 Tasting Rooms  
 Spa with Various Beauty Treatments  
 Carpet Cleaners  
 Funeral Homes/ Mortuary

## High Strength

Restaurants - with Dish Washer or Garbage Disposal  
 Coffee Shops - with Dish Washer or Garbage Disposal  
 Catering - with Dish Washer or Garbage Disposal  
 Bakeries  
 Butcher Shops  
 Fish Market/Shop  
 Markets - with Dish Washer or Garbage Disposal  
 Markets - with Bakeries or Butcher Shops  
 Mini Marts - with Dish Washer or Garbage Disposal  
 Wineries  
 Cheese Makers  
 Dairy Products (milk producers, yogurt, ice cream maker)  
 Specialty Foods Manufacturing (e.g., olive oil maker)

# Summary of Decision Points

## Wastewater Cost of Service

- Fixed / Variable Rate Allocation

*What portion of wastewater rate revenue should be fixed vs variable?*

## Wastewater Rate Structure Design

- Winter Water Use Discussion

*Should we adjust the winter water use period used to estimate sewer flow?*

- Customer Class

*Should we condense or modify the current customer classes?*

- *Multi-family Dormitory Style rate – Fixed \$/bed*
- *Commerical Classes: low, standard/domestic, medium, and high*

*Anything else to consider?*

# Receive Feedback Questions & Comments

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