



City of Tempe, Arizona

Water & Sewer Rate Study

Stakeholder Working Group Meeting #1 – “Rates 101”

June 2, 2020

Public Education and Participation

- Education
 - Introducing water infrastructure, industry, & challenges
 - Explaining how services are provided and charged
 - Providing the vocabulary to enable discussion
- Participation
 - Input on priorities
 - Input on levels of service

Agenda

- ▶ Introduction to Stantec
- ▶ The Water Industry & Rate Studies
- ▶ Examples from Prior Studies
- ▶ Public Education and Participation

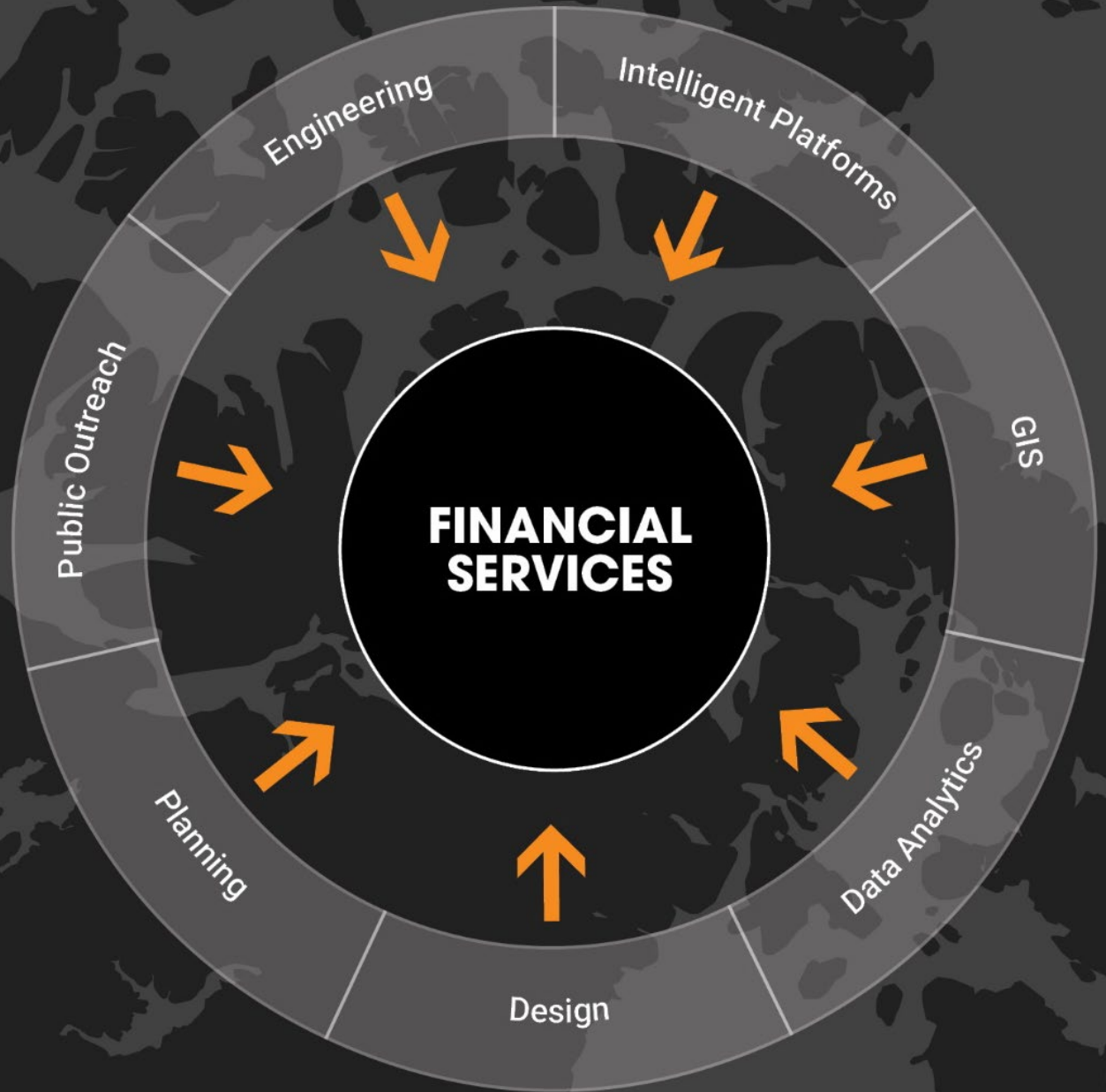


Financial Services

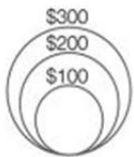
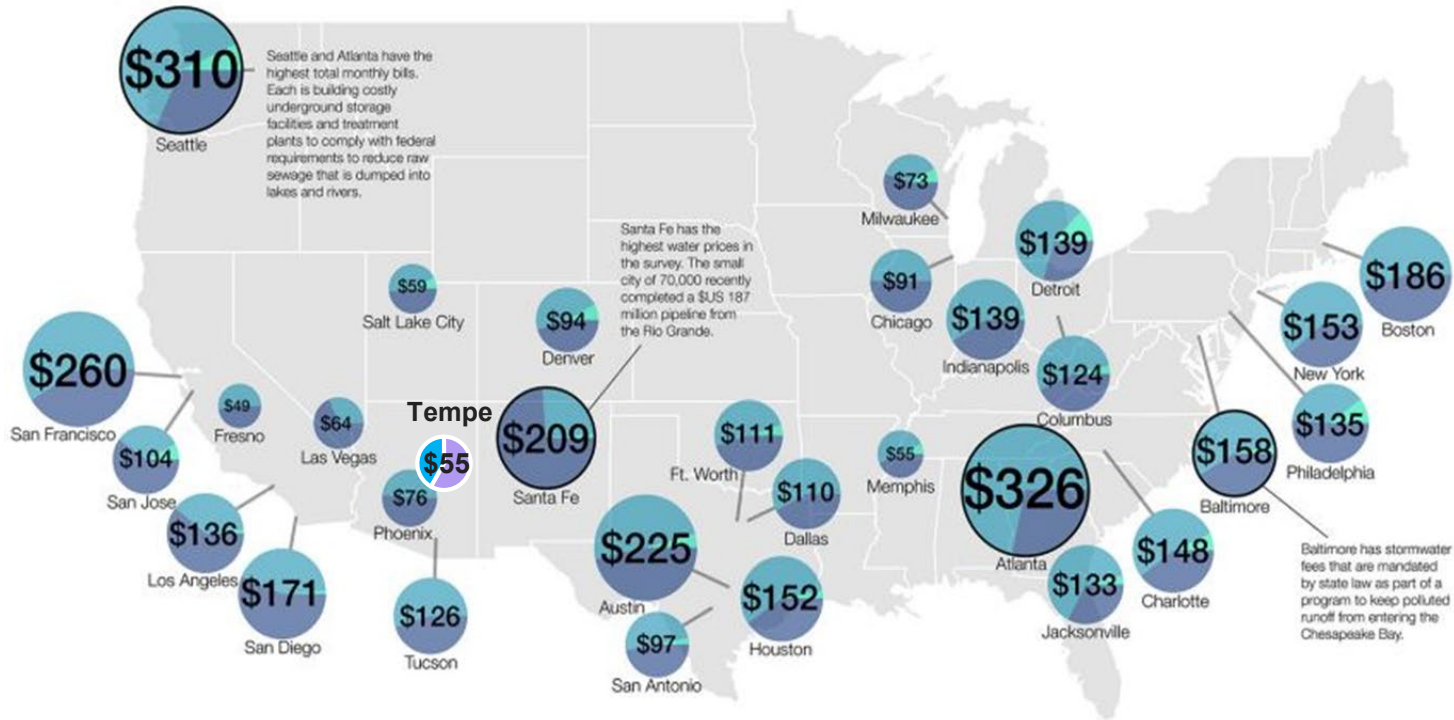
300+
Combined
years of
experience

35+
Specialists in
utility financial
management

>300
Communities
served



Water is Increasingly Costly



Water prices pay for treating, pumping, and delivering water, while sewer prices cover the cost of cleansing the water that goes down the drain.



Sewer prices are often higher than water prices because more energy and chemicals are required for treatment. Following the Clean Water Act, the federal government gave grants for new treatment plants during the 1970s and 1980s. Over the past three decades, however, new spending has been cut for local sewer infrastructure.

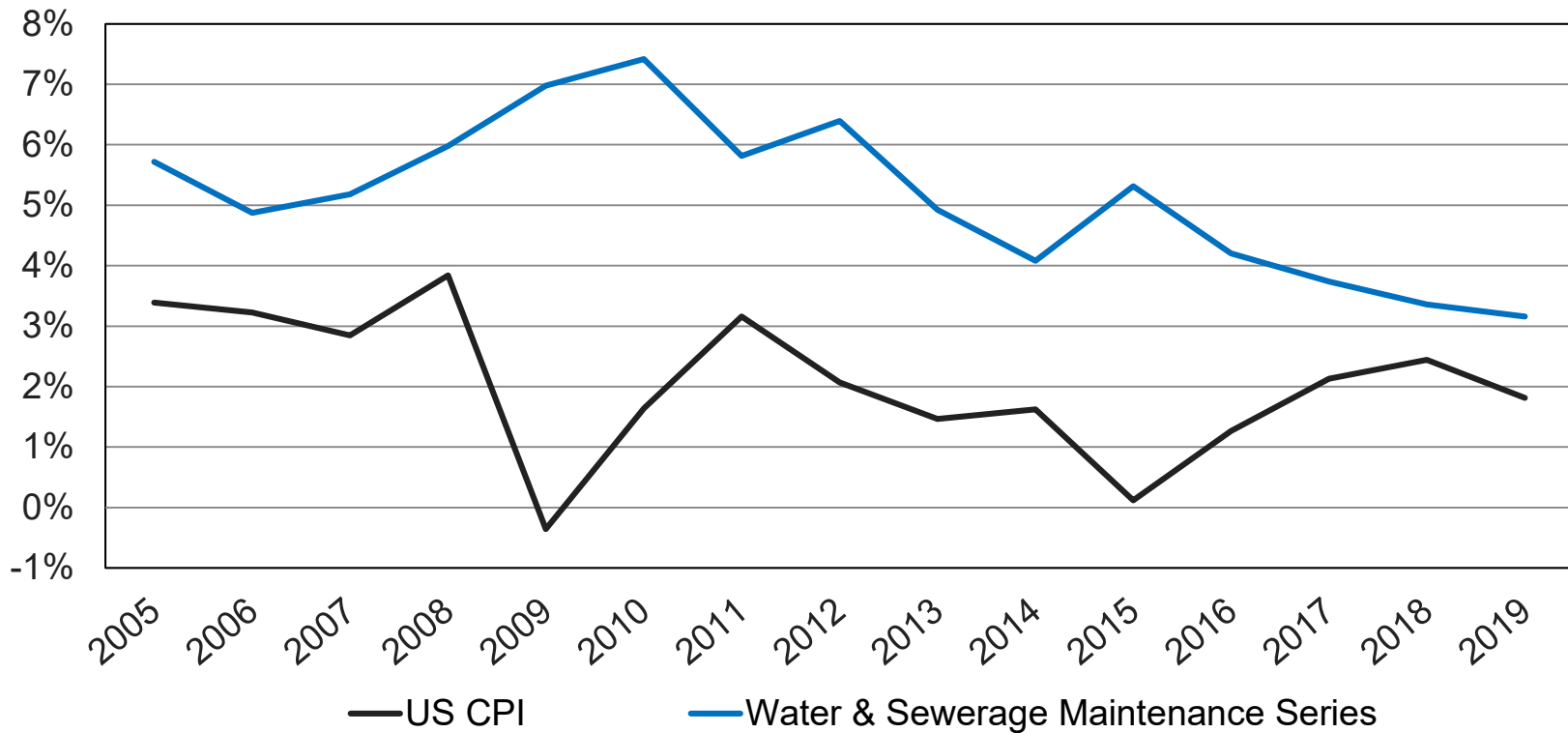


Stormwater fees are not included in every city's monthly bill. Some cities use general tax revenues to pay for projects to reduce polluted runoff from streets and parking lots. However, these projects must then compete for funds with other departments like police and schools.

Rates current as of April 1, 2015.
 Monthly bill calculated for a family of four using 100 gallons per person per day.
 Source: Circle of Blue research, based on utility water rates.

Utilities Face Steeper Increases in Costs Than We See in Overall Inflation

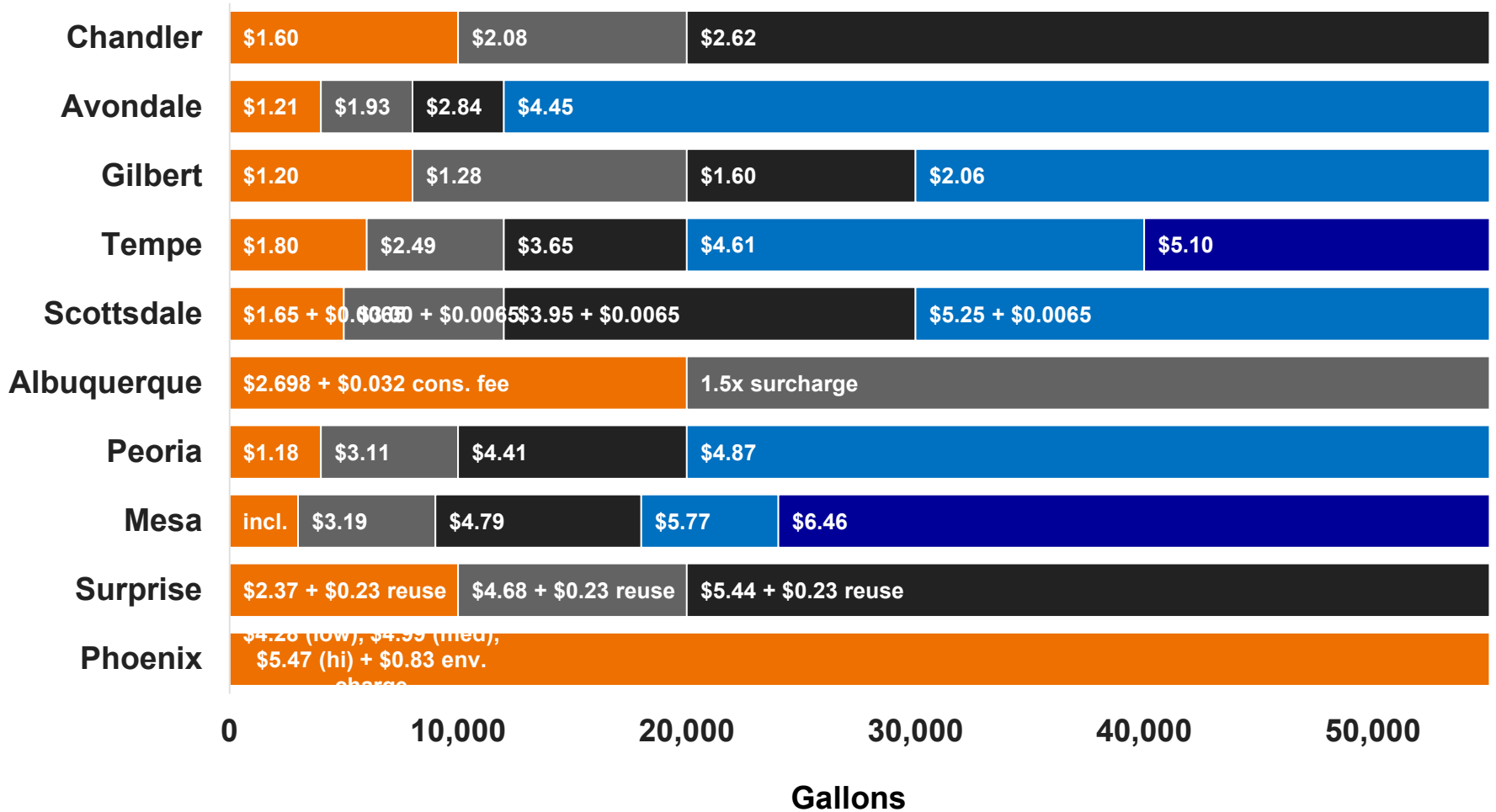
US CPI v. Water & Sewer Maintenance Series:
Annual Percentage Change



Historically water and sewer rates have increased about twice the rate of inflation

Rate Comparisons are Rather Complex

■ Tier 1 ■ Tier 2 ■ Tier 3 ■ Tier 4 ■ Tier 5



A Comprehensive Rate Study is A Series of Connected Investigations

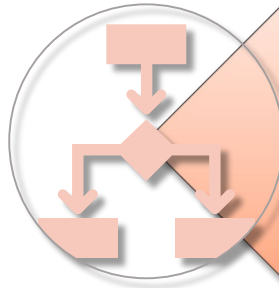
How
Much?



Revenue Sufficiency

- Policies & targets
- System investment needs and funding
- Sustainable operations

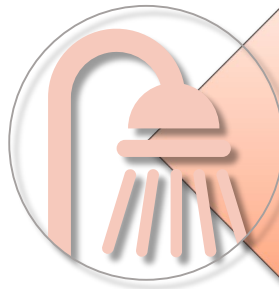
From
Whom?



Defensible Allocation Methods

- Industry accepted approaches
- Inter and intra class equity
- Correct and appropriate units of service

How to
Collect?

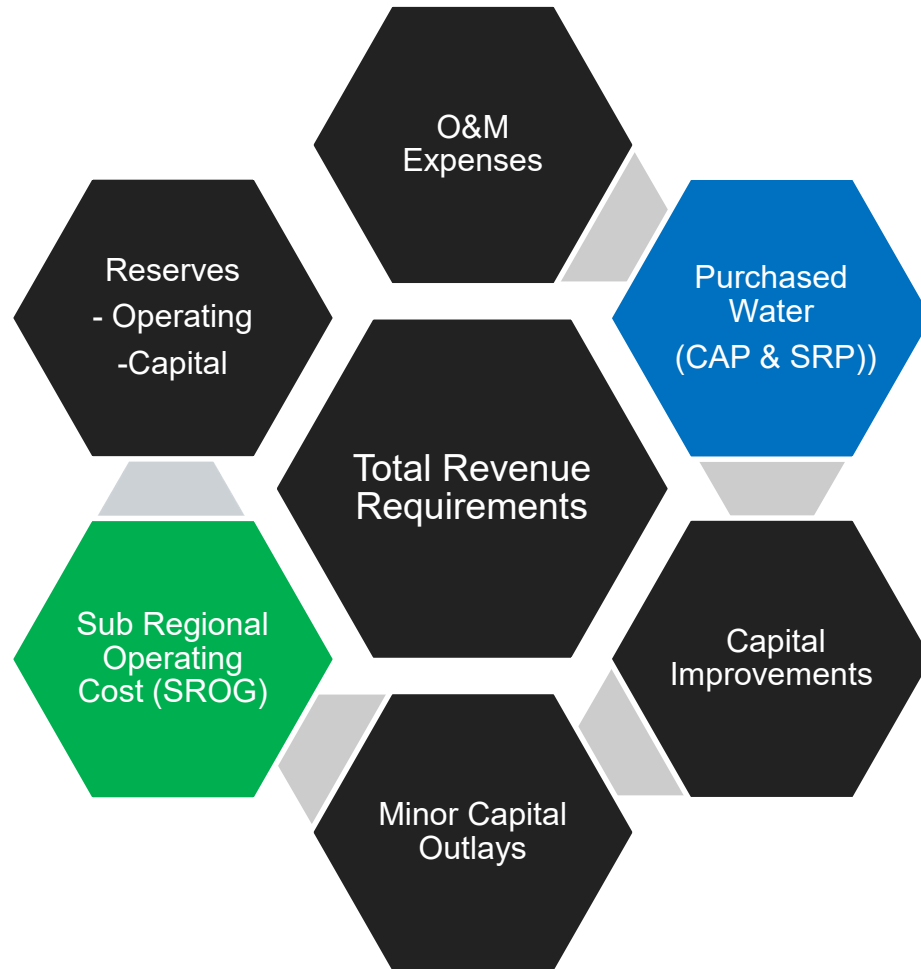


Simple, Equitable & Sustainable Rates

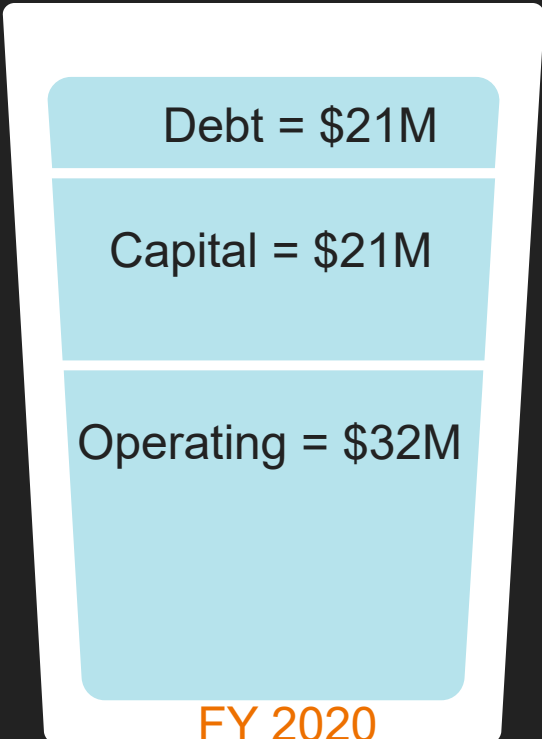
- Balance affordability and financial objectives
- Revenue stability
- Proposition 218 compliant rates

Revenue Requirements

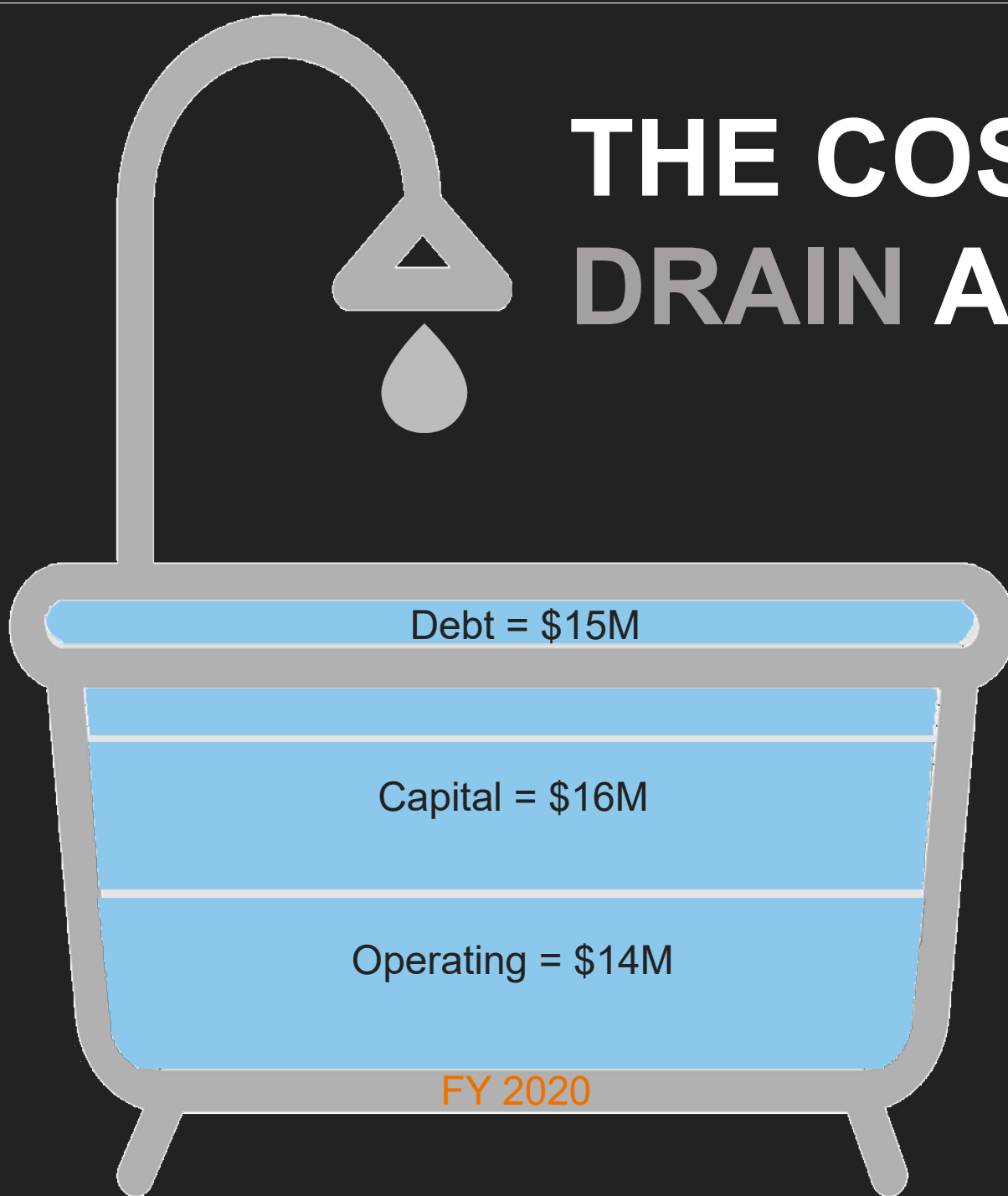
Components of the Revenue Requirement



THE COST TO FILL A GLASS OF WATER



THE COST TO DRAIN A TUB



Upward pressure on rates (Water)

2017 Forecast



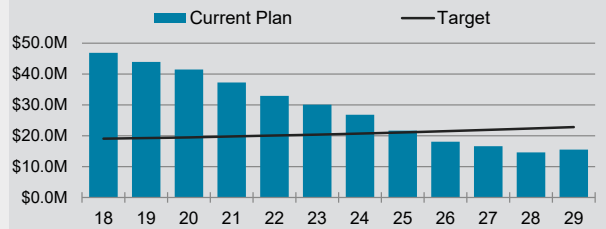
CITY OF TEMPE, AZ - WATER



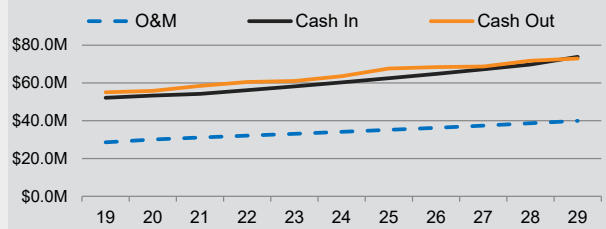
CALC SAVE CTRL LAST OVR

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2023	FY 2028
Water Rate Increase	0.00%	0.00%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%	23.13%	45.39%
Single Family Water Bill	\$32.26	\$32.26	\$33.67	\$35.10	\$36.59	\$38.16	\$39.80	\$41.46	\$43.25	\$45.06	\$47.00	White Mt Apacl	FY 2023

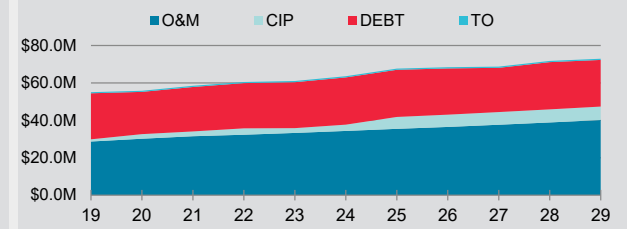
Operating Fund



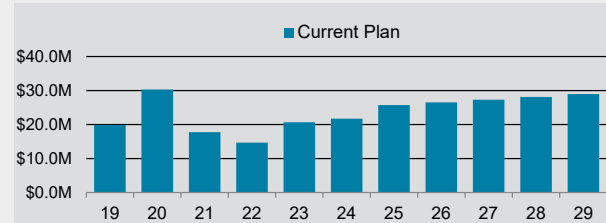
Revenues vs. Expenses



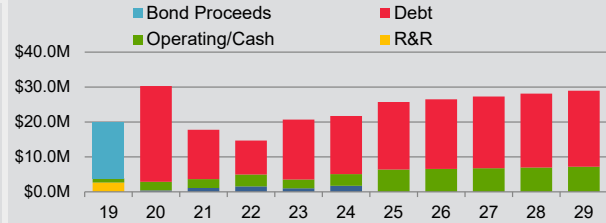
Expenses by Type



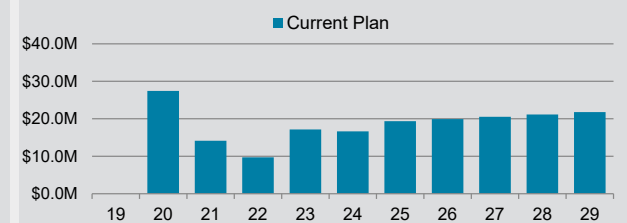
CIP Spending



CIP Funding



Borrowing



More stable outlook (Sewer)

2017 Forecast



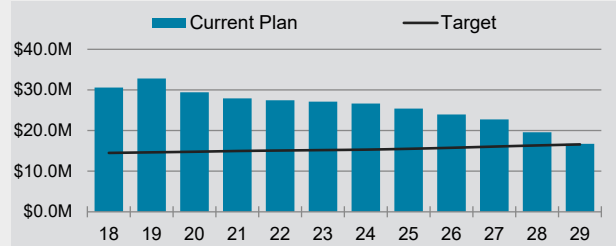
CITY OF TEMPE, AZ - SEWER



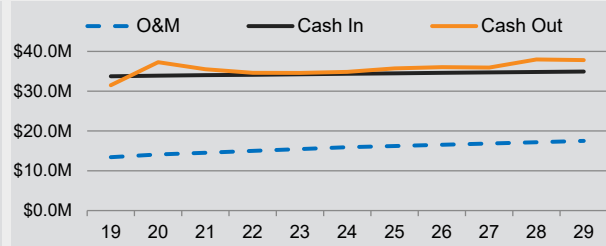
CALC SAVE CTRL LAST OVR

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2023	FY 2028
Sewer Rate Increase	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Single Family Water Bill	\$23.18	\$23.18	\$23.18	\$23.18	\$23.18	\$23.18	\$23.18	\$23.18	\$23.18	\$23.18	\$23.18		

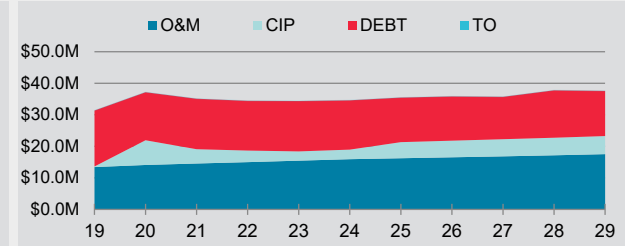
Operating Fund



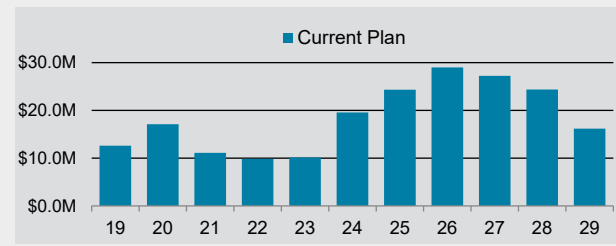
Revenues vs. Expenses



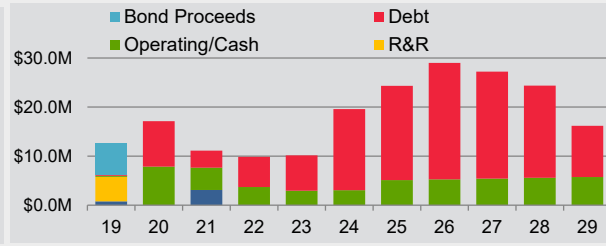
Expenses by Type



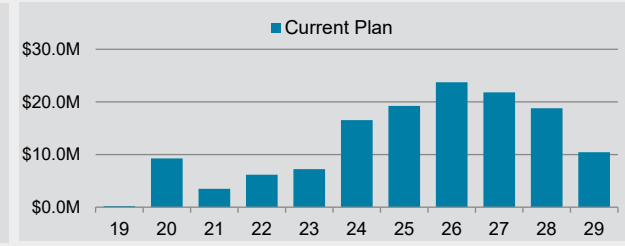
CIP Spending



CIP Funding



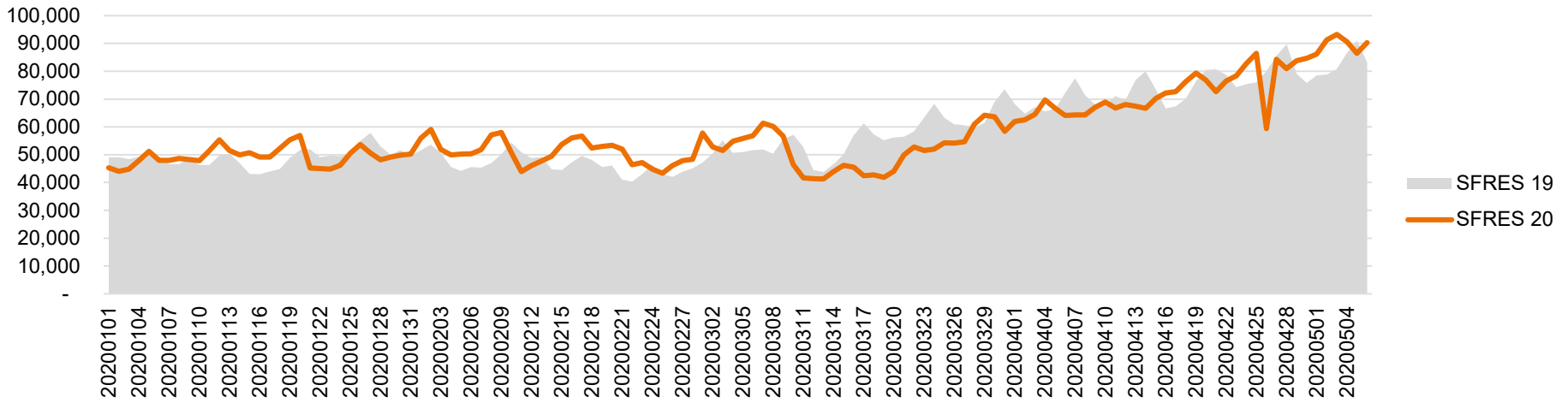
Borrowing



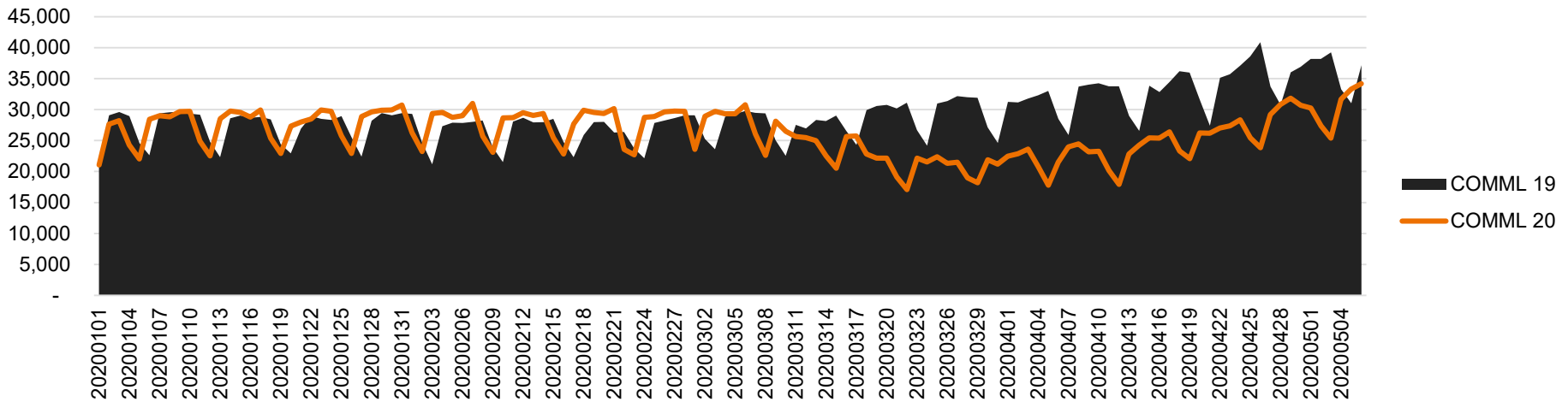
Questions & Discussion Before Cost of Service

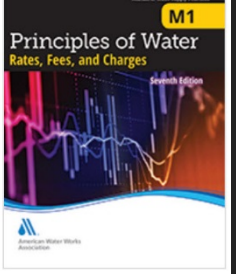
Deep dive into customer data

Residential Volumes

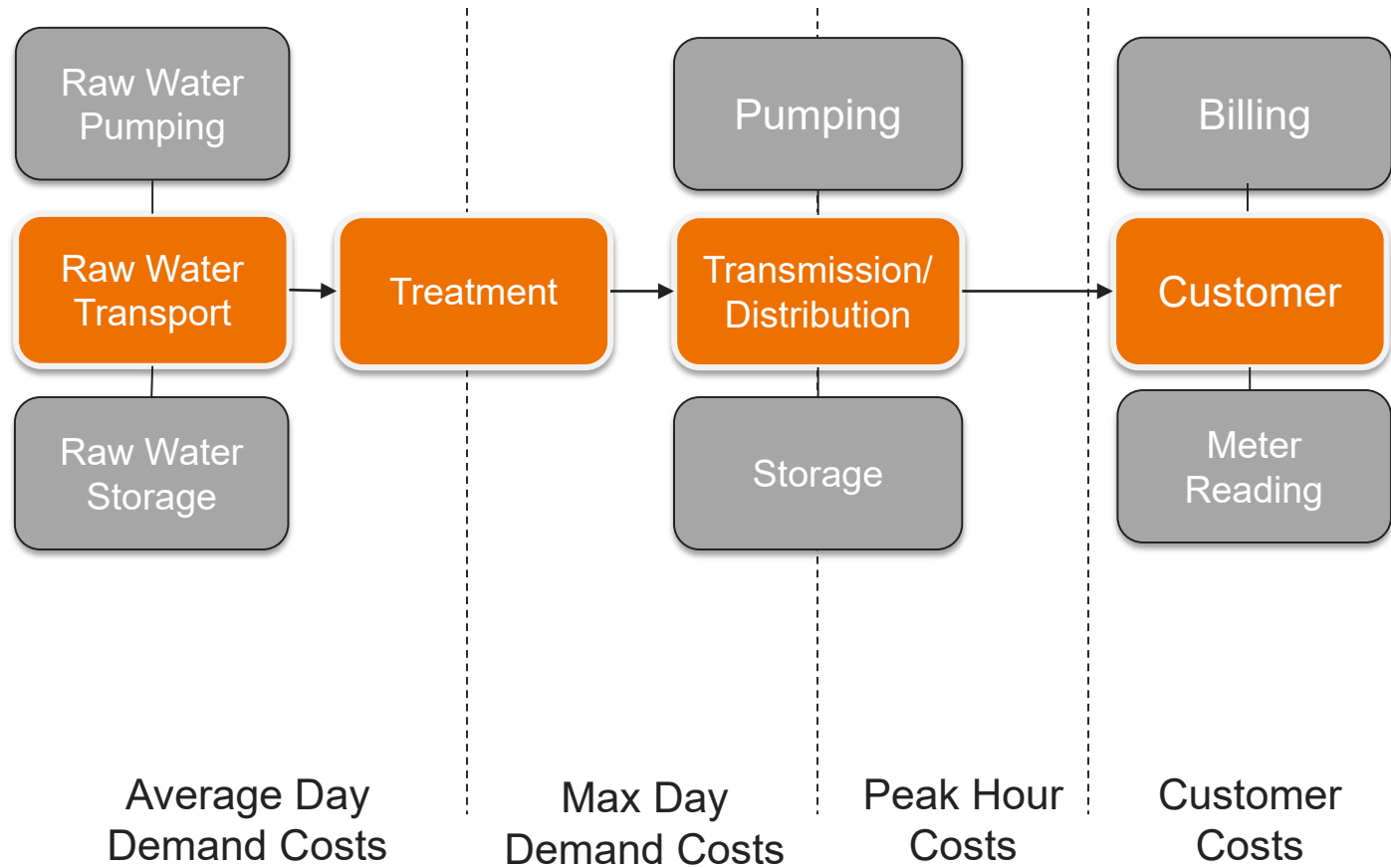


Commercial Volumes





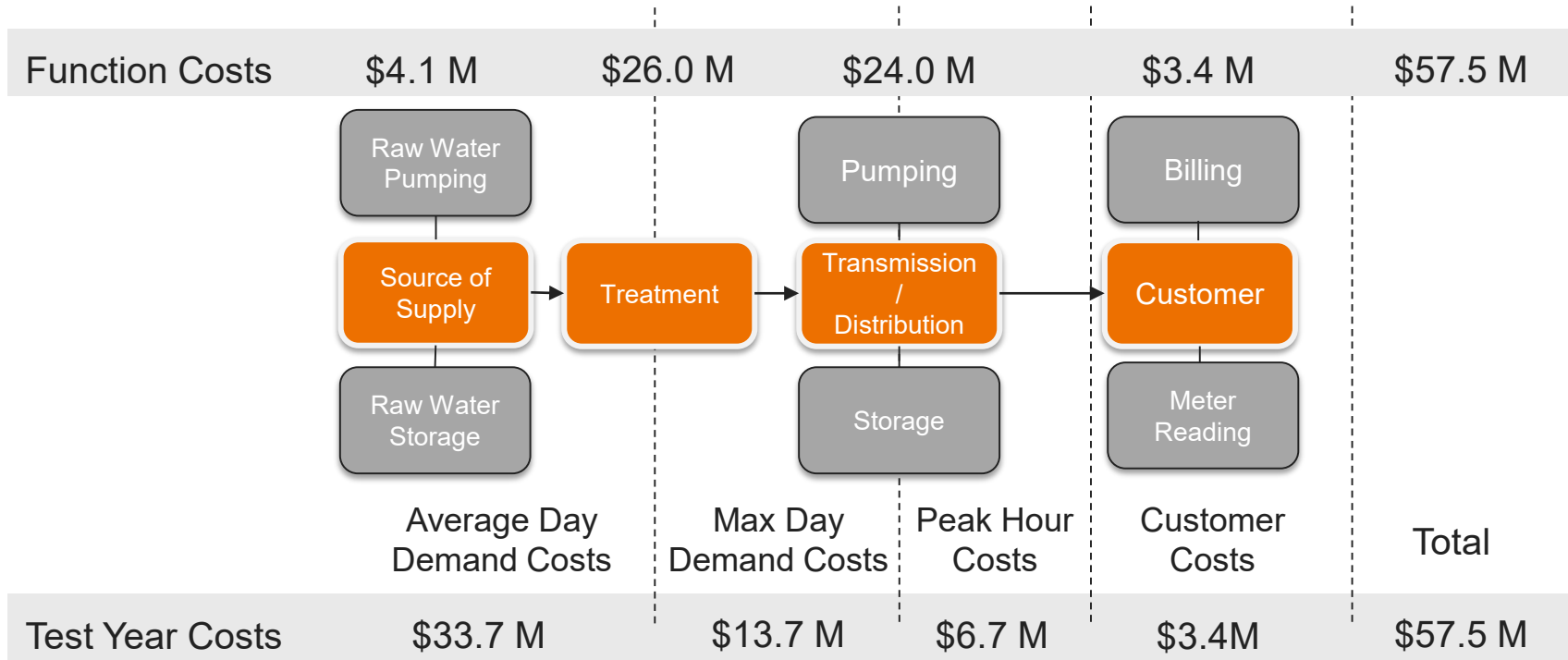
Allocated each system's costs according to functions "by the book"



Allocation Process

	Source of Supply	Treatment	Transmission	Distribution	Customer
Base Capacity Average Day	100%	68%	68%	49%	0%
Extra Capacity Max Day	0%	32%	32%	23%	0%
Extra Capacity Peak Hour	0%	0%	0%	28%	0%
Customer	0%	0%	0%	0%	100%
Total	100%	100%	100%	100%	100%

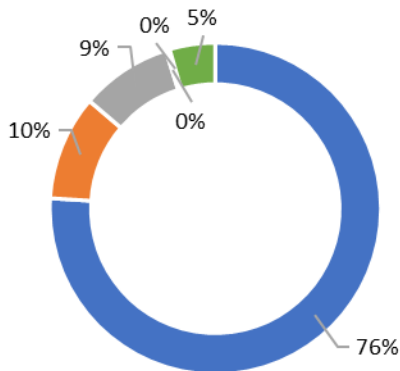
Functionalizing System Costs



Customer Type Units of Service

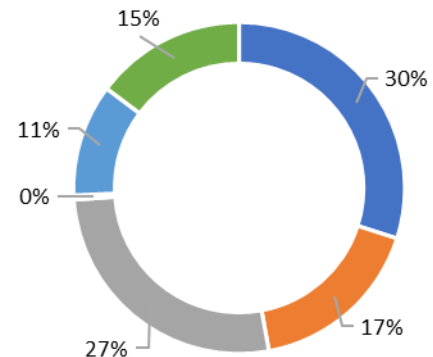
Customer Type	# of Bills	Daily Demand (kgal)	Estimated Daily Max Day (kgal)	Estimated Daily Peak Hour (kgal)
Single Family	388,368	4,609,929	31,575	44,205
Multi-Family	52,366	2,648,644	14,513	19,956
Commercial	45,504	4,120,233	22,577	31,043
Construction	1,200	65,046	445	624
Industrial	840	1,688,874	6,940	9,254
Landscape	22,704	2,272,385	18,677	24,903

Bills by Customer Type



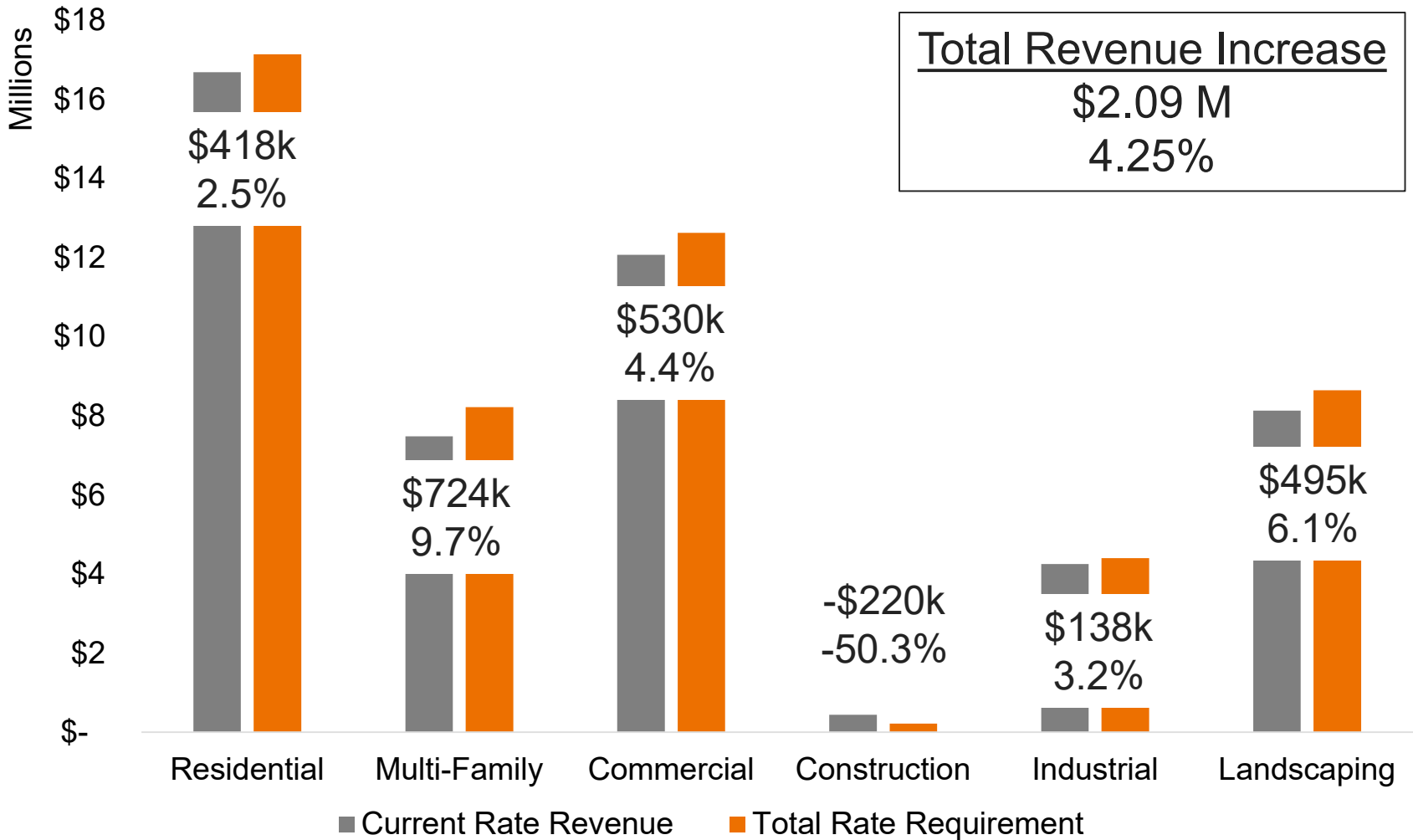
■ Single Family ■ Multi-Family ■ Commercial ■ Construction ■ Industrial ■ Landscape

Bills by Customer Type



■ Single Family ■ Multi-Family ■ Commercial ■ Construction ■ Industrial ■ Landscape

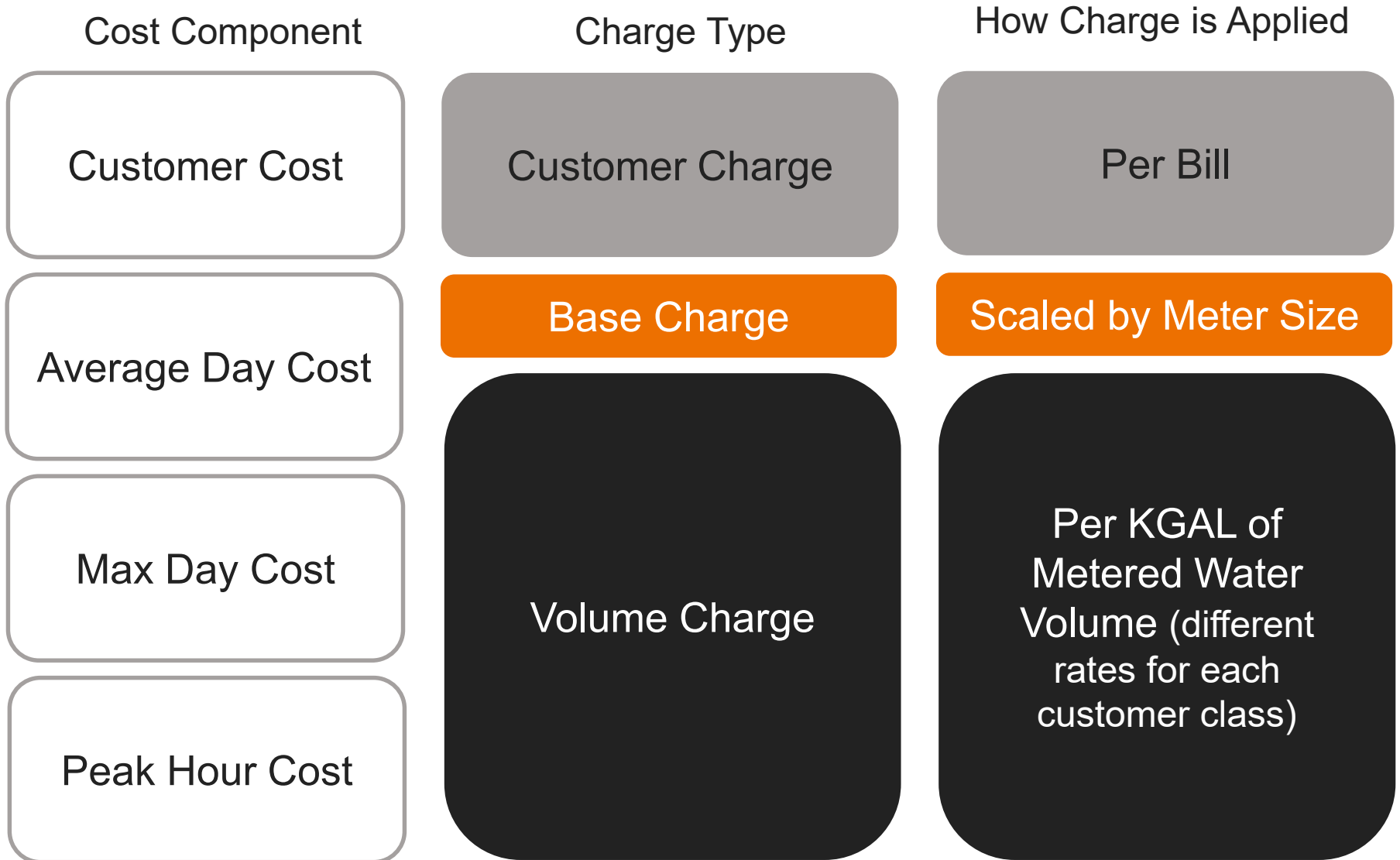
Water Cost to Serve vs. Current Revenue (\$M 2017)



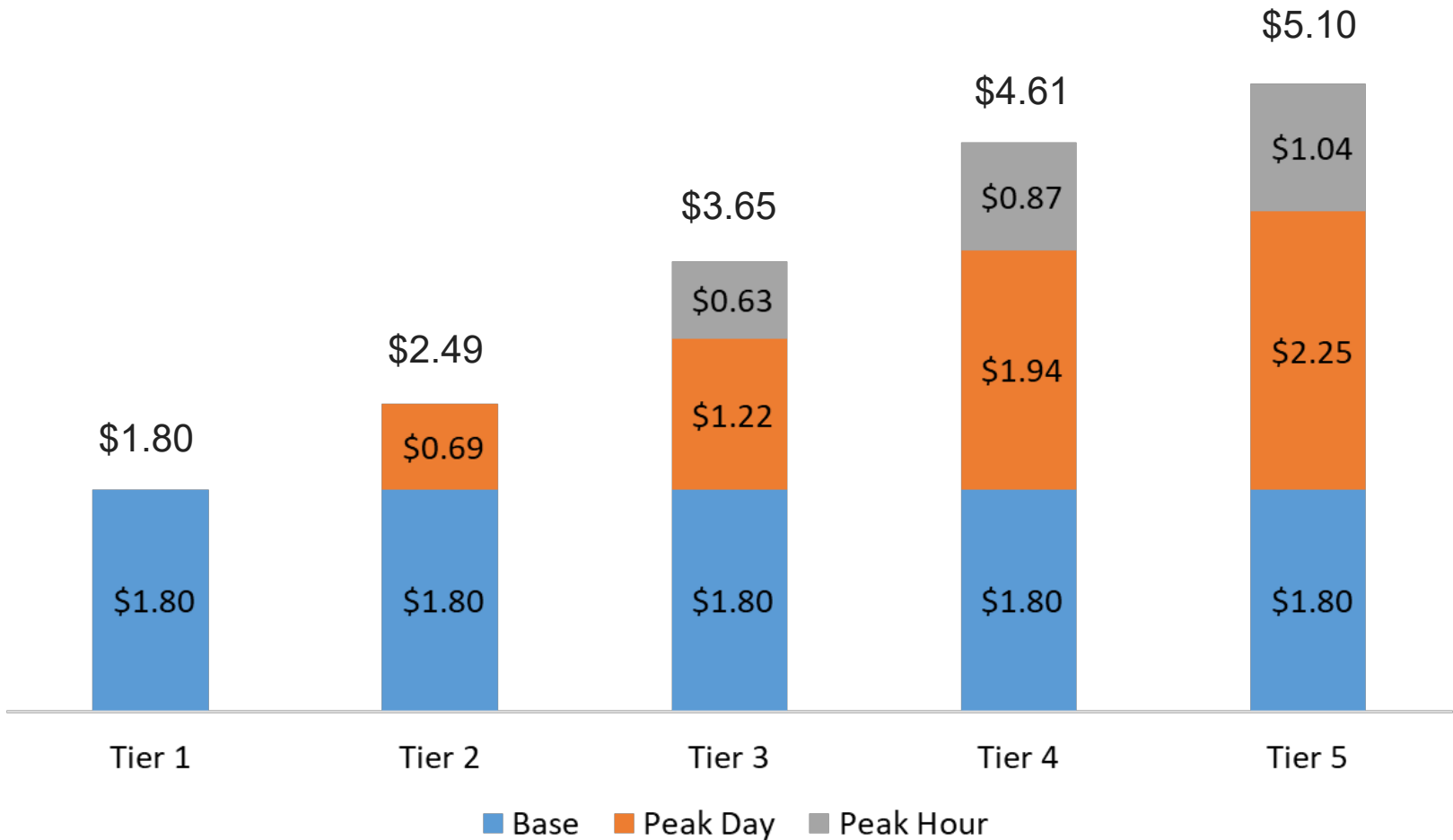
Questions & Discussion Before Rate Design

Basis of proposed water rate structure

Rate Design



Single family tiered rate calculations (\$/1,000 gal)



Non-single family volumetric rates

Class	Previous 2016 (per kgal)	Current (per kgal)
Multifamily	\$2.22	\$2.51
Commercial	\$2.46	\$2.59
Construction	\$4.07	\$4.07
Industrial	\$2.54	\$2.63
Landscaping	\$3.28	\$3.51

Monthly Single-Family Tier Sizing (Indoor)

Tier 1



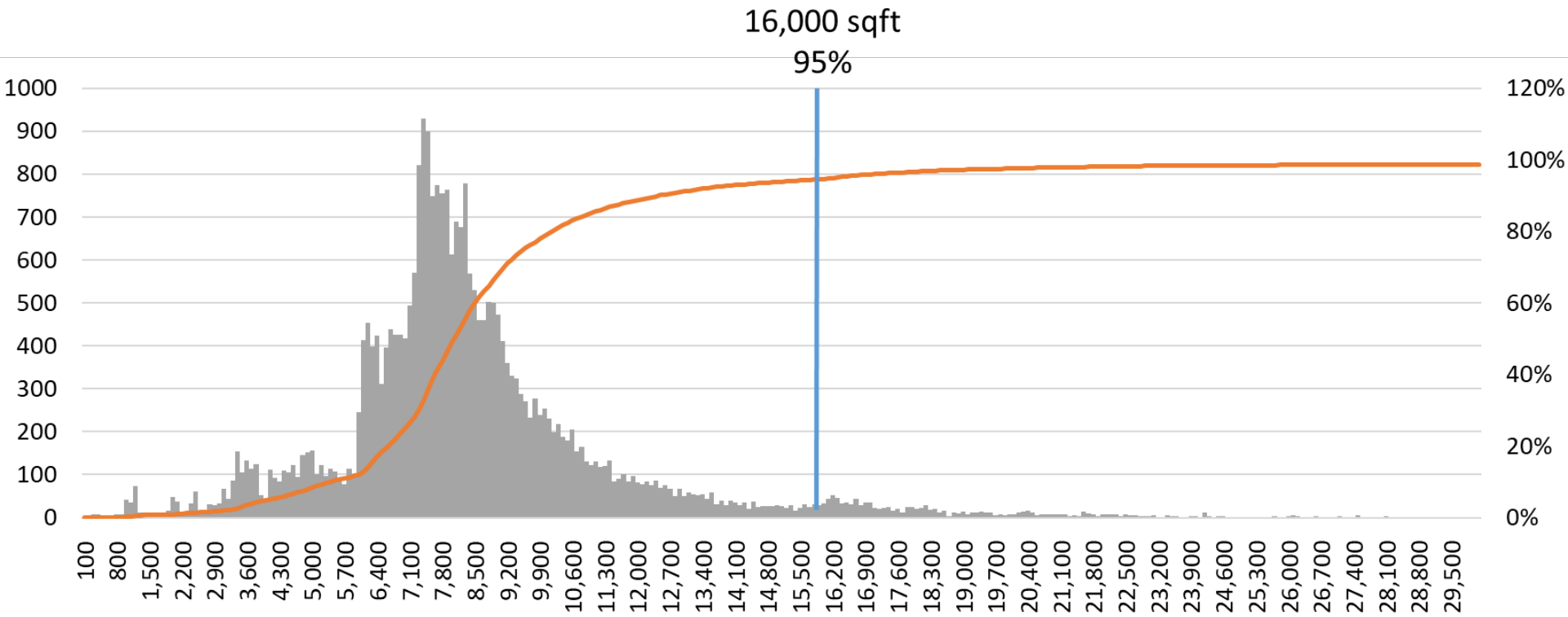
Average household:
2.63 people

Tier 2



Large household:
5.26 people

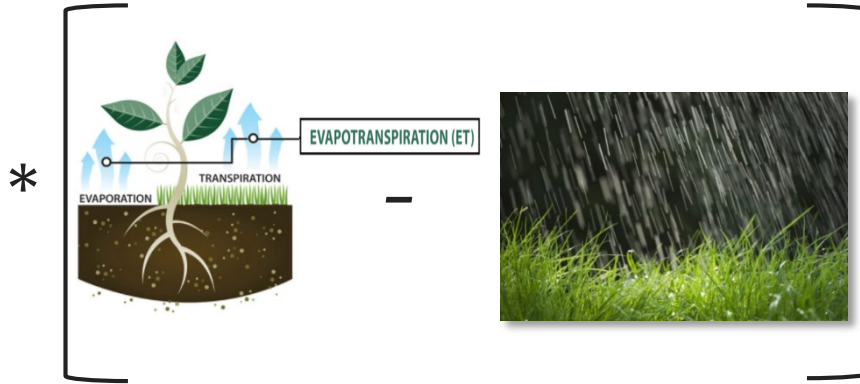
Single Family Parcel Distribution



Calculating irrigation requirements for the mean parcel (8,000 ft²)



Parcel Size: 8,000
Landscape Area: 2,000



Evapotranspiration: 81 Inches

Beneficial Rainfall: 4 Inches

Crop Type



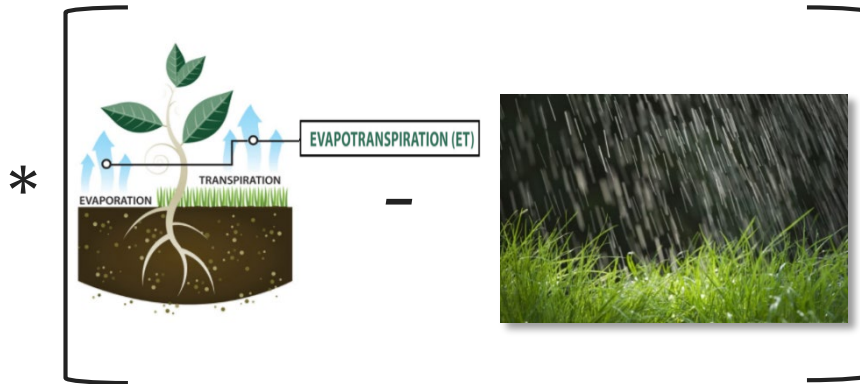
Irrigation System
Efficiency: 70%

= 8,000 GAL

Calculating irrigation requirements for the 90th percentile parcel (16,000 ft²)



Parcel Size: 16,000
Landscape Area: 6,500



Evapotranspiration: 81 Inches

Beneficial Rainfall: 4 Inches

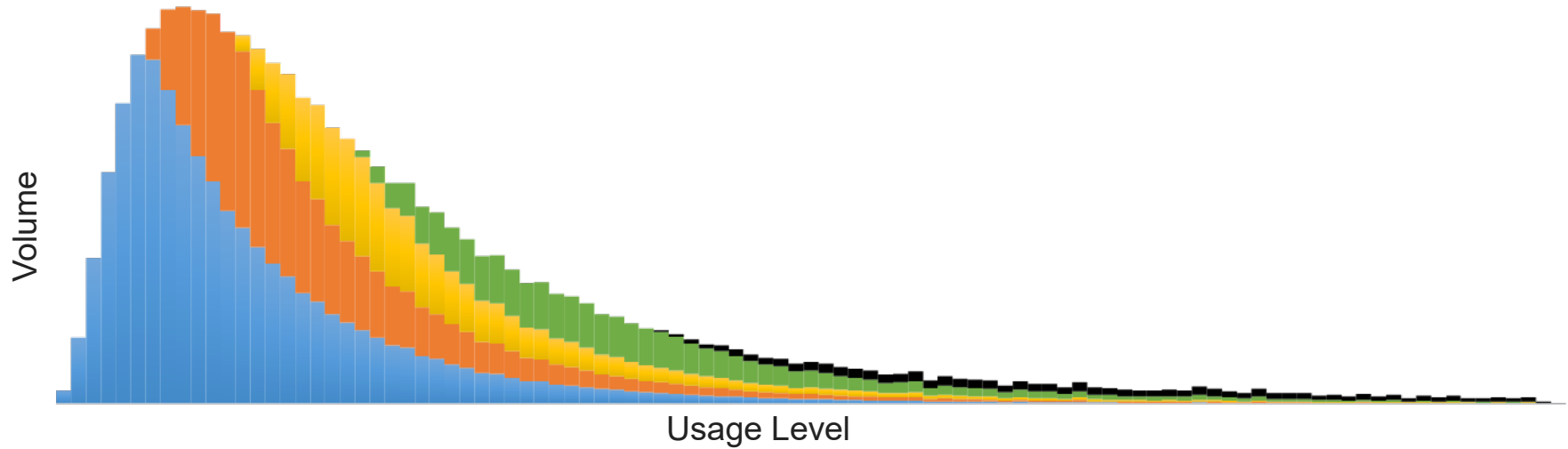
Crop Type



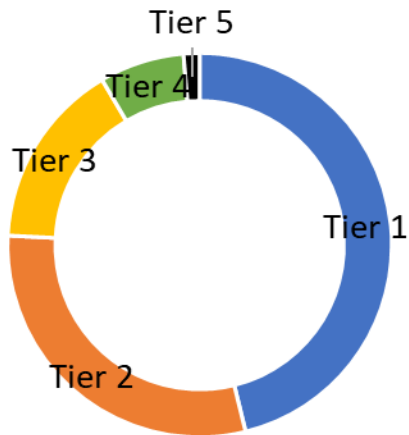
Irrigation System
Efficiency: 70%

= 20,000 GAL

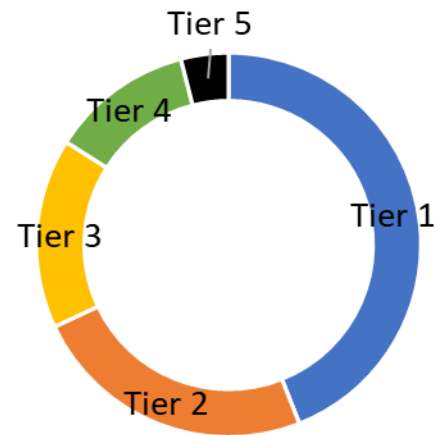
Single family water use by tier



Bill Count in Each Tier



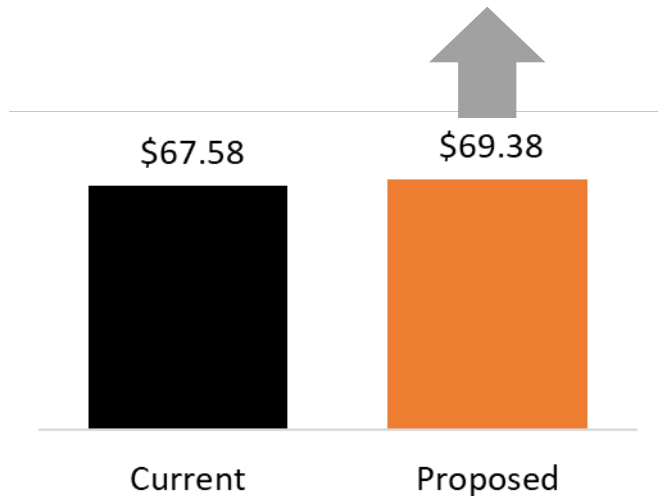
Volume in Tier



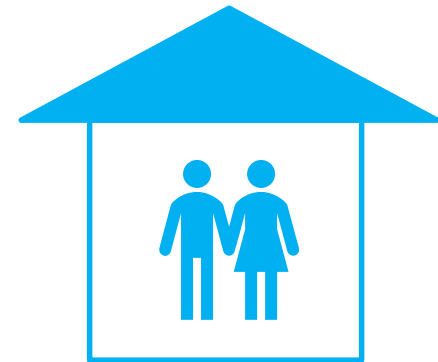
Questions & Discussion Before Customer Impacts

Bill Impacts: Single Family Customers

Customer with water, sewer, and sanitation service
Two-person household with indoor-only use
7,000 gal per month



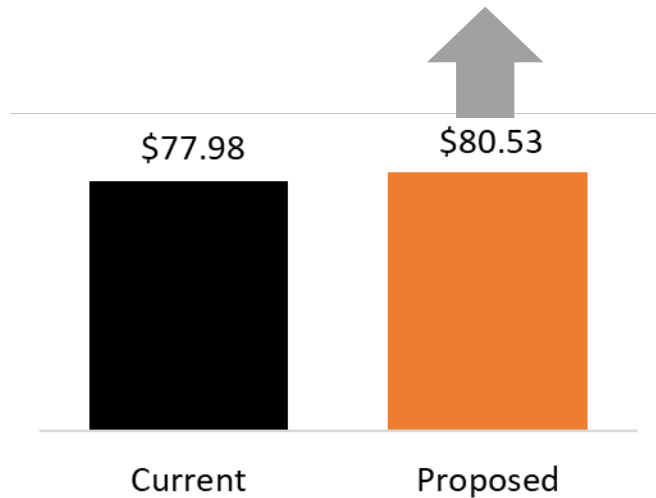
\$ Change: \$1.80
% Change: 2.7%



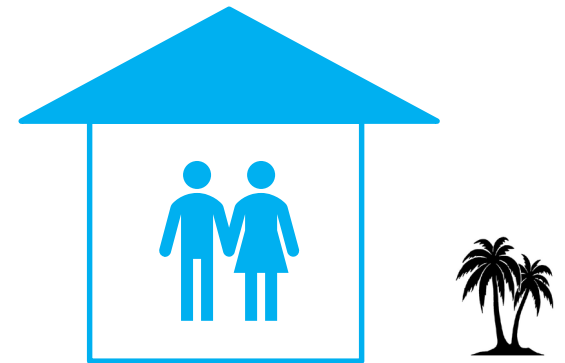
- 5/8" Meter
- 7,000 gal water use
- 5,000 gal sewer use

Bill Impacts: Single Family Customers

Customer with water, sewer, and sanitation service
Two-person household with outdoor use or larger family
10,000 gal per month



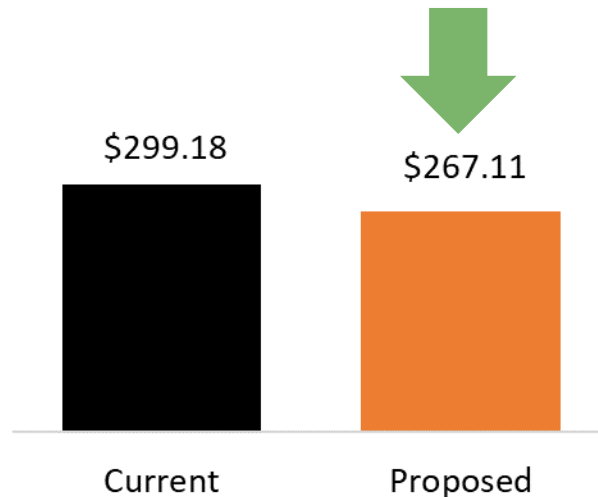
\$ Change: \$2.55
% Change: 3.3%



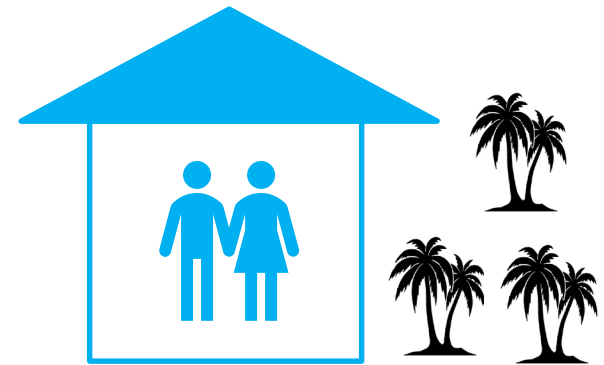
- 5/8" Meter
- 10,000 gal water use
- 7,000 gal sewer use

Bill Impacts: Single Family Customers

Customer with water, sewer, and sanitation service
Two-person household with significant outdoor use
50,000 gal per month



\$ Change: \$(32.07)
% Change: -10.7%



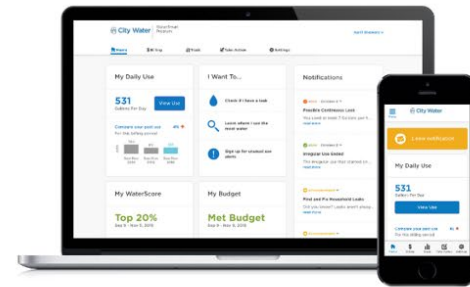
- 5/8" Meter
- 50,000 gal water use
- 12,000 gal sewer use

AMI – A Tool for Smart Water Use

AMI and WaterSmart



- Interactive water management portal
- Easy way to access and interpret water use
- Conservation recommendations
- Potential leak alerts



Slide from June 2020 Water and Wastewater Rate Study Public Meeting

Stakeholder Working Group Engagement

Summary of Activities

- “Rates 101” (Today)
 - Rate Study process, group role, desired outcomes
- Revenue Sufficiency Workshop (6/9/2020)
 - Annual O&M, debt service, and capital needs of water and sewer funds
- Cost of Service Workshop (7/7/2020)
 - Allocation of revenue requirements to customer classes
- Rate Structure Workshop (8/11/2020)
 - Customer class-specific rate structure enhancements

Example Link: <https://www.bismarcknd.gov/1849/Utility-Cost-of-Service-Rate-Design-Stud>

Questions & Discussion