



City of Tempe, Arizona

Water & Sewer Rate Study

Stakeholder Working Group Meeting #3 – Cost of Service

July 7, 2020

A Comprehensive Rate Study is A Series of Connected Investigations

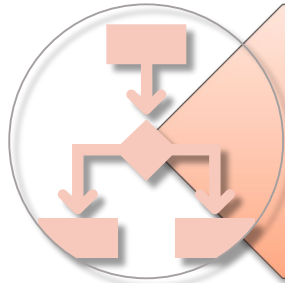
How
Much?



Revenue Sufficiency

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

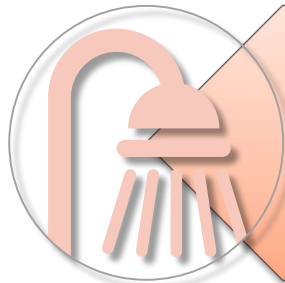
From
Whom?



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

What we will cover for water utility

Quick recap of FY 2021 revenue requirements

Cost allocation process

- Customer usage patterns and characteristics
- Recommended customer classes
- Cost allocation methodology

Review initial cost allocations by customer class and compare to current revenue

Goal: Understand characteristics and cost to serve each customer class, and receive input

Ask lots of questions & provide comments!

What we will cover for sewer utility

Wastewater cost allocations are based primarily on two data points **volume** and **strength**.

Tempe is initiating a process to collect strength samples from the system that will become the input for a future update.

While wastewater rates are not expected to need a revenue increase in the near future, these types of changes could result in customer impacts

Revenue Requirements Recap

“Levelized” Plan of Water Rate Increases

Recap



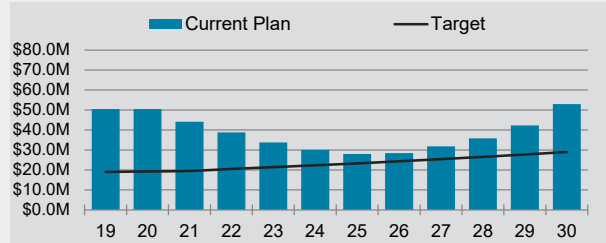
CITY OF TEMPE, AZ - WATER



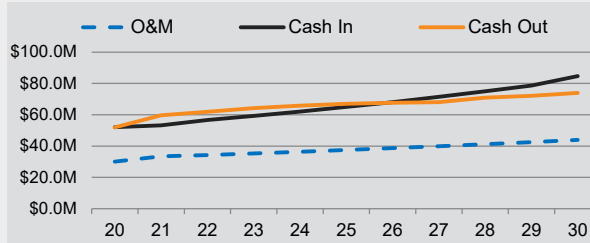
CALC SAVE CTRL LAST OVR

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2025	FY 2030
Water Rate Increases	0.00%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	30.61%	70.70%
Single Family Water Bill	\$32.26	\$34.05	\$35.88	\$37.84	\$39.94	\$42.12	\$44.45	\$46.92	\$49.48	\$52.19	\$55.05		

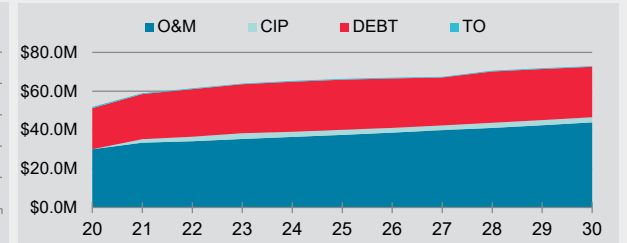
Operating Fund



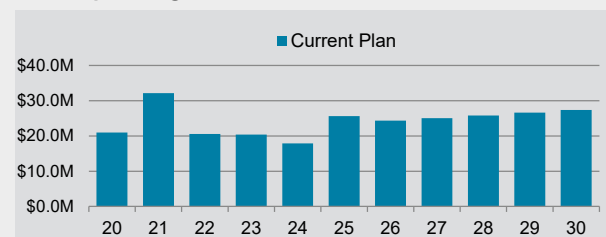
Revenues vs. Expenses



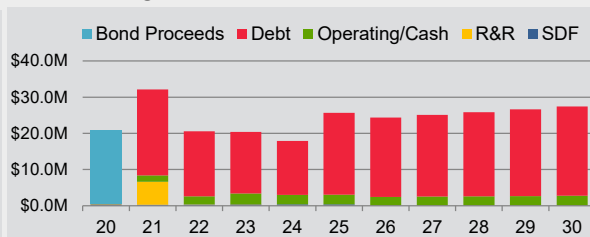
Expenses by Type



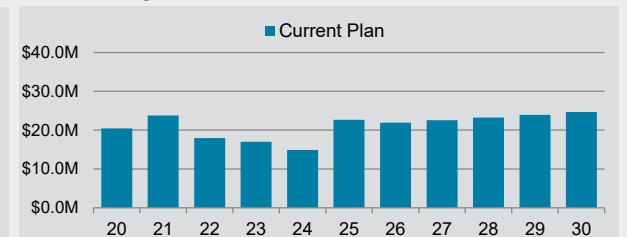
CIP Spending



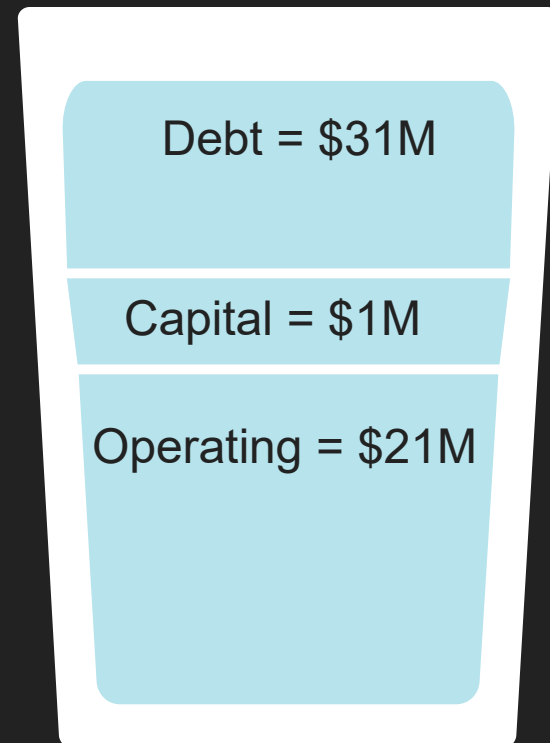
CIP Funding



Borrowing



THE COST TO FILL A GLASS OF WATER



Represents current projections for FY 2021

Cost of Service Analysis

Objectives of Cost of Service Analysis

- The total cost of service is the annual revenue requirement of the utility for the Test Year (based on the Financial Plan portion of the study).
- The utility system is made up of different functions, which drive costs.
- Different customer types use the system functions differently and, as a result, the cost to serve these customer types vary.

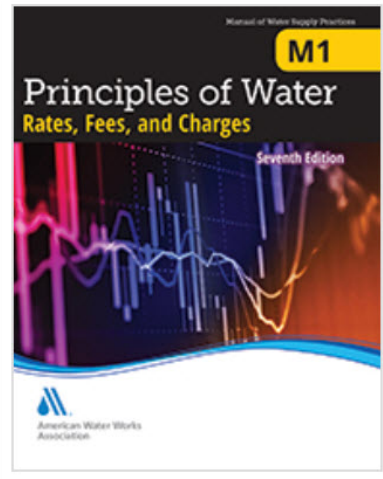
Goal: Determine the **cost to serve** each class and collect revenue from each class consistent with the cost of providing service.

Application based on Industry Guidance

Method

American Water Works Association (AWWA) Manual M-1

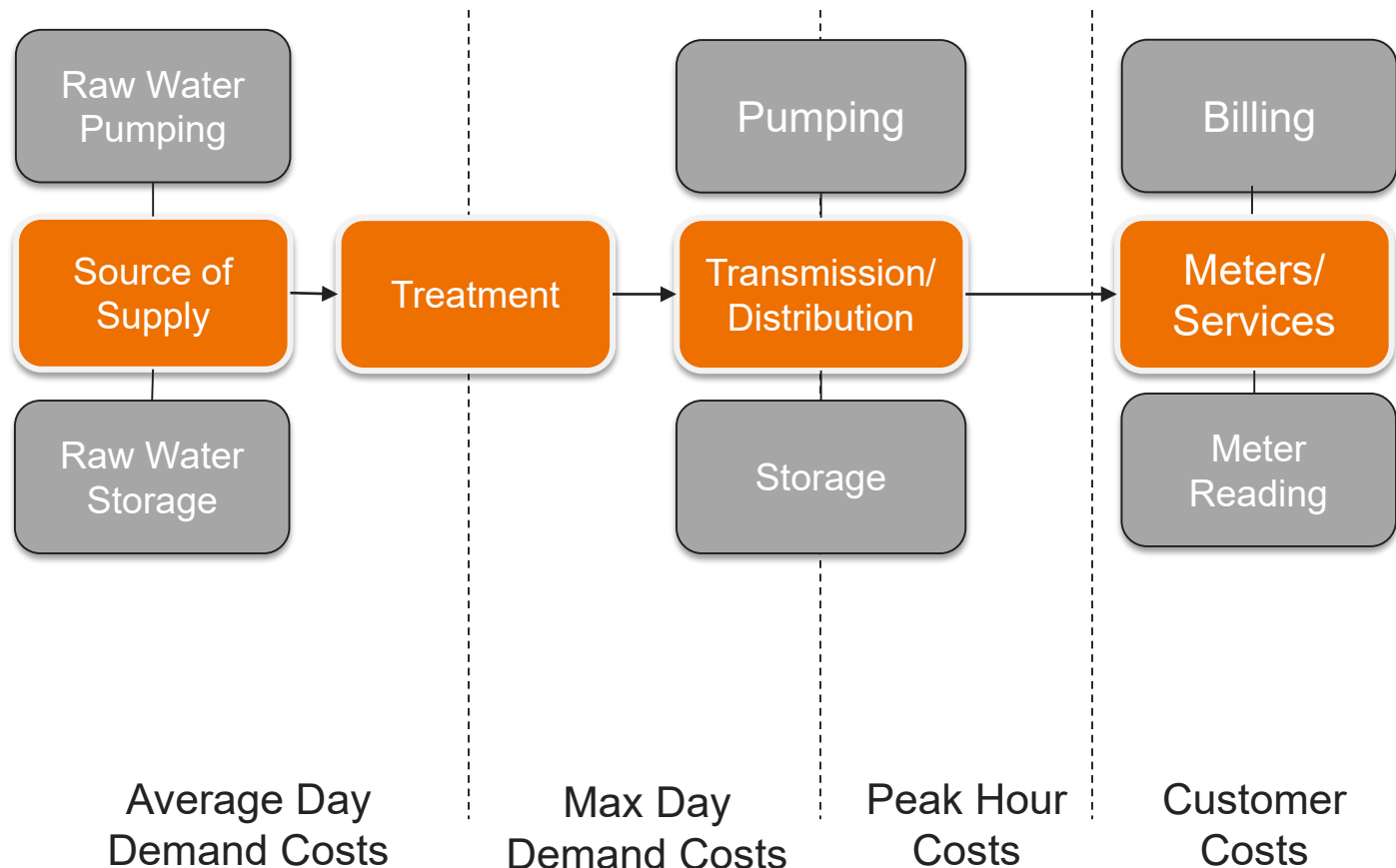
- ▶ Costs allocated to functions and then to users in proportion to contributions to system components



Process used:

- 1) Functionalize system costs
- 2) Allocate functional costs to cost components (base vs. extra capacity, customer-related costs)
- 3) Develop unit costs for each cost component of the system
- 4) Determine customer classes; develop units of service based on customer data
- 5) Distribute costs to customer classes based on unit costs and units of service

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

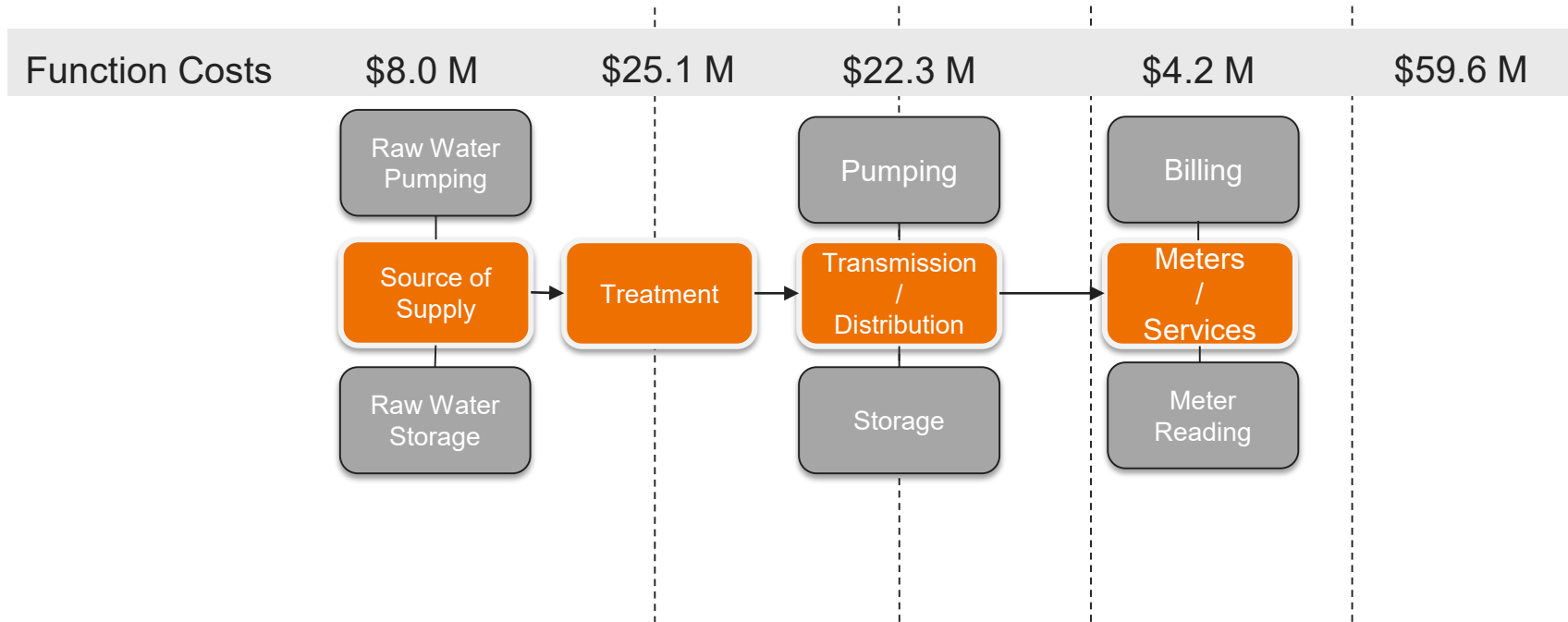


Allocation Process (FY 2021 Test Year)

Water System Operating & Debt Service Expense Allocation to Functions

Description	Department	Test Year COS	Allocation Basis/Factor	Supply % Allocation	Treatment % Allocation	T/D % Allocation	Meters/	Total % Allocation
							Services % Allocation	
Salaries	Customer Services	648,158	Meter/Services	0.00%	0.00%	0.00%	100.00%	100%
Bilingual Pay	Customer Services	1,447	Meter/Services	0.00%	0.00%	0.00%	100.00%	100%
Fica Taxes	Customer Services	48,042	Meter/Services	0.00%	0.00%	0.00%	100.00%	100%
Arizona State Retirement	Customer Services	79,110	Meter/Services	0.00%	0.00%	0.00%	100.00%	100%
Employee Health Insurance	Customer Services	124,881	Meter/Services	0.00%	0.00%	0.00%	100.00%	100%
Mediflex Reimbursed Expens	Customer Services	6,566	Meter/Services	0.00%	0.00%	0.00%	100.00%	100%
Defined Contribution- Ret	Customer Services	6,227	Meter/Services	0.00%	0.00%	0.00%	100.00%	100%
General Office Supplies	Customer Services	5,985	Meter/Services	0.00%	0.00%	0.00%	100.00%	100%
Uniform Allowance	Customer Services	1,140	Meter/Services	0.00%	0.00%	0.00%	100.00%	100%
Salaries	GIS/Eng	392,270	GIS	0.00%	0.00%	95.00%	5.00%	100%
Overtime	GIS/Eng	1,476	GIS	0.00%	0.00%	95.00%	5.00%	100%
Holiday Pay	GIS/Eng	569	GIS	0.00%	0.00%	95.00%	5.00%	100%
Fica Taxes	GIS/Eng	30,165	GIS	0.00%	0.00%	95.00%	5.00%	100%
Arizona State Retirement	GIS/Eng	48,186	GIS	0.00%	0.00%	95.00%	5.00%	100%
Employee Health Insurance	GIS/Eng	65,712	GIS	0.00%	0.00%	95.00%	5.00%	100%
Mediflex Reimbursed Expens	GIS/Eng	2,554	GIS	0.00%	0.00%	95.00%	5.00%	100%
Defined Contribution- Ret	GIS/Eng	4,359	GIS	0.00%	0.00%	95.00%	5.00%	100%
Comm. Parts - Telephone	GIS/Eng	186	GIS	0.00%	0.00%	95.00%	5.00%	100%
Other Equipment + Supplies	GIS/Eng	3,325	GIS	0.00%	0.00%	95.00%	5.00%	100%
Contracted Services	GIS/Eng	39,900	GIS	0.00%	0.00%	95.00%	5.00%	100%
Salaries	Conservation	293,300	Supply	100.00%	0.00%	0.00%	0.00%	100%
Fica Taxes	Conservation	22,438	Supply	100.00%	0.00%	0.00%	0.00%	100%
Arizona State Retirement	Conservation	35,717	Supply	100.00%	0.00%	0.00%	0.00%	100%
Employee Health Insurance	Conservation	70,064	Supply	100.00%	0.00%	0.00%	0.00%	100%
Mediflex Reimbursed Expens	Conservation	3,040	Supply	100.00%	0.00%	0.00%	0.00%	100%
General Office Supplies	Conservation	950	Supply	100.00%	0.00%	0.00%	0.00%	100%
Vehicles		735,300	Fixed Assets	6.40%	36.29%	56.04%	1.28%	100%
CAP Water		1,150,470	Supply	100.00%	0.00%	0.00%	0.00%	100%
Office Equipment	Conservation	2,970	Supply	100.00%	0.00%	0.00%	0.00%	100%
Transfers			N/A	0.00%	0.00%	0.00%	0.00%	0%
Interfund Transfer		395,800	Indirect	17.84%	49.10%	21.47%	11.59%	100%
Debt Service			N/A	0.00%	0.00%	0.00%	0.00%	0%
Subordinate Debt		16,647,683	Modified Fixed Assets	6.48%	36.76%	56.76%	0.00%	100%
Senior Debt		5,857,194	Modified Fixed Assets	6.48%	36.76%	56.76%	0.00%	100%
Model Calculated New Debt		787,988	5 Year CIP Projects	13.31%	26.24%	58.80%	1.66%	100%
Capital		-	N/A	0.00%	0.00%	0.00%	0.00%	0%
Projects Funded with Cash		1,782,288	2021 CIP	3.31%	22.06%	74.63%	0.00%	100%

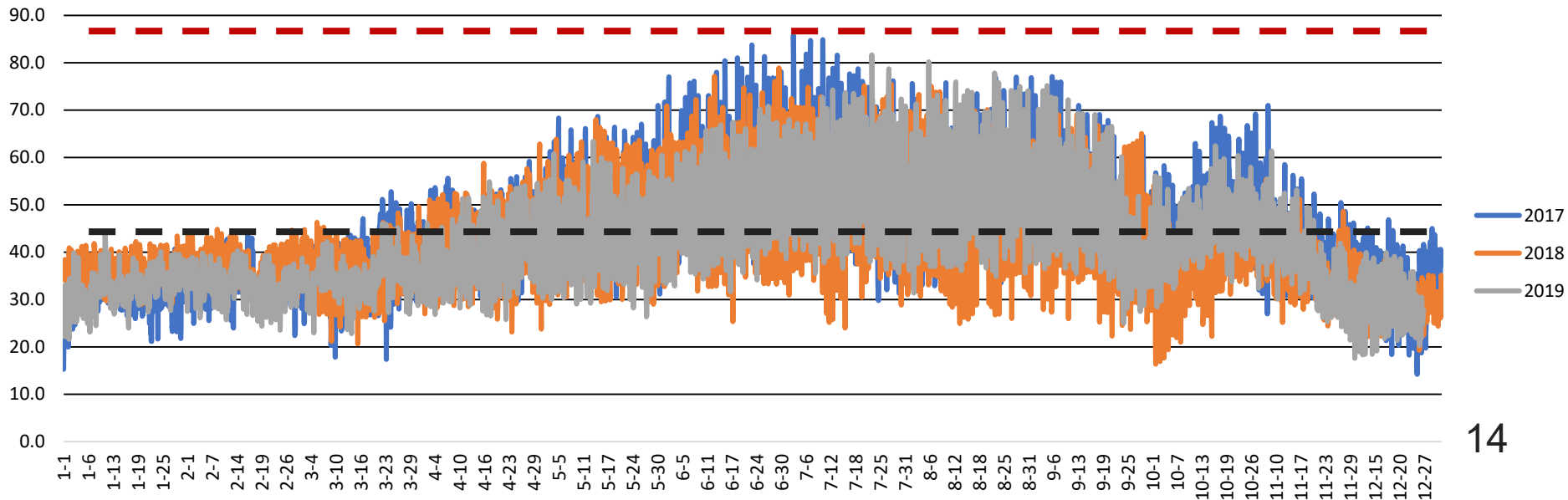
Functionalizing System Costs



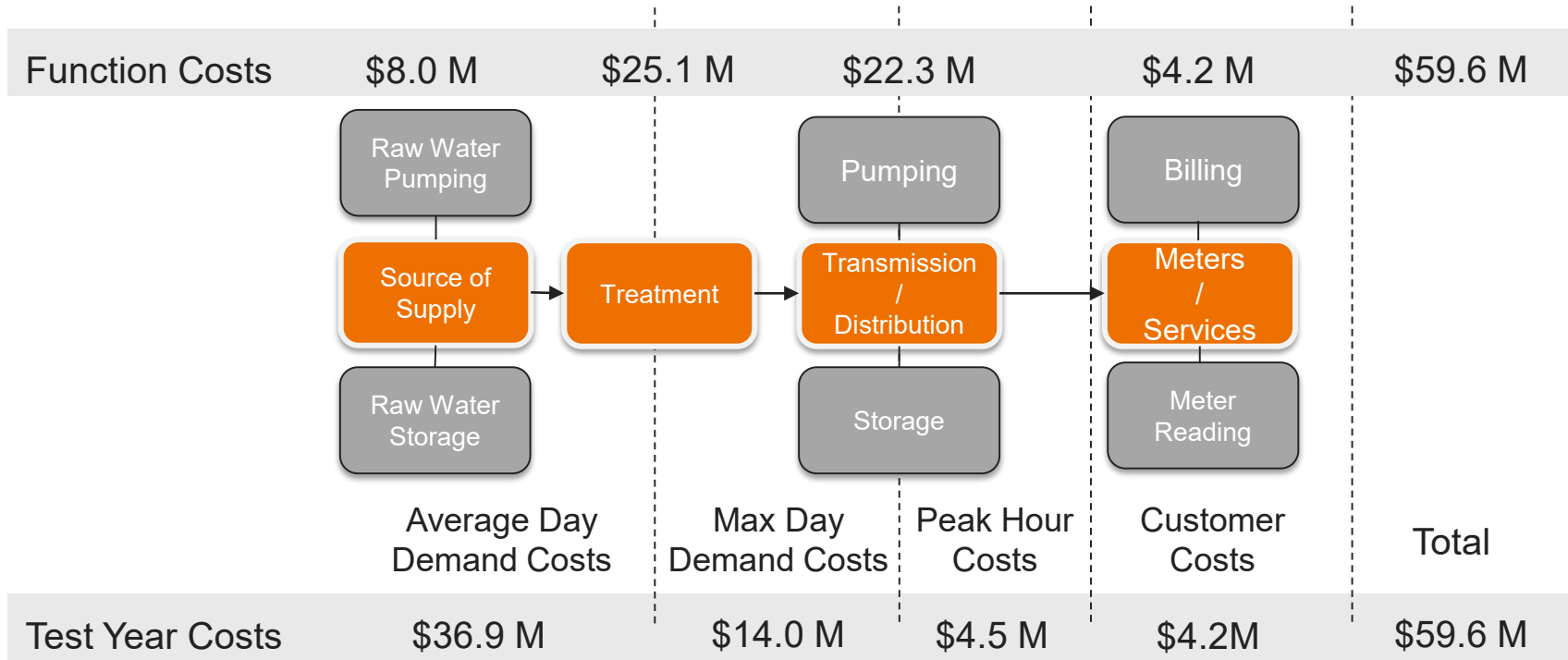
Allocation Process (2017 - 2019 Average)

	Source of Supply	Treatment	Transmission/ Distribution	Customer
Base Capacity Average Day	100%	67%	54%	0%
Extra Capacity Max Day	0%	33%	26%	0%
Extra Capacity Peak Hour	0%	0%	21%	0%
Customer	0%	0%	0%	100%

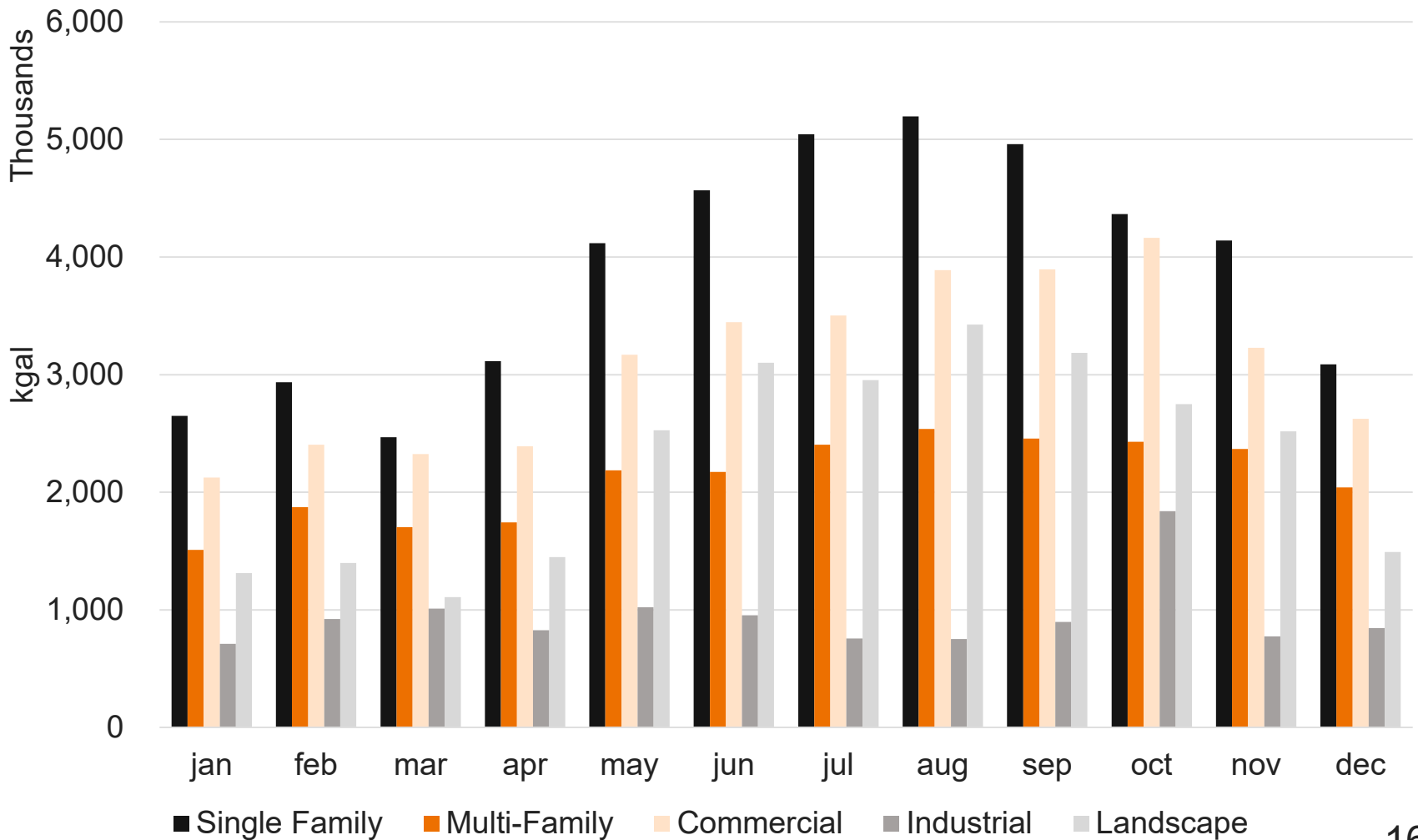
Water System Hourly Flow Rate (MGD)



Functionalizing System Costs



Summary of 2019 monthly water use



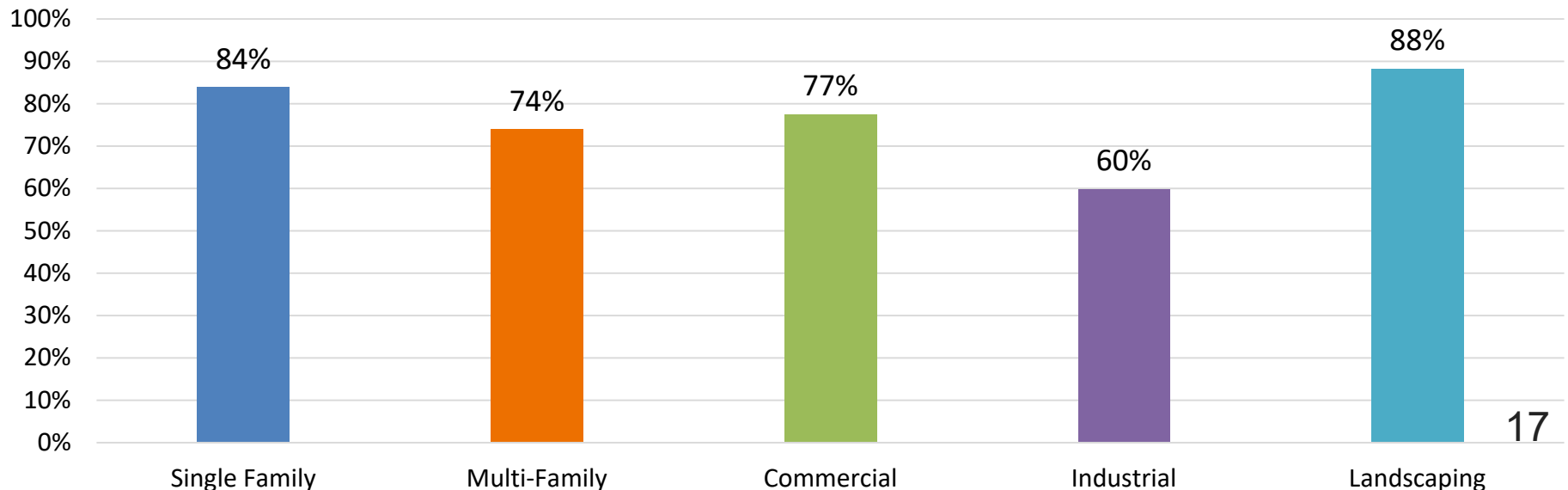
Automated Metering Infrastructure (AMI)



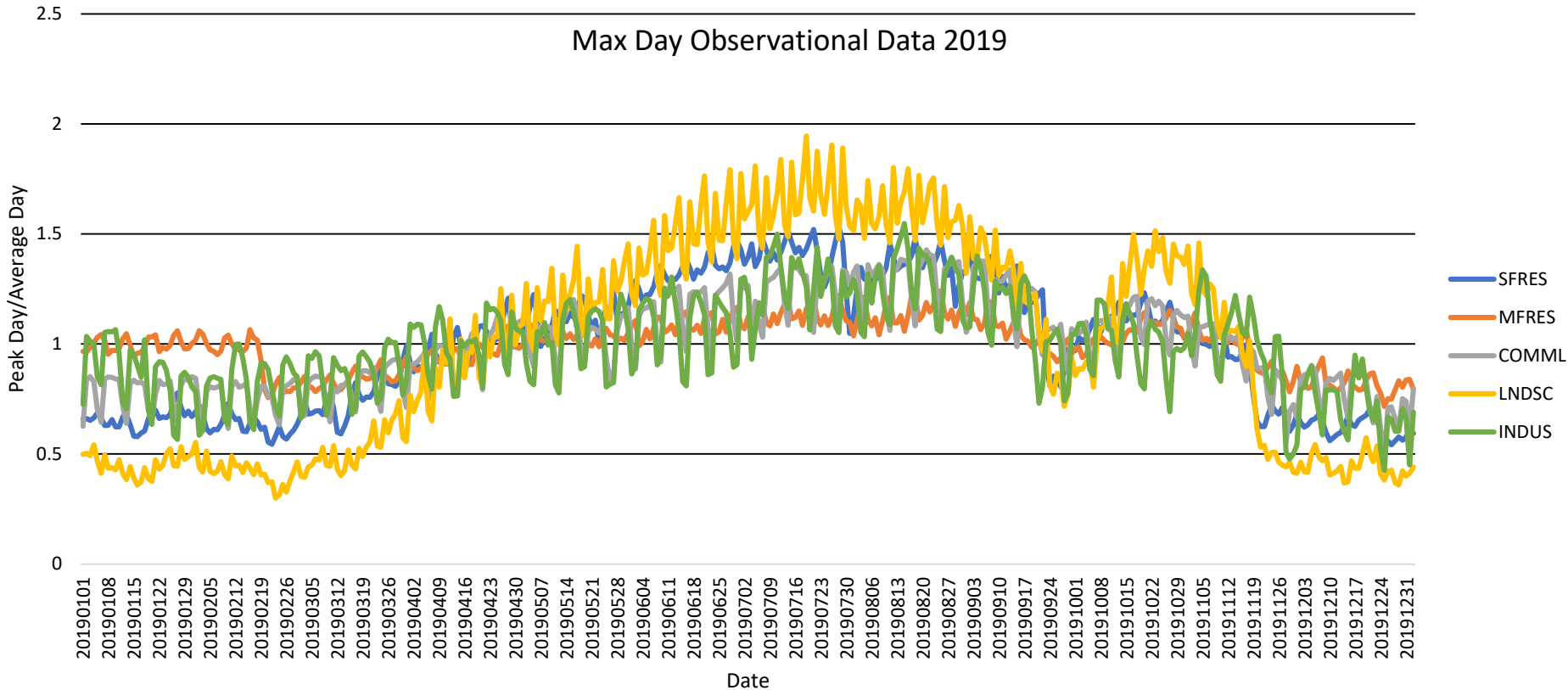
Key Observations

- Provides an in-depth picture of use
- Distinct from billing data (12 points vs 8,760)
- A separate analysis in an of itself
- Data is cleaned, organized and analyzed

% of Customer Class Represented

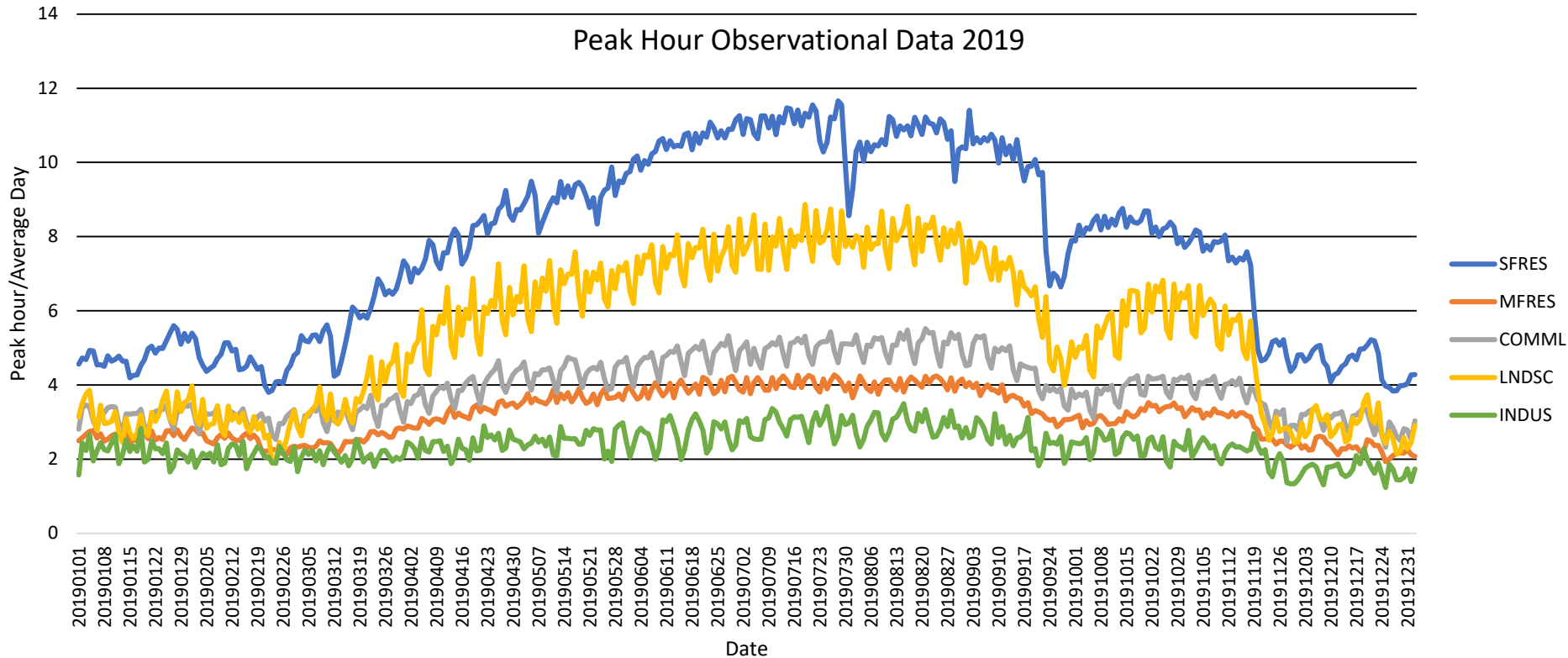


Deep dive into customer data



11 million data points from the Automated Meter Infrastructure Data were used for 2019 on a **daily** basis

REALLY deep dive into customer data

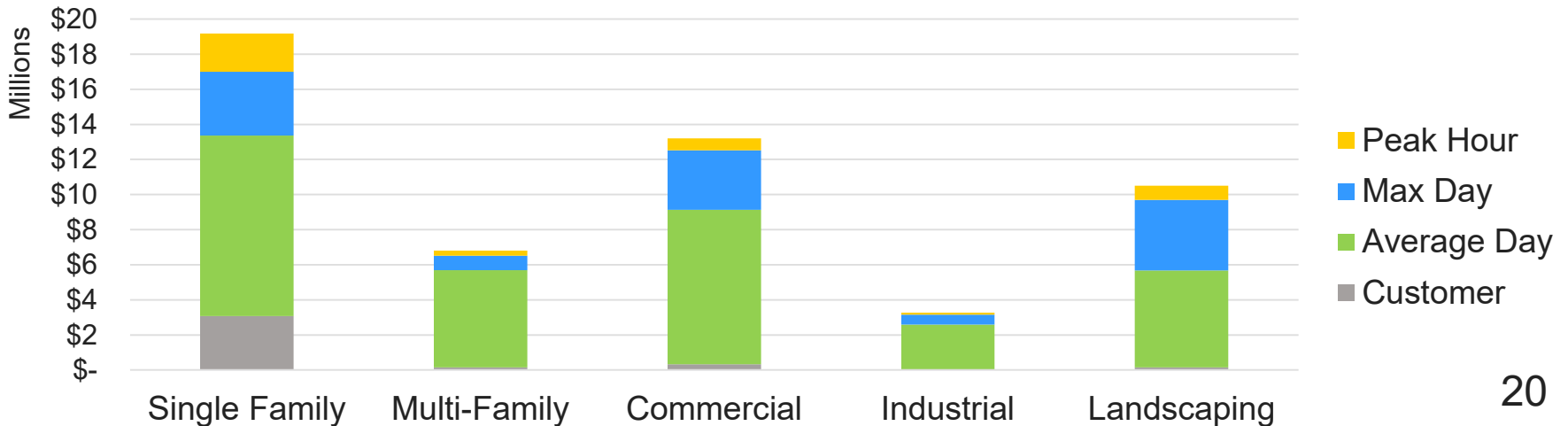


263 million data points from the Automated Meter Infrastructure Data were used for 2019 on an **hourly** basis

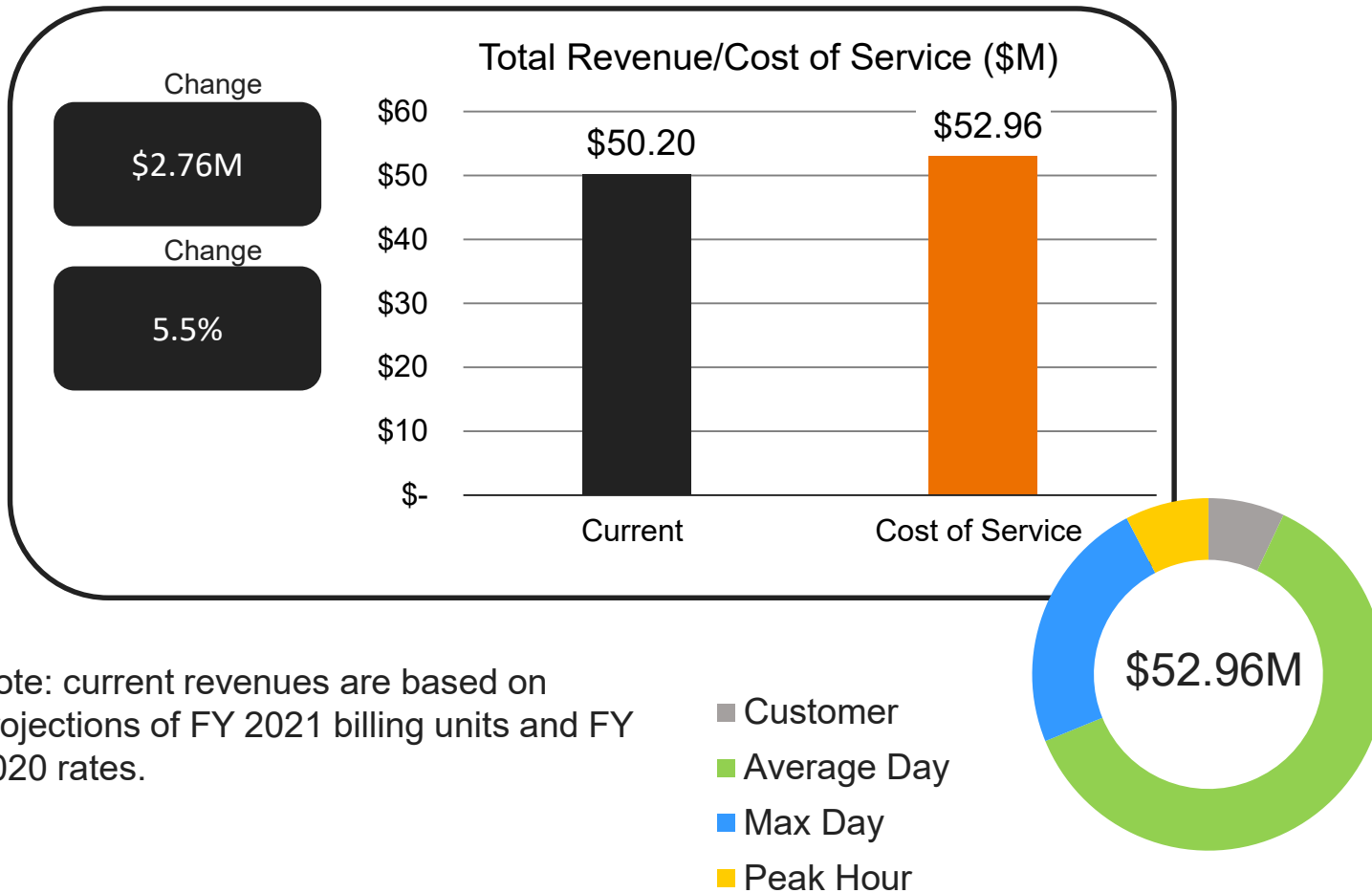
Customer Class Units of Service

Customer Type	# of Accounts	Total Water Use (kgal/day)	Extra Max Day Use (kgal/day)	Extra Peak Hour Use (kgal/day)
Single Family	34,677	12,922	4,264	129,734
Multi-Family	1,714	7,019	983	17,476
Commercial	3,712	10,952	3,943	39,975
Industrial	1,383	3,189	670	6,665
Landscape	7,628	6,779	4,610	46,845

Cost of Service by Cost Component and Class

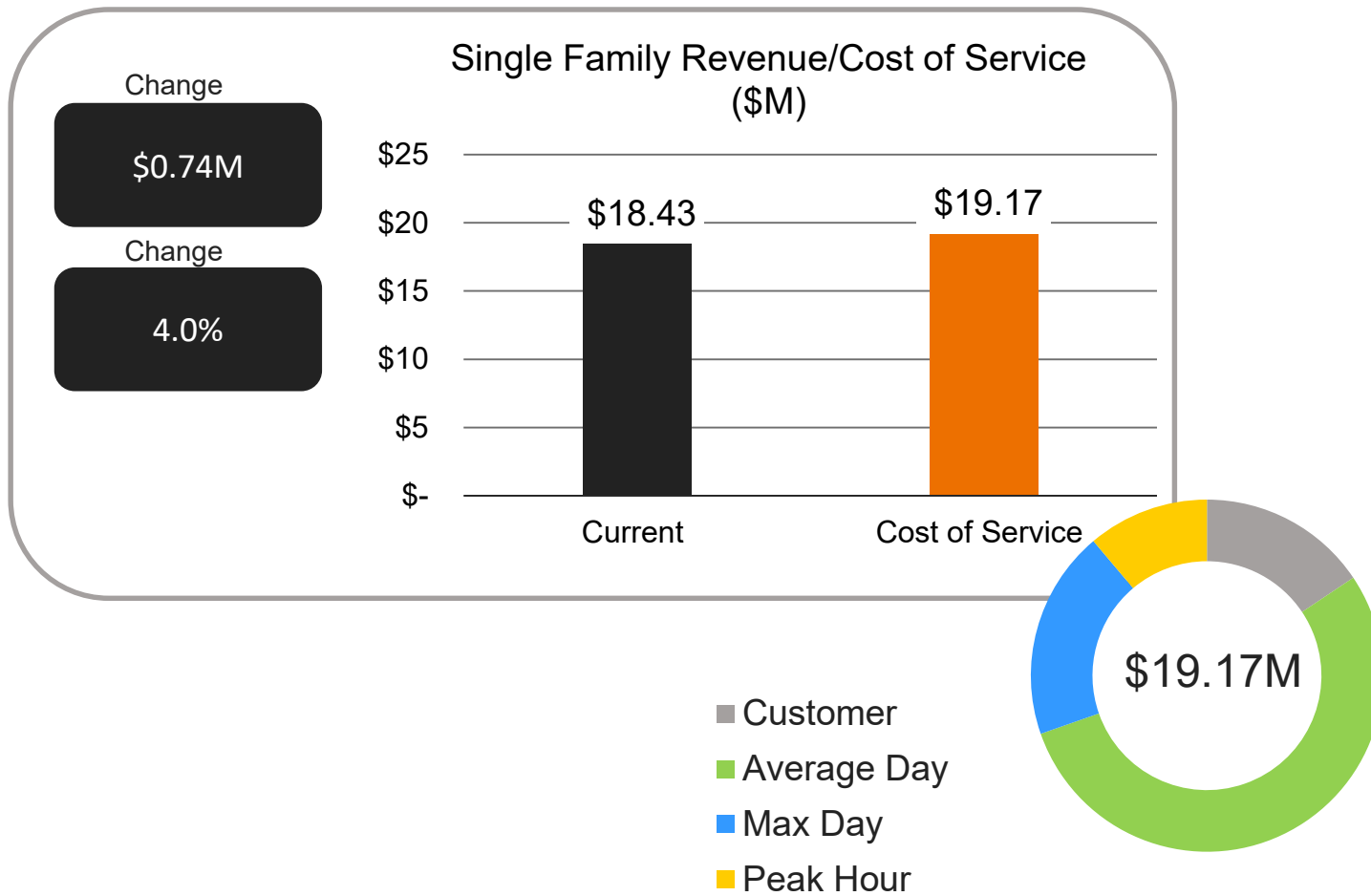


Water Cost to Serve vs. Current Revenue

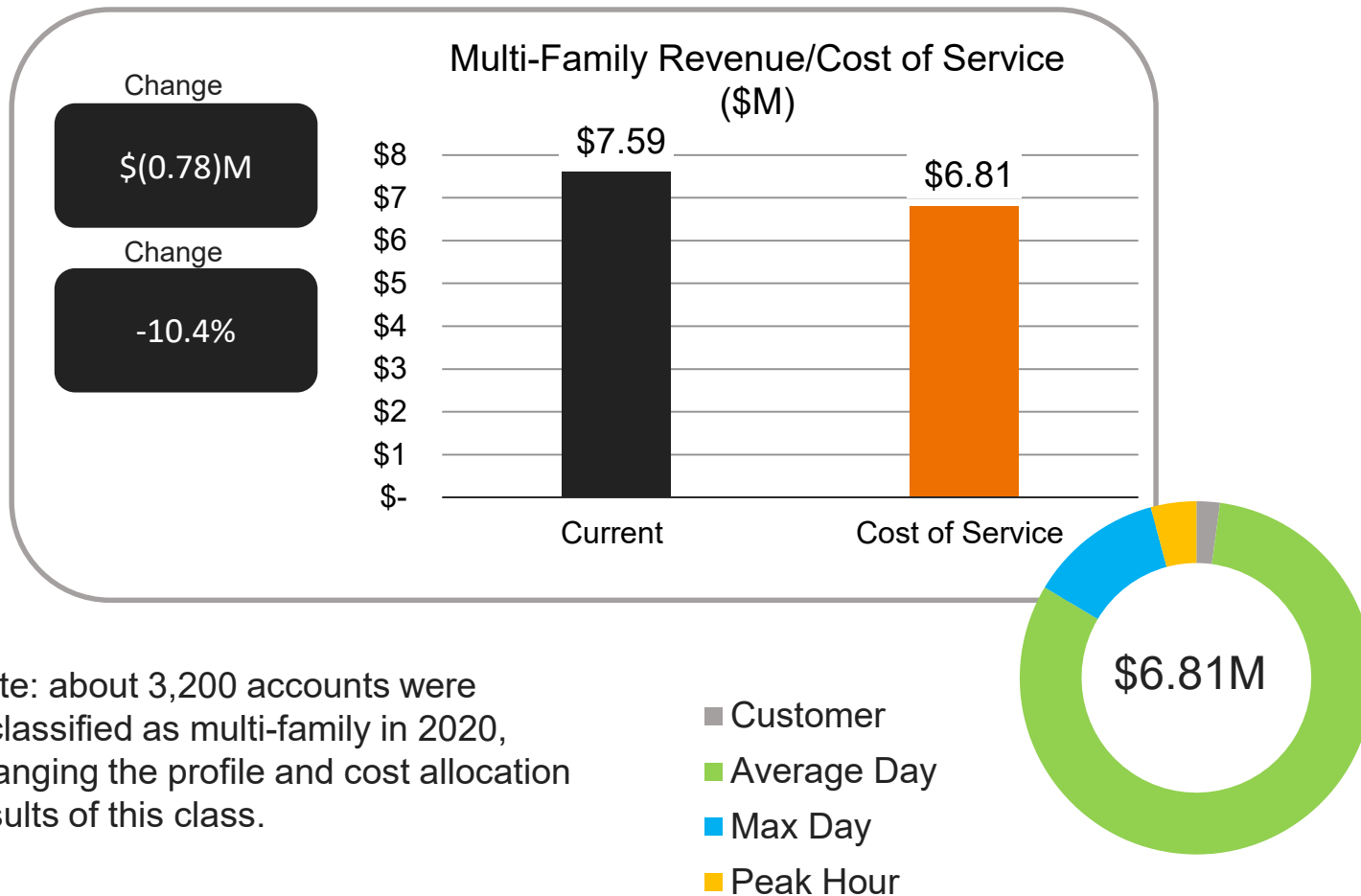


Note: current revenues are based on projections of FY 2021 billing units and FY 2020 rates.

Single Family Results

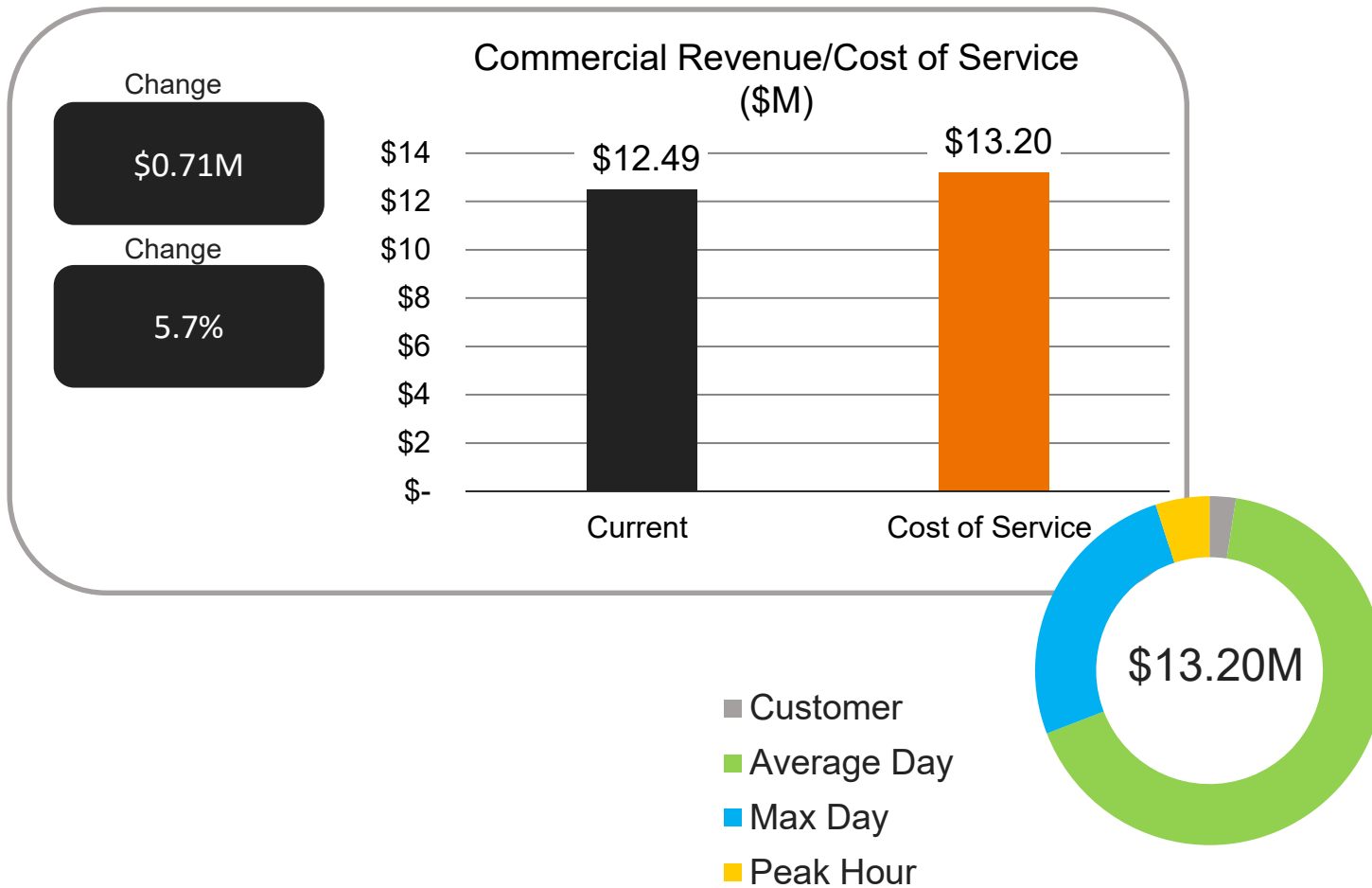


Multi-Family Results

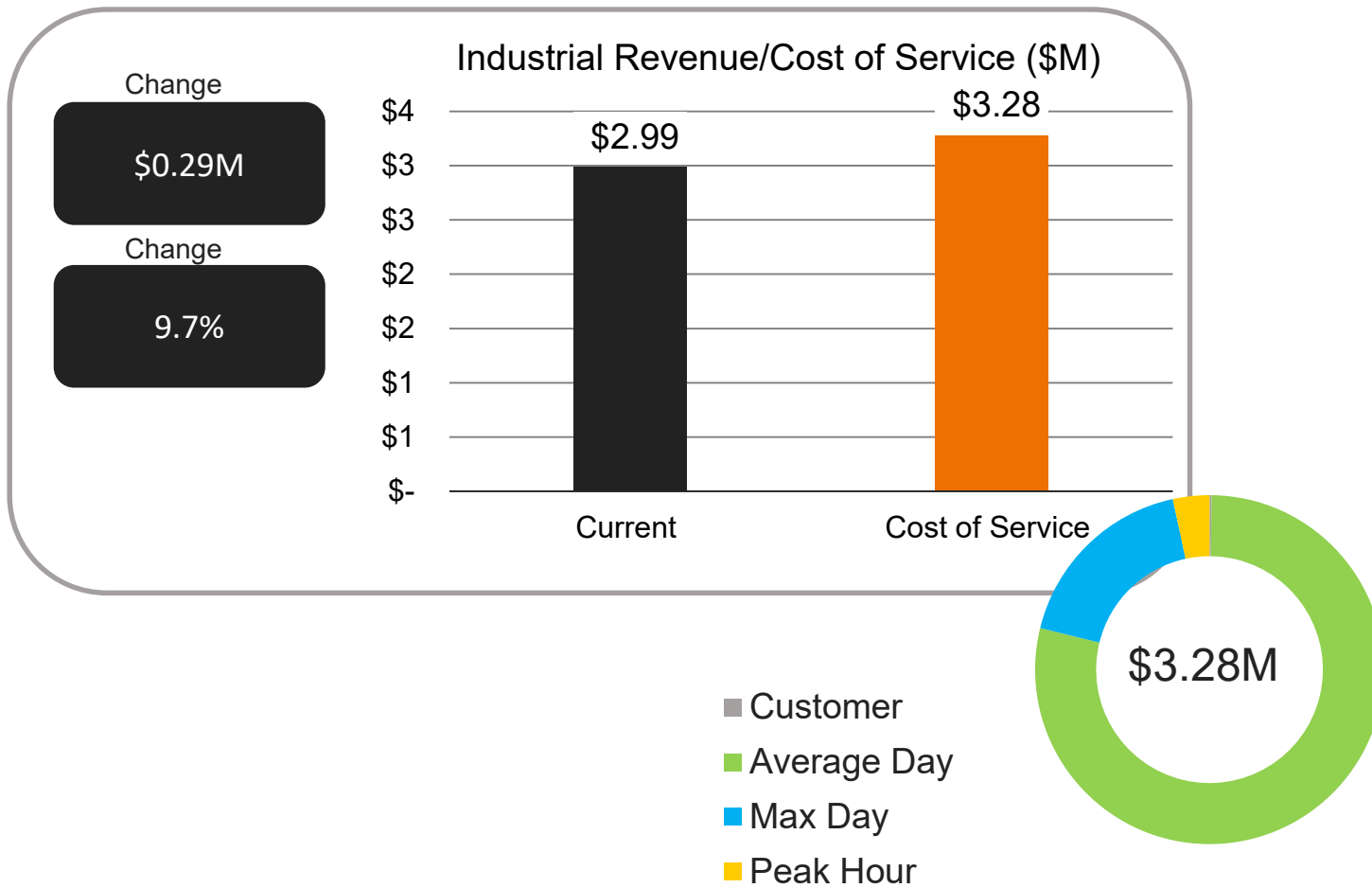


Note: about 3,200 accounts were reclassified as multi-family in 2020, changing the profile and cost allocation results of this class.

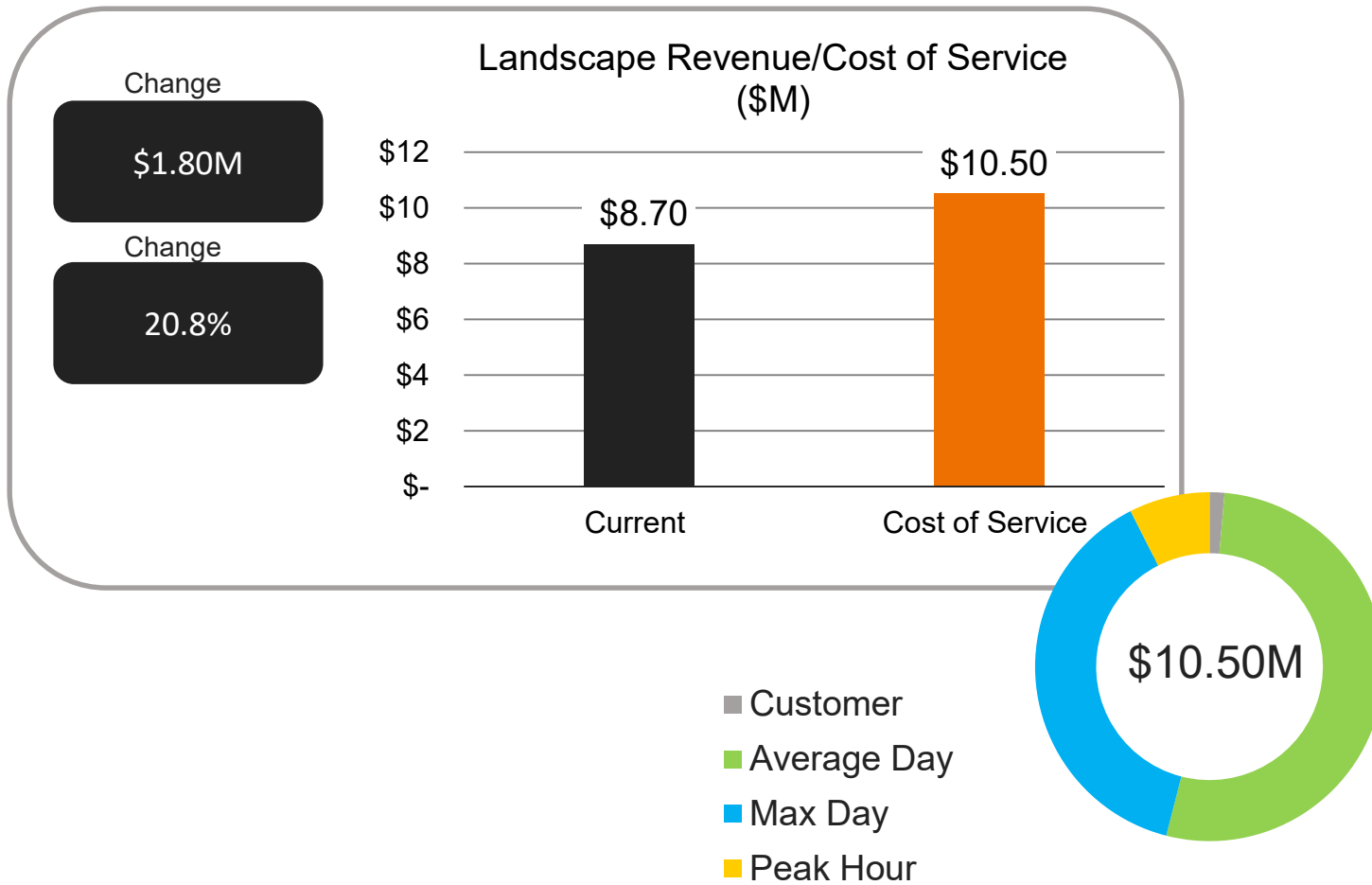
Commercial Results



Industrial Results



Landscape Results



Stakeholder Working Group Engagement

Summary of Activities

- ✓ “Rates 101” (6/2/2020)
 - 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 (Today)
 - Allocation of revenue requirements to customer classes
- Rate Structure Workshop (8/11/2020)
 - Customer class-specific rate structure enhancements

Questions & Discussion