

City of Bismarck, North Dakota

Utility Cost of Service
& Rate Design Study

*Final Presentation:
“Bringing it Together”*

November 27, 2018



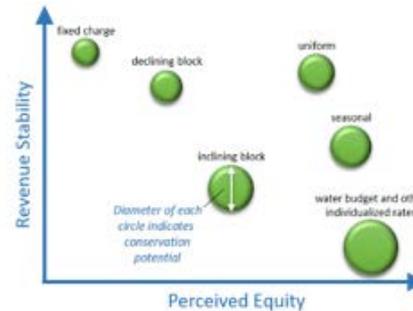
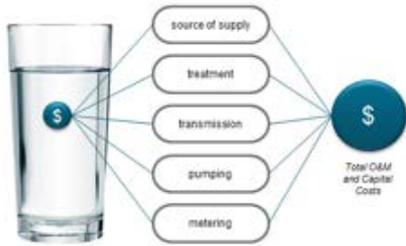
Big picture of the process

- Strengths, weaknesses & opportunities (Phase I)
 - Public meetings on 5/7 and 6/11; Commission on 6/26
- Detailed analytical work (Phase II)
 - Public meeting on 8/1 – revenue requirements
 - Public meeting on 9/5 – cost of service
 - Public meeting on 9/19 – rate design
 - Public meeting on 10/18 – capital charges
 - Plus 2 additional separate meetings with developers
- Final documents & delivery of models (Phase III)

Active stakeholder participation

- 6 meetings with 30-45 attendees at each
 - Single-Family & Multi-Family
 - Governmental Agencies/Departments
 - Various Businesses (including engineering firms)
 - Developers
 - Consecutive Users
- Feedback from stakeholders reflected in results
 - Recommended customer classes
 - Single-family household watering characteristics
 - Comments regarding implementation of capital charges

Presentation follows Phase II tasks



Revenue Requirements

- Operating Costs
- Capital Costs
- Financial Policies
 - Debt Coverage
 - Reserves

Cost Allocation

- Evaluate Available Data
- Establish Classes
- Identify Methodology
- Compare Results to Current Revenue

Rate Design

- Evaluate Objectives
- Identify Structures
- Set Parameters
- Customer Impacts

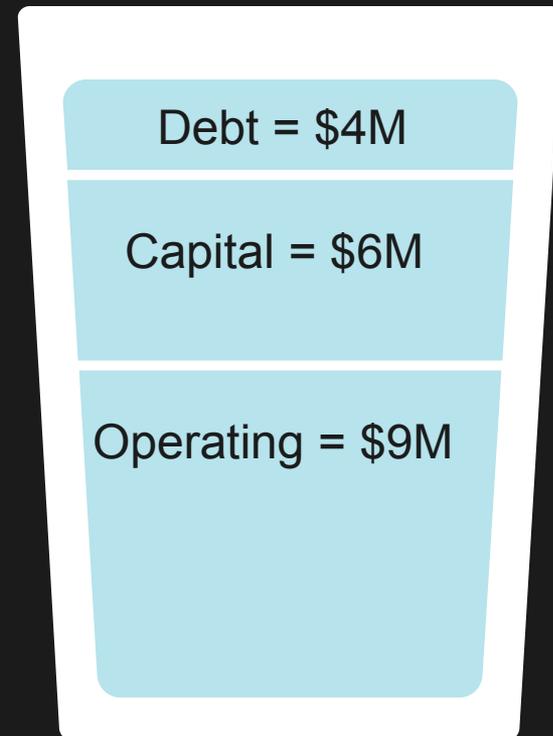
Other Fees/Charges

- Trunkline Assessment
- Miscellaneous Fees
- Curb Stop Repair
- Back-Up Coverage
- Unannexed Surcharge

Active Stakeholder Participation

Revenue Requirements

THE COST TO FILL A GLASS OF WATER

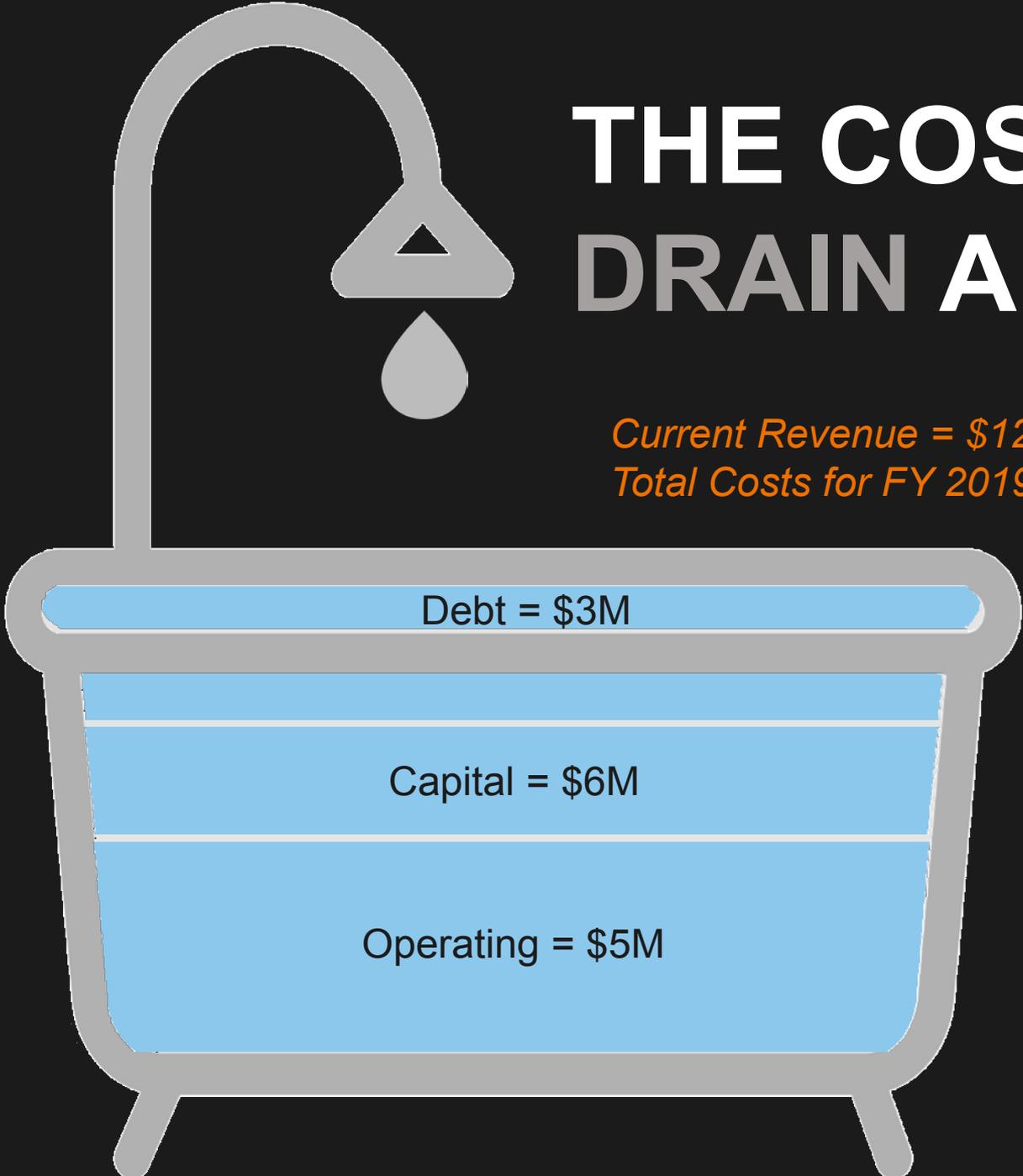


Current Revenue = \$18M

Total Costs for FY 2019 = \$19M

THE COST TO DRAIN A TUB

Current Revenue = \$12M
Total Costs for FY 2019 = \$14M

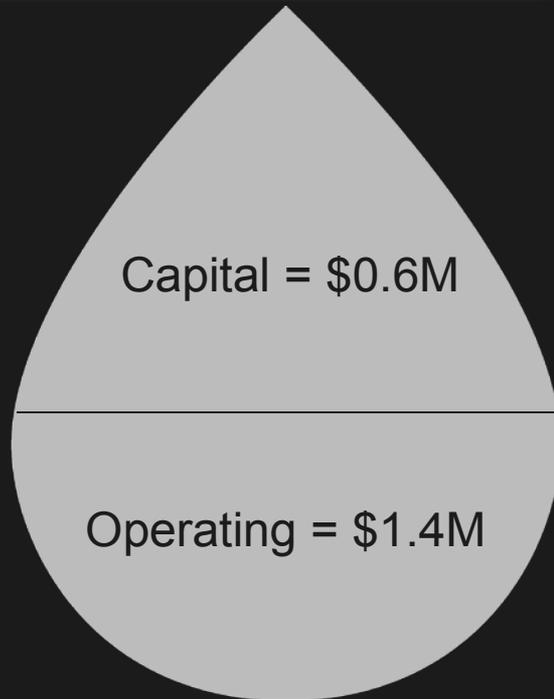


Debt = \$3M

Capital = \$6M

Operating = \$5M

THE COST TO MANAGE THE RAIN



Current Revenue = \$2.5M
Total Costs for FY 2019 = \$2.0M

2019 & Future revenue increase needs

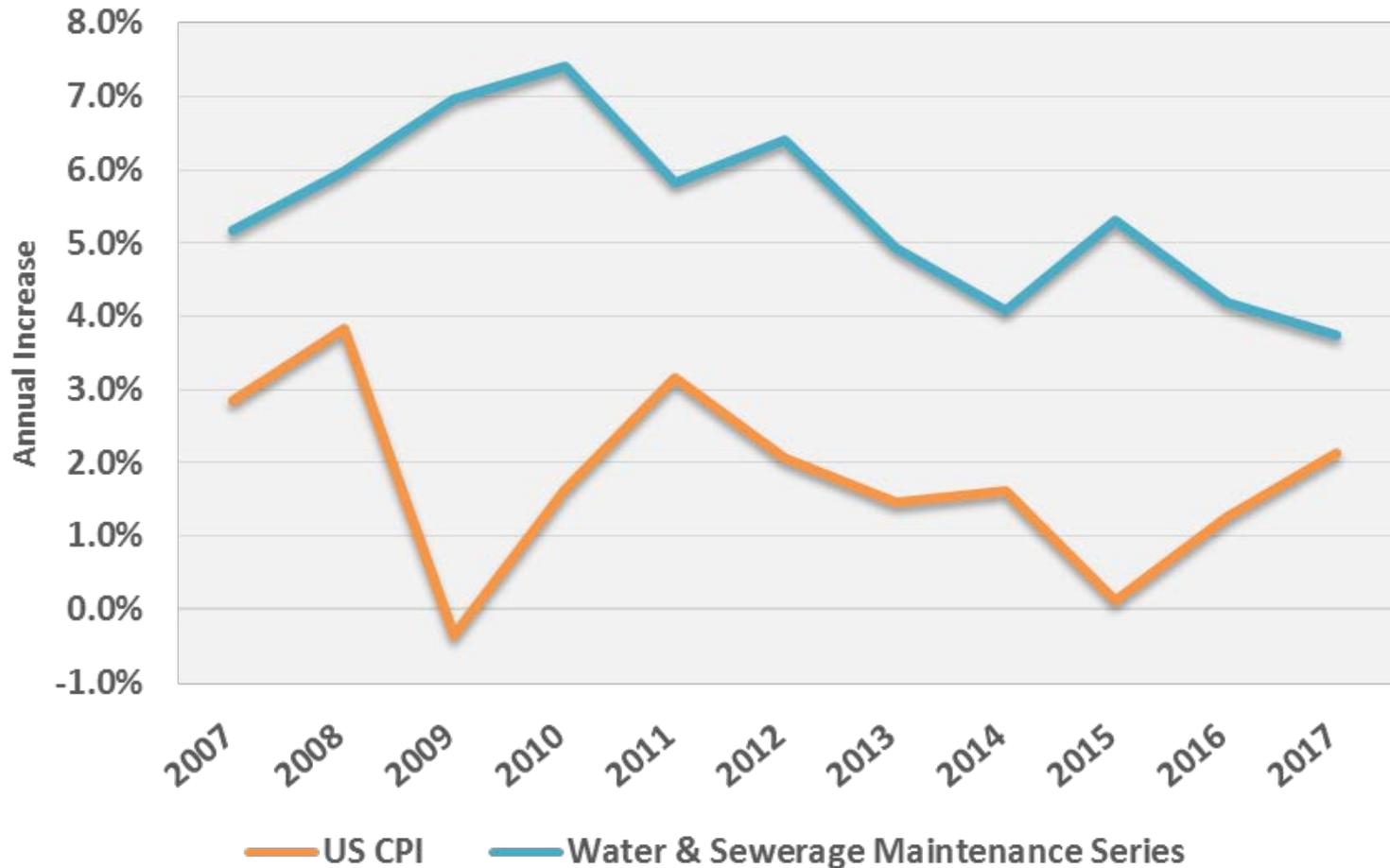
	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Water	8.00%	2.00%	2.00%	2.00%	2.00%
Sewer	5.00%	5.00%	5.00%	5.00%	1.00%
Stormwater	(33.81%)*	3.60%	3.60%	3.60%	3.60%
Combined	2.75%	3.76%	3.79%	3.81%	1.49%

*Reflects recommended removal of unannexed surcharge

Assumes implementation of recommended capacity charges and use of revenues for expansion related capital and debt service costs

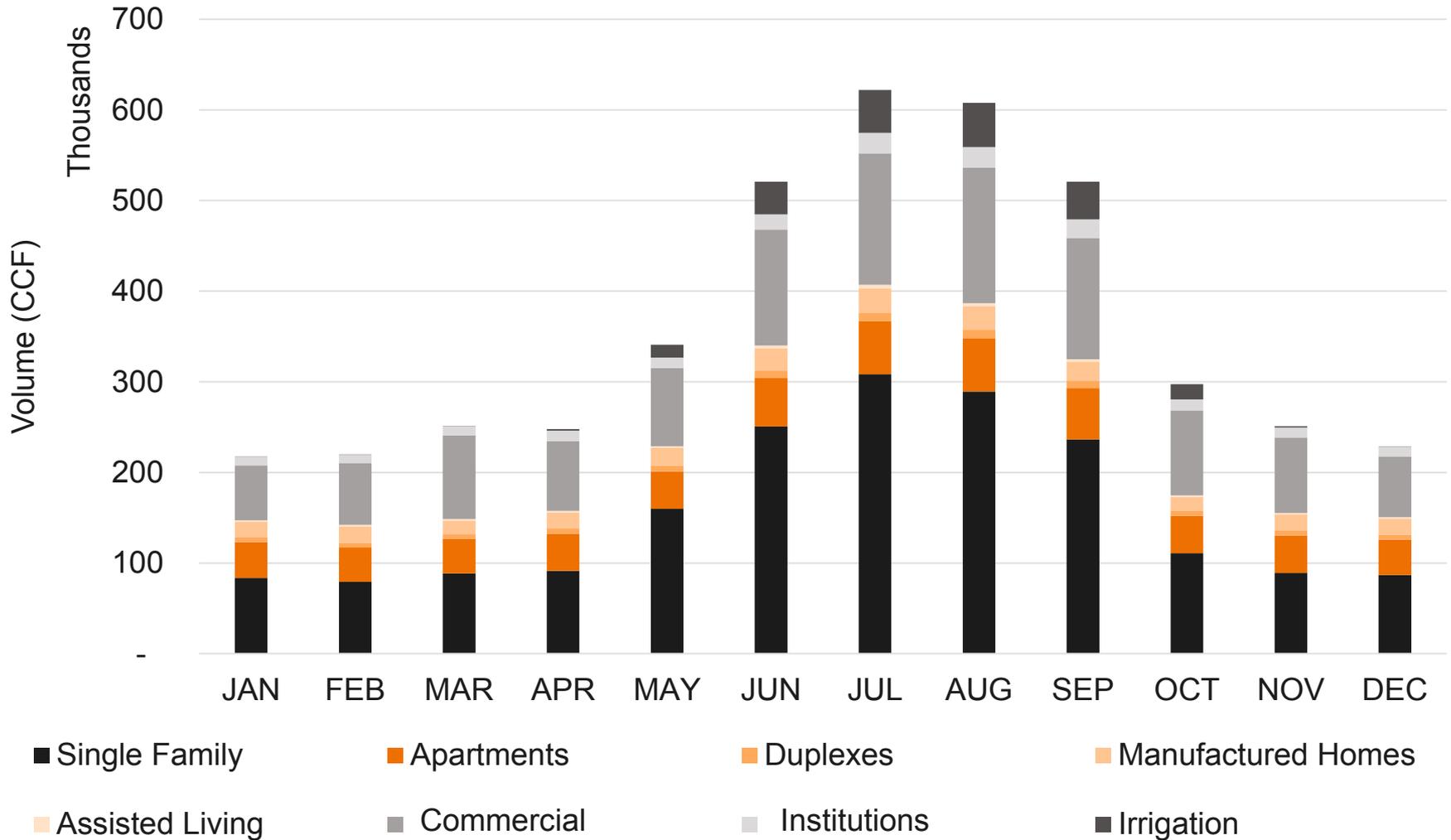
Future increases will be updated and determined annually as part of the budget process to reflect most current available data

Overall CPI vs. Water/Sewerage CPI

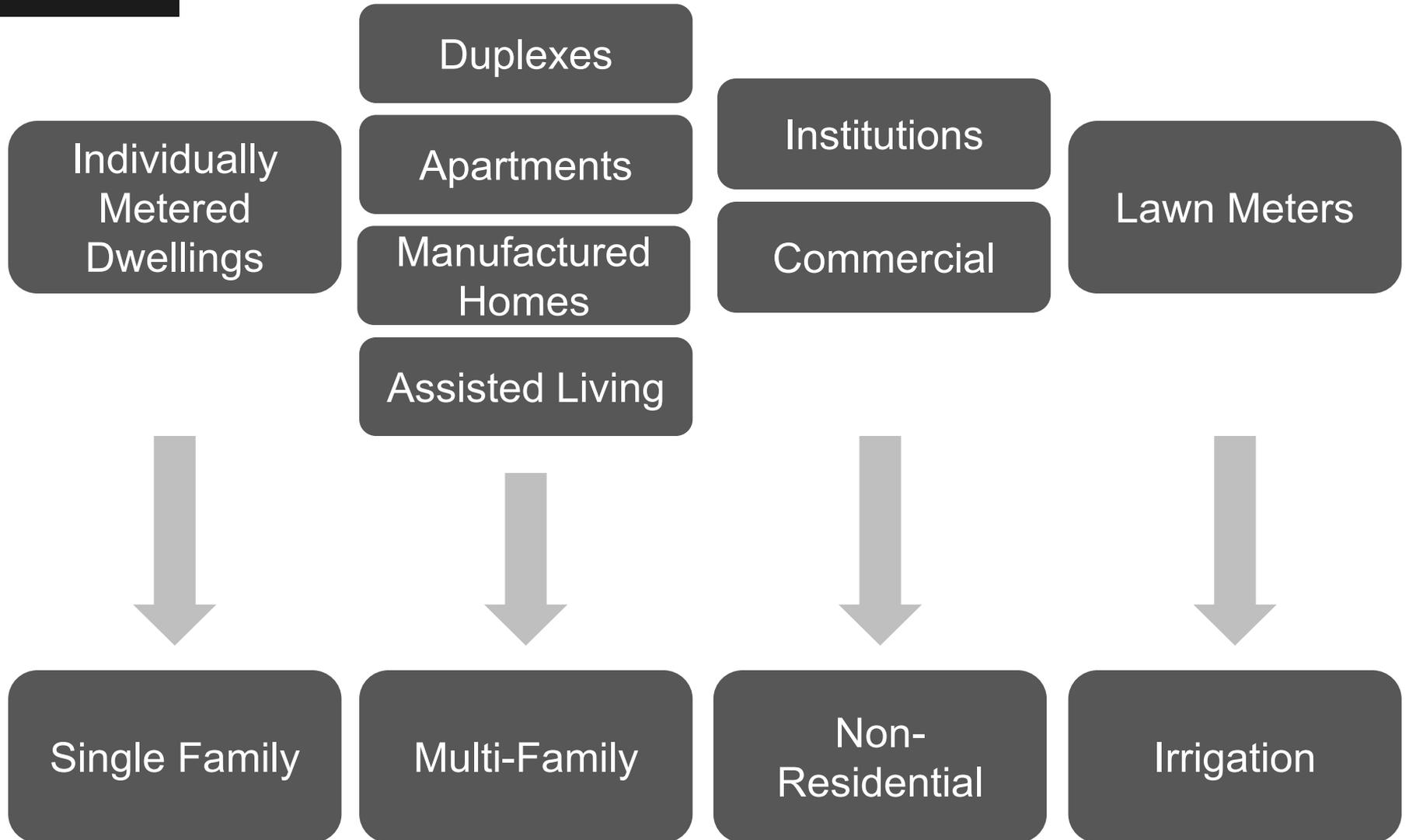


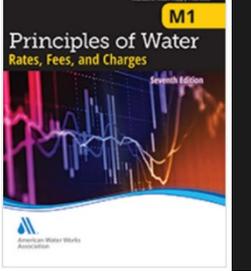
Cost of Service

Deep dive into 2016 monthly water use

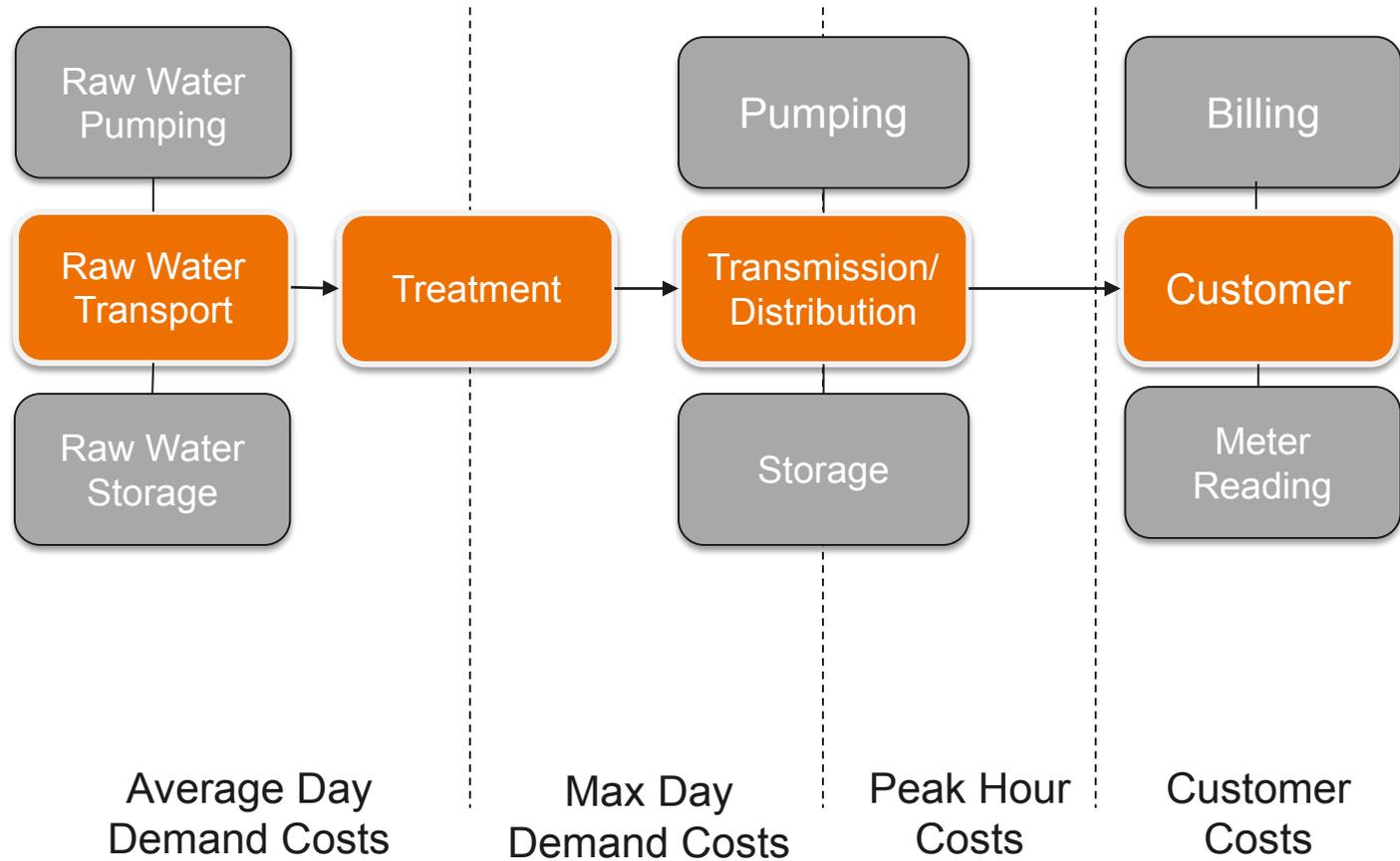


Recommended customer classes

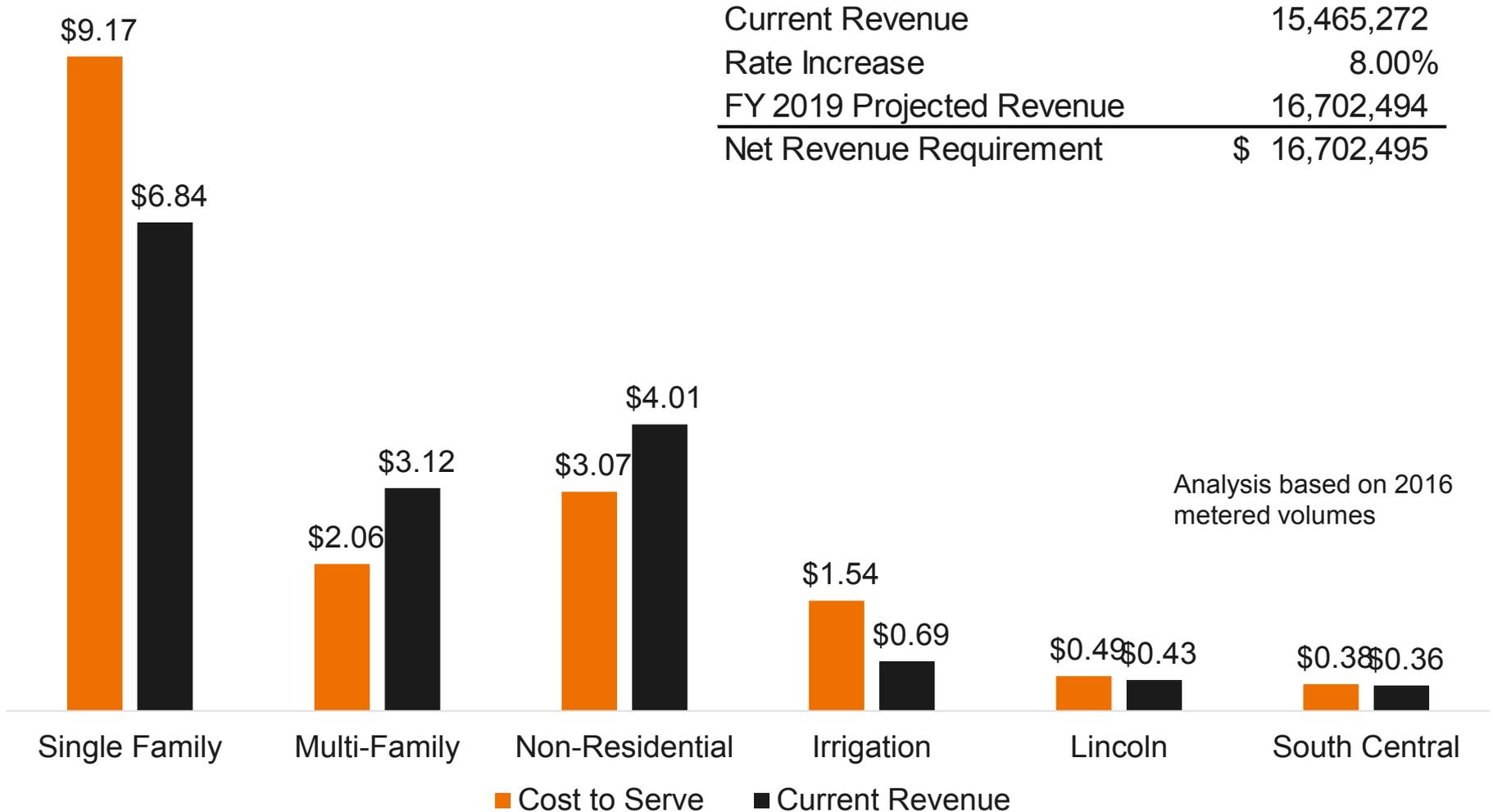




Allocated each system's costs according to functions "by the book"



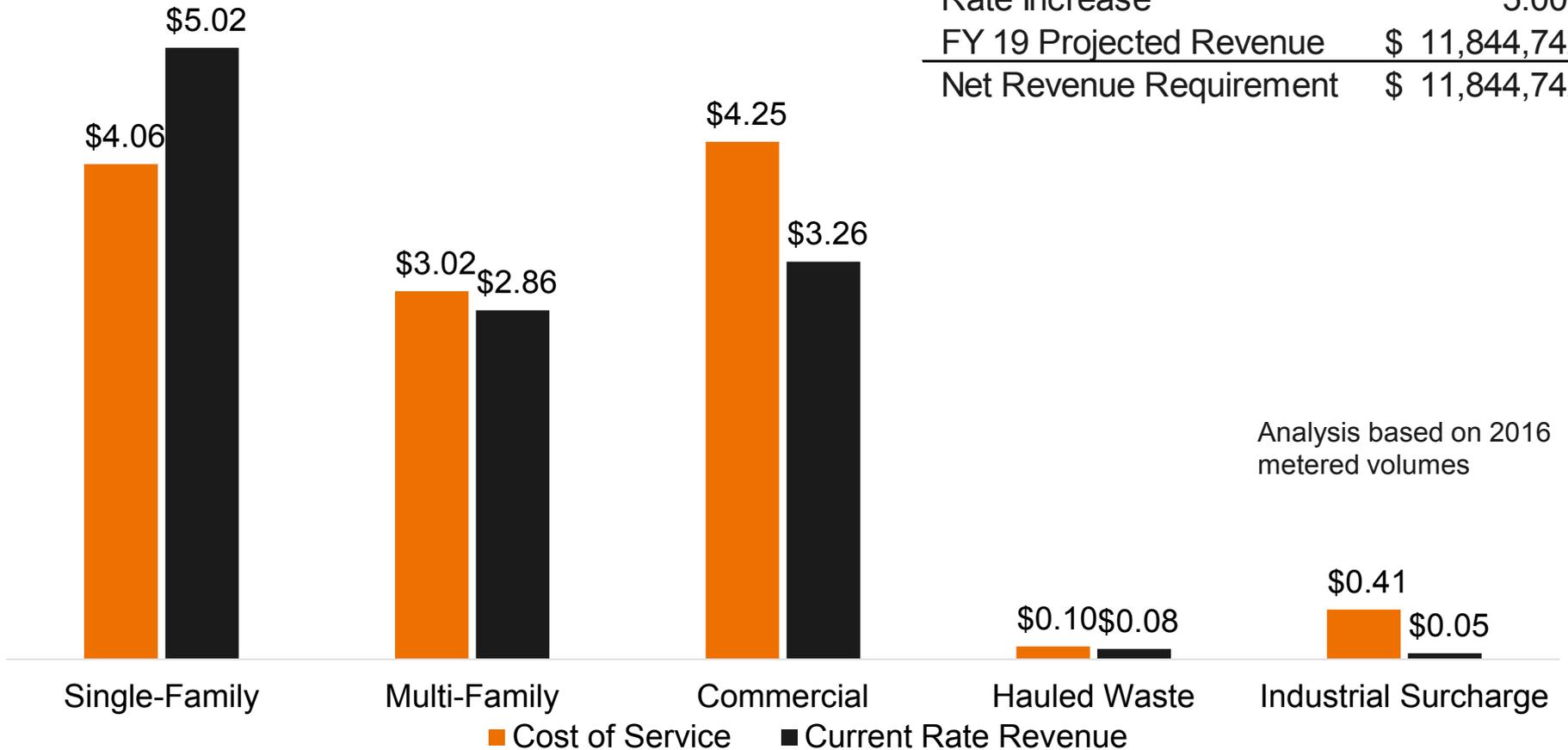
Cost to Serve vs. Current Revenue (\$M)



Current Revenue	15,465,272
Rate Increase	8.00%
FY 2019 Projected Revenue	16,702,494
Net Revenue Requirement	\$ 16,702,495

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

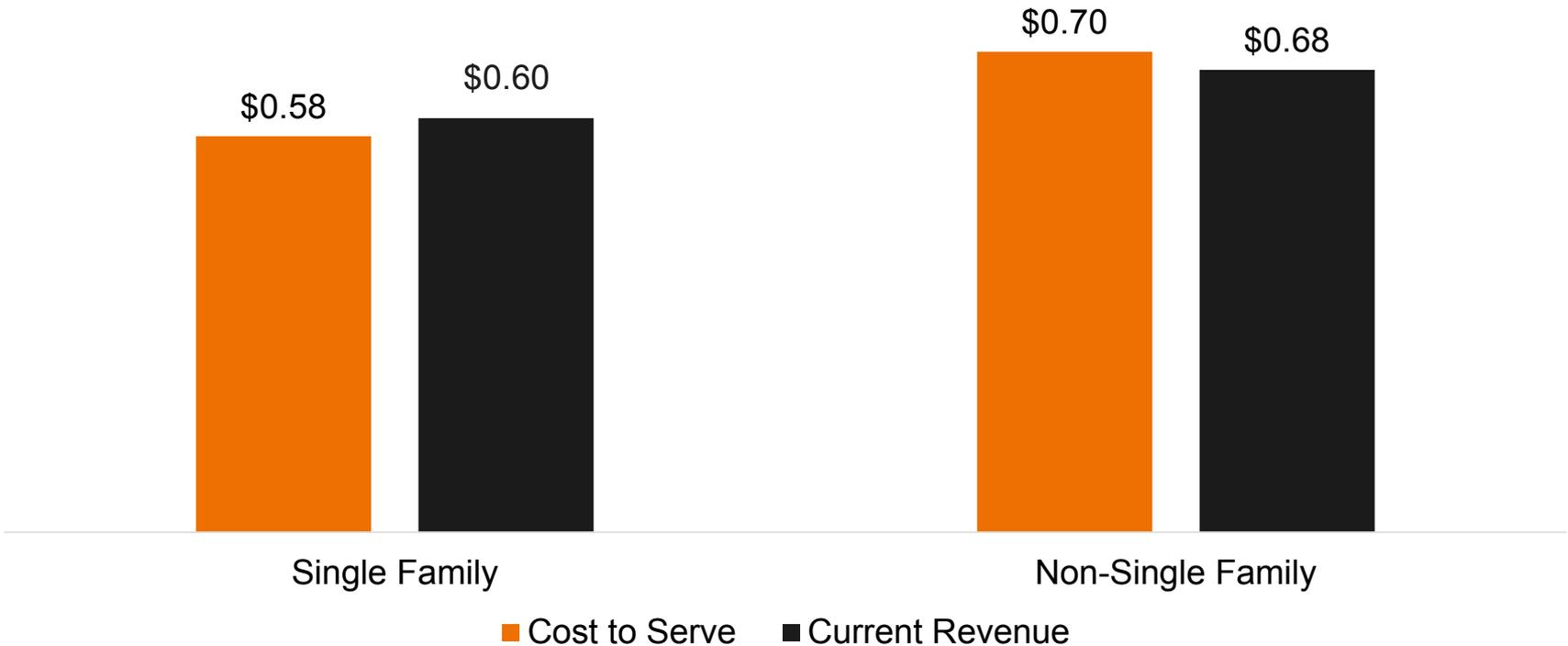
Current Revenue	\$ 11,280,707
Rate Increase	5.00%
<u>FY 19 Projected Revenue</u>	<u>\$ 11,844,742</u>
Net Revenue Requirement	\$ 11,844,742



Analysis based on 2016 metered volumes

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

Current Revenue	\$1,277,767
Rate Increase	0.00%
FY19 Projected Revenue	\$1,277,767
<hr/>	
Net Revenue Requirement	\$1,277,768



Rate Design Summary
(See Fee Schedule for Complete List)

Basis of proposed water rate structure

Rate Design

Cost Component	Charge Type	How Charge is Applied
Customer Cost	Customer Charge	Per Bill
Average Day Cost	Base Charge (50%)	Scaled by Meter Size
Max Day Cost	Volume Charge	Per CCF of Metered Water Volume (different rates for each customer class)
Peak Hour Cost		

Monthly single family tier sizing: Tier 1

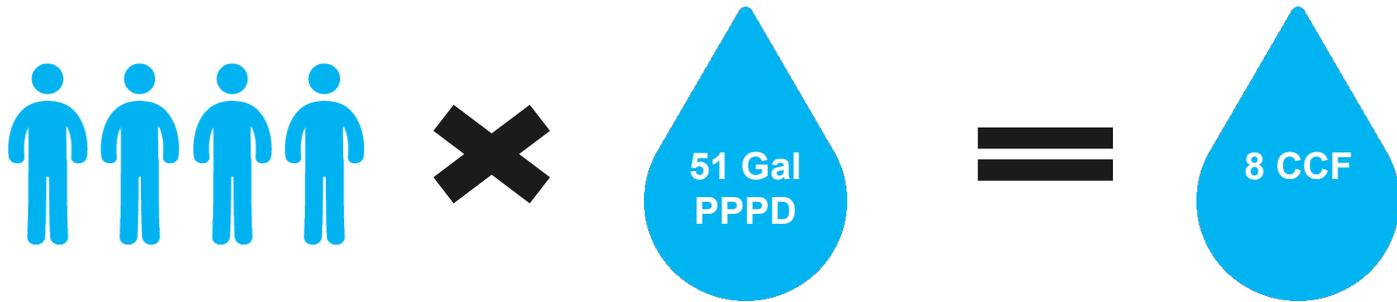


CCF per Month

Tier 1 = 4 CCF

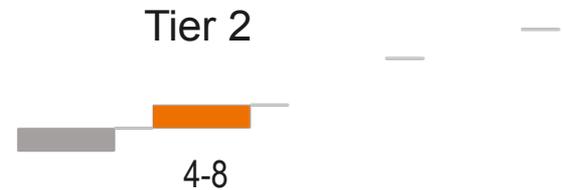


Monthly single family tier sizing : Tier 2



CCF per Month

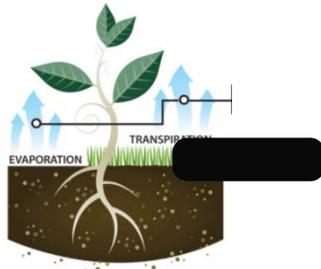
Tier 2 = 8 CCF



Calculating irrigation requirements for the median parcel (10,500 ft²)



Parcel Size: 10,500
Landscape Area: 5,000



Evapotranspiration:
46 Inches



Beneficial Rainfall:
15 Inches



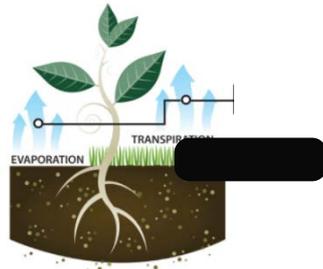
Irrigation System
Efficiency: 90%

Irrigation Requirement = 10 CCF

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



Parcel Size: 16,000
Landscape Area: 8,000



Evapotranspiration:
46 Inches



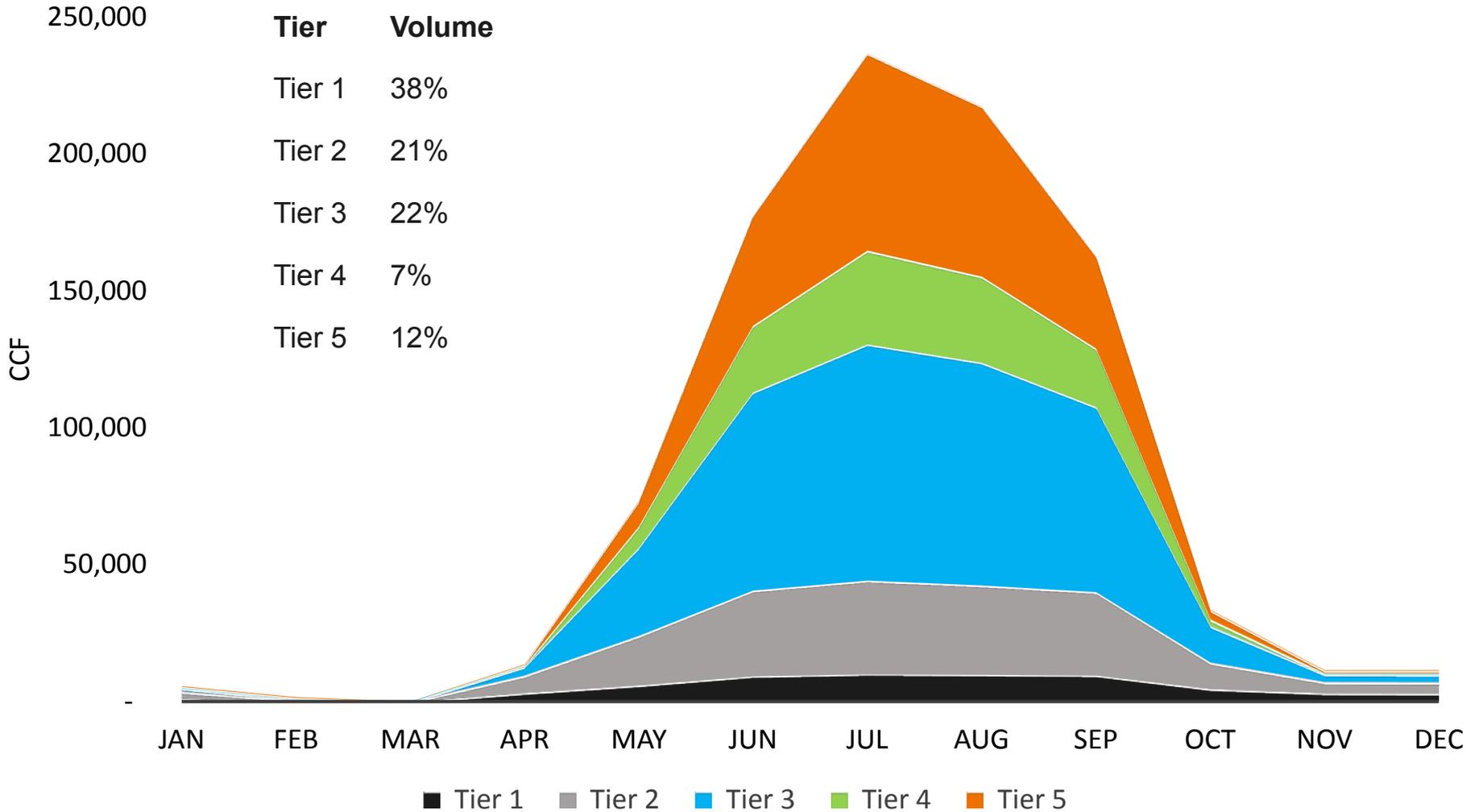
Beneficial Rainfall:
15 Inches



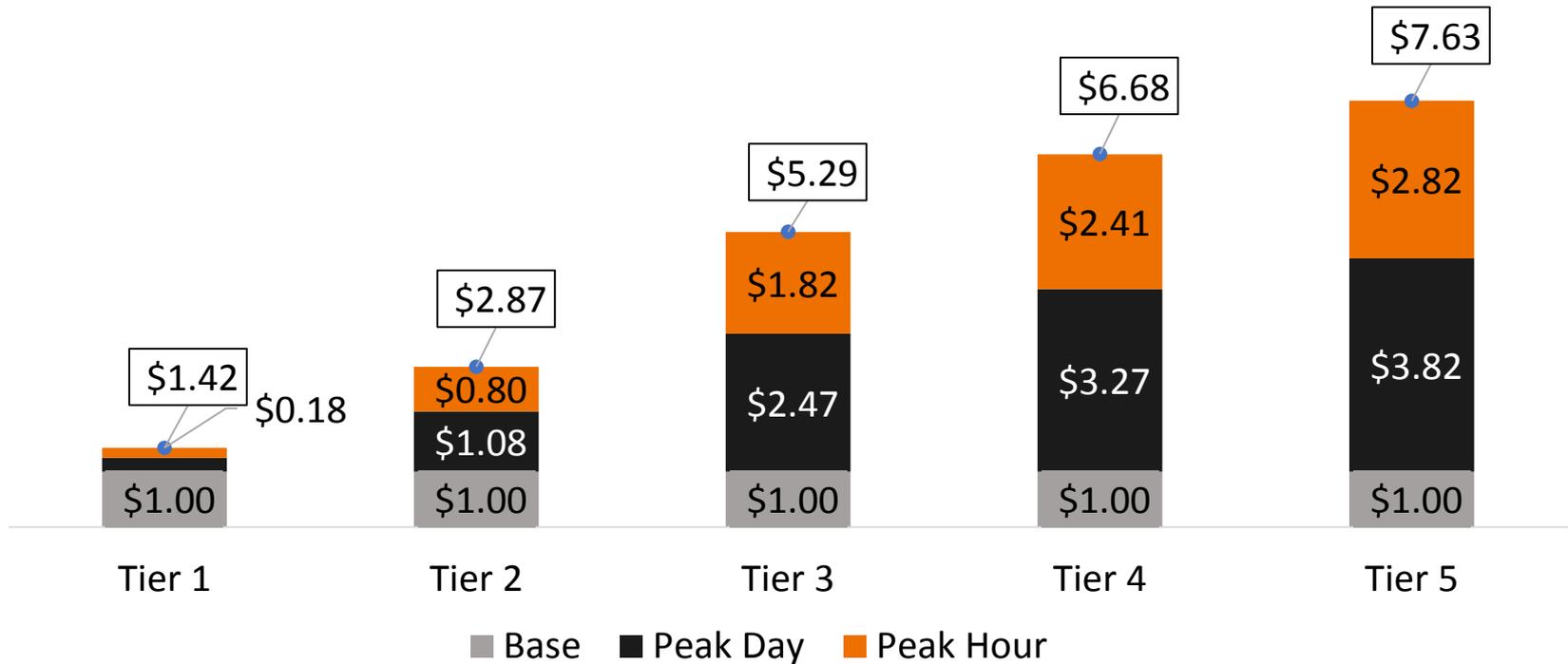
Irrigation System
Efficiency: 90%

Irrigation Requirement = 16 CCF

Single family water use by tier



Single family tiered rate calculations



Rates include an elasticity allowance to account for likely water use reductions resulting from new structure

Non-single family volumetric rates

Uniform Rate Per CCF

Rate reflects billing of base charges for only 1/2 of year

Current Rate Structure

Tier 1 (0-2 CCF): \$2.25

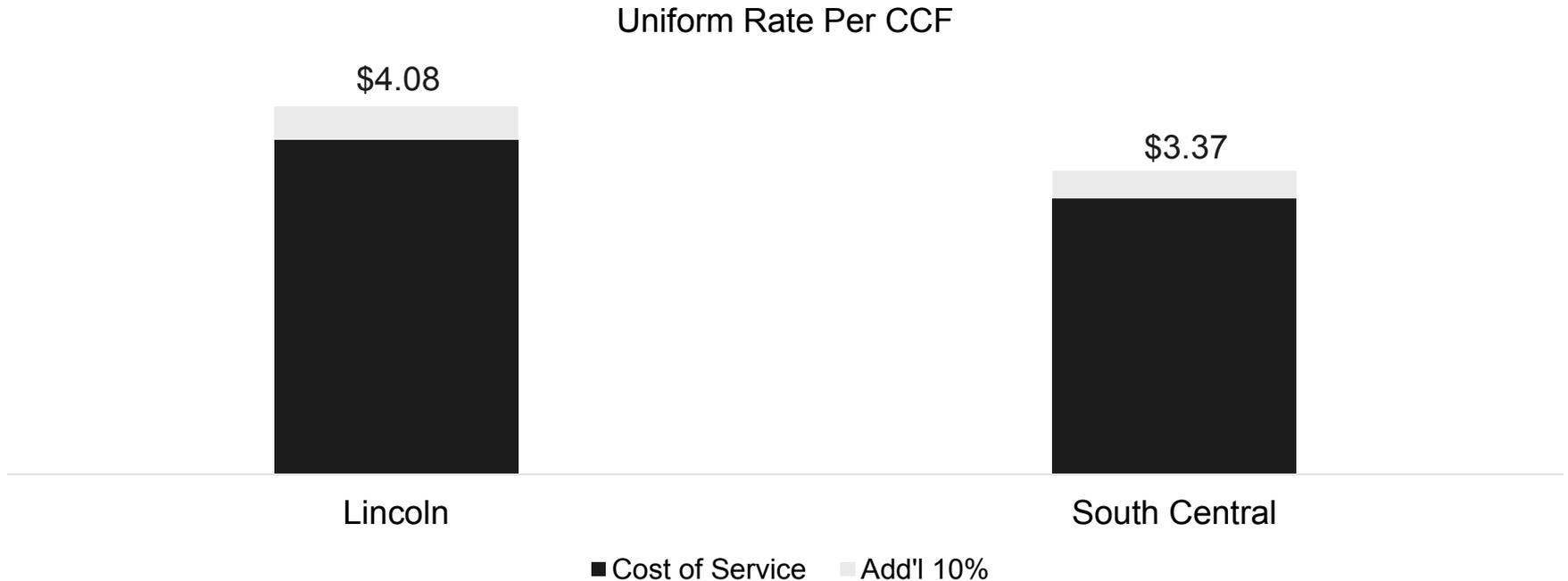
Tier 2 (2-6 CCF): \$2.60

Tier 3 (>6 CCF): \$3.00

(irrigation billed at Tier 3 rate)



Consecutive users volumetric rates



Lincoln and South Central will continue to have only volumetric rates, therefore these rates reflect the cost to serve these customers per unit of volume

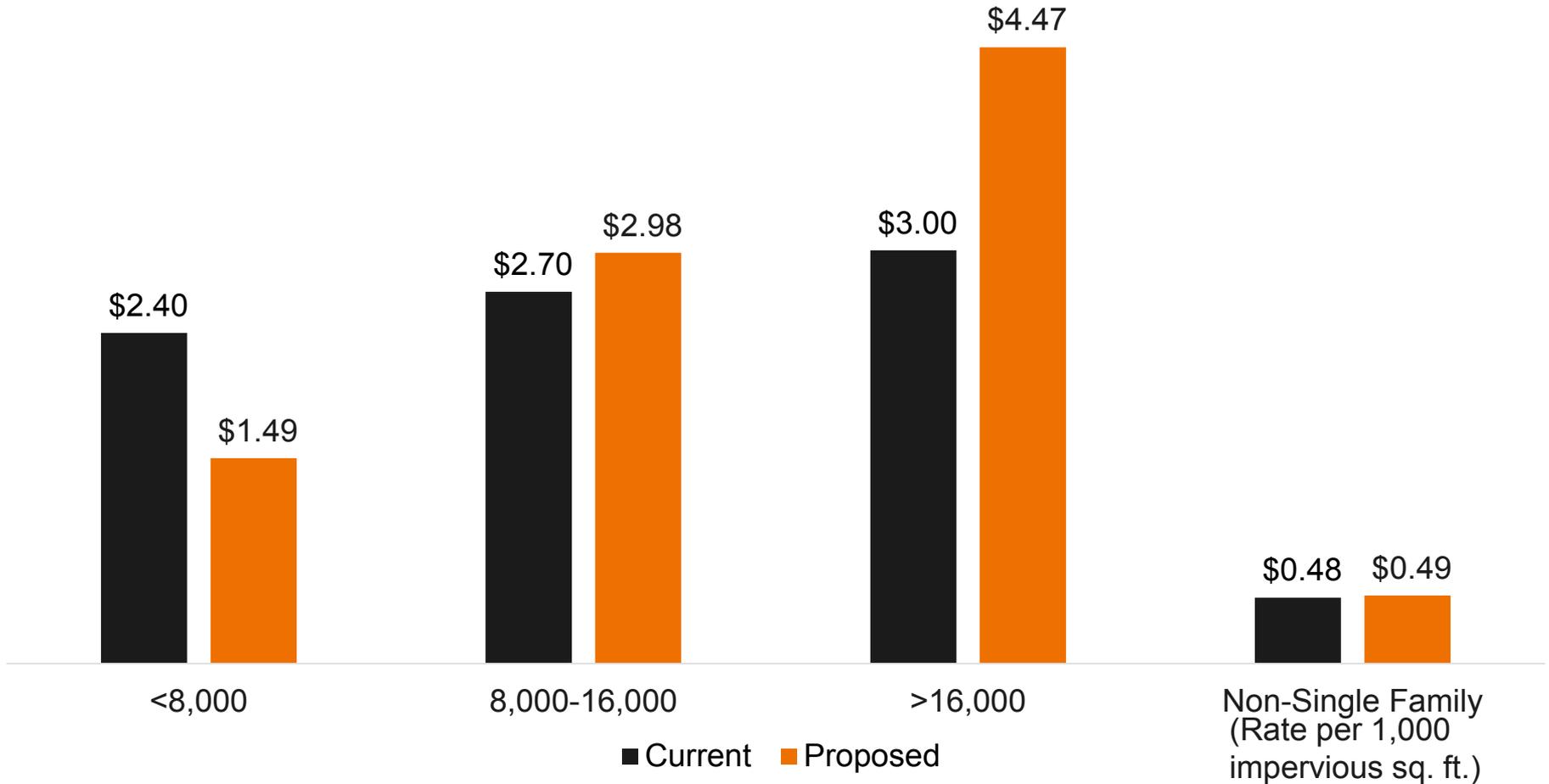
These customers will continue to pay an additional 10% surcharge for indirect costs

High strength and hauled waste

	Current	2019
High strength BOD (per 1,000 lbs)	\$ 135	\$ 170
High strength TSS (per 1,000 lbs)	\$ 135	\$ 170
Hauled waste (per 1,000 gal)	\$ 65	\$ 75

- Long term movement to reflect higher unit costs for high strength and hauled wastes
- Future rate updates are expected to reflect increasing cost allocations and changing loading patterns

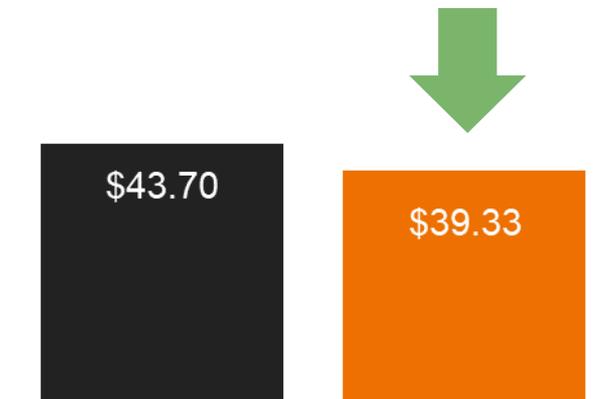
Modest adjustments to ensure equity



Customer Bill Impacts

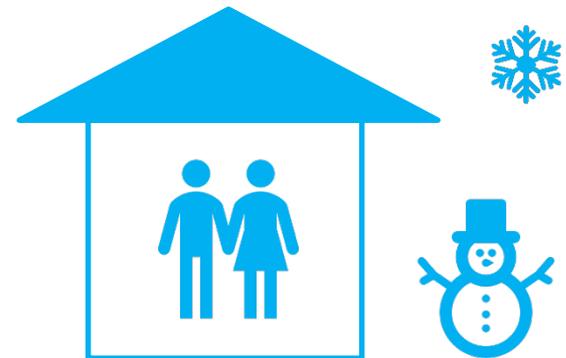
Bill Impacts: Single Family Customers

Customer with water, sewer, and stormwater service
Two person household with indoor-only use
4 CCF per month



Current Proposed

\$ Change: \$(4.37)
% Change: -10.0%



- 3/4" Meter
- 4 CCF water use
- 4 CCF sewer use
- <8,000 ASF

Bill Impacts: Single Family Customers

Customer with water, sewer, and stormwater service
Two person household with indoor and outdoor use
14 CCF per month

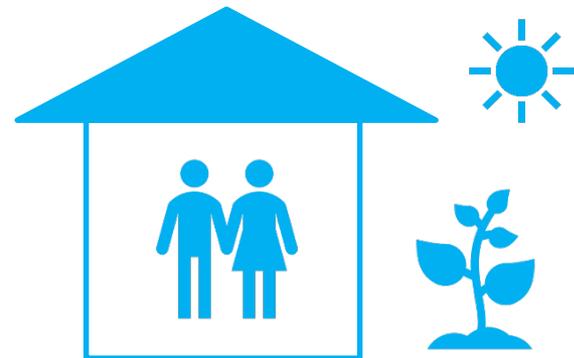


Current

Proposed

\$ Change: \$9.66

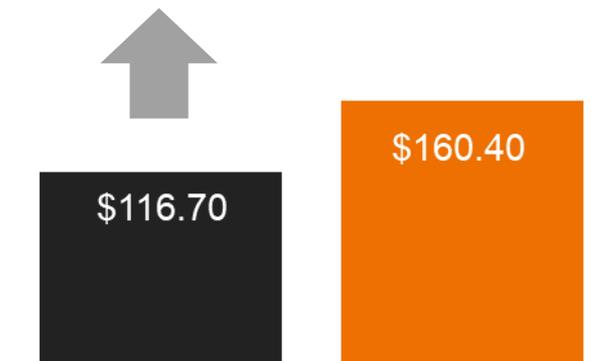
% Change: 13.2%



- 3/4" Meter
- 14 CCF water use
- 4 CCF sewer use
- <8,000 ASF

Bill Impacts: Single Family Customers

Customer with water, sewer, and stormwater service
Four person household with indoor and outdoor use
24 CCF per month

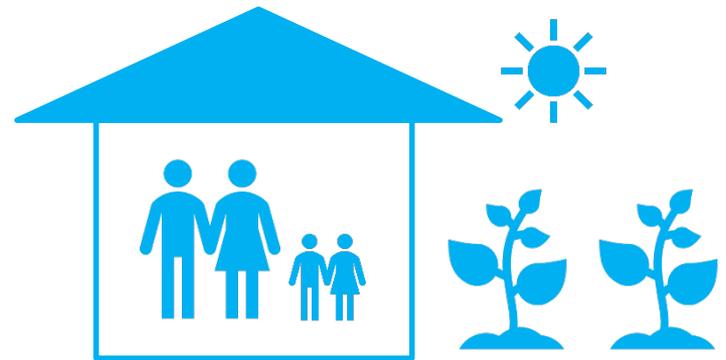


Current

Proposed

\$ Change: \$43.70

% Change: 37.4%



- 1" Meter
- 24 CCF water use
- 8 CCF sewer use
- >16,000 ASF

Multi-Family Customers

Customer Type	Water Use	Sewer Use	Current Bill	Proposed Bill	\$ Change	% Change	
Apartment	432	432	\$ 3,085	\$ 2,309	\$ (776)	-25%	↓
Manufactured Home Park	4,255	2,711	21,627	15,865	(5,763)	-27%	↓
Retirement Home	372	372	2,509	2,252	(256)	-10%	↓

Bills shown include water, sewer, and stormwater service charges.

Key drivers: Proposed rates no longer include per dwelling unit base charges or stormwater unannexed surcharge.

Non-Residential Customers

Bill Impacts

Customer Type	Meter	Water	Sewer	Current	Proposed	\$ Chg	% Chg	
Church	1.5"	26	22	\$ 203	\$ 215	\$ 12	6%	↑
School	3"	211	69	951	876	(75)	-8%	↓
Bank	1.5"	31	4	154	150	(4)	-3%	↓
Restaurant	2"	185	185	1,220	1,150	(70)	-6%	↓
Small office	1"	6	3	46	60	13	29%	↑
Large office	3"	183	183	1,345	1,363	18	1%	↑
Gas station	1"	13	13	104	115	10	10%	↑
Retail	3/4"	27	27	190	181	(9)	-5%	↓
Laundromat	2"	185	185	1,160	1,094	(66)	-6%	↓
Car wash	2"	226	226	1,451	1,356	(95)	-7%	↓
Big box store	3"	267	267	2,242	2,178	(65)	-3%	↓
Hotel	4"	1,309	1,309	7,946	7,398	(548)	-7%	↓
Hospital	6"	914	914	5,665	5,750	86	2%	↑
Public park (irrigation only)	1.5"	51	N/A	153	353	200	131%	↑
State Capitol (w/ irrigation)	Mult.	1,451	549	8,266	10,242	1,976	24%	↑

Capital Charges

Capital charges overview

Purpose: a way for new customers to pay their fair share of the costs of expansion; i.e. “Growth pays for growth”

Application:

- Enabling legislation requires specific processes in many states, but the core calculations are consistent nationwide based on well-defined “case law”
- Operations, maintenance, repair, and rehabilitation costs cannot be included in such charges as those expenditures are required to provide services to current customers
- Capital charge revenues are used to pay for growth-related capital projects or debt used for fund such projects

Capital charges overview

Key concepts:

- Only recover a proportional share of capacity related costs
- The calculation process subtracts donated assets
- The calculation process subtracts existing indebtedness
- In the absence of capacity fees, rate payers are forced to bear the full cost of providing capacity for new customers
 - Results in a subsidy from existing customers to future customers and the development process

Capital charge methodologies

Methodology	Description	Appropriate for
Buy-in method	Charges are based on cost of constructing existing utility system	System with ample existing capacity to sell
Incremental cost method	Charges are based on planned capital improvements	System with no/very limited existing capacity to sell
Combined method	Charges are based on cost of existing system and planned capital improvements	System with existing capacity to sell and with significant growth related capital projects

Capital charge calculation

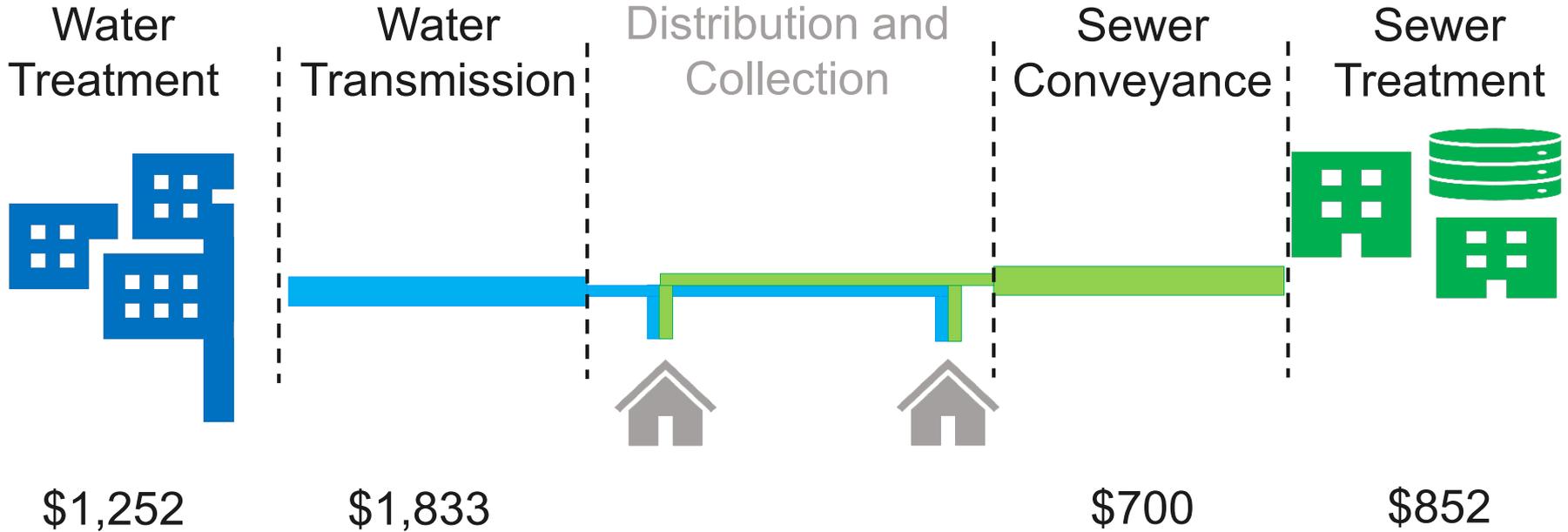
$$\text{Capital charge} = \frac{\text{Value of system} - \text{Debt}}{\text{System capacity}}$$

Value of system: Depreciated value escalated to current replacement cost (excludes contributed assets)

Debt: Outstanding principal on existing utility debt

System capacity: Volume capacity measured in equivalent units

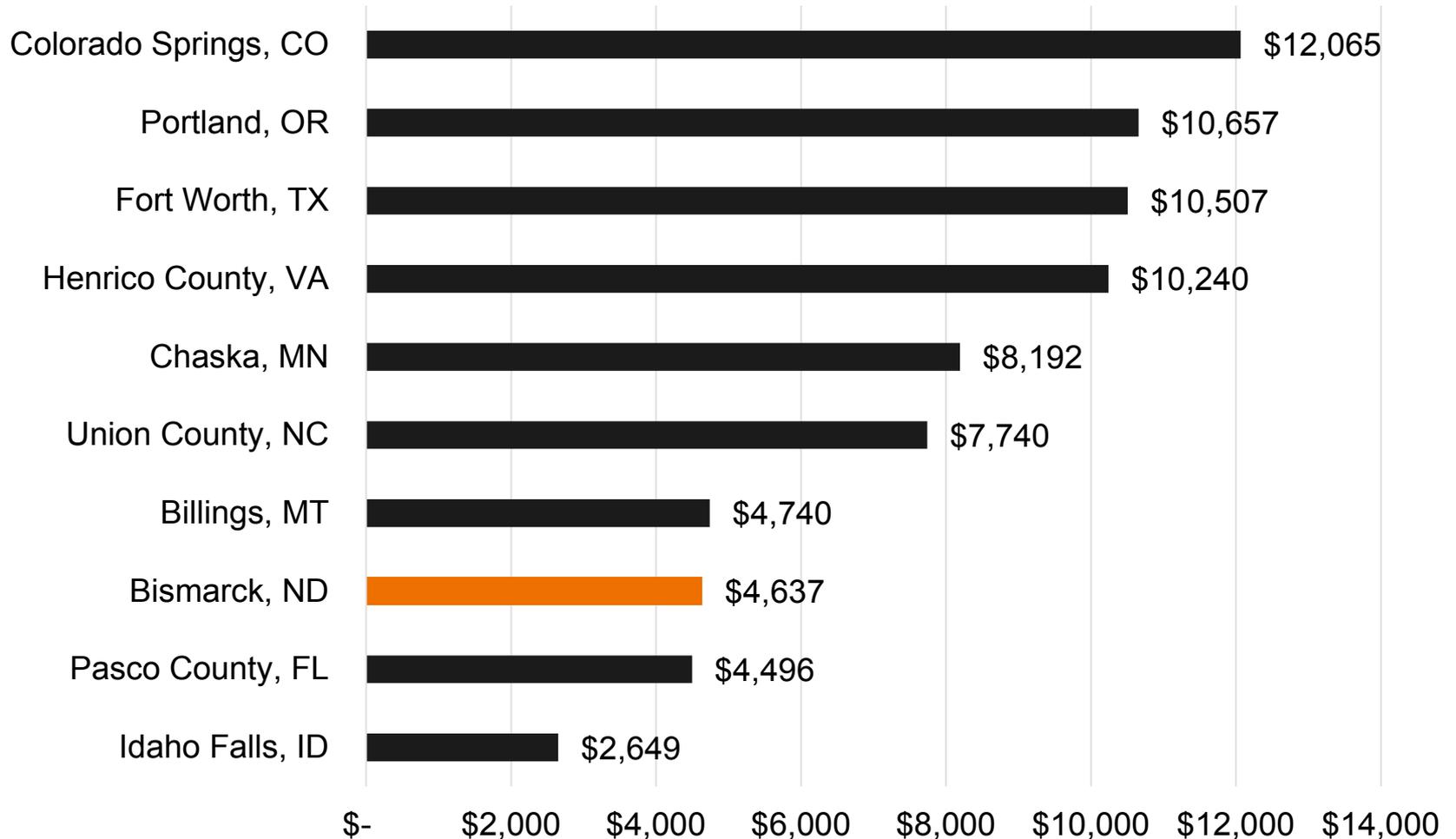
System and charge components



Total Charge per Equivalent Unit (3/4" Meter):
\$4,637

Credits may be applied to water transmission and/or sewer conveyance for upsizing of lines, at City's request

Combined capital charge comparison 3/4" Meter (Residential)



Process, timing, and responsibility

- After 2/1/19, developer pays:
 - 3/4" meter capital charge for each residential unit/lot
 - 2" meter capital charge for each non-residential lot/parcel
 - Due at the later of:
 - Time of annexation and platting,
 - Petition for street improvement, or
 - Escrow for water and sewer contract
 - Credit against transmission/conveyance fees for upsizing at City's request
- After 2/1/19, builder pays (at time of building permit):
 - Difference between developer payments & number/size of meters installed
 - Residential properties in developments under old method vested at 3/4"; Incremental capital charges apply if meter is installed/upsized >3/4"
 - Commercial properties in developments under prior method vested at greater of past trunkline payments or 2" meter capital charge: Incremental charges apply if total charges for actual meters exceed vested amount

Implement all rates, fees & charges

- Budget Committee recommends approval of:
 - 2019 Budget & CIP
 - Entire fee schedule per study (incl. service line repair surcharge)
 - All rates, fees, and capital charges go into effect 2/1/19
 - Annual rate increases from the study for customer, base, and volumetric rates (and stormwater rates) go into effect Jan 1, beginning in 2020 through 2023
 - Will be reviewed (and potentially modified) to reflect expense requirements and water use as part of the annual budget process
 - Timing & responsibility of capital charges identified herein
 - 3/4" (residential) or 2" (commercial) meter capital charges to developers
 - True-up based on final meter sizes and counts to builders
 - No capital charge adjustments until future study of updated costs



Questions/Comments

Project Team:

Andrew Burnham
Project Manager

William Zieburz
Technical Lead

Deborah Kloeckner
Primary Consultant

Kyle Stevens
Modeling & Data Manager