

CITY OF ANN ARBOR WATER & SEWER RATE STUDY ADVISORY COMMITTEE DISCUSSION

7.11.2017



Welcome & Introduction to Project

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- Thank you for your interest and participation!
 - Critical to ensuring needs are met in a sustainable way
- The Project:
 - Evaluate the needs of the system, values of the community, and expectations of the customers
 - Engage the community to:
 - Validate rate objectives (equity, affordability, conservation)
 - Give input for the financial plan to fund level of service
 - Goal: Recommendations to Council in December of 2017 for implementation in July of 2018 (next fiscal year)

Agenda

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- Background Information
- 2017 Rate Study Overview
- Community Survey
- Initial Issues
- Financial Model Review

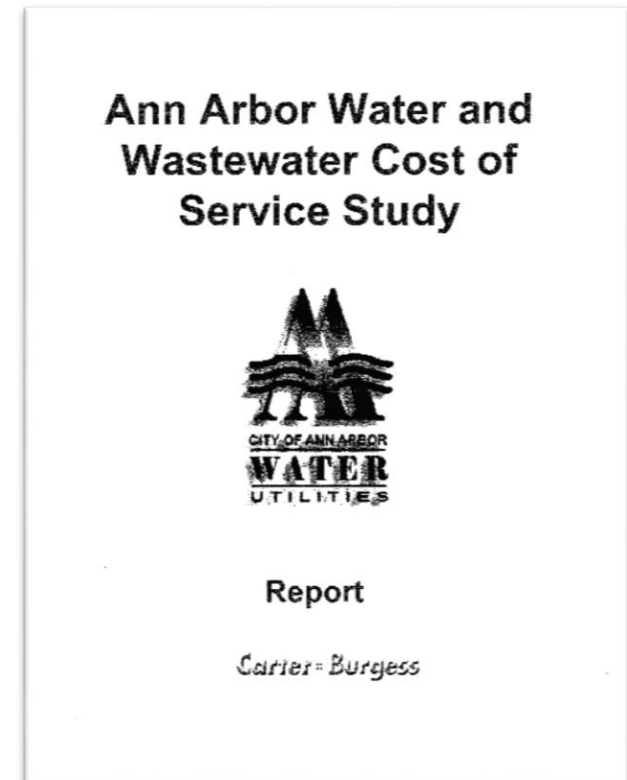
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Background Information

Summary of Most Recent Study

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- In 2003 the City engaged Carter Burgess to complete a water & wastewater cost of service study
- The study included evaluation of:
 - Revenue Sufficiency
 - Cost Allocation
 - Rate Structure Alternatives
 - Use of Inclining Block Rate Structure
 - Removed Minimum Use Allowance
- Rates have since evolved
 - Tiers (sizing and pricing)



Summary of Current Rate Structure

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- Reduced 4th tier rate (concerns of large users)
- Indexed annually to meet costs

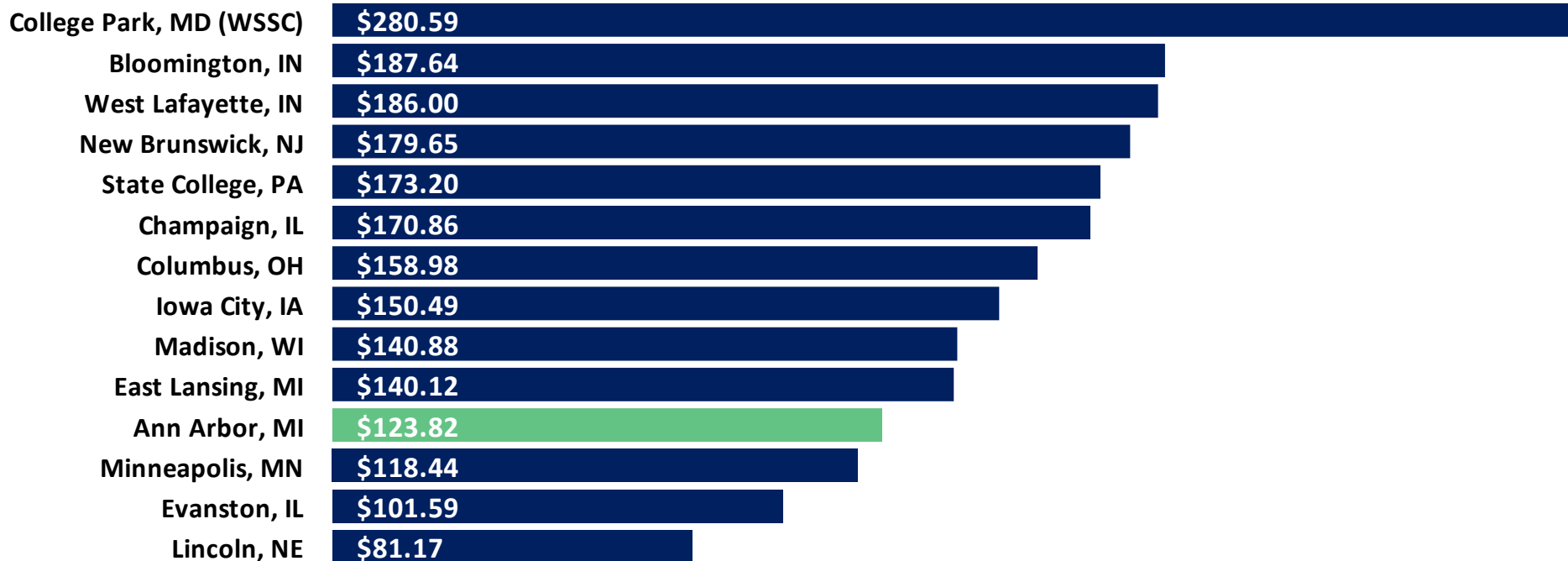
	Residential 1 Rate is based on a single water meter used in a home	Residential 2 Rate when a second Water-Only ² meter is also used in a home	Water Only** Rate for the second meter for non sewer water uses, such as for irrigation	Commercial Rate (Locations may also have a second, Water Only** meter)
1-7 CCFs*	\$1.55 per CCF	\$1.55 per CCF	\$5.89 per CCF	Tier 1 = \$ 3.81 (peaking factor <=5)
8-28 CCFs*	\$3.37 per CCF	\$3.37 per CCF	\$5.89 per CCF	Tier 2 = \$ 7.26 (peaking factor >5<8)
29-45 CCFs*	\$5.89 per CCF	\$3.37 per CCF	\$5.89 per CCF	Tier 3 = \$ 12.44 (peaking factor >=8)
Over 46 CCFs*	\$5.89 per CCF	\$3.37 per CCF	\$5.89 per CCF	
Water Customer Charge	\$11.25/quarter for 5/8 th inch standard residential meter; charge varies by meter size	\$11.25/quarter for 5/8 th inch standard residential meter; charge varies by meter size	Residential: No charge ----- Commercial: Charge varies by size of meter	Customer charge varies by size of water meter
Sewer Service Rate per CCF*	\$4.58 per CCF Resident 1 Summer sewer usage is calculated at winter water use rate, so the water used for outdoor activities is not charged to sewer	\$4.58 per CCF	No sewer fees	\$4.58 per CCF
Sewer Customer Charge	\$11.25/quarter for 5/8 th inch standard residential meter; charge varies by meter size	\$11.25/quarter for 5/8 th inch standard residential meter; charge varies by meter size	No charge	Customer charge varies by size of water meter

Quarterly Residential Fee Survey

(Based on publicly available data as of May 2017)

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Combined Water & Sewer Bill Survey at 13,000 Gallons per Quarter



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2017 Rate Study Overview

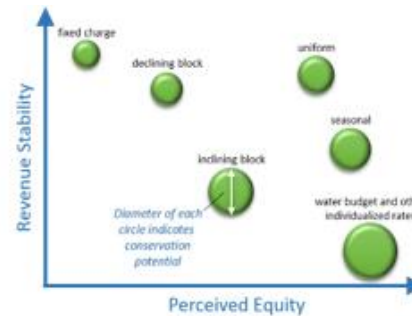
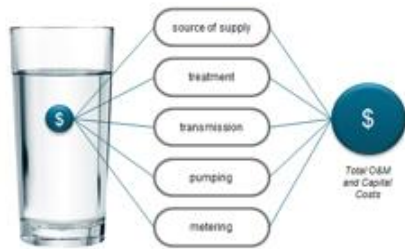
Study Objectives

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- Projection of full cost of service
 - Develop multi-year financial management plan
 - Integrate capital and asset management needs
- Evaluate customer class cost allocations and rate structures with affordability in mind
- Engage community stakeholders
 - Solicit input and comments regarding community expectations related to water/sewer rates
- Develop dynamic model for future use
 - Long-term sustainability & ongoing financial management

Every Step Conducted With Stakeholders

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Revenue Requirements

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

Cost Allocation

- Define Classes of Users
- Fair & Equitable
- Comparison to Current Revenue Recovery

Rate Design

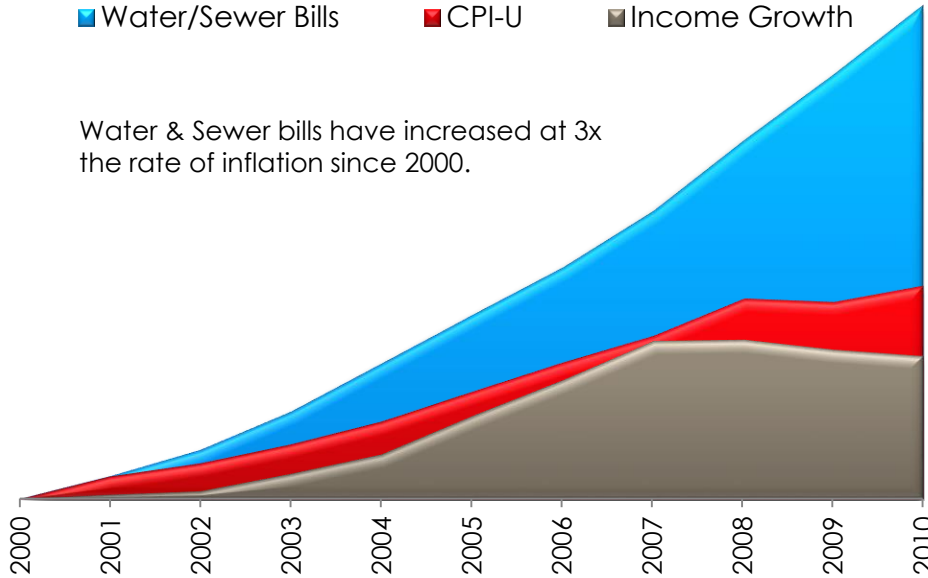
- Evaluate Objectives
 - Affordability
 - Conservation
- Identify Structures
- Customer Impacts

Analysis

- Fee & Policy Review
- Adjustment Drivers
- National Trends
- Local Practices

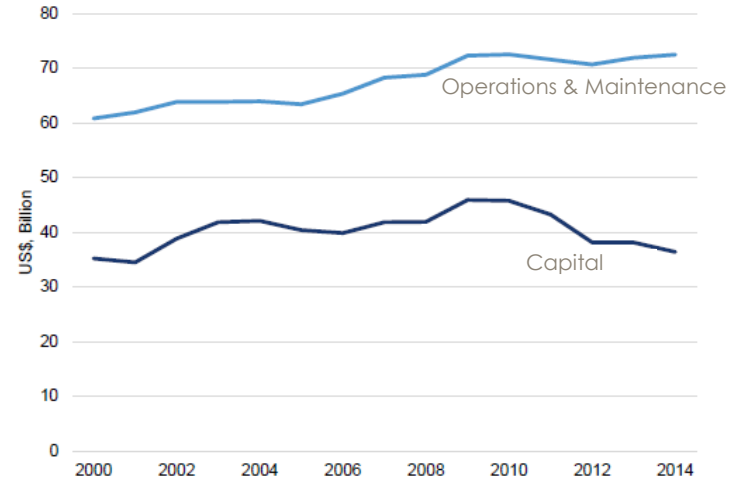
■ Water/Sewer Bills ■ CPI-U ■ Income Growth

Water & Sewer bills have increased at 3x the rate of inflation since 2000.



Public Spending (CAPEX) on Water Utility Infrastructure

Source: Congressional Budget Office, Bluefield Research



Real Household Income

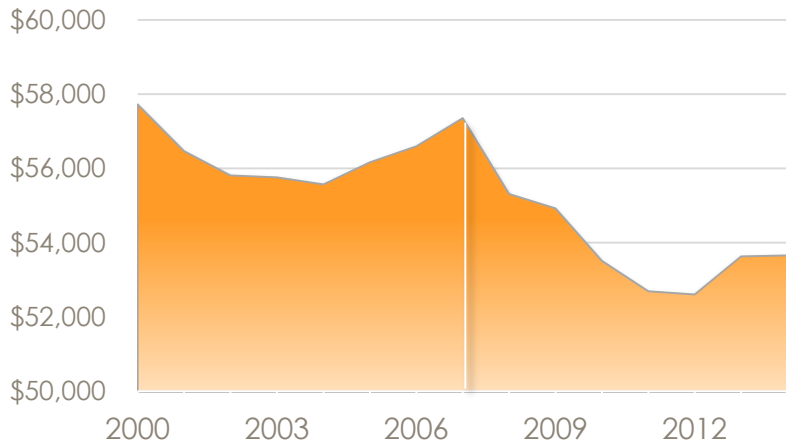
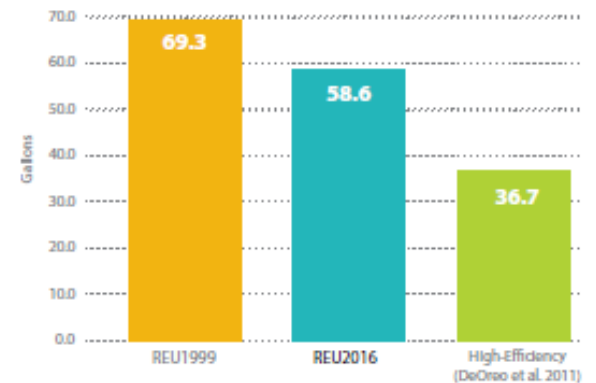


Figure 7. Indoor average gallons per capita per day, REU1999, REU2016, High Efficiency Studies



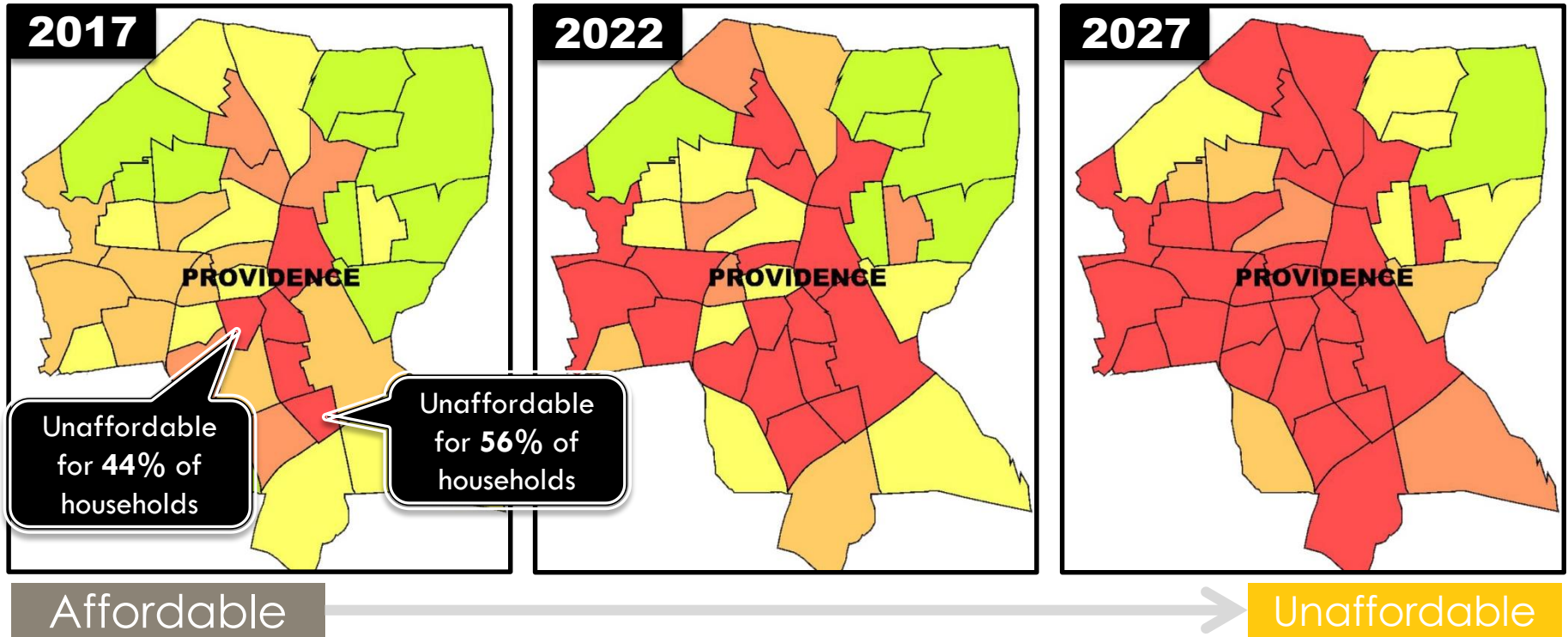
Simply Not Enough to Cover What's Needed

\$1 Trillion in Water and Sewer Infrastructure

Infrastructure costs alone could triple the size of
a typical family's water bills.

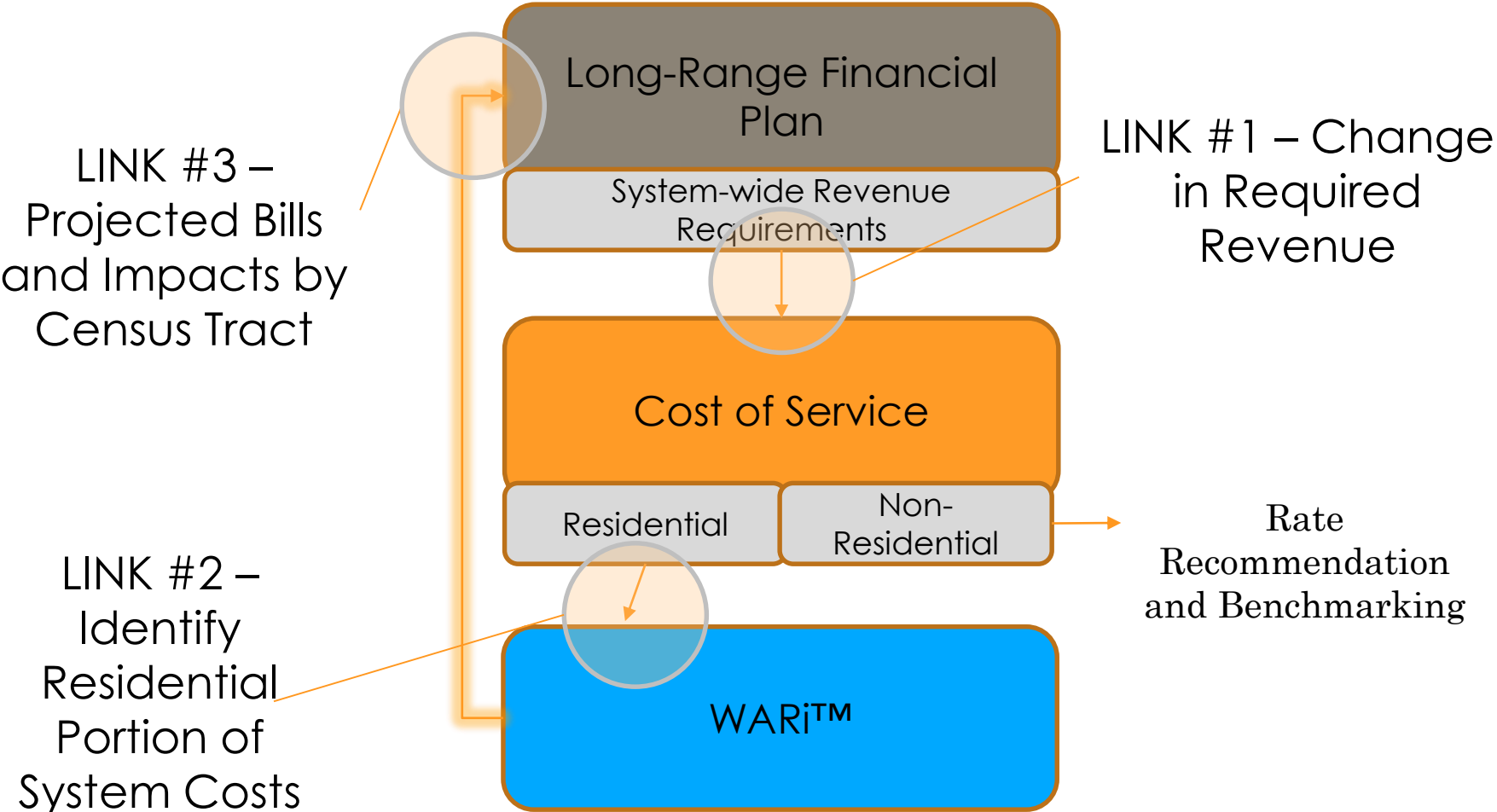
How We Will Understand Affordability

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With 53 data points for every census tract, affordability information can become overwhelming, especially over a multi-year horizon. But good information is usable information – We will use graphics like the above to understand, communicate, and address affordability in the city.

Study Will Link Affordability to Rates



Study Schedule & Path Forward

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- Current status: populating models & initializing analysis
- Completion in late 2017 for 7/1/18 implementation
 - Council in Dec/Jan of 2017 – Hearings in April of 2018
- Monthly progress meetings with Advisory Committee:
 - Today – Introductory
 - August – Revenue Requirements & Cost of Service
 - September – Cost of Service, Rate Structure & Affordability
 - October – Rate Structure & Affordability
 - November – Wrap-up / number finalization
 - December – Review presentation materials for Council

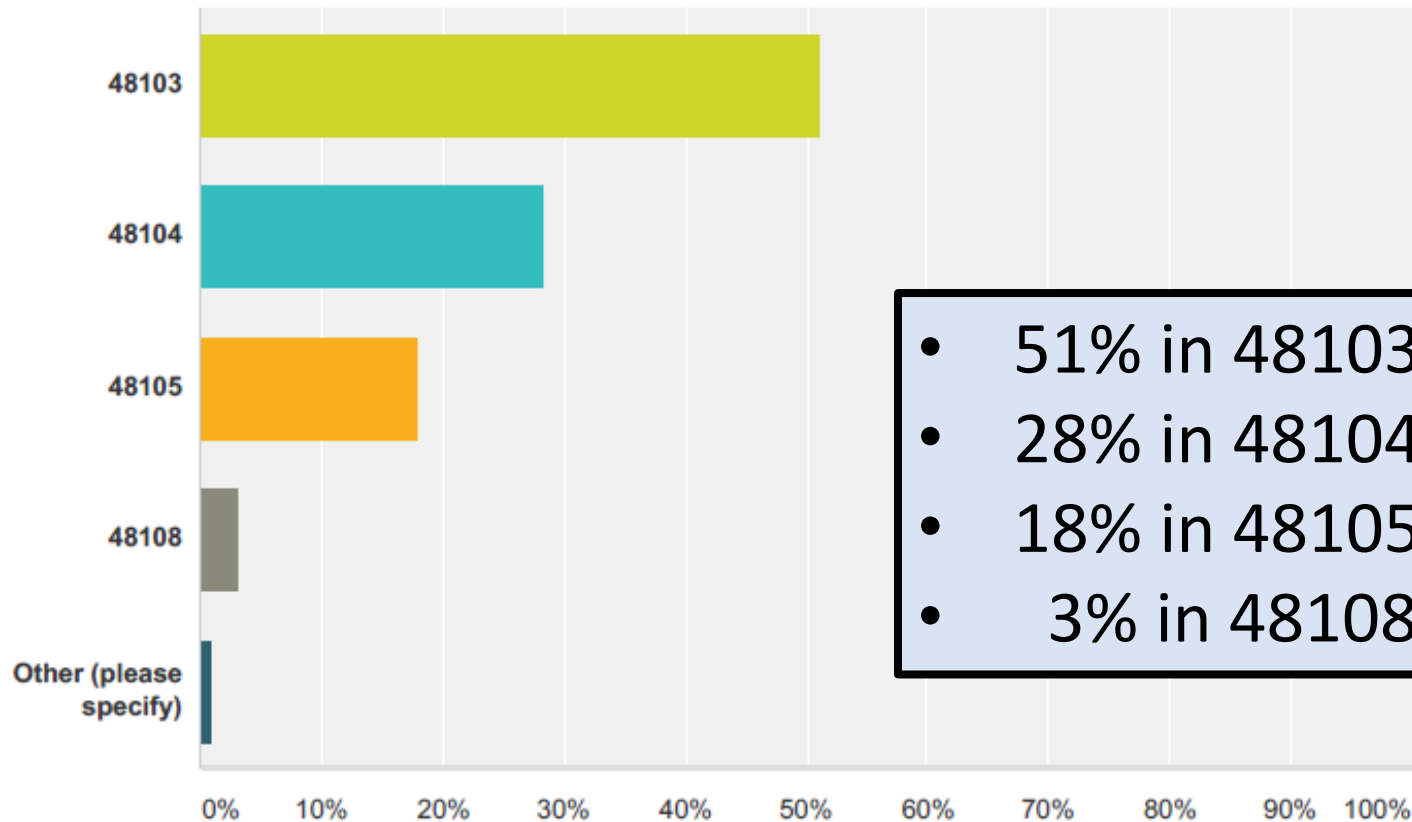
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Community Survey

Of the 679 Customers who responded

Q2 In what zip code(s) are your home or businesses located where you pay your water/sewer bill?

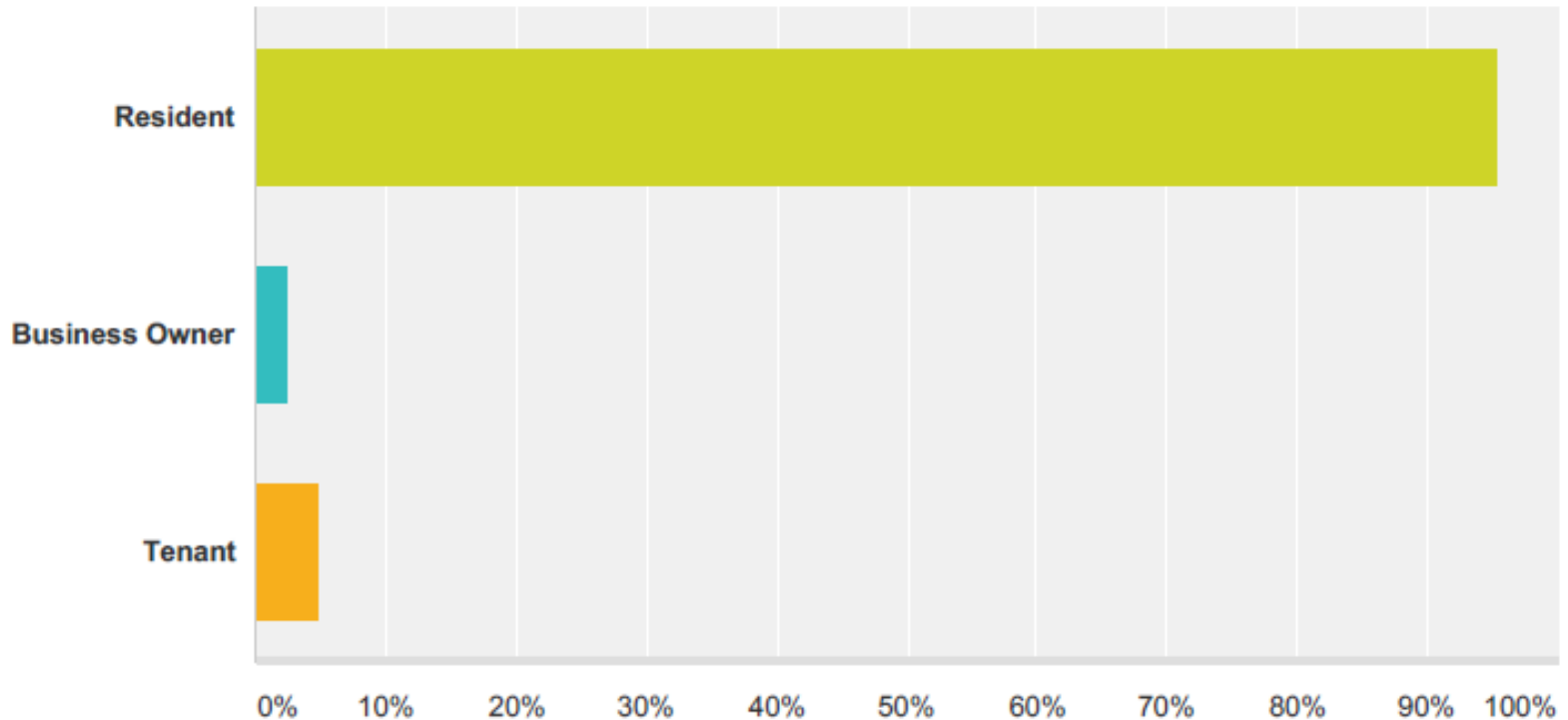
Answered: 681 Skipped: 3



- 51% in 48103
- 28% in 48104
- 18% in 48105
- 3% in 48108

Q3 Do you currently pay your water bill as a resident or business owner, both, or neither? Select all that apply.

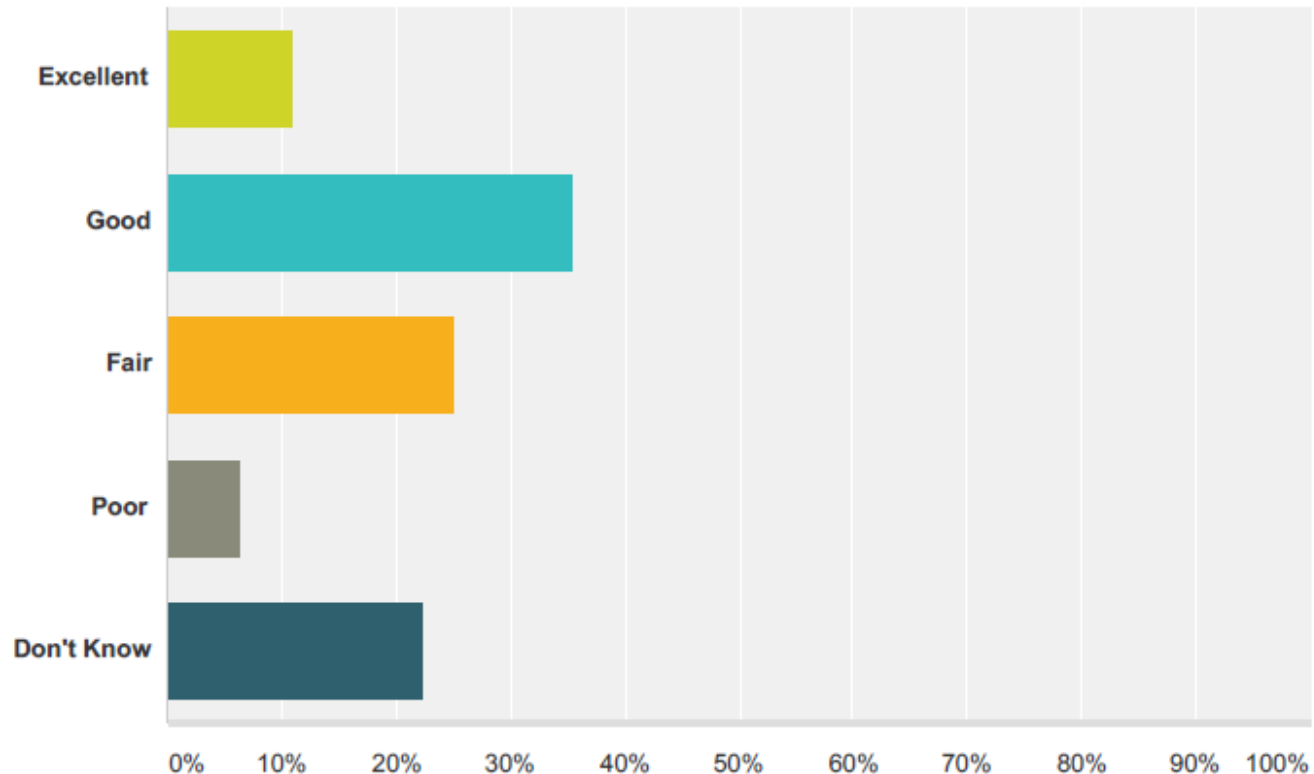
Answered: 662 Skipped: 22



95% Respondents Were Residents

Q4 How would you rate the current condition of the water and sewer infrastructure (including treatment plants and underground pipes, etc) in Ann Arbor?

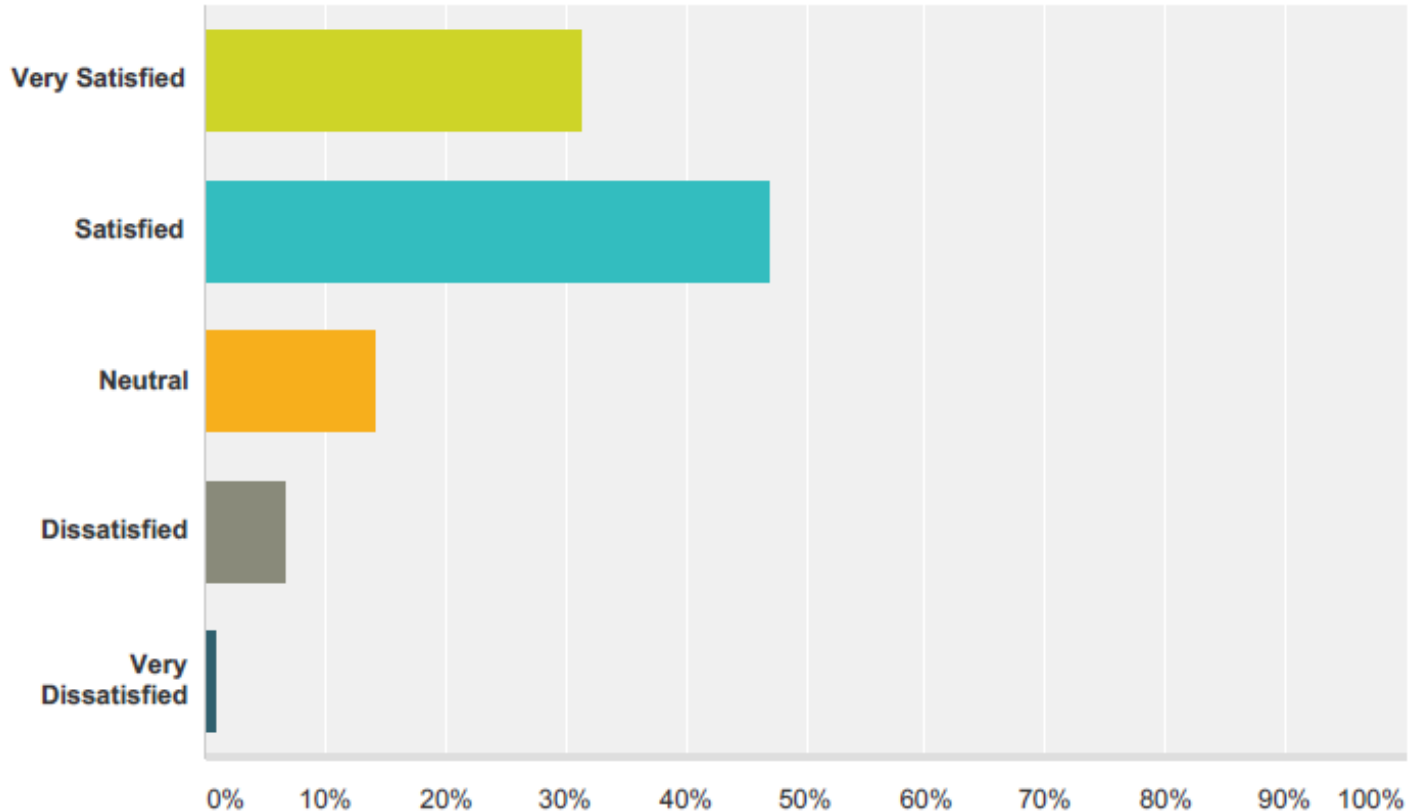
Answered: 678 Skipped: 6



- 46% rated Infrastructure Good or Better
- 31% rated Infrastructure Fair or Poor

Q5 Overall, how satisfied are you with the quality of your water and sewer service?

Answered: 674 Skipped: 10



- 31% are Very Satisfied
- 47% are Satisfied
- 8% are Dissatisfied or Very Dissatisfied

Q6 How concerned, if at all, are you about each of the following aspects of the water and sewer services in Ann Arbor?

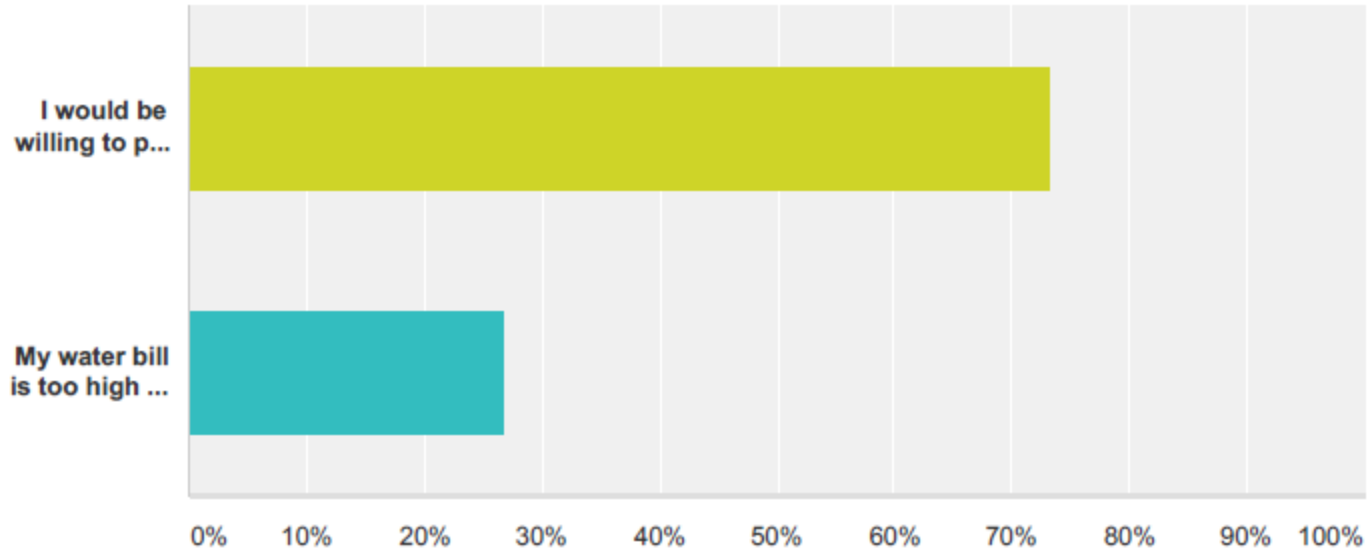
Answered: 679 Skipped: 5

Very Concerned or Somewhat Concerned About:

1. Being Able to Drink Water Straight from Tap (90%)
2. Lakes and Rivers being safe for Swimming, Fishing, and Other Recreation (93%)
3. Having a Robust Water Supply to Sustain my Community Through a Crisis (85%)

Q8 Which of the following statements come closest to your own view:

Answered: 650 Skipped: 34



- 73% are willing to pay higher water bill to improve and modernize the water systems to ensure safe and reliable water and sewer service.
- 27% believe their water bill is too high and would not be willing to pay more to sustain and modernize the water and sewer system.

Q11 Is there anything else you would like the City to know about concerns you have related to water and sewer services, rates, or communications?

Answered: 277 Skipped: 407

277 Comments were received and currently being tabulated for review and discussion.

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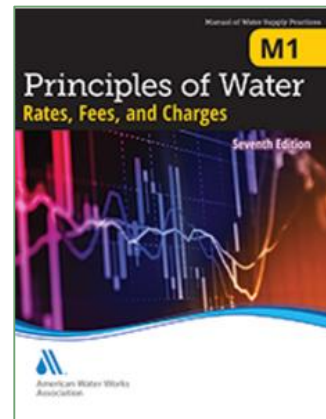
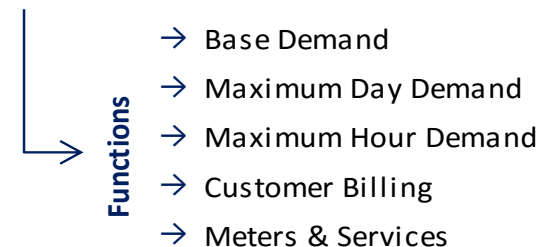
Initial Issues

Traditional Cost of Service

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- ❑ M1 provides detailed **inter-class** cost allocation
- ❑ **Intra-class** cost allocations in M1 are less specific
- ❑ Communities rarely focus on tying conservation rates ***directly*** to cost

Illustration of Base-Extra Capacity Cost Allocation Cost of Service



How do we allocate costs to tiers?

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Quantifying the marginal costs of water service

- Sources of supply
- **Allocation of max day and peak hour costs**
- Water conservation programs
- Development of alternative supplies
- Avoided costs

Other options: Use of unrestricted funds

- E.g., ad valorem property tax revenues

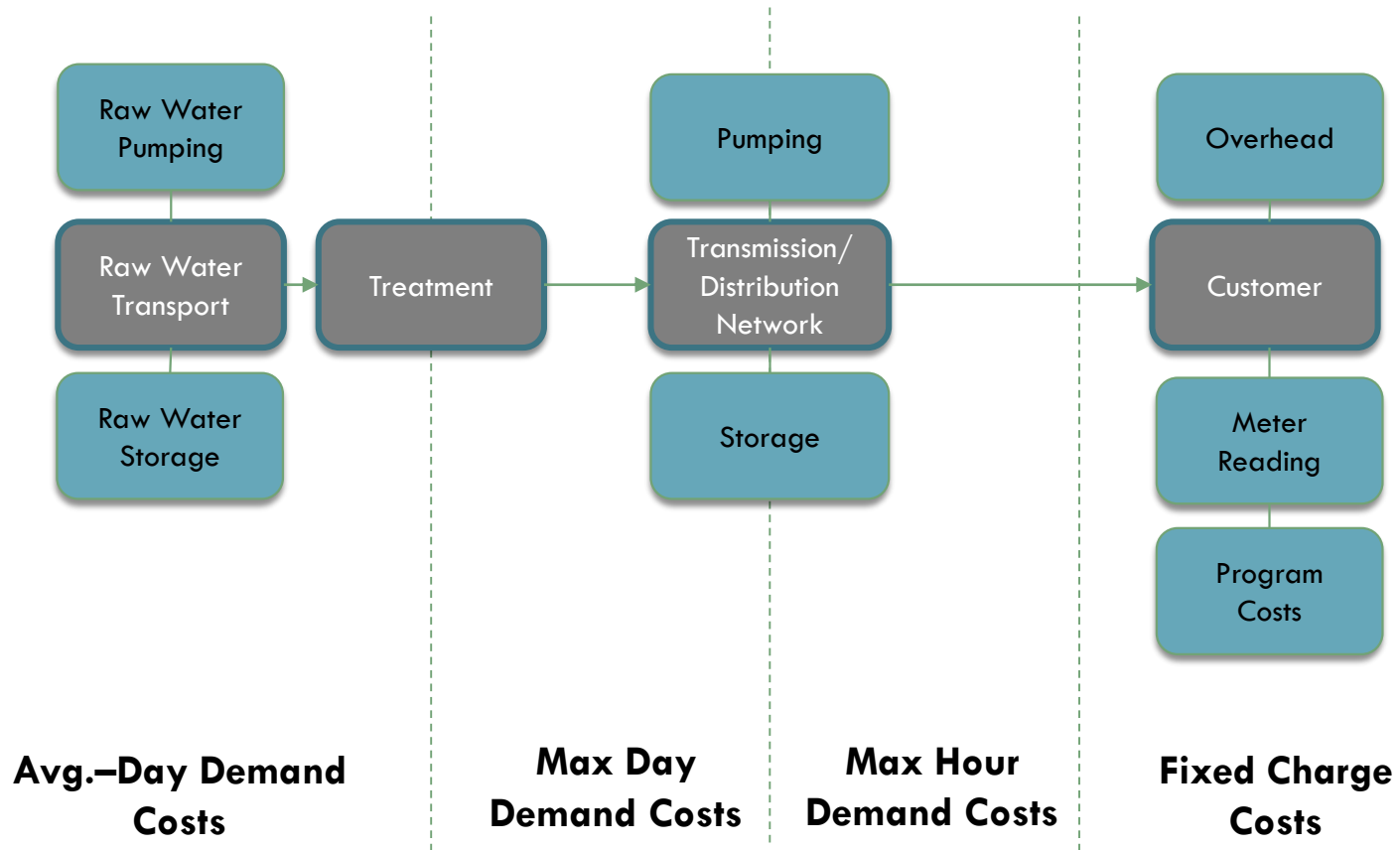
Why do we link costs to tier pricing?

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- Enhances intra-class equity
- Provides transparency
- Creates narrative for customer service
- Helps utility understand its own costs
- Enhances defensibility (some states)

Cost Allocation Framework

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Example Distribution of Costs to Customers Classes

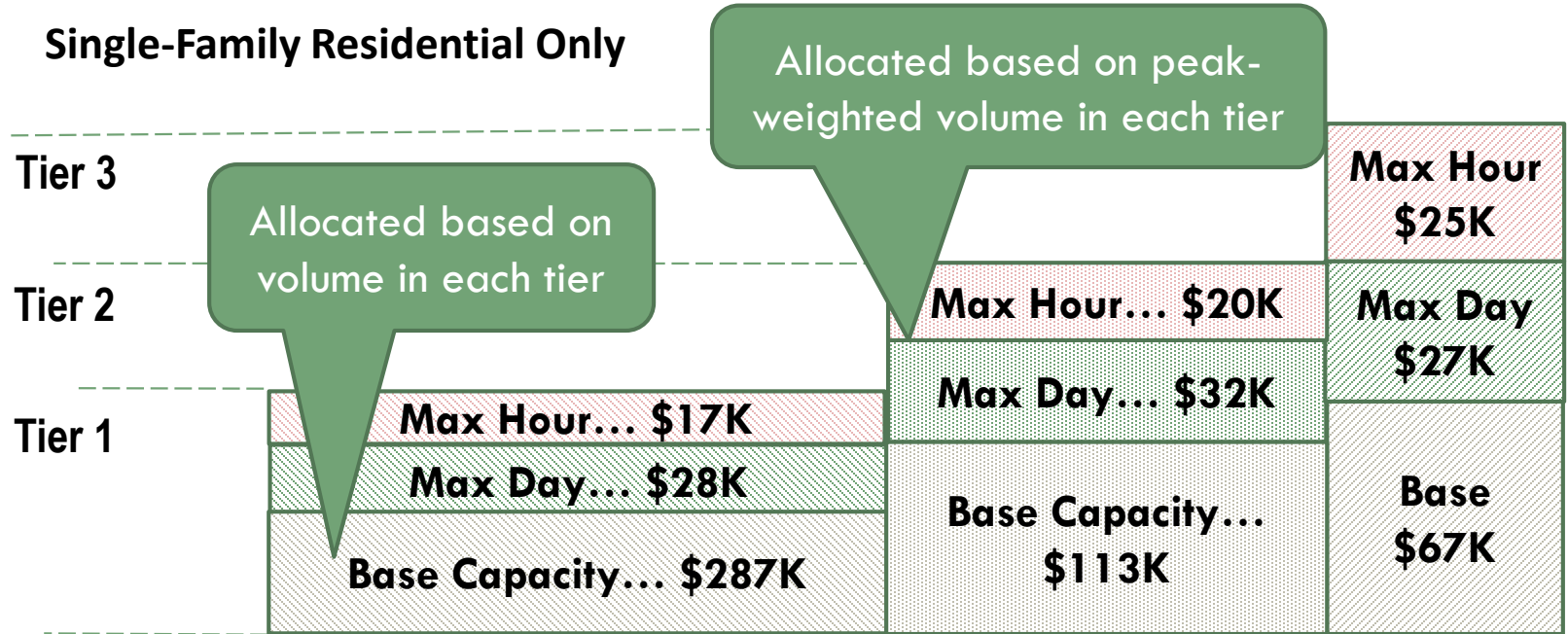
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	Single-Family Residential	Multi-Family Residential	Commercial/ Institutional	Industrial	Landscape/ Irrigation
Base Capacity	\$467,672	\$89,326	\$55,276	\$5,622	\$30,755
Extra Capacity - Max Day	\$174,270	\$25,669	\$20,605	\$2,020	\$28,059
Extra Capacity - Max Hour	\$124,383	\$19,677	\$14,705	\$-	\$20,487
Public Fire Protection	\$17,234	\$4,706	\$2,309	\$370	\$-
Customer	\$469,924	\$42,768	\$20,990	\$1,443	\$9,315
Rate Revenue Requirement	\$1,253,490	\$182,147	\$113,887	\$9,456	\$88,616

Example Distribution of Costs to Customers Classes

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Single-Family Residential Only



Fixed Meter Charge

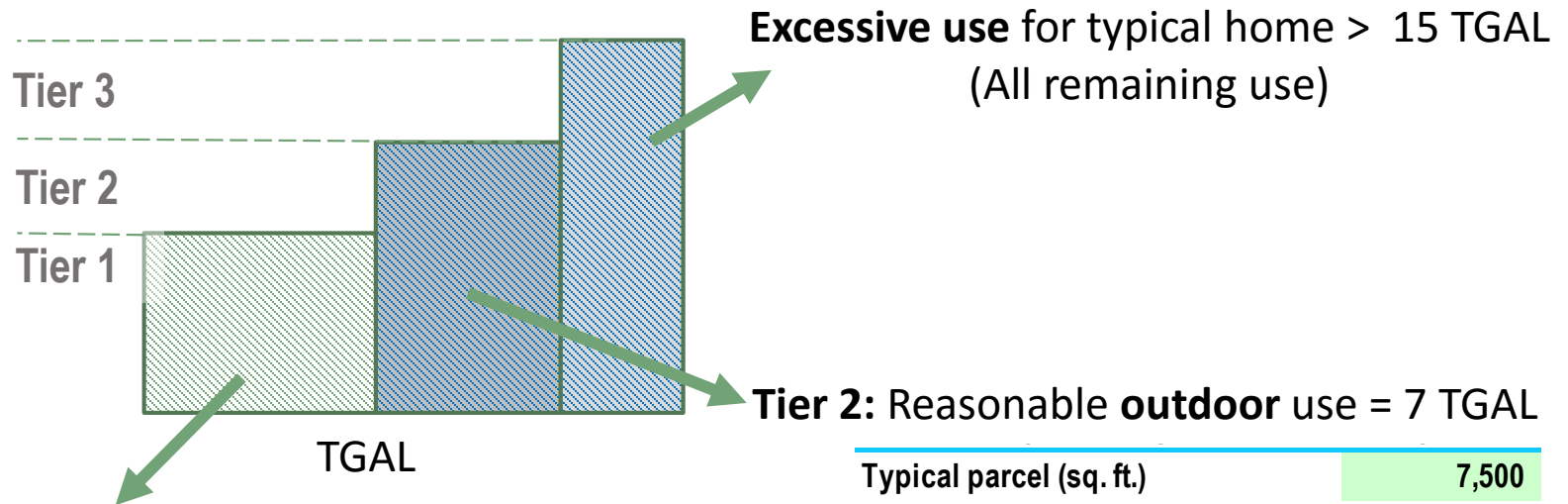
50% of Max Day and Max Hour + Public Fire Protection

Fixed Account Charge

Customer Service

Water Use Allocation Example

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Tier 1: Indoor water allowance = 8 TGAL

People per Household	4.70
Typical Indoor Use (Gallons per capita per day)	55
Typical Essential Domestic Use (gal/month)	7,863
First Tier Usage Amount (gallons / month)	8,000

Challenge: Class-based tiers do not account for differences in occupancy and property sizes....

Typical parcel (sq. ft.)	7,500
Square inches of area in 1/3 acre	2,090,880
% of area that is irrigable	33%
Reference ET for CIMIS Zone 12 (inches)	53.4
Average annual rainfall	11.3
Crop Coefficient	0.7
Irrigation Efficiency	70%
Water Budget (HCF per month)	8.8
Second Tier Usage Amount (gallons)	7,000
Second Tier Threshold	15,000

Residential Tier Sizing Example

Average Family	Value	Block Max	Current
People per Household	2.87		
Typical Indoor Use (Gallons per Capita per Day)	59		
Typical Essential Domestic Use (CCF/month)	7		
First Tier Usage Amount (CCF)	7	7	2

Large Family	Value	Block Max	Current
People per Household	6.00		
Typical Indoor Use (Gallons per Capita per Day)	59		
Typical Essential Domestic Use (CCF/month)	14		
Second Tier Usage Amount (CCF)	14	14	9

Amount of Typical Irrigation For a Property

Typical parcel (sq. ft.)	10,890		
Square inches of area in 1/4 acre	2,090,880	<i>(calculated)</i>	
% of area that is irrigable	25%	<i>Source: assumption</i>	
Reference ET (inches)	32.0	<i>Source: CIMIS Reference Evapotranspiration</i>	
Average annual rainfall	36.0	10%	
Crop Coefficient	75%	<i>Source: http://ucanr.edu/sites/Urk</i>	
Irrigation Efficiency	70%	<i>Source: Methodology for Estimating</i>	
Water Budget (CF per month)	5.8	<i>(calculation)</i>	
Third Tier Usage Amount (CCF)	6	20	>9
Fourth Tier Usage Amount (CCF)	All Use	>20	>9

A Representative Household?

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- Indoor Usage: 3 people using 59 gallons per person per day = 5,300 gallons a month



A Representative Household? (cont.)

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- Indoor Usage: 3 people using 59 gallons per person per day = 5,300 gallons a month
- Outdoor Usage: 10,000 sqft lot with 2,500 sqft irrigable, 4,300 gallons for normal irrigation a month.



A Representative Household? (cont.)

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- Indoor Usage: 3 people using 59 gallons per person per day = 5,300 gallons a month
- Outdoor Usage: 20,000 sqft lot with 5,000 sqft irrigable, 8,600 gallons for normal irrigation a month.



Commercial Rate Structure

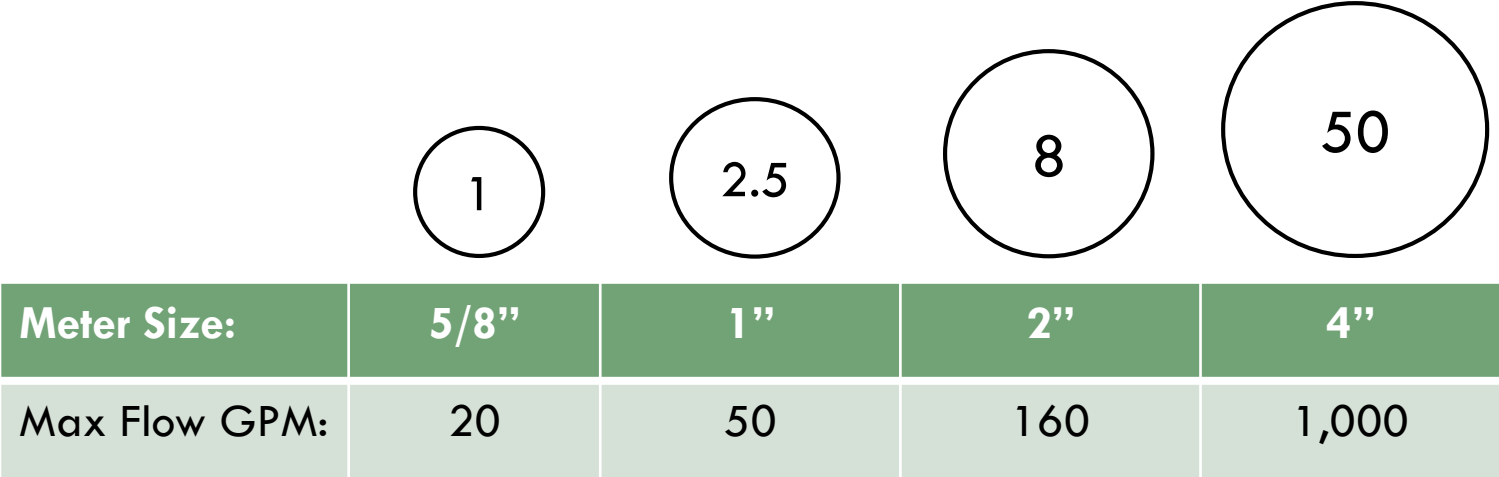
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Commercial Tiers:	1 (Peaking ≤ 5)	1 (Peaking $> 5, < 8$)	1 (Peaking ≥ 8)
Rate:	\$3.81	\$7.26	\$12.44
Volume Distribution 2016:	97.8%	1.5%	.7%

- Commercial rate structure is effectively a uniform rate
- Commercial customers have a profit motive to conserve

Readiness to Serve Charge

- Readiness to serve charges based on meter size represent an equitable way to meet fixed cost recovery goals, while recognizing the greater potential instantaneous demands larger meters are capable of.



Monthly vs Quarterly Billing

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- Benefits of Monthly Billing
 - Affordability in the form of smaller more regular budget friendly bills
 - Clear conservation signals stemming from a shorter consumption to bill generation time period
 - Comports with industry best practices
- Cost Considerations
 - Higher cycle frequency cost (Appx. 500k yr.)

Summary of Key Issues

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- Cost Allocation Methodology
- Residential Tier Sizing
- Commercial Rate Structure
- Readiness to Serve Fee
- Monthly vs Quarterly billing

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Financial Model Review