

**Ann Arbor Water and Wastewater
Cost of Service Study and Rate Analysis
Advisory Committee Meeting Summary
Monday, December 20, 2017 – 4:00pm to 6:00pm**



1. Participant List – See Attachment #1

2. Desired Outcomes from Advisory Committee Members:

- Determine how to identify multifamily accounts for the new category.
- Understand the relationship to revenue requirement in the CIP – cost ratio to budget.
- Know the process going forward.
- Believe that the study had three objectives: equity, affordability and conservation. Would like to know the goals for each and the metrics to track and measure.

3. Bringing It All Together – Andy Burnham and Kyle Stevens, Stantec

Andy Burnham reviewed the components of the cost of service study:

- Revenue sufficiency analysis
- Rate classification
- Cost to serve
- Rate Structures
- Customer impacts
- Affordability programs

A. Foundation of the Rate Study

This study is a complex analysis of infrastructure, detailed usage data and economics. The City's last cost of service study was performed in 2003 and there have been new factors that impact this study:

- Improved industry best practices
- Legal requirements that govern how rates are set
- Advanced Metering Infrastructure (AMI) data, which leads to a more accurate analysis

Andy emphasized that this new information could change the rate structure in ways that are unexpected, but that the City is compelled to make decisions that are based on the more accurate information. Elements of the study's framework and conclusions:

- Rates must capture the full needs of the system, which includes cost to serve customers, debt service, future improvements, desired level of service.

**Ann Arbor Water and Wastewater
Cost of Service Study and Rate Analysis
Advisory Committee Meeting Summary
Monday, December 20, 2017 – 4:00pm to 6:00pm**



- Legal statutes require that rates are equitable for all system users and reflect the actual cost to serve that customer class.
- Some affordability challenges are better addressed outside the rate structure.

B. Revenue sufficiency analysis

Study results show the system needs at:

- Water, a 6% annual revenue requirement increase
- Sewer, a 7% annual revenue requirement increase

Water and sewer rates were artificially low across the U.S. for many years, but as federal funding declined and infrastructure aged, rate increases have outpaced the Consumer Price Index, growing by about 5% annually over the last 20 years.

Q. Are the system needs and rate increases planned out for the next ten years?

A. Consultants modeled the next ten years, but going forward, City staff will be using and updating the model themselves to make projections to include additional data and changing economic conditions as part of the annual budgetary process.

Q. What have rate changes been in Ann Arbor in the past?

A. Generally, water increases at 4-5% and sewer increases around 6% annually.

C. New Rate Classifications

Currently the City has 3 rate classes for water:

- Residential
- Commercial
- Water Only (which has no sewer charges associated)

The recommended new structure is 4 rate classes, based on water usage characteristics:

- Residential
- Multi-family (>2 units)
- Non-residential
- Water only

The Commercial and Residential rate class was split into Multi-family and Non-residential. City has identified many accounts that may fit the multifamily class. Others that are unaccounted for (such as 3 or 4 unit accounts within the Residential classification) could opt-in for the new class as verified.

**Ann Arbor Water and Wastewater
Cost of Service Study and Rate Analysis
Advisory Committee Meeting Summary
Monday, December 20, 2017 – 4:00pm to 6:00pm**



Q. Previous discussions had multi-family as 4 units or more, but this definition is anything larger than two. Why the change?

A. After breaking down the data further (getting more granular) it made sense to include anything over a duplex as multi-family.

D. Test Year (FY 2018) Cost to Serve

Thanks to AMI (Advanced Metering Infrastructure), the City now has much more accurate data than was available for the 2003 Cost of Service Study. As part of the analysis, the consultants used the AMI data to determine the actual cost to serve. This data shows the precise monthly, daily, and even hourly usage by customer type. The more accurate customer data is the primary reason for the variances between revenues and cost for classes. The cost to serve each customer class is the basis for the new rate structure.

E. Proposed Water Rate Design

Residential: moving from a 3-tier inclining block to 4-tier inclining block. Tiers were determined based upon allowances of indoor and outdoor usage for various customer profiles. The new 4th tier is expected to primarily capture excessive outdoor irrigation for typical residential properties.

Key Issue: Level of Fixed Charges

- Higher fixed charges provide stability of revenues for the system, however can be an affordability issue and also undermine conservation
- In Ann Arbor, about 21% of typical residential water bills is associated with fixed charges, sewer is 13%.
- Average from other similar Midwestern communities is about 35%.
- Rating agencies like Fitch are starting to consider the amount of fixed charges for water and sewer in their bond ratings. Highest rating for those that collect >30% of annual revenue from fixed charges.

F. Proposed Quarterly Water Fixed Charge Cost Components

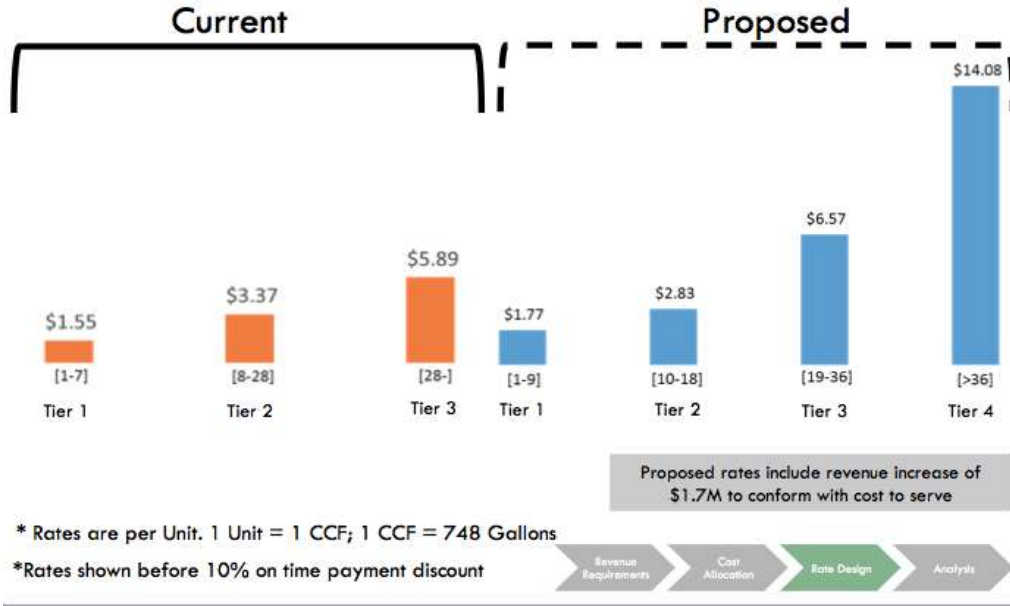
Fixed charge is made of 3 components:

- Customer service
- Meter program
- Fire protection

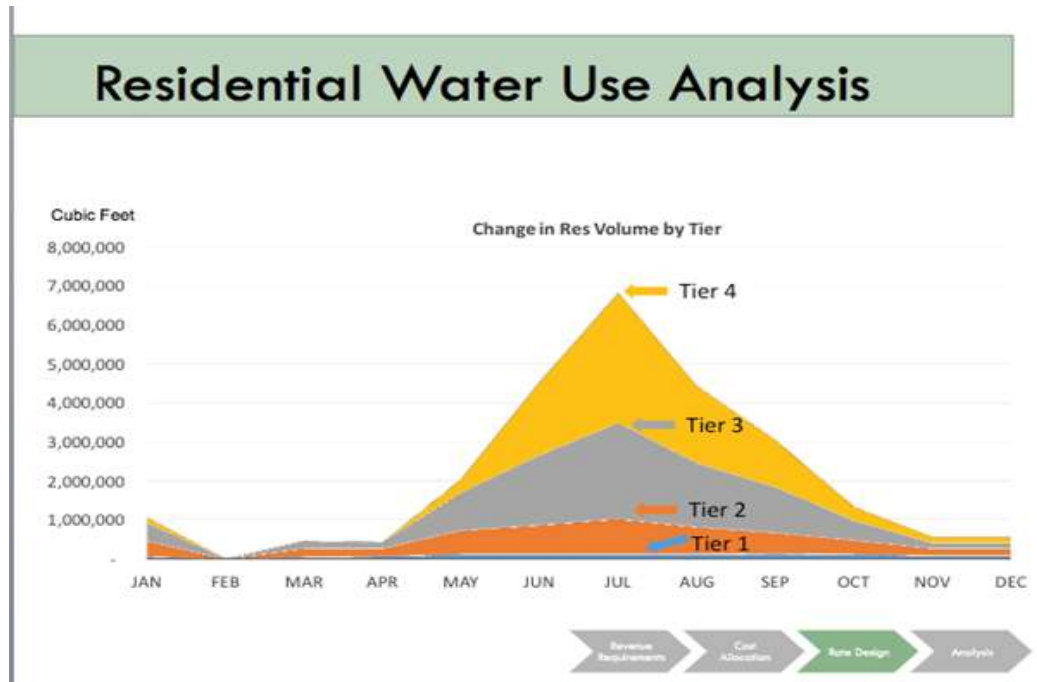
**Ann Arbor Water and Wastewater
 Cost of Service Study and Rate Analysis
 Advisory Committee Meeting Summary
 Monday, December 20, 2017 – 4:00pm to 6:00pm**



G. Residential Water Volumetric Pricing and Structure



Mr. Burnham notes that rates would move within the tiers incrementally, e.g. only the portion of use that exceeds the prior tier gets billed at the higher rate.



**Ann Arbor Water and Wastewater
Cost of Service Study and Rate Analysis
Advisory Committee Meeting Summary
Monday, December 20, 2017 – 4:00pm to 6:00pm**



Q&A:

Q. Did the data show a usage break between 18 and 19 CCFs?

A. The analysis shows that an increase in demand that is not incremental, but a multiple of average use. What's driving the differential in the rates between the 3rd and 4th tier is the demands within each tier. On a max day, the plant delivers about double what it does on a regular day. The peak hour for the year occurs at the end of July. The majority of that demand is tier 3 and tier 4 volumes.

Q. Aren't fixed charges related to fixed costs?

A. Actually 90% of a utility's costs are fixed. Generally, utility systems include customer related costs, meter program, fire protection, and other types of costs that are appropriately allocated based on customers and/or meter size that also result in levels of fixed charges that meet their financial stability objectives.

Q. What is the typical residential meter size?

A. 5/8" meter.

Q. How were the costs types selected for the fixed charges?

A. Cost categories that were generally a function of number of customers or meter size were included in the fixed charge.

Q. Why has the residential fixed charge gone up?

A. To reflect the results of the cost of service analysis and recover the appropriate types of costs mentioned previously.

Q. What is the typical household usage?

A. 17-18 CCF is the average single family household usage per quarter.

Q. What meter data is currently available?

A. Daily information is available for all, while hourly data is available for some.

Q. Has there been analysis done regarding how much water is required to put out a fire in a downtown high rise?

A. The most recent update to the AWWA M1 manual does have this type of information about fire flow requirements for different properties.

Q. Isn't the required pressure a high cost element?

A. The incremental cost difference is pretty small.

**Ann Arbor Water and Wastewater
Cost of Service Study and Rate Analysis
Advisory Committee Meeting Summary
Monday, December 20, 2017 – 4:00pm to 6:00pm**



Q. Do the variances in rates occur every year hereafter?

A. The level of future rate increases beyond next fiscal year will be updated annually as part of the budget process.

Q. Was the revenue sufficiency analysis done for a window of time?

A. The model will be updated and monitored by staff. Assumptions can be refined to continue to refine multi-year plans.

Q. Does it make sense to take water only billing out of residences?

A. It might, depending upon the nature of water use and associated economics. There are only about 400-500 water only residential meters.

Q. Would a dormitory be classified as non-residential or multi-family?

A: We believe multi-family would be the appropriate rate classification in the new structure (assuming it is separately metered). Any meter with 3 or greater dwelling units will be considered multi-family, so that could potentially include dorms depending on how they are metered.

Q. What about charging volumetric rates based on real time usage/time of day?

A. The water technology is not there yet. Electricity providers do have that capability. Technology is not yet available, but it may be in the future.

Q. What are the requirements for firefighting, specifically in a place without a lawn?

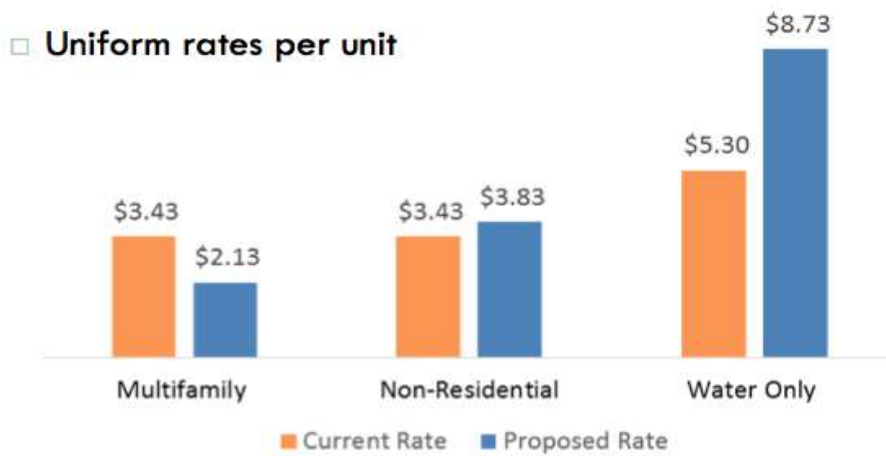
A. Fire flows are an integral component of the system. The City uses design fires in the analysis. ISO reviews and rates the City's fire protection capabilities.

Q. What if the City decided to discourage lawn watering? Would that impact the City's fire protection ability in a particular area?

A. No, the system and the pressures take fire protection into account and would not be impacted by conservation.



H. Non-Residential, Multi-family and Water Only Volumetric Rates



* Billed in Units. 1 Unit = 1 CCF; 1 CCF = 748 Gallons

*Rates shown before 10% on time payment discount



Q. Why does the non-residential rate go up when the cost to serve is less than the current revenue being collected?

A. The fixed charges for larger meter sizes are decreasing, which results in a slight increase in the volumetric rate to ensure full recovery of the cost to serve.

I. Proposed Sewer Rate Design

Residential

- Fixed Charge
- Volumetric Rate*
 - Uniform (flat) rate based on metered water use
 - Winter average water use applied in summer months

Non-Residential and Multi-Family

- Fixed Charge
- Volumetric Rate*
 - Uniform (flat) rate based on metered water use

* Billed based on Units
 1 Unit = 1 CCF; 1 CCF = 748 Gallons



**Ann Arbor Water and Wastewater
 Cost of Service Study and Rate Analysis
 Advisory Committee Meeting Summary
 Monday, December 20, 2017 – 4:00pm to 6:00pm**



J. Footing Drain Disconnection (FDD)

During the course of the Cost of Service Study, consultants reviewed the feasibility of using a different rate or applying a discount for those who had undergone an FDD, as suggested by the 2013 Sanitary Sewer Wet Weather Evaluation Project’s Citizens Advisory Committee. It was determined to not be feasible for three reasons:

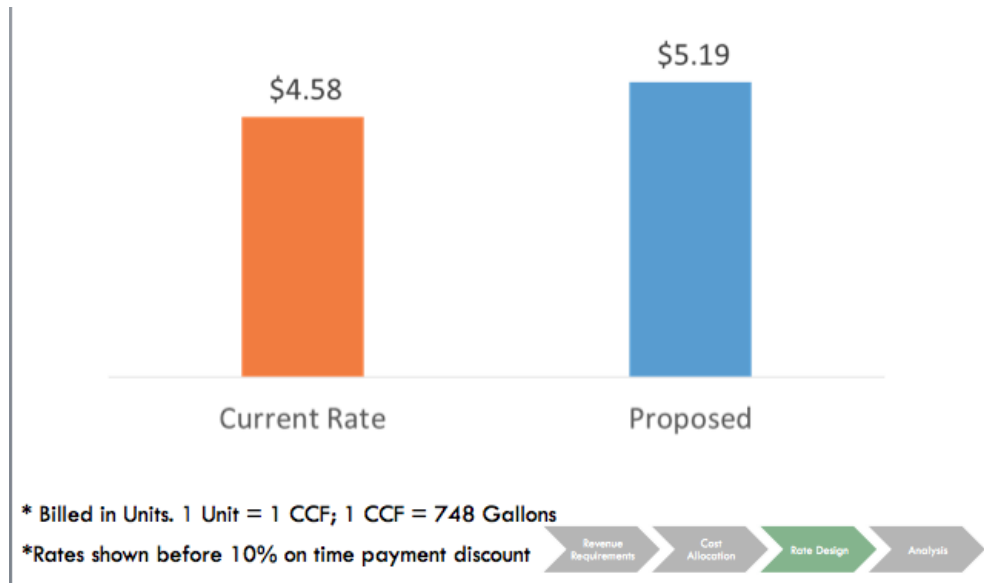
1. Equity. FDD participant properties are no different than properties that never connected.
2. Data. Require an audit/database of all connected homes.
3. Precedent. Not aware of other credits or surcharges for FDD.

K. Proposed Quarterly Sewer Fixed Charge Cost Components

Sewer fixed costs, which include:

- Customer related costs
- Meter program

L. Sewer volumetric rate



M. Water & Sewer Quarterly Bill Impacts

Review impact of rate changes for all customer classes, and several customer profiles within each rate classification.

**Ann Arbor Water and Wastewater
Cost of Service Study and Rate Analysis
Advisory Committee Meeting Summary
Monday, December 20, 2017 – 4:00pm to 6:00pm**



Q. Rates would adjust to the new structure in July 2018 and then increase approximately 6% every year after that?

A. For FY 2019, assuming that the recommendations were adopted by City Council and incorporated into the City's budget, rates would be adjusted in July of 2018 to reflect the new structure, and then increased in January of 2019. Beyond FY 2019, it is expected that any needed increases would be implemented at the beginning of each fiscal year.

Q. How will the university be impacted by the rate changes? Will rates go up?

A. The University has about 400 accounts. The analysis is still being conducted to determine the overall impacts. It's expected that some University accounts, such as dormitories which could be reclassified from commercial to multi-family may see reductions, while other accounts, such as water only, could see increases.

N. Affordability Next Steps

Mr. Burnham noted that the legal environment requires that rates for customer classes be based on the cost to serve that class, therefore there are some limitations to addressing affordability concerns within the rate structure.

Lynne Chaimowitz reviews future educational efforts and programs that are available to help with affordability challenges. A goal is to improve ease of access to existing services.

- Barrier Busters has an Unmet Needs Assistance Fund
- Crisis intervention through community and County partnerships
- Leak adjustments
- Payment plans – City can extend the bill due date up until the next bill (three months)
- Quantification of number and amount of customers with affordability challenges.

O. Next actions

1. Educate customers on options.
2. Quantify customers with unmet affordability needs.
3. Form Water Affordability Advisory Group.

Q. Do we have any idea how many people need help paying their water bill?

A. It's hard to know the true level of need in the City. In 2016, Barrier Busters and Ann Arbor Thrift Shop gave about \$7000 for payments ranging from \$200 to

**Ann Arbor Water and Wastewater
Cost of Service Study and Rate Analysis
Advisory Committee Meeting Summary
Monday, December 20, 2017 – 4:00pm to 6:00pm**



\$1000. Craig Hupy notes that there is not a strong correlation between household income and late or unpaid bills.

Q. Approximately how many customers are in the shut off stage each month?

A. It varies, but the range is typically 3-7, with one account experiencing a cessation of service for more than 12 hours.

4. Next Steps – Lynne Chaimowitz

The next steps for the Cost of Service Study are to present the recommendation to City Administrator, City Council and continue communication efforts. Lynne will continue to update via a listserve. Committee Members were urged to sign-up for the listserve distribution if they haven't already.

5. Public Education

The following suggestions were made by the Advisory Committee to help with reaching and educating the public on the Cost of Service Study and its results:

- Like the police department does outreach at middle schools, hold and publicize outreach events.
- Write a thorough letter and include it with the quarterly bill.
- MLive articles.
- CTN Public access channel.
- Send a flier, especially to multi-family.
- Use the public schools to distribute info – fliers, messages.
- Local publications and radio programs, The ANN, Damn Arbor, Stateside with Cynthia Canty, WEMU (David Fair).
- Word should go out starting in January – find social influencers with a large network: Mary Morgan, Linh Song, use the Next Door platform.

Key message suggestions:

- The rate changes will benefit some, but others will see their rates increase, particularly heavy irrigators.
- Health of the system and continued funding of the system is so important to the community (Flint).
- Public may not know the process, so they don't trust the water quality.
- Help people know the costs of things like repairing the water main on Nixon Road. Make a list of the improvements and put it right out there. "This is what it costs to keep your water safe and your house from burning down and your native plants in your yard alive."

**Ann Arbor Water and Wastewater
 Cost of Service Study and Rate Analysis
 Advisory Committee Meeting Summary
 Monday, December 20, 2017 – 4:00pm to 6:00pm**



- Find some way to address those with a negative FDD experience, so that it doesn't derail the conversation.

ATTACHMENT #1

| Last Name | First Name | Organization Representing |
|------------------|-------------------|--|
| Adams | Jim | U of M |
| Allen | Crystal | City of Ann Arbor |
| Beecher | Janice | MSU Institute of Public Utilities |
| Burnham | Andy | Stantec |
| Byrd | Patricia | Arrowwood Hills Co-op |
| Cederquist | Jack | Orchard Hills/Maplewood Homeowners |
| Chaimowitz | Lynne | City of Ann Arbor |
| Diephuis | David | Resident |
| Doughty | Joan | Community Action Network |
| Elias | Abigail | City of Ann Arbor |
| Glorie | Lou | Brooks Street Neighborhood Association |
| Graham | Christopher | East Aberdeen Drive Association |
| Hall | Jennifer | Ann Arbor Housing Commission (AAHC) |
| Hupy | Craig | City of Ann Arbor |
| Miller | Carol | Wayne State University/Resident |
| Naud | Matt | Resident |
| Newman | Teresa | Project Innovations |
| Praschan | Marti | City of Ann Arbor |
| Scott | Garrett | Iroquois/East Stadium Neighborhood Association |
| Slotten | Cresson | City of Ann Arbor |
| Stevens | Kyle | Stantec |
| Wingle | Aimee | City of Ann Arbor |



CITY OF ANN ARBOR WATER & SEWER COST OF SERVICE STUDY

12.20.2017



Overview

1. Revenue Sufficiency Analysis
2. Rate Classification
3. Cost to Serve
4. Rate Structures
5. Customer Impacts
6. Affordability Program



Foundation of the Rate Study

1. Adequate revenue to meet identified requirements
 - Capital, Operating, Debt Service, and Asset Management
2. Fair and equitable distribution of cost
 - Last cost of service was performed in 2003
 - Based upon industry best practices and legal requirements
 - Utilizing detailed AMI data – unique and better analysis
3. Evaluate and address community objectives
 - Affordability through rate and non-rate programs



Revenue Sufficiency Analysis

Water

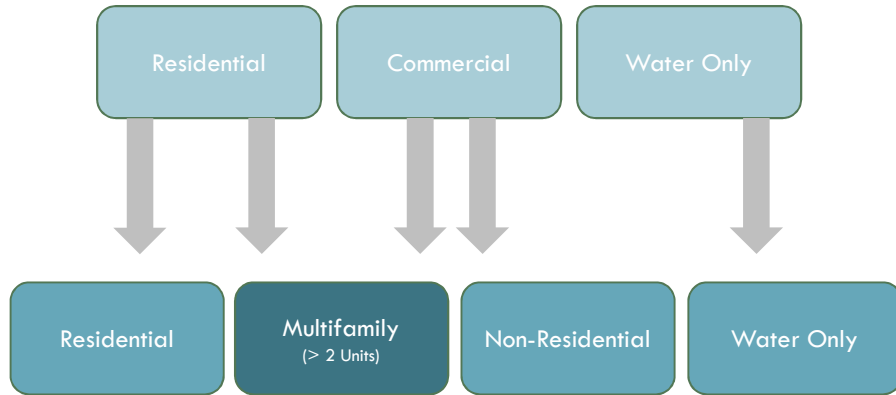
- 6% Annual Revenue Requirement increase
 - “Smooth” rate increases
 - Increased debt service for future WTP Project
 - Operating Budget
 - Asset management
 - Multi-Year capital plans

Sewer

- 7% Annual Revenue Requirement increase
 - “Smooth” rate increases
 - Increased debt service for recent WWTP Project
 - Operating budget
 - Asset management
 - Multi-Year capital plans



New Rate Classifications



AMI Data was used for FY16 on a daily or hourly basis (where available)



Test Year (FY 2018) Cost to Serve (\$M)



*Water and sewer revenue based on FY 2016 billing data and current rates



Proposed Water Rate Design

Residential

- Fixed Charge
- Volumetric Rate*
 - Inclining block
 - 4 Tiers based on data analysis
 - Tier 1 & 2 - Indoor use
 - Tier 3 & 4 - Outdoor use

Non-Residential, Multi-Family & Water Only

- Fixed Charge
- Volumetric Rate*
 - Uniform (flat) rate based on consumption
 - Water Only does not receive sewer charges

* Billed based on Units
1 Unit = 1 CCF; 1 CCF = 748 Gallons

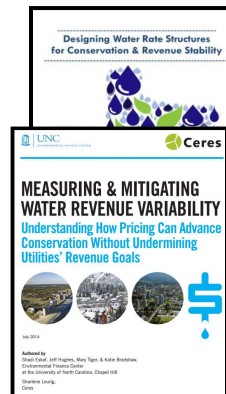


Key Issue: Level of Fixed Charges

- Higher fixed charges provide stability....
 - However, reduces cost allocation and level of conservation rates
 - Impacts affordability for low volume users
- Critical to understand and evaluate:
 - Use of reserve policies to mitigate risk of volatility
 - Current recovery of fixed costs and practices of other systems

Fixed Charge as a % of 18 CCF Quarterly Bill

| | Water Fixed | Sewer Fixed | Total |
|-----------|-------------|-------------|-------|
| Ann Arbor | 21% | 13% | 15% |
| Maximum | 64% | 100% | 65% |
| Minimum | 16% | 13% | 15% |
| Average | 36% | 35% | 35% |



- Rating agencies starting to focus on fixed charges
 - Industry-wide demand reductions & increasing fixed cost awareness
 - Fit: strong system will recover $\geq 30\%$ of revenue in fixed charges
 - Ann Arbor current collection = 12%; proposed rates (est.) = 13%

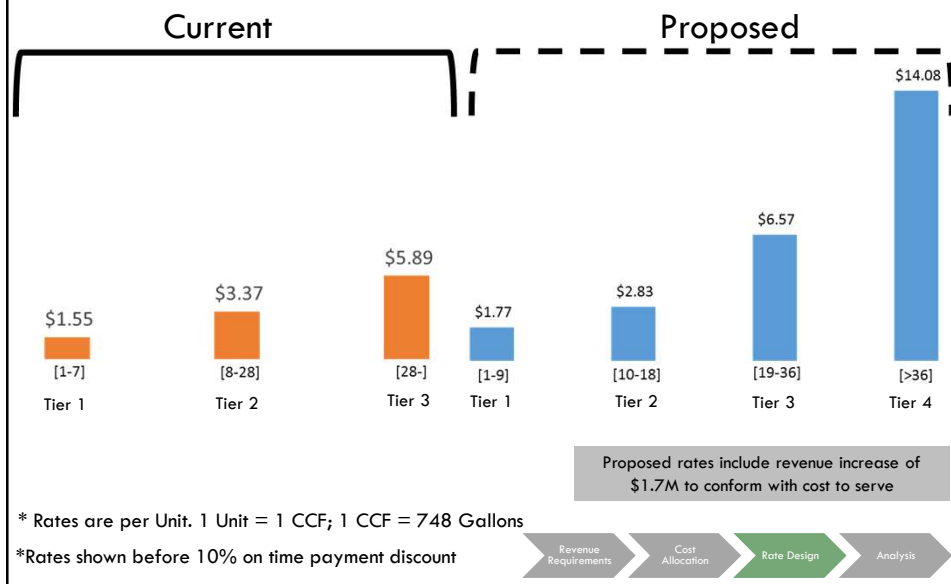


Proposed Quarterly Water Fixed Charge Cost Components

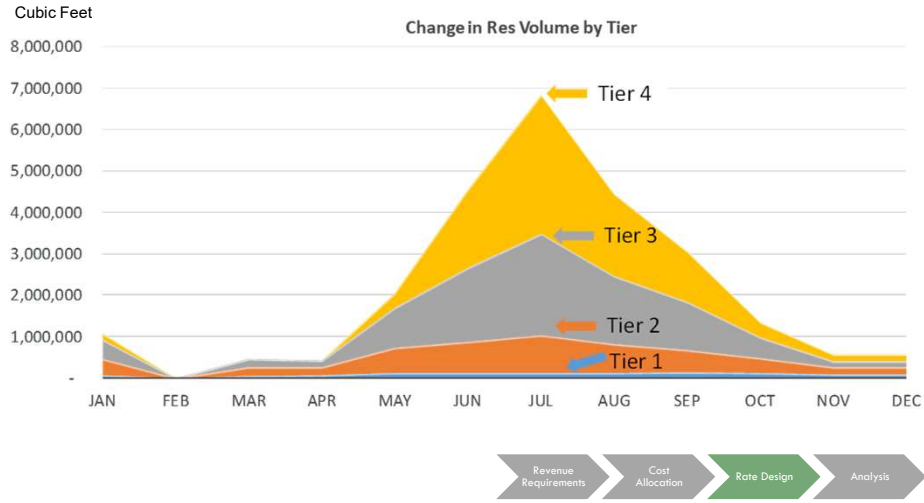
| | Meter Size | Water | |
|------------------|------------|------------|-------------|
| | | Calculated | Current |
| Customer Service | 5/8 | \$ 20.89 | \$ 11.25 |
| | 3/4 | \$ 22.43 | \$ 16.55 |
| Meter Program | 1 | \$ 25.26 | \$ 30.30 |
| | 1.5 | \$ 33.09 | \$ 62.00 |
| Fire Protection | 2 | \$ 41.90 | \$ 97.00 |
| | 3 | \$ 88.47 | \$ 195.00 |
| | 4 | \$ 115.48 | \$ 308.00 |
| | 6 | \$ 176.75 | \$ 613.00 |
| | 8 | \$ 257.21 | \$ 1,225.00 |
| | 10 | \$ 343.11 | \$ 1,960.00 |

Revenue Requirements → Cost Allocation → Rate Design → Analysis

Residential Pricing and Structure

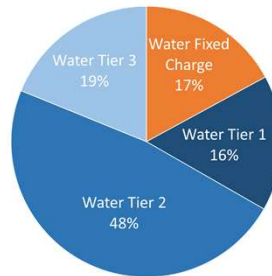


Residential Water Use Analysis



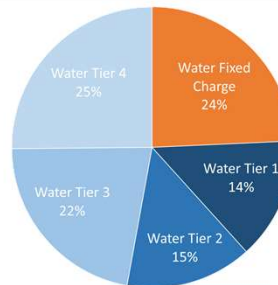
Residential Revenue Recovery Sources

Current Revenue Sources



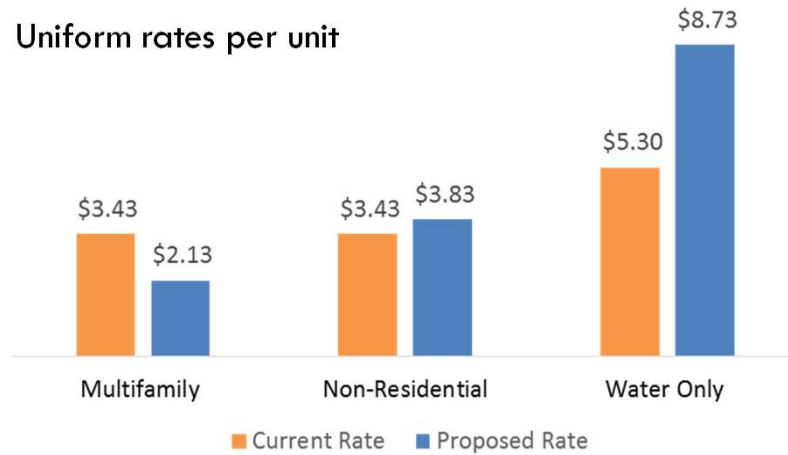
Proposed Revenue Sources

Increased to reflect the full cost to serve residential customers



Non-Residential, Multifamily and Water Only Volumetric

Uniform rates per unit



* Billed in Units. 1 Unit = 1 CCF; 1 CCF = 748 Gallons

*Rates shown before 10% on time payment discount



Proposed Sewer Rate Design

Residential

- Fixed Charge
- Volumetric Rate*
 - Uniform (flat) rate based on metered water use
 - Winter average water use applied in summer months

Non-Residential and Multi-Family

- Fixed Charge
- Volumetric Rate*
 - Uniform (flat) rate based on metered water use

* Billed based on Units
1 Unit = 1 CCF; 1 CCF = 748 Gallons



Footing Drain Disconnection (FDD)

1. Program to disconnect footing drains from sewer system
 1. About 2,000 homes been disconnected via the program
 2. Estimated 15,000 homes still connected
2. To be evaluated in rate study per SSWE Citizens Advisory Committee
3. Challenges:
 1. Equity: No different than properties that never connected
 2. Data: Require audit/database of all connected homes
 3. Precedent: Not aware of other credits/surcharges for FDD
4. Suggestions: Communication of benefits and alternative funding programs

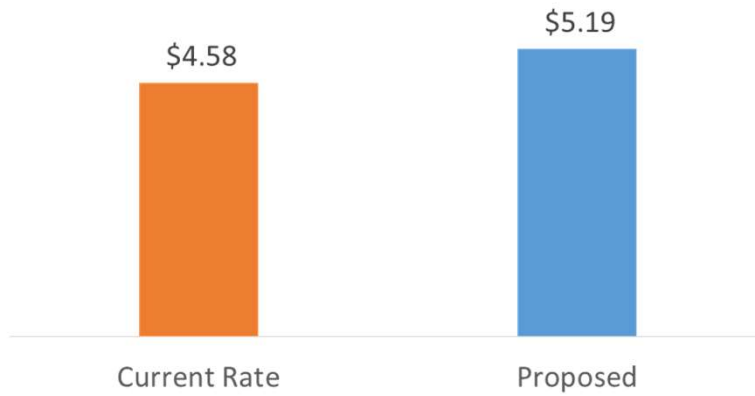


Proposed Quarterly Sewer Fixed Charge Cost Components

| Cost Component | Meter Size | Calculated | Current |
|------------------|------------|------------|-------------|
| Customer Related | 5/8 | \$ 13.09 | \$ 11.25 |
| | 3/4 | \$ 13.47 | \$ 16.55 |
| | 1 | \$ 13.98 | \$ 30.30 |
| | 1.5 | \$ 16.01 | \$ 62.00 |
| Meter Program | 2 | \$ 17.84 | \$ 97.00 |
| | 3 | \$ 45.86 | \$ 195.00 |
| | 4 | \$ 51.98 | \$ 308.00 |
| | 6 | \$ 55.22 | \$ 613.00 |
| | 8 | \$ 66.07 | \$ 1,225.00 |
| | 10 | \$ 70.74 | \$ 1,960.00 |



Sewer Volumetric Rate



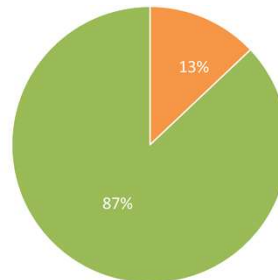
* Billed in Units. 1 Unit = 1 CCF; 1 CCF = 748 Gallons

*Rates shown before 10% on time payment discount

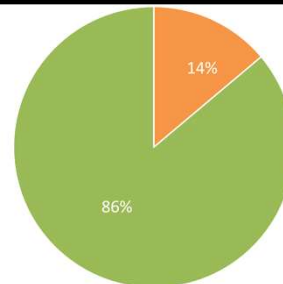


Residential Revenue Recovery Sources

Current
Revenue Sources



Proposed
Revenue Sources



Water & Sewer Quarterly Residential Bill Impact

Scenario:

- 5/8" Meter
- Two person household with minimal irrigation
- Bill is increasing to conform with the cost to serve and fixed cost recovery goals



8 CCF = 5,984 Gallons

*Bill shown net 10% on time payment discount

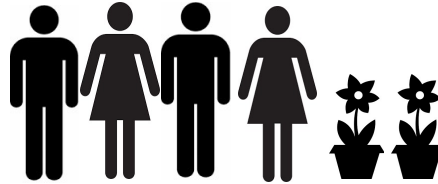


*Bills shown net 10% on time payment discount

Water & Sewer Quarterly Residential Bill Impact

Scenario:

- 5/8" Meter
- Four person household with minimal irrigation
- Bill is increasing to conform with the cost to serve



18 CCF = 13,464 Gallons

*Bill shown net 10% on time payment discount

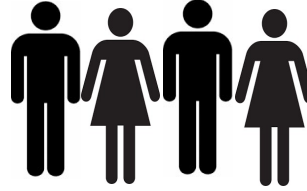


*Bills shown net 10% on time payment discount

Water & Sewer Quarterly Residential Bill Impacts

Scenario:

- 5/8" Meter
- Four person household with efficient irrigation
- Bill is increasing to conform with the cost to serve

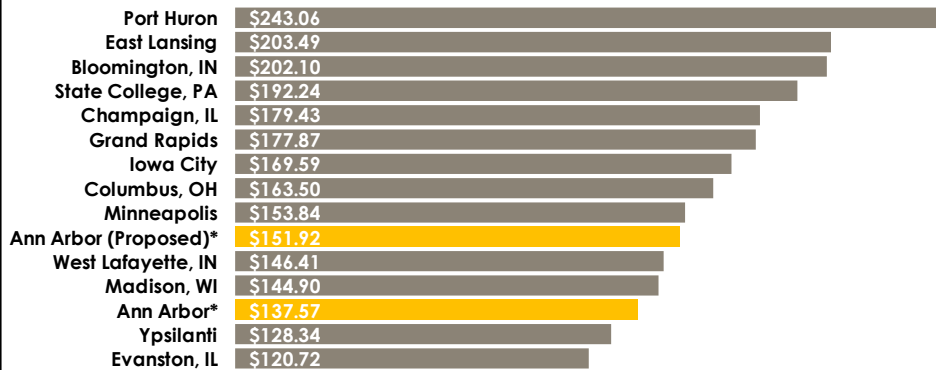


*Bill shown net 10% on time payment discount



Comparison of Residential Water & Sewer Bills

Combined Water & Sewer Bill Survey at 18 CCF Quarterly



*Bill shown net 10% on time payment discount



Select Water & Sewer Quarterly Non-Residential Bill Impacts

| Type | Meter | Current | Proposed | Change \$ | Change % |
|---------------------|------------|-----------|-----------|------------|----------|
| Grocery Store | 2" | \$ 8,002 | \$ 7,573 | \$ (429) | -5% |
| Deli | 1.5", 1.5" | \$ 4,747 | \$ 4,434 | \$ (313) | -7% |
| Pub | 1.5" | \$ 3,883 | \$ 3,667 | \$ (216) | -6% |
| Brewery | 1", 5/8" | \$ 2,660 | \$ 2,550 | \$ (110) | -4% |
| Teen Center | 5/8" | \$ 166 | \$ 171 | \$ 5 | 3% |
| Specialty Store | 5/8" | \$ 288 | \$ 288 | \$ - | 0% |
| Hotel | 2", 3" | \$ 24,319 | \$ 23,031 | \$ (1,288) | -5% |
| Professional Office | 2" | \$ 1,613 | \$ 1,436 | \$ (178) | -11% |
| Dry Cleaners | 5/8" | \$ 430 | \$ 441 | \$ 11 | 3% |
| Hospital | 6" | \$ 29,143 | \$ 27,672 | \$ (1,471) | -5% |

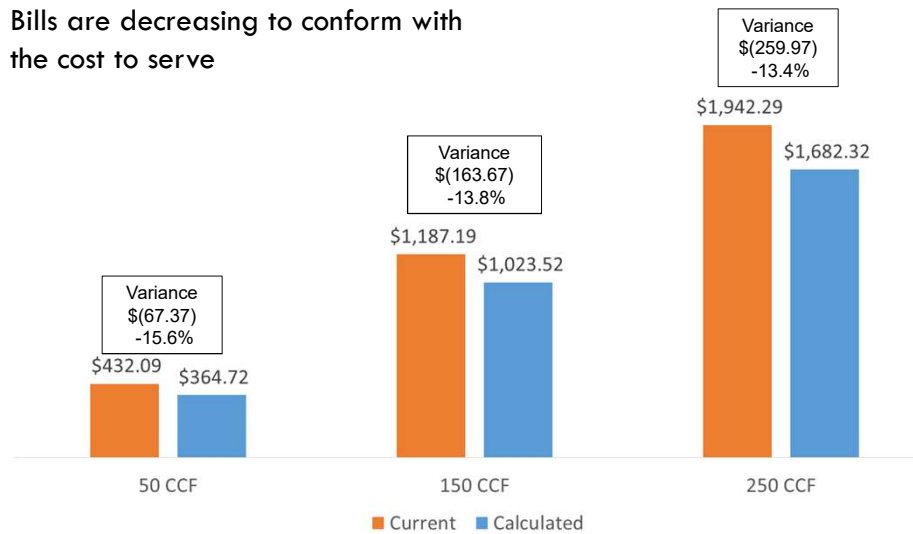
*Bill shown net 10% on time payment discount

*Fixed charges for larger meters are decreasing



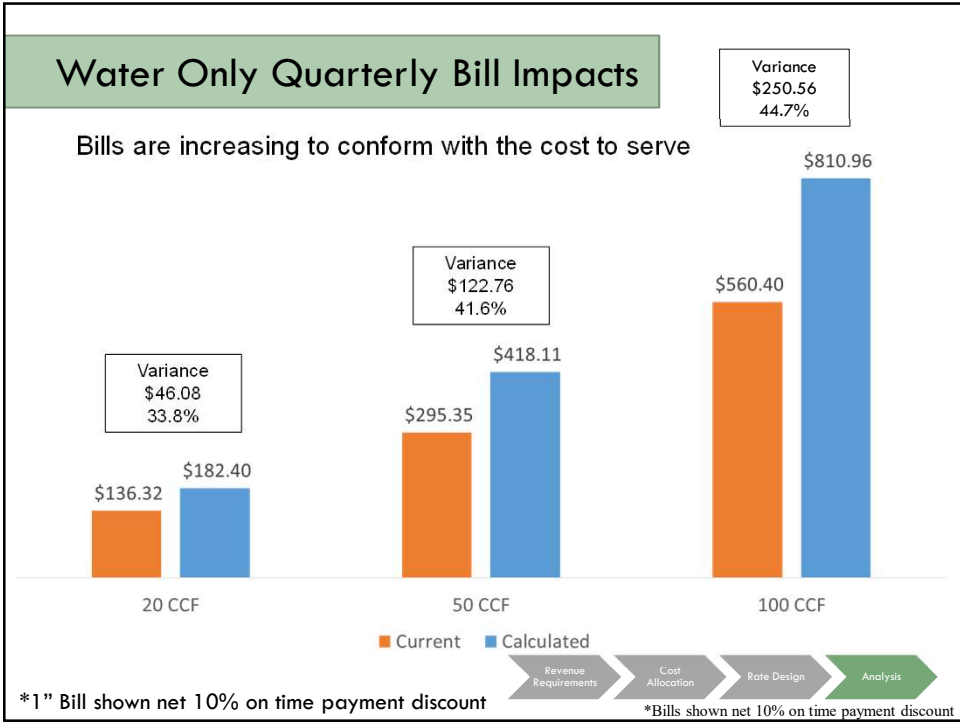
Water & Sewer Quarterly Multifamily Bill Impacts

Bills are decreasing to conform with the cost to serve



*1" Bill shown net 10% on time payment discount





Background

Affordability Next Steps

- Rate study affordability: All rates reflect the cost to serve

Developed Profiles of Different Ratepayers with Affordability Challenges



- Affordability beyond rates:
 - Improve ease of access to existing services
 - Water affordability advisory group



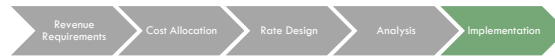
Affordability Program Summary

- Barrier Busters –Unmet Needs Assistance Fund
 - Crisis intervention through community and County partnerships
- Leak adjustment
- Payment plans
- Quantification of number and amount of customers with affordability challenges

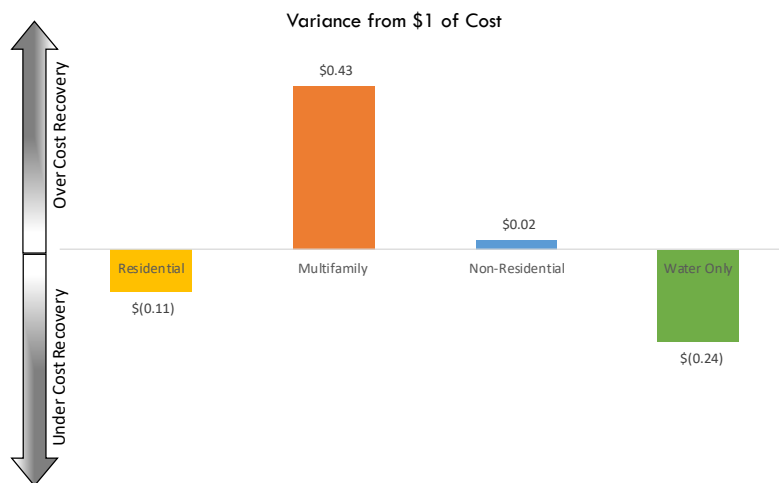


Project Next Steps

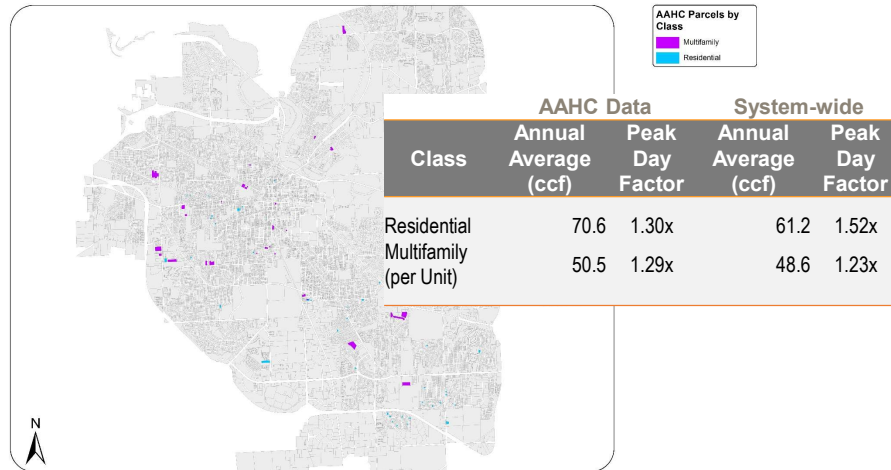
- Presentation to Administrator & City Leadership
- Presentation to City Council
- Continue Communication Efforts



Test Year (FY 2018) Cost to Serve (\$1)



Affordability Findings



Multifamily

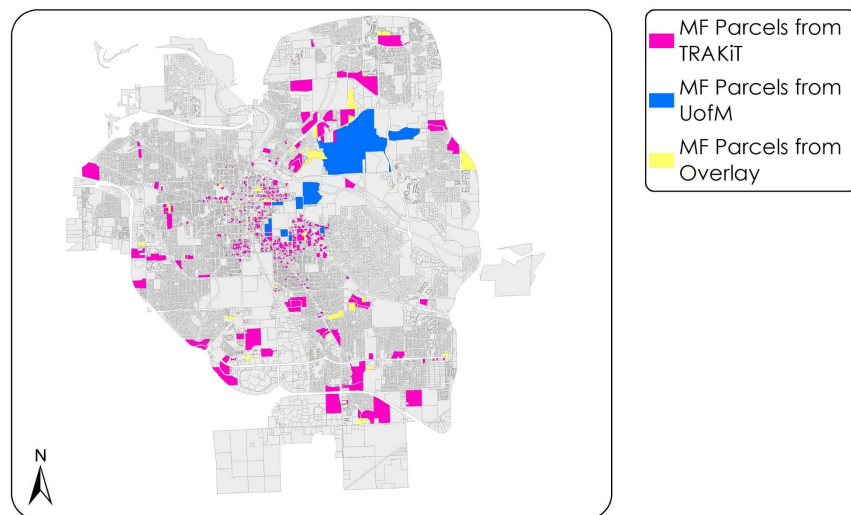
- Evaluated Cost-of-Service drivers for multifamily customers
- Determined that there is a cost-based justification for defining a new class with lower cost to serve
- Issue: because tenants often don't pay a bill directly, the benefit of the new Multifamily class will be indirect, but is expected to lower the cost of rental housing in the City

Multifamily – Final Data Sources

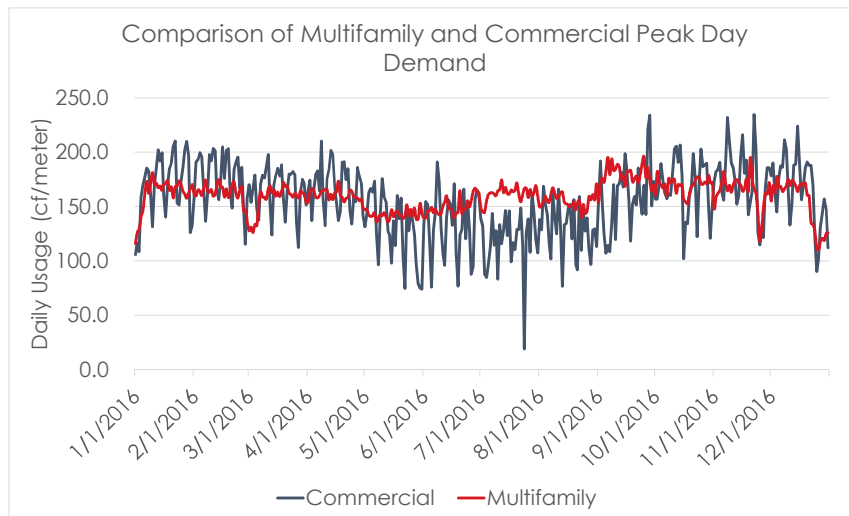
| Data Source | Unique LocationID | Unique Parcels |
|----------------------------------|-------------------|----------------|
| TRAKiT Rental Permits | 1,807 | 854 |
| U of M Records | 119 | 14 |
| Land Use & Building Type Overlay | 488 | 431 |
| Total | 2,414 | 1,299 |

- TRAKiT Rental Permits
 - Confirmed as residential-use
 - Dataset excludes units that aren't rented (condos & dorms)
- U of M Records
 - Small dataset – staff individually identified multifamily accounts
- Land Use & Building Type Overlay
 - Captures accounts missed by other methods
 - Reviewed by staff to validate

Multifamily – Final Data Sources



Multifamily – Customer Characteristics



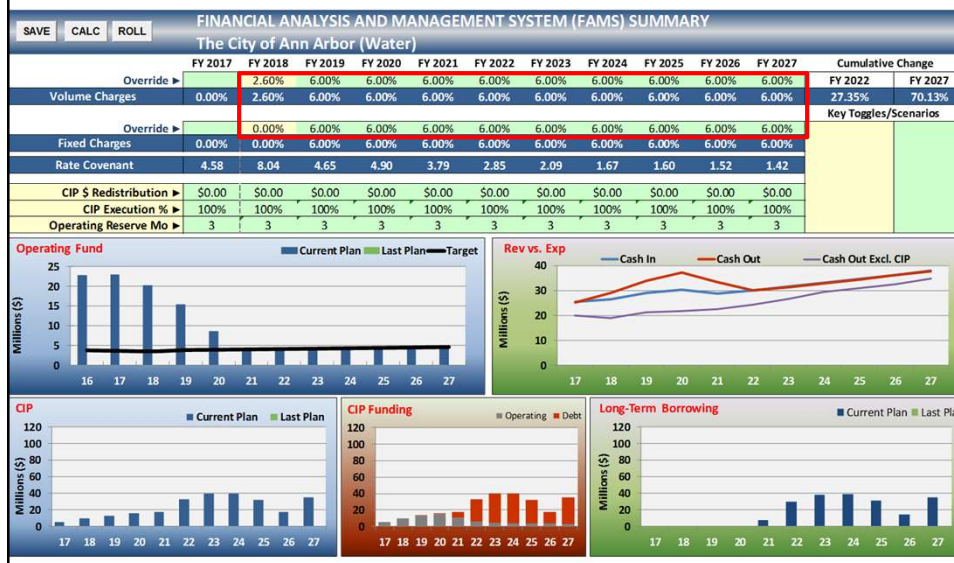
Large Single Family

- ❑ Evaluated water usage data for tenants of Ann Arbor Housing Commission properties
- ❑ Determined that even larger users do not peak the system the way general residential customers do – implying that their use is mostly indoor
- ❑ Proposed adjusting the tier sizes to reflect the actual usage data, which should mitigate impact to families that are efficient indoor users, even if the household is larger than the Ann Arbor average of 2.2

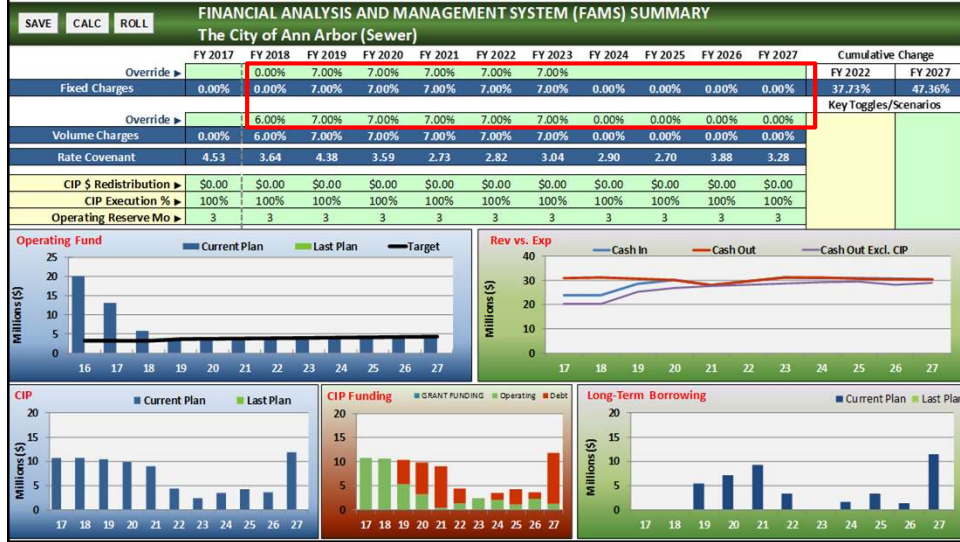
Small Single Family

- Evaluated water usage data for tenants of Ann Arbor Housing Commission properties
- Difficulty identifying individual small-household billing records
- Generally low users with predominantly indoor water use
- Ability to control overall bill amount is a function of the fixed charge percentage
- Non-Rate Affordability programs will be key to serving this subset of families

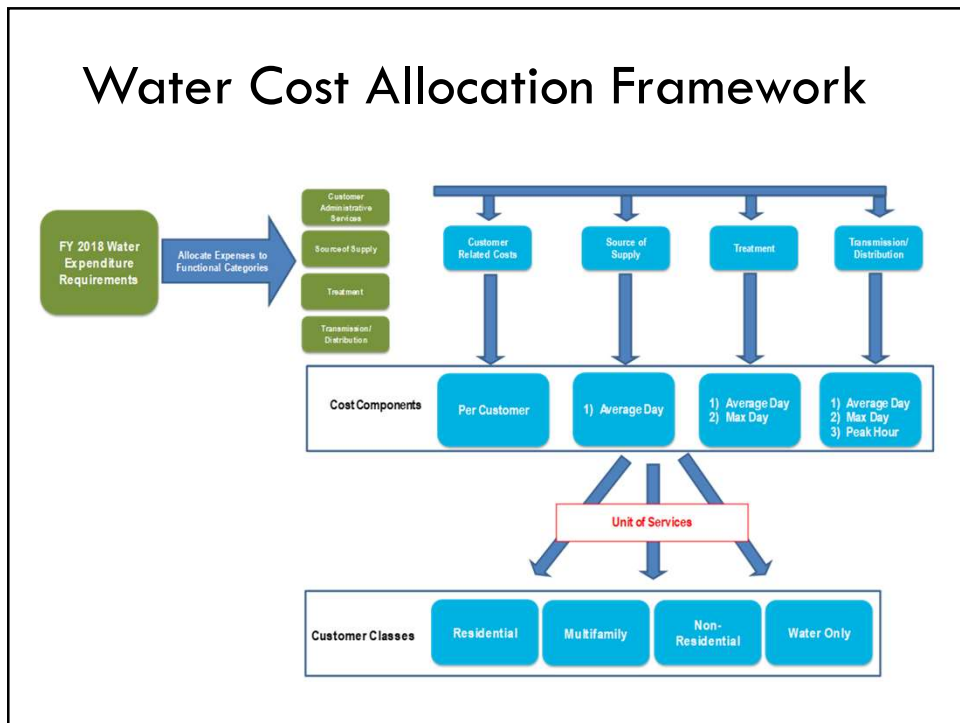
Recap of Water RSA



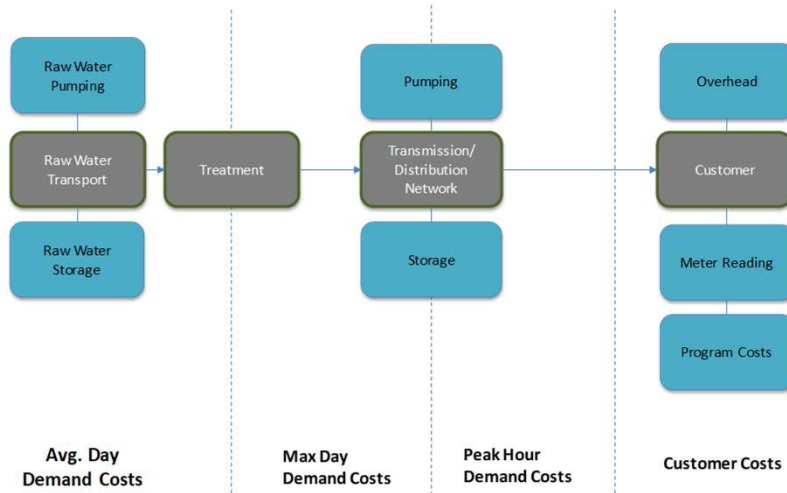
Recap of Sewer RSA



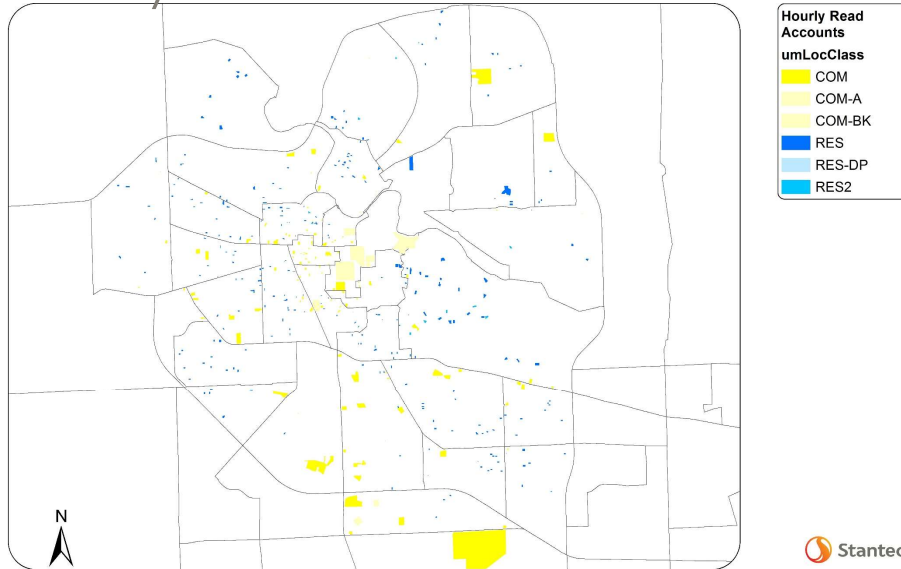
Water Cost Allocation Framework



Water System Functions

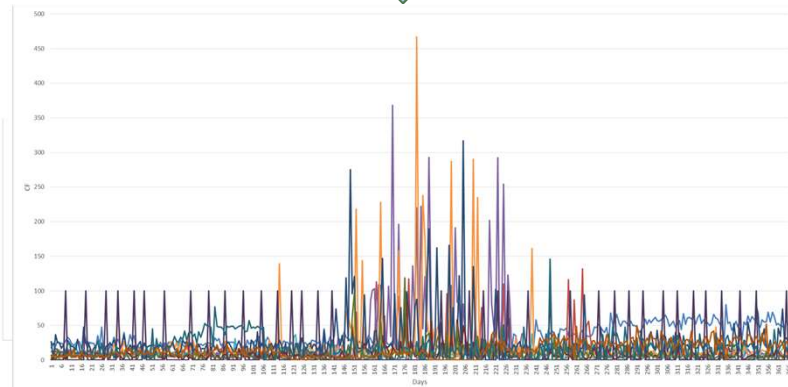


Hourly Read AMI Accounts

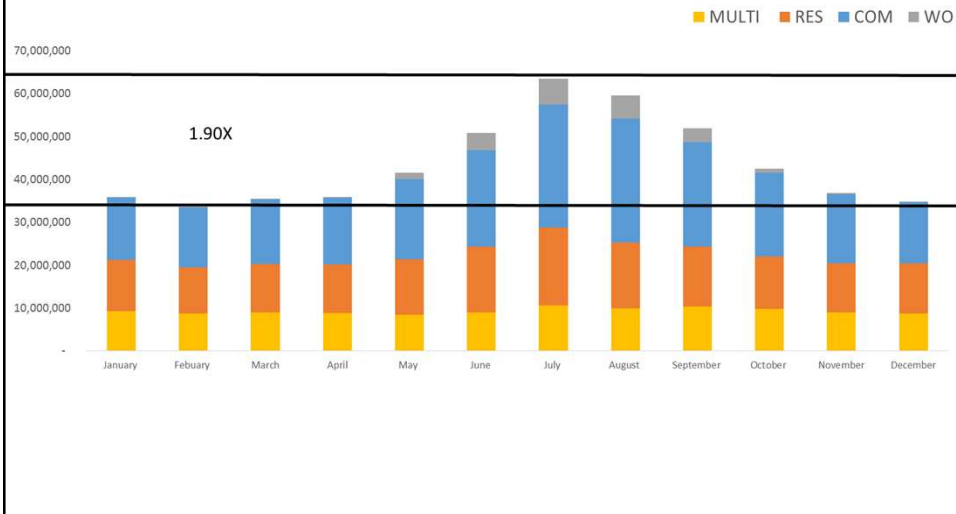


Real Measurements of Usage

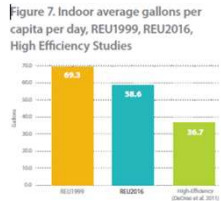
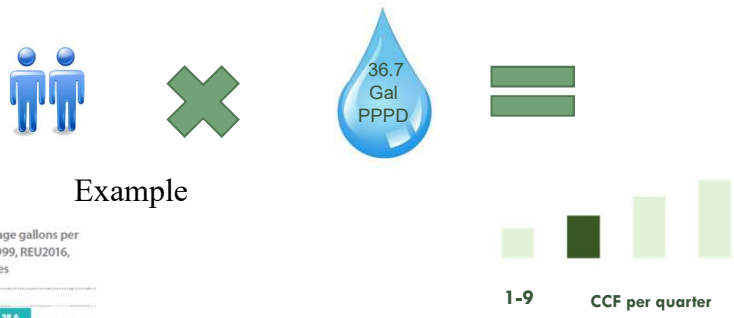
Advanced Meter Infrastructure (AMI)



Water Customer Usage



Volumetric Tier Sizing – Tier 1

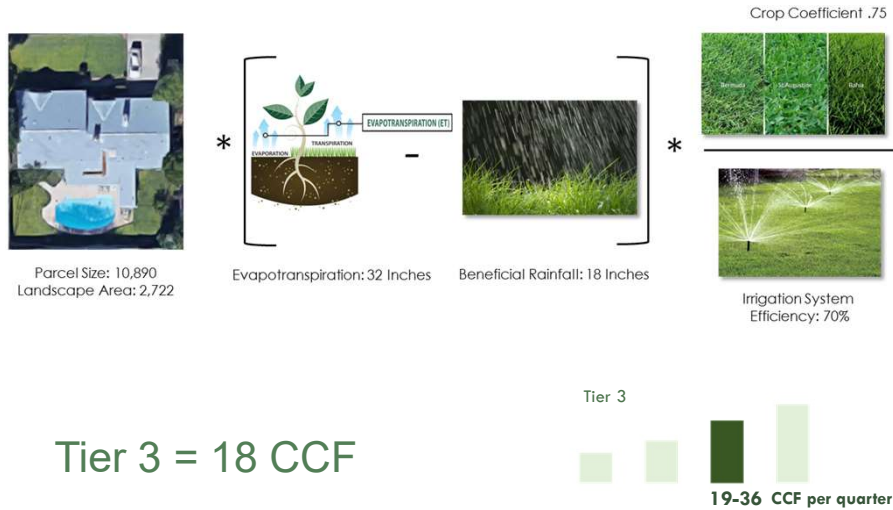


Volumetric Tier Sizing – Tier 2

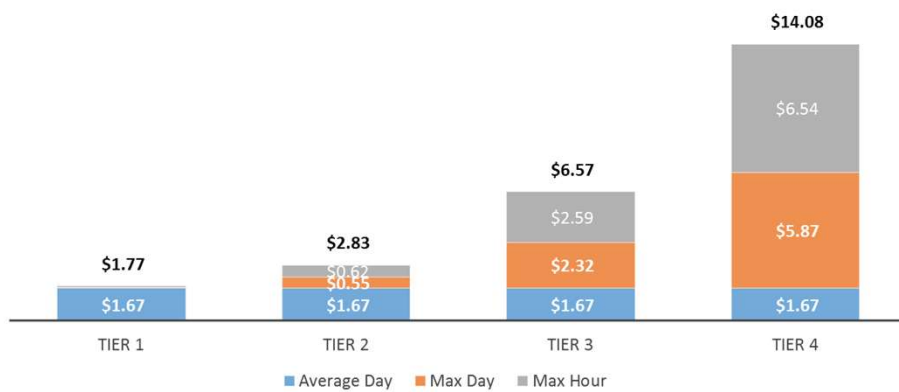
● Tier 2 (Capture use for larger than average household size)



Volumetric Tier Sizing (Efficient Irrigation)



Residential (Pricing)



*Rates shown before 10% on time payment discount

How do We Compare to Our Peers?

Combined Residential 5/8 (Water & Sewer Quarterly Fixed Charges)

