

**Ann Arbor Water and Wastewater
Cost of Service Study and Rate Analysis
Advisory Committee Meeting Summary
Wednesday, August 23, 2017 – 4:00 p.m. to 6:00 p.m.**



- 1. Participant List – See Attachment #1**
- 2. Welcome – Lynne Chaimowitz**
 - a. Lynne welcomed the Advisory Committee to the second meeting.
- 3. Introductions, Agenda Review and Desired Outcomes – Teresa Newman**
 - a. Teresa reviewed the agenda – See Attachment #3 for presentation slides
 - i. Introduction to Financial Models
 - ii. Overview of Customer Billing and GIS Data
 - iii. Introduction to Revenue Requirements and Financial Needs by Customer Class
 - iv. Initial Cost of Service Path Forward
 - b. The Advisory Committee introduced themselves and stated desired outcomes for the meeting as follows:
 - An engaged group
 - Understand the project, communicate to public
 - Andy – engage the group, provide data
 - Group engagement, facilitate information that people are seeking
 - Want to learn more and convey information
 - Want to find a way to help large low-income families pay for water as a basic need
 - Understand the two workbooks
 - Watch and learn
 - Interested in the residents of Arborview Blvd, who are dealing with a sewage issue that has been ongoing for a long time (sewage odors.)
 - Interested in how climate change is addressed in this process
 - Want to see where we've been, historical information on the system and rate structure
 - Interested in a defensible rate structure that is equitable for all that sustains the water and sewer operations moving forward
- 4. Introduction to the Financial Models for Water and Sewer – Andy Burnham, Kyle Stevens**
 - a. Today, we are focusing on the financial needs of the water and sewer system – the revenue requirements.
 - b. Review of the Rate Study Process:
 - i. Revenue Requirements – operating costs are identified
 - ii. Cost Allocation – customer attributes are defined
 - iii. Rate Design – evaluation of objectives and customer impacts
 - iv. Analysis – review fees and policies

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- c. Assumptions and Results Workbooks were sent out in advance for review. They are draft documents and very high-level information extracted directly from the financial models. The financial models will be continually updated and will be turned over to the City at the end of the project.
- d. Kyle Stevens explained that revenue in the enterprise water and sewer funds are from rates. He reviewed tabs in the water financial model:
 - i. Tab #1: Beginning Balances - \$37,318,406 was the beginning fund balances for FY 2016/2017. Funds include:
 - 1. Restricted Reserves
 - 2. Equipment Replacement Reserves
 - ii. Tab #2: Customer Account History and Forecast – *See Attachment #2*
 - 1. Residential 1 –class – single water meter.
 - a. FY 16/17: 24,050 accounts
 - 2. Residential 2 -class – second meter used for indoor consumption when a water only meter is used.
 - a. FY 16/17: 476 accounts
 - b. Sewer charges are not assessed to the water only meter.
 - 3. Commercial class – covers most other customers that are not single-family homes and multi-family (greater than 4) units.
 - a. FY16/17: 4,818 accounts
 - 4. Water only – meter used for irrigation or purposes that do not input any water into the sewer system only.
 - a. FY 16/17: 928 accounts
 - 5. Fire Service
 - 6. Hydrants
 - 7. Sale for Resale – water produced by Ann Arbor but sold to other communities for resale.
 - iii. Tab #3: Customer Volume History and Forecast
 - 1. Currently have 3 Tiers of usage (there were previously 4 tiers).
 - 2. Residential 1 - there has been a 1.64% decline in residential usage. Indoor residential end use studies show the efficiencies gained in water devices. The forecast in the financial model reflects this change continuing. This percentage will be used in the revenue forecasts going forward. 1 CCF = 748 gallons
 - 3. Residential 2 – there has been a 2.2% decline in usage.

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4. Commercial – there has been a 0.99% decrease in usage.

e. Q & A:

- i. Q: Could we see increases as two-person households in Ann Arbor increase to four-person households? A: There are a lot of variables that go into projecting water use. Ann Arbor's usage has room for further decreases as people move to more efficient fixtures. And it's a challenge to have multi-family property owners see the value in upgrading their fixtures to higher efficiency, when the renter pays the water bill.
- ii. Q: Does the City have a peaking system for commercial and a usage factor for residential? A: Yes, there may have been a reason to do that when rates were established (to encourage operational changes to reduce peak usages).
- iii. Q: Why is peaking a better way to set rates for commercial customers? A: It may be found that it isn't a better way, often we see a uniform rate structure for non-residential customers.
- iv. Q: How do you know that irrigation usage is declining due to efficiencies, isn't it really related to precipitation? A: Irrigation tools are more efficient with rain gauges and other precipitation detection devices.
- v. Q: If sewer rates are based on a winter average, then what is the advantage of the separate irrigation meter? A: There really is not, they are really only beneficial for Water Only requirements.
- vi. Q: How many months are assessed for winter usage? A: Two quarters or six months. The advantage to monthly billing cycles is that it is simpler to capture winter month billings more succinctly.
- vii. Q: Scio Township pays a water & sewer fee that comprises 8% of the City's total budget. Is the payment that comes in allocated directly to the water & sewer funds, or is it distributed to the General Fund? A: There is a small processing fee of approx. 3% that goes to the General Fund, but all other monies go to the Water and Sewer Enterprise Fund.
- viii. Q: Is the Equipment Fund for equipment only? A: Yes, it is for small equipment and mobile tools as dictated by bond covenants. .
- ix. Q: Is there an industry standard guideline for reserves -"healthy fund balance"? A: Yes, a reserve of 3-6 months of operating costs, plus contingencies for weather issues, etc. When all is rolled up, the reserves for a financially strong system is typically around 12 months operating expenses.

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- x. Marti Praschan added that sometimes the fund balance is increased to use for upcoming capital improvement projects or to smooth rate increases.
- xi. Q: Is the \$22M shown meeting the recommended 12 months reserves? A: That's something we'll look at in the model.
- xii. Q: Has anyone evaluated the interest rate implications of going from an A rating to a AA rating or other changes? A: Yes, it's typically about ½ % when you move from A to AA.
- xiii. Q: How are the rates established for the townships that buy water from A2? A: City can provide additional information on those rates and how they were established at a future meeting. UPDATE: The rate paid by townships as in the contract is revenue requirements plus 3%. Or the total cost divided by the units sold –determined by previous years data-- multiplied by 1.03.

5. Overview of Customer Data Sources

- a. Billing Data
 - i. Quarterly billed usage and charges
- b. Automated Meter Infrastructure (AMI)
 - i. Highly granular consumption data (hourly in some cases)
 - ii. Over 100,000,000 data points per year available for analysis.
- c. Geographical Information Systems (GIS) Data
 - i. Parcel specific data
- d. Q&A/Comments:
 - i. Q: How is Sale for Resale cost calculated and how does it relate to other tiers? A: The City will provide information on costs associated with Sale for Resale. UPDATE: The rate paid by townships as in the contract is revenue requirements plus an upcharge of 3%.
 - ii. Q: Can you assume that Sale for Resale customers irrigate more than the City customers? A: Not sure, we will need to dig into that data. Because the formula is already dictated by contract, that is not within the scope of this study.
 - iii. Q: Are Water Only customers applicable to average day demand? A: Data will need to be reviewed further.

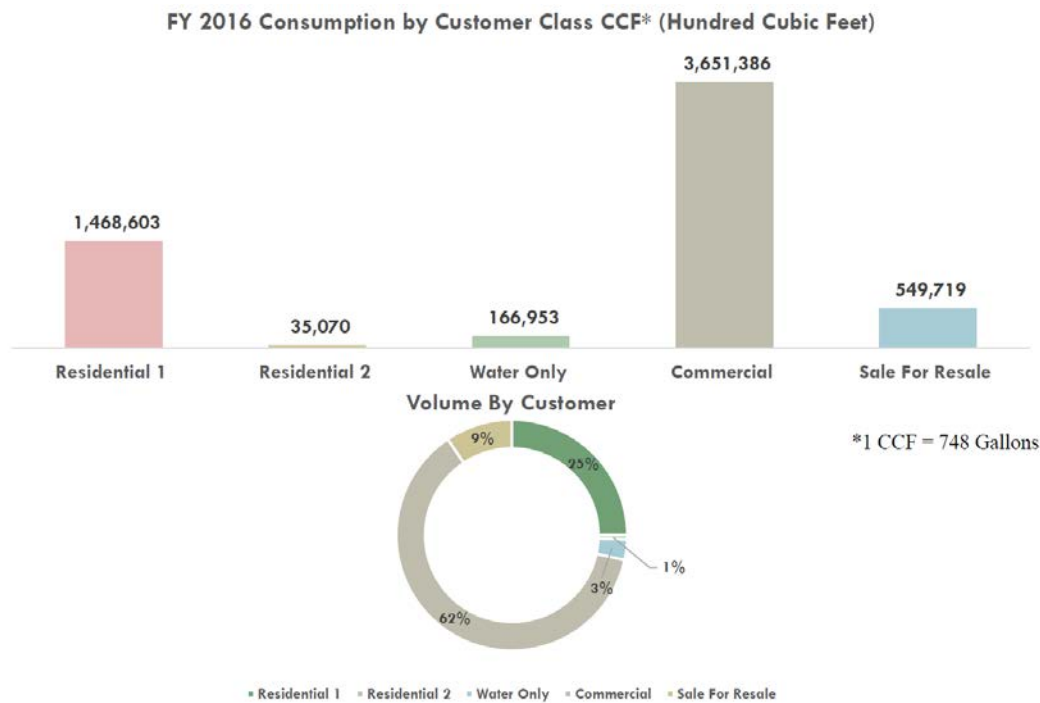
6. Customer Classes and Usage

- a. ERUS: Equivalent Residential Units using 5/8" residential meters.
- b. Q&A/Comments:

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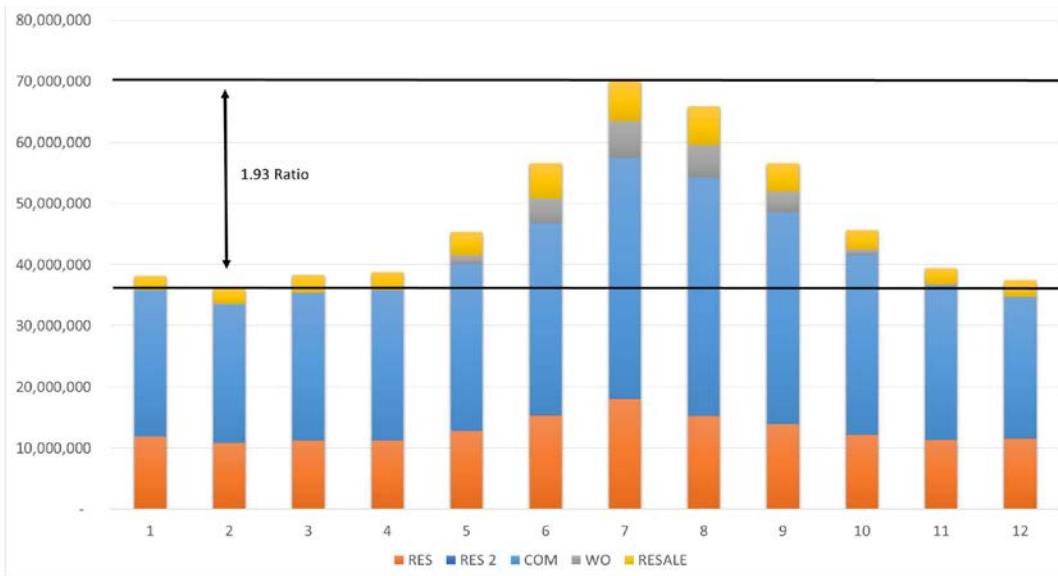


- i. Commercial absolute number of customers is about 4,800, but ERUs is about equivalent to 20,000, similar to residential usage.
- ii. Q: A number of new units have come online, for example around 1200 in 2016. Why no increase in ERUs? A: Not sure, could be an offset, based on the fact that most development is actually redevelopment, taking one meter offline and replacing it with another.
- iii. Q: How is the conversion made between meters and ERUs. A: The project team will provide the calculations. AWWA provides guides for equivalency factors in flow rates from various meter sizes.



Monthly Customer Usage by Customer Class in CCF

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7. Affordability Analysis – Andy Baker

a. Objectives:

- i. Identify at-risk neighborhoods.
- ii. Understand key customer characteristics - water demand profile and account types.
- iii. Incorporate that understanding into cost-of-service and rate design.

b. Analysis:

- i. Data sources – US Census Bureau: American Community Survey, City GIS, County GIS, City Billing Data
- ii. Demographic Analysis – evaluated at the census tract-level and bifurcated between commercial and residential customers.
 - 1. Median Household Income
 - 2. Household Income Distribution
 - 3. Poverty Status
 - 4. Owner/Renter Status
 - 5. Single Family/Multi-family – multi-family analysis has identified that about 35% of commercial accounts are multi-family.
 - a. Multi-family usage is very flat. They have much steadier demands on the system.
 - 6. College student population was extracted and used to screen out false signals in poverty status.
 - 7. Map of Building Footprints

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- a. Uses spatial data to delineate true residential (single family and multi-family) from commercial
- 8. Initial Multi-Family Analysis
 - a. If there are about 4,800 commercial rate payers, then about 25% are actually multi-family.
- 9. Monthly Customer Usage (CCF)
 - a. Showing graph of customer usage with multi-family broken out of commercial, shows steady demands on the system. Commercial usage is more peak-y.
 - b. Andy Baker says that this finding shows that there is merit to evaluating rate impact on low income residential as a group, because their usage characteristics are similar to each other, but different from other residential users.
 - c. Most of the costs of providing water service are the operations and maintenance of the infrastructure, which is fixed, rather than usage, which is variable.
- c. Q&A/Comments:
 - i. Comment: Jennifer Hall commended the team for screening out students to get a more accurate picture of poverty. She suggests using sources that indicates the use of forms of public assistance. She has water usage data for her multi-family housing of 400 units. Suggested also asking the AA Public Schools for data on free and reduced lunch recipients. Andy Baker will talk with Jennifer to incorporate her data into the affordability aspect of the COS study.
 - ii. Q: Are you considering data for shut-offs and late payments? A: The data didn't seem to correlate well with poverty information.
- 8. Hourly Read AMI Accounts**
 - a. Identify peak usage
 - b. City is very advanced as far as the data it collects. It is also challenging to assimilate all that data and extract meaningful insights from it.
 - c. Lowest month usage – January highest month usage in July. It basically doubles.
- 9. Topics to be covered in the next meeting:**
 - a. Revenue Requirements and Financial Needs by Customer Class
 - b. Initial Cost of Service Path Forward
- 10. Next Meeting and Action Item Review:**

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- a. Action Items:
 - i. Provide information related to:
 - 1. Conversion of meters to ERUs.
 - 2. Detail about rate calculations for Sale for Resale customers. (integrated into above notes)
 - 3. Water Only Average Day Demand data to understand comparison to Peak Demand.
 - 4. Send Operational, Capital, and Debt Expense sheets for review before next meeting.
 - ii. Jennifer Hall and Andy Baker will collaborate on data for low income, multi-family units, renters, and single family.
- b. Participant Feedback:
 - i. Participants were asked to rate the meeting from 1 to 5 with 5 being best. The average rating for 17 responses was 4.4. Comments included:
 - 1. Not sure we need this much data/detail.
 - 2. Like the projections but wants more historical data.
 - 3. Not sure what is fair/affordable for poor sewer service (smell issues).
 - 4. Want to see more data ahead of time.
 - 5. Liked the glossary and the materials sent in advance. Would like to see some of the charts ahead of time and to use wayfinding during the meeting (to indicate where in the agenda we are at any given time).
 - 6. Appreciate the depth of data. Consider using the term “low income” rather than “at risk.” Looking forward to revenues/financials.

11. Public Comment

- a. David Diephuis thanked all of those that have volunteered for this committee.

ATTACHMENT #1 – Participant List

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Last Name	First Name	Organization Representing
Adams	Jim	U of M
Baker	Andy	Stantec
Burnham	Andy	Stantec
Byrd	Patricia	Arrowwood Hills Co-op
Cederquist	Jack	Orchard Hills/Maplewood Homeowners
Chaimowitz	Lynne	City of Ann Arbor
Demetriou	Marios	Ann Arbor Public Schools
Diephuis	David	Resident
Doughty	Joan	Community Action Network
Elias	Abigail	City of Ann Arbor
Glorie	Lou	Brooks Street Neighborhood Association
Hall	Jennifer	Ann Arbor Housing Commission (AAHC)
Houk	Peter	Resident
Maciejewski	Molly	City of Ann Arbor
Markham	Robert	Resident
McKinnon	Darren	First Martin
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
Steglitz	Brian	City of Ann Arbor
Stevens	Kyle	Stantec
Wingle	Aimee	City of Ann Arbor

ATTACHMENT #2 – Ann Arbor System Data



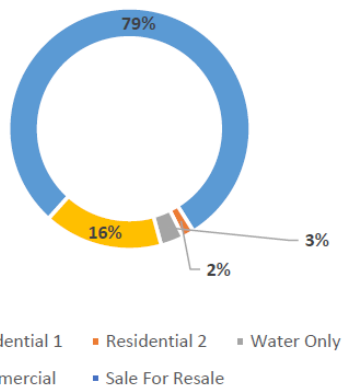
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Ann Arbor Water System

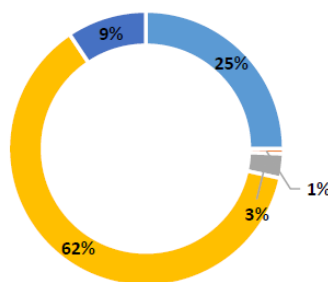
- Residential 1** Single water meter used at a residential property
- Residential 2** Second meter used for indoor consumption when a water only meter is used
- Water Only** Meter used for irrigation proposes only
- Commercial** Covers most other customers that are not single family homes
- Sale For Resale** Water Produced by Ann Arbor but sold to other communities for resale

Customer Connections	Residential 1	Residential 2	Water Only	Commercial	Sale For Resale
5/8"	22,388	365	524	1,185	
3/4"	1,406	67	29	368	
1"	256	40	152	1,436	
1.5"	-	2	132	845	
2"	-	2	86	742	
3"	-	-	3	144	
4"	-	-	1	73	
6"	-	-	1	23	
8"	-	-	-	2	
Total	24,050	476	928	4,818	
Consumption (CCF)					
Tier1	565,763	12,173	166,953	3,570,531	549,719
Tier2	747,949	22,897	-	54,094	-
Tier3	154,891	-	-	26,761	-
Total	1,468,603	35,070	166,953	3,651,386	549,719

Connections By Customers



Volume By Customer



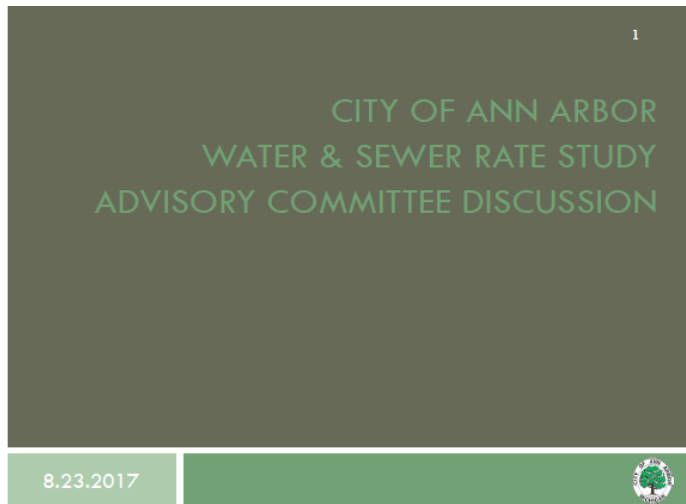
System Revenue FY 2018

Customer Type	Percentage	Revenue
Commercial	63%	\$15,255,511
Residential 1	22%	\$5,328,713
Sale For Resale	10%	\$2,379,531
Water Only	5%	\$1,156,437
Residential 2	1%	\$123,073
Total		\$24,243,265



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ATTACHMENT #3 – Presentation Slides



Agenda

- 2
- Introductions, Agenda Review and Desired Outcomes
 - Introduction to the Financial Models
 - Overview of Customer Data
 - ~~Revenue Requirements by Customer Class~~
 - Small Group Discussions:
 - Feedback on Data and Financial Models
 - Questions about Revenue Requirements/ Financial Needs
 - ~~Initial Cost of Service Path Forward~~
 - Next Meeting and Action Item Review – Teresa Newman
 - Tuesday, September 19, 2017
 - Public Comment

Desired Outcomes From Today



4 Introduction to the Financial Models



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Framing the Conversation

- Limited workbooks sent in advance
 - “High-level” and preliminary
 - Extracted directly from financial models
- Tab by tab model review
 - Identify basis of funding source and expenditure requirements
 - Discuss status of information and sources
 - Not intended to be a line item review
- Conclude with model demo
 - Demonstrate functionality and scenario management capabilities

6 Overview of Customer Data

7 How We Currently Define Our Customers

Residential 1	Single water meter used at a residential property
Residential 2	Residential customers that also have a water only meter
Water Only	Meter used for irrigation purposes only
Commercial	All non residential and multifamily >4 units
Sale For Resale	Water sold by the City to other communities for resale

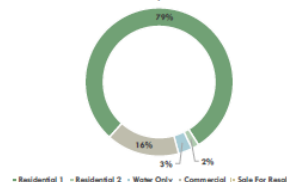
Data Sources

- Billing Data
 - Quarterly billed usage and charges
- Automated Meter Infrastructure (AMI)
 - Highly granular consumption data (hourly in some cases)
- Geographical Information Systems (GIS)
 - Parcel specific data

8 How Many Customers We Have

Customer Connections	Residential 1	Residential 2	Water Only	Commercial
5/6"	22,388	365	524	1,185
3/4"	1,406	67	29	368
1"	256	40	152	1,436
1.5"	-	2	132	845
2"	-	2	86	742
3"	-	-	3	144
4"	-	-	1	73
6"	-	-	1	23
8"	-	-	-	2
Total	24,050	476	928	4,818

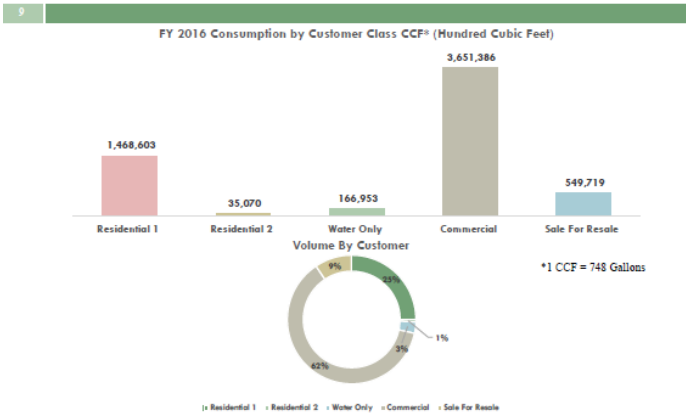
Connections By Customers



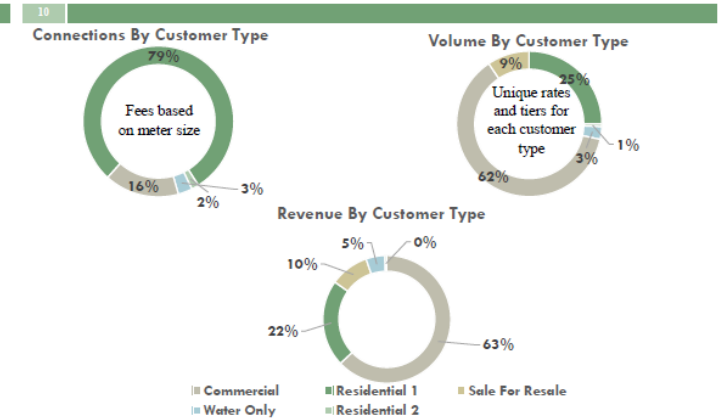


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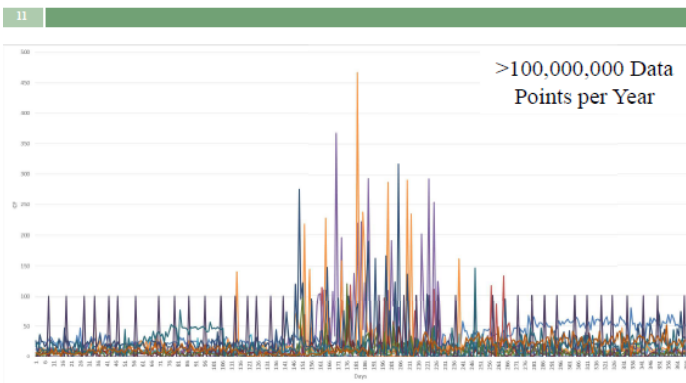
How Much Water Do They Use



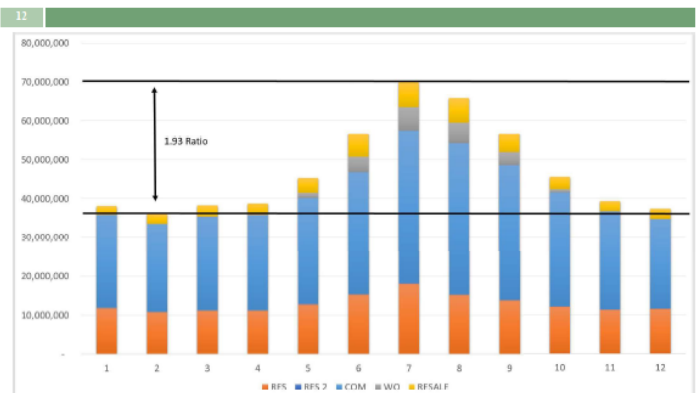
Revenue by Customer Type



Raw AMI Data



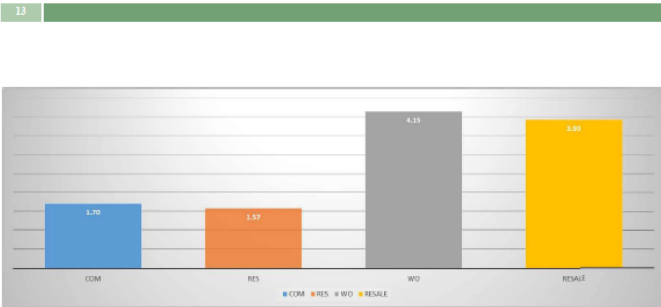
Monthly Customer Usage (CCF)



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Ratio of Average Day to Peak Day Demands



Objectives for Affordability Analysis

- Identify At-Risk Neighborhoods
- Understand their key customer characteristics
 - ▣ Water Demand profile
 - ▣ Account types
- Incorporate that understanding into Cost-of-Service and Rate Design

Data Sources

- US Census Bureau: American Community Survey
- City GIS
- County GIS
- City Billing Data

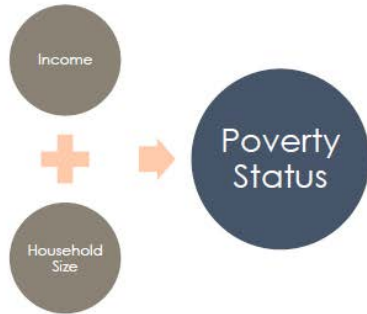
Demographic Analysis

- ▣ Evaluated at the Census Tract-level:
 - Median Household Income
 - Household Income Distribution
 - Poverty Status
 - Owner/Renter Status
 - Single Family / Multifamily
 - College Student Population

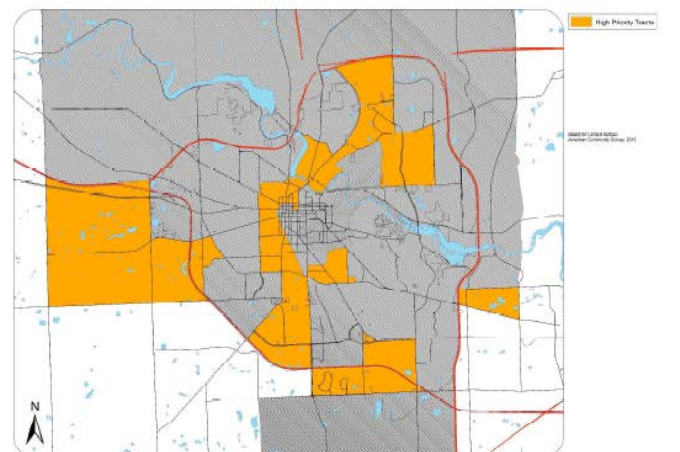
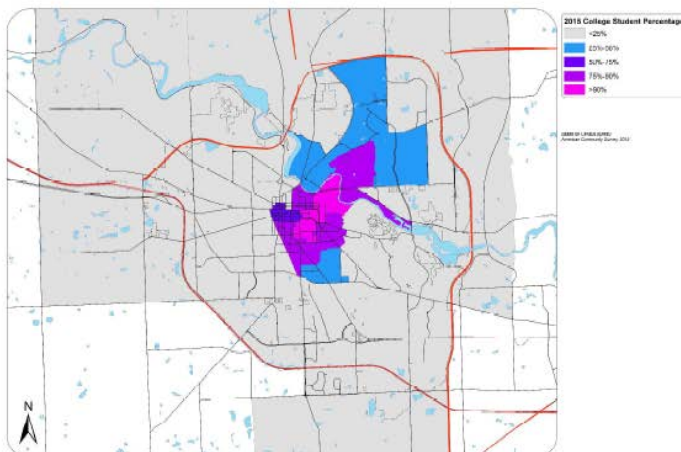
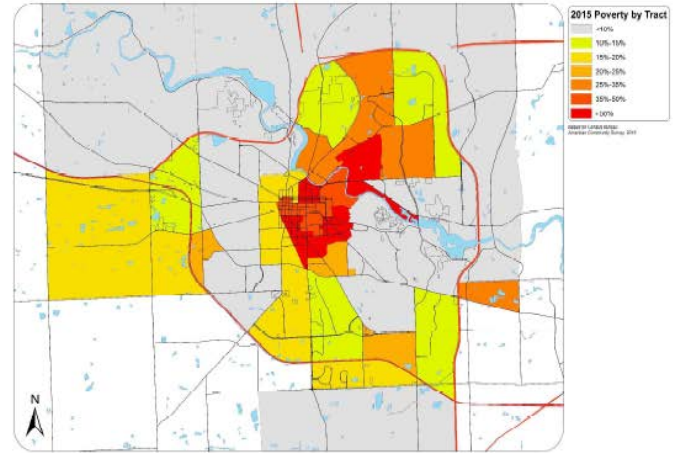
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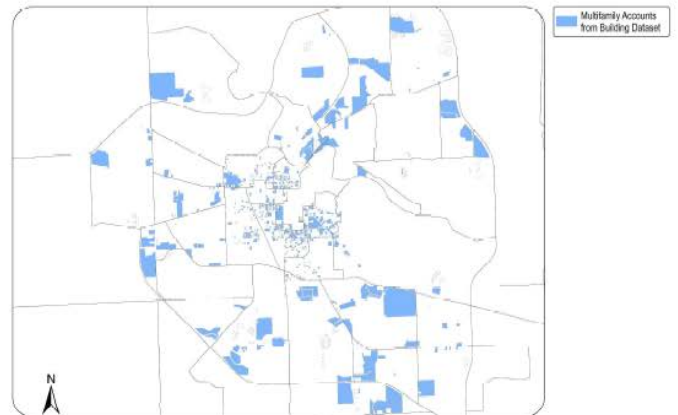
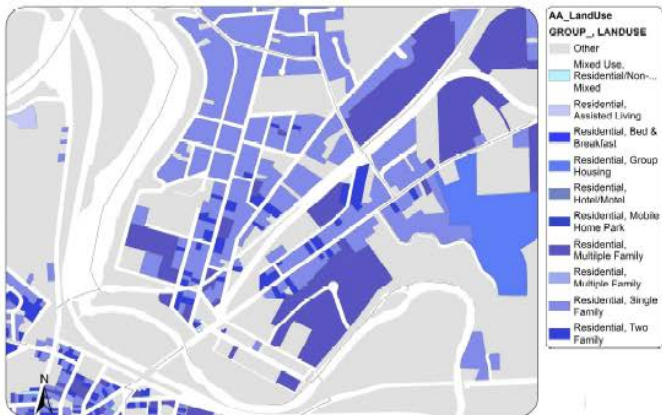
Poverty Status



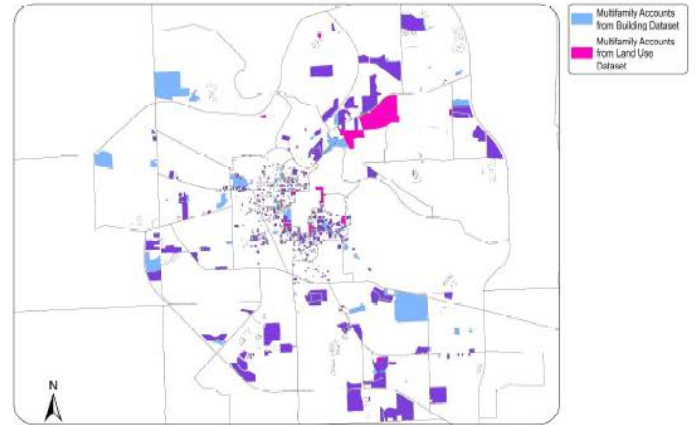
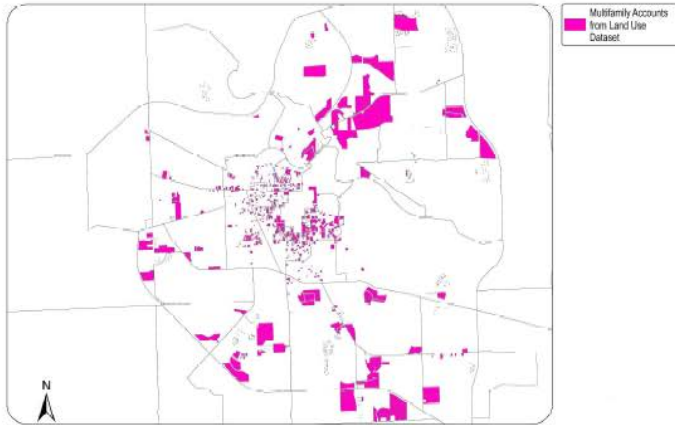
Size	Threshold
1	\$12,082
2	\$15,391
3	\$18,871
4	\$24,257
5	\$28,741
6	\$32,542
7	\$36,998
8	\$41,029
9+	\$49,177



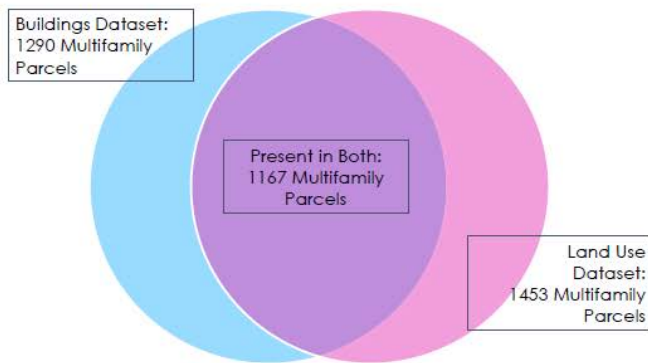
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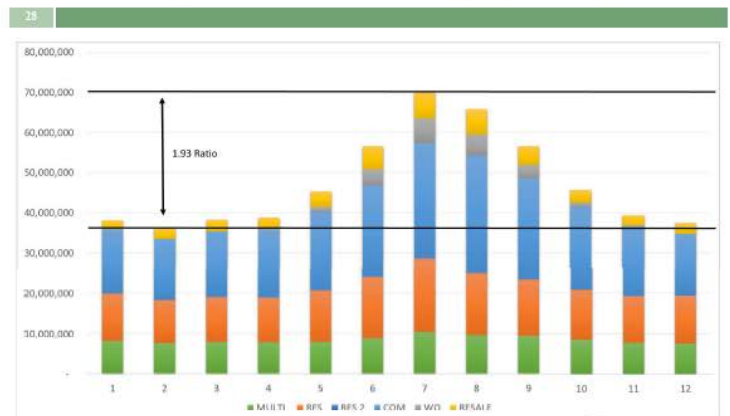
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Initial Multifamily Analysis



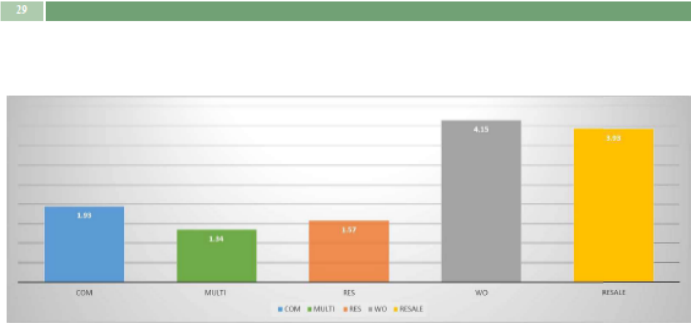
Monthly Customer Usage (CCF)



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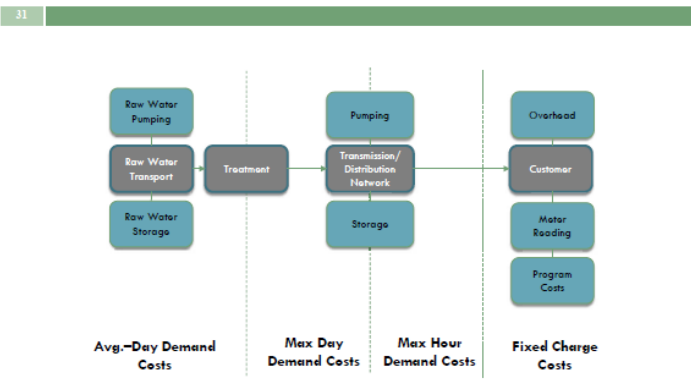
Ratio of Average Day to Peak Day Demands



Water System Cost of Service Path

- Calculate peak day demands by customer class
- Calculate peak hour factors by customer class to establish peak hour demands
- Allocate water system cost by function component (see next slide)
- Allocate cost of each function to each customer class based upon billed volumes, number of customers, max day and peak hour demands
- Compare current revenues to cost allocations

Functional Cost Allocation Framework



Hourly Read AMI Accounts

