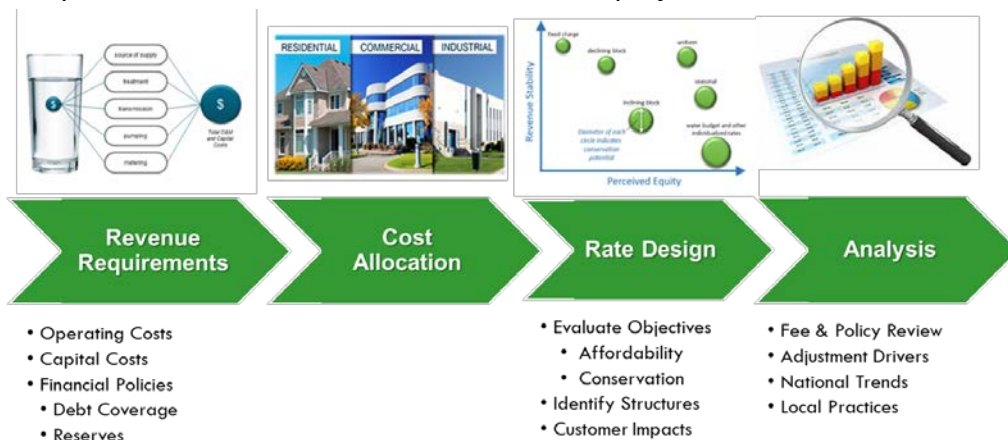**Ann Arbor Water and Wastewater**
Cost of Service Study and Rate Analysis
Advisory Committee Meeting Summary
Tuesday, September 19, 2017 – 4:00 p.m. to 6:00 p.m.

1. **Participant List – See Attachment #1**
2. **Welcome – Lynne Chaimowitz**
3. **Introductions, Agenda Review and Desired Outcomes – Teresa Newman**
   a. Teresa reviewed the agenda and introduced the parking lot where questions/comments that are related to topics not on the agenda will be placed for future discussion to keep the project on track.
   b. Lou voiced concern about the pace of the process and the difficulty in digesting the information being presented and the inability to make an informed decision without understanding all elements of the information being analyzed in the project. Andy explained that it is a balance of distributing information in advance and providing it at the meeting for discussion and Q/A. Lou stressed the importance of citizens being able to understand what goes into this process. She also believes that citizens are not being well represented in this committee.
      i. Action Item: A follow-up conversation will occur with a subgroup to understand what can be done to assist in achieving a level of understanding across the committee.
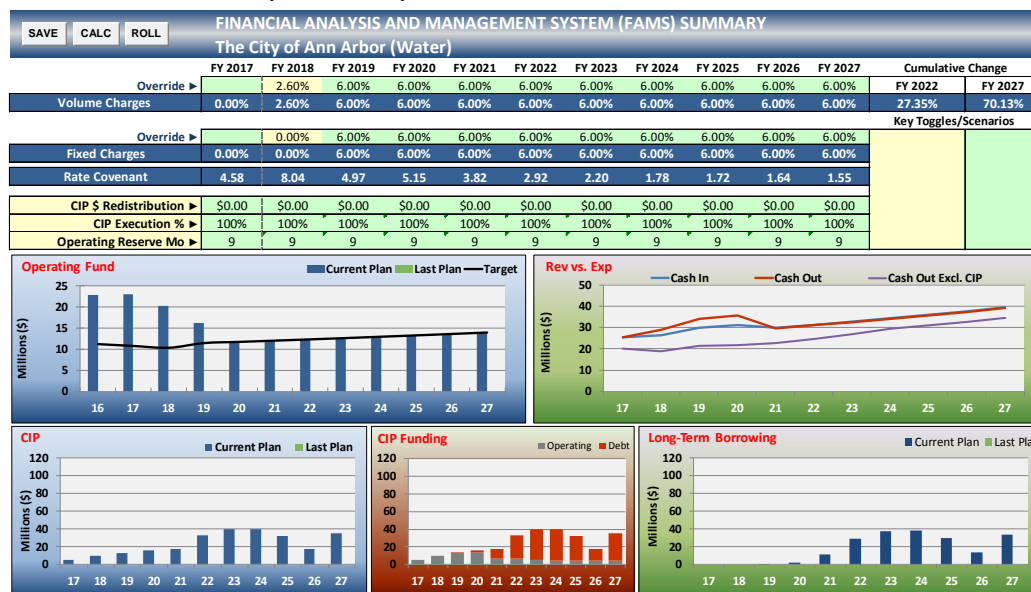   c. Andy Burnham reviewed the timetable for the project

   d. Detailed water and sewer workbooks that were extracted from the financial model were distributed in advance of the meeting. Today, we are reviewing the *functionality* of the financial models.
4. **Financial Management Plan/Scenario Analysis – Kyle Stevens, Stantec**
   a. Water Financial Model

Ann Arbor Water and Wastewater
Cost of Service Study and Rate Analysis
Advisory Committee Meeting Summary
Tuesday, September 19, 2017 – 4:00 p.m. to 6:00 p.m.

i. The flows of the funds are in the background of the model that replicates the financials of the utility. You can run sensitivity analyses to see the impact of changes to areas of the model. Example: fixed charges, volume charges, annual rate increases, operating reserves, etc.

ii. Categories include:
1. Operating Fund
2. Revenue vs. Expenses
3. CIP Plan/Projects
4. CIP Funding
5. Long-Term Borrowing

iii. Status quo scenario, with no rate increases, showed expenses outpacing revenue by 2022.

iv. Just in time rate increase scenario showed the need for a 18% rate increase in 2023.

v. Gradual rate increases of 5-7% per year leading up to 2023 was also adequate to satisfy operating and capital needs.

vi. DRAFT & Preliminary Summary Screenshot is below.

FINANCIAL ANALYSIS AND MANAGEMENT SYSTEM (FAMS) SUMMARY
The City of Ann Arbor (Water)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Cumulative Change	
												FY 2022	FY 2027
Override ▶		2.60%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%		
Volume Charges	0.00%	2.60%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	27.35%	70.13%
Override ▶		0.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%		
Fixed Charges	0.00%	0.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%		
Rate Covenant	4.58	8.04	4.97	5.15	3.82	2.92	2.20	1.78	1.72	1.64	1.55		
CIP $ Redistribution ▶	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		
CIP Execution % ▶	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Operating Reserve Mo ▶	9	9	9	9	9	9	9	9	9	9	9		

Key Toggles/Scenarios

b. Q/A
i. Q: Does this assume that you are taking on additional debt? A: Yes.
ii. Q: Does it assume that operating reserves are stable? A: Yes, the model includes 9 months of operating reserves. The sewer side had 6 months of operating reserves.

Ann Arbor Water and Wastewater
Cost of Service Study and Rate Analysis
Advisory Committee Meeting Summary
Tuesday, September 19, 2017 – 4:00 p.m. to 6:00 p.m.

iii. Q: Is there a consideration for a decrease in cost of service in the model? A: Reducing capital spending would jeopardize the level of service and not allow rehabilitation and replacement of infrastructure needs. Each year, a look at efficiencies and prioritization of infrastructure needs are evaluated through the budget and capital improvement planning processes, which are also open for public consideration.

iv. Q: What is the budget? A: See water and sewer 2-pager for information. For water it has been an operating budget of $18-$22 Mil, with capital expenses ranging from $7-10 Mil.   For sewer, it has been $16 to $22 Mil, with operating expenses of $2.8 Mil to $11.5 Mil. This is also the last year of a $130 Mil dollar plant renovation.

v. Q: What is the difference between cash funded and debt service funding? A: Debt service costs are related to loans and interest payments for long-term capital investment. Cash funding is typically used for short-term asset purchases.

vi. Q: Is Ann Arbor consistent with other national utilities? A: Yes, it is in-line with other utilities.

c. Sewer Financial Model

i. Status quo was shown, with no rate increases. The expenses outstrip revenues by 2022 in this scenario.

ii. Just in time funding showed the need for a 20% rate increase in 2021.

iii. An annual 6% increase doesn't allow for cash funded capital projects after 2021. An increase of 7% allowed for cash funded capital projects.

d. Q/A

i. Q: Are the increases in revenue the same across the board for all customer classes? A: Yes, the increases shown are for total revenue.

ii. Q: Does the capital plan equal renewal and replacement (R&R) or expansion related? A: The capital here is related to R&R. New service expansion is borne by the customers seeking the service and would be covered by a Capital Recovery Charge.

iii. Q: Does this take price elasticity into account? A: Yes, assumptions related to elasticity is factored into the model.

iv. Q: Would adding more users help? A: The model includes about 1000 accounts added over 2 years. This increases fixed revenue for the new account, also factored in are decreases related to water conservation in

Ann Arbor Water and Wastewater
Cost of Service Study and Rate Analysis
Advisory Committee Meeting Summary
**Tuesday, September 19, 2017 – 4:00 p.m. to 6:00 p.m.**

existing accounts. New customers' capital charges or developer contributions do benefit the system.

v. Q: Does the model have consistent increases/decreases annually? A: No, there is flexibility to replicate the utility and you can match revenue required to cover fund costs annually. The model can be used to adjust annually for budgeting process.

vi. Q: How do you increase fund balances? A: Increase the reserve target, identify funding strategy and program into spending plan. Emergency reserves are included in reserve levels for unplanned needs.

vii. Q: Does debt projection include pay back on debt? A: Yes.

viii. Q: Capital spending comparison between water and sewer? A: The operating expenses are pretty similar but capital spending is a little less for the sewer system.

5. **Cost of Service Allocation Results – Andy Burnham, Stantec**

a. Framework for allocation of expenses by function

i. Customer costs are uniform but capacity changes cost.
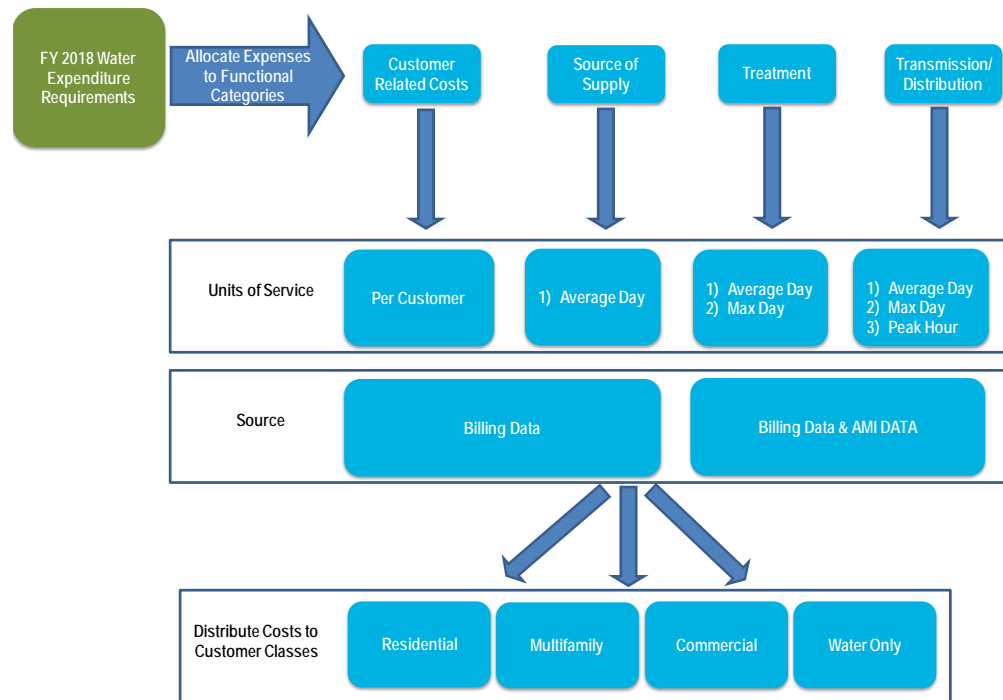
ii. Identify how to determine spreading cost across customer classes.

b. Three Steps of Allocation

i. Step 1: Cost by Functions

Ann Arbor Water and Wastewater
Cost of Service Study and Rate Analysis
Advisory Committee Meeting Summary
Tuesday, September 19, 2017 – 4:00 p.m. to 6:00 p.m.

	Avg. Day Demand Costs		Max Day Demand Costs		Peak Hour Demand Costs		Customer Costs
Millions of Dollars:	$ 13.45	$	10.02	$	5.80	$	3.46
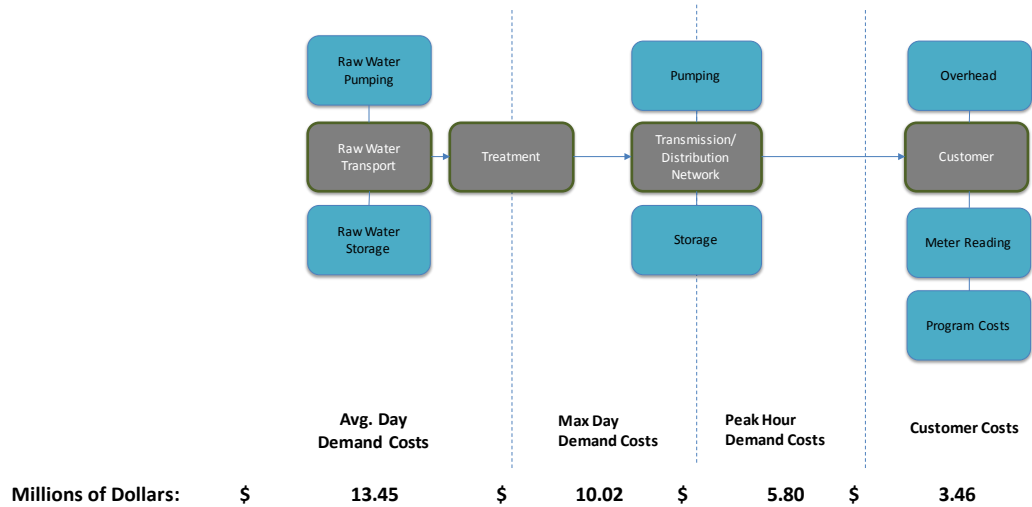
1. Treatment systems are sized to meet maximum day (MD) demands while also serving average day demands (ADD).
2. Transmission systems are sized to meet instantaneous demand placed on the system (peak hour demands or PH) as well as MD and ADD.
3. Q/A:
   a. Q: How do you decide what is ADD, MD, PH costs. A: We look at the ratios of ADD, MD, and PH demands. Treatment costs are distributed based on the ratio of ADD and MD values.
   b. Q: Does this include major capital costs? A: It includes operating expenses, cash funded capital, debt service – all are added together and broken out by function and type of asset.
   c. Q: Is per year bond service cost included? A: Yes, principal and interest.
   d. Q: What are examples of customer costs? A: Billing, meter reading, public engagement.
ii. Step 2: Units of Service
   1. Automated Meter data captures customer demand data daily and hourly.

Ann Arbor Water and Wastewater
Cost of Service Study and Rate Analysis
Advisory Committee Meeting Summary
Tuesday, September 19, 2017 – 4:00 p.m. to 6:00 p.m.
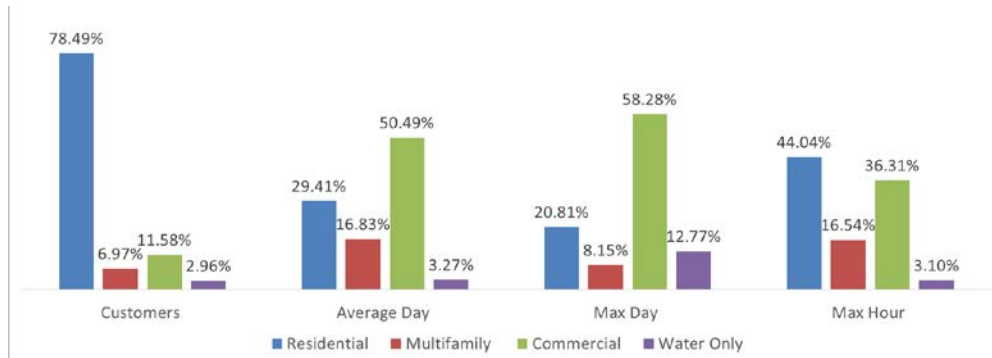
2. Data is based on what we know today. May not be perfect but the data allows the ability to understand and discuss now.

3. Q/A:

   a. Q: What does "Water Only" mean? A: These are separate meters for water only use (largely irrigation) that are not charged for sewer.

iii. Step 3: Results

1. Allocations are projected and shown compared to current revenue.

2. No significant peak demands coming from multi-family units.

3. Multi-family demands are consistent throughout the year.

4. Peaking in residential customers drives the size of infrastructure for treatment and distribution of water.

5. There are over 100,000,000 million data points from the City's AMI system that have been analyzed to compare customer demands placed on the system. Most utilities don't have this data for rate studies.

6. Hourly read accounts were analyzed (about 2% of all meters).

   a. Analysis of accounts shows that they are geographically diverse and include all customer classes.

   b. Maximum hourly demands on the system were shown by class. The analysis showed:

      i. Multi-family usage was flat and under 100 cubic feet hourly per day.

      ii. Residential peak usage is about 800 cubic feet hourly per day.

      iii. Commercial peak usage is about 600 cubic feet hourly per day.

Ann Arbor Water and Wastewater
Cost of Service Study and Rate Analysis
Advisory Committee Meeting Summary
Tuesday, September 19, 2017 – 4:00 p.m. to 6:00 p.m.
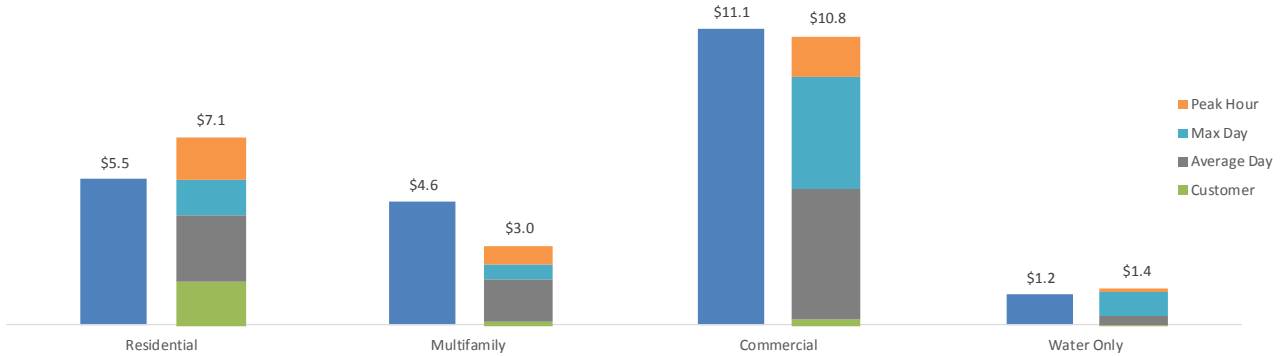
PRELIMINARY

7. Q/A:

   a. Q: Multi-family means what? A: It could be multiple meters per building but it generally refers to more than 4 family units in one building.

   b. Q: Why is multi-family so flat? A: It is distinct in that there is no outdoor irrigation, usage is for food and hygiene. The multi-family peak hour is in Sept., Commercial was in August, Residential was in July.

   c. Q: How do you discern between low income and student populations? A: The data is still being reviewed and will be presented at a future meeting.

   d. Q: Is there a multi-family rate now? A: No.

   e. Comment: Urban buildings don't irrigate, and are they subsidized by large properties outside of downtown. A: No, each customer class pays its fairly allocated cost of service.

   f. Q: Can commercial customers install water only meters? A: Yes.

   g. Q: Residential has winter billing, does Commercial have winter billings? A: No.

   h. Q: Is fire protection related to peak hour accounted for? A: Cost of public fire protection will be distributed across classes. Water used for fires is not tracked.

   c. Next Steps for Cost Allocation

      i. Finalize functionalization of the budget.

      ii. Firm up customer units of service.

Ann Arbor Water and Wastewater
Cost of Service Study and Rate Analysis
Advisory Committee Meeting Summary
Tuesday, September 19, 2017 – 4:00 p.m. to 6:00 p.m.

         iii.   Complete fire protection analysis.

         iv.   Complete sewer cost allocation.

         v.   Link test year revenue requirements by customer class to rate design model.

6. **Review of Multi-Family and Affordability Data – Andy Baker, Stantec**
   a. TRAKiT data set multi-family units
      i. 1015 multi-family parcels and 1577 multi-family accounts identified.
      ii. A point was made that there are more UofM owned properties that are not inspected by the city that can be added to the data set.
   b. Next steps
      i. Proceed to rate design
      ii. Evaluate bill impacts
      iii. Prepare for implementation
   c. Q/A
      i. Q: Are multi-family accounts based on all of the units by account? A: If the accounts are based on one record (single master meter) it would be all of the units in one account. Unless sub-metered we can't drill down to single units.
   d. Affordability Analysis
      i. Objectives for Affordability Analysis
         1. Identify customers with affordability challenges
         2. Understand key customer characteristics.
            a. Small households with fixed incomes
            b. Large households that are low income
            c. Multi-family low income tenants
         3. Incorporate in Rate Design
         4. Evaluate bill impacts
      ii. Census tracks are large and it is difficult to discern low income housing.
      iii. Ann Arbor Housing Commission data set is being analyzed.
   e. Next steps:
      i. Finalize typical characteristics to use in rate design.
      ii. Evaluate bill impacts to typical customers and actual identified customers.
      iii. Identify recommendations for future actions and prioritizations.
      iv. Q/A and Comments:
         1. Q: How does BOLT impact affordability without tying cost of service? A: Identify differences in characteristics. Preliminary results show lower peaking as an example than the system wide average. Structure

Ann Arbor Water and Wastewater
Cost of Service Study and Rate Analysis
Advisory Committee Meeting Summary
Tuesday, September 19, 2017 – 4:00 p.m. to 6:00 p.m.

rates around common usage. Inclining block rate structures can distinguish between types of usage.

2. Q: Do we really want to sort out who is irrigating? A: The comparison is important to understand the impact on low income customers.

7. **Next Meeting, Action Items, Parking Lot Items – Teresa Newman, Project Innovations**

    a. Next meeting is October 25.

Ann Arbor Water and Wastewater
Cost of Service Study and Rate Analysis
Advisory Committee Meeting Summary
Tuesday, September 19, 2017 – 4:00 p.m. to 6:00 p.m.

ATTACHMENT #1 – Participant List

Last Name	First Name	Organization Representing
Adams	Jim	U of M
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
Demetriou	Marios	Ann Arbor Public Schools
Doughty	Joan	Community Action Network
Elias	Abigail	City of Ann Arbor
Glorie	Lou	Brooks Street Neighborhood Association
Hupy	Craig	City of Ann Arbor
Hutton	Susan	Environmental Commission
Kenzie	Earl	City of Ann Arbor
Maciejewski	Molly	City of Ann Arbor
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

Ann Arbor Water and Wastewater
Cost of Service Study and Rate Analysis
Advisory Committee Meeting Summary
Tuesday, September 19, 2017 – 4:00 p.m. to 6:00 p.m.

ATTACHMENT #2 – Ann Arbor System Data

Cost of Service Study and Rate Analysis

Revenue Requirements	Cost Allocation	Rate Design	Analysis
•Operating Costs	•Define Classes of Users	•Evaluate Objectives	•Fee & Policy Review
•Capital Costs	•Fair & Equitable	○ Affordability	•Adjustment Drivers
•Financial Policies	•Comparison to Current Revenue Recovery	○ Conservation	•National Trends
○ Debt Coverage		•Identify Structures	•Local Practices
○ Reserves		•Customer Impacts	

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

Agenda

☐ Introductions, Agenda Review and Desired Outcomes (5 Min)

☐ Financial Management Plan/Scenario Analysis (45 Min)

☐ Cost of Service Allocation Results (40 Min)

☐ Review of Multi-Family & Affordability Data (10 Min)

☐ Next Meeting, Action Item Review and Parking Lot (5 Min)

  ◻ Tuesday, October 25, 2017

☐ Public Comment (5 Min)

Rate Study Process to Keep in Mind

Revenue Requirements
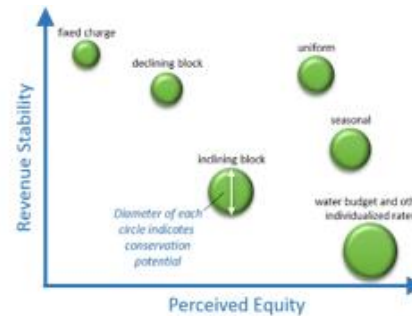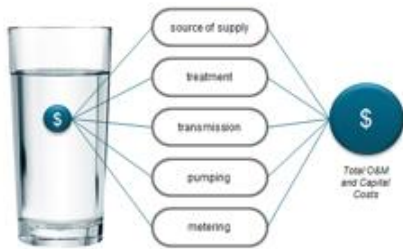
Cost Allocation

Rate Design

Analysis

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

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

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

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

4 Financial Model Scenarios

Framing the Conversation

- Detailed workbooks sent in advance
  - Not going to review these today
  - Extracted directly from financial models
- Reviewing Model Functionality and Key Issues
  - Control panel- explanation & presentation
  - Explore Options- Status Quo, Just-in-Time increase, level plan, Indexing
  - Reserve levels
  - Capital spending and funding sources

Interactive Financial Modeling

FINANCIAL ANALYSIS AND MANAGEMENT SYSTEM (FAMS) SUMMARY
The City of Ann Arbor (Water)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Cumulative Change	
Override ▶		2.60%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	FY 2022	FY 2027
Volume Charges	0.00%	2.60%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	27.35%	70.13%
												Key Toggles/Scenarios	
Override ▶		0.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%			
Fixed Charges	0.00%	0.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%		
Rate Covenant	4.58	8.04	4.97	5.15	3.82	2.92	2.20	1.78	1.72	1.64	1.55		
CIP $ Redistribution ▶	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		
CIP Execution % ▶	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Operating Reserve Mo ▶	9	9	9	9	9	9	9	9	9	9	9		

7 Cost of Service Allocation Results

Water Cost Allocation Framework

Step 1 (Functions)

		Avg. Day Demand Costs		Max Day Demand Costs		Peak Hour Demand Costs		Customer Costs
Millions of Dollars:	**$**	**13.45**	**$**	**10.02**	**$**	**5.80**	**$**	**3.46**
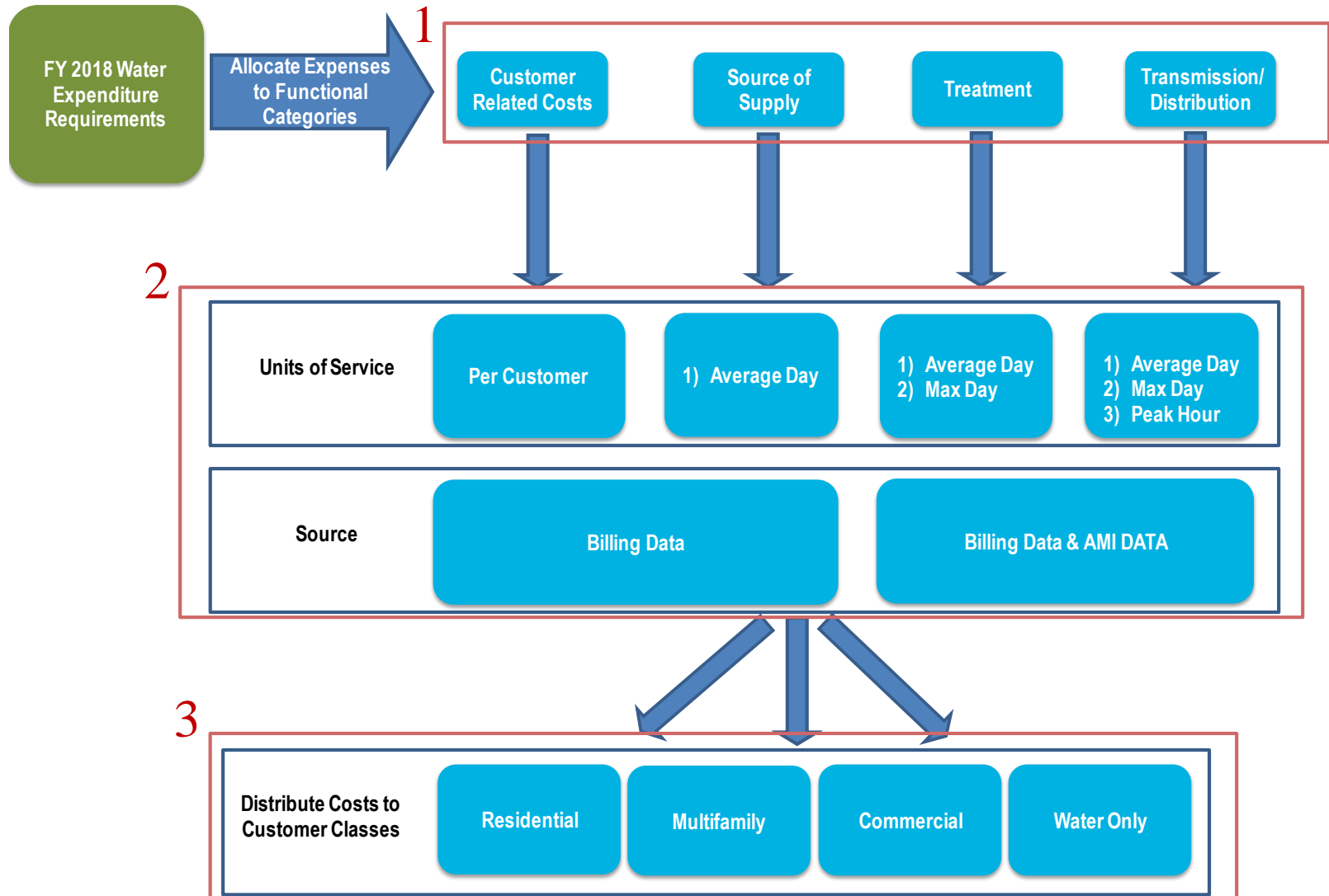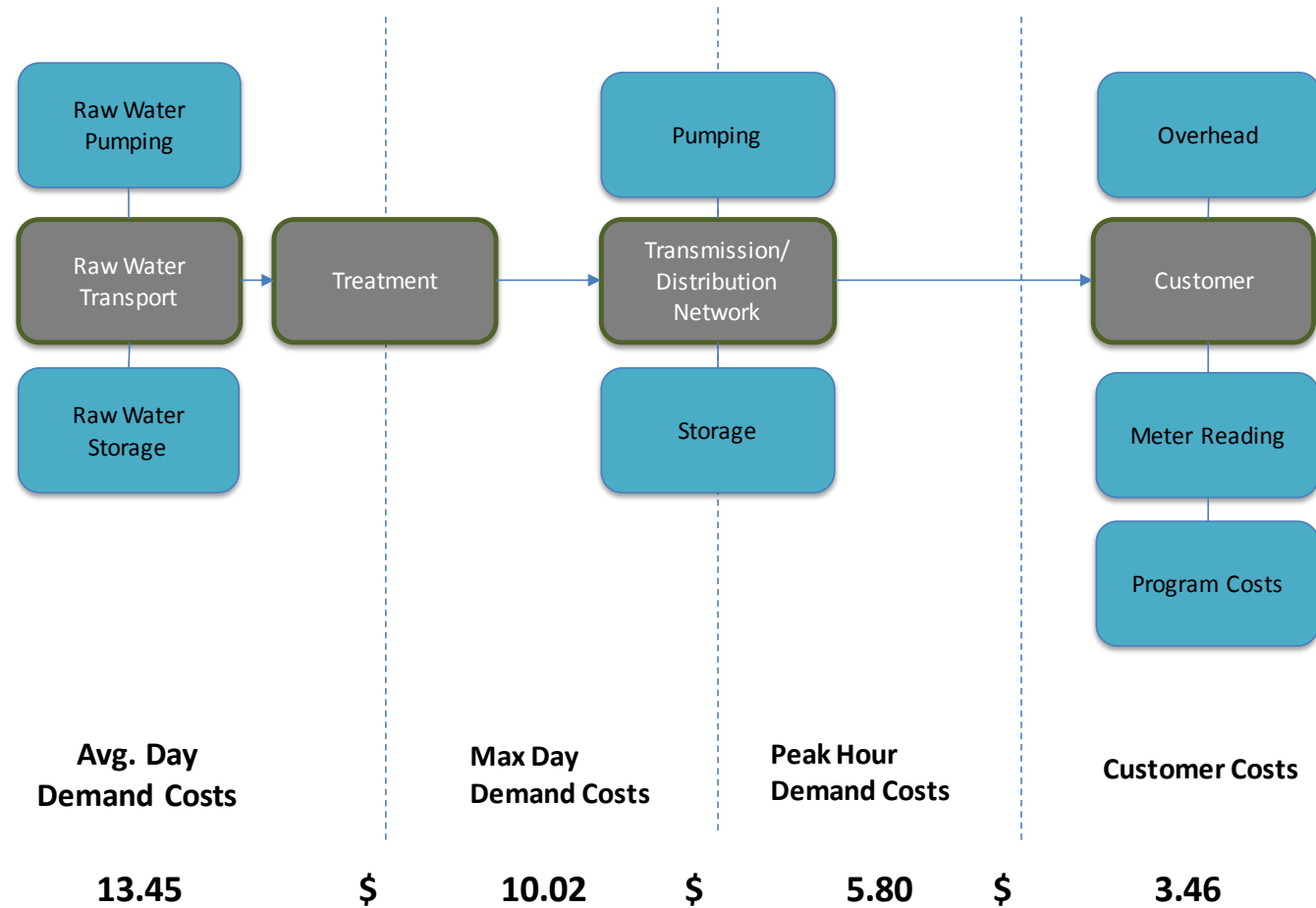
Preliminary

Step 2 (Units of Service)
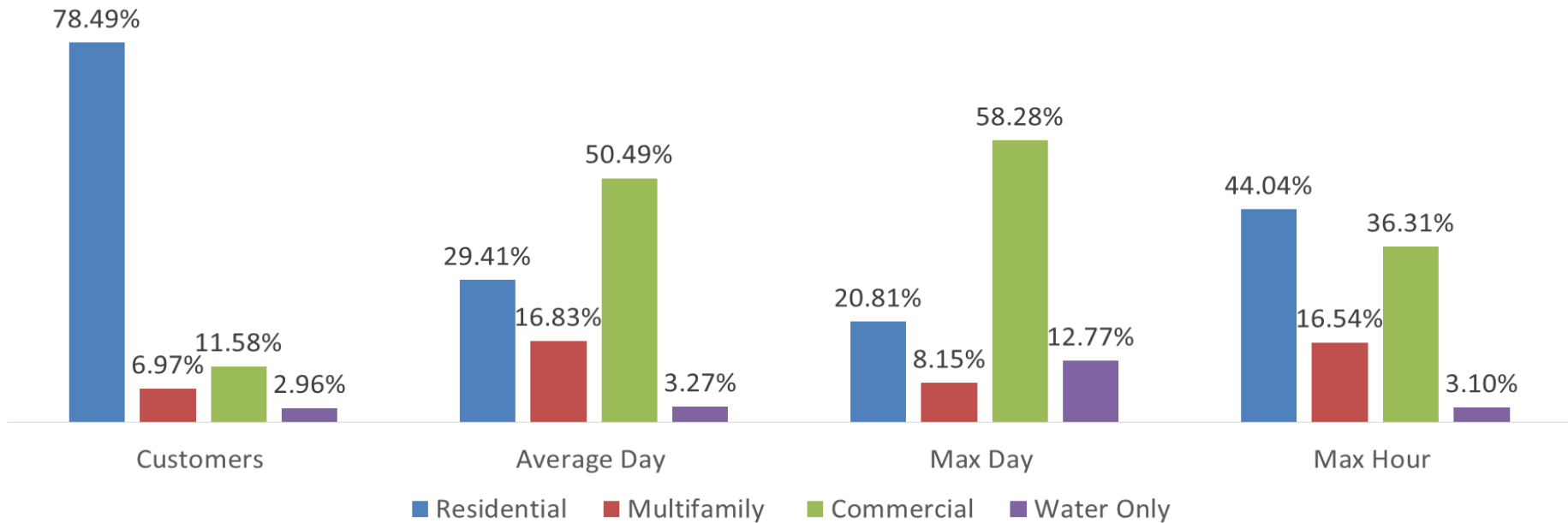
Step 3 (Results)
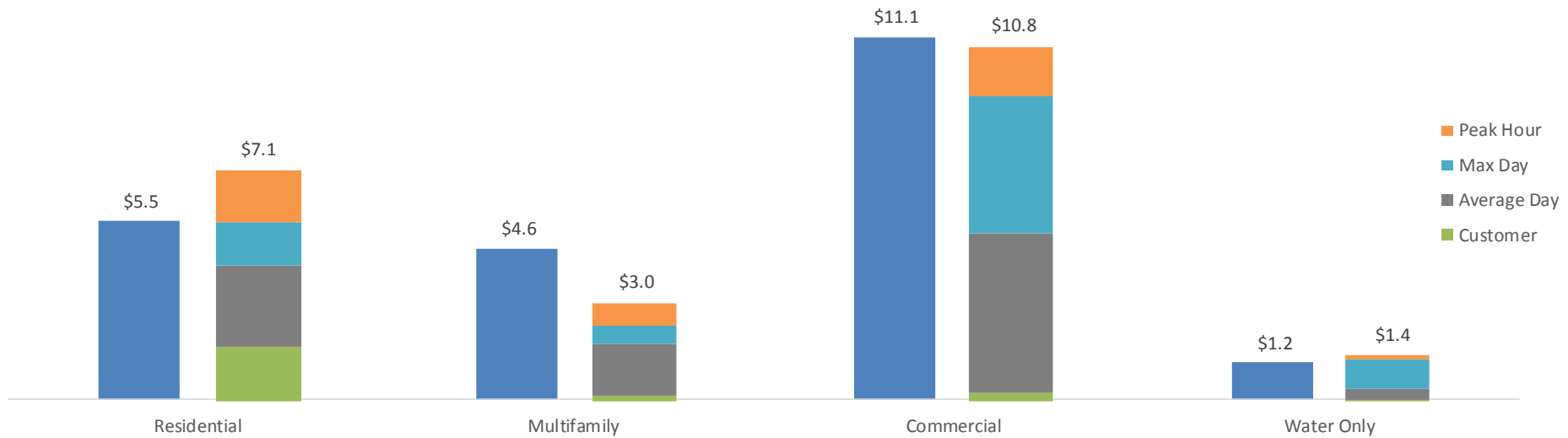
Preliminary

Water Customer Usage
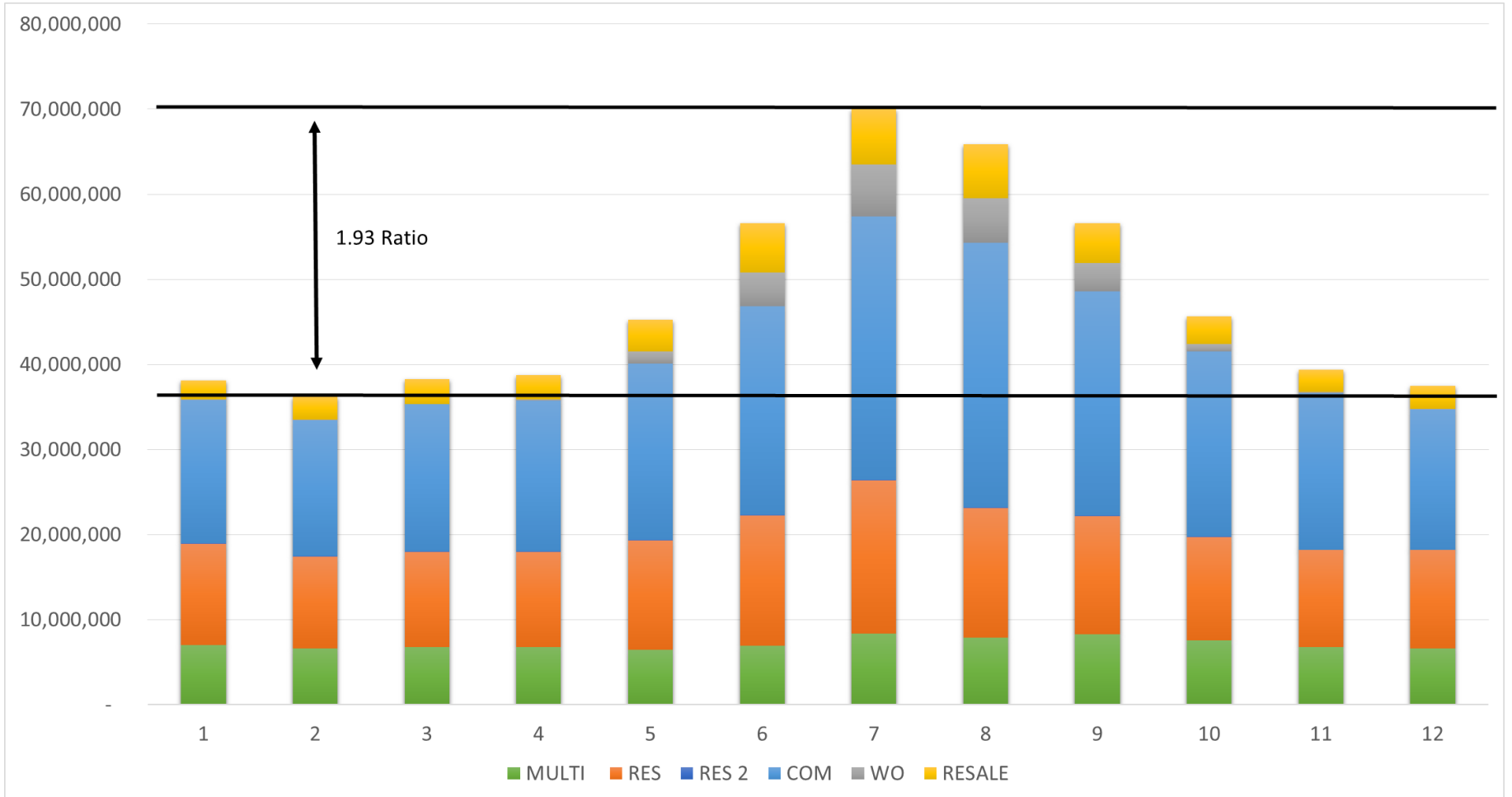
Ratio of Average Day to Peak Day Demands

Raw AMI Data

>100,000,000 Data Points per Year
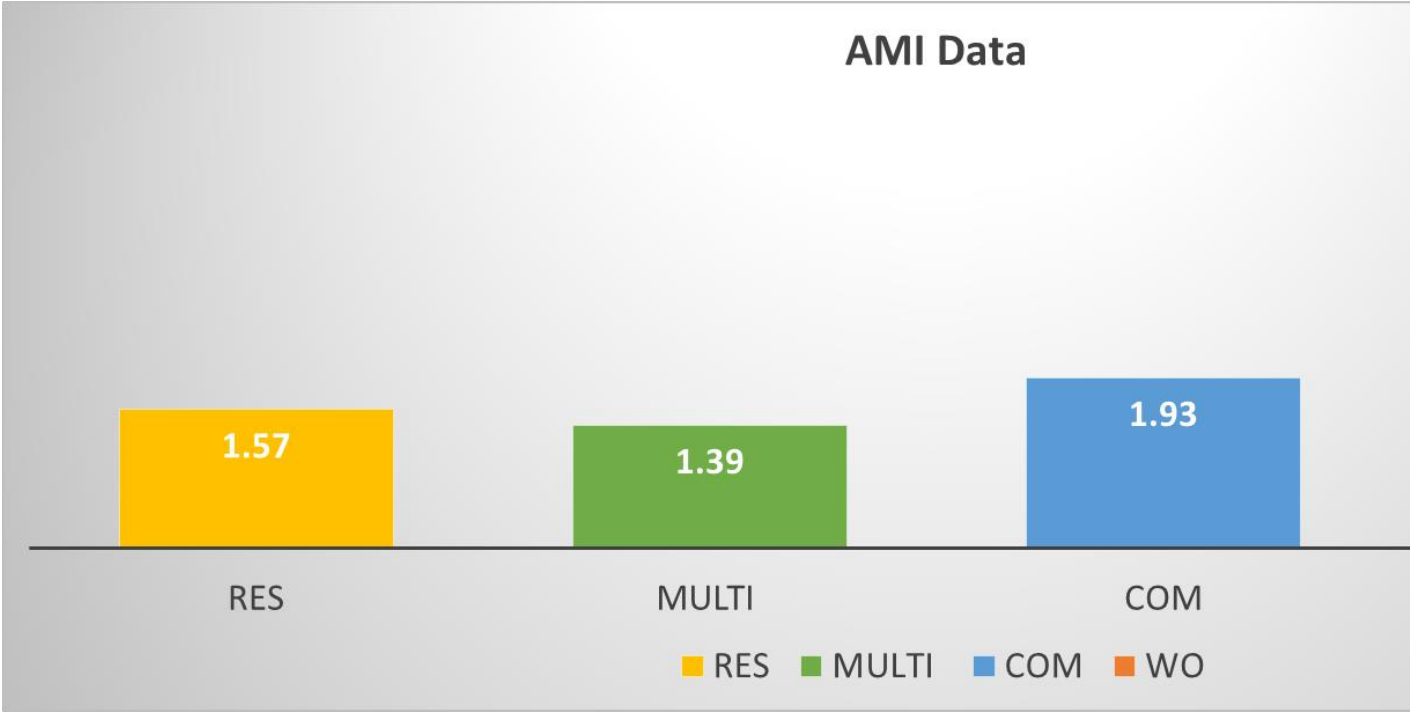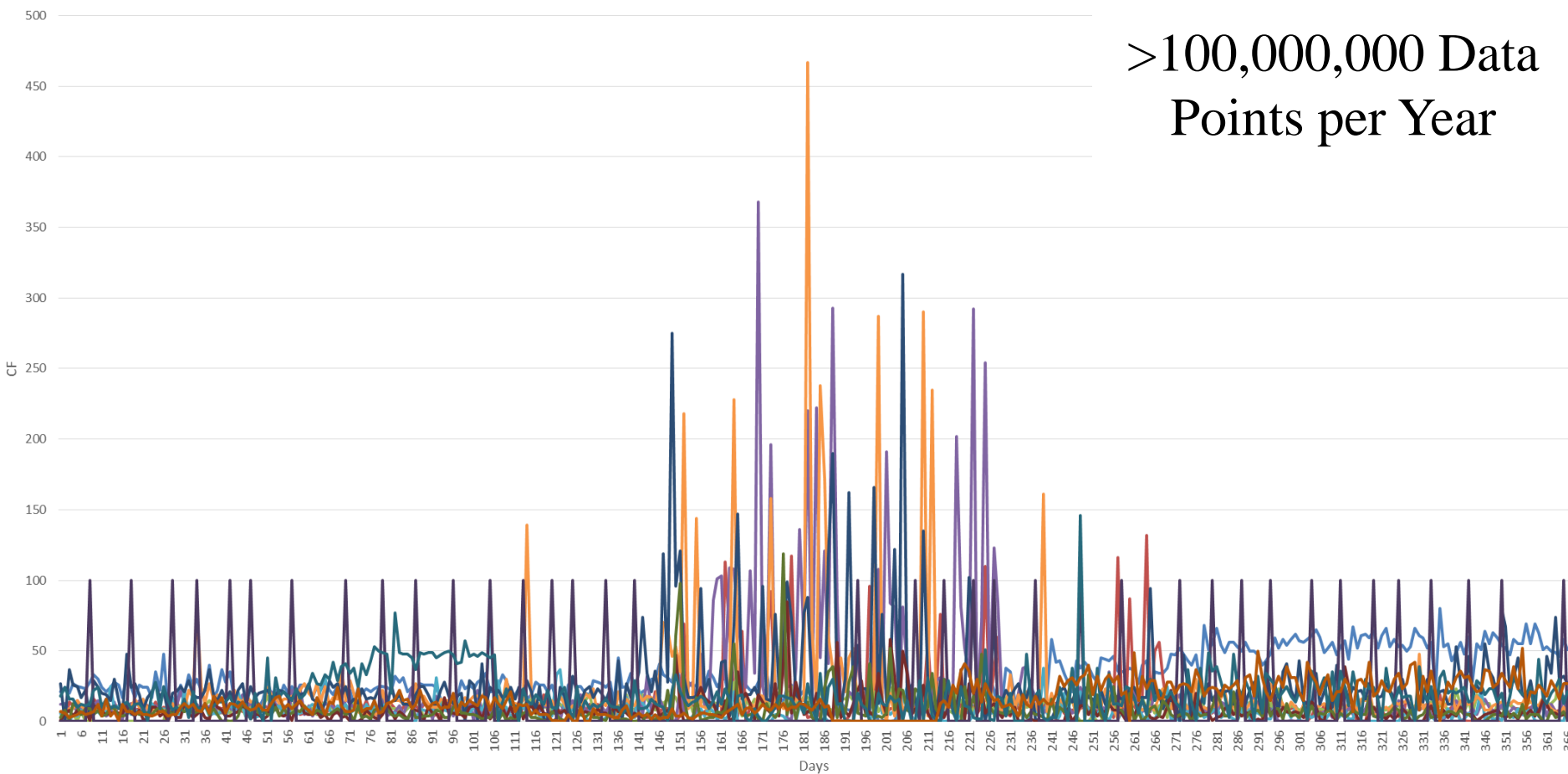
Ratio of Average Day to Peak Hour Demands
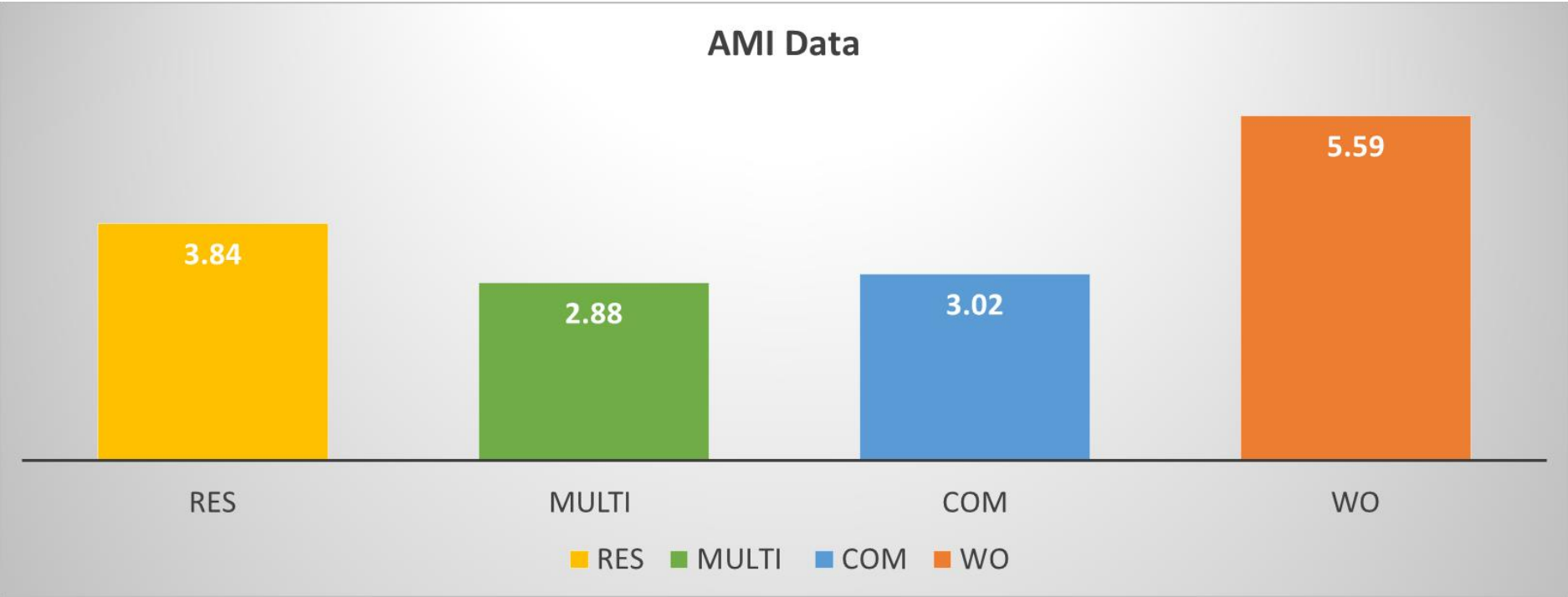
Hourly Read AMI Accounts
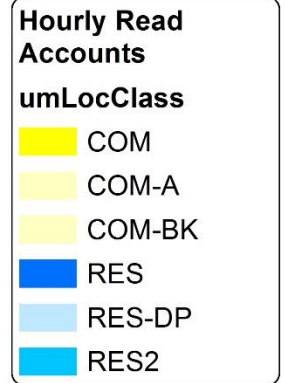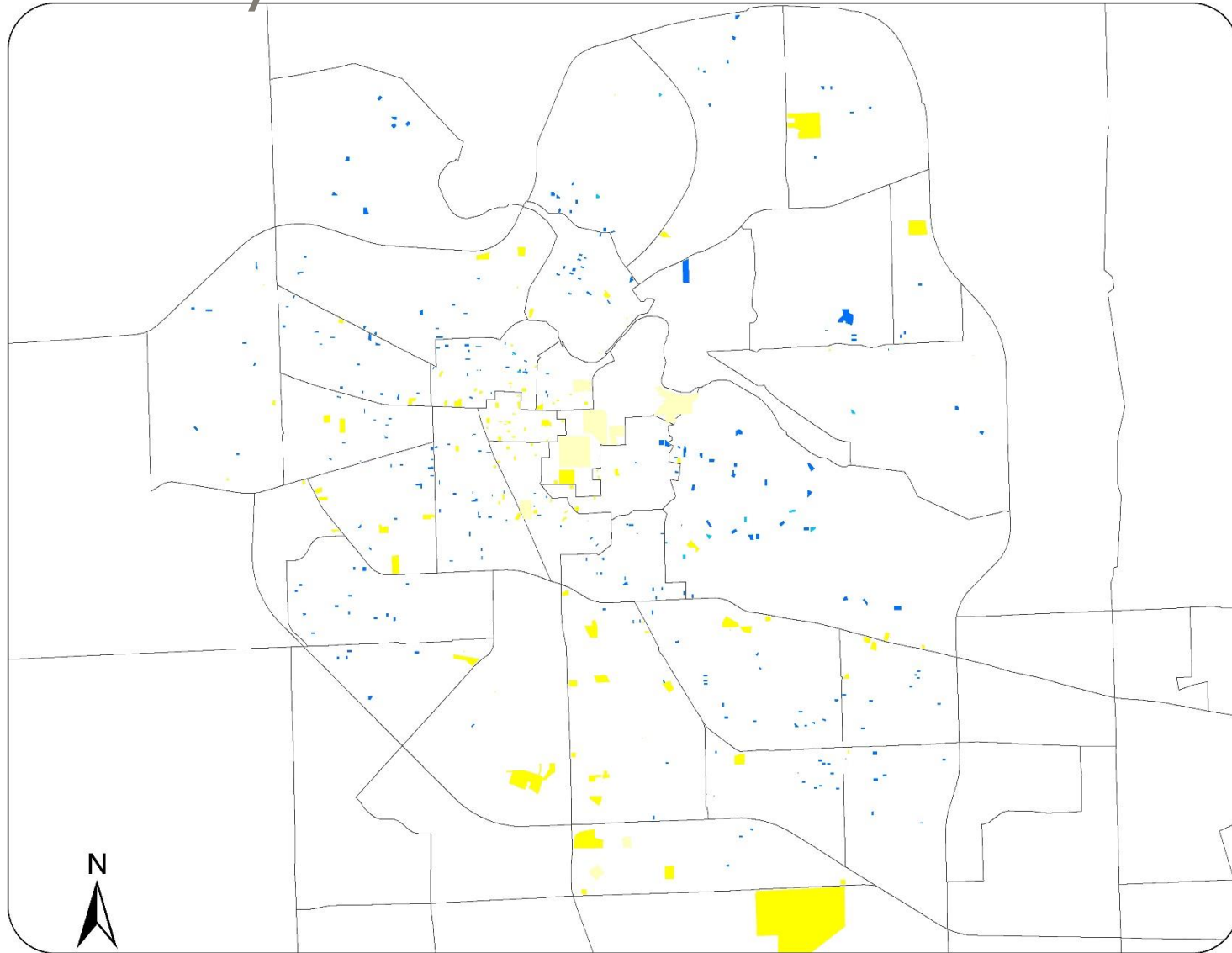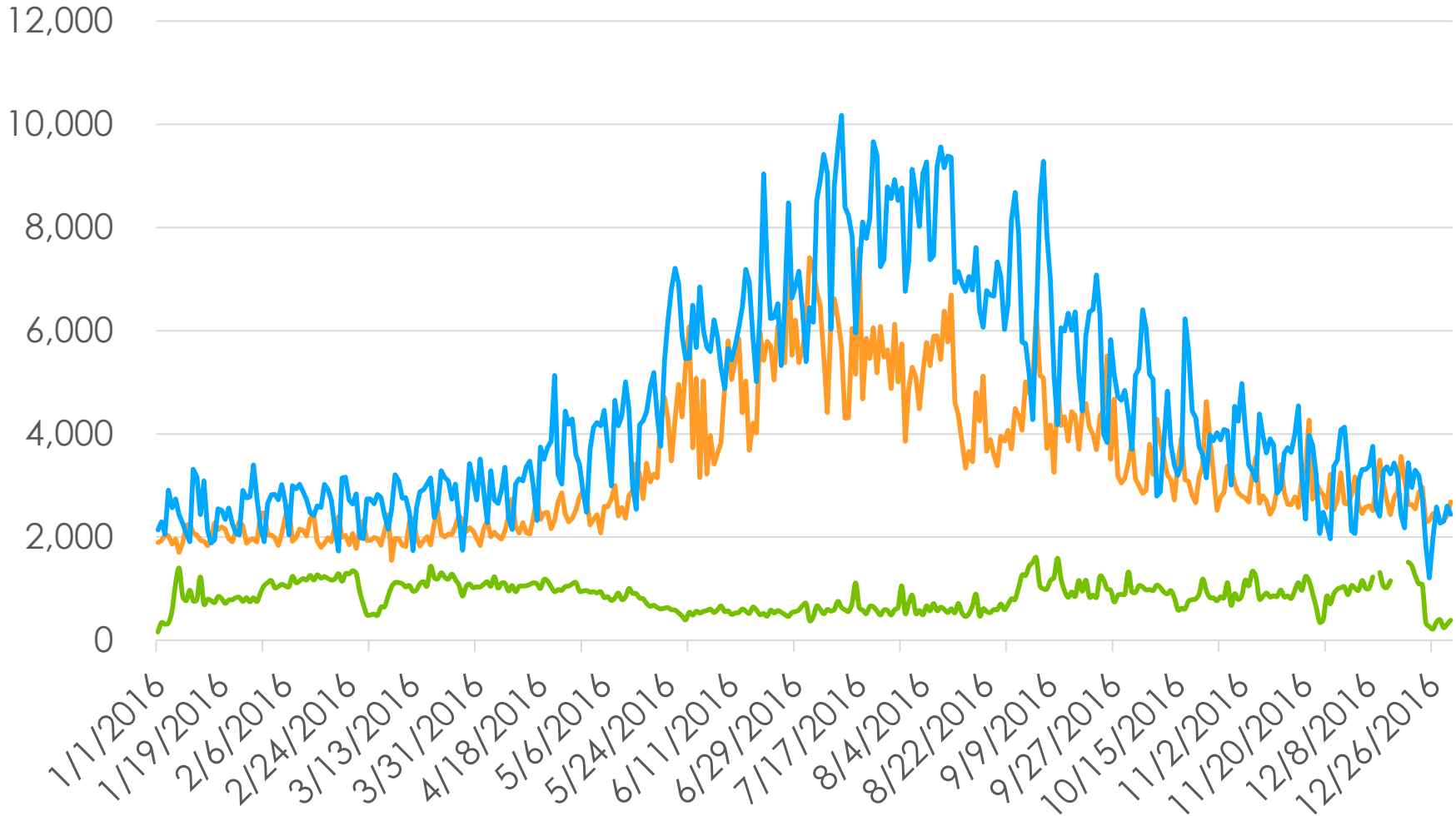
Hourly Read Accounts

umLocClass

- COM
- COM-A
- COM-BK
- RES
- RES-DP
- RES2

N

Stantec

Hourly AMI Data - Max Day

Legend:
- Residential Consumption (for Hourly AMI Meters)
- Commercial Consumption (for Hourly AMI Meters)
- MF Consumption (for Hourly AMI Meters)

Hourly AMI Data - Max Hour

Residential Max Hour — Commercial Max Hour — Multifamily Max Hour
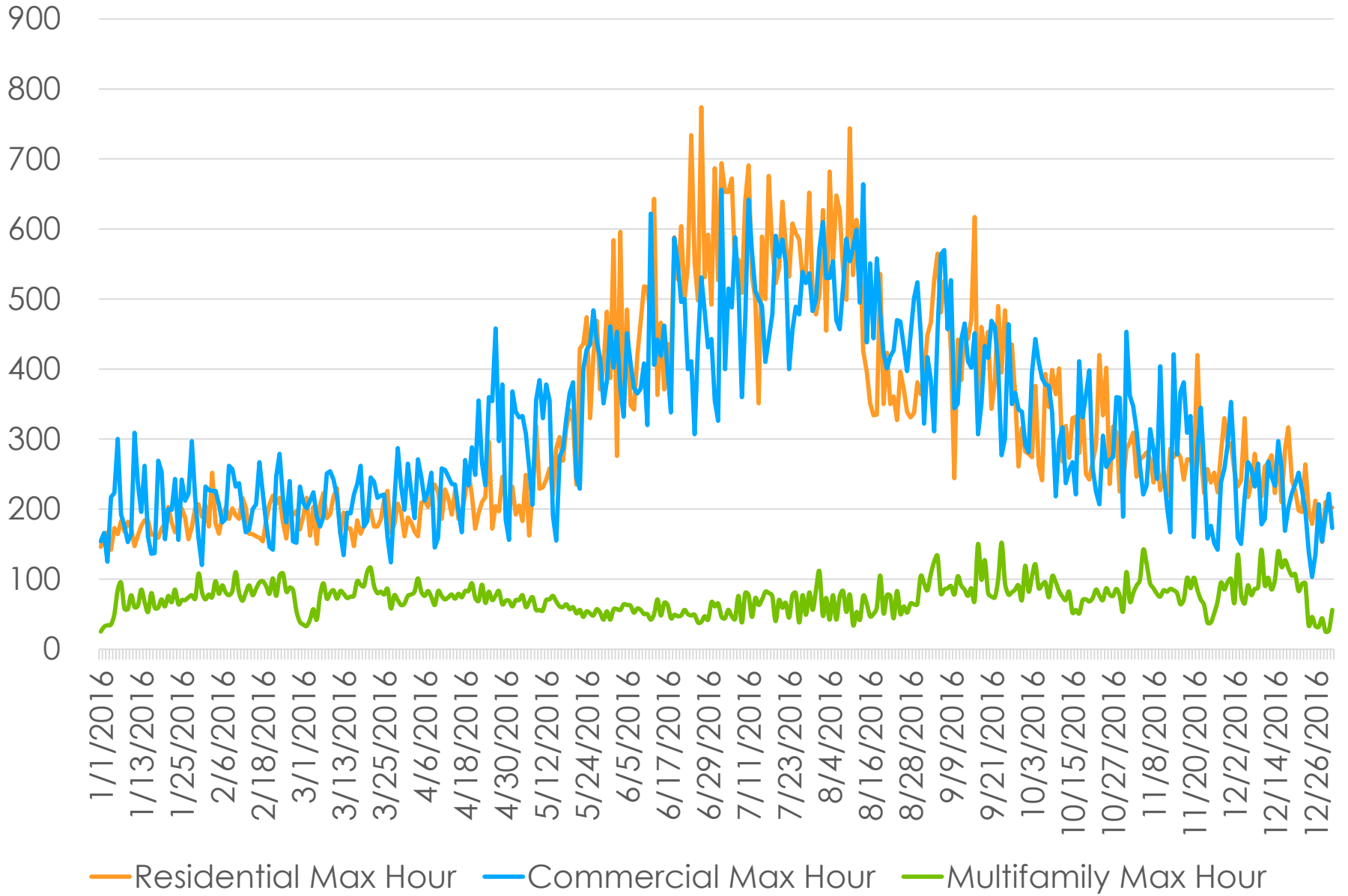
Cost Allocation Next Steps

- Finalize functionalization of the budget with Staff

- Firm up customer units of service

- Complete fire protection analysis

- Complete sewer cost allocation (largely based on customers and flows)

- Link test year revenue requirements by customer class to rate design model

4 Multi-Family & Affordability Data

Multifamily Analysis

- Recap of Prior Analysis
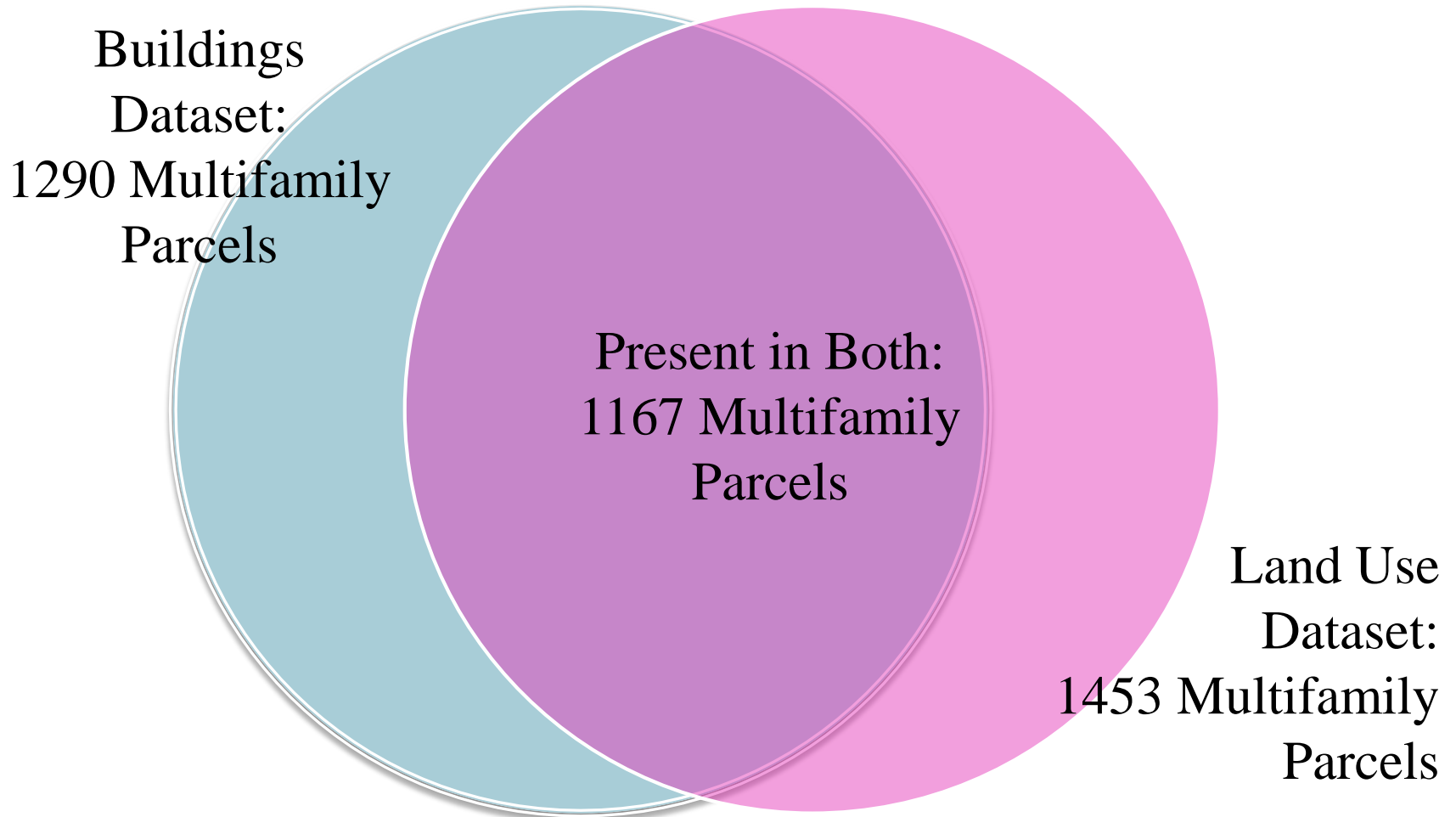- Presentation of TRAKiT Data
- Next Steps

Stantec

Multifamily Accounts from Building Dataset

N

Stantec

N

Stantec
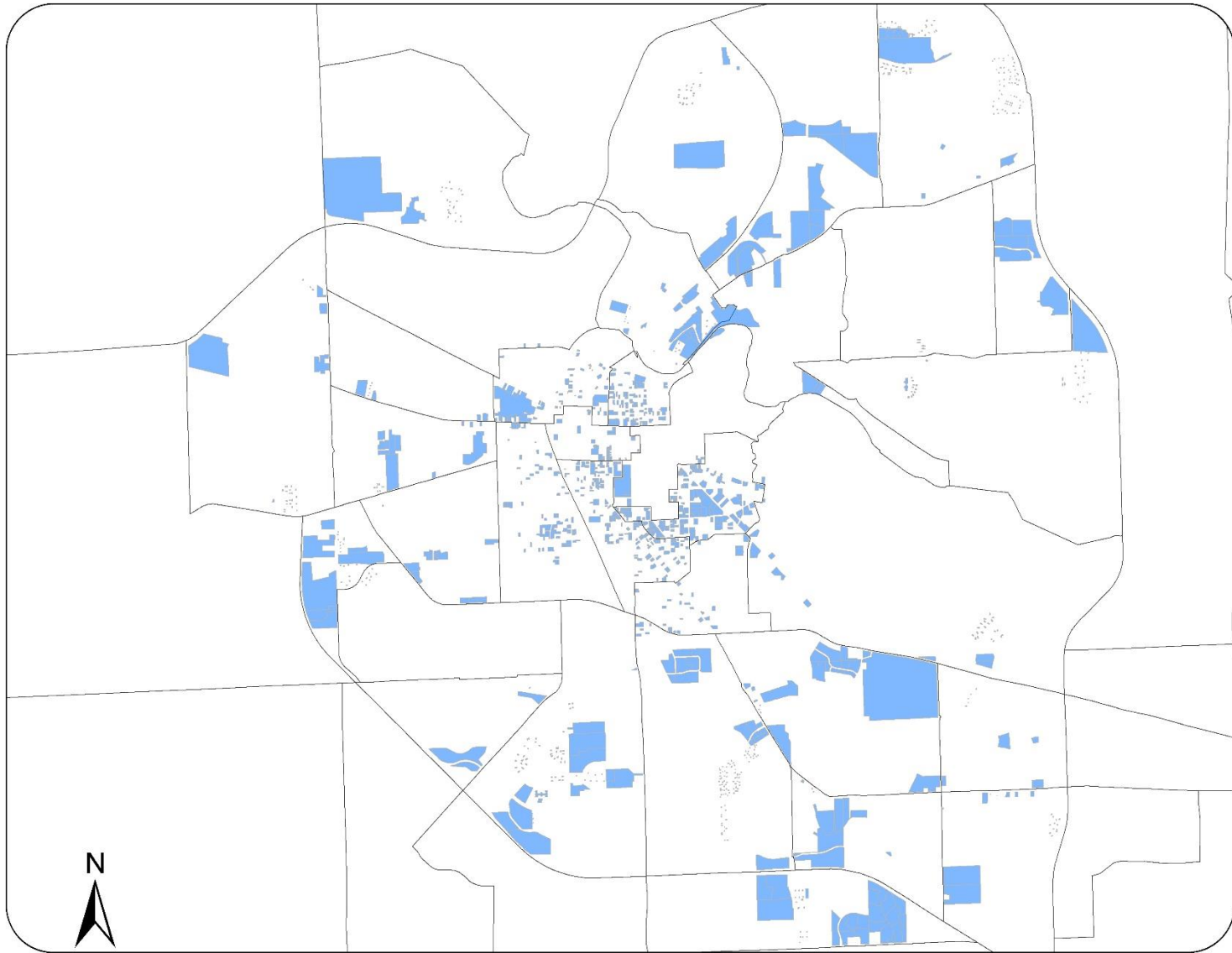
Multifamily Accounts from Building Dataset
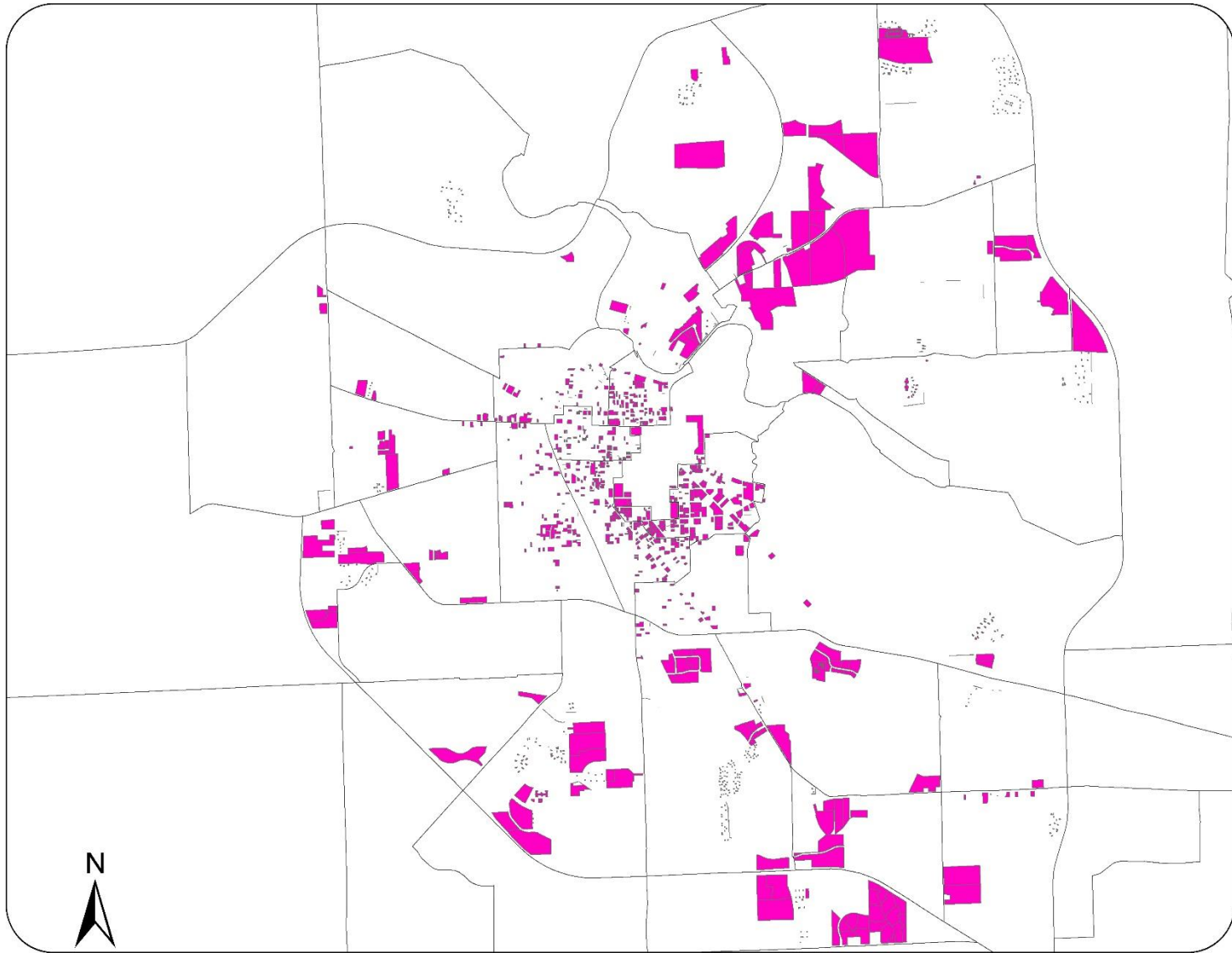
Multifamily Accounts from Land Use Dataset

N

Stantec

Initial Multifamily Analysis

Buildings Dataset: 1290 Multifamily Parcels
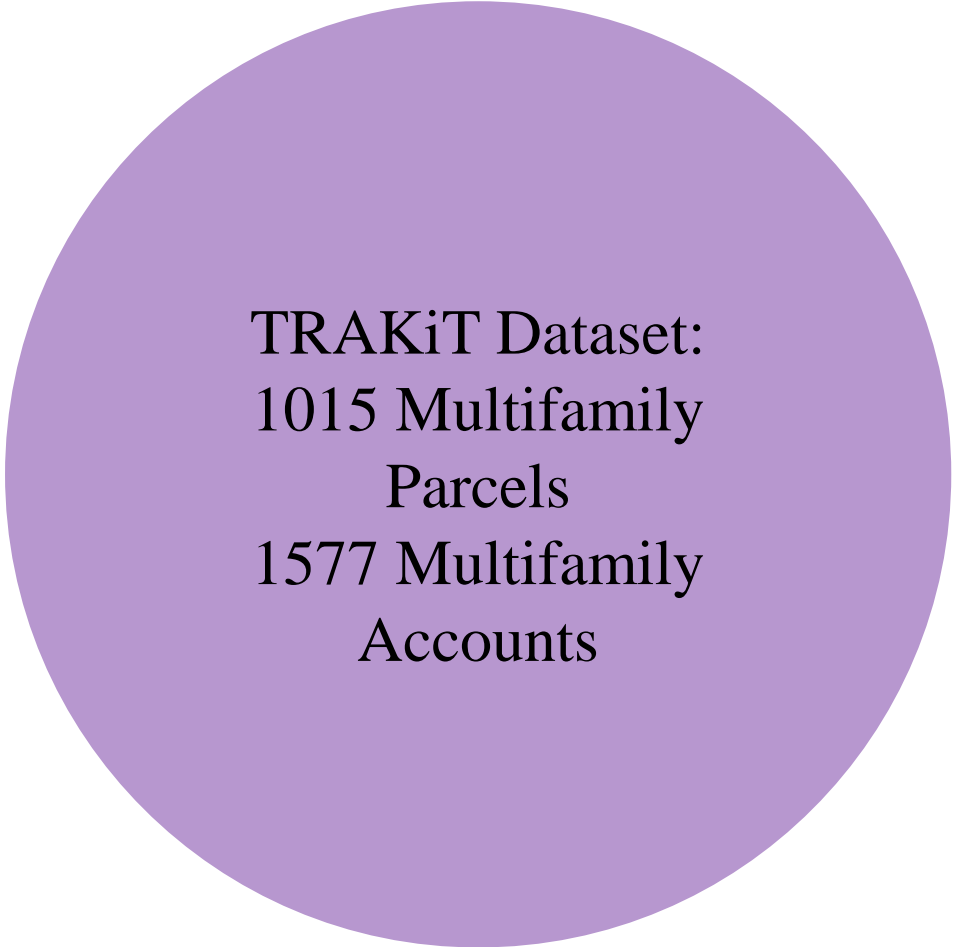
Present in Both: 1167 Multifamily Parcels

Land Use Dataset: 1453 Multifamily Parcels

N
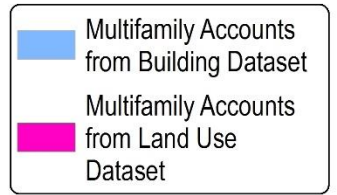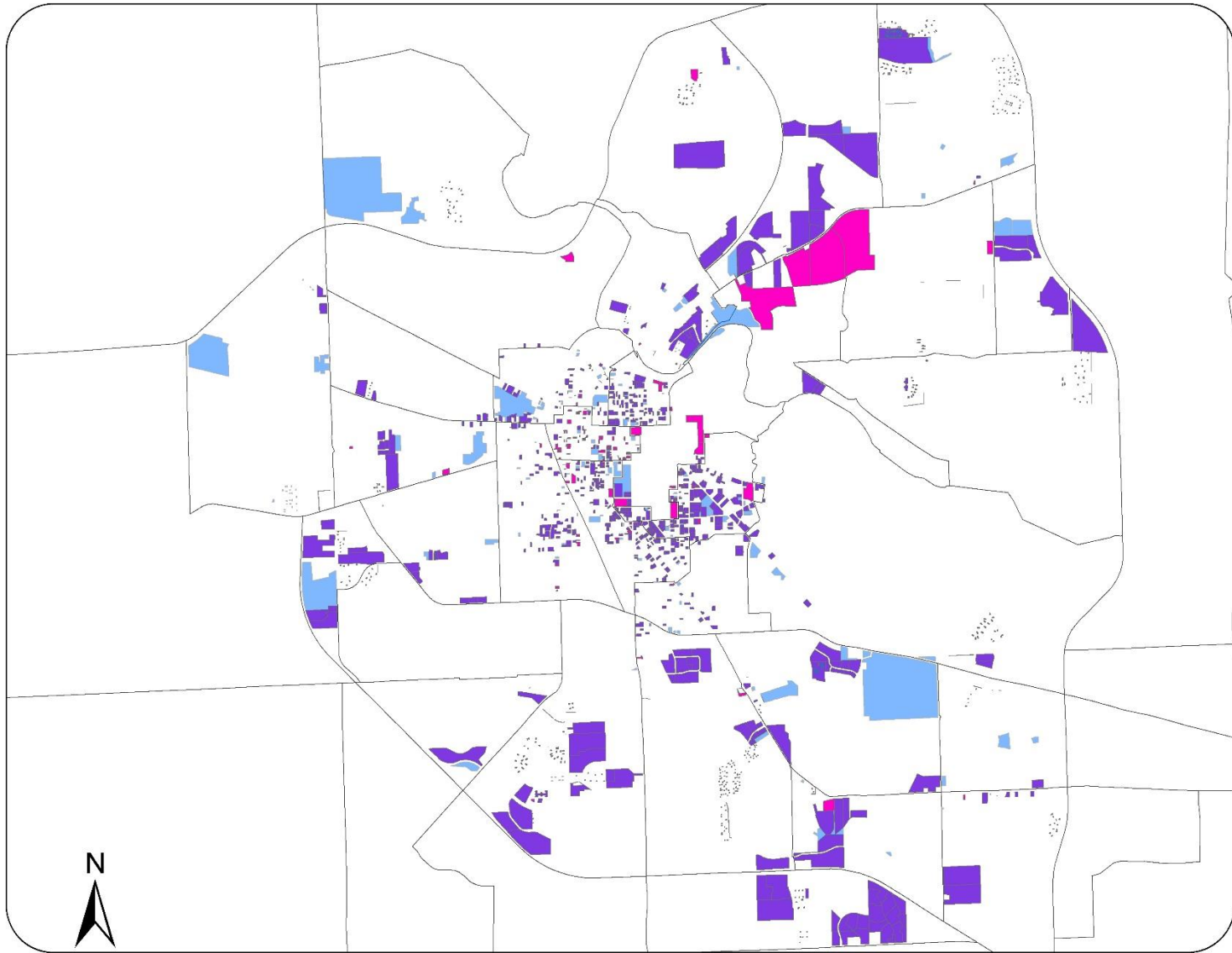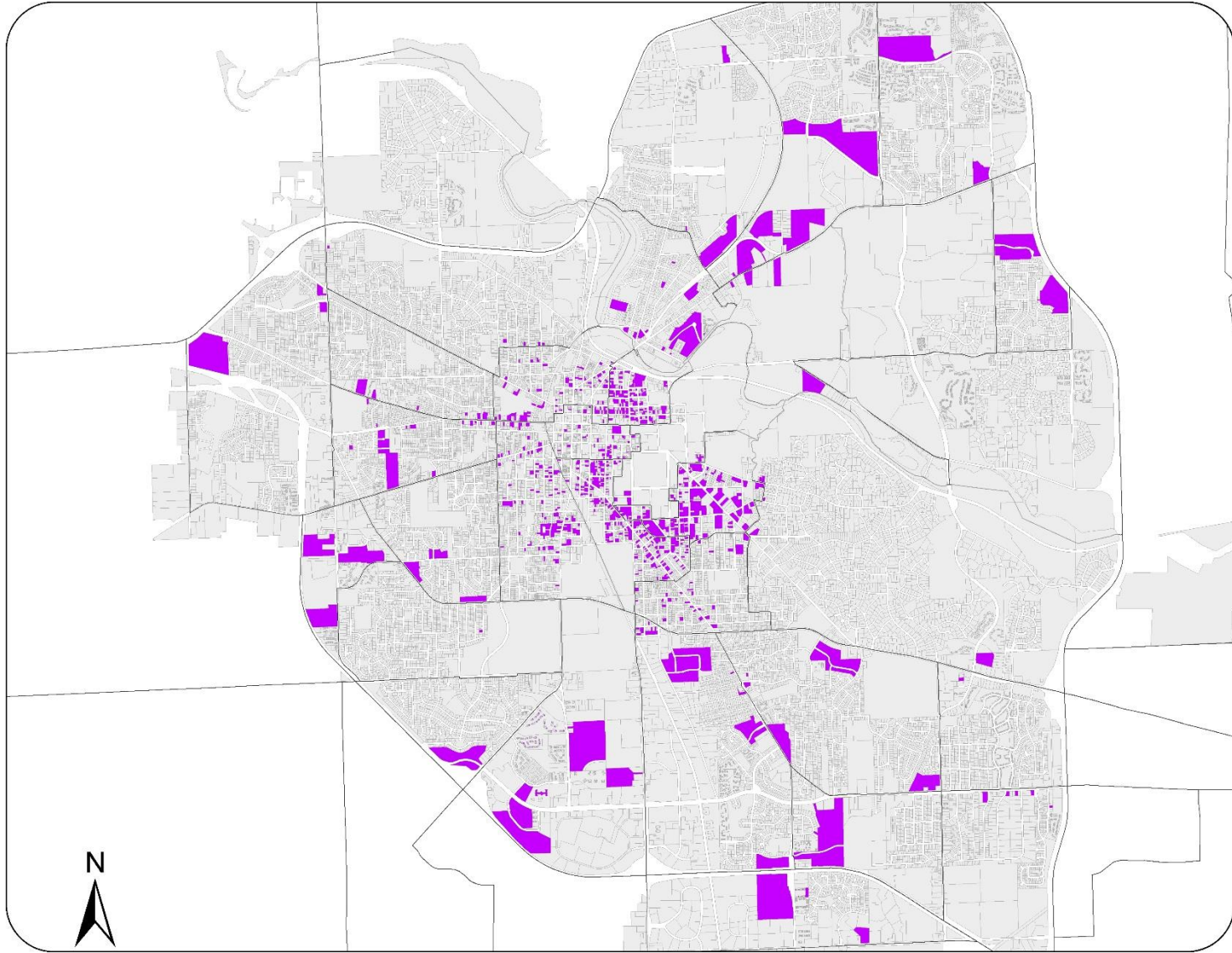
Final Multifamily Analysis using TRAKiT Data

TRAKiT Dataset:
1015 Multifamily
Parcels
1577 Multifamily
Accounts

Next Steps

- Proceed to Rate Design

- Evaluate Bill Impacts

- Prepare for implementation

Affordability Analysis

- Objectives
- Recap of Prior Analysis
- Presentation of New Data
- Next Steps

Stantec

Objectives for Affordability Analysis

- Identify customers with affordability challenges

- Understand their key customer characteristics and define key types:

  - ◻ Small household fixed income

  - ◻ Large household low income

  - ◻ Multifamily low income tenants
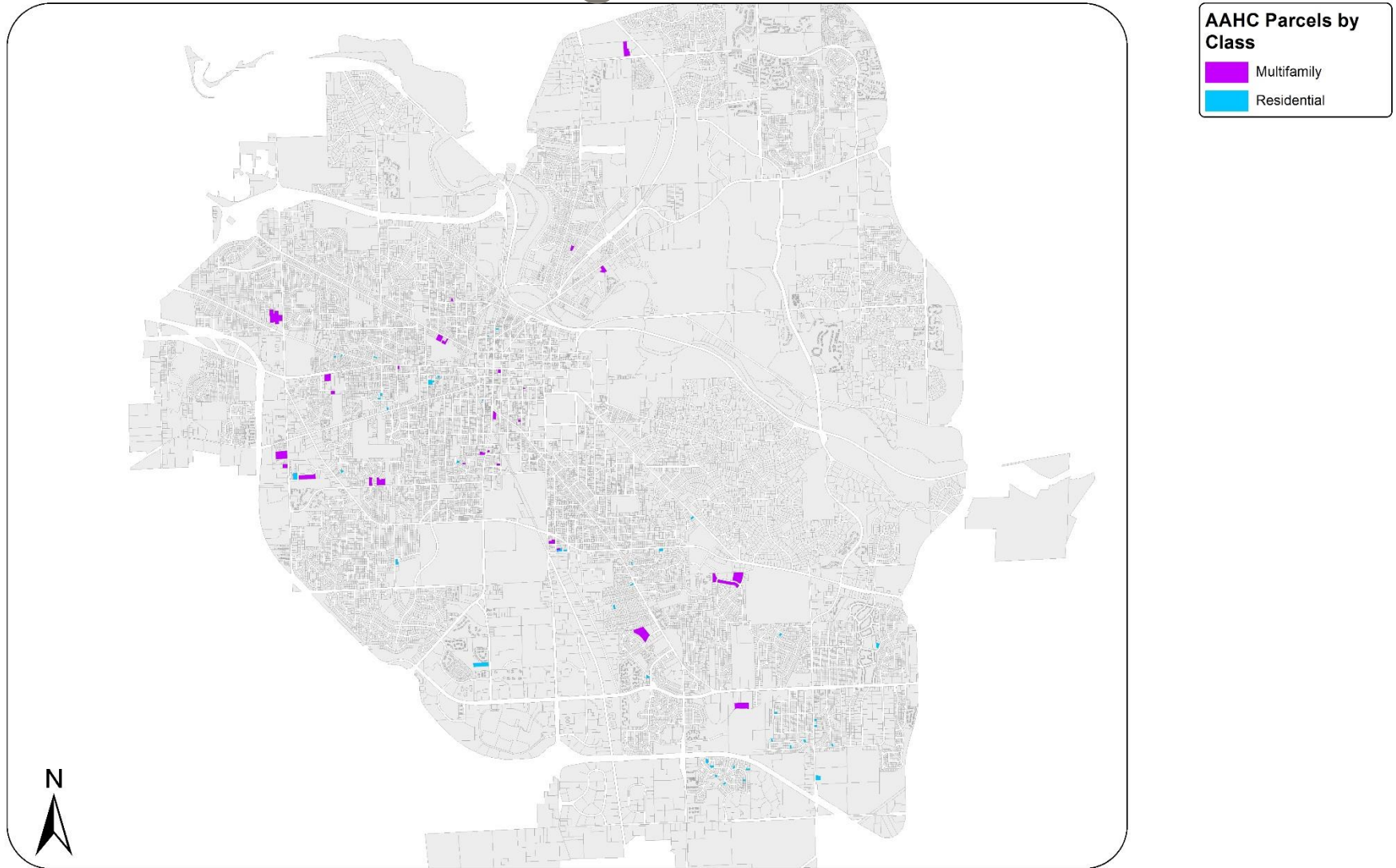
- Incorporate in Rate Design

- Evaluate Bill Impacts
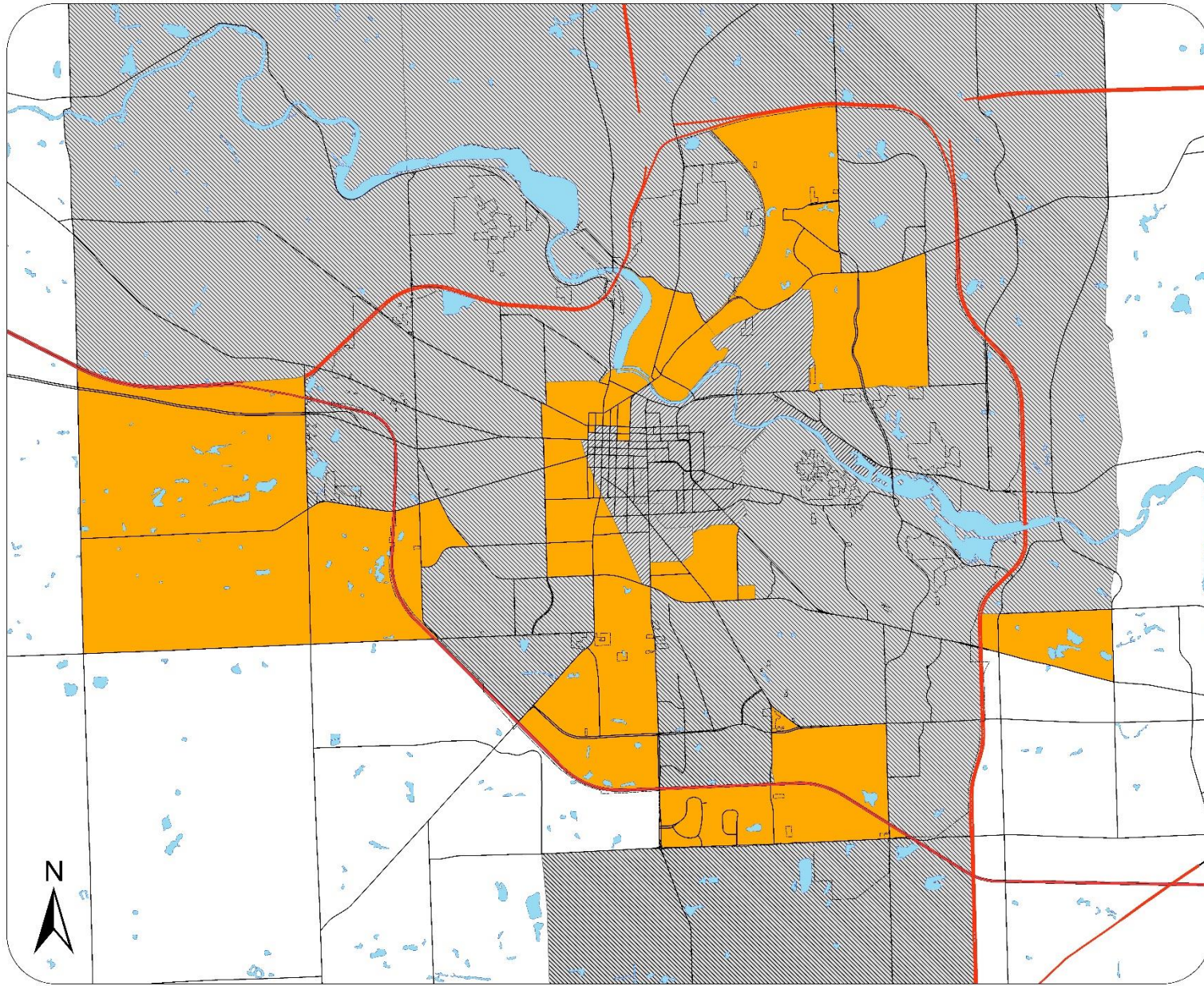
High Priority Tracts

Based on Census Bureau
American Community Survey, 2015

Stantec

Ann Arbor Housing Commission Data

AAHC Parcels by Class

- Multifamily
- Residential

Note: Only parcels which could be joined to the billing data are shown

Next Steps

- Finalize typical characteristics to use in rate design and compare to system wide class statistics

- Evaluate bill impacts to both typical customers and the actual identified customers

- Identify recommendations for future actions and prioritization

Next Meeting and Action Items

Summary of AAHC Customer Characteristics

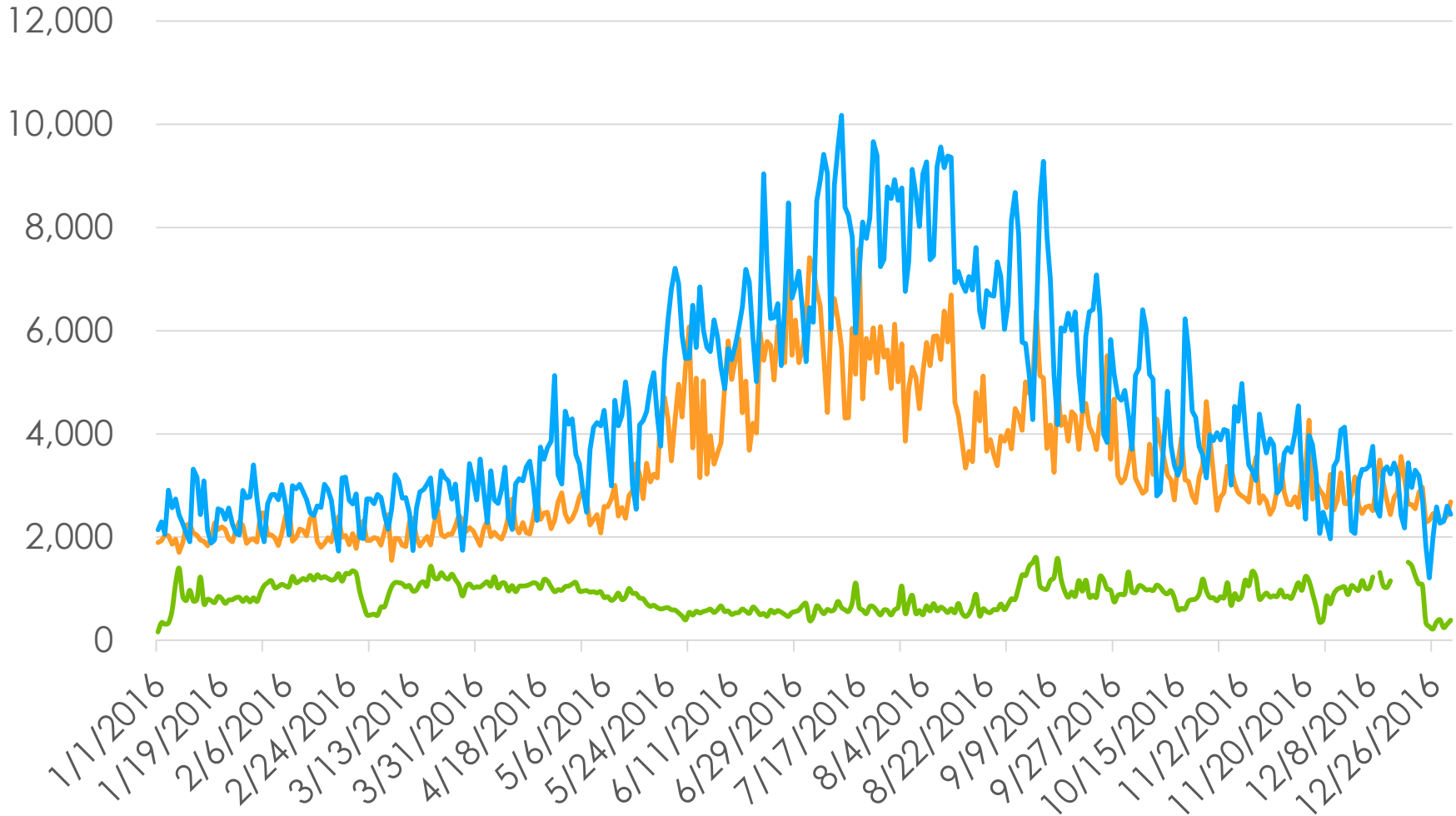| Class	AAHC Data		Systemwide	
	Annual Average (ccf)	Peak Day Factor	Annual Average (ccf)	Peak Day Factor
Residential	67.1	1.30x	61.2	1.57x
Multifamily (per Unit)	53.0	1.29x	48.6	1.39x

- Residential Affordability customers have measurably higher average usage, but lower peak day factors

- Multifamily Affordability customers show a similar trend, but per-Unit usage is significantly more variable

AMI Peaking Analysis

Hourly Read AMI Accounts

Hourly Read Accounts

umLocClass
- COM
- COM-A
- COM-BK
- RES
- RES-DP
- RES2

N

Stantec
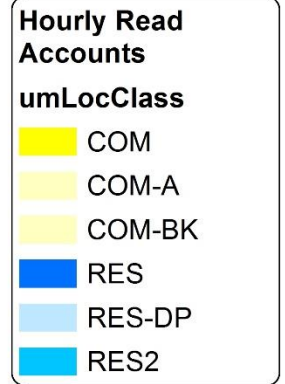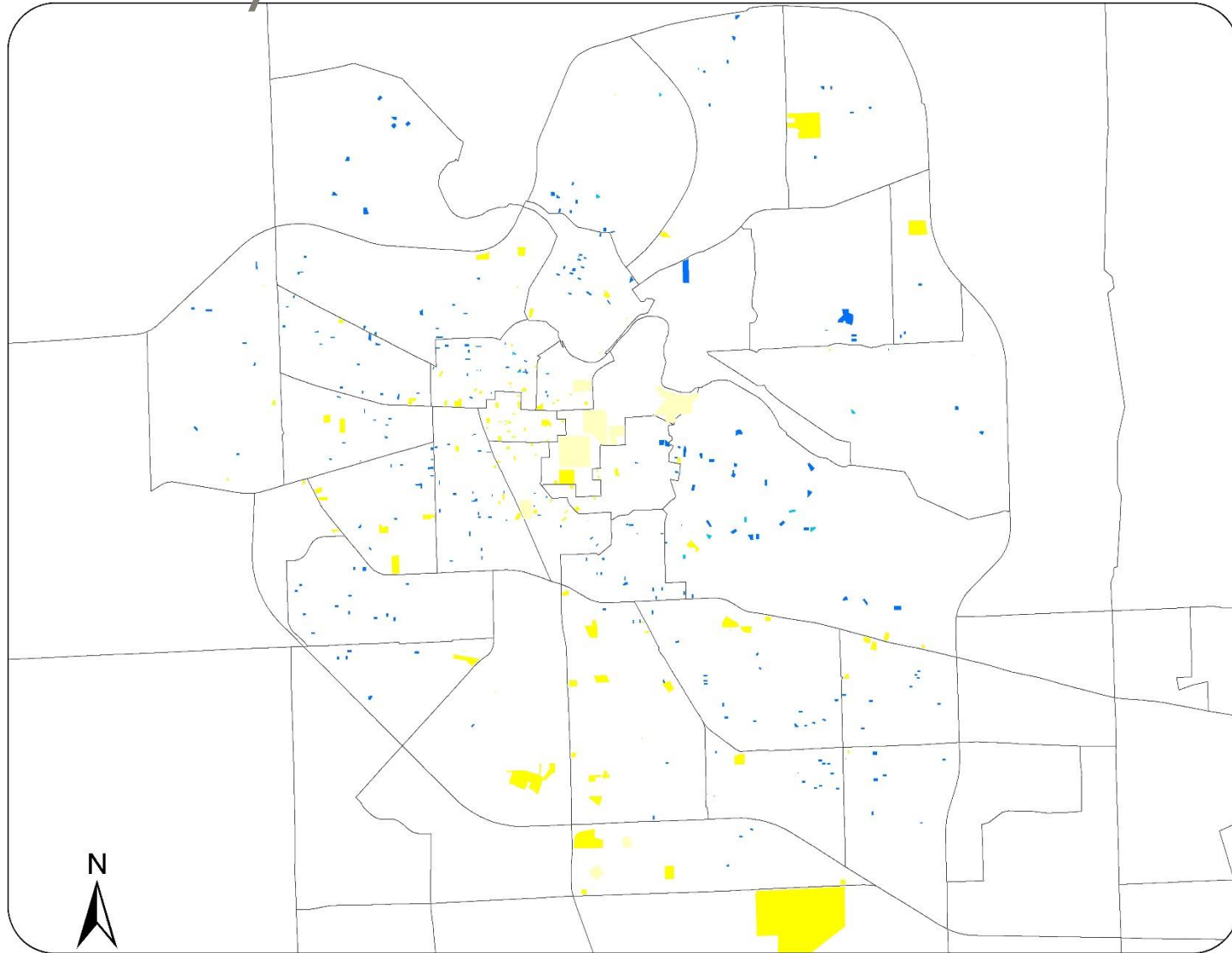
Hourly AMI Data - Max Day

— Residential Consumption (for Hourly AMI Meters)

— Commercial Consumption (for Hourly AMI Meters)

— MF Consumption (for Hourly AMI Meters)

Hourly AMI Data - Max Hour

Legend: Residential Max Hour, Commercial Max Hour, Multifamily Max Hour