Madison Water Utility – Proposed Water Rates

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TRILOGY
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MUNICIPAL & UTILITY ADVISORS

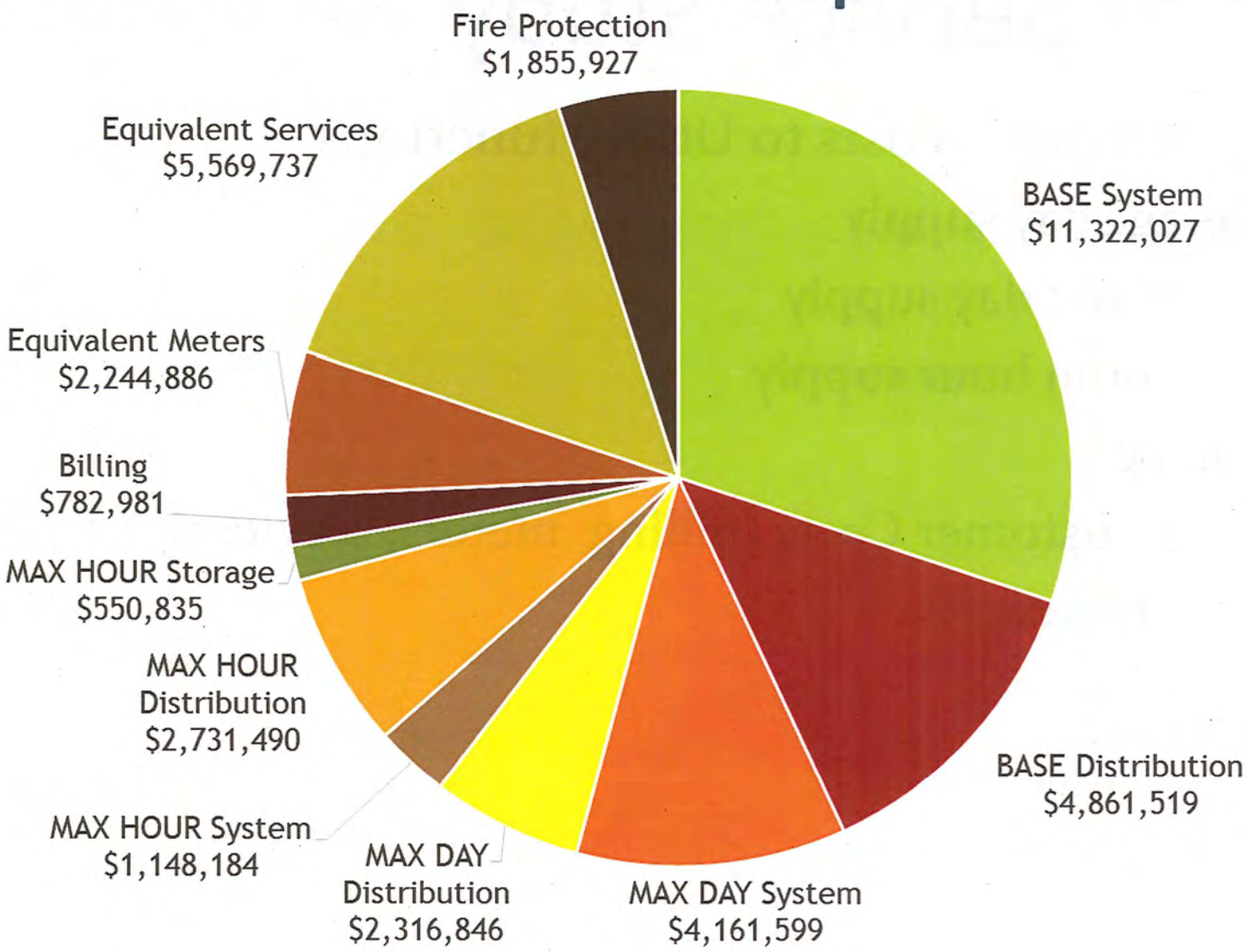
Objectives

- Cost of Service Study
  - Use AMI meter data to allocate costs fairly - based on how each customer class uses the water system
- Rate Design
  - Design rates to recover as close to the allocated cost for each customer class as possible
  - Encourage reduction of water use during peak season

Cost of Service Study

- Step 1: Allocate costs to Utility functions
  - Average day supply
  - Maximum day supply
  - Maximum hour supply
  - Storage
  - Fixed Customer Costs (billing, meters, services)
  - Fire Protection

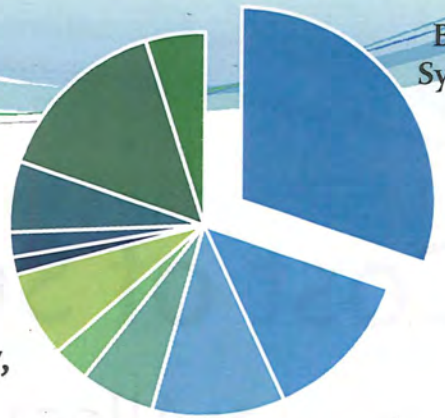
Allocation from Step 1

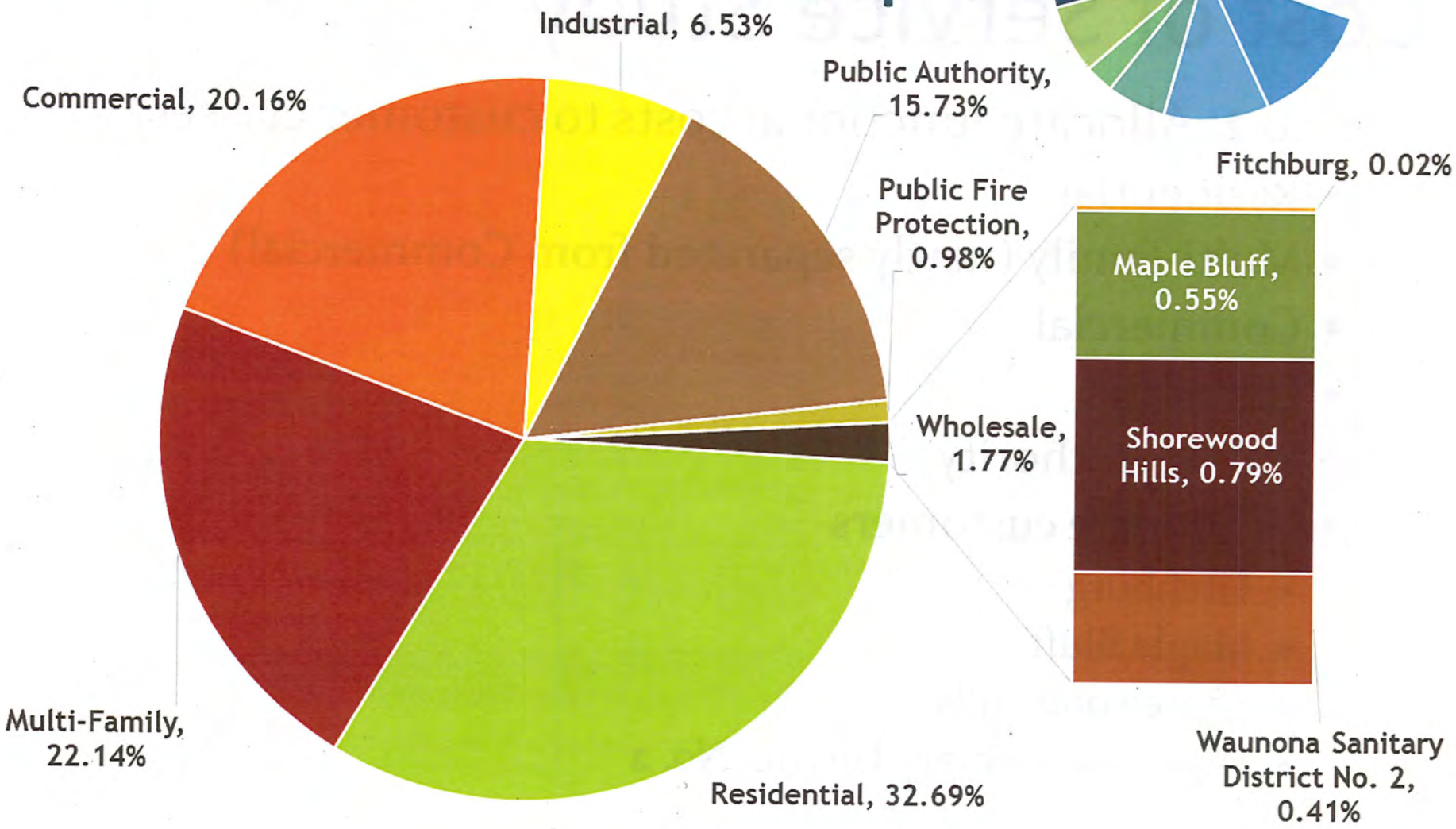


Cost of Service Study

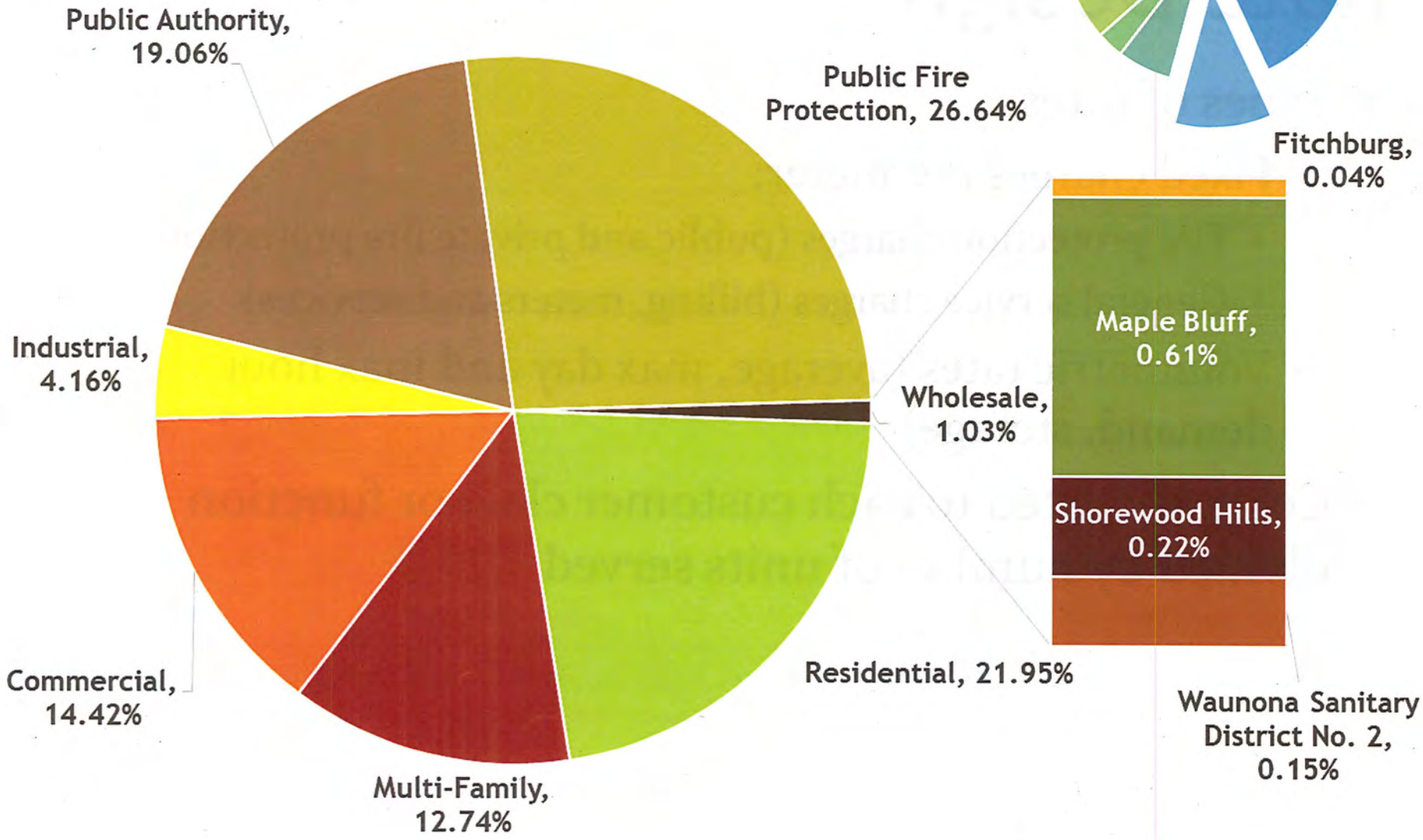
- Step 2: Allocate functional costs to customer classes
  - Residential
  - Multi-family (newly separated from Commercial)
  - Commercial
  - Industrial
  - Public Authority
  - Wholesale customers
    - Fitchburg
    - Maple Bluff
    - Shorewood Hills
    - Waunona Sanitary District No. 2

Allocation from Step 1





Allocation from Step 2



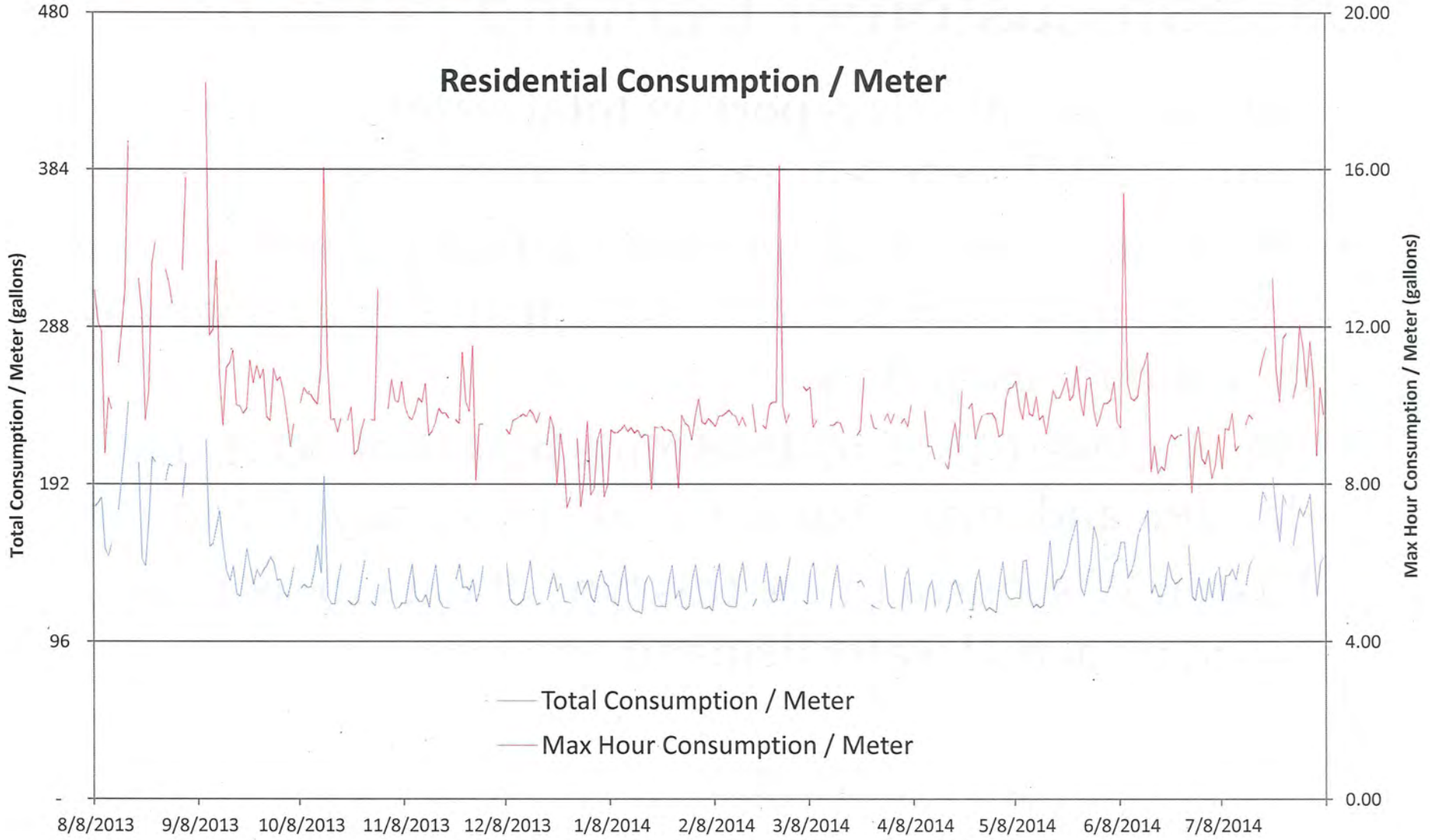
Rate Design

- Types of rates:
  - Fixed charges per meter:
    - Fire protection charges (public and private fire protection)
    - General service charges (billing, meters and services)
  - Volumetric rates (average, max day and max hour demand, storage)
- Costs allocated to each customer class or function divided by number of units served

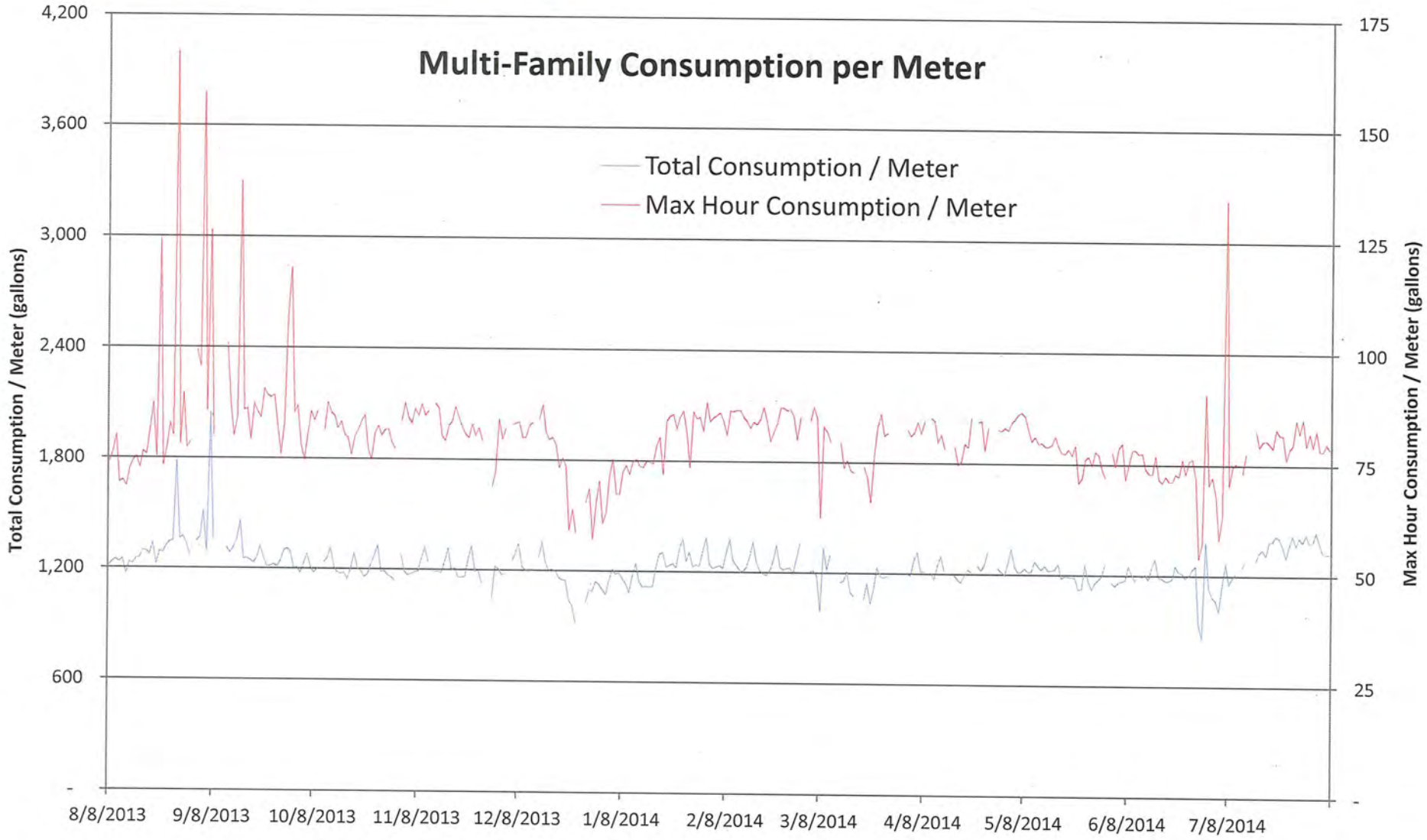
Cost of Service Study Used Detailed Data on Customer Demand Patterns

- Obtained an hourly report on total water demand from all AMI meters in each customer class
- From these reports, determined actual patterns of max day and max hour demand as compared to average day demand for each class
- Findings were used to determine how to allocate max day demand, max hour demand and storage functions
- First in Wisconsin to use this type of data to set rates based on actual water demand patterns

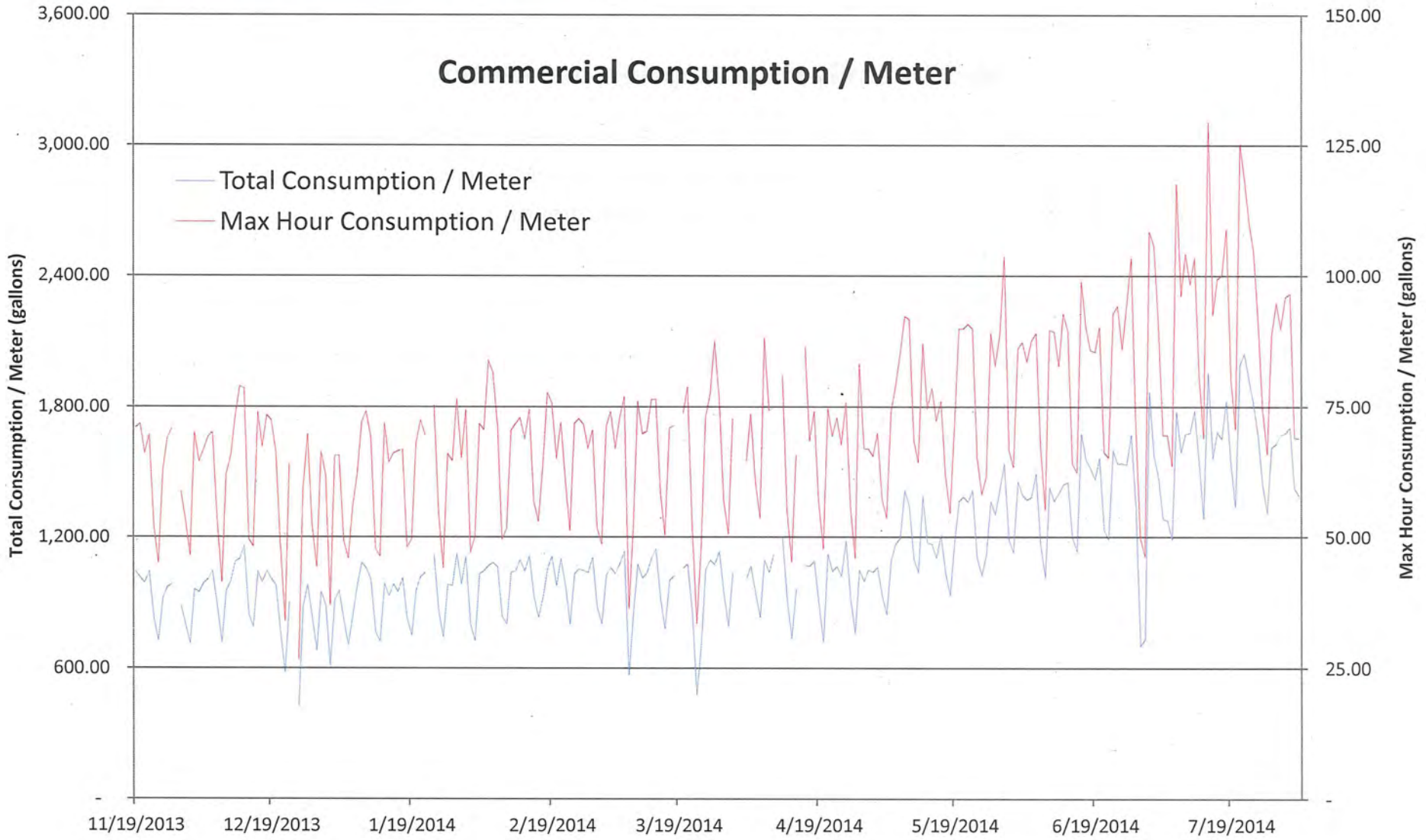
Residential



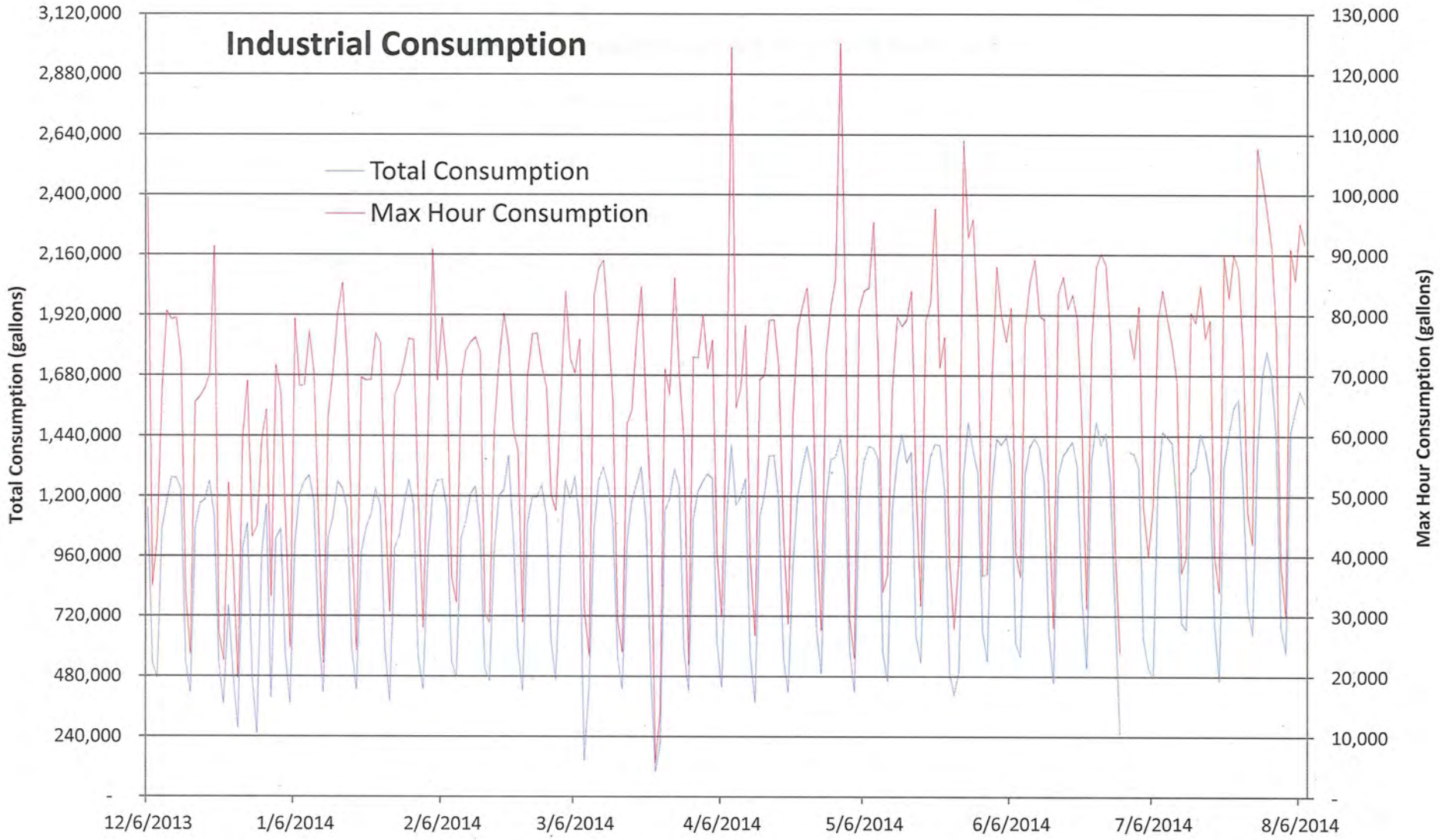
Multi-Family



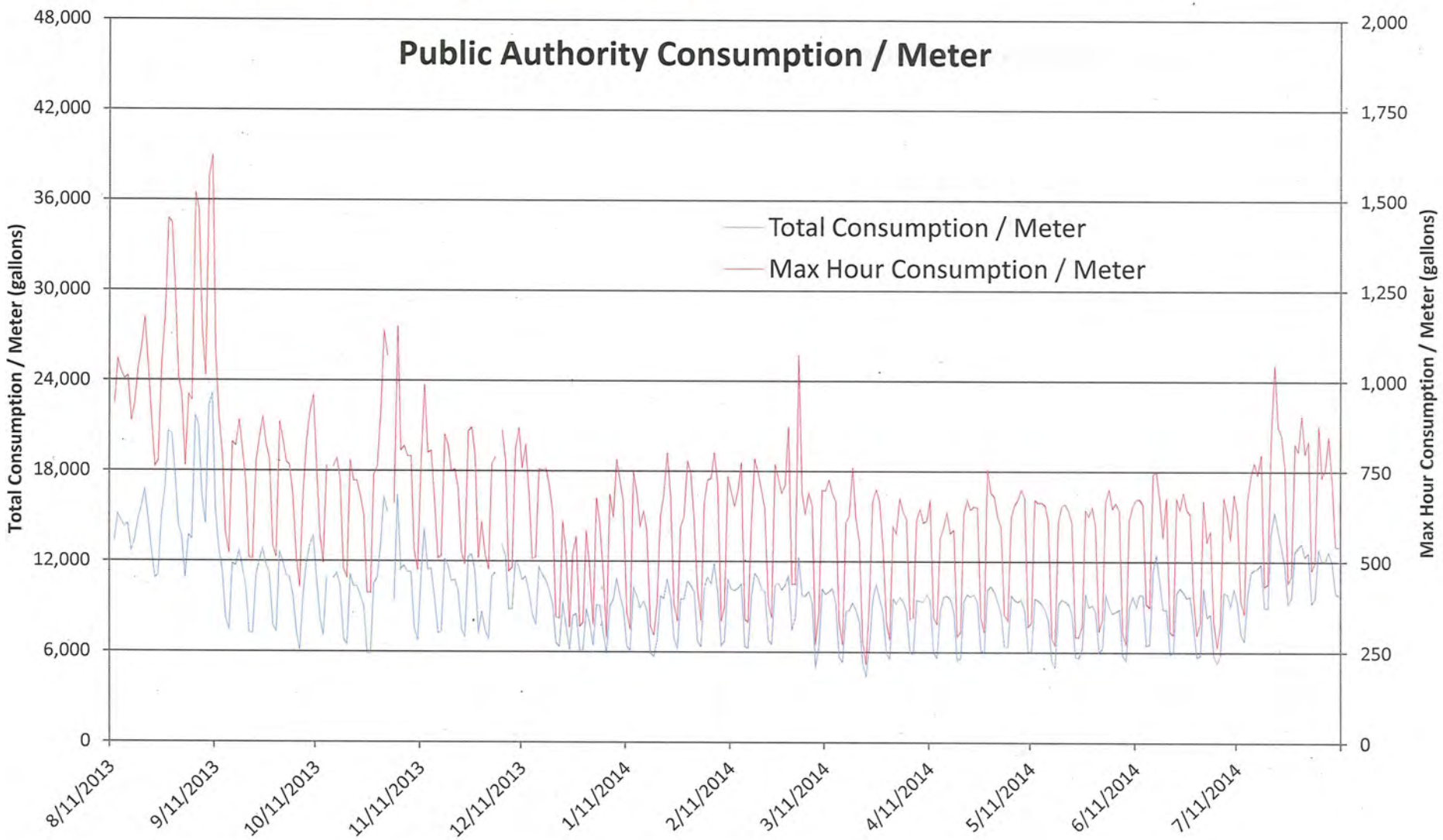
Commercial


Commercial Consumption / Meter
Total Consumption / Meter
Max Hour Consumption / Meter
Total Consumption / Meter (gallons)
Max Hour Consumption / Meter (gallons)
3,600.00
3,000.00
2,400.00
1,800.00
1,200.00
600.00
-
150.00
125.00
100.00
75.00
50.00
25.00
-
11/19/2013
12/19/2013
1/19/2014
2/19/2014
3/19/2014
4/19/2014
5/19/2014
6/19/2014
7/19/2014

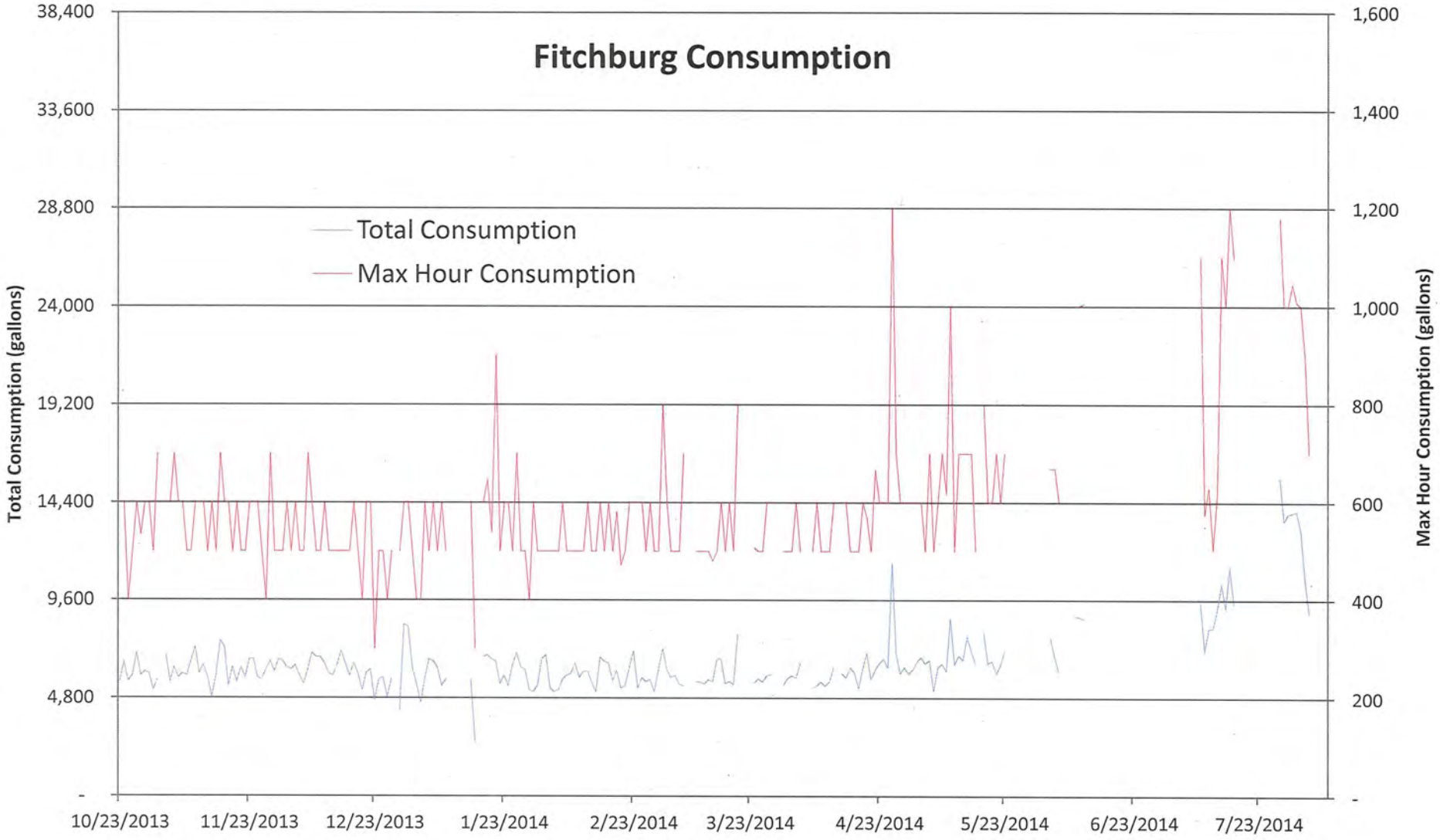
Industrial


Industrial Consumption
Total Consumption
Max Hour Consumption
Total Consumption (gallons)
Max Hour Consumption (gallons)
3,120,000
2,880,000
2,640,000
2,400,000
2,160,000
1,920,000
1,680,000
1,440,000
1,200,000
960,000
720,000
480,000
240,000
-
130,000
120,000
110,000
100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
-
12/6/2013
1/6/2014
2/6/2014
3/6/2014
4/6/2014
5/6/2014
6/6/2014
7/6/2014
8/6/2014

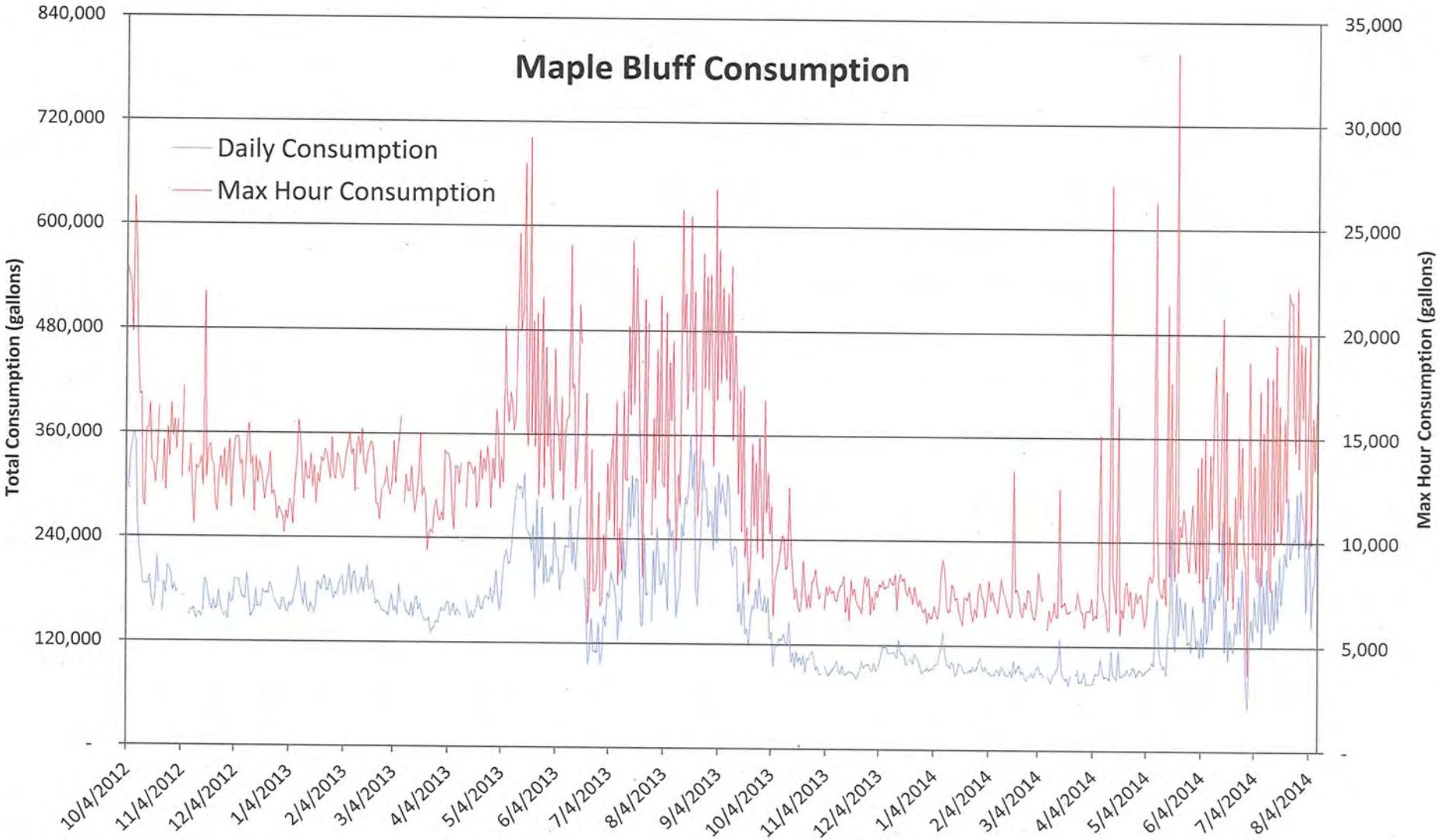
Public Authority



Fitchburg


Fitchburg Consumption
Total Consumption
Max Hour Consumption
Total Consumption (gallons)
Max Hour Consumption (gallons)
38,400
33,600
28,800
24,000
19,200
14,400
9,600
4,800
-
1,600
1,400
1,200
1,000
800
600
400
200
-
10/23/2013
11/23/2013
12/23/2013
1/23/2014
2/23/2014
3/23/2014
4/23/2014
5/23/2014
6/23/2014
7/23/2014

Maple Bluff


Maple Bluff Consumption
Daily Consumption
Max Hour Consumption
Total Consumption (gallons)
Max Hour Consumption (gallons)
840,000
720,000
600,000
480,000
360,000
240,000
120,000
-
35,000
30,000
25,000
20,000
15,000
10,000
5,000
-
10/4/2012
11/4/2012
12/4/2012
1/4/2013
2/4/2013
3/4/2013
4/4/2013
5/4/2013
6/4/2013
7/4/2013
8/4/2013
9/4/2013
10/4/2013
11/4/2013
12/4/2013
1/4/2014
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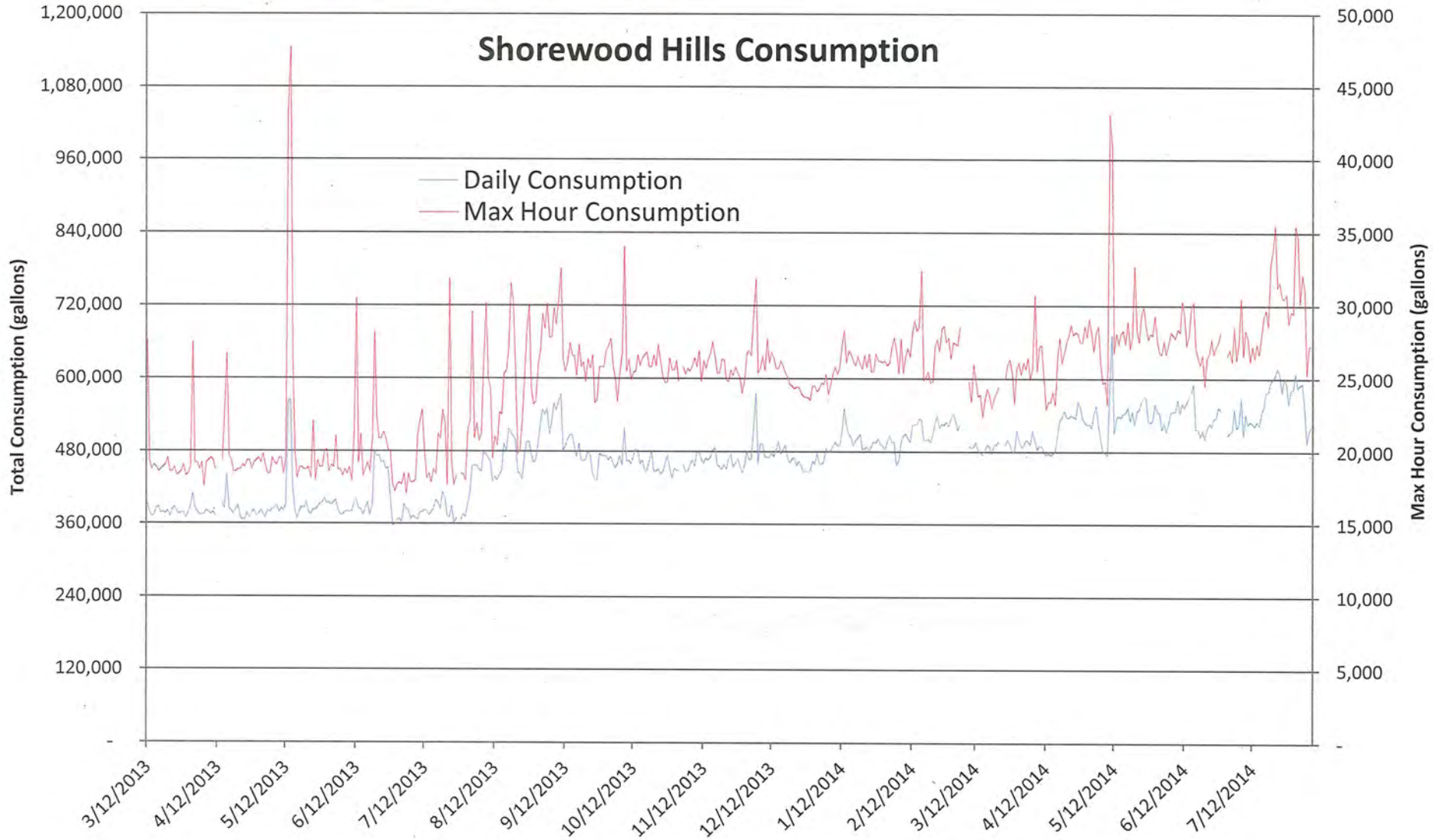
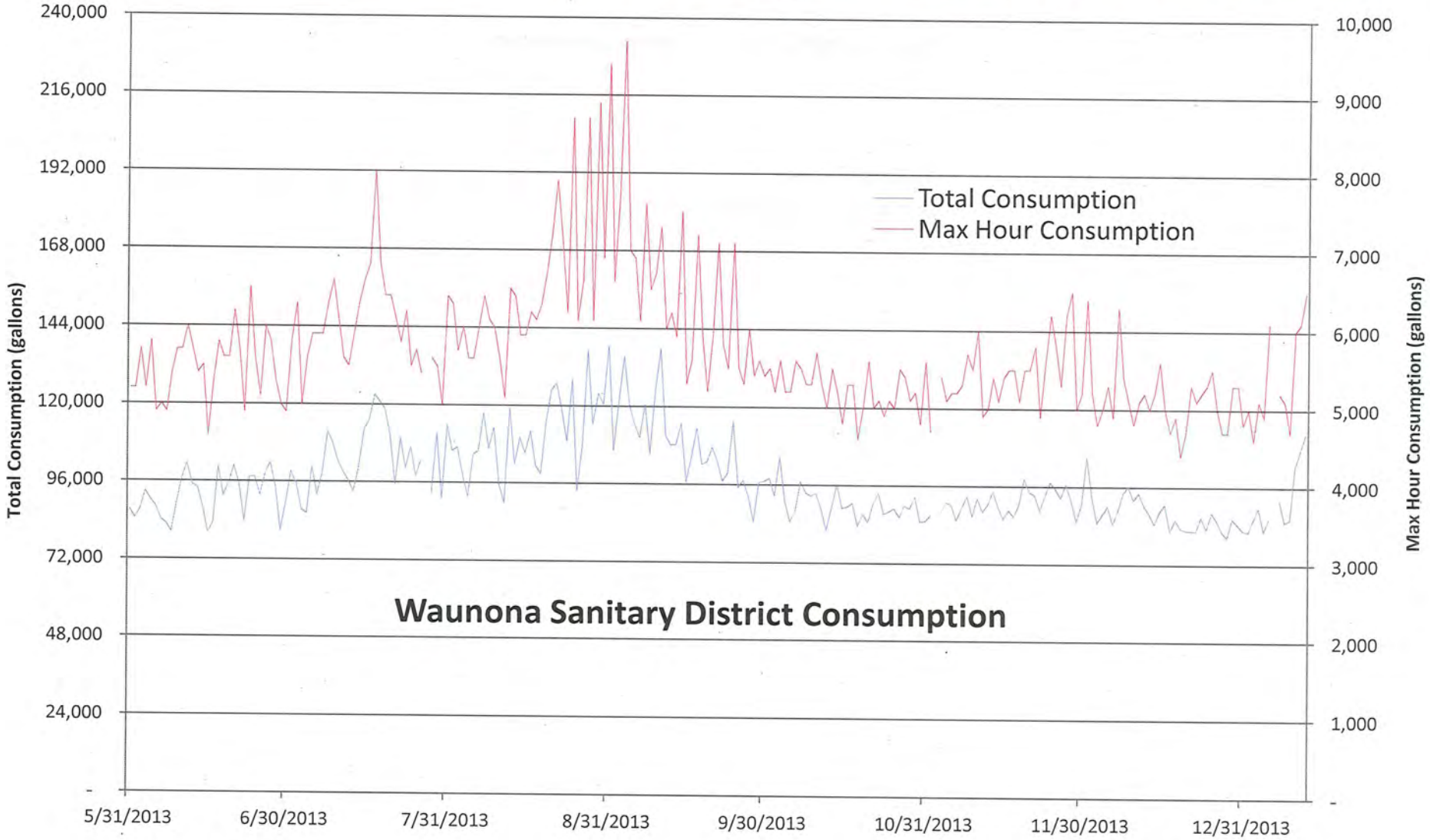
7/4/2014
8/4/2014

Shorewood Hills



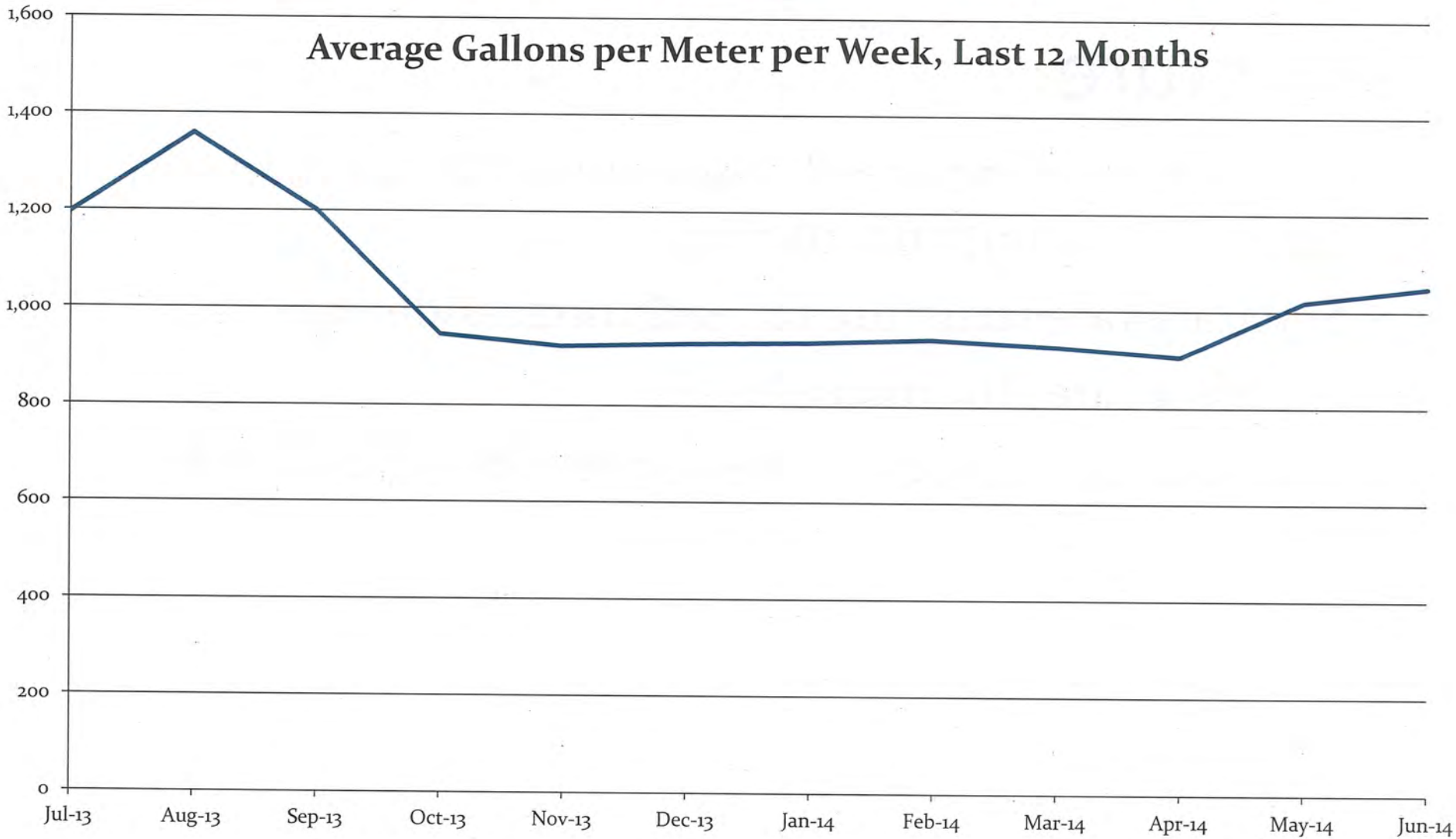
Waunona Sanitary District No. 2



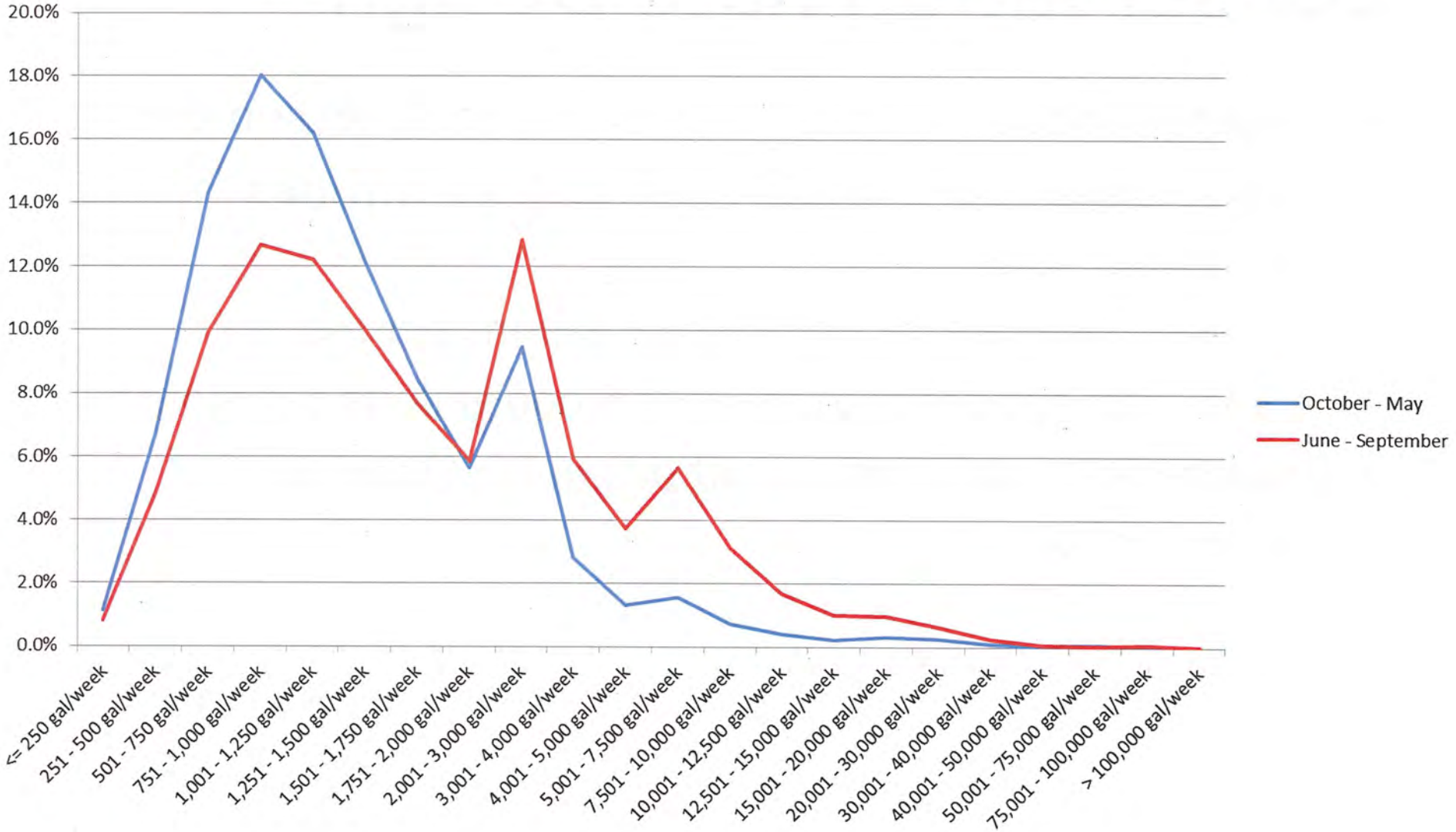
Significant Changes in Rate Structure

- Fixed charges increased, but were set at less than cost of service (about 70% of cost)
- Separate rate structure for each nonresidential class
- Separate rates for multi-family
- Seasonal conservation rates for residential customers

Peak vs. Off-Peak Residential Use



Residential Bill Frequency Analysis



Conservation Rate Design

- Targeted reduction of 20% in excess peak season use
- Conservation rates would apply to June through September bills
  - Lower base rate for up to 6,000 gallons per month
  - Peak rate applies to usage over 6,000 gallons per month
- Base rates would apply to all usage for October through May

Residential Rates

Existing Rates

Residential	(per thousand gallons)
All Usage	$2.81

Proposed Rates

Residential (during off-peak season bills October – May)	(per thousand gallons)
All Usage	$2.96

Residential (during peak season bills June – September)	(per thousand gallons)
First 6,000 Gallons / Month	$2.96
Over 6,000 Gallons / Month	$4.48

Non-Residential Rates

Existing Rates

Non-Residential (including Multi-Family)	(per thousand gallons)
First 62,331 Gallons / Month	$2.34
Over 62,331 Gallons / Month	$1.83

Proposed Rates

Multi-Family	(per thousand gallons)
All Usage	$2.61

Commercial	(per thousand gallons)
All Usage	$2.69

Industrial	(per thousand gallons)
All Usage	$2.54

Public Authority	(per thousand gallons)
All Usage	$3.33

Wholesale Rates

Existing Rates

Wholesale	(per thousand gallons)
Fitchburg	$2.19
Maple Bluff, Shorewood Hills, Waunona	$2.07

Proposed Rates

Fitchburg	(per thousand gallons)
All Usage	$2.80

Maple Bluff	(per thousand gallons)
All Usage	$2.07

Shorewood Hills	(per thousand gallons)
All Usage	$1.52

Waunona Sanitary District	(per thousand gallons)
All Usage	$1.57

Fixed Charges (Total)

Meter Size	Existing Charge per Month	Proposed Charge per Month
5/8"	$6.00	$8.62
¾"	$9.50	$13.70
1"	$17.25	$24.65
1 ½"	$30.00	$42.65
2"	$56.00	$78.95
3"	$155.00	$216.60
4"	$320.00	$445.70
6"	$577.50	$803.90
8"	$1,120.00	$1,556.40
10"	$1,926.00	$2,673.70

Residential Customer Bill Impacts

Customer Type	Meter Size (Inches)	Volume Gallons	Monthly Bill with Public Fire Protection		
			Bill at Old Rates	Bill at New Rates	Percentage Change
Small Residential (Off-Peak)	5/8	2,000	$11.62	$14.54	25.1%
Small Residential (Peak)	5/8	2,500	$13.03	$16.02	23.0%
Small Residential (Annual)			$145.06	$180.40	24.4%
Average Residential (Off-Peak)	5/8	4,000	$17.24	$20.46	18.7%
Average Residential (Peak)	5/8	5,000	$20.05	$23.42	16.8%
Average Residential (Annual)			$218.12	$257.36	18.0%
Large Residential (Off-Peak)	5/8	10,000	$34.10	$38.22	12.1%
Large Residential (Peak)	5/8	14,000	$45.34	$62.22	37.2%
Large Residential (Annual)			$454.16	$554.64	22.1%
Very Large Residential (Off-Peak)	5/8	16,000	$50.96	$55.98	9.9%
Very Large Residential (Peak)	5/8	30,000	$90.30	$133.90	48.3%
Very Large Residential (Annual)			$768.88	$983.44	27.9%