

Exhibit No.: _____

Issue(s): Class Cost of Service
Witness/Type of Exhibit: Hong Hu/Direct
Sponsoring Party: Public Counsel
Case Nos.: WR-2000-281 and SR-2000-282

DIRECT TESTIMONY

OF

HONG HU

FILED²

APR 06 2000

**Missouri Public
Service Commission**

Submitted on Behalf of the Office of the Public Counsel

MISSOURI-AMERICAN WATER COMPANY

Case Nos.: WR-2000-281 and SR-2000-282

April 6, 2000

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

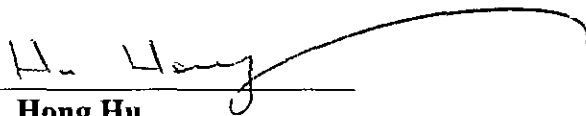
In the Matter of Missouri-American)	
Water Company's Tariff Sheets Designed to)	
Implement General Rate Increases for Water)	Case Nos. WR-2000-281 and
And Sewer Service Provided to Customers in the)	SR-2000-282
Missouri Service Area of the Company.)	

AFFIDAVIT OF HONG HU

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

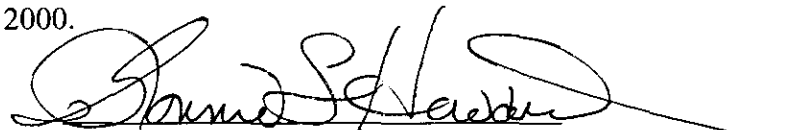
Hong Hu, of lawful age and being first duly sworn, deposes and states:

1. My name is Hong Hu. I am a Public Utility Economist for the Office of the Public Counsel.
2. Attached hereto and made a part hereof for all purposes is my direct testimony consisting of pages 1 through 12 and Schedules HH DIR-1 through HH DIR-4.
3. I hereby swear and affirm that my statements contained in the attached testimony are true and correct to the best of my knowledge and belief.



Hong Hu

Subscribed and sworn to me this 6th day of April, 2000.



Bonnie S. Howard, Notary Public

My Commission expires May 3, 2001.



**DIRECT TESTIMONY
OF
HONG HU**

MISSOURI AMERICAN WATER COMPANY

CASE NO. WR-2000-281

1 **Q. PLEASE STATE YOUR NAME, TITLE, AND BUSINESS ADDRESS.**

2 A. Hong Hu, Public Utility Economist, Office of the Public Counsel, P. O. Box
3 7800, Jefferson City, Missouri 65102.

4 **Q. PLEASE SUMMARIZE YOUR EDUCATIONAL AND EMPLOYMENT BACKGROUND.**

5 A. I hold a Bachelor of Engineering degree in Management of Information Systems
6 from Tsinghua University of Beijing, China and a Masters of Arts degree in
7 Economics from Northeastern University. I have completed the comprehensive
8 exams for a Ph.D. in Economics from the University of Missouri at Columbia. I
9 have been employed as a regulatory economist with the Office of Public Counsel
10 (OPC) since March 1997.

11 **Q. HAVE YOU TESTIFIED PREVIOUSLY BEFORE THIS COMMISSION?**

12 A. Yes.

13 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

14 A. I will present OPC's Class Cost of Service (CCOS) Study for this case. OPC
15 performed CCOS studies for the aggregate Missouri American Water Company

(MAWC, or Company) and each of its seven districts. My testimony will describe how the CCOS results were derived. The result of my CCOS studies was a factor in the development of OPC's rate design recommendations that are presented in the direct testimony of OPC witness James Busch.

Q. WHAT IS THE PRIMARY PURPOSE OF A CCOS STUDY?

A. The main purpose of a CCOS study is to provide an estimate of the cost of providing service to each of the customer classes to be used as a guide for setting rates to the extent allowed by other rate design objectives of the Commission.

Q. PLEASE OUTLINE THE BASIC ELEMENTS OF THE CCOS STUDY THAT YOU PERFORMED FOR THIS CASE.

A. The three primary steps that must be taken in order to perform a CCOS study are functionalization, classification, and allocation of costs. Functionalization of costs involves categorizing accounts by the type of function with which an account is associated. Accounts are categorized as being related to Supply, Pumping, Treatment, Transmission and Distribution, Customer Accounts, Administrative and General, etc., depending on the water company functions of which they are a part. The Uniform System of Accounts (USOA) is the starting point in functionalizing accounts since it already has most accounts grouped by functional area.

In performing the classification step, I utilized the water industry's commonly used "Base-Extra Capacity Method". Under this method, depending on the classification with which they are most closely associated, costs of service are separated into four primary classes of costs: costs that are related to the number of

1 customers ("customer costs"), costs that are related to the total quantity of water
2 used ("base costs"), costs that are related to various peak water usage such as peak
3 day or peak hour usage ("extra capacity costs"), and costs that are related to fire-
4 protection water usage ("fire costs"). For example, meter, regulator, and service
5 line expenses are considered customer-related, since a certain amount of meter,
6 regulator, and service line expense will be incurred solely for hooking up a
7 customer. An example of base-related costs is the chemicals cost. The amount of
8 chemicals used in water treatment is directly related to the total quantity of water
9 used. Many plant accounts are partially base load related and partially peak usage
10 related since the plant included in many accounts is sized to meet the needs of
11 both annual water consumption and day or hour peak water usage requirements.
12 Fire hydrants and outlets are clearly fire protection related costs. A portion of
13 pumping, transmission and distribution costs are also fire protection related.
14 Although the total annual quantity of water usage attributable to fire service is
15 usually considered to be negligible, peak requirements for fire service can be a
16 significant factor in sizing facilities and therefore a significant impact on cost.

17 Following the appropriate classification of costs, I developed allocation factors
18 that distribute a fair share of jurisdictional costs and district specific costs to each
19 customer class. These allocation factors are ratios that reflect the proportion of
20 total units (total number of customers, total annual throughput, etc.) attributable to
21 a certain customer class. Applying these ratios to the appropriate cost categories
22 produces an estimated cost for which each class is responsible.

Q. WHICH CUSTOMER CLASSES HAVE YOU USED?

A. I have used the following customer rate classes: Residential, Commercial, Industrial, Other Public Authority (OPA), Sales for Resale (SfR), Private Fire Service, and Public Fire Service. These classes are consistent with the MAWC's current tariff.

Q. ON WHAT DATA IS YOUR CCOS STUDY BASED?

A. The MAWC workpapers supporting the Company's filing with the Commission for this rate case were the source of most of the financial data and the billing determinant information that I utilized in my CCOS study. This data is for the year ending December 31, 1999 and trued up through April 1, 2000. I have also utilized data received from MAWC in response to OPC Data Requests. My use of this information should not be viewed as an endorsement of MAWC's methods for calculating accounting costs or billing determinants. I have used this information because it was readily available and contains the level of detail necessary to perform a CCOS study.

Q. PLEASE DISCUSS THE METHODS THAT YOU USED TO ALLOCATE FUNCTIONALIZED COSTS.

A. For each identified classification of cost, I developed an allocator to allocate the costs to different customer classes in order to reflect the differences in costs of furnishing service to them. In developing customer-related allocators, I have utilized various weights to reflect the fact that there are greater costs associated with serving a bigger customer than serving a smaller customer. In developing allocators for "extra-capacity" costs, I have adjusted the commonly used "Base-

1 Extra Capacity Method" to recognize economies of scale in sizing utility plant.

2 The results of these allocators are shown at Schedule HH DIR-1.1 through 1.8.

3 **Q. PLEASE EXPLAIN WHAT MODIFICATION YOU HAVE MADE TO RECOGNIZE**
4 **ECONOMIES OF SCALE IN SIZING UTILITY PLANT.**

5 A It is common knowledge in engineering that scale economies exist. The concept
6 of economies of scale refers to a phenomenon whereby construction costs per unit
7 of capacity decline with increased size. Due to inherent economies of scale, for
8 most major facilities, the construction cost per unit of capacity associated with
9 adding extra peak capacity is substantially less than the unit cost associated with
10 base capacity cost. In other words, economies of scale in sizing water facilities
11 may permit peak loads to be served at incremental capital costs which are less
12 than average costs.

13 An example of economies of scale would be the material and installation costs of
14 pipes relative to their sizes and their capacities. A 10" pipe provides four times
15 the capacity that a 5" pipe would provide but the material cost of a 10" pipe would
16 be much less than twice that of a 5" pipe. Furthermore, installation cost and
17 overhead costs such as the cost to obtain right-of-way is more or less constant
18 with respect to pipe size within a certain range. To my knowledge, in common
19 practice, trenchers or backhoes used for the installation of both 5" and 10" pipes
20 would not change despite the change in pipe size. Also, the number of crew and
21 transportation vehicles used would be the same. In summary, to increase capacity
22 by a factor of 4, the Company's cost increases by a much lower factor (less than 2
23 in this case).

1 In my derivation of "extra-capacity" related allocators, I used an economies of
2 scale factor of 0.5 to reflect the fact that four times as much capacity can be
3 provided through a pipe that is twice the size (and less than twice the cost). In
4 other words, capacities are raised to the power of 0.5 to get to the cost allocation
5 percentage. Here, 0.5 is a conservative estimate of the economies of scale. This
6 factor is applied to all extra-capacity related facilities as a generalization, although
7 I did not assess the value of economies of scale in other facilities other than
8 transmission or distribution pipes.

9 **Q. PLEASE DESCRIBE HOW YOU ALLOCATED VARIOUS PLANT ACCOUNTS.**

10 A. I allocated the investment in source of supply, land, land rights, and impounded
11 reservoir structures based on annual water consumption by class. This recognizes
12 the fact that such facilities are sized to meet the annual supply requirement in
13 total, whether or not variations in daily needs are experienced. I have allocated
14 the costs associated with lake, river and other intakes; wells and springs; and
15 supply mains utilizing a composite allocator. This allocator was developed based
16 on a comparison of average day usage relative to maximum day demand and
17 adjusted for consideration of the fire-protection requirement.

18 Pumping facilities are allocated using a composite allocation factor based on
19 average day usage, maximum day usage, maximum hour usage, and the fire
20 protection requirement because all of these factors affect the costs of these
21 facilities.

22 Water treatment plant is allocated on a composite allocation factor based on
23 average day usage and maximum day usage only. I utilized this factor because
24 water treatment plant is designed to meet maximum day demands and to provide

1 year round water usage to the customers. I have not allocated a portion of water
2 treatment plant cost to fire because presumably water does not need to be treated
3 for fire protection usage.

4 Distribution reservoir and standpipes serve principally to assist in meeting the
5 maximum hour capacity requirements of the system, and also provide some
6 element of system reliability. They are allocated based on base consumption,
7 maximum hour usage and fire protection requirement. Fire mains and hydrants
8 are allocated directly to private and public fire protection services. Meters and
9 services are allocated based on the weighted number of meters and services. The
10 weights are chosen recognizing that bigger customers generally use larger size
11 meters and services, and that it generally costs more to buy and install a larger
12 size meter or a larger service. Other transmission and distribution plant are
13 allocated utilizing a composite allocator based on base consumption, maximum
14 day usage, maximum hour usage and fire requirement.

15 General plant includes office buildings, furniture and equipment, vehicles, and
16 other related items. General plant is allocated to all customer classes based on the
17 overall allocation resulting from the allocation of all other non-general plant
18 facilities.

19 **Q. HOW DID YOU ALLOCATE OPERATION AND MAINTENANCE EXPENSES?**

20 A. For source of supply, pumping, water treatment and transmission & distribution
21 expenses, I used the "expenses follow plant principle" for allocating most of the
22 accounts in this category. For example, the allocator that I applied to Pumping
23 Plant was also applied to Pumping Expenses with the exception of Account 623.
24 Accounts 623, 602 and 641 contain purchased electric power, purchased water

1 and general chemicals. These costs tend to vary with the total amount of water
2 consumption and thus are allocated based on base consumption only.

3 **Q. ARE THERE OTHER OPERATION AND MAINTENANCE EXPENSES TO WHICH THE**
4 **"EXPENSES FOLLOW PLANT PRINCIPLE" DOES NOT APPLY?**

5 A. Yes. Customer account expenses are allocated based on the weighted number of
6 bills with no meter reading cost allocated to private fire customers. The weights
7 are chosen recognizing that it generally costs more to handle bigger customers.

8 Property insurance expenses are allocated based on the resulting allocation of
9 total plant since this expense is linked to the amount of plant that the Company
10 requires in order to serve each customer class. Injuries and Damages, and
11 Employee Pensions and Benefits are payroll-related expenses so they were
12 allocated on the basis of the amount of labor expense that I had previously
13 allocated to each class. The remaining administrative and general expenses
14 accounts represent expenditures that support the Company's overall operation, so I
15 have allocated them on the basis of each customer class' share of total cost of
16 service.

17 **Q. HOW DID YOU ALLOCATE TAXES OTHER THAN INCOME TAXES?**

18 A. Property taxes were allocated on the basis of the amount of total plant that I had
19 previously allocated to each class. Other taxes in this category were allocated on
20 the basis of the amount of total cost of service.

Q. HOW DID YOU ALLOCATE STATE AND FEDERAL INCOME TAXES?

A. These taxes are allocated on the basis of rate base since a utility company's income taxes are a function of the size of its rate base and associated earnings. Thus, a class should contribute revenues for income taxes in accordance with the proportion of rate base that is necessary to serve it.

II. CLASS COST OF SERVICE STUDY RESULTS

Q. PLEASE DESCRIBE THE RESULTS OF OPC'S CCOS STUDY.

A. Schedule HH DIR-2.1, Table 1 and Table 1.1 show a summary of the results of OPC's CCOS study for each customer class in each of the seven districts of MAWC. Current rate revenues for each class in each district are also shown in Schedule HH DIR-2.2, Table 2 and 2.1 for comparison purposes. Schedules HH DIR-3.1.1 through 3.8.2 are detailed reports of OPC's CCOS Studies for the total company and each of the seven district of MAWC, and examples about how revenue increase can be allocated among customer classes to reflect cost of service.

It should be noted here that the CCOS studies that I developed were based on OPC's recommended overall rate of return of 8.24%, and the Company's cost filings. Our accounting staff and consultant have recommended substantial adjustments to the Company's costs. I intend to file updated CCOS studies that incorporate these and other adjustments when data is available. My CCOS studies can also be updated in the event that the Commission makes specific determinations about the appropriate rate of return and revenue requirement adjustments for the Company to reflect these changes.

Q. PLEASE SUMMARIZE THE RESULTS OF OPC'S CCOS STUDY.

A. The results of my COS studies show that for most districts, and for all districts combined, most customer classes are paying significantly above or below the proportion of the total costs that are incurred to serve that class. The residential class in all districts is paying a disproportionately large share of the total company cost of service. On the other hand, the industrial class in most districts and the sales for resale class in all districts are paying less than their appropriate share of the total cost of service.

Q. WHAT IS THE RELATIVE IMPORTANCE OF CCOS STUDY RESULTS IN RATE DESIGN?

A. My understanding is that the statutory obligation of the Commission is to set just and reasonable rates. A CCOS study provides the Commission with a general guide as to the "just" rate for the provision of service that corresponds to costs. Other factors must be considered when determining the "reasonable" rate for a service. These factors include the value of a service, affordability, rate impact, and rate continuity. The determination as to the manner in which all these factors are balanced by the Commission in setting the rates can only be determined on a case-by-case basis.

Q. IN YOUR OPINION, DO YOUR CLASS COS STUDIES SUPPORT THE CONTINUED USE OF SINGLE TARIFF PRICING FOR MAWC?

A. No. My COS studies show that different districts are currently paying rates that differ significantly from the actual cost of serving them. If the Commission determines that it is reasonable to move toward cost of service (within the limit of

1 other considerations) in a case with a possible revenue increase, the use of a
2 single tariff pricing structure moves in the opposite direction. For example, due
3 to the astronomical cost of the new St. Joseph water treatment plant, moving
4 toward cost of service implies that rates in St. Joseph district would have a larger
5 percent increase than those in other districts.

6 Furthermore, the results of my CCOS studies show that **class** cost structures are
7 different in each district. In other words, a certain customer class may represent
8 different percentage of cost of service for each specific district. Thus moving
9 toward cost of service may require different rates for the same class in different
10 districts.

11 This can be illustrated more clearly using an example of an \$8 million revenue
12 increase shown in Schedules HH DIR-3.1.2 through 3.8.2 and summerized in
13 Schedule HH DIR-4. In the example, current class revenue requirements are re-
14 allocated based on a movement toward the cost of service (movement would
15 equal one-half of the difference between current rates and the COS study) and
16 then the revenue increase is spread to each district and each customer class
17 accordingly. The \$8 million represents an increase of about 28% of the total
18 company revenue. However, moving toward cost of service would produce an
19 increase of 55% for the Brunswick district, 36% for the St. Joseph district and
20 only 19% for the Joplin district. For the residential class, this method produced a
21 range of increases from 16% to 27%.

22 **Q. HAS OPC PROPOSED A RATE DESIGN METHOD FOR THIS CASE?**

23 A. Yes. Another OPC witness James Busch will discuss the principles and method
24 of rate design that OPC recommends in this case.

Direct Testimony of
Hong Hu
Case No. WR-2000-281

1

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

2

A. Yes.

**Office of the Public Counsel
Allocators for COS Study
WR-2000-281**

Total Company	OTHER PUBLIC SALES FOR PRIVATE FIRE PUBLIC FIRE							TOTAL
	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	AUTHORITY	RESALE	SERVICE	SERVICE	
No. of Customers	84,710	8,522	210	662	27	891	-	95,022
Service Weighted Customers	84,135	10,565	660	1,259	165	4,845	-	101,628
Meters Weighted Customers	87,449	17,689	2,627	4,201	844	-	-	112,810
Base only	48.20%	20.34%	17.03%	4.47%	9.95%	0.00%	0.00%	100.00%
Base, Day	49.15%	20.18%	16.11%	4.44%	10.12%	0.00%	0.00%	100.00%
Base, Day, Hour	51.64%	19.88%	14.27%	4.37%	9.84%	0.00%	0.00%	100.00%
Base, Hour	52.75%	19.77%	13.57%	4.34%	9.57%	0.00%	0.00%	100.00%
Base, Day with Fire	47.62%	19.60%	15.71%	4.31%	9.81%	0.36%	2.58%	100.00%
Base, Day, Hour with Fire	47.67%	18.50%	13.49%	4.07%	9.16%	0.88%	6.23%	100.00%
Base, Hour with Fire	48.01%	18.19%	12.76%	4.00%	8.82%	1.02%	7.22%	100.00%
Meter Reading Wt. Customers	778,433	118,088	24,948	56,088	7,680	-	-	985,237
Customer Account	778,433	118,088	24,948	56,088	7,680	10,692	-	995,929
Direct allocation - FIRE	0	0	0	0	0	12.35%	87.65%	100.00%
Re-allo Public FIRE	84,710	8,522	210	662	0	0	0	94,104

**Office of the Public Counsel
Allocators for COS Study
WR-2000-281**

Brunswick	OTHER PUBLIC SALES FOR PRIVATE FIRE PUBLIC FIRE							TOTAL
	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	AUTHORITY	RESALE	SERVICE	SERVICE	
No. of Customers	398	73	3	6	1	5	-	486
Service Weighted Customers	395	78	4	8	10	12	-	506
Meters Weighted Customers	411	94	6	13	28	-	-	552
Base only	39.81%	11.21%	0.83%	1.58%	46.58%	0.00%	0.00%	100.00%
Base:Peak Day	39.49%	10.86%	0.73%	1.53%	47.38%	0.00%	0.00%	100.00%
Base:Peak Day:Peak Hour	40.76%	10.71%	0.63%	1.51%	46.39%	0.00%	0.00%	100.00%
Base:Peak Hour	41.93%	10.75%	0.60%	1.51%	45.21%	0.00%	0.00%	100.00%
Base, Day with Fire	38.05%	10.48%	0.71%	1.48%	45.57%	0.46%	3.25%	100.00%
Base, Day, Hour with Fire	37.54%	9.92%	0.60%	1.40%	42.89%	0.95%	6.71%	100.00%
Base, Hour with Fire	37.95%	9.81%	0.56%	1.38%	41.22%	1.12%	7.96%	100.00%
Meter Reading Wt. Customers	4,686	1,298	288	576	720	-	-	7,567
Customer Account	4,686	1,298	288	576	720	60	-	7,627
Direct allocation - FIRE	0	0	0	0	0	7.97%	92.03%	100.00%
Re-allo Public FIRE	398	73	3	6	0	0	0	480

**Office of the Public Counsel
Allocators for COS Study
WR-2000-281**

Joplin	OTHER PUBLIC SALES FOR PRIVATE FIRE PUBLIC FIRE							TOTAL
	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	AUTHORITY	RESALE	SERVICE	SERVICE	
No. of Customers	18,502	3,085	60	135	8	268	-	22,058
Service Weighted Customers	18,988	3,790	205	280	40	1,552	-	24,854
Meters Weighted Customers	20,832	6,041	867	953	203	-	-	28,895
Base only	38.99%	28.38%	21.38%	3.92%	7.33%	0.00%	0.00%	100.00%
Base:Peak Day	39.82%	28.27%	20.37%	3.90%	7.64%	0.00%	0.00%	100.00%
Base:Peak Day:Peak Hour	41.94%	28.25%	18.33%	3.89%	7.59%	0.00%	0.00%	100.00%
Base:Peak Hour	42.91%	28.28%	17.53%	3.90%	7.38%	0.00%	0.00%	100.00%
Base, Day with Fire	38.62%	27.48%	19.87%	3.79%	7.40%	0.35%	2.48%	100.00%
Base, Day, Hour with Fire	38.83%	26.33%	17.35%	3.63%	7.06%	0.84%	5.96%	100.00%
Base, Hour with Fire	39.16%	26.05%	16.49%	3.59%	6.79%	0.98%	6.93%	100.00%
Meter Reading Wt. Customers	217,021	55,698	8,028	13,600	1,860	-	-	296,207
Customer Account	217,021	55,698	8,028	13,600	1,860	3,216	-	299,423
Direct allocation - FIRE	0	0	0	0	0	21.53%	78.47%	100.00%
Re-allo Public FIRE	18,502	3,085	60	135	0	0	0	21,782

**Office of the Public Counsel
Allocators for COS Study
WR-2000-281**

Mexico	OTHER PUBLIC SALES FOR PRIVATE FIRE PUBLIC FIRE							TOTAL
	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	AUTHORITY	RESALE	SERVICE	SERVICE	
No. of Customers	4,321	479	13	99	2	63	-	4,977
Service Weighted Customers	4,292	568	75	153	16	413	-	5,517
Meters Weighted Customers	4,310	869	415	390	62	-	-	6,046
Base only	32.53%	13.80%	31.32%	6.63%	15.71%	0.00%	0.00%	100.00%
Base:Peak Day	33.08%	13.88%	30.08%	6.66%	16.31%	0.00%	0.00%	100.00%
Base:Peak Day:Peak Hour	35.52%	14.03%	27.26%	6.73%	16.45%	0.00%	0.00%	100.00%
Base:Peak Hour	36.79%	14.10%	26.13%	6.76%	16.23%	0.00%	0.00%	100.00%
Base, Day with Fire	32.10%	13.48%	29.34%	6.47%	15.80%	0.35%	2.46%	100.00%
Base, Day, Hour with Fire	32.81%	13.05%	25.75%	6.26%	15.27%	0.85%	6.01%	100.00%
Base, Hour with Fire	33.48%	12.95%	24.52%	6.21%	14.89%	0.98%	6.97%	100.00%
Meter Reading Wt. Customers	51,424	8,441	2,396	8,544	864	-	-	71,668
Customer Account	51,424	8,441	2,396	8,544	864	756	-	72,424
Direct allocation - FIRE	0	0	0	0	0	16.60%	83.40%	100.00%
Re-allo Public FIRE	4,321	479	13	99	0	0	0	4,912

**Office of the Public Counsel
Allocators for COS Study
WR-2000-281**

Parksville	OTHER PUBLIC SALES FOR PRIVATE FIRE PUBLIC FIRE							TOTAL
	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	AUTHORITY	RESALE	SERVICE	SERVICE	
No. of Customers	4,043	303	11	45	3	60	-	4,465
Service Weighted Customers	4,027	386	18	74	13	237	-	4,755
Meters Weighted Customers	4,267	734	41	203	70	-	-	5,315
Base only	64.86%	17.62%	0.81%	3.77%	12.94%	0.00%	0.00%	100.00%
Base:Peak Day	65.02%	17.26%	0.73%	3.69%	13.30%	0.00%	0.00%	100.00%
Base:Peak Day:Peak Hour	65.13%	17.31%	0.64%	3.69%	13.24%	0.00%	0.00%	100.00%
Base:Peak Hour	65.14%	17.51%	0.61%	3.73%	13.01%	0.00%	0.00%	100.00%
Base, Day with Fire	62.66%	16.67%	0.71%	3.56%	12.79%	0.45%	3.17%	100.00%
Base, Day, Hour with Fire	60.29%	16.04%	0.60%	3.42%	12.24%	0.91%	6.49%	100.00%
Base, Hour with Fire	59.37%	15.98%	0.57%	3.40%	11.86%	1.09%	7.73%	100.00%
Meter Reading Wt. Customers	47,336	5,309	1,148	4,200	576	-	-	58,569
Customer Account	47,336	5,309	1,148	4,200	576	720	-	59,289
Direct allocation - FIRE	0	0	0	0	0	13.63%	86.37%	100.00%
Re-allo Public FIRE	4,043	303	11	45	0	0	0	4,402

**Office of the Public Counsel
Allocators for COS Study
WR-2000-281**

St. Charles	OTHER PUBLIC SALES FOR PRIVATE FIRE PUBLIC FIRE							TOTAL
	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	AUTHORITY	RESALE	SERVICE	SERVICE	
No. of Customers	25,002	807	2	59	-	101	-	25,971
Service Weighted Customers	24,492	1,254	5	162	-	591	-	26,504
Meters Weighted Customers	25,025	2,949	16	859	-	-	-	28,850
Base only	83.55%	13.60%	0.09%	2.75%	0.00%	0.00%	0.00%	100.00%
Base:Peak Day	83.88%	13.34%	0.08%	2.70%	0.00%	0.00%	0.00%	100.00%
Base:Peak Day:Peak Hour	84.55%	12.80%	0.06%	2.59%	0.00%	0.00%	0.00%	100.00%
Base:Peak Hour	84.83%	12.57%	0.06%	2.54%	0.00%	0.00%	0.00%	100.00%
Base, Day with Fire	80.84%	12.88%	0.08%	2.61%	0.00%	0.45%	3.16%	100.00%
Base, Day, Hour with Fire	77.62%	11.83%	0.06%	2.39%	0.00%	1.00%	7.10%	100.00%
Base, Hour with Fire	76.76%	11.47%	0.05%	2.32%	0.00%	1.16%	8.25%	100.00%
Meter Reading Wt. Customers	290,810	14,068	188	5,192	-	-	-	310,257
Customer Account	290,810	14,068	188	5,192	-	1,212	-	311,469
Direct allocation - FIRE	0	0	0	0	0	4.98%	95.02%	100.00%
Re-allo Public FIRE	25,002	807	2	59	0	0	0	25,870

**Office of the Public Counsel
Allocators for COS Study
WR-2000-281**

St. Joseph	OTHER PUBLIC SALES FOR PRIVATE FIRE PUBLIC FIRE							TOTAL
	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	AUTHORITY	REALE	SERVICE	SERVICE	
No. of Customers	27,237	3,188	107	191	11	334	-	31,068
Service Weighted Customers	26,863	3,748	321	361	78	1,709	-	33,079
Meters Weighted Customers	27,520	5,746	1,168	1,034	440	-	-	35,910
Base only	36.35%	19.64%	25.00%	3.49%	15.52%	0.00%	0.00%	100.00%
Base:Peak Day	36.62%	19.66%	24.31%	3.49%	15.93%	0.00%	0.00%	100.00%
Base:Peak Day:Peak Hour	38.89%	19.57%	22.22%	3.47%	15.85%	0.00%	0.00%	100.00%
Base:Peak Hour	40.10%	19.51%	21.35%	3.45%	15.58%	0.00%	0.00%	100.00%
Base, Day with Fire	35.65%	19.15%	23.74%	3.40%	15.48%	0.32%	2.26%	100.00%
Base, Day, Hour with Fire	36.05%	18.28%	21.00%	3.24%	14.78%	0.82%	5.82%	100.00%
Base, Hour with Fire	36.68%	18.03%	20.06%	3.19%	14.38%	0.95%	6.71%	100.00%
Meter Reading Wt. Customers	106,258	22,754	11,564	12,140	3,228	-	-	155,944
Customer Account	106,258	22,754	11,564	12,140	3,228	4,008	-	159,952
Direct allocation - FIRE	0	0	0	0	0	13.23%	86.77%	100.00%
Re-allo Public FIRE	27,237	3,188	107	191	0	0	0	30,723

**Office of the Public Counsel
Allocators for COS Study
WR-2000-281**

Warrensburg	OTHER PUBLIC SALES FOR PRIVATE FIRE PUBLIC FIRE							TOTAL
	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	AUTHORITY	RESALE	SERVICE	SERVICE	
No. of Customers	5,207	587	14	127	2	60	-	5,997
Service Weighted Customers	5,078	742	31	222	9	333	-	6,414
Meters Weighted Customers	5,084	1,256	115	748	41	-	-	7,244
Base only	41.42%	22.34%	7.98%	17.15%	11.11%	0.00%	0.00%	100.00%
Base:Peak Day	41.71%	22.24%	7.58%	17.05%	11.42%	0.00%	0.00%	100.00%
Base:Peak Day:Peak Hour	43.53%	21.86%	6.68%	16.74%	11.20%	0.00%	0.00%	100.00%
Base:Peak Hour	44.48%	21.68%	6.34%	16.59%	10.90%	0.00%	0.00%	100.00%
Base, Day with Fire	40.47%	21.59%	7.39%	16.56%	11.06%	0.36%	2.56%	100.00%
Base, Day, Hour with Fire	40.19%	20.32%	6.30%	15.56%	10.39%	0.89%	6.34%	100.00%
Base, Hour with Fire	40.51%	19.93%	5.95%	15.26%	10.01%	1.03%	7.31%	100.00%
Meter Reading Wt. Customers	60,900	10,521	1,336	11,836	432	-	-	85,025
Customer Account	60,900	10,521	1,336	11,836	432	720	-	85,745
Direct allocation - FIRE	0	0	0	0	0	9.81%	90.19%	100.00%
Re-allo Public FIRE	5,207	587	14	127	0	0	0	5,935

Office of the Public Counsel
Summary of Cost of Service Results
WR-2000-281

Table 1 - Summary: Cost of Service by District by Class

	TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER PUBLIC AUTHORITY	SALES FOR RESALE	FIRE SERVICE
Total	43,042,445 100%	24,164,044 56%	7,860,138 18%	5,403,178 13%	1,772,923 4%	3,440,401 8%	401,761 1%
Brunswick	330,598 100%	145,847 44%	37,977 11%	2,847 1%	6,007 2%	135,926 41%	1,994 1%
Joplin	7,476,989 100%	3,885,338 52%	1,832,988 25%	999,988 13%	256,945 3%	385,537 5%	116,194 2%
Mexico	2,768,714 100%	1,172,776 42%	367,971 13%	654,177 24%	187,319 7%	357,003 13%	29,469 1%
Parkville	2,475,922 100%	1,686,140 68%	387,407 16%	18,005 1%	90,105 4%	266,392 11%	27,873 1%
St. Charles	9,121,273 100%	7,835,488 86%	988,955 11%	5,566 0%	203,588 2%	- 0%	87,677 1%
St. Joseph	18,372,710 100%	7,695,879 42%	3,453,584 19%	3,893,654 21%	645,968 4%	2,572,874 14%	110,751 1%
Warrensburg	2,490,364 100%	1,257,303 50%	488,945 20%	142,087 6%	364,213 15%	212,240 9%	25,576 1%

Table 1.1 - Summary: Cost of Service by District by Class (as a percentage of total cost of service)

	TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER PUBLIC AUTHORITY	SALES FOR RESALE	PRIVATE FIRE SERVICE
Company	100.00%	56.14%	18.26%	12.55%	4.12%	7.99%	0.93%
Brunswick	0.77%	0.34%	0.09%	0.01%	0.01%	0.32%	0.00%
Joplin	17.37%	9.03%	4.26%	2.32%	0.60%	0.90%	0.27%
Mexico	6.43%	2.72%	0.85%	1.52%	0.44%	0.83%	0.07%
Parkville	5.75%	3.92%	0.90%	0.04%	0.21%	0.62%	0.06%
St. Charles	21.19%	18.20%	2.30%	0.01%	0.47%	0.00%	0.20%
St. Joseph	42.69%	17.88%	8.02%	9.05%	1.50%	5.98%	0.26%
Warrensburg	5.79%	2.92%	1.14%	0.33%	0.85%	0.49%	0.06%

Office of the Public Counsel
Summary of Cost of Service Results
WR-2000-281

Table 2 - Summary: Current Rate Revenue by District by Class

	TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER PUBLIC AUTHORITY	SALES FOR RESALE	PRIVATE FIRE SERVICE
Company	28,782,864 100%	18,558,216 64%	5,295,171 18%	2,247,641 8%	1,001,744 3%	1,203,141 4%	476,951 2%
Brunswick	112,062 100%	64,758 58%	15,741 14%	1,080 1%	2,127 2%	25,802 23%	2,554 2%
Joplin	7,193,280 100%	3,985,125 55%	1,837,530 26%	744,431 10%	222,671 3%	252,682 4%	150,841 2%
Mexico	1,528,010 100%	790,762 52%	231,493 15%	252,255 17%	99,095 6%	115,652 8%	38,753 3%
Parkville	1,441,770 100%	1,058,802 73%	211,020 15%	10,936 1%	42,266 3%	84,386 6%	34,360 2%
St. Charles	7,173,569 100%	6,208,632 87%	771,039 11%	4,707 0%	138,510 2%	- 0%	50,681 1%
St. Joseph	9,525,428 100%	5,424,815 57%	1,848,239 19%	1,151,030 12%	279,754 3%	647,439 7%	174,151 2%
Warrensburg	1,808,745 100%	1,025,322 57%	380,109 21%	83,202 5%	217,321 12%	77,180 4%	25,611 1%

Table 2.1 - Summary: Current Rate Revenue by District by Class (as a percentage of total revenue)

	TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER PUBLIC AUTHORITY	SALES FOR RESALE	PRIVATE FIRE SERVICE
Company	100.00%	64.48%	18.40%	7.81%	3.48%	4.18%	1.66%
Brunswick	0.39%	0.22%	0.05%	0.00%	0.01%	0.09%	0.01%
Joplin	24.99%	13.85%	6.38%	2.59%	0.77%	0.88%	0.52%
Mexico	5.31%	2.75%	0.80%	0.88%	0.34%	0.40%	0.13%
Parkville	5.01%	3.68%	0.73%	0.04%	0.15%	0.29%	0.12%
St. Charles	24.92%	21.57%	2.68%	0.02%	0.48%	0.00%	0.18%
St. Joseph	33.09%	18.85%	6.42%	4.00%	0.97%	2.25%	0.61%
Warrensburg	6.28%	3.56%	1.32%	0.29%	0.76%	0.27%	0.09%

Office of the Public Counsel
MAWC Class Cost of Service Summary

TOTAL COMPANY

CLASS COST OF SERVICE SUMMARY:		TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER PUBLIC AUTHORITY	SALES FOR RESALE	PRIVATE FIRE SERVICE	PUBLIC FIRE SERVICE
1	O & M Expenses	15,623,548	8,600,527	2,727,443	1,841,128	683,060	1,132,345	111,033	528,011
2	Depreciation Expenses	4,497,489	2,251,199	818,106	601,232	176,127	388,726	47,431	214,668
3	Taxes	9,365,343	4,696,165	1,682,360	1,200,990	367,397	779,218	100,545	538,668
4	TOTAL Expenses and Taxes	29,486,380	15,547,891	5,227,909	3,643,350	1,226,584	2,300,290	259,009	1,281,348
5									
6	Spread public fire expenses & taxes to others	15	1,281,348	1,153,436	116,038	2,859	9,014	0	(1,281,348)
7	TOTAL Expenses and Taxes after Spread	29,486,380	16,701,328	5,343,947	3,646,209	1,235,598	2,300,290	259,009	-
8									
9	Current Revenue								
10	Rate Revenue	28,782,864	18,558,216	5,295,171	2,247,641	1,001,744	1,203,141	476,951	0
11	Other Revenue	25	21,433	11,826	3,970	2,765	933	196	0
12	TOTAL Current Revenues	28,804,297	18,570,042	5,299,141	2,250,406	1,002,677	1,204,885	477,147	0
13	Current Revenue Percentage	100.00%	64.47%	18.40%	7.81%	3.48%	4.18%	1.66%	0.00%
14									
15	OPERATING INCOME	(682,083)	1,868,714	(44,806)	(1,395,804)	(232,921)	(1,095,405)	218,138	0
16									
17	TOTAL Rate Base	164,515,358	82,150,203	29,689,560	21,301,566	6,455,164	13,836,299	1,732,434	9,350,133
18									
19	Spread public fire rate base to others	15	9,350,133	8,416,749	846,742	20,866	65,776	0	(9,350,133)
20	TOTAL Rate Base after Spread	164,515,358	90,566,952	30,536,302	21,322,432	6,520,940	13,836,299	1,732,434	-
21									
22	Implicit Rate of Return (ROR)	-0.41%	2.06%	-0.15%	-6.55%	-3.57%	-7.92%	12.59%	
23									
24	Operating Income with Equalized ROR	(682,083)	(375,492)	(126,604)	(88,403)	(27,036)	(57,365)	(7,183)	
25									
26	Class COS with Equalized ROR	28,804,297	16,325,836	5,217,343	3,557,806	1,208,562	2,242,924	251,826	
27	Class COS Percentage	100.00%	56.68%	18.11%	12.35%	4.20%	7.79%	0.87%	
28									
29	OPC Recommended ROR	8.24%	8.24%	8.24%	8.24%	8.24%	8.24%	8.24%	
30									
31	Operating Income with Recommended ROR	13,556,066	7,462,717	2,516,191	1,756,968	537,325	1,140,111	142,753	
32									
33	Class COS with Recommended ROR	43,042,445	24,164,044	7,860,138	5,403,178	1,772,923	3,440,401	401,761	
34	Class COS Percentage	100.00%	56.14%	18.26%	12.55%	4.12%	7.99%	0.93%	

Office of the Public Counsel
MAWC Class Cost of Service Summary

	TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OPA	SFR	PRIVATE FIRE
1 Current Revenue	28,804,297	18,570,042	5,299,141	2,250,406	1,002,677	1,204,885	477,147
2 Class Percentage	100.00%	64.47%	18.40%	7.81%	3.48%	4.18%	1.66%
3							
4 Class COS with Equalized ROR	28,804,297	16,325,836	5,217,343	3,557,806	1,208,562	2,242,924	251,826
5 Class COS Percentage	100.00%	56.68%	18.11%	12.35%	4.20%	7.79%	0.87%
6							
7 Margin Revenue Required to Equalized ROR	28,804,297	16,325,836	5,217,343	3,557,806	1,208,562	2,242,924	251,826
8 Revenue Neutral Shift to Equalize Class ROR	0	(2,244,206)	(81,798)	1,307,401	205,885	1,038,039	(225,321)
9 Revenue Increase/Decrease Percentage	0.00%	-12.09%	-1.54%	58.10%	20.53%	86.15%	-47.22%
10							
11 1/2 of Revenue Neutral Shift	0	(1,122,103)	(40,899)	653,700	102,942	519,020	(112,660)
12 Revenue Increase/Decrease Percentage	0.00%	-6.04%	-0.77%	29.05%	10.27%	43.08%	-23.61%
13							
14 Recommended Margin Revenue	28,804,297	17,447,939	5,258,242	2,904,106	1,105,619	1,723,905	364,486
15 Recommended Class Revenue Percentage	100.00%	60.57%	18.26%	10.08%	3.84%	5.98%	1.27%
16							
17 Spread of Revenue Increase							
18 Example: Revenue Increase of 8 mil	8,000,000	4,845,927	1,460,405	806,576	307,071	478,791	101,231
19 Example: Revenue Increase of 12 mil	12,000,000	7,268,890	2,190,607	1,209,864	460,606	718,187	151,847
20 Example: Revenue Increase of 16 mil	16,000,000	9,691,853	2,920,810	1,613,152	614,141	957,582	202,462
21							
22 Combining Revenue Neutral Shift and Revenue Increase							
23 Example: Revenue Increase of 8 mil	8,000,000	3,723,824	1,419,506	1,460,276	410,013	997,811	(11,429)
24 Example: Revenue Increase of 12 mil	12,000,000	6,146,787	2,149,708	1,863,564	563,548	1,237,206	39,186
25 Example: Revenue Increase of 16 mil	16,000,000	8,569,750	2,879,911	2,266,852	717,084	1,476,602	89,802
26							
27 Adjust to eliminate negative increase							
28 Example: Revenue Increase of 8 mil	8,000,000	3,718,511	1,417,481	1,458,193	409,428	996,387	-
29 Example: Revenue Increase of 12 mil	12,000,000	6,146,787	2,149,708	1,863,564	563,548	1,237,206	39,186
30 Example: Revenue Increase of 16 mil	16,000,000	8,569,750	2,879,911	2,266,852	717,084	1,476,602	89,802
31							
32 Percentage of Net Revenue Increase							
33 Example: Revenue Increase of 8 mil	27.77%	20.02%	26.75%	64.80%	40.83%	82.70%	0.00%
34 Example: Revenue Increase of 12 mil	41.66%	33.10%	40.57%	82.81%	56.20%	102.68%	8.21%
35 Example: Revenue Increase of 16 mil	55.55%	46.15%	54.35%	100.73%	71.52%	122.55%	18.82%
36							
37 Class Revenue							
38 Example: Revenue Increase of 8 mil	36,804,297	22,293,865	6,718,647	3,710,682	1,412,690	2,202,696	465,718
39 Example: Revenue Increase of 12 mil	40,804,297	24,716,829	7,448,849	4,113,970	1,566,225	2,442,091	516,333
40 Example: Revenue Increase of 16 mil	44,804,297	27,139,792	8,179,051	4,517,258	1,719,761	2,681,487	566,949
41							
42 Percentage of Class Revenue							
43 Example: Revenue Increase of 8 mil	100.00%	60.57%	18.26%	10.08%	3.84%	5.98%	1.27%
44 Example: Revenue Increase of 12 mil	100.00%	60.57%	18.26%	10.08%	3.84%	5.98%	1.27%
45 Example: Revenue Increase of 16 mil	100.00%	60.57%	18.26%	10.08%	3.84%	5.98%	1.27%

**Office of the Public Counsel
MAWC Class Cost of Service Summary**

Brunswick District

CLASS COST OF SERVICE SUMMARY:		TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER PUBLIC AUTHORITY	SALES FOR RESALE	PRIVATE FIRE SERVICE	PUBLIC FIRE SERVICE
1	O & M Expenses	186,781	75,197	20,613	1,754	3,680	81,104	663	3,770
2	Depreciation Expenses	28,756	11,458	2,980	190	405	11,496	260	1,967
3	Taxes	50,020	20,612	5,362	372	793	19,393	418	3,070
4	TOTAL Expenses and Taxes	265,557	107,266	28,956	2,316	4,878	111,993	1,340	8,808
5									
6	Spread public fire expenses & taxes to others	15 8,808	7,303	1,339	55	110	0	0	(8,808)
7	TOTAL Expenses and Taxes after Spread	265,557	114,569	30,295	2,371	4,988	111,993	1,340	-
8									
9	Current Revenue								
10	Rate Revenue	112,062	64,758	15,741	1,080	2,127	25,802	2,554	0
11	Other Revenue	25 55	21	6	1	1	27	(0)	0
12	TOTAL Current Revenues	112,117	64,779	15,747	1,081	2,128	25,829	2,554	0
13	Current Revenue Percentage	100.00%	57.78%	14.05%	0.96%	1.90%	23.04%	2.28%	0.00%
14									
15	OPERATING INCOME	(153,440)	(49,791)	(14,548)	(1,290)	(2,860)	(86,164)	1,214	0
16									
17	TOTAL Rate Base	789,339	330,725	84,261	5,413	11,631	290,455	7,928	58,926
18									
19	Spread public fire rate base to others	15 58,926	48,859	8,962	368	737	0	0	(58,926)
20	TOTAL Rate Base after Spread	789,339	379,584	93,222	5,781	12,368	290,455	7,928	-
21									
22	Implicit Rate of Return (ROR)	-19.44%	-13.12%	-15.61%	-22.32%	-23.12%	-29.67%	15.31%	
23									
24	Operating Income with Equalized ROR	(153,440)	(73,787)	(18,122)	(1,124)	(2,404)	(56,462)	(1,541)	
25									
26	Class COS with Equalized ROR	112,117	40,782	12,174	1,247	2,584	55,531	(201)	
27	Class COS Percentage	100.00%	36.37%	10.86%	1.11%	2.30%	49.53%	-0.18%	
28									
29	OPC Recommended ROR	8.24%	8.24%	8.24%	8.24%	8.24%	8.24%	8.24%	
30									
31	Operating Income with Recommended ROR	65,041	31,278	7,682	476	1,019	23,934	653	
32									
33	Class COS with Recommended ROR	330,598	145,847	37,977	2,847	6,007	135,926	1,994	
34	Class COS Percentage	100.00%	44.12%	11.49%	0.86%	1.82%	41.12%	0.60%	

**Office of the Public Counsel
MAWC Class Cost of Service Summary**

	TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OPA	SFR	PRIVATE FIRE
1 Current Rate Revenue	112,117	64,779	15,747	1,081	2,128	25,829	2,554
2 Class Percentage	100.00%	57.78%	14.05%	0.96%	1.90%	23.04%	2.28%
3							
4 Class COS with Equalized ROR	112,117	40,782	12,174	1,247	2,584	55,531	(201)
5 Class COS Percentage	100.00%	36.37%	10.86%	1.11%	2.30%	49.53%	-0.18%
6							
7 Margin Revenue Required to Equalize ROR	112,117	40,782	12,174	1,247	2,584	55,531	(201)
8 Revenue Neutral Shift to Equalize Class ROR	(0)	(23,996)	(3,573)	166	456	29,703	(2,755)
9 Revenue Increase/Decrease Percentage	0.00%	-37.04%	-22.69%	15.40%	21.41%	115.00%	-107.87%
10							
11 1/2 of Revenue Neutral Shift	(0)	(11,998)	(1,787)	83	228	14,851	(1,377)
12 Revenue Increase/Decrease Percentage	0.00%	-18.52%	-11.35%	7.70%	10.70%	57.50%	-53.93%
13							
14 Recommended Margin Revenue	112,117	52,780	13,960	1,164	2,356	40,680	1,177
15 Recommended Class Revenue Percentage	100.00%	47.08%	12.45%	1.04%	2.10%	36.28%	1.05%
16							
17 Spread of Revenue Increase							
18 Example: Revenue Increase of 8 mil	61,454	28,930	7,652	638	1,291	22,298	645
19 Example: Revenue Increase of 12 mil	92,182	43,395	11,478	957	1,937	33,447	967
20 Example: Revenue Increase of 16 mil	122,909	57,861	15,304	1,276	2,583	44,596	1,290
21							
22 Combining Revenue Neutral Shift and Revenue Increase							
23 Example: Revenue Increase of 8 mil	61,454	16,932	5,865	721	1,519	37,149	(733)
24 Example: Revenue Increase of 12 mil	92,182	31,397	9,691	1,040	2,165	48,298	(410)
25 Example: Revenue Increase of 16 mil	122,909	45,862	13,517	1,359	2,811	59,447	(88)
26							
27 Adjust to eliminate negative increase							
28 Example: Revenue Increase of 8 mil	61,454	16,733	5,796	713	1,501	36,711	-
29 Example: Revenue Increase of 12 mil	92,182	31,258	9,649	1,036	2,155	48,084	-
30 Example: Revenue Increase of 16 mil	122,909	45,830	13,508	1,358	2,809	59,404	-
31							
32 Percentage of Net Revenue Increase							
33 Example: Revenue Increase of 8 mil	54.81%	25.83%	36.81%	65.95%	70.54%	142.13%	0.00%
34 Example: Revenue Increase of 12 mil	82.22%	48.25%	61.27%	95.83%	101.27%	186.17%	0.00%
35 Example: Revenue Increase of 16 mil	109.63%	70.75%	85.78%	125.68%	131.97%	229.99%	0.00%
36							
37 Class Revenue							
38 Example: Revenue Increase of 8 mil	173,571	81,711	21,612	1,802	3,647	62,978	1,821
39 Example: Revenue Increase of 12 mil	204,299	96,176	25,438	2,121	4,293	74,127	2,144
40 Example: Revenue Increase of 16 mil	235,026	110,641	29,264	2,440	4,939	85,275	2,466
41							
42 Percentage of Class Revenue							
43 Example: Revenue Increase of 8 mil	100.00%	47.08%	12.45%	1.04%	2.10%	36.28%	1.05%
44 Example: Revenue Increase of 12 mil	100.00%	47.08%	12.45%	1.04%	2.10%	36.28%	1.05%
45 Example: Revenue Increase of 16 mil	100.00%	47.08%	12.45%	1.04%	2.10%	36.28%	1.05%

**Office of the Public Counsel
MAWC Class Cost of Service Summary**

Joplin District

CLASS COST OF SERVICE SUMMARY:		TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER PUBLIC AUTHORITY	SALES FOR RESALE	PRIVATE FIRE SERVICE	PUBLIC FIRE SERVICE
1	O & M Expenses	3,297,462	1,664,433	786,644	423,684	122,159	158,213	35,237	107,092
2	Depreciation Expenses	663,884	305,639	158,748	93,654	20,622	37,022	14,242	33,957
3	Taxes	1,940,068	903,331	464,229	265,888	62,056	104,944	36,477	103,143
4	TOTAL Expenses and Taxes	5,901,414	2,873,403	1,409,621	783,225	204,838	300,180	85,957	244,191
5									
6	Spread public fire expenses & taxes to others	15 244,191	207,420	34,585	673	1,513	0	0	(244,191)
7	TOTAL Expenses and Taxes after Spread	5,901,414	3,080,823	1,444,206	783,898	206,351	300,180	85,957	-
8									
9	Current Revenue								
10	Rate Revenue	7,193,280	3,985,125	1,837,530	744,431	222,671	252,682	150,841	0
11	Other Revenue	25 2,683	1,355	670	374	96	144	43	0
12	TOTAL Current Revenues	7,195,963	3,986,480	1,838,200	744,805	222,767	252,826	150,884	0
13	Current Revenue Percentage	100.00%	55.40%	25.54%	10.35%	3.10%	3.51%	2.10%	0.00%
14									
15	OPERATING INCOME	1,294,549	905,657	393,994	(39,093)	16,416	(47,354)	64,928	0
16									
17	TOTAL Rate Base	19,121,050	8,882,697	4,571,356	2,619,590	607,577	1,035,888	366,957	1,036,986
18									
19	Spread public fire rate base to others	15 1,036,986	880,834	146,869	2,856	6,427	0	0	(1,036,986)
20	TOTAL Rate Base after Spread	19,121,050	9,763,530	4,718,225	2,622,447	614,004	1,035,888	366,957	-
21									
22	Implicit Rate of Return (ROR)	6.77%	9.28%	8.35%	-1.49%	2.67%	-4.57%	17.69%	
23									
24	Operating Income with Equalized ROR	1,294,549	661,018	319,437	177,547	41,570	70,132	24,844	
25									
26	Class COS with Equalized ROR	7,195,963	3,741,841	1,763,643	961,445	247,921	370,312	110,801	
27	Class COS Percentage	100.00%	52.00%	24.51%	13.36%	3.45%	5.15%	1.54%	
28									
29	OPC Recommended ROR	8.24%	8.24%	8.24%	8.24%	8.24%	8.24%	8.24%	
30									
31	Operating Income with Recommended ROR	1,575,575	804,515	388,782	216,090	50,594	85,357	30,237	
32									
33	Class COS with Recommended ROR	7,476,989	3,885,338	1,832,988	999,988	256,945	385,537	116,194	
34	Class COS Percentage	100.00%	51.96%	24.52%	13.37%	3.44%	5.16%	1.55%	

**Office of the Public Counsel
MAWC Class Cost of Service Summary**

	TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OPA	SIR	PRIVATE FIRE
1 Current Rate Revenue	7,195,963	3,986,480	1,838,200	744,805	222,767	252,826	150,884
2 Class Percentage	100.00%	55.40%	25.54%	10.35%	3.10%	3.51%	2.10%
3							
4 Class COS with Equalized ROR	7,195,963	3,741,841	1,763,643	961,445	247,921	370,312	110,801
5 Class COS Percentage	100.00%	52.00%	24.51%	13.36%	3.45%	5.15%	1.54%
6							
7 Margin Revenue Required to Equalized ROR	7,195,963	3,741,841	1,763,643	961,445	247,921	370,312	110,801
8 Revenue Neutral Shift to Equalize Class ROR	0	(244,639)	(74,557)	216,640	25,154	117,486	(40,084)
9 Revenue Increase/Decrease Percentage	0.00%	-6.14%	-4.06%	29.09%	11.29%	46.47%	-26.57%
10							
11 1/2 of Revenue Neutral Shift	0	(122,319)	(37,279)	108,320	12,577	58,743	(20,042)
12 Revenue Increase/Decrease Percentage	0.00%	-3.07%	-2.03%	14.54%	5.65%	23.23%	-13.28%
13							
14 Recommended Margin Revenue	7,195,963	3,864,161	1,800,922	853,125	235,344	311,569	130,842
15 Recommended Class Revenue Percentage	100.00%	53.70%	25.03%	11.86%	3.27%	4.33%	1.82%
16							
17 Spread of Revenue Increase							
18 Example: Revenue Increase of 8 mil	1,389,886	746,355	347,844	164,779	45,456	60,179	25,272
19 Example: Revenue Increase of 12 mil	2,084,828	1,119,532	521,767	247,169	68,184	90,268	37,908
20 Example: Revenue Increase of 16 mil	2,779,771	1,492,710	695,689	329,559	90,912	120,358	50,544
21							
22 Combining Revenue Neutral Shift and Revenue Increase							
23 Example: Revenue Increase of 8 mil	1,389,886	624,035	310,566	273,099	58,033	118,922	5,230
24 Example: Revenue Increase of 12 mil	2,084,828	997,213	484,488	355,489	80,761	149,011	17,866
25 Example: Revenue Increase of 16 mil	2,779,771	1,370,390	658,410	437,879	103,489	179,101	30,502
26							
27 Adjust to eliminate negative increase							
28 Example: Revenue Increase of 8 mil	1,389,886	624,035	310,566	273,099	58,033	118,922	5,230
29 Example: Revenue Increase of 12 mil	2,084,828	997,213	484,488	355,489	80,761	149,011	17,866
30 Example: Revenue Increase of 16 mil	2,779,771	1,370,390	658,410	437,879	103,489	179,101	30,502
31							
32 Percentage of Net Revenue Increase							
33 Example: Revenue Increase of 8 mil	19.31%	15.65%	16.90%	36.67%	26.05%	47.04%	3.47%
34 Example: Revenue Increase of 12 mil	28.97%	25.01%	26.36%	47.73%	36.25%	58.94%	11.84%
35 Example: Revenue Increase of 16 mil	38.63%	34.38%	35.82%	58.79%	46.46%	70.84%	20.22%
36							
37 Class Revenue							
38 Example: Revenue Increase of 8 mil	8,585,849	4,610,515	2,148,766	1,017,905	280,800	371,748	156,114
39 Example: Revenue Increase of 12 mil	9,280,791	4,983,693	2,322,688	1,100,294	303,528	401,838	168,750
40 Example: Revenue Increase of 16 mil	9,975,734	5,356,870	2,496,610	1,182,684	326,256	431,927	181,386
41							
42 Percentage of Class Revenue							
43 Example: Revenue Increase of 8 mil	100.00%	53.70%	25.03%	11.86%	3.27%	4.33%	1.82%
44 Example: Revenue Increase of 12 mil	100.00%	53.70%	25.03%	11.86%	3.27%	4.33%	1.82%
45 Example: Revenue Increase of 16 mil	100.00%	53.70%	25.03%	11.86%	3.27%	4.33%	1.82%

**Office of the Public Counsel
MAWC Class Cost of Service Summary**

Mexico District

CLASS COST OF SERVICE SUMMARY:		TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER PUBLIC AUTHORITY	SALES FOR RESALE	PRIVATE FIRE SERVICE	PUBLIC FIRE SERVICE
1	O & M Expenses	1,067,662	457,484	136,638	228,256	81,563	121,445	8,603	33,674
2	Depreciation Expenses	334,100	118,343	43,047	85,479	20,090	47,330	4,658	15,154
3	Taxes	452,844	168,505	58,942	111,974	27,926	61,893	5,361	18,244
4	TOTAL Expenses and Taxes	1,854,607	744,332	238,627	425,709	129,578	230,668	18,622	67,072
5									
6	Spread public fire expenses & taxes to others	15 67,072	59,002	6,541	178	1,352	0	0	(67,072)
7	TOTAL Expenses and Taxes after Spread	1,854,607	803,334	245,167	425,887	130,930	230,668	18,622	-
8									
9	Current Revenue								
10	Rate Revenue	1,528,010	790,762	231,493	252,255	99,095	115,652	38,753	0
11	Other Revenue	25 876	371	117	205	65	110	9	0
12	TOTAL Current Revenues	1,528,886	791,133	231,610	252,460	99,160	115,762	38,762	0
13	Current Revenue Percentage	100.00%	51.75%	15.15%	16.51%	6.49%	7.57%	2.54%	0.00%
14									
15	OPERATING INCOME	(325,721)	(12,201)	(13,558)	(173,427)	(31,770)	(114,905)	20,140	0
16									
17	TOTAL Rate Base	11,093,530	4,093,134	1,447,059	2,769,338	675,392	1,533,193	131,637	443,777
18									
19	Spread public fire rate base to others	15 443,777	390,383	43,275	1,174	8,944	0	0	(443,777)
20	TOTAL Rate Base after Spread	11,093,530	4,483,517	1,490,334	2,770,512	684,337	1,533,193	131,637	-
21									
22	Implicit Rate of Return (ROR)	-2.94%	-0.27%	-0.91%	-6.26%	-4.64%	-7.49%	15.30%	
23									
24	Operating Income with Equalized ROR	(325,721)	(131,642)	(43,758)	(81,346)	(20,093)	(45,017)	(3,865)	
25									
26	Class COS with Equalized ROR	1,528,886	671,692	201,409	344,541	110,837	185,651	14,757	
27	Class COS Percentage	100.00%	43.93%	13.17%	22.54%	7.25%	12.14%	0.97%	
28									
29	OPC Recommended ROR	8.24%	8.24%	8.24%	8.24%	8.24%	8.24%	8.24%	
30									
31	Operating Income with Recommended ROR	914,107	369,442	122,804	228,290	56,389	126,335	10,847	
32									
33	Class COS with Recommended ROR	2,768,714	1,172,776	367,971	654,177	187,319	357,003	29,469	
34	Class COS Percentage	100.00%	42.36%	13.29%	23.63%	6.77%	12.89%	1.06%	

**Office of the Public Counsel
MAWC Class Cost of Service Summary**

	TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OPA	SFR	PRIVATE FIRE
1 Current Rate Revenue	1,528,886	791,133	231,610	252,460	99,160	115,762	38,762
2 Class Percentage	100.00%	51.75%	15.15%	16.51%	6.49%	7.57%	2.54%
3							
4 Class COS with Equalized ROR	1,528,886	671,692	201,409	344,541	110,837	185,651	14,757
5 Class COS Percentage	100.00%	43.93%	13.17%	22.54%	7.25%	12.14%	0.97%
6							
7 Margin Revenue Required to Equalized ROR	1,528,886	671,692	201,409	344,541	110,837	185,651	14,757
8 Revenue Neutral Shift to Equalize Class ROR	0	(119,441)	(30,200)	92,081	11,677	69,889	(24,005)
9 Revenue Increase/Decrease Percentage	0.00%	-15.10%	-13.04%	36.47%	11.78%	60.37%	-61.93%
10							
11 1/2 of Revenue Neutral Shift	0	(59,720)	(15,100)	46,040	5,838	34,944	(12,003)
12 Revenue Increase/Decrease Percentage	0.00%	-7.55%	-6.52%	18.24%	5.89%	30.19%	-30.96%
13							
14 Recommended Margin Revenue	1,528,886	731,412	216,509	298,500	104,999	150,707	26,759
15 Recommended Class Revenue Percentage	100.00%	47.84%	14.16%	19.52%	6.87%	9.86%	1.75%
16							
17 Spread of Revenue Increase							
18 Example: Revenue Increase of 8 mil	514,672	246,217	72,884	100,485	35,346	50,733	9,008
19 Example: Revenue Increase of 12 mil	772,008	369,325	109,326	150,727	53,019	76,099	13,512
20 Example: Revenue Increase of 16 mil	1,029,344	492,433	145,768	200,969	70,692	101,465	18,016
21							
22 Combining Revenue Neutral Shift and Revenue Increase							
23 Example: Revenue Increase of 8 mil	514,672	186,496	57,784	146,525	41,184	85,677	(2,995)
24 Example: Revenue Increase of 12 mil	772,008	309,605	94,226	196,767	58,857	111,043	1,509
25 Example: Revenue Increase of 16 mil	1,029,344	432,713	130,668	247,010	76,530	136,410	6,013
26							
27 Adjust to eliminate negative increase							
28 Example: Revenue Increase of 8 mil	514,672	185,417	57,449	145,678	40,946	85,181	-
29 Example: Revenue Increase of 12 mil	772,008	309,605	94,226	196,767	58,857	111,043	1,509
30 Example: Revenue Increase of 16 mil	1,029,344	432,713	130,668	247,010	76,530	136,410	6,013
31							
32 Percentage of Net Revenue Increase							
33 Example: Revenue Increase of 8 mil	33.66%	23.44%	24.80%	57.70%	41.29%	73.58%	0.00%
34 Example: Revenue Increase of 12 mil	50.49%	39.13%	40.68%	77.94%	59.36%	95.92%	3.89%
35 Example: Revenue Increase of 16 mil	67.33%	54.70%	56.42%	97.84%	77.18%	117.84%	15.51%
36							
37 Class Revenue							
38 Example: Revenue Increase of 8 mil	2,043,558	977,629	289,393	398,985	140,344	201,439	35,767
39 Example: Revenue Increase of 12 mil	2,300,894	1,100,737	325,835	449,227	158,017	226,806	40,271
40 Example: Revenue Increase of 16 mil	2,558,230	1,223,846	362,277	499,469	175,690	252,172	44,775
41							
42 Percentage of Class Revenue							
43 Example: Revenue Increase of 8 mil	100.00%	47.84%	14.16%	19.52%	6.87%	9.86%	1.75%
44 Example: Revenue Increase of 12 mil	100.00%	47.84%	14.16%	19.52%	6.87%	9.86%	1.75%
45 Example: Revenue Increase of 16 mil	100.00%	47.84%	14.16%	19.52%	6.87%	9.86%	1.75%

**Office of the Public Counsel
MAWC Class Cost of Service Summary**

Parkville District

CLASS COST OF SERVICE SUMMARY:		TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER PUBLIC AUTHORITY	SALES FOR RESALE	PRIVATE FIRE SERVICE	PUBLIC FIRE SERVICE
1	O & M Expenses	1,007,800	657,361	155,561	8,762	40,785	106,883	6,513	31,935
2	Depreciation Expenses	206,734	126,564	30,865	1,232	6,542	22,461	3,357	15,713
3	Taxes	588,188	358,056	88,633	3,583	19,254	63,394	8,555	46,712
4	TOTAL Expenses and Taxes	1,802,721	1,141,981	275,059	13,578	66,581	192,738	18,425	94,360
5									
6	Spread public fire expenses & taxes to others	15 94,360	86,664	6,495	236	965	0	0	(94,360)
7	TOTAL Expenses and Taxes after Spread	1,802,721	1,228,645	281,554	13,813	67,545	192,738	18,425	-
8									
9	Current Revenue								
10	Rate Revenue	1,441,770	1,058,802	211,020	10,936	42,266	84,386	34,360	0
11	Other Revenue	25 6,423	4,307	1,029	53	256	716	63	0
12	TOTAL Current Revenues	1,448,193	1,063,109	212,049	10,989	42,522	85,102	34,423	0
13	Current Revenue Percentage	100.00%	73.41%	14.64%	0.76%	2.94%	5.88%	2.38%	0.00%
14									
15	OPERATING INCOME	(354,528)	(165,535)	(69,506)	(2,824)	(25,024)	(107,637)	15,998	0
16									
17	TOTAL Rate Base	8,169,921	4,965,488	1,240,654	49,271	267,254	893,854	114,666	638,734
18									
19	Spread public fire rate base to others	15 638,734	586,643	43,966	1,596	6,530	0	0	(638,734)
20	TOTAL Rate Base after Spread	8,169,921	5,552,131	1,284,620	50,867	273,783	893,854	114,666	-
21									
22	Implicit Rate of Return (ROR)	-4.34%	-2.98%	-5.41%	-5.55%	-9.14%	-12.04%	13.95%	
23									
24	Operating Income with Equalized ROR	(354,528)	(240,931)	(55,745)	(2,207)	(11,881)	(38,788)	(4,976)	
25									
26	Class COS with Equalized ROR	1,448,193	987,714	225,809	11,606	55,665	153,950	13,449	
27	Class COS Percentage	100.00%	68.20%	15.59%	0.80%	3.84%	10.63%	0.93%	
28									
29	OPC Recommended ROR	8.24%	8.24%	8.24%	8.24%	8.24%	8.24%	8.24%	
30									
31	Operating Income with Recommended ROR	673,202	457,496	105,853	4,191	22,560	73,654	9,448	
32									
33	Class COS with Recommended ROR	2,475,922	1,686,140	387,407	18,005	90,105	266,392	27,873	
34	Class COS Percentage	100.00%	68.10%	15.65%	0.73%	3.64%	10.76%	1.13%	

**Office of the Public Counsel
MAWC Class Cost of Service Summary**

	TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OPA	SIR	PRIVATE FIRE
1 Current Rate Revenue	1,448,193	1,063,109	212,049	10,989	42,522	85,102	34,423
2 Class Percentage	100.00%	73.41%	14.64%	0.76%	2.94%	5.88%	2.38%
3							
4 Class COS with Equalized ROR	1,448,193	987,714	225,809	11,606	55,665	153,950	13,449
5 Class COS Percentage	100.00%	68.20%	15.59%	0.80%	3.84%	10.63%	0.93%
6							
7 Margin Revenue Required to Equalized ROR	1,448,193	987,714	225,809	11,606	55,665	153,950	13,449
8 Revenue Neutral Shift to Equalize Class ROR	0	(75,395)	13,760	617	13,143	68,849	(20,974)
9 Revenue Increase/Decrease Percentage	0.00%	-7.09%	6.49%	5.61%	30.91%	80.90%	-60.93%
10							
11 1/2 of Revenue Neutral Shift	0	(37,698)	6,880	308	6,572	34,424	(10,487)
12 Revenue Increase/Decrease Percentage	0.00%	-3.55%	3.24%	2.81%	15.45%	40.45%	-30.46%
13							
14 Recommended Margin Revenue	1,448,193	1,025,412	218,929	11,298	49,093	119,526	23,936
15 Recommended Class Revenue Percentage	100.00%	70.81%	15.12%	0.78%	3.39%	8.25%	1.65%
16							
17 Spread of Revenue Increase							
18 Example: Revenue Increase of 8 mil	460,245	325,883	69,577	3,590	15,602	37,986	7,607
19 Example: Revenue Increase of 12 mil	690,368	488,824	104,366	5,386	23,403	56,979	11,410
20 Example: Revenue Increase of 16 mil	920,491	651,765	139,154	7,181	31,204	75,972	15,214
21							
22 Combining Revenue Neutral Shift and Revenue Increase							
23 Example: Revenue Increase of 8 mil	460,245	288,185	76,457	3,899	22,174	72,410	(2,880)
24 Example: Revenue Increase of 12 mil	690,368	451,126	111,246	5,694	29,975	91,403	924
25 Example: Revenue Increase of 16 mil	920,491	614,068	146,034	7,489	37,776	110,397	4,727
26							
27 Adjust to eliminate negative increase							
28 Example: Revenue Increase of 8 mil	460,245	286,393	75,982	3,875	22,036	71,960	-
29 Example: Revenue Increase of 12 mil	690,368	451,126	111,246	5,694	29,975	91,403	924
30 Example: Revenue Increase of 16 mil	920,491	614,068	146,034	7,489	37,776	110,397	4,727
31							
32 Percentage of Net Revenue Increase							
33 Example: Revenue Increase of 8 mil	31.78%	26.94%	35.83%	35.26%	51.82%	84.56%	0.00%
34 Example: Revenue Increase of 12 mil	47.67%	42.43%	52.46%	51.82%	70.49%	107.40%	2.68%
35 Example: Revenue Increase of 16 mil	63.56%	57.76%	68.87%	68.15%	88.84%	129.72%	13.73%
36							
37 Class Revenue							
38 Example: Revenue Increase of 8 mil	1,908,438	1,351,294	288,506	14,888	64,695	157,512	31,543
39 Example: Revenue Increase of 12 mil	2,138,561	1,514,236	323,294	16,683	72,496	176,505	35,346
40 Example: Revenue Increase of 16 mil	2,368,684	1,677,177	358,083	18,478	80,297	195,498	39,150
41							
42 Percentage of Class Revenue							
43 Example: Revenue Increase of 8 mil	100.00%	70.81%	15.12%	0.78%	3.39%	8.25%	1.65%
44 Example: Revenue Increase of 12 mil	100.00%	70.81%	15.12%	0.78%	3.39%	8.25%	1.65%
45 Example: Revenue Increase of 16 mil	100.00%	70.81%	15.12%	0.78%	3.39%	8.25%	1.65%

**Office of the Public Counsel
MAWC Class Cost of Service Summary**

St Charles District

CLASS COST OF SERVICE SUMMARY:		TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER PUBLIC AUTHORITY	SALES FOR RESALE	PRIVATE FIRE SERVICE	PUBLIC FIRE SERVICE
1	O & M Expenses	4,034,321	3,296,739	438,500	2,900	94,368	0	21,712	180,101
2	Depreciation Expenses	448,679	341,443	41,708	201	7,942	0	7,169	50,217
3	Taxes	2,561,713	1,919,619	267,391	1,332	54,868	0	32,393	286,110
4	TOTAL Expenses and Taxes	7,044,713	5,557,801	747,599	4,433	157,178	-	61,274	516,427
5									
6	Spread public fire expenses & taxes to others	15	516,427	499,100	16,110	40	1,178	0	(516,427)
7	TOTAL Expenses and Taxes after Spread	7,044,713	6,056,901	763,709	4,472	158,356	-	61,274	-
8									
9	Current Revenue								
10	Rate Revenue	7,173,569	6,208,632	771,039	4,707	138,510	0	50,681	0
11	Other Revenue	25	0	0	0	0	0	0	0
12	TOTAL Current Revenues	7,173,569	6,208,632	771,039	4,707	138,510	0	50,681	0
13	Current Revenue Percentage	100.00%	86.55%	10.75%	0.07%	1.93%	0.00%	0.71%	0.00%
14									
15	OPERATING INCOME	128,856	151,731	7,330	235	(19,846)	0	(10,593)	0
16									
17	TOTAL Rate Base	25,200,977	18,848,956	2,645,264	13,046	542,483	-	320,415	2,830,814
18									
19	Spread public fire rate base to others	15	2,830,814	2,735,833	88,306	219	6,456	0	(2,830,814)
20	TOTAL Rate Base after Spread	25,200,977	21,584,789	2,733,569	13,265	548,939	-	320,415	-
21									
22	Implicit Rate of Return (ROR)	0.51%	0.70%	0.27%	1.77%	-3.62%	#DIV/0!	-3.31%	
23									
24	Operating Income with Equalized ROR	128,856	110,366	13,977	68	2,807	-	1,638	
25									
26	Class COS with Equalized ROR	7,173,569	6,167,267	777,686	4,540	161,163	-	62,913	
27	Class COS Percentage	100.00%	85.97%	10.84%	0.06%	2.25%	0.00%	0.88%	
28									
29	OPC Recommended ROR	8.24%	8.24%	8.24%	8.24%	8.24%	8.24%	8.24%	
30									
31	Operating Income with Recommended ROR	2,076,561	1,778,587	225,246	1,093	45,233	-	26,402	
32									
33	Class COS with Recommended ROR	9,121,273	7,835,488	988,955	5,566	203,588	-	87,677	
34	Class COS Percentage	100.00%	85.90%	10.84%	0.06%	2.23%	0.00%	0.96%	

**Office of the Public Counsel
MAWC Class Cost of Service Summary**

	TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OPA	SIR	PRIVATE FIRE
1 Current Rate Revenue	7,173,569	6,208,632	771,039	4,707	138,510	0	50,681
2 Class Percentage	100.00%	86.55%	10.75%	0.07%	1.93%	0.00%	0.71%
3							
4 Class COS with Equalized ROR	7,173,569	6,167,267	777,686	4,540	161,163	-	62,913
5 Class COS Percentage	100.00%	85.97%	10.84%	0.06%	2.25%	0.00%	0.88%
6							
7 Margin Revenue Required to Equalized ROR	7,173,569	6,167,267	777,686	4,540	161,163	-	62,913
8 Revenue Neutral Shift to Equalize Class ROR	(0)	(41,365)	6,647	(167)	22,653	0	12,232
9 Revenue Increase/Decrease Percentage	0.00%	-0.67%	0.86%	-3.54%	16.35%	#DIV/0!	24.13%
10							
11 1/2 of Revenue Neutral Shift	(0)	(20,682)	3,323	(83)	11,326	0	6,116
12 Revenue Increase/Decrease Percentage	0.00%	-0.33%	0.43%	-1.77%	8.18%	#DIV/0!	12.07%
13							
14 Recommended Margin Revenue	7,173,569	6,187,950	774,362	4,624	149,836	0	56,797
15 Recommended Class Revenue Percentage	100.00%	86.26%	10.79%	0.06%	2.09%	0.00%	0.79%
16							
17 Spread of Revenue Increase							
18 Example: Revenue Increase of 8 mil	1,695,539	1,462,579	183,028	1,093	35,415	0	13,424
19 Example: Revenue Increase of 12 mil	2,543,309	2,193,868	274,542	1,639	53,123	0	20,137
20 Example: Revenue Increase of 16 mil	3,391,078	2,925,158	366,055	2,186	70,830	0	26,849
21							
22 Combining Revenue Neutral Shift and Revenue Increase							
23 Example: Revenue Increase of 8 mil	1,695,539	1,441,896	186,351	1,009	46,742	-	19,540
24 Example: Revenue Increase of 12 mil	2,543,309	2,173,186	277,865	1,556	64,449	-	26,253
25 Example: Revenue Increase of 16 mil	3,391,078	2,904,475	369,379	2,102	82,157	-	32,965
26							
27 Adjust to eliminate negative increase							
28 Example: Revenue Increase of 8 mil	1,695,539	1,441,896	186,351	1,009	46,742	-	19,540
29 Example: Revenue Increase of 12 mil	2,543,309	2,173,186	277,865	1,556	64,449	-	26,253
30 Example: Revenue Increase of 16 mil	3,391,078	2,904,475	369,379	2,102	82,157	-	32,965
31							
32 Percentage of Net Revenue Increase							
33 Example: Revenue Increase of 8 mil	23.64%	23.22%	24.17%	21.45%	33.75%	#DIV/0!	38.56%
34 Example: Revenue Increase of 12 mil	35.45%	35.00%	36.04%	33.06%	46.53%	#DIV/0!	51.80%
35 Example: Revenue Increase of 16 mil	47.27%	46.78%	47.91%	44.66%	59.31%	#DIV/0!	65.04%
36							
37 Class Revenue							
38 Example: Revenue Increase of 8 mil	8,869,108	7,650,528	957,390	5,716	185,252	0	70,221
39 Example: Revenue Increase of 12 mil	9,716,878	8,381,818	1,048,904	6,263	202,959	0	76,934
40 Example: Revenue Increase of 16 mil	10,564,647	9,113,107	1,140,418	6,809	220,667	0	83,646
41							
42 Percentage of Class Revenue							
43 Example: Revenue Increase of 8 mil	100.00%	86.26%	10.79%	0.06%	2.09%	0.00%	0.79%
44 Example: Revenue Increase of 12 mil	100.00%	86.26%	10.79%	0.06%	2.09%	0.00%	0.79%
45 Example: Revenue Increase of 16 mil	100.00%	86.26%	10.79%	0.06%	2.09%	0.00%	0.79%

**Office of the Public Counsel
MAWC Class Cost of Service Summary**

St Joseph District

CLASS COST OF SERVICE SUMMARY:		TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER PUBLIC AUTHORITY	SALES FOR RESALE	PRIVATE FIRE SERVICE	PUBLIC FIRE SERVICE
1	O & M Expenses	5,151,720	2,248,500	916,466	964,676	203,291	617,695	39,842	161,249
2	Depreciation Expenses	2,538,906	932,386	481,464	578,153	85,166	386,093	10,645	64,998
3	Taxes	3,209,292	1,201,174	597,219	701,124	106,612	468,195	18,804	116,165
4	TOTAL Expenses and Taxes	10,899,917	4,382,060	1,995,148	2,243,953	395,069	1,471,984	69,291	342,412
5									
6	Spread public fire expenses & taxes to others	15 342,412	303,560	35,531	1,193	2,129	0	0	(342,412)
7	TOTAL Expenses and Taxes after Spread	10,899,917	4,685,620	2,030,679	2,245,146	397,198	1,471,984	69,291	-
8									
9	Current Revenue								
10	Rate Revenue	9,525,428	5,424,815	1,848,239	1,151,030	279,754	647,439	174,151	0
11	Other Revenue	25 9,639	4,041	1,815	2,027	365	1,326	64	0
12	TOTAL Current Revenues	9,535,067	5,428,856	1,850,054	1,153,057	280,119	648,765	174,215	0
13	Current Revenue Percentage	100.00%	56.94%	19.40%	12.09%	2.94%	6.80%	1.83%	0.00%
14									
15	OPERATING INCOME	(1,364,850)	743,237	(180,625)	(1,092,088)	(117,079)	(823,219)	104,925	0
16									
17	TOTAL Rate Base	90,689,237	33,743,446	16,941,835	19,995,216	2,999,492	13,360,321	503,162	3,145,765
18									
19	Spread public fire rate base to others	15 3,145,765	2,788,829	326,423	10,956	19,557	0	0	(3,145,765)
20	TOTAL Rate Base after Spread	90,689,237	36,532,275	17,268,258	20,006,172	3,019,048	13,360,321	503,162	-
21									
22	Implicit Rate of Return (ROR)	-1.50%	2.03%	-1.05%	-5.46%	-3.88%	-6.16%	20.85%	
23									
24	Operating Income with Equalized ROR	(1,364,850)	(549,801)	(259,883)	(301,088)	(45,436)	(201,069)	(7,572)	
25									
26	Class COS with Equalized ROR	9,535,067	4,135,818	1,770,796	1,944,058	351,762	1,270,915	61,718	
27	Class COS Percentage	100.00%	43.37%	18.57%	20.39%	3.69%	13.33%	0.65%	
28									
29	OPC Recommended ROR	8.24%	8.24%	8.24%	8.24%	8.24%	8.24%	8.24%	
30									
31	Operating Income with Recommended ROR	7,472,793	3,010,259	1,422,904	1,648,509	248,770	1,100,890	41,461	
32									
33	Class COS with Recommended ROR	18,372,710	7,695,879	3,453,584	3,893,654	645,968	2,572,874	110,751	
34	Class COS Percentage	100.00%	41.89%	18.80%	21.19%	3.52%	14.00%	0.60%	

Office of the Public Counsel
MAWC Class Cost of Service Summary

	TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OPA	SFR	PRIVATE FIRE
1 Current Rate Revenue	9,535,067	5,428,856	1,850,054	1,153,057	280,119	648,765	174,215
2 Class Percentage	100.00%	56.94%	19.40%	12.09%	2.94%	6.80%	1.83%
3							
4 Class COS with Equalized ROR	9,535,067	4,135,818	1,770,796	1,944,058	351,762	1,270,915	61,718
5 Class COS Percentage	100.00%	43.37%	18.57%	20.39%	3.69%	13.33%	0.65%
6							
7 Margin Revenue Required to Equalized ROR	9,535,067	4,135,818	1,770,796	1,944,058	351,762	1,270,915	61,718
8 Revenue Neutral Shift to Equalize Class ROR	0	(1,293,038)	(79,258)	791,001	71,643	622,150	(112,497)
9 Revenue Increase/Decrease Percentage	0.00%	-23.82%	-4.28%	68.60%	25.58%	95.90%	-64.57%
10							
11 1/2 of Revenue Neutral Shift	0	(646,519)	(39,629)	395,500	35,822	311,075	(56,249)
12 Revenue Increase/Decrease Percentage	0.00%	-11.91%	-2.14%	34.30%	12.79%	47.95%	-32.29%
13							
14 Recommended Margin Revenue	9,535,067	4,782,337	1,810,425	1,548,557	315,941	959,840	117,967
15 Recommended Class Revenue Percentage	100.00%	50.16%	18.99%	16.24%	3.31%	10.07%	1.24%
16							
17 Spread of Revenue Increase							
18 Example: Revenue Increase of 8 mil	3,415,274	1,712,939	648,459	554,663	113,164	343,796	42,253
19 Example: Revenue Increase of 12 mil	5,122,911	2,569,409	972,688	831,994	169,746	515,694	63,380
20 Example: Revenue Increase of 16 mil	6,830,548	3,425,879	1,296,918	1,109,326	226,327	687,592	84,507
21							
22 Combining Revenue Neutral Shift and Revenue Increase							
23 Example: Revenue Increase of 8 mil	3,415,274	1,066,420	608,830	950,163	148,985	654,871	(13,995)
24 Example: Revenue Increase of 12 mil	5,122,911	1,922,890	933,059	1,227,495	205,567	826,768	7,132
25 Example: Revenue Increase of 16 mil	6,830,548	2,779,360	1,257,289	1,504,826	262,149	998,666	28,258
26							
27 Adjust to eliminate negative increase							
28 Example: Revenue Increase of 8 mil	3,415,274	1,062,068	606,345	946,286	148,377	652,198	-
29 Example: Revenue Increase of 12 mil	5,122,911	1,922,890	933,059	1,227,495	205,567	826,768	7,132
30 Example: Revenue Increase of 16 mil	6,830,548	2,779,360	1,257,289	1,504,826	262,149	998,666	28,258
31							
32 Percentage of Net Revenue Increase							
33 Example: Revenue Increase of 8 mil	35.82%	19.56%	32.77%	82.07%	52.97%	100.53%	0.00%
34 Example: Revenue Increase of 12 mil	53.73%	35.42%	50.43%	106.46%	73.39%	127.44%	4.09%
35 Example: Revenue Increase of 16 mil	71.64%	51.20%	67.96%	130.51%	93.58%	153.93%	16.22%
36							
37 Class Revenue							
38 Example: Revenue Increase of 8 mil	12,950,341	6,495,276	2,458,884	2,103,220	429,104	1,303,636	160,220
39 Example: Revenue Increase of 12 mil	14,657,978	7,351,746	2,783,114	2,380,552	485,686	1,475,533	181,347
40 Example: Revenue Increase of 16 mil	16,365,615	8,208,216	3,107,343	2,657,883	542,268	1,647,431	202,474
41							
42 Percentage of Class Revenue							
43 Example: Revenue Increase of 8 mil	100.00%	50.16%	18.99%	16.24%	3.31%	10.07%	1.24%
44 Example: Revenue Increase of 12 mil	100.00%	50.16%	18.99%	16.24%	3.31%	10.07%	1.24%
45 Example: Revenue Increase of 16 mil	100.00%	50.16%	18.99%	16.24%	3.31%	10.07%	1.24%

**Office of the Public Counsel
MAWC Class Cost of Service Summary**

Warrensburg District

CLASS COST OF SERVICE SUMMARY:		TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER PUBLIC AUTHORITY	SALES FOR RESALE	PRIVATE FIRE SERVICE	PUBLIC FIRE SERVICE
1	O & M Expenses	877,803	437,562	161,545	45,621	129,405	64,244	6,341	33,085
2	Depreciation Expenses	276,430	119,020	52,786	16,437	38,734	25,202	4,034	20,217
3	Taxes	563,218	246,236	109,683	33,337	81,125	51,297	6,497	35,042
4	TOTAL Expenses and Taxes	1,717,452	802,817	324,014	95,395	249,265	140,743	16,873	88,344
5									
6	Spread public fire expenses & taxes to others	15 88,344	77,507	8,738	208	1,890	0	0	(88,344)
7	TOTAL Expenses and Taxes after Spread	1,717,452	880,325	332,752	95,604	251,155	140,743	16,873	-
8									
9	Current Revenue								
10	Rate Revenue	1,808,745	1,025,322	380,109	83,202	217,321	77,180	25,611	0
11	Other Revenue	25 1,757	863	350	103	269	153	18	0
12	TOTAL Current Revenues	1,810,502	1,026,185	380,459	83,305	217,590	77,333	25,629	0
13	Current Revenue Percentage	100.00%	56.68%	21.01%	4.60%	12.02%	4.27%	1.42%	0.00%
14									
15	OPERATING INCOME	93,050	145,860	47,708	(12,298)	(33,565)	(63,410)	8,756	0
16									
17	TOTAL Rate Base	9,380,008	4,070,249	1,838,652	562,758	1,359,754	867,677	105,617	575,300
18									
19	Spread public fire rate base to others	15 575,300	504,732	56,900	1,357	12,311	0	0	(575,300)
20	TOTAL Rate Base after Spread	9,380,008	4,574,982	1,895,552	564,116	1,372,064	867,677	105,617	-
21									
22	Implicit Rate of Return (ROR)	0.99%	3.19%	2.52%	-2.18%	-2.45%	-7.31%	8.29%	
23									
24	Operating Income with Equalized ROR	93,050	45,384	18,804	5,596	13,611	8,607	1,048	
25									
26	Class COS with Equalized ROR	1,810,502	925,709	351,556	101,200	264,766	149,351	17,921	
27	Class COS Percentage	100.00%	51.13%	19.42%	5.59%	14.62%	8.25%	0.99%	
28									
29	OPC Recommended ROR	8.24%	8.24%	8.24%	8.24%	8.24%	8.24%	8.24%	
30									
31	Operating Income with Recommended ROR	772,913	376,979	156,194	46,483	113,058	71,497	8,703	
32									
33	Class COS with Recommended ROR	2,490,364	1,257,303	488,945	142,087	364,213	212,240	25,576	
34	Class COS Percentage	100.00%	50.49%	19.63%	5.71%	14.62%	8.52%	1.03%	

Office of the Public Counsel
MAWC Class Cost of Service Summary

	TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OPA	SIR	PRIVATE FIRE
1 Current Rate Revenue	1,810,502	1,026,185	380,459	83,305	217,590	77,333	25,629
2 Class Percentage	100.00%	56.68%	21.01%	4.60%	12.02%	4.27%	1.42%
3							
4 Class COS with Equalized ROR	1,810,502	925,709	351,556	101,200	264,766	149,351	17,921
5 Class COS Percentage	100.00%	51.13%	19.42%	5.59%	14.62%	8.25%	0.99%
6							
7 Margin Revenue Required to Equalized ROR	1,810,502	925,709	351,556	101,200	264,766	149,351	17,921
8 Revenue Neutral Shift to Equalize Class ROR	0	(100,476)	(28,904)	17,894	47,176	72,018	(7,708)
9 Revenue Increase/Decrease Percentage	0.00%	-9.79%	-7.60%	21.48%	21.68%	93.13%	-30.08%
10							
11 1/2 of Revenue Neutral Shift	0	(50,238)	(14,452)	8,947	23,588	36,009	(3,854)
12 Revenue Increase/Decrease Percentage	0.00%	-4.90%	-3.80%	10.74%	10.84%	46.56%	-15.04%
13							
14 Recommended Margin Revenue	1,810,502	975,947	366,007	92,253	241,178	113,342	21,775
15 Recommended Class Revenue Percentage	100.00%	53.90%	20.22%	5.10%	13.32%	6.26%	1.20%
16							
17 Spread of Revenue Increase							
18 Example: Revenue Increase of 8 mil	462,930	249,541	93,585	23,588	61,667	28,981	5,568
19 Example: Revenue Increase of 12 mil	694,395	374,312	140,377	35,382	92,501	43,471	8,352
20 Example: Revenue Increase of 16 mil	925,860	499,083	187,170	47,176	123,334	57,961	11,135
21							
22 Combining Revenue Neutral Shift and Revenue Increase							
23 Example: Revenue Increase of 8 mil	462,930	199,303	79,133	32,535	85,255	64,989	1,713
24 Example: Revenue Increase of 12 mil	694,395	324,074	125,926	44,330	116,089	79,480	4,497
25 Example: Revenue Increase of 16 mil	925,860	448,844	172,718	56,124	146,922	93,970	7,281
26							
27 Adjust to eliminate negative increase							
28 Example: Revenue Increase of 8 mil	462,930	199,303	79,133	32,535	85,255	64,989	1,713
29 Example: Revenue Increase of 12 mil	694,395	324,074	125,926	44,330	116,089	79,480	4,497
30 Example: Revenue Increase of 16 mil	925,860	448,844	172,718	56,124	146,922	93,970	7,281
31							
32 Percentage of Net Revenue Increase							
33 Example: Revenue Increase of 8 mil	25.57%	19.42%	20.80%	39.06%	39.18%	84.04%	6.69%
34 Example: Revenue Increase of 12 mil	38.35%	31.58%	33.10%	53.21%	53.35%	102.78%	17.55%
35 Example: Revenue Increase of 16 mil	51.14%	43.74%	45.40%	67.37%	67.52%	121.51%	28.41%
36							
37 Class Revenue							
38 Example: Revenue Increase of 8 mil	2,273,432	1,225,488	459,592	115,841	302,845	142,322	27,343
39 Example: Revenue Increase of 12 mil	2,504,897	1,350,259	506,385	127,635	333,679	156,813	30,127
40 Example: Revenue Increase of 16 mil	2,736,362	1,475,030	553,177	139,429	364,512	171,303	32,911
41							
42 Percentage of Class Revenue							
43 Example: Revenue Increase of 8 mil	100.00%	53.90%	20.22%	5.10%	13.32%	6.26%	1.20%
44 Example: Revenue Increase of 12 mil	100.00%	53.90%	20.22%	5.10%	13.32%	6.26%	1.20%
45 Example: Revenue Increase of 16 mil	100.00%	53.90%	20.22%	5.10%	13.32%	6.26%	1.20%

Office of the Public Counsel
Example of Class Cost Allocation
WR-2000-281

Table 1 - Example of \$8 mil Revenue Increase: % increase in Rate Revenue by District by Class

	TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER PUBLIC AUTHORITY	SALES FOR RESALE	PRIVATE FIRE SERVICE
Company	28%	20%	27%	65%	41%	83%	0%
Brunswick	55%	26%	37%	66%	71%	142%	0%
Joplin	19%	16%	17%	37%	26%	47%	3%
Mexico	34%	23%	25%	58%	41%	74%	0%
Parkville	32%	27%	36%	35%	52%	85%	0%
St. Charles	24%	23%	24%	21%	34%	N/A	39%
St. Joseph	36%	20%	33%	82%	53%	101%	0%
Warrensburg	26%	19%	21%	39%	39%	84%	7%

Table 1.1 - Example of \$8 mil Revenue Increase: Resulting Rate Revenue % by District by Class

	TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER PUBLIC AUTHORITY	SALES FOR RESALE	PRIVATE FIRE SERVICE
Company	100.00%	60.57%	18.26%	10.08%	3.84%	5.98%	1.27%
Brunswick	0.47%	0.22%	0.06%	0.00%	0.01%	0.17%	0.00%
Joplin	23.33%	12.53%	5.84%	2.77%	0.76%	1.01%	0.42%
Mexico	5.55%	2.66%	0.79%	1.08%	0.38%	0.55%	0.10%
Parkville	5.19%	3.67%	0.78%	0.04%	0.18%	0.43%	0.09%
St. Charles	24.10%	20.79%	2.60%	0.02%	0.50%	0.00%	0.19%
St. Joseph	35.19%	17.65%	6.68%	5.71%	1.17%	3.54%	0.44%
Warrensburg	6.18%	3.33%	1.25%	0.31%	0.82%	0.39%	0.07%