

COST OF SERVICE STUDIES



**Water & Sewer Rate Design Branch
Financial Analysis Division**

KENTUCKY PUBLIC SERVICE COMMISSION

Water is a rising cost industry:

Utility Plant Investment is increasing

Water Industry is More Capital Intensive

Residential Customers -

Usage 

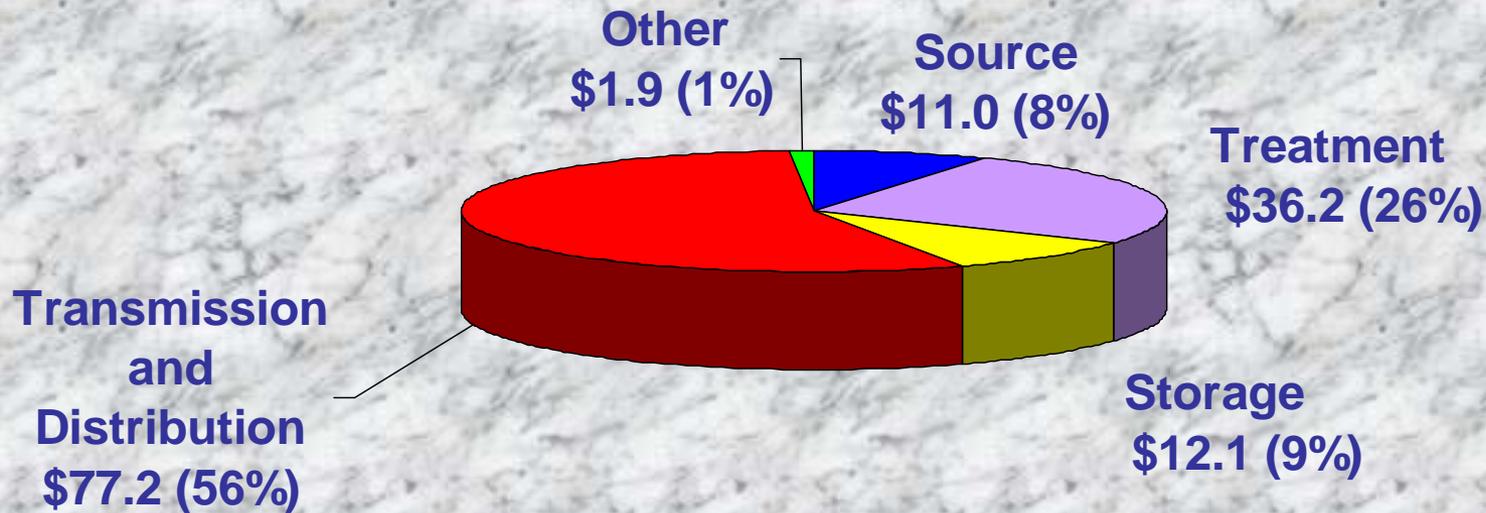
Prices 

Regulation is increasing

Total 20-Year Need by Category

In Billions of January 1995 Dollars

Total Need: \$138.4 Billion



"As water costs continue to increase, it becomes imperative that water utilities know the actual cost of providing water service to their different types of customers."

Revenue Requirement

Operating and Maintenance Expenses

Taxes/Transfer Payments

Debt Service/Depreciation

Capital Project Funding/Rate of Return

= Total Revenue Requirement

Cost of Service Study

★ **ALLOCATES** all costs of providing water service to various types of customers.

★ **RECOVERS** those costs through a rate structure that is fair, just, and reasonable.

Cost of Service Study

- ★ Limits interclass and intraclass rate subsidies
- ★ Tracks costs and provides accurate price signals
- ★ Enhances revenue stability

Cost of Service Study

- ★ Promotes adequate cash flow
- ★ Establishes a range of reasonableness
- ★ NEVER takes into consideration the ability to pay

5 Steps

- ★ Load Forecast
- ★ O & M and Capital Budget
- ★ Revenue Requirement
- ★ Cost of Service Study
- ★ Rates

Billing Analysis

- ★ Summarization of customer bills
 - by meter size
 - customer classification
- ★ Determines test year revenue
- ★ Show customer usage patterns

Major Functions

- ★ Source of Supply
- ★ Pumping
- ★ Transmission
- ★ Distribution
- ★ Customer
- ★ Administrative and General

Classifications

- ★ Commodity
- ★ Demand
- ★ Customer
- ★ Fire Protection
- ★ Direct Assignment

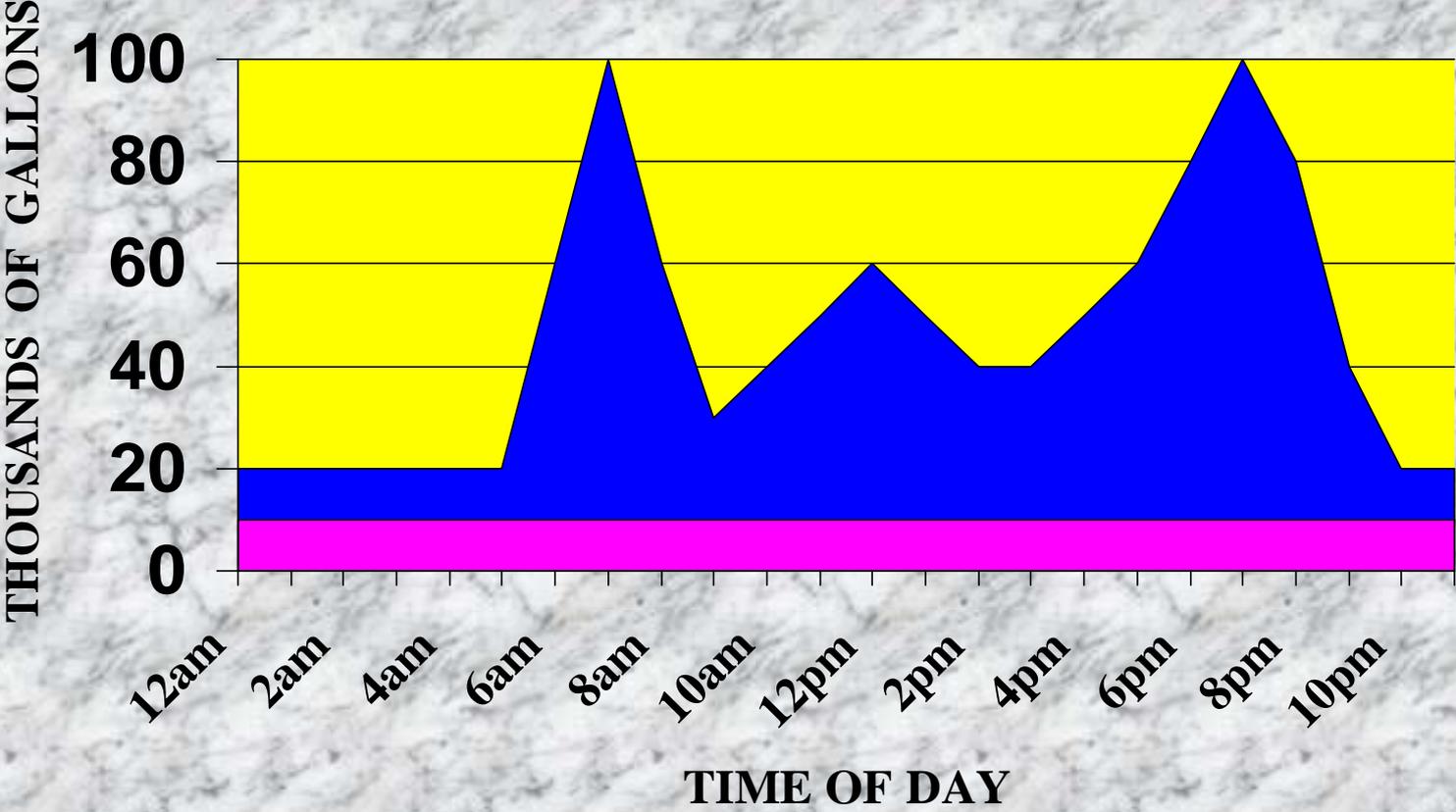
Commodity Costs

★ Costs that vary with the amount of water treated

- power for pumping
- chemicals
- purchased water

Demand Costs

★ Demand costs are those associated with providing the facilities to meet the peak demands placed on the system



Peak Demand Problems

- Your plant must be sized to meet peak demands.
- But you only generate revenue when plant is being used.
- Idle plant is very expensive to utilities because you have spent money for plant that is not generating revenue.
- Which customers cause you to have idle plant during non-peak times?
- In many cases, large usage customers may not contribute to peak day demands.

Demand Costs

★ Demand costs are those associated with providing the facilities to meet the peak demands placed on the system

- pumping and storage facilities

- transmission and distribution mains

- salaries associated with treatment and distribution

Customer Costs

- ★ Costs incurred to serve customers without regard to usage
 - meter reading
 - billing and collections
 - meters and service lines

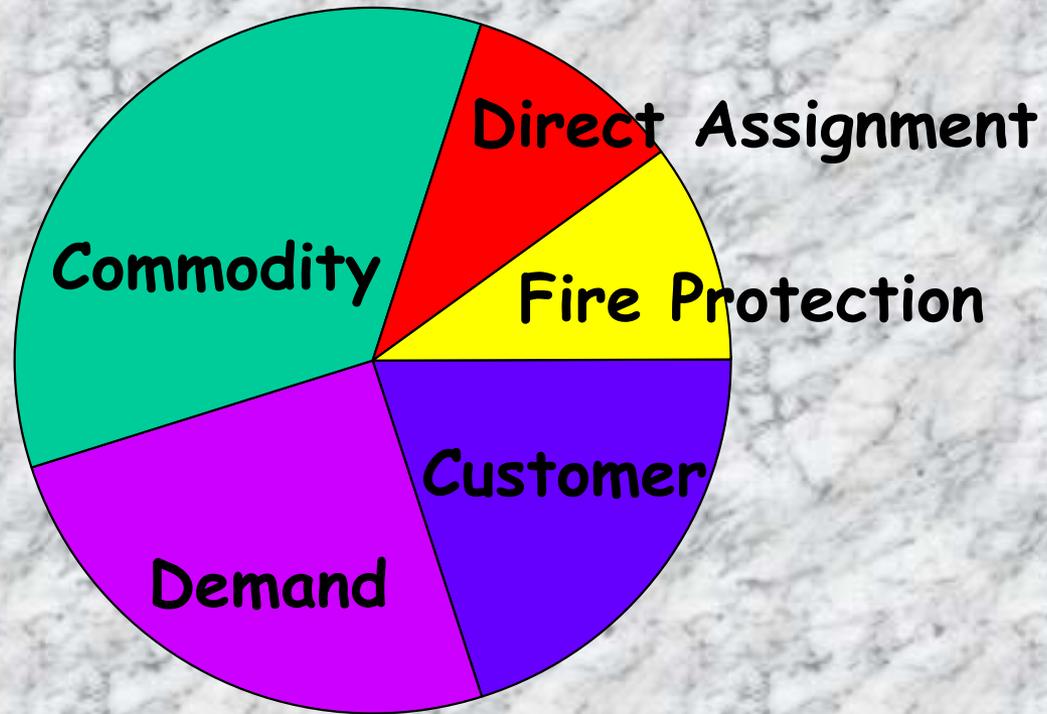
Fire Protection

★ Generally not a major function for the small utilities that are regulated by the PSC.

Direct Assignment or Wholesale Customers

★ Costs directly associated with serving a particular customer.

All Expenses



ALLOCATION OF OPERATION AND MAINTENANCE EXPENSES

	Total	Allocation Factor	Wholesale	Retail
Salaries				
Transmission/Distribution	167,177	0.0030	\$502	\$166,675
Customer Accounts	62,354	0.0000	\$0	\$62,354
Purchased Water	426,223		\$8,798	417,425
Purchased Power				
Transmission/Distribution	13,420	0.0211	\$283	13,137
Customer Accounts	600	0.0000	\$0	600
Materials & Supplies				
Transmission/Distribution	47,447	0.0030	\$142	47,305
Administrative/General	13,025	0.0030	\$39	12,986
Contract Services	7,969	0.0030	\$24	7,945
Transportation Expense				
Transmission/Distribution	2,855	0.0030	\$9	2,846
Customer Accounts	2,855	0.0000	\$0	2,855
Insurance-General Liability			\$0	
Transmission/Distribution	4,541	0.0030	\$14	4,527
Customer Accounts	4,540	0.0000	\$0	4,540
Insurance-Workers Comp				
Transmission/Distribution	3,275	0.0030	\$10	3,265
Customer Accounts	1,513	0.0000	\$0	1,513
Bad Debt Expense	3,307	0.0000	\$0	3,307
Total Operation/Maintenance	761,101			
Depreciation				
Retail-only	29,795	0.0000	\$0	29,795
Shared Depreciation				
Shared Trans/Dist	55,041	0.0030	\$165	54,876
Shared Source of Supply	10,053	0.0211	\$212	9,841
Taxes other than Income	13,989	0.0030	\$42	13,947
Debt Service				
Retail Only	\$25,025	0.0000	\$0	25,025
Shared Debt Service	\$86,127	0.0211	\$1,817	84,310
Total - Utility Req Revenue	\$981,131		\$12,057	\$969,074
Rate to Wholesale	Wholesale gallons	6,306,000	\$1.91	per 1,000 gallons

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ALLOCATION OF RETAIL OPERATION AND MAINTENANCE EXPENSES				
	Total	Commodity	Demand	Customer
Salaries				
Transmission/Distribution	112,773		\$112,773	
Customer Accounts	60,600			60,600
Purchased Water	417,425	417,425		
Purchased Power				
Transmission/Distribution	12,549	12,549		
Customer Accounts	600			600
Materials & Supplies				
Transmission/Distribution	47,305		47,305	
Transportation Expense				
Transmission/Distribution	2,846		2,846	
Customer Accounts	2,855			2,855
Insurance-General Liability				
Transmission/Distribution	4,527		4,527	
Customer Accounts	4,540			4,540
Insurance-Workers Comp				
Transmission/Distribution	2,281		2,281	
Customer Accounts	1,208			1,208
Bad Debt Expense	3,307			3,307
Miscellaneous Expense				
Transmission/Distribution	6,862		6,862	
Customer Accounts	1,754			1,754
Subtotal	\$681,432	\$429,974	\$176,594	\$74,864
Less Commodity	(429,974)			
Total	\$251,458			
Percentages			70.23%	29.77%
Administrative & General				
Salaries/Officers/Comm	\$42,544		\$29,879	\$12,665
Purchased Power	587		412	175
Materials & Supplies	12,986		9,120	3,866
Contract Services	4,363		3,064	1,299
Insurance	984		691	293
Rentals	3,582		2,516	1,066
Advertising	305		214	91
Miscellaneous Expense	4,496		3,158	1,338
Taxes other than Income	13,947		9,795	4,152
Subtotal	\$83,794		\$58,849	\$24,945
Total O & M Expenses	\$765,226	\$429,974	\$235,443	\$99,809
Depreciation				
Retail-only	29,795		\$23,204	6,591
Shared Depreciation	64,717		\$50,402	14,315
Debt Service	109,335		\$86,167	23,168
Total	\$969,073	\$429,974	\$395,216	\$143,883

ALLOCATION OF RETAIL OPERATION AND MAINTENANCE EXPENSES

	Total	Commodity	Demand	Customer
Salaries				
Transmission/Distribution	166,675		\$166,675	
Customer Accounts	62,354			62,354
Purchased Water	417,425	417,425		
Purchased Power				
Transmission/Distribution	13,137	13,137		
Customer Accounts	600			600
Materials & Supplies				
Transmission/Distribution	47,305		47,305	
Transportation Expense				
Transmission/Distribution	2,846		2,846	

	Total	Commodity	Demand	Customer
Transportation Expense				
Transmission/Distribution	2,846		2,846	
Customer Accounts	2,855			2,855
Insurance-General Liability				
Transmission/Distribution	4,527		4,527	
Customer Accounts	4,540			4,540
Insurance-Workers Comp				
Transmission/Distribution	3,265		3,265	
Customer Accounts	1,513			1,513
Bad Debt Expense	3,307			3,307
Subtotal	\$730,349	\$430,562	\$224,618	\$75,169
Less Commodity	(430,562)			
Total	\$299,787			
Percentages			74.93%	25.07%

	Total	Commodity	Demand	Customer
Administrative & General				
Materials & Supplies	12,986		9,730	3,256
Contract Services	7,945		5,953	1,992
Taxes other than Income	13,947		10,450	3,497
Subtotal	\$34,878		\$26,133	\$8,745
Total O & M Expenses	\$765,227	\$430,562	\$250,751	\$83,914
Depreciation				
Retail-only	29,795		\$23,204	6,591
Shared Depreciation	64,717		\$50,402	14,315
Debt Service	109,335		\$86,167	23,168
Total	\$969,074	\$430,562	\$410,524	\$127,988

CALCULATION OF RETAIL WATER RATES

	Total	First 2000	Over 2000
Actual Water Sales:			
Thousand Gallons	201,560,000	84,672,000	116,888,000
	100.00%	42.01%	57.99%
Weighted Sales for Demand:			
Thousand Gallons	286,232,000	169,344,000	116,888,000
Percent	100.00%	59.16%	40.84%
Allocation of Volumetric Costs:			
Commodity	\$430,562	\$180,872	\$249,690
Demand	410,524	242,879	167,645
Customer	127,988	127,988	
Total	\$969,074	\$551,739	\$417,335
Number of Bills		42,336	
Proposed Rates		\$13.03	\$3.57

Summary

Things to Think About

Fresh Water will become a national security issue in the 21st Century.

Worldwide water consumption is rising twice as fast as the world's population.

Nearly 85% of water is used for agricultural and industrial purposes.

Nearly 80% of diseases in developing countries are water borne.

Over 300,000,000 people
live in areas where there are
severe water shortages.

Over 9,500 children worldwide die daily from lack of water or diseases caused by polluted water.

Common Goal

“We all want adequate and reliable water service at affordable prices for the consumer, and to help achieve it.....”

....We must all look for opportunities to find creative solutions to the water problems in this state and work together to create policies that best serve the public."

Web Resources

Other state commissioners and water companies

NARUC Committee and Subcommittee on Water

NRRI, NAWC, and AWWA

PUBLIC
SERVICE
COMMISSION

SAM REID

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