COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

PROPOSED ADJUSTMENT OF THE WHOLESALE WATER SERVICE RATES OF THE CITY OF PIKEVILLE MOUNTAIN WATER DISTRICT	)))	Case No. 2019-00080

RESPONSE OF MOUNTAIN WATER DISTRICT TO COMMISSION'S SECOND DATA REQUEST

Mountain Water District, (MWD) by counsel, submits its responses to the Commission's Second Data Request.

SUBMITTED BY:

John N. Hughes
124 W. Todd St.
Frankfort, KY 40601
Telephone: (502) 227-7270
jnhughes@johnnhughespsc.com

and

Daniel P. Stratton
Stratton Law Firm PSC
Post Office Box 1530
Pikeville, Kentucky 41502
Telephone: (606) 437-7800
Facsimile: (606) 437-7569
dan@strattonlaw.net

Attorneys for Mountain Water District

CASE	:	City of Pikeville
CASE NO	:	2019-00080
RE	:	Public Service Commission Second Data Request to MWD

Q 1. Provide the following information concerning the costs for the preparation of this case:

a. A detailed schedule of expenses incurred to date for the following categories:

(1) Accounting;

(2) Engineering;

(3) Legal;

(4) Consultants; and

(5) Other Expenses (Identify separately).

(6) For each category, the schedule should include the date of each transaction, check number or other document references, the vendor, the hours worked, the rates per hour, amount, a description of the services performed, and the account number in which the expenditure was recorded. Provide copies of contracts or other documentation that support charges incurred in the preparation of this case. Identify any costs incurred for this case that occurred during the base period.

b. An itemized estimate of the total cost to be incurred for this case. Expenses should be broken down into the same categories as identified in "a." above, with an estimate of the hours to be worked and the rates per hour. Include a detailed explanation of how the estimate was determined, along with all supporting work-papers and calculations.

c. Provide monthly updates of the actual costs incurred in conjunction with this rate case, reported in the manner requested in (a) above.

WITNESS : ROY SAWYERS

RESPONSE Q1:

a. To date, the following expenses have been incurred.

1) N/A

2) N/A

3) Stratton Law Firm P.S.C. (See attached itemized statements) John N, Hughes, Attorney (See attached itemized statement)

4) Salt River Engineering (See attached itemized statement up to and including July 18, 2019. Costs incurred after July 18, 2019, will be itemized in future costs, as they have not yet been billed.)

5) N/A

6) See attached exhibits referenced above.

b. Estimated future cost and expenses are as follows:

(1) N/A

(2) N/A

(3) Future legal cost estimated to be incurred by Stratton Law Firm, P.S.C., in this matter, at a rate of $165 per hour, is as follows: See attached.

Future legal cost estimated to be incurred by John N. Hughes, Attorney, in this matter, at a rate of $350 per hour, is as follows: See attached.

(4) Consultants; and

Future cost estimated to be incurred by Salt River Engineering, in this matter, is as follows: See attached.

(5) Other Expenses (Identify separately).

Future expenses estimated for Roy Sawyers, Mountain Water District Administrator, are as follows: Travel expenses 328 miles at .58¢ per mile $190.24; hotel room at $125; and meals at $25.00; for a total of $340.24.

(6) See attached exhibits referenced above.

c. Will provide when available.

RESPONSE TO QUESTION

1(a)

EXHIBIT "3"

DANIEL P. STRATTON, ESQ.

STRATTON LAW FIRM, P.S.C.

STRATTON LAW FIRM, P.S.C.
111 Pike St., P.O. Box 1530
Pikeville, KY 41502
606-437-7800 Fax 606-437-7569

STATEMENT

PRIVILEGED & CONFIDENTIAL

Federal ID No. 31-1556382

Mountain Water District
P.O. Box 3157
Pikeville, KY 41502

ATTN: ROY SAWYERS

Account No. HEM3005-193

RE: City of Pikeville - City Water Rates

Statement Date: 06/30/2019
Statement No. 19
Page No. 1

Fees

			Hours
06/10/2019	DPS	Receipt and review of scheduling Order	0.25
06/11/2019	DPS	Call to Jack H.; Email to Jack re: discovery process	0.25
	DPS	Receipt and review email from Jack & Connie	0.25
06/20/2019	DPS	Receipt and review of email from Jack Hughes; Call to Roy and Mike B.; Emails to Jack Hughes	0.50
06/24/2019	DPS	Call from Jack; Receipt and review email with downloaded discovery documents; Downloaded documents to file	0.25
	DPS	Initial review of city's Answers to PSC	1.75
	DPS	Two emails from and to Jack	0.25
	DPS	Review discovery information	1.00
	DPS	Review all correspondence with Rusty; Send Jack and Connie letters; Email from May	0.50
06/25/2019	DPS	Exchange various emails with Jack & Connie	0.25
	DPS	Review file for questions; email to Connie and Jack	1.75
	DPS	Receipt and review of email from Connie; Call to Tammy; Email to Connie re: rate study	0.25
06/26/2019	DPS	E-mail received from Connie re: meter issue	0.25
06/27/2019	DPS	Receipt and review various emails to and from Connie and Jack	0.25
	DPS	Review Connie's questions; Review Jack's comments	0.75
	DPS	Conference call with Jack & Connie and Roy to review questions to the City	2.50

			Hours	
	DPS	Receipt and review of various emails for Jack and Connie; Reply email	0.25	
06/28/2019	DPS	Receipt and review multiple emails with Connie Allen and Jack Hughes re: questions for City, et al	0.50	
		For Current Services Rendered	11.75	1,938.75
		Previous Balance		$330.00
		Total Current Work		1,938.75
		Payments		
		Total Payments		-330.00
		Balance Due		$1,938.75

MAKE CHECK PAYABLE TO STRATTON LAW FIRM, PSC
PAYMENT DUE UPON RECEIPT
NOW ACCEPTING MASTERCARD, VISA AND DISCOVER
THANK YOU

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STATEMENT

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Federal ID No. 31-1556382

Mountain Water District
P.O. Box 3157
Pikeville, KY 41502

ATTN: ROY SAWYERS

Account No. HEM3005-193

RE: City of Pikeville - City Water Rates

Statement Date: 05/31/2019
Statement No. 18
Page No. 1

Fees

			Hours	
05/02/2019	DPS	Various emails to/from John Hughes and Connie Allen in regard to the City of Pikeville matter before the PSC	0.25	
05/03/2019	DPS	E-mail sent to Roy, Mike and Mike S.	0.25	
	DPS	E-mail received from John Hughes and Connie Allen	0.25	
05/08/2019	DPS	Receipt and review email from Rusty Davis; Email to Roy and Mike	0.25	
	DPS	Receipt and review email from Mike Blackburn; Call to Roy	0.25	
05/09/2019	DPS	Revise letter to Karen Kelly; Call to Roy; Set up conference call with Hilda Legg; Email to Roy	0.75	
		For Current Services Rendered	2.00	330.00
		Previous Balance		$1,320.00
		Total Current Work		330.00

Payments

Total Payments	-1,320.00
Balance Due	$330.00

MAKE CHECK PAYABLE TO STRATTON LAW FIRM, PSC
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THANK YOU

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Federal ID No. 31-1556382

Mountain Water District
P.O. Box 3157
Pikeville, KY 41502

ATTN: ROY SAWYERS

Account No. HEM3005-193

RE: City of Pikeville - City Water Rates

Statement Date: 04/30/2019
Statement No. 17
Page No. 1

Fees

			Hours
04/16/2019	DPS	Review City's rate study and Connie's questions	0.75
	DPS	Draft questions to City of Pikeville	1.25
04/17/2019	DPS	Second draft of discovery request	0.50
	DPS	Letter to to Jack Hughes re: discovery requests	0.25
04/18/2019	DPS	E-mail sent to Jack H. re: additional discovery questions	0.25
04/22/2019	DPS	Receipt and review email from Connie Allen; Reply email x2	0.25
	DPS	E-mail received from Connie Allen; Reply email re: contract issue	0.25
	DPS	E-mail received from Jack Hughes; Email to Roy and Mike Blackburn	0.25
	DPS	Call from Roy; Call to Mike Blackburn	0.25
	DPS	Receipt and review email from Connie Allen re: new discovery question; Reply email	0.25
	DPS	Receipt and review of letter from Rusty Davis; Email to Roy and Mike	0.25
	DPS	E-mail sent to Connie Allen & John Hughes attaching copies of correspondence to/from Rusty Davis, Esq. regarding our request for a contract extension	0.25
04/23/2019	DPS	E-mail sent to Connie & Jack	0.25
	DPS	Text to Roy; Reply text; Prepare outline of issue for conference call with Mike and Roy	0.25
	DPS	Received two emails from Connie Allen; Call to Connie	0.50
	DPS	Call to Mike Spears; Discuss different loan options	0.25

			Hours	
	DPS	Receipt and review of emails from Jack and Connie; Reply email; Emails to Roy, Mike Blackburn and Mike Spears	0.25	
	DPS	Conference call to Mike Blackburn, Roy and Mike Spears	0.50	
	DPS	Second draft of letter to Rusty Davis	0.25	
04/24/2019	DPS	Revise letter to Rusty Davis	0.50	
	DPS	Send Rusty Davis letter to Mike and Roy for approval	0.25	
	DPS	E-mail received from and to Roy	0.25	
		For Current Services Rendered	8.00	1,320.00
		Previous Balance		$288.75
		Total Current Work		1,320.00
		Payments		
		Total Payments		-288.75
		Balance Due		$1,320.00

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P.O. Box 3157
Pikeville, KY 41502

ATTN: ROY SAWYERS

Account No. HEM3005-193

RE: City of Pikeville - City Water Rates

Statement Date: 03/31/2019
Statement No. 16
Page No. 1

Fees

			Hours	
03/01/2019	DPS	E-mail received from Jack re: protest form; Email to Jack	0.25	
03/04/2019	DPS	E-mail received from Connie Allen; Reply email to Roy, Carrie and Connie	0.25	
	DPS	Receipt and review of protest letter filed with PSC; Letter to Rusty Davis	0.25	
	DPS	E-mail sent to Jack re: rate case discovery	0.25	
03/19/2019	DPS	E-mail sent to Connie re: update on case	0.25	
03/28/2019	DPS	Receipt and review PSC Order	0.25	
	DPS	Receipt and review of PSC Order from Roy	0.25	
		For Current Services Rendered	1.75	288.75
		Previous Balance		$3,258.75
		Total Current Work		288.75

Payments

Total Payments	-3,258.75
Balance Due	$288.75

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THANK YOU

To ensure proper credit, please include account number and statement date on remittance checks. Thank you.

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STATEMENT

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Federal ID No. 31-1556382

Mountain Water District
P.O. Box 3157
Pikeville, KY 41502

ATTN: ROY SAWYERS

Account No. HEM3005-193

RE: City of Pikeville - City Water Rates

Statement Date: 02/28/2019
Statement No. 15
Page No. 1

Fees

			Hours
02/03/2019	DPS	Letter to P.A. rate study RFP	0.25
02/05/2019	DPS	Call from Rusty Davis; Call to Roy; Call to Mike Spears	0.50
	DPS	Call to Mike Spears	0.25
	DPS	Receipt and review email with new rate study; Email to Roy and Mike	0.25
02/06/2019	DPS	Receipt and review of various emails re: RFP; Email from Roy	0.25
	DPS	Receipt and review from Todd Osterloh, City of Pikeville's cost-of-service analysis.	0.25
02/07/2019	DPS	Call to Roy and Mike Spears; Set up conference call	0.25
02/08/2019	DPS	Call to Roy and Mike re: schedule meeting	0.25
	DPS	Draft letter to City's attorney re: rate study Response	0.25
	DPS	Call from Roy; Call to to Mike to reschedule call	0.25
	DPS	Receipt and review from Sturgill, Turner, Barker & Moloney, PLLC, Cost of Service Analysis.	0.25
02/11/2019	DPS	E-mail received from Roy; Reply email	0.25
	DPS	Letter to Mike Blackburn and Kevin V. re: new rate study	0.25
	DPS	Prepared for meeting with Roy and Mike	0.75
	DPS	Meet with Roy and Mike	1.00
02/12/2019	DPS	E-mail sent to committee to set up meeting	0.25
	DPS	Call from Mike Blackburn; Email to committee	0.25

			Hours
02/13/2019	DPS	E-mail sent to Tammy Olson requesting copies of previous water purchase contracts with the City of Pikeville. R/R several prior contacts via email.	0.25
	DPS	Meet with Roy, Mike Blackburn and Mike Spears re: City Rate and Radio Road issue	1.50
02/14/2019	DPS	E-mail sent to Connie Allen re: RFP	0.25
	DPS	Prepared exhibits to send Connie Allen; Letter to Connie	0.50
	DPS	E-mail received from and to Connie Allen setting up conference; Email from Todd Ostrish	0.25
02/15/2019	DPS	Conference call to Connie Allen	0.75
02/19/2019	DPS	Letter to Todd; Email to rate study committee; Letter to Connie Allen	0.50
	DPS	Receipt and review of various emails from Mike B., Kevin Varney and Mike Spears	0.25
02/20/2019	DPS	Letter to Roy and rate committee	0.25
	DPS	Multiple email to Connie Allen to set up conference call; Email from Connie; Email to Roy	0.50
	DPS	Draft letter to rate committee	0.25
	DPS	E-mail and phone call received from Connie Allen	0.75
	DPS	Call to David Taylor; Call to Connie re: Marvin Branch tract	0.50
	DPS	E-mail sent to Connie re: rate study	0.25
	DPS	E-mail received from Tammy; Email to Connie Allen	0.25
	DPS	Receipt and review of Notice of Rate case	0.25
02/21/2019	DPS	Text to Roy; Call to Mike Blackburn; Call to Jack Hughes	0.50
	DPS	Complete information to send Jack Hughes	0.25
	DPS	Call to Tammy; Call to Carrie re: information requested by Connie Allen	0.25
	DPS	Call from Connie Allen, legal question	0.25
	DPS	Receipt and review of first draft report from Connie	0.25
	DPS	E-mail sent to Connie - comments on 1st draft of report	0.50
02/22/2019	DPS	Receipt and review from Carrie Hatfield at MWD, the 2016/2017 Water Purchase Analysis as requested by Connie Allen. Email to Connie Allen and John Hughes, copy of the analysis.	0.25

			Hours	
	DPS	Receipt and review of email from Connie Allen	0.25	
	DPS	Receipt and review of various emails re: rate study; Email from Todd	0.25	
02/25/2019	DPS	Receipt and review (2) emails from John Hughes	0.25	
02/26/2019	DPS	Review draft letter to PSC	0.25	
	DPS	Receipt and review of revised PSC letter from Jack	0.25	
	DPS	Prepared for meeting with Roy	0.50	
	DPS	Conference call with Jack, Connie and Roy	0.50	
02/27/2019	DPS	Letter to Connie and Jack; Letter to Todd	0.50	
02/28/2019	DPS	Call from Jack Hughes re: electronic filing	0.25	
		For Current Services Rendered	18.25	3,011.25
		Previous Balance		$247.50
		Total Current Work		3,011.25
		Balance Due		$3,258.75

MAKE CHECK PAYABLE TO STRATTON LAW FIRM, PSC
PAYMENT DUE UPON RECEIPT
NOW ACCEPTING MASTERCARD, VISA AND DISCOVER
THANK YOU

STRATTON LAW FIRM, P.S.C.
111 Pike St., P.O. Box 1530
Pikeville, KY 41502
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STATEMENT

PRIVILEGED & CONFIDENTIAL

Federal ID No. 31-1556382

Mountain Water District
P.O. Box 3157
Pikeville, KY 41502

ATTN: ROY SAWYERS

Account No. HEM3005-193

RE: City of Pikeville - City Water Rates

Statement Date: 01/31/2019
Statement No. 14
Page No. 1

Fees

			Hours	
01/02/2019	DPS	Call from Brandy Tippy declining to bid; Receipt and review of emails confirming receipt of additional information from other bidders	0.25	
01/04/2019	DPS	Meet with Rusty Davis re: rate study issue; Email to Roy	0.25	
01/16/2019	DPS	Call from Roy; Call to Jack H.; Call to Roy	0.25	
01/17/2019	DPS	E-mail received from Roy; Email from Jack Hopkins	0.25	
01/23/2019	DPS	Receipt and review of email on rate study bid	0.25	
01/24/2019	DPS	Review Garnett Fleming bid for rate study	0.25	
		For Current Services Rendered	1.50	247.50
		Previous Balance		$1,856.25
		Total Current Work		247.50

Payments

Total Payments	-1,856.25
Balance Due	$247.50

MAKE CHECK PAYABLE TO STRATTON LAW FIRM, PSC
PAYMENT DUE UPON RECEIPT
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To ensure proper credit, please include account number and statement date on remittance checks. Thank you.

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STATEMENT

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Federal ID No. 31-1556382

Mountain Water District
P.O. Box 3157
Pikeville, KY 41502

ATTN: ROY SAWYERS

Account No. HEM3005-193

RE: City of Pikeville - City Water Rates

Statement Date: 12/31/2018
Statement No. 13
Page No. 1

Fees

			Hours
12/06/2018	DPS	Review file; Draft memo to committee	0.50
12/07/2018	DPS	Outline questions for meeting; Preparation for meeting	0.50
12/10/2018	DPS	Prepared for and attend meeting with City of Pikeville re: rate study	4.50
12/11/2018	DPS	Draft memo of meeting with City	0.50
	DPS	Research KAR; Email to Roy	0.25
	DPS	Call from Rusty; Email to Rusty	0.50
12/12/2018	DPS	Receipt and review of email from Jack H.; Email to Roy	0.25
	DPS	Call from Roy	0.25
12/13/2018	DPS	Call to Roy; Call t Greg Heitzman	0.50
	DPS	Call to prospective bidders on RFP for rate study	0.25
	DPS	Call from Jack H.; Call to Roy; Memo to Roy	0.50
	DPS	Drafts of RFP for review of rate study	0.75
	DPS	Review 2002 PSC Order; Letter to Roy and Mike	0.50
	DPS	Call to Carrie for information on payout's to City	0.25
12/14/2018	DPS	Receipt and review four of the five RFPs sent via email yesterday evening. T/C to Connie Allen, PE, CCM to make her aware that she was sent the RFP via email. Got voice mail. Left detailed message with return number.	0.25
	DPS	Call from Roy	0.25
	DPS	Call from Mike Spears; Email to Mike Blackburn re: 2002 PSC Order	0.25

			Hours	
12/21/2018	DPS	Letter sent to Kenneth Taylor, Brent Tippy, Connie Allen, Gary Larimore and Constance Heppenstell re: deadline date for project proposal was wrong, advised of new date - cc Roy on these	0.25	
	DPS	Letter to engineers for rate study correction date to respond	0.25	
		For Current Services Rendered	11.25	1,856.25
		Previous Balance		$217.50
		Total Current Work		1,856.25
		Payments		
		Total Payments		-217.50
		Balance Due		$1,856.25

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PAYMENT DUE UPON RECEIPT
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THANK YOU

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STATEMENT

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Federal ID No. *31-1556382*

Mountain Water District
P.O. Box 3157
Pikeville, KY 41502

ATTN: ROY SAWYERS

Account No. HEM3005-193

Statement Date: 11/30/2018
Statement No. 12
Page No. 1

RE: City of Pikeville - City Water Rates

Fees

			Hours	
11/01/2018	DPS	E-mail received from Phillip Elswick, received our letter and will be in touch with dates	0.25	
	DPS	Letter to Phillip Elswick	0.25	
11/02/2018	DPS	Receipt and review email from Gerald W.; Call to Gerald	0.25	
	DPS	Call from Roy	0.25	
11/05/2018	DPS	Receipt and review of email report from John Hughes	0.25	
11/06/2018	DPS	E-mail received from Phillip Elswick with available dates for meeting	0.25	
		For Current Services Rendered	1.50	217.50
		Previous Balance		$145.00
		Total Current Work		217.50

Payments

Total Payments	-145.00
Balance Due	$217.50

MAKE CHECK PAYABLE TO STRATTON LAW FIRM, PSC
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THANK YOU

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STATEMENT

PRIVILEGED & CONFIDENTIAL

Federal ID No. *31-1556382*

Mountain Water District
P.O. Box 3157
Pikeville, KY 41502

ATTN: ROY SAWYERS

Account No. HEM3005-193

RE: City of Pikeville - City Water Rates

Statement Date: 10/31/2018
Statement No. 11
Page No. 1

Fees

			Hours	
10/16/2018	DPS	Receipt and review of City's rate study; Call to Roy; Email to Mike Spears and Mike B.	0.50	
10/17/2018	DPS	Review Pikeville rate study	0.50	
		For Current Services Rendered	1.00	145.00
		Previous Balance		$72.50
		Total Current Work		145.00

Payments

Total Payments	-72.50
Balance Due	$145.00

MAKE CHECK PAYABLE TO STRATTON LAW FIRM, PSC
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THANK YOU

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STATEMENT

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Federal ID No. *31-1556382*

Mountain Water District
P.O. Box 3157
Pikeville, KY 41502

ATTN: ROY SAWYERS

Account No. HEM3005-193

RE: City of Pikeville - City Water Rates

Statement Date: 09/30/2018
Statement No. 10
Page No. 1

Fees

			Hours	
09/12/2018	DPS	Call to Rusty Davis; Call to Roy; Call to Jack Hughes	0.50	
		For Current Services Rendered	0.50	72.50
		Previous Balance		$217.50
		Total Current Work		72.50

Payments

	Total Payments	-217.50
	Balance Due	$72.50

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Federal ID No. 31-1556382

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Pikeville, KY 41502

ATTN: ROY SAWYERS

Account No. HEM3005-193

Statement Date: 08/31/2018
Statement No. 9
Page No. 1

RE: City of Pikeville - City Water Rates

Fees

			Hours	
08/01/2018	DPS	Receipt and review signed green card from correspondence sent to Phillip Elswick, City Manager, regarding City of Pikeville Wholesale Water Rate	0.25	
08/30/2018	DPS	Call from Roy; Call to Phillip Elswick	0.25	
	DPS	Call from Roy; Call to Phillip Elswick; Email to Mike and Roy	0.50	
08/31/2018	DPS	Letter to Phillip Elswick; Letter to Mike and Roy	0.25	
	DPS	Call to Mike Spears	0.25	
		For Current Services Rendered	1.50	217.50
		Previous Balance		$36.25
		Total Current Work		217.50

Payments

Total Payments	-36.25
Balance Due	$217.50

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Mountain Water District
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ATTN: ROY SAWYERS

Account No. HEM3005-193

RE: City of Pikeville - City Water Rates

Statement Date: 07/31/2018
Statement No. 8
Page No. 1

Fees

			Hours	
07/21/2018	DPS	E-mail sent to Carrie	0.25	
		For Current Services Rendered	0.25	36.25
		Total Current Work		36.25
		Balance Due		$36.25

MAKE CHECK PAYABLE TO STRATTON LAW FIRM, PSC
PAYMENT DUE UPON RECEIPT
NOW ACCEPTING MASTERCARD, VISA AND DISCOVER
THANK YOU

To ensure proper credit, please include account number and statement date on remittance checks. Thank you.

RESPONSE TO QUESTION

1(a)

EXHIBIT "3"

JOHN N. HUGHES, ESQ.

JOHN N. HUGHES, P.S.C.

STATEMENT OF ACCOUNT

John N. Hughes, PSC
Attorney at Law
124 West Todd St.
Frankfort, KY 40601

Invoice to:
Mountain Water District
% Roy Sawyers
6332 Zebulon Hwy ~ PO Box 3157
Pikeville, KY 41501

Date of Invoice: August 1, 2019

Date	Reference	Time (Hrs)
5/2/19	Response CA re; case status	.25
5/17	Response DS re: PSC rate issues	.25
5/16	Response DS re: Pikeville COSS issues	.5
5/17	Response DS re: Pikeville COSS issues	.5
6/11	Review PSC order, Initial DR to Pikeville	.75
6/20	Message DS re: rate issues	.25
6/21	Message DS re: PSWC filing	.25
6/22	Review Pikeville DR responses	1.75
6/24	Several message DS, CA re: Pikeville DR's, motions; Review Pikeville motions; review info from CA re: COSS issues;	4.5
6/25	Message CA re: Pikeville responses; Review Pikeville DR's; revised COSS; Prepare issues list for Pikeville DR's, CA testimony	5.5
6/26	Conference CA re: Pikeville DR responses, testimony; revise draft DR's; several messages CA, DS.	4.75
	Mileage Harrodsburg 50 miles @ $0.50	$25.00
6/27	Review draft DR's; tele. conference DS, CA, re: DR's, response to Pikeville's motions	3.5
6/28	Revisions to Pikeville's DR's	.75
7/1	Review PSC DR 2; several messages DS, CA re: testimony	.5
7/2	Messages DS, CA; Draft CA testimony issues; research case issues, prior PSC orders, case files	5
7/3	Review draft responses to DR's; message DS; tele DS,CA	.75
7/8	Several messages DS, CA re: CA testimony	.5
7/9	Review of CA testimony; research testimony issues	4.75

7/12	Response DS re: CA testimony	.25
7/15	Responses to PSC DR's; several calls DS, CA; response to DS re: electronic filing issues; Review Pikeville responses; message TO; review Pikeville confidentiality agreement.	5
7/16	Review Pikeville's responses to MWD, PSC; draft motion to compel; tele. CA re: testimony	6.5
7/17	Conference CA re: testimony; tele. DS re: testimony; revisions to testimony	5
	Mileage Harrodsburg 50 miles @ $0.50	$25.00
7/18	Tele. CA re: motion to compel; several calls DS re: motion; CA testimony revisions	4.25
7/23	Review PSC hearing order; several message DS, CA re: rescheduling hearing; outline potential hearing issues	2.25
7/24	Motion to reschedule hearing; verify available hearing dates	.75
7/26	Review Pikeville's responses to compel; message DS re: discovery options	.5
7/29	Review PSC DR 3 to Pikeville and DR 2 to MWD; several calls CA; DS	.75
Sub total		60.25 hr. @$350.00 =$21,087.50
Expenses		$50.00
Previous balance		$ 0
Total Due		**$21,137.50**

STATEMENT OF ACCOUNT

John N. Hughes, PSC
Attorney at Law
124 West Todd St.
Frankfort, KY 40601

Invoice to:
Mountain Water District
% Roy Sawyers
6332 Zebulon Hwy ~ PO Box 3157
Pikeville, KY 41501

Date of Invoice: May 1, 2019

Date	Reference	Time (Hrs)
11/5/18	Review information from DS re: Pikeville COS; Prepare issues list, questions re: COS	2.5
11/6	Message DS re: Pikeville COS issues	.25
12/13	Response DS re: Pikeville issues; COS issues; tele. DS; tele. Pikeville atty re: COSW issues	.75
1/11/19	Tele. DS; message re: Pikeville rate issues	.5
1/22	Tele. DS re: Pikeville issues	.5
2/21	Tele. DS; review Pikeville rate issues	2.75
2/22	Review Pikeville COS information; tele. CA re: COS issues	1.75
2/23	Draft PSC protest/intervention letter for Pikeville rate increase; review Pikeville COS/rate issues	4.5
2/25	Tele. CA re: COS issues; message DS re: tariff protest/COS issues	.75
2/26	Tele. DS, RS, CA re: Pikeville rate issues	.75
3/4	Revise and file protest letter w/PSC	2.25
3/28	Review PSC order; tele DS	.5
4/17	Review draft discovery issues from DS	.75
4/22	Response CA re: COS issues	.25
4/23	Several messages DS, CA re: Pikeville Cos issues	.75
Sub total		19.5 hr. @$350.00 =$6,825.00
Expenses		
Previous balance		$ 0
Total Due		**$6,825.00**

RESPONSE TO QUESTION

1(a)

EXHIBIT "4"

Invoice

Mountain Water District
6332 Zebulon Highway
PO Box 3157
Pikeville KY 41502-3157

29 Jul 2019

Invoice 16-2019-5

PSC Case	date	hours	cost
Review Dan Stratton's discovery questions; talk with Steve Seelye regarding same	19 Apr 2019	03:15	$487.50
adding two questions re: hydraulics and Marion's Branch	22 Apr 2019	03:45	$562.50
review PSC rate cases	23 Apr 2019	00:45	$112.50
review Pikeville's 1st response	24 Jun 2019	06:00	$900.00
review Pikeville response/MWD questions	25 Jun 2019	05:45	$862.50
MWD request questions	26 Jun 2019	09:30	$1,425.00
MWD request questions	27 Jun 2019	10:00	$1,500.00
MWD request questions	28 Jun 2019	04:30	$675.00
MWD request questions	01 Jul 2019	01:00	$150.00
review notes for testimony	08 Jul 2019	04:00	$600.00
CLA testimony	15 Jul 2019	10:30	$1,575.00
CLA testimony	16 Jul 2019	09:00	$1,350.00
CLA testimony	17 Jul 2019	09:30	$1,425.00
CLA testimony	18 Jul 2019	04:15	$637.50
Total		81:45	$12,262.50

Salt River Engineering, PLLC

info@saltrivereng.com
859-734-2334

EXHIBIT 1(b)

DANIEL P. STRATTON, ESQ.
STRATTON LAW FIRM, P.S.C.

(3) Future legal cost estimated to be incurred by Stratton Law Firm, P.S.C., in this matter, at a rate of $165 per hour, is as follows:

a) Assist in the preparation and review of responses to current discovery requests from the Public Service Commission. Two (2) hours.

b) Assist in the preparation and review of current discovery requests from the City of Pikeville. Two (2) hours.

c) Assist in witness preparation for the PSC hearing. Four-Six (4-6) hours.

d) Assist in the preparation and review of cross-examination of witnesses for the PSC hearing. Three (3) hours.

e) Review record in preparation for hearing. Three (3) hours.

f) Travel to and from Frankfort to attend hearing. Six (6) hours.

g) Attend hearing. Eight (8) hours.

h) Travel expenses to attend PSC hearing in Frankfort. 328 miles at .58¢ per mile. ($190.24)

i) Meals for Dan Stratton on date of PSC hearing. ($15.00)

j) Attorney/client communications (phone calls, emails, etc.). Four (4) hours.

k) Review and assist with post hearing DR's. Two-Four (2-4) hours.

l) Review and assist with Brief. Ten (10) hours.

EXHIBIT 1(b)

JOHN N. HUGHES, ESQ.
JOHN N. HUGHES, P.S.C.

(3) Future legal cost estimated to be incurred by John N. Hughes, Esq., in this matter, at a rate of $350 per hour, is as follows:

a) Responses to PSC and Pikeville DR's. Two (2) hours.

b) Hearing preparation. Eight-Twelve (8-12) hours.

c) Witness preparation. Six-Eight (6-8) hours.

d) PSC Hearing. Eight-Ten (8-10) hours.

e) Post hearing DR's, Two-Four (2-4) hours.

f) Brief. Twenty-five-Thirty (25-30) hours.

EXHIBIT 1(b)

CONNIE LEA ALLEN, P.E.
SALT RIVER ENGINEERING, P.L.L.C.

(4) Future engineer/analyst cost estimated to be incurred by Salt River Engineering, P.L.L.C., in this matter, at a rate of $150 per hour, is as follows:

a) Preparation and review of responses to current discovery requests from the Public Service Commission and the City of Pikeville. Thirteen (13) hours.

b) Preparation for the PSC hearing. Eight (8) hours.

c) Travel to and from Frankfort to attend hearing. Two (2) hours.

d) Attend hearing. Eight (8) hours.

e) Review and assist with post hearing DR's. Ten (10) hours.

CASE : City of Pikeville

CASE NO : 2019-00080

RE : Public Service Commission
Second Data Request to MWD

Q 2. Refer to the Testimony of Connie Lea Allen, P.E. (Allen Testimony), pages 10-11, Item 20.

a. Confirm that in the cost-of-service study (COSS), the analysis used a volume for Mountain Water District (Mountain District) of 456,591,000 gallons instead of the 463,000,000 as reported by the city of Pikeville (Pikeville).

b. Also, confirm that the analysis was limited to the use of the 456,591,000 gallons for Mountain District, no matter the response from Pikeville.

WITNESS : CONNIE ALLEN, P.E.

RESPONSE Q2:

a. I cannot confirm that the COSS used a volume of 456,591,000 gallons purchased by MWD. Mr. Petty did not use 456,591,000 gallons despite the fact that the meter readings supplied by Pikeville in response to PSC's initial data request totaled 456,592,000 gallons for Fiscal Year 2017, the test year. I asked MWD for their record of gallons purchased in June when preparing MWD's data request for Pikeville. The total of their meter readings was 456,591,000. The total of the readings supplied by Pikeville in response to PSC's initial data request was 456,592,000 gallons. I intended to use the latter volume, but inadvertently used 456,591,000 gallons, which has no material impact on the results.

Figure 7 of the COSS included "463" in the "million gallons" column associated with purchases by MWD. Figure 10 is the other place in the COSS where the volume purchased by MWD is used. No reference to gallons purchased by MWD exists in the rate determination table. However, using Mr. Petty's revenue and rate numbers, the gallons

purchased can be back-calculated. The illustration below includes a reprint of Mr. Petty's Figure 10 at the top, with my calculations to solve for gallons purchased below Mr. Petty's numbers.

Rate Determination for Variable Costs						
	revenue paid	current rate per 1,000 gal	revenue required	required rate per 1,000 gal	revenue deficit	increase needed per 1,000 gal
MWD	729,785	$ 1.58	1,067,733	$ 2.30	337,947	$ 0.72

solving for volume	461,889	1,000 gal	464,232	1,000 gal	469,371	1,000 gal
	461,889,241	gallons	464,231,739	gallons	469,370,833	gallons
rate if you use 463,000 (1,000 gal)		$ 1.58		$ 2.31		$ 0.73
rate if you use 456,591 (1,000 gal)		$ 1.60		$ 2.34		$ 0.74

Noting the results of the calculations, I cannot confirm the precise number Mr. Petty used for MWD purchase volume in his rate determination. I can only confirm the number he included in Figure 7, and it was 463 million gallons.

b. No, I cannot confirm the analysis was limited to the use of 456,591,000, for reasons stated in response to Item 2(a) above.

CASE : City of Pikeville

CASE NO : 2019-00080

RE : Public Service Commission
Second Data Request to MWD

Q 3. Refer to the Allen Testimony, pages 16-17, Item 29.

a. Confirm that the miles of line are from the Kentucky Water Resource Inventory System (WRIS) and Pikeville.

b. Provide all workpapers, assumptions, and analyses on the inch mile information for the stated calculation of 40 percent using the footage from the WRIS and the American Water Works Association system theory. Provide this calculation and supporting information in Excel spreadsheet format with all rows and columns unprotected and accessible.

WITNESS : CONNIE ALLEN, P.E.

RESPONSE Q3:

a. In Question 29 of MWD's initial data request of Pikeville, I included a table (Table 1) showing inch-mile totals, calculated on three sources of data. The table is reprinted, here, for convenience:

Table 1

	PSC 2002-00022		KIA WRIS (est. 2018)		PSC 2019-00080	
line diameter (inches)	miles	inch-miles	miles	inch-miles	miles	inch-miles
unknown			1.04	2.09		
2	2.73	5.46	8.00	16.01	1.7	3
3	2.42	7.26	1.02	3.06		
4	3.18	12.72	1.27	5.10	2.4	10
6	23.03	138.18	37.67	226.00	19.4	116
8	24.02	192.16	26.31	210.48	16.8	134
10	6.29	62.90	8.94	89.42	11.6	116
12	4.39	52.68	14.84	178.12	17.9	215
16	2.06	32.96	2.47	39.51	1.6	26
		504.32		769.79		620

The first two columns after the line diameters (columns 2 and 3) were obtained from PSC's order on Case 2002-00022. The next two were obtained by reference to the files associated with the "Pikeville Water Department" on WRIS. On the WRIS page for Pikeville, the tab labeled "Asset Management" lists physical attributes of the water system. Lines submitted by Pikeville are included in five sections, Cedar Creek, Huffman, Mossy Bottom, Thompson Road and Yorktown.

The numbers in columns 4 and 5, above, were obtained by adding the line totals of the 5 sections. Finally, the numbers in the last two columns (columns 6 and 7) were obtained from Pikeville's response to Question 13 of PSC's initial data request.

Since MWD submitted the questions for the initial data request of Pikeville to PSC and since the Allen Testimony, the WRIS numbers have changed slightly. The WRIS website indicates the "Date Last Modified" as 07.27.2019. Though the 40 percent capacity allocation factor did not change as a result of the adjusted numbers, the adjusted footage totals and corresponding minimum system theory calculations are included on the third and fourth tabs of the Excel spreadsheet (attached in response to Question 3(b), respectively.

In reviewing a prior rate study performed in 2008 for Pikeville by KRWA (Carryn Lee), the "Mountain Jointly Used Inch Mile Ratio" was determined to be 0.1881. (Copy attached) The raw data used by Ms. Lee in the original KRWA rate study compares exactly with the inch-mile data in the PSC 2002-00022 case with the exception of 1 mile of 6-inch line. Pikeville revised Ms. Lee's report later in 2008 but did not revise the inch-mile data. (Copy attached) Because the raw data was the same in the PSC 2002-00022 case and the 2008 KRWA rate study, the difference in inch-mile ratios is attributed to a different calculation of jointly-used lines (the numerator). The PSC 2002-00022 case found 172.15 inch-miles as being jointly-used. The 2008 KRWA used 94.86 inch-miles as jointly-used.

In reviewing the WRIS listing of project profiles (unsure as to when the listing began), KIA show three projects as constructed in the past few years. The 3 projects replaced 30,392 linear feet of 8-inch PVC pipe with 8-inch ductile iron (DI) pipe; 7,500 linear feet of 6-inch PVC pipe with 6-inch DI pipe; and added 8,600 linear feet of 8-inch pipe, 14,900 linear feet of 10-inch pipe, a 1,000,000 gallon tank and accompanying booster station. Presumably, there have been other additions to the distribution

system since 2008. The three projects described are only the ones listed on WRIS by KIA. The WRIS totals certainly seem to indicate additional projects have been constructed since the total miles listed in 2002 and 2008, but there is no data in the record to confirm any additional facilities

b. The minimum system theory calculation for the line allocation (also referred to as the Distribution Line Allocation) is presented in AWWA's "Financial Management: Cost of Service Rate Making" seminar. The participant's manual briefly describes the theory as well. (The manual is attached; the relevant slides are Slides S6-8 through S6-12. When viewing the pdf, the slides are on pages 66-68.)

The calculations, using the WRIS data (both original and adjusted), are the basis of the Excel worksheet that is attached. Enable the viewing of comments on the Excel worksheet for additional explanation. Some further information is provided for the reader:

- The linear feet for 2-inch line contains all line noted in WRIS as "unknown" and "up to 2";
- The linear feet for 9-inch line is included in the total for 10-inch line;
- "Installed Cost" is an estimate of the installed price, per foot, for the respective diameter line;
- The "Customer Component" in this case 26% (or, 25% with the adjusted WRIS numbers), signifies the 2-inch diameter costs of all line.
- The "Capacity Component" in this case 40%, is the cost of 2-inch through 6-inch diameters of all the lines, less the 2-inch cost;
- The "Fire Protection Component" in this case 34%, is the cost of 8-inch through 16-inch, less the Customer and Capacity Components.

I did not calculate a distribution allocation factor based on the inch-mile method because of the inconsistency of the numbers provided by Pikeville.

RESPONSE TO QUESTION

3(a)

City of Pikeville Water Lines
(from WRIS and from 2002 and 2019 PSC submittals by Pikeville)

	from WRIS (presumably entire system)									
line diameters	Cedar Creek	Huffman	Mossy Bottom	Thompson Road	Yorktown	line diameter totals	totals in miles	line diameters	percent of total	inch-miles
unknown	0	5226	0	286	0	5512	1.04	unknown	1.0%	2.09
2	4197	0	29788	3018	5256	42259	8.00	2	7.9%	16.01
3	176	0	4673	542	0	5391	1.02	3	1.0%	3.06
4	0	1479	4079	1173	0	6731	1.27	4	1.3%	5.10
6	23522	41534	84310	18351	31159	198876	37.67	6	37.1%	226.00
8	16232	94611	8909	12745	6418	138915	26.31	8	25.9%	210.48
9	0	208	0	0	0	208	0.04	9	0.0%	0.35
10	10643	20622	2744	320	12884	47213	8.94	10	8.8%	89.42
12	174	25622	24169	7796	20610	78371	14.84	12	14.6%	178.12
16	1269	8055	0	0	3715	13039	2.47	16	2.4%	39.51
						536515			100%	770.13

line diameters	2019 PSC miles	2019 PSC inch-miles	2002 PSC miles	2002 PSC inch-miles	percent change from 2002
unknown					
2	1.7	3.4	2.73	5.46	-37.7%
3		0	2.42	7.26	-100.0%
4	2.4	9.6	3.18	12.72	-24.5%
6	19.4	116.4	23.03	138.18	-15.8%
8	16.8	134.4	24.02	192.16	-30.1%
10	11.6	116	6.29	62.9	84.4%
12	17.9	214.8	4.39	52.68	307.7%
16	1.6	25.6	2.06	32.96	-22.3%
total inch-miles		620.2		504.32	23.0%

CITY OF PIKEVILLE

Rate Analysis for Water and Wastewater Divisions

Retail and Wholesale Customers

Prepared 2008

by

Kentucky Rural Water Association
Helping Water and Wastewater Systems Help Themselves
Carryn Lee

RATE STUDY FOR THE CITY OF PIKEVILLE

January 2008

Executive Summary

The Kentucky Rural Water Association ("KRWA") has prepared the following rate study for the City of Pikeville, Water and Wastewater Divisions ("Pikeville"). The city provides water, and wastewater service to customers located both inside and outside the city limits.

A customer breakdown for the water division is shown below.

Inside City Customers	2,914
Outside City Customers	546
Wholesale	3

The following table shows the customer breakdown for the wastewater division.

Inside City Customers	2,684
Outside City Customers	416

The increase for both the water and wastewater divisions are shown below.

	Water	Wastewater
Operating Expenses	$2,901,889	$1,653,489
Operating Income	2,411,146	1,066,131
Increase Needed	$490,743	$587,358

Inside and outside wastewater rates are shown below.

INSIDE WASTEWATER RATES – CURRENT AND PROPOSED		
First 2,000	$6.98	$8.50
Over 2,000	3.46	4.60

OUTSIDE WASTEWATER RATES – CURRENT AND PROPOSED		
First 2,000	$14.00	$17.05
Over 2,000	7.00	9.34

It should be noted that the outside city rates are higher than the inside city rates due to debt incurred to provide service to the outside city customers.

The following table shows inside and outside city water rates.

WATER RATES – CURRENT AND PROPOSED				
	Current Inside City	Proposed Inside City	*Current Outside City*	*Proposed Outside City*
2,000	7.00	11.20	*15.72*	*27.00*
3,000	3.50	6.20	*3.70*	*6.95*
5,000	3.45	6.20	*3.70*	*6.95*
10,000	3.40	3.98	*3.60*	*6.50*
30,000	3.35	3.95	*3.55*	*6.00*
50,000	3.25	3.85	*3.45*	*6.00*
100,000	1.52	1.90	*3.15*	*3.50*

The following table shows the inside city rates along with the dollar increase.

	Current Inside City	Proposed Inside City	Dollar Increase
2,000	7.00	11.20	4.20
3,000	3.50	6.20	2.70
5,000	3.45	6.20	2.75
10,000	3.40	3.98	.58
30,000	3.35	3.95	.60
50,000	3.25	3.85	.60
100,000	1.52	1.90	.38

The outside city rates are shown below with the increase in dollar amount per rate increment.

	Current Outside City	Proposed Outside City	Dollar Increase
2,000	15.72	27.00	11.28
3,000	3.70	6.95	3.25
5,000	3.65	6.95	3.30
10,000	3.60	6.50	2.90
30,000	3.55	6.00	2.45
50,000	3.45	6.00	2.55
100,000	3.15	3.50	.35

The last four rate steps for the inside city customers were increased at a lower percentage than the first three rate increments which contain the first 2,000 gallons, next 3,000 gallons, and next 5,000 gallon usage levels. Pikeville noted that the in city customers were charged an occupational tax of ½ percent to pay for some of the costs of the utilities. Thus, the smaller consumption users are now paying their share of expenses.

The outside city customers were not assessed the occupational taxes, and their increase is a higher percentage amount than inside customers. This is also due to the outside city customers causing most of the capital improvements that will be made.

The tables below show a comparison of both water and wastewater bills based on usage of 5,000. The rates were obtained for the utilities by reviewing Kentucky Public Service Commission tariffs and a report issued by Allen and Hoshall dated September 2006. Every effort has been made to ensure that the bills for 5,000 gallons are correct and up to date. However, some utilities may have increased their rates since the information on hand was reviewed, and the current bill for usage of 5,000 gallons may not be reflected correctly in the following tables.

COMPARISON OF WATER COSTS WITH OTHER UTILITIES	
Hazard	14.35
Benham	23.70
Pikeville Utilities – In City	**29.80**
Campton	30.50
Big Sandy	32.95
Paintsville	32.95
Southern	33.30
Mountain	36.15
Vicco	42.20
Pikeville Utilities – Outside	**47.86**

COMPARISON OF WASTEWATER COSTS WITH OTHER UTILITIES	
Hazard	15.30
Pikeville – In City	**22.30**
Campton	32.50
Vicco	29.54
Booneville	29.48
Benham	32.75
Paintsville	35.64
Pikeville – Outside City	**45.05**

Allocation of Test Year Expenses

Most municipal utilities that offer more than one utility service do not maintain separate accounts for each utility service. In the past, separate accounts were not required and there were few complaints regarding utility rates. Today, federal and state lending agencies are starting to require that separate accounts be maintained for each division of the utility. One reason for this requirement is that state and federal funding is scarce and lending agencies want to ensure that each utility service is "paying its own way". There has been concern that some cities were using money collected from utility services to fund other city needs and then obtaining grants and low interest loans to pay for utility system improvements. Additionally, there have been few customer complaints regarding rates in the past; however, with the increasing cost of compliance with the Safe Drinking Water Act requirements and aging infrastructure improvements, utility rates are increasing. Customers are becoming more concerned and want to know that their utility payments are paying for the service they are receiving. Pikeville is to be commended for maintaining separate accounts for each utility service.

Allocation of Water Expenses

The first step in designing rates is to allocate expenses between the various utility services. The next step is to allocate a portion of costs to the wholesale customers. Pikeville provides water service to three wholesale customers. The current rate to Southern Water District is $1.70 and the

recommended rate is $1.89. The current rate for Mountain is $1.44 and it is recommended that this rate increase to $1.70. The rate for UMG is currently $2.45. No change is recommended to this rate. The rate is higher than the other wholesale rates due to the small amount of gallons purchased by UMG. The other wholesale customers purchase an average 314,028 and UMG purchased 62,150. This is a much lower gallon amount to be divided into expenses.

In reviewing the expenses for both the water and wastewater it was determined that capital expenses should be amortized based on the life span of each item. Adjustments for both the water and wastewater capital projects have been adjusted. Additionally, several items in the budget for Pikeville were deleted in order to maintain rates as low as possible for both the wholesale and retail customers. These items other expenses of $77,514 and project support of $54,063. The deletion of both these items has certainly decreased the rate to wholesale customers.

In order to determine the wholesale rate, certain allocation factors must be determined. Since the wholesale customers use only a small part of Pikeville's system it would not be equitable to allocate a portion of all expenses to the wholesale customers. Page 9, shows total water produced, sales to retail, sales to wholesale, plant use and unaccounted for water. Page 10 shows the jointly used line ratio between Pikeville and the wholesale customers. Once allocation factors are determined they are used to allocate costs. Page 11 shows the allocation factors for production and transmission and distribution.

CITY OF PIKEVILLE		
WATER PRODUCED AND SOLD		
Pikeville Retail	412,832,000	
Mountain	367,812,000	
UMG	62,150,000	
Southern	314,245,000	
Total Sales	1,157,039,000	
Treatment Plant Use	57,851,950	0.0500
Unaccounted For Water	71,736,418	0.0620
Total Produced	1,286,627,368	

CITY OF PIKEVILLE

JOINTLY USED MILES OF LINE

Pikeville Miles of Line

Size	Feet	Miles	Inch-Miles
2	14,400	2.73	5.46
3	12,800	2.42	7.26
4	16,800	3.18	12.72
6	121,600	22.03	138.18
8	126,800	24.02	192.16
10	33,200	6.29	62.90
12	23,200	4.39	52.68
16	10,900	2.06	32.96
			504.32
Mountain Jointly Used Inch Mile Ratio			0.1881
Southern Jointly Used Inch Mile Ratio			0.1315
UMG			0.1594

CITY OF PIKEVILLE				
WHOLESALE ALLOCATION FACTORS				
Line Loss Percentage		0.0620		
Plant Use		0.0500		
Total Plant Use & Line Use		0.1120		
Pikeville Production Multiplier				1.1261
Wholesale Inch Mile Ratio				
Southern				0.1315
Mountain				0.1881
UMG				0.1594
Wholesale Share of Plant Use & Line Loss				
Southern				0.0582
Mountain				0.0617
UMG				0.0599
Production Multiplier				
Southern				1.0540
Mountain				1.5921
UMG				1.0637
Production Allocation Factor				
Southern				0.2544
Mountain				0.2570
UMG				0.0507
Trans and Dist Factor				
Southern				0.0357
Mountain				0.0598
UMG				0.0086

Page 14 reflects the current usage and rates for each wholesale customer. Corresponding revenue for each wholesale customer is also shown.

Page 15 shows the total revenue received and the allocation of budgeted expenses. Revenue is shown as $2,411,146. Total expense shown at the bottom of 15-B, is $2,901,889.

These sheets reflect the allocation of costs to each wholesale customer and the amount to be allocated to Pikeville. The amount to retail shown in the last column is simply the total costs, less the amount allocated to the wholesale customers.

Allocation of Retail Rates

Once expenses associated with serving the wholesale customers have been determined, costs can then be allocated to the retail customers. Pages 15 and 15-B shows the allocation of costs to the retail customers to be $1,546,531.

Pikeville requested that the first 3 increments of the inside city customers be increased by a larger amount than the customer who use in excess of 10,000

Pikeville has inside and outside city rates. The current and recommended rates for the inside city customers are shown on Page 16. The current and recommended rates for the outside city customers are shown on Page 17.

There are expenses associated with serving outside city customers, especially with the city of Pikeville and the extensive repairs needed to the outside city service area. It is recommended that in the future the outside city rates expenses be reviewed to ensure that the differences in expenses justify the

difference in outside and inside city rates. In other words, the expenses should not be based on historical differences in providing services.

CITY OF PIKEVILLE			
BILLING ANALYSIS			
WHOLESALE CUSTOMERS			
CURRENT RATES	Gallons	Rate	Revenue
WA 08 (Southern)	114,457.0	$ 1.70	$ 194,577
WA 09 (Mountain)	367,812.0	1.44	529,649
WA 10 (UMG)	62,150.0	2.45	152,268
WA 11 (Southern)	199,788.0	1.70	339,640
Total	744,207		$ 1,216,134

CITY OF PIKEVILLE					
ALLOCATION OF EXPENSES					
Income	TY Actual				
Retail Sales	$1,128,149				
Wholesale	1,216,134				
Service Charges	19,294				
Penalties and Service Charges	7,151				
Miscellaneous	4,892				
Connection Fees	39,524				
Total Income	$2,413,144				
Expenses	Total	Southern	Mountain	UMG	Pikeville Expenses
Utilities	$ 96,814	$ 26,295	$ 43,508	$ 4,908	$ 22,103
General Maintenance	183,241	5,828	9,762	1,404	146,247
Vehicles	37,670	1,352	2,265	326	33,927
Bad Debt Expense	30,540				30,540
Banking Expense	143				143
Outside Services	10,134	362	606	87	9,079
Office Expenses	6,494				6,494
Food and Travel	3,324				3,324
Chemicals	68,101	18,496	30,605	3,453	15,547
Retirement	12,000	428	718	103	10,751
Payroll	17,110				17,110
Personnel Costs	8,212				8,212
Pension	16,424				16,424
Health and Dental	82,345				82,345
Long Term Disability	1,919				1,919
Workmans Comp	18,466				18,466
Life Insurance	2,423	87	14	21	2,301
Payroll Taxes	38,783	1,385	2,319	334	34,745
Contractual Services	1,440,429	366,445	370,190	73,030	630,764

Expenses	Total	Southern	Mountain	UMG	Pikeville Expenses
Repairs and Maintenance	$ 22,527		$ -	$ -	$ 22,527
Office Expense	5,555	198	332	48	4,977
Freight and Postage	1,404	50	84	12	1,258
Maintenance Materials	74	26	4	1	43
Vehicle	49	17	3	0	29
Telephone	330	12	20	3	295
Office Expense	1,016	36	61	9	910
Travel	253				253
Utilities	7,031	1789	0	0	5,242
Insurance	16,388	584	979	0	14,805
Engineering	1,539	55	92	13	1,379
Rents and Leases	889	32	53	8	796
Interest Expense	41,447	10,544	0	0	30,903
Professional Services	4,250	152	0	0	4,098
Subtotal	$2,157,504	$ 434,173	$ 461,615	$ 83,760	$ 1,177,956
Capital Improvements 20 Years Amort.					
Transmission and Distribution	5,576	199	1,800	2,000	1,577
Debt Service					
Supply and Treatment	586,677	149,251	150,776	37,950	248,700
Transmission and Distribution	151,615	5,413	9,067	19,354	117,781
Meters and Services	517				517
Total Expenses	$2,901,889	$ 589,036	$ 623,258	$ 143,064	$ 1,546,531
Rate to Southern - 314,245 Gallons		1.89			
Rate to Mountain - 367,812 Gallons			1.70		
Rate to - UMG 62,150 Gallons				2.45	
Current Rates		1.69	1.44	2.45	
Difference per 1,000 Gallons		0.20	0.26	0.00	

CITY OF PIKEVILLE

INSIDE CITY CUSTOMERS

CURRENT AND RECOMMENDED RATES

	Bills	Gallons	Current Rates	Revenue	Recommended Rates	Revenue	Percentage Increase	Dollar Increase
First 2,000	34,969	57,094,800	$ 7.00	$ 244,783	$ 11.20	$ 391,653	60%	$ 4.20
Next 3,000		19,209,500	3.50	67,233	6.20	119,099	77%	2.70
Next 5,000		22,695,000	3.45	78,298	6.20	140,709	80%	2.75
Next 10,000		31,400,000	3.40	106,760	3.98	124,972	17%	0.58
Next 30,000		44,940,000	3.35	150,549	3.95	177,513	18%	0.60
Next 50,000		40,595,000	3.25	131,934	3.85	156,291	18%	0.60
Over 100,000		50,558,000	1.52	76,848	1.90	96,060	25%	0.38
TOTAL	34,969	286,492,300		$ 856,405		$ 1,206,297		
Outside City						337,557		
Total Revenue from Inside and Outside						1,543,854		
Revenue Required						1,546,531		

CITY OF PIKEVILLE

OUTSIDE CITY CUSTOMERS

CURRENT AND RECOMMENDED RATES

	Bills	Gallons	Current Rates	Revenue	Recommended Rates	Revenue	Percentage Increase	Dollar Increase
First 2,000	6,550	11,299,900	$ 15.72	$ 102,966	$ 27.00	$ 176,850	72%	$ 11.28
Next 3,000		7,736,100	3.70	28,624	6.95	53,766	88%	3.25
Next 5,000		8,689,300	3.65	31,716	6.95	60,391	90%	3.30
Next 10,000		2,618,300	3.60	9,426	6.50	17,019	81%	2.90
Next 30,000		2,754,000	3.55	9,777	6.00	16,524	69%	2.45
Next 50,000		1,474,800	3.45	5,088	6.00	8,849	74%	2.55
Over 100,000		1,188,100	3.15	3,743	3.50	4,158	11%	0.35
Total	6,550	35,760,500		$ 191,340		$ 337,557		

Sewer Rates and Expenses

During the test year, Pikeville collected $1,066,131 in sewer revenue and incurred expenses of $1,653,489. The income statement showing total expenses and the amount allocated to the sewer division is shown on Page 19.

A billing analysis showing present rate and recommended rates is shown on Page 20. The billing analysis verifies test year usage and revenue and allows the utility to analyze customer usage patterns.

It is recommended that the rates for inside city customers be increased as follows:

	Current Rates	Recommended Rates
First 2,000	$6.98	$8.50
Over 2,000	3.46	4.60

The following table shows the recommended rates for outside city customers. The rates for outside city customers are higher than inside city customers due to the extensive repairs that must be made to serve the outside city customers.

	Current Rates	Recommended Rates
First 2,000	$14.00	$17.05
Over 2,000	7.00	9.34

CITY OF PIKEVILLE			
SEWER DIVISION			
EXPENSES			
Revenue			
Sewer Rates	$ 995,222		
Penalties	7,500		
County Sewer	2,000		
Service Charges	1,000		
Interest	60,409		
Total Income	$ 1,066,131		
Expense	Current	Adjustments	Recommended
Postage	$ 5,500		$ 5,500
Insurance	19,200		19,200
Auto Maintenance	5,200		5,200
Office Expense	1,000		1,000
Public Works	488,891		488,891
Easements	6,300		6,300
Repair and Maintenance	93,000		93,000
Utilities	19,400		19,400
Equipment Purchase	13,000	(8,667)	4,333
Electric	22,800		22,800
Legal, Support, Bad Debt, Rate Study	21,100		21,100
Station Pumps and Storm Drain	138,000		138,000
Total Operation and Maintenance	$ 833,391	$ (8,667)	$ 824,724
Debt			
Thompson Road	36,780		36,780
95 Project	122,710		122,710
1992 Treatment Plant	207,119		207,119
Mossy Bottom	105,000		105,000
South Mayo	59,445		59,445
1.2 Coverage			106,211
Capital Projects to serve Mossy Bottom and Cow Lick	191,500		191,500
Total Expenses	$ 1,364,445	$ (8,667)	$ 1,653,489

CITY OF PIKEVILLE

SEWER DIVISION

INSIDE CITY CUSTOMERS AND RECOMMENDED RATES

	Customers	Gallons	Current Rates	Revenue	Revised	Revenue	$ Increase	%
First 2,000	32,213		$6.98	$ 224,847	8.50	273,811	$1.52	0.22
Over 2,000		189,768	3.46	656,597	4.60	872,933	$1.14	0.33
Total	32,213	189,768		$ 881,444		$ 1,335,204		

OUTSIDE CUSTOMERS, MOSSY BOTTOM AND COW LICK

RECOMMENDED RATES

	Bills	Gallons	Current Rates	Revenue	Revised Rates	Revenue	$ Increase	%
First 2,000	4,975	6,996	$ 14.00	$ 69,650	17.05	84,824	$ 3.05	0.22
Over 2,000		16,973	7.00	118,811	9.34	158,528	2.34	0.33
Total	4,975	16,973		$ 188,461		$ 243,352		

Other Income				
County Sewer	$ 2,000		$ 2,000	
Penalties	7,500		7,500	
Tap Fees	5,200		5,200	
Service Charges	1,000		1,000	
Interest	60,409		60,409	
Total	$ 76,109		$ 76,109	
Total Revenue	**$ 1,146,014**		**$ 1,654,665**	

CITY OF PIKEVILLE

Rate Analysis for Water And Wastewater Divisions

Retail and Wholesale Customers

REVISED

November 2008

REVISED RATE STUDY
For the
CITY OF PIKEVILLE

NOVEMBER 2008

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SUMMARY OF REVISED RATE STUDY

The Kentucky Rural Water Association (KRWA) prepared a rate study for the City of Pikeville, Water and Wastewater divisions in January 2008. The following is a revision to the original study reflecting updated information obtained from the City of Pikeville and revisions to expense allocations and revenue projections made in coordination with Carryn Lee, author of the original study and now an independent consultant, and Bob Meyer, an employee of Utility Management Group. At the request of the City, this revised report has also been reviewed by Don Wallen, an independent certified public accountant.

Pikeville provides water and wastewater service to customers located both inside and outside the city limits. In 2006, the city's "outside" water customer base increased significantly as a result of the dissolution of Sandy Valley Water District, with those retail customers of Sandy Valley located in Pike County being transferred to the City of Pikeville. Also, in 2006, the city's "outside" sewer customers increased as a result of the transfer of the Mossy Bottom sewer plant – and sewer customers previously served by that plant – from Mountain Water District to Pikeville. This revised study reflects those changes to Pikeville's customer base, as well as revenue and expense projections associated with those changes.

A customer breakdown for the city's water division is shown below:

Number of Inside Water Customers	2,916
Number of Outside Water Customers	1,577
Number of Wholesale Water Customers	3

The following table shows the customer breakdown for the wastewater division.

Number of Inside Sewer Customers	2,695
Number of Outside Sewer Customers	623

Finally, the city's current wholesale customers are identified below:

Mountain Water District
Mountain Water District (Cowpen Area)
Southern Water & Sewer District

Inside and outside customer WATER rates are shown below (rates in effect prior to the original rate study in January 2008, rates as recommended and adopted pursuant to the original study, and rates based on this revised study):

INSIDE CITY WATER RATES			
	Prior to Jan 2008	Revised Jan 2008	Current Revision
2,000 Gal (Min)	7.00	11.20	11.20
Next 3,000 Gal	3.50	6.20	6.20
Next 5,000 Gal	3.45	6.20	6.20
Next 10,000 Gal	3.40	3.98	3.98
Next 30,000 Gal	3.35	3.95	3.95
Next 50,000 Gal	3.25	3.85	3.85
Over 100M Gal	1.52	1.90	1.90

OUTSIDE CITY WATER RATES			
	Prior to Jan 2008	Revised Jan 2008	Current Revision
2,000 Gal (Min)	15.72	27.00	22.50
Next 3,000 Gal	3.70	6.95	6.30
Next 5,000 Gal	3.65	6.95	6.30
Next 10,000 Gal	3.60	6.50	5.40
Next 30,000 Gal	3.55	6.00	5.40
Next 50,000 Gal	3.45	6.00	5.00
Over 100M Gal	3.15	3.50	3.50

Inside and outside customer WASTEWATER rates are shown below (rates in effect prior to the original rate study in January 2008, rates as recommended and adopted pursuant to the original study, and rates based on this revised study):

INSIDE SEWER RATES	Prior to Jan 2008	Revised Jan 2008	Current Revision
First 2,000 Gallons	6.98	8.50	8.00
Over 2,000 Gallons	3.46	4.60	4.00

OUTSIDE SEWER RATES	Prior to Jan 2008	Revised Jan 2008	Current Revision
First 2,000 Gallons	14.00	17.05	18.80
Over 2,000 Gallons	7.00	9.34	10.75

It should be noted that outside city rates – both water and wastewater – are higher than inside city rates, based on a range of factors, including additional debt assumed by the City for outside city customers (from assumption of loans from Sandy Valley Water District (water customers) and sewer customers (assumption of loans associated with the Mossy Bottom Sewer Plant), and larger amounts of proposed capital expenditures required to upgrade outside city water & sewer lines, pump stations, etc. An additional factor in evaluating the difference between in-city and out-of-city rates is the fact that in-city customers are charged an occupational tax fee which out-of-city customers do not pay.

Current and recommended rates for Pikeville's wholesale water customers are shown in the chart below (rates are per 1,000 gallons):

Wholesale Customer	Prior to Jan 2008	Revised Jan 2008	Current Revision
Mountain Water Dist	1.44	1.70	1.78
MWD (Cowpen)	2.45	2.45	1.75
Southern W&S Dist	1.69	1.89	1.72

The tables below are a comparison of the City's currently proposed water and wastewater rates with other public utilities throughout the region, based on an assumed usage of 5,000 gallons of water. The rates were obtained for the utilities by reviewing Kentucky Public Service Commission tariffs and a report issued by Allen and Hoshall dated September 2006. Although the comparative rate information shown below was accurate at the time of this report preparation, some utilities may have made adjustments to their rates since that time.

REGIONAL UTILITY NAME	WATER RATES (5,000 GALLONS)
City of Hazard	14.35
City of Benham	23.70
City of Pikeville (Inside Customers)	**29.80**
City of Campton	30.50
Big Sandy Water District	32.95
City of Paintsville	32.95
Southern Water & Sewer District	33.30
Mountain Water District	36.15
City of Vicco	42.20
City of Pikeville (Outside Customers)	**41.40**

REGIONAL UTILITY NAME	SEWER RATES (5,000 GALLONS)
City of Hazard	15.30
City of Pikeville (Inside Customers)	**20.00**
City of Campton	32.50
City of Vicco	29.54
City of Booneville	29.48
City of Benham	32.75
City of Paintsville	35.64
City of Pikeville (Outside Customers)	**51.05**

In today's utility regulatory environment, federal and state lending agencies are beginning to require that separate accounts be maintained for each division of utilities. One reason for this requirement is that state and federal funding is scarce and lending agencies want to ensure that each utility service is "paying its own way". There has been concern that some cities were using money collected from utility services to fund other city needs – and then obtaining grants and low interest loans to pay for utility system improvements. Although there have been relatively few customer complaints regarding rates in the past, with the increasing cost of compliance with the Safe Drinking Water Act requirements and more and more need for capital expenditures for repair / replacement of aging infrastructure, utility rates are increasing and customers want to understand what they are paying for. Pikeville is to be recommended for taking a proactive position and maintaining separate accounts for water and sewer services.

CALCULATION OF WATER RATES

Formulating a new rate structure is a complex process. The first step is to allocate expenses to the various utility services (ie: water and wastewater, in Pikeville's case). As Pikeville already maintains separate accounting for its water and wastewater utilities, this step has already been dealt with internally. Given the changes in its customer base and consequent changes in future expenses and revenues, expenses utilized in the preparation of this revised report are based on Pikeville's current year budget appropriations. All projected expenses are accounted for including routine operational expenses, annual debt service on existing loans for utility system improvements and expansions, and projected amortization of future capital expenditures.

With regard to water rates, the next step is to allocate a portion of projected expenditures to wholesale customers. In that context, certain allocation factors must be determined. Since the City's wholesale customers use only a portion of Pikeville's distribution system, it would not be equitable to allocate a percentage al all expenses to wholesale customers. Page 5 shows total water produced, sales to retail customers, sales to wholesale customers, plant usage and unaccounted water loss. Page 6 illustrates the "jointly used line ratio" (the proportionate amount of various sized water used to distribute water to wholesale customers as well as retail customers). Based on data from these two sources, additional expense allocation formulae are calculated (Page 7) which formulae are used to allocate expenses between the City's wholesale users and its retail users. The allocation of production and distribution expenses between wholesale users and retail users is shown on Page 8.

CITY OF PIKEVILLE		
WATER PRODUCED AND SOLD 2007		
Pikeville Inside	274,620,800	28.4%
Pikeville Outside	106,315,100	11.0%
Mountain Water District	377,972,000	39.1%
Mountain Water District – Cowpen	28,183,000	2.9%
Southern Water & Sewer District	178,586,000	18.5%
Total Sales	965,676,900	100.0%
Treatment Plant Use	5,106,480	0.5%
Unaccounted For Water	342,679,820	35.5%
Total Produced	1,313,463,200	

CITY OF PIKEVILLE

JOINTLY USED MILES OF LINE

Pikeville Miles of Line

Size	Feet	Miles	Inch-Miles
2	14,400	2.73	5.46
3	12,800	2.42	7.26
4	16,800	3.18	12.72
6	121,600	22.03	138.18
8	126,800	24.02	192.16
10	33,200	6.29	62.90
12	23,200	4.39	52.68
16	10,900	2.06	32.96
			504.32
Mountain Jointly Used Inch Mile Ratio			0.1881
Southern Jointly Used Inch Mile Ratio			0.1315
Mountain (Cowpen) Jointly Used Inch Mile Ratio			0.1594

CITY OF PIKEVILLE			
WHOLESALE ALLOCATION FACTORS			
Line Loss Percentage	6.20%		
Plant Use	5.00%		
Total Plant Use & Line Use	11.20%		
Pikeville Production Multiplier 1/1-.1120			1.1261
Wholesale Inch Mile Ratio			
Southern			0.1315
Mountain			0.1881
Mtn (Cowpen)			0.1594
Wholesale Share of Plant Use & Line Loss			
Southern .1315*.0500 + .0602			0.0668
Mountain .1881*.0500 + .0602			0.0696
Mtn (Cowpen) .1594*.0500 + .0602			0.0682
Production Multiplier			
Southern 1/1-.0668			1.0716
Mountain 1/1-.0696			1.0748
Mtn (Cowpen) 1/1-.0682			1.0720

CITY OF PIKEVILLE

ALLOCATION OF EXPENSES

			WHOLESALE					RETAIL	RETAIL ALLOC (IN-OUT)			RETAIL CUST. (Excluding SVWD)		
	Total	Southern Factors	Southern	Mountain Factors	Mountain	Mountain (Cowpen) Factors	Mountain (Cowpen)	Pikeville Retail Expenses	In-City Retail (Excluding SVWD Cust)	Out-of-City Retail (Excluding SVWD Cust)		CUST	#	% To Total
Auto Maintenance	$ 2,500	0.1943	$ 486	0.4109	$ 1,027	0.0306	$ 77	$ 910	814.45	95.55		IN-CITY	2916	89.5%
Dues	2,600	0.1943	505	0.4109	1,068	0.0306	80	947	847.57	99.43		OUTSIDE	341	10.5%
Freight and Postage	4,000	0.1943	505	0.4109	1,644	0.0306	122	1,729	1,547.46	181.54		TOTAL	3257	100.0%
Vehicle Insurance	3,500	0.0243	85	0.0736	258	0.0047	16	3,141	2,811.20	329.80				
Insurance General Liab	10,000	0.1943	1,943	0.4109	4,109	0.0306	306	3,642	3,259.59	382.41		NOTE: Above customer count		
Office Expenses	4,000	0.1943	777	0.4109	1,644	0.0306	122	1,457	1,304.02	152.98		is from May 2007, prior to the		
Public Works T&D	729,900	0.0243	17,737	0.0736	53,721	0.0047	3,431	655,011	586,234.85	68,776.15		Sandy Valley Water District		
Public Works Productic	727,224	0.1943	141,300	0.4109	298,818	0.0306	22,253	264,855	237,045.23	27,809.77		transition.		
Professional Training	1,000	0.1943	194	0.4109	411	0.0306	31	364	325.78	38.22				
Legal	500	0.1943	97	0.4109	205	0.0306	15	183	163.79	19.21				
Other Professional Ser	10,000	0.1943	1,943	0.4109	4,109	0.0306	306	3,642	3,259.59	382.41				
Rent and Easements	1,000							1,000	895.00	105.00				
Telephone	7,000	0.1943	1,360	0.4109	2,876	0.0306	214	2,550	2,282.25	267.75				
Utilities	7,500	0.1943	1,457	0.4109	3,082	0.0306	230	2,731	2,444.25	286.75				
Depreciation T & D	20,000	0.0243	486	0.0736	1,472	0.0047	94	17,948	16,063.46	1,884.54				
Depreciation Prod	20,000	0.1943	3,886	0.4109	8,218	0.0306	612	7,284	6,519.18	764.82				
Salaries/Benefits T & D	13,200	0.0243	321	0.0736	972	0.0047	62	11,845	10,601.28	1,243.72				
Salaries/Benefits Prod	13,200	0.1943	2,565	0.4109	5,424	0.0306	404	4,807	4,302.27	504.73				
Subtotal	$ 1,577,124		$ 175,647		$ 388,058	0.0086	$ 28,375	$ 984,046	880,721.22	103,324.78				

	Total	Southern Factors	Southern	Mountain Factors	Mountain	Mountain (Cowpen) Factors	Mountain (Cowpen)	Pikeville Expenses			
Capital Costs - Inside											
Transmission and Dis	$ 188,404	0.0243	$ 4,578	0.0736	$ 13,867	0.0047	$ 885	$ 169,074	151,321.23	17,752.77	
Treatment	136,050	0.1943	26,435	0.4109	55,903	0.0306	4,163	49,549	44,346.36	5,202.64	
Water Line Extensions	0							0	-	-	
Vehicles and Equipme	45,484	0.1943	8,838	0.4109	18,689	0.0306	1,392	16,565	14,825.68	1,739.32	
Debt (Per Debt Sched)	$ 544,431	0.1943	$ 91,827	0.4109	$ 194,079	0.0306	$ 14,394	243,634	140,968.00		
Total Expenses	$ 2,491,493		$ 307,325		$ 671,594		$ 49,209	$ 1,462,868	$ 1,232,182	$ 128,020	
Rate to Southern - 178,586.0 Gallons			$ 1.72								
Rate to Mountain - 377,972.0 Gallons					$ 1.78						
Rate to - Mountain (Cowpen) - 28,183.0 Gallons							$ 1.75				
Current Rates			$ 1.69		$ 1.44		$ 2.45				
Difference per 1,000 Gallons			$ 0.03		$ 0.34		$ (0.70)				

Pikeville presently provides water service to two wholesale customers, Southern Water & Sewer District and Mountain Water District. It should be noted that Mountain Water District has two wholesale rates, one for the bulk of its customers and one for those customers located in the Cowpen area. The wholesale rate for customers in the Cowpen area was higher because previously, water was sold by Pikeville to Sandy Valley Water District and then resold to Mountain Water District. Also, prior to June 2006, there was a third wholesale customer – Sandy Valley Water District. However, as mentioned earlier, Sandy Valley Water District was dissolved in 2006 and all its customers were transferred to the City of Pikeville and Southern Water and Sewer District. Consequently, it is no longer a wholesale customer for Pikeville.

Once expenses associated with wholesale customers have been allocated, the remaining costs can be allocated to retail customers. The allocation of expenses to retail customers is identified on two separate schedules. The first schedule (Page 8) illustrates expenses allocated to Pikeville retail customers, excluding those new customers transferred to the City from the former Sandy Valley Water District. A second schedule (Page 10) identifies specific expenses associated with former Sandy Valley Water District customers. All expenses on this schedule are allocated 100% to out-of-city customers. Page 11 is a summary of all expenses for both inside and out-of-city customers.

In addition to operational expenses addressed in the previous paragraphs, expenditures associated with existing debt and projected capital expenditures must also be factored into new rates. Separate schedules address these costs. The Allocation of Debt Schedule on Page 12 identifies all of the city's existing debt, annual debt service amounts and allocation of that debt to retail and wholesale customers. On pages 13 through 15, schedules of planned capital expenditures are shown for the system, amortization of those capital expenditures over the lives of the various assets, and the allocation of those amortized costs to retail and wholesale customers. Note that all capital expenditures shown on page 15 are specifically related to out of city customers only.

Finally, pages 16 and 17 identify the proposed new water rates for inside-city and out-of-city customers.

CITY OF PIKEVILLE

SANDY VALLEY EXPENSES

(Out of City Customers Only)

Dues	$ 2,500
Freight and Postage	2,500
Insurance – Vehicle	3,000
Insurance - General Liab	18,698
Office Supplies	4,000
Professional Training	1,000
Engineering	15,000
Legal	3,500
Professional Services	2,500
Billing Prof Services	5,500
Billing Service Bank	2,500
Rent and Easements	1,000
Contract Management (UMG)	252,000
Repair & Maintenance	30,000
Travel	1,000
City Utilities	2,500
Depreciation	5,000
Workers Comp.	1,000
Salaries and Wages	20,000
Payroll Tax	1,500
Employee Benefits	7,700
Travel	1,000
Uniforms	500
Total Operation and Maintenance	$ 383,898
Capital Expense	263,251
Debt (Sandy Valley Only)	48,066
Total	$ 695,215

CITY OF PIKEVILLE

SUMMARY OF EXPENSES

INSIDE CITY	
Operation and Maintenance	$ 880,721
Capital Improvments	210,493
Debt	140,968
Penalties (Revenue)	(8,600)
Special Revenue	(1,000)
Water SC	(22,000)
Public Works Reimbursement	(6,500)
Interest	(2,000)
Water Unearned Revenue	(1,000)
TOTAL INSIDE	$ 1,191,082
OUTSIDE CITY	
Oper & Maint (Sandy Valley)	$ 383,898
Oper & Maint (Other Outside Cust)	$ 103,325
Capital Improvements	263,251
Debt	102,666
Penalties (Revenue)	(3,100)
Water Special Revenue	(2,500)
Water SC	(7,500)
Interest	(400)
Bank Charges - Revenue	(500)
TOTAL OUTSIDE	$ 839,140

		CITY OF PIKEVILLE RATE STUDY						11/20/2008
		ALLOCATION OF DEBT (BASED ON GALLONS OF WATER SOLD)						
			RETAIL		WHOLESALE			
			INSIDE	OUTSIDE	SOUTHERN	MOUNTAIN	MTN-COWPEN	TOTAL
		GALLONS->	274,620,800	106,315,100	178,586,000	377,972,000	28,183,000	965,676,900
SPECIFIC DEBTS	ANNUAL DEBT SVC	% To Total	28.4%	11.0%	18.5%	39.1%	2.9%	100.0%
Water Treatment Plant	$ 364,835		$103,613	$40,132	$67,494	$142,650	$10,580	$364,835
Water Treatment Plant	94,347		$26,795	$10,378	$17,454	$36,890	$2,736	$94,347
Raw Water Project	37,183		$10,560	$4,090	$6,879	$14,539	$1,078	$37,183
Sandy Valley Water	48,066			$48,066				$48,066
Total	$ 544,431	TOTAL ALLOC.	$140,968	$102,666	$91,827	$194,079	$14,394	$544,431

CAPITAL EXPENSES AND AMORTIZATION

OVERALL WATER SYSTEM

	Total	Total to be Amortized	Amortization	Inside / Wholesale	Outside Retail
TREATMENT PLANT					
Chain and Sprockets - Flocculators (2)	$10,500	$10,500	5	$1,812	$288
CL17 Chlorine Analyzer (2)	15,000	$15,000	6	2,157	343
Upgrade Security Lights/Cameras (1)	5,000	$5,000	5	646	354
Gate Valve Oper - Floc & Settling Basins (2)	50,000	$50,000	7	6,164	979
Replace Raw Water Pump (2)	50,000	$50,000	10	4,315	686
Replace High Service Pumps (2)	521,600	$521,600	10	45,009	7,151
Control Valve Repair Kits/Cylinder Cans (2)	37,500	$37,500	3	10,786	1,714
Replace Subsurface Wash on Filter (2)	30,000	$30,000	3	8,629	1,371
Coating Lamella Filters (2)	25,000	$25,000	5	4,315	686
Sludge Dewatering Facility (2)	300,000	$300,000	10	25,887	4,113
New Storage Tank (WTP Expansion)	1,067,976	$1,067,976	35	26,330	4,183
SUBTOTAL WATER TREATMENT PLANT	2,112,576	2,112,576		136,050	21,868
WATER DISTRIBUTION PLANT					
Main Line Insertions (2)	52,000	$52,000	40	1,122	178
Water Meter Replacements (1)	80,000	$80,000	10	5,170	2,830
Replace 2" Galvanized Water Lines (2)	48,000	$48,000	40	1,035	165
Replace PRV Station (2)	13,000	$13,000	10	1,122	178
Install 2 Master Meter Sites Inc Telemetry (2)	38,000	$38,000	10	3,279	521
Inspect/Repair Existing Tanks (2)	350,000	$350,000	5	60,403	9,597
Replace Qual Ridge Tank (100,000 gal) (2)	110,000	$110,000	35	2,712	431
New 500,000 Tank @ Yorktown (2)	$350,000	$350,000	35	$8,629	$1,371
Upgrade Town Mountain Pump Station (2)	350,000	$350,000	35	8,629	1,371
Install Telemetry at Various Sites (2)	200,000	$200,000	10	17,258	2,742
New Distribution Mains from WTP	3,664,145	$3,664,145	40	79,045	12,559
SUBTOTAL DISTRIBUTION SYSTEM	5,255,145	5,255,145		188,404	31,943
VEHICLES AND EQUIPMENT REPLACEMENTS					
Replace Backhoe	45,000	$45,000	5	7,766	1,234
Replace Dump Truck	75,000	$75,000	5	12,944	2,057
Replace Utility Field Trucks	105,000	$105,000	3	22,617	12,383

New Air Compressor	25,000	$25,000	10	2,157	343
SUBTOTAL VEHICLES	$250,000	$250,000		$45,484	$16,017
TOTAL ALL CAPITAL EXPENSES	**$7,617,721**	**$7,617,721**		**$369,938**	**$69,828**

PIKEVILLE WATER

CAPITAL EXPENSES AND AMORTIZATION

OUTSIDE CITY (Previously SVWD)

	Total	Total to be Amortized	Amortization	Outside
WATER DISTRIBUTION SYSTEM				
Main Line Insertions (2 per year)	$49,998	$49,998	40	$1,250
Water Meter Replacements	80,000	$80,000	10	8,000
Replace 2 Bores under Railroad	50,000	$50,000	40	1,250
Replace Commercial Meters	75,000	$75,000	10	7,500
Install 2 Master Meter Sites Inc. Telemetry	38,000	$38,000	25	1,520
Inspect/Clean Tanks	70,000	$70,000	5	14,000
New Storage Tank at Coal Run	500,000	$500,000	35	14,286
Aquavar (fix pressure at Ratliffs Br.)	10,000	$10,000	10	1,000
Relocate line on Riverbank (uncovered)	350,000	$350,000	40	8,750
Replace 12" Main Line Along US 23	1,100,000	$1,100,000	40	27,500
Install Telemetry (Various Sites)	36,000	$36,000	10	3,600
Replace Fire Hydrants (3 per year)	36,000	$36,000	10	3,600
Encase Main Line at Walters Toyota	200,000	$200,000	40	5,000
WATER LINE REPLACEMENTS/EXTENSIONS				
Back up Water Main for Sandy Valley Customers	450,000	$450,000	40	11,250
VEHICLE & EQUIPMENT REPLACEMENTS				
Replace Service / Utility Trucks	120,000	$120,000	3	40,000
Replace Backhoes 5 year life	37,500	$37,500	5	7,500
Replace Dump Truck 5 year life	37,500	$37,500	5	7,500
Replace Field Utility Trucks 3 year	70,000	$70,000	3	23,333
New Air Compressor (10 year	12,500	$12,500	10	1,250
Lowboy Trailer	10,000	$10,000	15	667
Exavator	20,000	$20,000	10	2,000
Meter Reader Truck	8,000	$8,000	3	2,667
Total	$3,360,498	$3,360,498		$193,423

CITY OF PIKEVILLE

INSIDE CITY CUSTOMERS

11/20/2008

CURRENT AND REVISED RATES

	Bills	Gallons	Current Rates	Revenue	Revised Rates	Revenue	Percentage Increase	Dollar Increase	*Originally Proposed Rates*
First 2,000	34,561	56,278,800	$ 7.00	$ 241,927	$ 11.20	$ 387,083	60%	$ 4.20	*$11.20*
Next 3,000		17,985,500	3.50	62,949	6.20	111,510	77%	2.70	*$ 6.20*
Next 5,000		22,695,000	3.45	78,298	6.20	140,709	80%	2.75	*$ 6.20*
Next 10,000		31,400,000	3.40	106,760	3.98	124,972	17%	0.58	*$ 3.98*
Next 30,000		44,940,000	3.35	150,549	3.95	177,513	18%	0.60	*$ 3.95*
Next 50,000		40,565,000	3.25	131,836	3.85	156,175	18%	0.60	*$ 3.85*
Over 100,000		50,558,000	1.52	76,848	1.90	96,060	25%	0.38	*$ 1.90*
TOTAL REV.	**34,561**	**264,422,300**		**$ 849,167**		**$ 1,194,022**			
TOTAL PROJECTED EXPENSES						1,191,082			
REVENUE OVER (UNDER) EXPENSES						**$ 2,940**			

Decreased number of inside city bills by 408.

Decreased gallons by 5,000 gallons per bill (state wide average usage)

CITY OF PIKEVILLE

OUTSIDE CITY CUSTOMERS

11/20/2008

CURRENT AND REVISED RATES

	Bills	Gallons	Current Rates	Revenue	Revised Rates	Revenue	Percentage Increase	Dollar Increase	*Originally Proposed Rates*
First 2,000	18,924	37,848,000	$ 15.72	$ 297,485	$ 22.50	$ 425,790	43%	$ 6.78	*$27.00*
Next 3,000		51,094,800	3.70	189,051	6.30	321,897	70%	2.60	*$6.95*
Next 5,000		8,689,300	3.65	31,716	6.30	54,743	73%	2.65	*$6.95*
Next 10,000		2,618,300	3.60	9,426	5.40	14,139	50%	1.80	*$6.50*
Next 30,000		2,754,000	3.55	9,777	5.40	14,872	52%	1.85	*$6.00*
Next 50,000		1,474,800	3.45	5,088	5.00	7,374	45%	1.55	*$6.00*
Over 100,000		1,188,100	3.15	3,743	3.50	4,158	11%	0.35	*$3.50*
TOTAL REVENUE	18,924	105,667,300		$ 546,286		$ 842,973			
TOTAL PROJECTED EXPENSES						839,140			
REVENUE OVER (UNDER) EXPENSES						$ 3,833			

Includes 1,239 "outside city customers" transferred to the city from the Sandy Valley Water District

1,577 customers times 12 equals 18,924

Gallons based on statewide average of 5,000 gallons

SEWER RATES AND EXPENSES

Expenses used in determining revised wastewater rates are also based on Pikeville's current year budget appropriations. As with water rates, all projected expenses are accounted for, including routine operational expenses, annual debt service on existing loans, and projected amortization of future capital expenditures. A schedule of expenses and allocation of those expenses to in-city and out-of-city customers is shown on Page 19.

A billing analysis showing rates previous to January 2008, those rates adopted in January 2008, and revised rates pursuant to this study is shown on page 20. The billing analysis verifies test year usage and also incorporates a larger out-of-city customer base in determining revenue projections.

Inside and outside customer WASTEWATER rates are shown below (rates in effect prior to the original rate study in January 2008, rates as recommended and adopted pursuant to the original study, and rates based on this revised study):

INSIDE SEWER RATES	Prior to Jan 2008	Revised Jan 2008	Current Revision
First 2,000 Gallons	6.98	8.50	8.00
Over 2,000 Gallons	3.46	4.60	4.00

OUTSIDE SEWER RATES	Prior to Jan 2008	Revised Jan 2008	Current Revision
First 2,000 Gallons	14.00	17.05	18.80
Over 2,000 Gallons	7.00	9.34	10.75

As stated earlier in this report, out-of-city wastewater rates are higher than inside city rates, based on a range of factors, including additional debt assumed by the City for outside city customers (from assumption of loans associated with the transfer of the Mossy Bottom plant from Mountain Water to the City) and larger amounts of proposed capital expenditures required to upgrade outside city sewer lines, lift stations, etc.

CITY OF PIKEVILLE

ALLOCATION OF WASTEWATER EXPENSES

	TOTAL	IN-CITY	OUT-OF-CITY
Auto Maintenance	$ 5,000	$ 2,500	$ 2,500
Service Charge	200	200	
Freight /Postage	5,500	3,000	2,500
Repairs and Maint (In addition to UMG R&M)	48,000	48,000	
Insurance Vehicle	8,500	6,500	3,000
Insurance/General Liability	21,200	15,000	6,200
Office Supplies	7,000	4,000	3,000
Public Works			
Treatment Plant (2)	351,753	285,709	66,044
Sewer Collection (2)	301,337	244,759	56,578
Mossy Bottom	137,000		137,000
Prof Service Other	6,500	1,000	5,500
Prof Service Bank Deposits	6,700	2,500	4,200
Rent-Easements	300	300	
Repairs and Maint (In addition to UMG R&M)	48,000		48,000
Disposal Sewage Fr. Tanks	5,000	5,000	
Electric (2)	5,000	4,061	939
City Utilities (2)	14,000	11,371	2,629
Insurance/Workers Comp.	1,000	1,000	
Salaries and Wages	22,000	22,000	
Payroll Tax	1,500	1,500	
Employer Benefits	5,000	5,000	
Depreciation	30,000	25,000	5,000
Pension Matching	3,500	3,500	
Subtotal	$ 1,033,990	$ 690,901	343,089
Debt			
Sewer Plant	$ 206,883	$ 155,266	$ 51,617
Sewer Harold Br.	122,751	122,751	
Thompson Road	36,744	36,744	
Mossy Bottom	105,450		105,450
Total Debt	471,828	314,761	157,067
Total Operation and Maintenance	**$ 1,505,818**	**$ 1,005,661**	**$ 500,157**

CITY OF PIKEVILLE

SEWER DIVISION

INSIDE CITY CUSTOMERS

	Customers	Gallons	Current Rates	Revenue @ Current Rates	Revised	Revenue @ New Rates	$ Increase	%	Original Proposal
First 2,000	32,340		$8.98	$ 225,733	$8.00	258,720	$1.02	15%	$8.50
Over 2,000		189,768	$3.46	656,597	$4.00	759,072	$0.54	16%	$4.60
Total	32,340	189,768		$ 882,330		$ 1,017,792			
Plus Other Income						$ 18,100			
TOTAL INCOME (INSIDE CITY CUSTOMERS)						$ 1,035,892			
TOTAL EXPENSES (Incl. debt & capital amortization)						$ 1,023,094			
REVENUES GENERATED IN EXCESS OF EXPENSES						$ 12,798			

OUTSIDE CUSTOMERS (INCLUDING MOSSY BOTTOM & COWPEN)

	Bills	Gallons	Current Rates	Revenue @ Current Rates	Revised Rates	Revenue @ New Rates	$ Increase	%	
First 2,000	7,476	22,644	$ 14.00	$ 104,664	$18.80	140,549	$ 4.80	34%	$17.05
Over 2,000		40,445	$7.00	283,115	$10.75	434,784	3.75	54%	$9.34
Plus Other Income						$ 15,300			
Total	7,476	63,089		$ 387,779		$ 590,633			
TOTAL INCOME (OUTSIDE CITY CUSTOMERS)						$ 605,933			
TOTAL EXPENSES (Incl. debt & capital amortization)						$ 600,696			
REVENUES GENERATED IN EXCESS OF EXPENSES						$ 5,237			
TOTAL REVENUE - INSIDE & OUTSIDE				$ 1,270,109		$ 1,641,825			
TOTAL EXPENSES (INSIDE & OUTSIDE)						$ 1,623,790			
REVENUES IN EXCESS OF EXPENSES						$ 18,035			

Additional schedules supporting the wastewater rate calculations are as follows:

A Summary of all wastewater related expenses, including debt service and capital expenditure amortization (Page 22)

A schedule of capital expenditures planned for the treatment plant and collection system as a whole (Page 23)

A schedule of capital expenditures specifically related to out-of-city customers (Page 24)

CITY OF PIKEVILLE

SUMMARY OF ALL EXPENSES (SEWER)

INSIDE CITY CUSTOMERS		
Operation and Maintenance		$ 690,901
Debt (Total Allocation)		314,761
Less Debt Paid w/Occup Tax	(A)	(155,266)
Capital Improvements		172,698
Total		$ 1,023,094
(A) Per City Ordinance, that amount of debt associated with KIA Loan A90-06 for sewer plant improvements is to be paid with occupational tax revenues (for in-city customers, who actually pay occupational taxes).		

OUTSIDE- (INCLUDING MOSSY BOTTOM)		
Operation and Maintenance		$ 343,089
Debt		157,067
Capital Improvements		100,539
Total		$ 600,696

PIKEVILLE SEWER

CAPITAL EXPENSES AND AMORTIZATION

PIKEVILLE AND MOSSY BOTTOM

	Total	Amt to Amortize	Amortization	Inside	Outside
TREATMENT PLANT					
Air Line Replacement (2)	$ 125,000	$ 125,000	10	$ 9,381	$ 3,119
Replace Blower Motors (2)	100,000	$ 100,000	10	7,505	2,495
Corrosion Resistant Coating (2)	150,000	$ 150,000	10	11,258	3,743
Back Up Generators (2)	165,000	$ 165,000	10	12,383	4,117
WASTEWATER COLLECTION SYSTEM					
Correct I/I Problems/Separate Storm Water (2)	350,000	$ 350,000	40	6,567	2,183
Rehab Center Creek LS / Upgrade 700' Old Line (2)	77,000	$ 77,000	10	5,779	1,921
Rehab Lift Station #7 and River Crossing (2)	261,800	$ 261,800	10	19,648	6,532
Rehab Coal Run Fire Dept. Lift Station (2)	30,000	$ 30,000	10	2,252	749
COLLECTION SYSTEM EXPANSION					
Cedar Gap Extensions (5,000 LF) (1)	327,600	$ 327,600	40	6,652	1,538
Yorkwood Forrest Dr Extension (1)	260,600	$ 260,600	40	5,291	1,224
Foxcroft Subdivison Extensions (1)	295,500	$ 295,500	40	6,000	1,387
Johnson Hollow Extension (1)	260,600	$ 260,600	40	5,291	1,224
VEHICLE AND EQUIPMENT REPLACEMENTS					
New Roll-Off Truck (1)	60,000	$ 60,000	5	9,746	2,254
Replace Service/Utility Trucks (1)	120,000	$ 120,000	5	19,493	4,507
New VAC Truck/ Jetter (2)	400,000	$ 400,000	10	30,020	9,980
Replace Mini-Excavator (1)	40,000	$ 40,000	10	3,249	751
Replace Dump Truck (1)	75,000	$ 75,000	5	12,183	2,817
TOTAL	$ 3,098,100	$ 3,098,100		$ 172,698	$ 50,539

Factors

(1) Number of Customers
(2) Gallons Sold

PIKEVILLE WASTEWATER CAPITAL ITEMS

SPECIFICALLY ASSOCIATED WITH MOSSY BOTTOM

	Total	Amt to Amortize	Amortization	Total Amount
Corrision Resistant Coating	150,000	150,000	10	15,000
Replace Coal Run Lift Station	75,000	75,000	15	5,000
Odor Control	200,000	200,000	10	20,000
Repair Lift (coating - hydrogen sulfide corrosion)	50,000	50,000	5	10,000
Total	$ 475,000	$ 475,000		$ 50,000

RESPONSE TO QUESTION

3(b)

City of Pikeville Water Lines
(from WRIS and from 2002 and 2019 PSC submittals by Pikeville)

	from WRIS (presumably entire system)									
line diameters	Cedar Creek	Huffman	Mossy Bottom	Thompson Road	Yorktown	line diameter totals	totals in miles	line diameters	percent of total	inch-miles
unknown	0	5226	0	286	0	5512	1.04	unknown	1.0%	2.09
2	4197	0	29788	3018	5256	42259	8.00	2	7.9%	16.01
3	176	0	4673	542	0	5391	1.02	3	1.0%	3.06
4	0	1479	4079	1173	0	6731	1.27	4	1.3%	5.10
6	23522	41534	84310	18351	31159	198876	37.67	6	37.1%	226.00
8	16232	94611	8909	12745	6418	138915	26.31	8	25.9%	210.48
9	0	208	0	0	0	208	0.04	9	0.0%	0.35
10	10643	20622	2744	320	12884	47213	8.94	10	8.8%	89.42
12	174	25622	24169	7796	20610	78371	14.84	12	14.6%	178.12
16	1269	8055	0	0	3715	13039	2.47	16	2.4%	39.51
						536515			100%	770.13

line diameters	2019 PSC miles	2019 PSC inch-miles	2002 PSC miles	2002 PSC inch-miles	percent change from 2002
unknown					
2	1.7	3.4	2.73	5.46	-37.7%
3		0	2.42	7.26	-100.0%
4	2.4	9.6	3.18	12.72	-24.5%
6	19.4	116.4	23.03	138.18	-15.8%
8	16.8	134.4	24.02	192.16	-30.1%
10	11.6	116	6.29	62.9	84.4%
12	17.9	214.8	4.39	52.68	307.7%
16	1.6	25.6	2.06	32.96	-22.3%
total inch-miles		620.2		504.32	23.0%

Distribution Line Allocation
(calculated on City of Pikeville waterlines - WRIS data)
from "Financial Management: Cost of Service Rate Making"

Distribution Main Analysis			
Pipe Size (in)	Linear Feet	Installed Cost ($/LF)	Replacement Cost ($)
2	47,771	30.00	$ 1,433,130
3	5,391	35.00	$ 188,685
4	6,731	60.00	$ 403,860
6	198,876	90.00	$ 17,898,840
8	138,915	130.00	$ 18,058,950
10	47,421	150.00	$ 7,113,150
12	78,371	170.00	$ 13,323,070
16	13,039	180.00	$ 2,347,020
20	-	220.00	$ -
24	-	250.00	$ -
Totals	536,515		$ 60,766,705

Customer % =	536,515	X $30.00 =		$ 16,095,450	
divided by	$ 60,766,705		gives		26%
					Customer Component
Add cost of 2 inch through 6 inch pipe				$	19,924,515
Equivalent for 8 inch through 24 inch					
Add	138,915		47,421		78,371
	13,039		-		-
			multiplied by	$	90
Add	$ (16,095,450)		$ 19,924,515	$	24,997,140
			gives	$	28,826,205
			divided by	$	60,766,705
					40%
					Capacity Component
100%	minus		26%		40%
					34%
					Fire Protection Component

Connie L Allen:
this is the 2-inch cost ($30) of all the line

Connie L Allen:
this is total cost of 2-inch through 6-inch line, D3+D4+D5+D6

Connie L Allen:
ft of 8-inch

Connie L Allen:
ft of 10-inch

Connie L Allen:
ft of 12-inch

Connie L Allen:
ft of 16-inch

Connie L Allen:
cost of 6-inch part of pipe

Connie L Allen:
this is the total feet of 8-inch through 16-inch multiplied by cost of 6-inch, to get the cost of 6-inch pipe within the 8 to 16-inch lines

Connie L Allen:
subtract the 2-inch part of the cost

City of Pikeville Waterlines
(from WRIS after 27 July 2019 adjustment)

	rom WRIS (presumably entire system) as changed 27 July 201									
line diameters	Cedar Creek	Huffman	Mossy Bottom	Thompso n Road	Yorktown	line diameter totals	totals in miles	line diameters	percent of total	inch-miles
unknown	0	5223	0	286	0	5509	1.04	unknown	1.0%	2.09
2	1399	0	10520	1005	1751	14675	2.78	2	2.8%	5.56
3	176	0	4673	542	0	5391	1.02	3	1.0%	3.06
4	0	1478	4077	1173	0	6728	1.27	4	1.3%	5.10
6	23519	41526	84304	18346	31155	198850	37.66	6	37.8%	225.97
8	16230	94600	8908	12738	6417	138893	26.31	8	26.4%	210.44
9	0	208	0	0	0	208	0.04	9	0.0%	0.35
10	10642	20620	2744	320	12880	47206	8.94	10	9.0%	89.41
12	174	25620	36938	7784	20610	91126	17.26	12	17.3%	207.10
16	1269	12175	0	0	3713	17157	3.25	16	3.3%	51.99
						525743			100%	801.07

Distribution Line Allocation
(calculated on City of Pikeville waterlines - adjusted WRIS data)
from "Financial Management: Cost of Service Rate Making"

Distribution Main Analysis			
Pipe Size (in)	Linear Feet	Installed Cost ($/LF)	Replacement Cost ($)
2	20,184	30.00	$ 605,520
3	5,391	35.00	$ 188,685
4	6,728	60.00	$ 403,680
6	198,850	90.00	$ 17,896,500
8	138,893	130.00	$ 18,056,090
10	47,414	150.00	$ 7,112,100
12	91,126	170.00	$ 15,491,420
16	17,157	180.00	$ 3,088,260
20	-	220.00	$ -
24	-	250.00	$ -
Totals	525,743		$ 62,842,255

Customer % =	1,521,007	X $10.00 =	$	15,772,290	
divided by	$ 62,842,255		gives		25%
					Customer Component
Add cost of 2 inch through 6 inch pipe				$	19,094,385
Equivalent for 8 inch through 24 inch					
Add	138,893		47,414		91,126
	17,157		-		-
			multiplied by	$	90
Add	$ (15,772,290)		$ 19,094,385	$	26,513,100
			gives	$	29,835,195
			divided by	$	62,842,255
					40%
					Capacity Component
100%	minus		25%		40%
					35%
					Fire Protection Component

American Water Works Association

Financial Management: Cost of Service Rate-Making

An AWWA Seminar

April 7 – 9 , 2014
Charleston, South Carolina

TABLE OF CONTENTS

SECTIONS

LEARNING OUTCOMES

- Evaluate financial policies and rate impacts.
- Develop defendable policies that are fair, equitable, and objective.
- Recover the full cost of service with your rate, while still promoting community objectives, and getting the rate your utility needs to be successful.
- Avoid rate shock by using proven techniques on the use of capital budgeting and analysis.
- Establish cost of service rates by applying fundamental methodologies.
- Set fair revenue requirements.
- Classify and allocate costs equitably.
- Establish system development charges by evaluating the costs of growth and the methods to recover those costs.
- Present information in a clear and concise manner to best communicate your results to the public.

IMPORTANT NOTE ABOUT CONTINUING EDUCATION CREDITS

AWWA follows the ANSI/IACET Standard for Continuing Education and Training. Continuing education credit approval processes required by licensing agencies mandate that AWWA document attendance. We ask that you sign-in daily both in the morning and afternoon to document your attendance for all days of the seminar. To obtain full CEU credit for the seminar, a participant's signature must be on all morning and afternoon sign-in sheets. **Instructions on how to print off your certificate of completion can be found in Section 9, page 21 of the PowerPoint presentation.**

AWWA will maintain the participant's CEU record for seven years.

It is the participant's responsibility to apply to his/her licensing agency for continuing education credit approval. While AWWA coursework may be approved by a given agency, this doesn't necessarily mean that the agency will deem all AWWA coursework relevant to a given type of license. Therefore, AWWA recommends that the participant confirms that the coursework attended meets the relevancy criteria and guidelines established by your agency.

Questions? Please contact AWWA's Continuing Education and Training Coordinator, Leah Bang at LBang@awwa.org.

ABOUT AWWA

The American Water Works Association (AWWA) is an international nonprofit scientific and educational society dedicated to the improvement of water quality and supply. Founded in 1881, AWWA is the largest organization of water supply professionals in the world. Its more than 57,000 members represent the full spectrum of the water community: treatment plant operators and managers, scientists, environmentalists, manufacturers, academicians, regulators, and others who hold genuine interest in water supply and public health. Membership includes more than 4,000 utilities that supply water to roughly 180 million people in North America. AWWA offers a variety of educational programs for its members, these include:

CONFERENCES - Provide a venue for participants from around the world to attend AWWA's leading-edge technical sessions and exhibits, workshops, and symposiums to meet, learn, and network.

SEMINARS – Provide a venue for participants to learn about important topics instructed by top experts in their field.

ELEARNING - Provides education and training 24 hours a day, 7 days a week. Without leaving your desk, water professionals can take courses on a schedule that meets their needs. Receive education and training through self-paced or facilitated courses on basic operator training, occupational safety, and human resources topics.

ABOUT AWWA (CONTINUED)

WEBINARS - Cover a diverse range of topics that are typically "hot off the press." Purchase a single license, or purchase a site license and gather a group together to view a webinar. Webinars are delivered over the Internet; via PowerPoint presentations and audio to the viewer.

AGENDA

DAY ONE	
TIME	**6.5 CONTACT HOURS OF INSTRUCTION TOTAL FOR DAY 1**
8 a.m. – 8:30 a.m.	Registration
8:30 a.m. – 12 Noon	**- Financial Management, Policies, and Rates** **- Capital Budgeting and Financing, Key Issues**
12 Noon – 1 p.m.	Lunch (Included)
1 p.m. – 4:30 p.m.	**- Overview of Rate Setting Objectives, Policies and Process** **- Consideration in Setting Utility Revenue Requirements**

DAY TWO	
TIME	**7 CONTACT HOURS OF INSTRUCTION TOTAL FOR DAY 2**
8 a.m. – 12 Noon	**- Cost of Service Studies**
12 Noon – 1 p.m.	Lunch (Not Included)
1 p.m. – 4:30 p.m.	**- Classification Procedures**
NOTE	(2) fifteen minute break times a.m./p.m. = 30 minutes total are subtracted from the contact hour day 2 total
DAY TWO EVENING OPTIONAL SESSION	
4:30 p.m. – 6 p.m.	**- Optional Session: Fundamentals of System Development Charges**

DAY THREE	
TIME	**6 CONTACT HOURS OF INSTRUCTION TOTAL FOR DAY 3**
8 a.m. – 2 p.m.	**- Allocation Procedures** **- Rate Design**
LUNCH	Work Through Lunch

American Water Works Association

Financial Management: Cost of Service Rate-Making

INSTRUCTORS
Todd Cristiano
Denver Water

Tom Gould
HDR Engineering, Inc.

Overview of the Instructors

Tom Gould
Vice President, HDR Engineering, Inc.
Tgould@HDRinc.com

Tom has almost 35 years of experience in establishing cost-based rates for water, wastewater, stormwater, electric, and solid waste utilities. He has worked with utilities across the US and Canada on a variety of financial planning, cost allocation, and rate design issues. He is a member of the AWWA Rates and Charges Committee and a contributing author to the AWWA M1 manual, *Principles of Water Rates, Fees and Charges*. For the past 23 years, he has also been a co-instructor for the AWWA Financial Management Seminar, which teaches the theory and methodologies used to establish cost-based water rates.

Todd Cristiano
Manager of Rates Administration, Denver Water
Todd.Cristiano@denverwater.org

Todd Cristiano is the Manager of Rates Administration at Denver Water. Prior experience includes 10 years as a financial consultant for municipal water, wastewater, reclaimed, electric, and sanitation utilities across the United States. Work includes financial planning, cost of service analysis, rate design, and development of impact fees for both utility and general government. Todd also specializes in reclaimed water pricing and economic analysis. Todd has a B.S. in Chemical Engineering from the University of Tulsa, and an MBA from the University of Colorado. Todd has taught AWWA's Financial Management seminar since 2010.

Seminar Overview

Section	Description	Schedule
1	Financial Management, Policies and Rates	AM—Day 1
2	Capital Budgeting and Financing—Key Issues	AM—Day 1
3	Overview of Rate Setting Environment, Objectives, and Process	PM—Day 1
4	Considerations in Setting Utility Revenue Requirements	PM—Day 1
5	Cost of Service Studies	AM/PM—Day 2
6	Allocation Procedures	AM—Day 3
7	Distribution Procedures	AM—Day 3
8	Rate Design	AM—Day 3
9	How to Effectively Organize a Rate Study	PM—Day 3

Technical Appendix

Section 1
Financial Management, Policies & Rates

. . . Looking for a better way

Overview of the Rate Setting Process

Revenue Requirement — Compares the revenues of the utility to its expenses to determine the overall level of rate adjustment

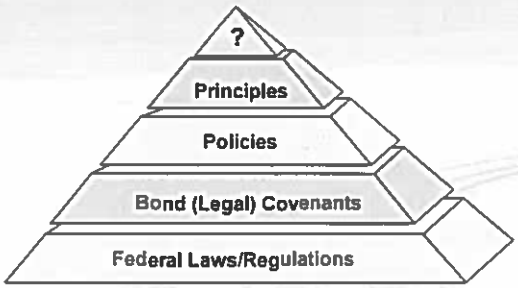
Cost of Service — Equitably allocates the revenue requirements between the various customer classes of service

Rate Design — Design rates for each class of service to meet the revenue needs of the utility, along with any other rate design goals and objectives

Class Exercise/Discussion

- Discuss in small groups the challenges/problems that you have faced in establishing cost-based rates at your utility (e.g. technical, managerial, public process, political etc).
- Be specific and discuss how your utility has dealt with those challenges in the past (successfully or unsuccessfully).
- Order these challenges from —most challenging" to —least challenging".

The Rate Setting Decision Pyramid

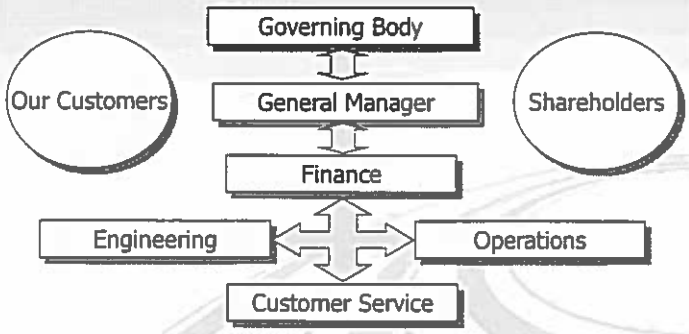


Water (& Sewer) Utility Best Management Practices [1] A Utility Should Have...

1. Long-term financial forecast.
2. Debt policies.
3. Policies for financial margins, debt service coverage.
4. Regular financial reporting and monitoring.
5. Prioritized capital improvement programs.
6. Use of professional experts.
7. Limited dependency on growth sensitive revenue.
8. Collection policies with enforcement for late or non-payers.
9. Coordination with regional growth planners.
10. Rate affordability index.
11. Defined financial relationship to the general purpose government so that the utility revenue can be relied on for utility purposes.
12. Strategies to track changing regulatory mandates.
13. Strong accounting practices and internal controls.
14. Professional recognition of budget and accounting process.

1 Adopted from "Water and Sewer Revenue Bond Rating Guidelines," published by Fitch Ratings, April 13, 2004.

Role of Key Groups/Positions in the Financial Planning Process



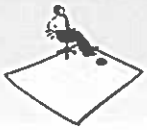
Typical Issues in the Financial Planning Process

- **Policy Governance Board**
  - Micro-managing.
- **Financial Planning Models**
  - Too simple or too complex.
  - Lack of focus on the important issues.
- **Financial Policies**
  - Little or no written policies for establishing rates.

Issue 1 – Policy Governance Board

The problem of micro-managing

Foundation of Governance



Policy Governance: What It Is

- Policy governance is a form of leadership; governing body provides "visionary" leadership; should not be involved in day-to-day operations/decisions.

The Problem

- A governing board that doesn't understand their role – they bring to the table what they know.
- A management team that doesn't work with their governing board in an effective way.
  - Properly laying out the discussion.
  - Focusing on the key policy decisions.

Models of Governance Structures [1]

- Based upon a simple principle:
  - Governing body establishes the —ends".
  - Management team determines the —means".
- An effective governing body's role is to:
  - To see to it.
  - Achieve what the organization should.
  - Avoid what is unacceptable.

[1] - Note: Based on the Carver Governance Model

"To See To It"

- Commitment to assure that things are done right.
- Governing body must describe what is —right" or the criteria for success (e.g. financial performance target levels).
- Governing body must hold parties accountable.
- Governing body must monitor performance regularly.

"Achieve What the Organization Should"

- Implies an understanding of providing services (benefits) to the right customers, at an appropriate costs.
- Another way of describing —ends".
- Mistakenly, most governing boards focus on activities, as opposed to —ends".

What are the "Ends" and the "Means"?

- "Ends"
  - Defined as the results or the priorities of the organization.
  - Example - targeted conservation savings (e.g. 5%).
- "Means"
  - Defined as the methods, programs, practices & conduct of the organization to achieve the -ends."
  - Example: Management determines that conservation savings will be achieved via a specific program or programs.

"Avoid What is Unacceptable"

- If the governing body focuses on the —ends" then the —means" are delegated to management.
- Micro-management of the —means" is a major problem of governing boards.
- Governing body should specify any —means" that are unacceptable (e.g. achieving conservation by pricing water at marginal cost).
- Management is left with a broad array of choices (means) to meet the desired —ends".

Issue 2 – Financial Planning Models

Simple or Complex??

Typical Issues Associated With Financial Planning Models

- Length of Planning Horizon
- Building the Financial Model
  - Accuracy
  - Size and complexity
  - Inputs/outputs

- Uses of the Results
  - What do you need to know and understand?
  - What results do you want to communicate and to whom?

Issue 3 – Financial Policies

The problem created by a lack of written policy direction

Financial Policies and Procedures

- The difference between a policy versus a procedure.
  - Policy – —eds"
  - Procedure – —eans" – step by step
- The need to find the proper balance between policy direction and policy (management) flexibility.
- Written policies are found in numerous areas of the utility; written financial/rate policies rarely found.

Class Exercise: Financial Policies and Procedures (Written vs. Understood)

Discuss as small work groups the type of policies that your utility has in place; written and un-written.

Discuss the advantages of each type of policy and why certain policies may be in one form instead of the other.

- Written Policies
- Unwritten Policies

Example of Written Financial Policies

- Copy Attached as Appendix A
  - Provided for example purposes only
- Items to Note
  - Objectives of each of the global policy statements
  - General layout or approach

American Water Works Association

Section 2
Capital Budgeting and Financing

Capital Budgeting and Financing – Key Issues

- Financial Planning Process—Balancing the Equation:

Revenue = O&M + Debt + Rate Funded Capital

- Capital Construction and Debt Often Drive Rates
- Need for Strategic Capital Planning - Typical Result is a Financial/Capital Improvement Plan

Detail of the "Cash Basis" Approach

(i + Term)

+ O&M Expenses
+ Taxes/Transfer Payments
+ Debt Service (P&I)
+ Capital Projects Funded from Rates
= Total Revenue Requirements
– Miscellaneous Revenues
= Balance Required from Rates

+ Total Capital Projects
– Revenue Bonds (Bond Proceeds)
– Grants
– Customer Contributions (e.g. SDC's)
= Capital Projects Funded from Rates

(≥ Annual Deprec. Exp.)

Example (Simple) Layout For Capital Planning Purposes ($000)

	Year 1	Year 2	Year 3	Year 4	Year 5
Water Treatment Expansion	$0	$4,500	$4,000	$0	$0
8th Street Transmission Line	0	0	2,000	0	0
Well Housing Upgrade	250	0	0	0	0
Capital Hill Reservoir	0	0	0	1,500	0
Telemetry system	0	0	0	0	300
Replacement Mains	500	500	500	500	500
Total Capital Projects	$750	$5,000	$6,500	$2,000	$800
Less: Outside Funding Sources					
Grants	$0	$500	$0	$0	$0
Capital Reserves	250	0	2,000	850	100
System Development Charges	0	1,000	1,000	500	0
Low-Interest State Loans	0	2,200	2,000	0	0
Revenue Bonds	0	750	900	0	0
Total Outside Funding	$250	$4,450	$5,900	$1,350	$100
Balance Funded From Rates	$500	$550	$600	$650	$700

Debt Service Coverage [1]

Calculating Debt Service Coverage	Source of Coverage Above 1.00 DSC	DSC
+ Total Revenues		
– O&M Expenses	+ O&M Expenses	
– Taxes	+ Taxes	
= Balance Available for Debt Service	+ Debt Service	= 1.00
	+ Balance After Debt Pmt/CIP from Rates	> 1.00
	= Total Revenue Requirements	

$$\frac{\text{Balance Available for Debt Service}}{\text{Debt Service Payment}} = \text{DSC}$$

[1] - You should check with your utility-specific bond issues for the calculation of debt service coverage ratios. May vary from utility to utility.

What Useful Information is Contained in a Capital Improvement Plan?

- Capital Projects Needed to be Built
-
-
-
-
-

Types of Capital Projects

- Types of Capital Projects
  - Renewal and Replacement
  - Growth related
  - Legally mandated

- Why Does It Matter?
  - Methods of financing different types of capital projects
  - Presentations/Explanation

Example of a Capital Improvement Plan

- See Technical Appendix B.
- Items to Note:
  - Length of planning horizon
  - Summary page
  - Detail to help explain/justify
  - Priority of projects – Ability to slide projects out?

Capital Planning Issues

- Define Service Levels and Customer Needs
  - Service area boundaries/annexation
  - Customer growth - Extension policies to new customers (outlying area)
  - Minimum service levels/regulatory requirements
- Physical Facilities (what is needed to meet service levels)
  - Supply issues (short and long-term)
  - Age/condition of plant (replacement/upgrade)
  - Changes in technology (e.g., meter reading)
- Financial Resources (What we care about!)
  - Customers' ability and willingness to pay for new facilities
  - Return on investment (risk)
  - Financing alternatives (impacts to rates and financial performance)

"Cost" vs. "Value" of Water

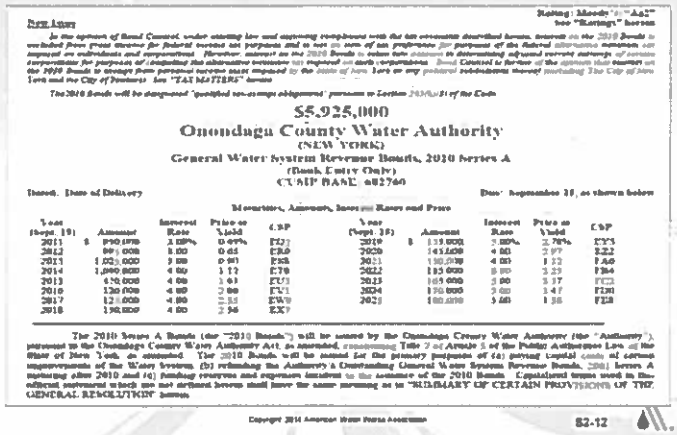
Methods of Financing Capital Projects

- Rates (cash flow)
- Revenue Bonds
-
-
-
-
-

Can You Develop an "Optimum" Financing Plan?

- How do you define "optimum?"
  - Desired Rate Impacts—Short and Long Term
  - Net Present Value (Lowest)
  - Risk (Avoidance of or least risk)
  - Covenants (Bond and Rate)

Example Cover - Official Statement (OS)



$5,925,000

Onondaga County Water Authority

(NEW YORK)

General Water System Revenue Bonds, 2010 Series A

(Book Entry Only)

CUSIP BASE: 682760

Dated: Date of Delivery — Due: September 15, as shown below

Maturities, Amounts, Interest Rates and Prices

Year (Sept. 15)	Amount	Interest Rate	Price or Yield	CUSIP	Year (Sept. 15)	Amount	Interest Rate	Price or Yield	CUSIP
2011	$ 590,000	3.00%	0.65%	EX7	2019	$ 535,000	5.00%	2.78%	EY5
2012	595,000	3.00	0.85	EZ4	2020	565,000	4.00	2.97	EZ2
2013	1,025,000	5.00	0.97	FA8	2021	590,000	4.00	3.12	FA6
2014	1,060,000	4.00	1.12	EY8	2022	615,000	5.00	3.29	FB4
2015	470,000	4.00	1.63	EZ3	2023	645,000	5.00	3.57	FC2
2016	120,000	4.00	2.00	FA1	2024	670,000	5.00	3.67	FD0
2017	125,000	4.00	2.35	FA9	2025	705,000	3.68	3.86	FE8
2018	130,000	4.00	2.56	EX5					

The 2010 Series A Bonds (the "2010 Bonds") will be issued by the Onondaga County Water Authority (the "Authority"), pursuant to the Onondaga County Water Authority Act, as amended, constituting Title 7 of Article 5 of the Public Authorities Law of the State of New York, as amended. The 2010 Bonds will be issued for the primary purposes of (a) paying capital costs of certain improvements of the Water System, (b) refunding the Authority's Outstanding General Water System Revenue Bonds, 2001 Series A maturing after 2010 and (c) funding reserves and expenses incident to the issuance of the 2010 Bonds. Capitalized terms used in the official statement which are not defined herein shall have the same meaning as in "SUMMARY OF CERTAIN PROVISIONS OF THE GENERAL RESOLUTION" herein.

Sources and Uses of Funds

SOURCES AND USES OF FUNDS

The following is a summary of the estimated sources and applications of the proceeds of the 2010 Bonds.

Sources of Funds:	
Principal Amount of 2010 Bonds	$ 5,925,000.00
Net Premium	455,629.10
Debt Service Reserve Fund	1,066,972.42
Total Sources	$ 7,447,601.52
Uses of Funds:	
Deposit to Escrow Fund	$ 4,794,346.88
Deposit to Construction Fund	2,000,000.00
Deposit to Bond Reserve Fund	590,407.55
Underwriting Discount	16,412.25
Cost of Issuance and Rounding	76,434.84
Total Applications	$ 7,447,601.52

FINANCED CAPITAL IMPROVEMENTS

$2,000,000 of the proceeds of the 2010 Bonds will be applied to capital improvements to the Water System. The capital improvements to be undertaken with proceeds of the 2010 Bonds include roofing, siding and HVAC improvements at the Northern Concourse Facility.

Rate Covenant and Security

SECURITY FOR THE BONDS

Pledge under the General Resolution

The Bonds are general obligations of the Authority to the payment of which the Authority has specifically pledged (i) the revenues and other moneys of the Authority derived by the Authority from the ownership and operation of the Water System, and (ii) the moneys in certain funds created under the General Resolution, as more fully set forth in the General Resolution. See "SUMMARY OF CERTAIN PROVISIONS OF THE GENERAL RESOLUTION".

Rate Covenant

The Authority has covenanted in the General Resolution to establish, maintain, revise and collect rates and charges with respect to the Water System to provide Revenues which, together with other moneys available therefor, will be sufficient to cover the Net Revenue Requirement as defined in the General Resolution. The General Resolution defines the Net Revenue Requirement to mean an amount equal to the greater of (i) the sum of the Aggregate Debt Service and the Required Deposits for such period, or (ii) 1.25 times the Aggregate Debt Service for such period. See "SUMMARY OF CERTAIN PROVISIONS OF THE GENERAL RESOLUTION".

Establishment of the Bond Reserve

Bond Reserve Fund

The General Resolution establishes the Bond Reserve Fund (the "Reserve Fund") to be held by the Trustee as security for all Bonds Outstanding under the General Resolution. The General Resolution provides that the Reserve Requirement for any Series of Bonds is the amount required to be deposited and maintained in the Bond Reserve Fund as set forth in the Series Resolution authorizing such Series of Bonds. The 2010 Series A Resolution establishes the Reserve Requirement for the 2010 Bonds as the least of (i) the Maximum Annual Debt Service with respect to the 2010 Bonds as of their date of issue, (ii) 125% of the average annual debt service with respect to the 2010 Bonds as of their date of issue, (iii) 10% of the aggregate principal amount of the 2010 Bonds, or (iv) such lesser amount as shall be specified by the Bond Series Certificate. The Authority has established the Reserve Requirement incident to the issuance of the 2010 Bonds in the amount of $590,407.55, with $200,788.39 of that amount being funded from proceeds of the 2010 Bonds and the balance being funded from other sources. After September 15, 2015 the Reserve Requirement relating to the 2010 Bonds will decrease to $200,788.39. The Reserve Fund shall be held as a reserve for the payment of the principal of, premiums, if any, and interest on all Bonds Outstanding when and if other funds on deposit in the Bond Fund are not sufficient for such purposes.

The Authority may substitute an insurance policy, surety bond, letter of credit or other form of guarantee for the moneys required to be held in the Reserve Fund as provided in the General Resolution.

Other Legal Provisions

The Authority shall review the adequacy of fees, rates and charges at least annually. If such annual review indicates that the rates, fees and charges are, or will be, insufficient to meet the requirements of subparagraphs (a) and (b) of this Section, the Authority shall promptly take the necessary action to cure or avoid any such deficiency.

The Authority shall shut off water service to any user for non-payment of water bills and charges after said bills and charges are delinquent for a period of sixty (60) days.

The Authority shall not furnish free service to any person, firm, association, corporation (whether municipal or private), political subdivision or public or governmental agency; provided, however, that the continuation of a free service required by contract or franchise validly in force on March 28, 2001 (the date of issue of the 2001 Series A Bonds) shall not be deemed a breach of this covenant.

The Authority shall keep proper books, records and accounts (separate from all other books, records and accounts) in which complete and correct entries shall be made of its transactions relating to the Water System, the Funds established by the Resolution, and which, together with all other books and papers of the Authority, including insurance policies, shall at all

System's Largest Users

The fifteen largest industrial customers within these areas, served directly by the Water System in order of usage, are:

Customer	Consumption (in Gallons)	% of Water Sales
Anheuser-Busch, Inc.	866,157,000	7.58%
Solvay Paperboard	628,660,000	5.48%
Crucible Steel	285,528,000	2.49%
Bristol Meyers Squibb	180,311,000	1.57%
Clinton Ditch	128,680,000	1.12%
Queensboro Farms	73,750,000	0.64%
Frazer & Jones, Co.	43,200,000	0.38%
Community General Hospital	41,890,000	0.37%
Covanta Onondaga LP	31,460,000	0.27%
Lockheed Martin	30,500,000	0.27%
Crouse Hinds	19,540,000	0.17%
Carr Street (Co-Generator)	13,570,000	0.12%
Sunoco Inc. R&M	12,752,000	0.11%
Suburban Lodging	12,480,000	0.11%
Ameripride	11,650,000	0.10%

Bond Ratings

	S&P[1]	Moody's
Highest Rating	AAA	Aaa
Very Strong	AA	Aa
Strong but Susceptible	A	A
Adequate	BBB	Baa
Speculative	BB/B CCC/CC	Ba/B Caa, Ca, C
Default	D	

(1) May have a plus (+) or minus (-) with rating.

Fitch's "10-Cs" of Water and Wastewater Revenue Bond Analysis What the Rating Agencies Examine

1. Community Characteristics
2. Customer Growth
3. Capacity Available
4. Compliance with Environmental Laws
5. Capital Demands and Debt Policies
6. Covenants
7. Charges and Rate Affordability
8. Coverage and Financial Performance
9. Cash Considerations
10. Crew / Management Team

Adopted from —Water and Sewer Revenue Bond Rating Guidelines," published by Fitch Ratings, April 13, 2004.

American Water Works Association

Section 3
Overview of Rate Setting Environment, Objectives, and Process

A Few Aspects of a Water Utility

- Natural monopoly
  - Single producer can supply entire market more efficiently rather than two or more
- Provide services essential to societal growth
- Capital intensive
  - Requires $5 - $6 of assets to produce $1 of revenue
- Regulated
  - Private utility: Utility Commissions, Shareholders
  - Municipal utility: Council, boards

United States Municipal Water Usage

Population served:
258 million people
86% of population

Daily Usage:
44,200 MGD
Ground water: 33%
Surface water: 67%

Daily per capita usage:
171 gallons

Highest Usage:
California,
Texas,
New York
Florida

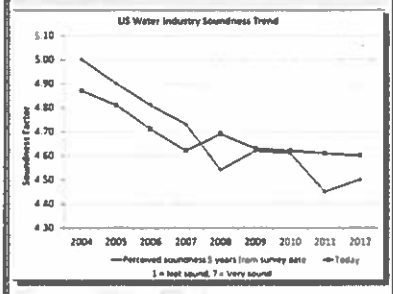
34% of population
37% of Water

Source: http://pubs.usgs.gov/circ/1344/

State of the United States Water Industry

Top 5 Critical Issues

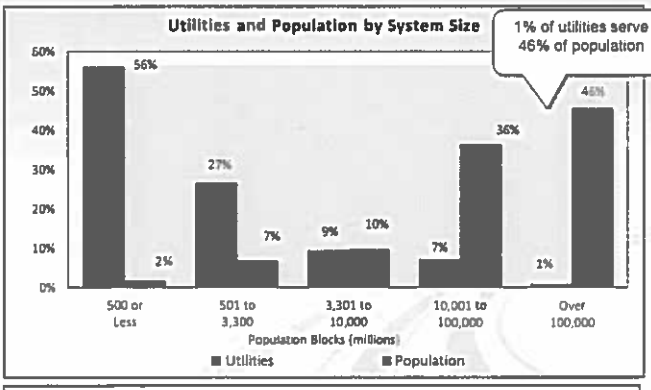
1. **Infrastructure**
   - Replacement lags demand
   - Funding asset management programs
2. **Business Factors**
   - Cash-flow and collection issues
   - Decreases in demand and construction environment reduces revenue
3. **Regulatory**
   - Cost-benefit relation of new regulations
   - Forgoing infrastructure replacement to fund new regulations
4. **Source Water Supply and Protection**
   - Quantity and quality of supply
   - Conservation, demand management, recycled water
5. **Workforce**
   - Retirements slow with economy
   - Difficulty retaining younger workers



Source: AWWA Journal "State of the Industry Report 2012 – An industry at the crossroads." Volume 104, Number 6, June 2012

S3-3

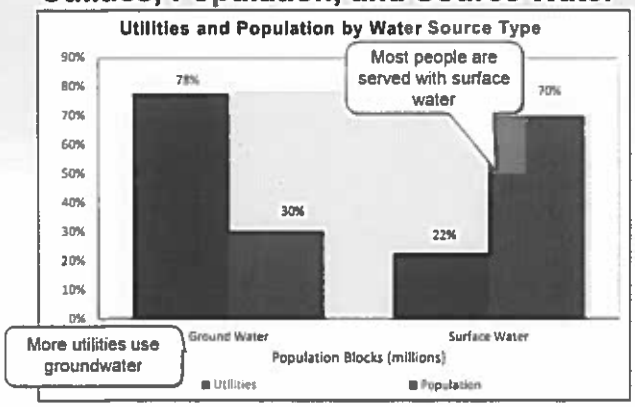
Utilities, Population, and Source Water



Source: EPA Factsheet Drinking Water and Ground Water Statistics for 2008. EPA 816-K-08-004. December 2008 www.epa.gov/safewater

S3-4

Utilities, Population, and Source Water



Source: EPA Factsheet Drinking Water and Ground Water Statistics for 2008. EPA 816-K-08-004. December 2008 www.epa.gov/safewater

S3-4

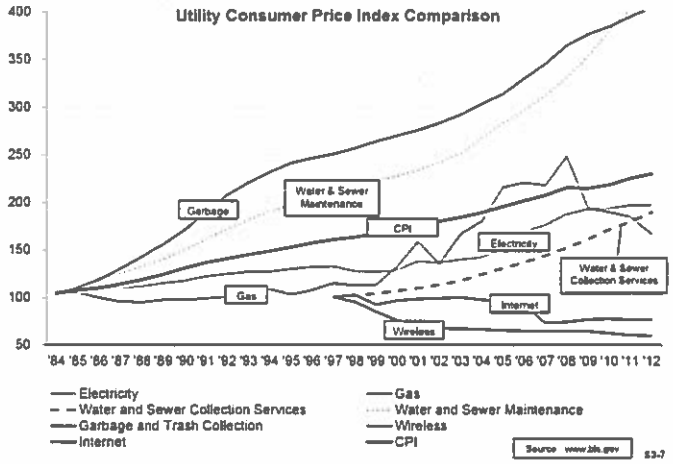
Water Use Trends

- 43 utilities surveyed
  - Water rich
  - Water scarce
- Study results
  - Increased use of efficient fixtures
  - Reduced residents per household
- Other possible factors[1]
  - Changing attitudes towards water use
  - Increased price elasticity

1 Not the views of the author

S3-6

Consumer Water Costs are Increasing



S3-7

Water Utility Financial Challenges

- For many utilities, water revenues are flat or declining while costs continue to increase
- Customer bills continue to increase – leads to affordability issues
- Increased political pressure to "keep rates low"
- Balancing conservation and revenue stability to achieve goals
- How are rates affected by these challenges?

S3-8

What is the Role of Rates?

- **Utility Financial Viability**
  - Pays the bills
  - Revenue stability: matching inflows and outflows
  - Funding the future
- **Customers Care About:**
  - Is the water on?
  - Is it clear and does it taste good?
  - Amount of their bill
- **Water Bill (Rates)**
  - Primary communication with customers
  - Primary determinant of utility performance
  - Influence consumption (how and when)
  - Social goals
  - Fairness

Typical Rate Setting Objectives[1]

- Revenue stability and sufficiency
- Continuity in rate Philosophy
- Fairness and equity
- Cost-based
- Ability to pay / affordability
- Conservation / efficient and effective usage
- Simplicity (Administration and Customer Understanding)
- Feasibility
- Defensible

1 Not presented in any order of importance or preference

Why is a Rate Study Important?

- Identifies cost inequities
  - Equity *between* customer classes
  - Equity *within* customer classes
- Properly designed rates send pricing signal (Price = Costs)
- Proactive financial planning decisions for short and long-term - avoids customer "rate shock"
- Helps manage revenue stability
  - Revenue fluctuation due to seasonality, weather, etc.
- Provides documentation and support for ratemaking decision process
- Provides framework for rate *reasonableness*
- Fosters collaboration between various utility departments

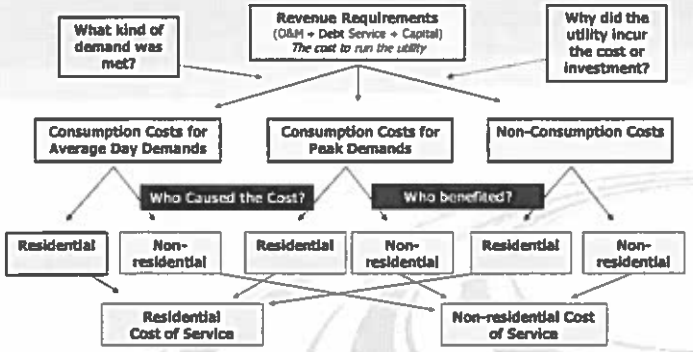
Review of the Global Rate Setting Principles

- Rates should be:
  - Cost-based (average cost pricing)
  - Equitable
  - Set at such a level that they meet the utility's full revenue requirements, bond covenants, and utility financial objectives
  - Predictable from year to year
  - Easy to understand and administer
- Cost allocations used for rate determination should follow the principles of cost-causation, or *those that cause costs, pay costs*

Setting Rates –Top to Bottom

Forecast Projections	Projected number of customers, consumption, and revenues
O&M & Capital Budget	Forecast of expenditures
Revenue Requirement	Determination of revenue needs to meet O&M, capital, debt and financial performance criteria
Cost of Service	Equitable allocation of the revenue requirements to customer classes
Rates	Design rates to recover revenue requirements

Cost of Service A Basic / Simple Road Map



There Are Other Ways of Allocating Costs

- Water Sales
- Politics
- "Across the Board" Increases (Absent Cost of Service Information)
- Pros and Cons
  - Simplicity
  - Appearance of Equity
  - Defendable??

American Water Works Association

Section 4
Considerations in Setting Revenue Requirements

What Are Revenue Requirements?

- The level of revenue required to properly and prudently operate, maintain, and develop utility infrastructure.
- For most utilities revenue requirements are properly set when they cover costs.

Revenue or Costs?....Revenue Requirements = Costs

- Revenue requirements from rates:

Total Costs (Revenue Requirements)
Less. Non-rate revenues

= Revenue Requirements from Rates

Overview of Developing Revenue Requirements

- Revenue requirements are established to offset utility costs
- Determining them requires familiarity with data and estimating
- Establishing a Test Period—the method of determining the basis and timeframe for the estimate
  - Historical - a recent "typical" year
  - Projected - budgeted or forecasted
  - Pro forma - historical base year with adjustments for known and measurable changes
- "Cash Basis" versus "Utility/Accrual Basis"

Comparison of "Cash Basis" and "Utility/Accrual Basis"

Cash Basis	Utility Basis
+ O&M expenses	+ O&M expenses
+ Taxes, transfer payments	+ Taxes, transfer payments
+ Debt service	+ Depreciation expense
+ Capital projects	+ Return on rate base
Σ = Total Revenue Requirements	Σ = Total Revenue Requirements

Typical "Cash Basis" Situations

- ✓ Commonly used by municipal / governmental utilities
- ✓ Cash budget
- ✓ Revenue in = costs out
- ✓ Duty to recover costs

Typical "Utility Basis" Situations

- ✓ Commonly used by privately owned utilities or municipal utilities with outside city or wholesale customers
- ✓ Accrual / income statement
- ✓ Revenue = operating costs, loss of investment and investment risk
- ✓ Duty to investors

Comparison of Utility Basis and Cash Basis

	Cash Basis
O&M	$3,000,000
Taxes/Transfers	50,000
Debt Service (P&I)	500,000
Capital Projects Funded from Rates	1,000,000
Revenue Requirements	$4,550,000

	Utility Basis
O&M	$3,000,000
Taxes	50,000
Depreciation Expense	900,000
Return on Rate Base (1)	600,000
Revenue Requirements	$4,550,000

(1) See following page for calculation of return on rate base

Example of Return on Rate Base Calculation

Rate Base Calculation	
Original Cost of Plant	$40,000,000
Less: Accumulated Depreciation	18,000,000
Net Plant	$22,000,000
Plus: Working Capital	500,000
Less: Contributed Plant (net of depr.)	15,000,000
Rate Base	$7,500,000

Weighted Cost of Capital

	Amount	%	Cost	Weighted Cost
Debt	$5,000,000	20%	6.0%	1.2%
Equity	20,000,000	80%	8.5%	6.8%
	$25,000,000			8.0%

8% x $7,500,000 = $600,000

Return on Rate Base Components

- Rate base
  - Original cost of assets
  - Accumulated depreciation
  - Working capital
  - Construction work in progress (CWIP)
- Rate of return (WACC)
  - Outstanding long-term debt / cost of debt
  - Net equity in system / cost of equity

Weighted Average Cost of Capital

- Cost of debt
  - Total interest payments divided by book value of outstanding debt
  - Should account for issuance costs, premiums or discounts at time of issue, and sinking fund or call provisions
  - Premium or discounts may affect the yield to the investor

Weighted Average Cost of Capital

- Cost of equity
  - Estimate of future returns to stockholders
  - Difficult to estimate what future returns will be
  - Represents the minimum acceptable return
  - Cost of equity is different than return on equity

"The cost of equity, which is the minimum acceptable return, is a starting point ... Under normal economic conditions, the fair return lies above that minimum rate"

Source. Wisconsin Public Service Commission, Final Decision, Docket 3270-UR-115, December 2007

Weighted Average Cost of Capital

- Cost of equity calculation methodologies
  - Discount cash flow (DCF)
    - *Cost of equity (K) = $D_1/P_0 + G$*
  - Capital Asset Pricing Model (CAPM)
    - *Cost of equity (K) = $R_f + \beta(R_m - R_f)$*
  - Bond yield plus risk premium
    - *Cost of equity (K) = $i + (R_m - R_f)$*
- Calculation is just and estimate
- Each method has strengths and weaknesses

D_1 = Expected dividend
P_0 = Current stock price
G = constant growth rate

R_f = Risk free rate
R_m = Market return
β = Beta

i = Utility debt interest
R_p = Expected market risk premium

Example Cost of Equity Calculation

- Discount cash flow

  $K = D_1/P_0 + G$ where:
  2010 dividend = $2.00
  Current stock price = $60
  Constant growth = 5%

  *$D_1 = \$2.00 * 1.05 = \$2.10$*
  $D_1/P_0 = \$2.10 / \$60 = 3.5\%$
  $K = 3.5\% + 5.0\% = 8.5\%$

Growth can be estimated from:
- Earnings per share (EPS)
- Cash flow per share (CFPS)
- Book value per share (BVPS)
- Dividends per share (DPC)

Alternative Method For Determining Return Component

- Step 1 – Determine revenue requirement on "cash basis"
- Step 2 – Determine first three components of the utility basis
- Step 3 – Determine return component for the utility basis, return is what it takes to balance to the "cash basis"

Cash Basis		Utility Basis	
O&M	$3,000,000	O&M	$3,000,000
Taxes/Transfers	50,000	Taxes	50,000
Debt Service	500,000	Deprec. Exp.	900,000
CIP from Rates	1,000,000	Return	600,000
Total	$4,550,000	Total	$4,550,000

Many Utilities Use Both Methods

- The allocation of rate base (assets) and depreciation is often considered simpler and less volatile from year to year than the allocation of debt service and cash financed capital.
- Utilities serving suburban or neighboring communities often assess the suburban rates using the utility basis and thus treat the owning city as the investor (inside City/outside City).

Utility Basis vs. Cash Basis Pros and Cons

- Cash Basis
  - Simple to understand and develop
  - Conforms with budget process
  - Potential problem of ~~lumpy~~" funding of capital improvements
- Utility Basis
  - Generally stable over time
  - Common for investor-owned utilities (IOU's)
  - Requires return calculation –
    - ***However***, return can look like profit from the customer's perspective

Other Considerations in Developing Revenue Requirements

- Financial planning considerations
  - ➢Debt service coverage (DSC) ratios and capital financing
  - ➢Reserve levels

Interrelationship Between Rate Funded Capital & Debt Service Coverage

Calculation of Revenue Requirements	Debt Service Coverage Calculation
+ O&M Expenses	+ Total Revenues
+ Taxes	− O&M Expenses
+ Debt Service	− Taxes
+ Rate Financed Capital	= Balance Available for Debt Service & Rate Financed Capital
= Total Revenue Requirements	

$$\text{Debt Service Coverage} = \frac{\text{Balance Available for Debt Service \& Rate Funded Capital}}{\text{Debt Service Payment}} > 1.0$$

Note: Refer to your specific bond covenants for purposes of calculating debt service coverage ratios

Examples of the Interrelationship Between Rate Funded Capital and DSC

	Example 1		Example 2		Example 3	
Description	Revenue Requirements	DSC	Revenue Requirements	DSC	Revenue Requirements	DSC
Total Revenues	$4,000,000		$4,300,000		$5,000,000	
O&M Expenses	(2,000,000)		(2,000,000)		(2,000,000)	
Taxes	(1,000,000)		(1,000,000)		(1,000,000)	
Balance Available for Debt Service	$1,000,000	1.00	$1,300,000	1.30	$2,000,000	2.00
Debt Service Payment	$1,000,000		$1,000,000		$1,000,000	
Funds Available for Capital	$0		$300,000		$1,000,000	

Note: In financing capital projects, there is also a trade-off between debt funded capital and rate funded capital

Other Financial Planning Considerations Reserve Levels

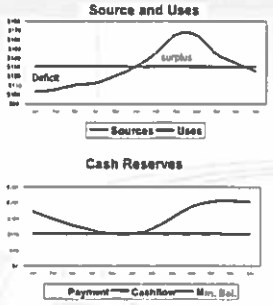
Types of reserves

1. Operating reserve
   - 45 – 90 days of O&M is typical
2. Capital Reserve
   - Typical year of capital projects (rate funded)
   - One year depreciation expense
3. Emergency reserve
   - Funds required until emergency funding can be arranged, or largest capital item to replace
   - Rate stabilization reserve
4. Bond reserve
   - Established based on bond documents
   - A portion of annual debt service payments

Reserve Levels (Continued)

Another Method: *Cash Flow Approach*

1. During the first half of the year, sources of funds are below uses, and cash reserves drop
2. During the second half of the year, sources are higher than uses and reserves replenish
3. A cash flow analysis should allow you to determine the beginning of the year needs that allow you to make payments at the lowest reserve balance



Funding of Renewal and Replacement Capital Projects

- Renewal and replacement projects are of an on-going nature.
- A utility should fund from rates an amount for renewal and replacement capital projects;
  - A simple financial rule is to fund, at a minimum, an amount at least equal to annual depreciation expense.
  - Issue of depreciation expense vs. replacement cost.
  - If possible, targeting an amount greater than annual depreciation expense (e.g. 1.5 times annual depreciation expense).

Framework for Evaluating Capital Improvement Projects

	Year 1	Year 2	Year 3	Year 4	Year 5
Source of Supply Improvements	$0	$6,000	$2,000	$0	$0
Washington Reservior	0	0	2,500	0	0
Transmission Improvements	400	0	0	600	1,000
Capital Hill Reservoir	0	0	0	1,500	0
Pumping Plant Replacements	200	0	0	0	200
Replacement Mains	1,000	1,100	1,200	1,300	1,400
Total Capital Projects	$1,600	$7,100	$5,700	$3,400	$2,600
Less: Outside Funding Sources					
Grants	$0	$2,000	$0	$0	$0
Capital Reserves	100	0	700	650	100
System Development Charges	0	1,350	0	500	0
Low-Interest State Loans	0	2,000	0	0	0
Revenue Bonds	0	0	3,000	0	0
Total Outside Funding	$100	$5,350	$3,700	$1,150	$100
Balance Funded From Rates	**$1,500**	**$1,750**	**$2,000**	**$2,250**	**$2,500**

Case Study

Clear Water Utility is a small municipal utility with approximately 5,000 customers. It is currently facing a number of problems. As with most small utilities, planning from both an engineering and financial perspective is an exercise which never seems to come to the forefront. Among the utility's problems are the following:

- To improve water quality, a $4.0 million (current year $) treatment plant must be built within any one of the next three years (year 1, year 2, or year 3). It is assumed that this is a one-year project. Delay of the project adds 10% to the cost for each year delayed.
- Much of the distribution system needs replacements. In the past, water rate levels have not supported the ability to make adequate renewals and replacements. Current depreciation expense is approximately $500,000 per year.

Case Study Considerations

- Water rates were last adjusted 3 years ago. The present residential rate is as follows:
  - Meter Charge: $7.00/month
  - Commodity Charge: $1.50/CCF
- Average residential use is 10 CCF/Month, and the average bill is $22.00/month.
- The utility has no existing (outstanding) debt and has the capability to debt finance 100% of the major capital improvements.
- Grant funding for the treatment plant will be available in year 2 at a level of 25% of the project cost. The assumed probability of funds being available and of receiving these funds is about 50%.

Developing the Analysis

- Clear Water Utility retains you to provide an analysis of funding/financing alternatives and a recommendation on the suggested approach
- Based upon your analysis, the following scenarios were developed

	Option 1	Option 2	Option 3	Option 4
Treatment Plant -				
- Year Built	Year 1	Year 1	Year 2	Year 3
- Method of Funding	100% Rates	Bonds	Bonds	Bonds
- Grant Funding?	No	No	Yes	No
Renewals & Replacements				
Approach	Full Funding	Full Funding	Phase-In	Phase-In
Funding in Year 1	$500,000	$500,000	$200,000	$150,000
Funding by Year 4	$500,000	$500,000	$500,000	$500,000

Option 1 – Capital Financing Plan

Option 1 - 100% Rate Financed, Full R&R Funding

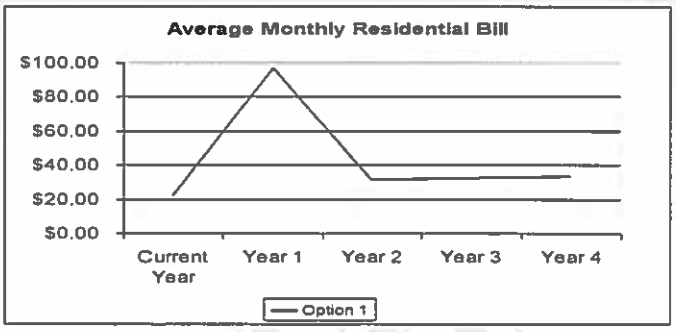
	Current Year	Year 1	Year 2	Year 3	Year 4
Capital Improvement Projects					
Treatment Plant Expansion	$0	$4,000,000	$0	$0	$0
Renewals & Replacements (Mains)	50,000	500,000	500,000	500,000	500,000
Total Capital Improv. Proj.	$50,000	$4,500,000	$500,000	$500,000	$500,000
Less: Funding Sources					
Bond Funds	$0	$0	$0	$0	$0
Grants	0	0	0	0	0
Total Outside Funding Sources	$0	$0	$0	$0	$0
Net Capital Improv. Funded from Rates	$50,000	($4,500,000)	$500,000	$500,000	$500,000

Option 1 – Revenue Requirements

Option 1 - 100% Rate Financed, Full R&R Funding

	Current Year	Year 1	Year 2	Year 3	Year 4
Sources of Funds					
Revenue at Present Rates	$1,325,000	$1,338,300	$1,351,700	$1,365,200	$1,378,900
Miscellaneous Revenues	28,000	28,600	29,200	29,800	30,400
Total Revenues	$1,353,000	$1,366,900	$1,380,900	$1,395,000	$1,409,300
Application of Funds –					
Total Oper. & Maint. Exp.	$1,250,000	$1,312,500	$1,378,100	$1,447,000	$1,519,400
Taxes/Transfer Payments	53,000	80,298	81,102	81,912	82,734
Debt Service					
- Existing Debt Service	0	0	0	0	0
- New Debt Service	0	0	0	0	0
Cap. Improv. Funded From Rates	50,000	4,500,000	500,000	500,000	500,000
Total Revenue Requirements	$1,353,000	$5,892,798	$1,959,202	$2,028,912	$2,102,134
Balance/(Deficiency) of Funds	$0	($4,525,898)	($578,302)	($633,912)	($692,834)
Bal./(Defic.) as a % of Present Rates	0.0%	-338.2%	-42.8%	-46.4%	-50.2%
DSC - Before Rate Adjustment	0.00	0.00	0.00	0.00	0.00
DSC - After Rate Adjustment	0.00	0.00	0.00	0.00	0.00
Current Ave. Residential Bill ($/Mth)	$22.00				
Required Rate Adjustment	0.0%	338.2%	42.8%	46.4%	50.2%
Proposed Ave. Residential Bill ($/Mth)	$22.00	$96.40	$31.41	$32.22	$33.05

Residential Rate Impacts



Option 1 Rate financed, full fund R&R	

Option 2 – Capital Financing Plan

Option 2 - Year 1: 100% Debt Financed, Full R&R Funding

	Current Year	Year 1	Year 2	Year 3	Year 4
Capital Improvement Projects					
Treatment Plant Expansion	$0	$4,000,000	$0	$0	$0
Renewals & Replacements (Mains)	50,000	500,000	500,000	500,000	500,000
Total Capital Improv. Proj.	$50,000	$4,500,000	$500,000	$500,000	$500,000
Less: Funding Sources					
Bond Funds	$0	$4,000,000	$0	$0	$0
Grants	0	0	0	0	0
Total Outside Funding Sources	$0	$4,000,000	$0	$0	$0
Net Capital Improv. Funded from Rates	$50,000	$500,000	$500,000	$500,000	$500,000

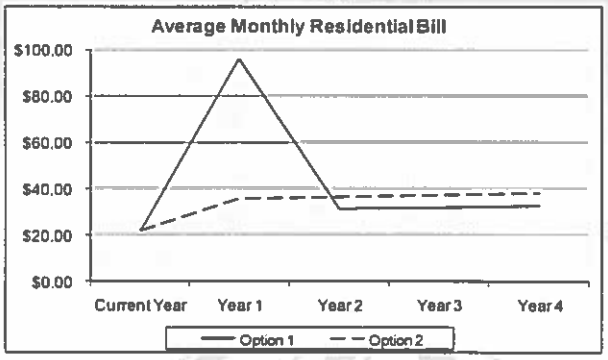
Debt issued at 5% for 20 years. DS = $320,970

Option 2 – Revenue Requirements

Option 2 - Year 1: 100% Debt Financed, Full R&R Funding

	Current Year	Year 1	Year 2	Year 3	Year 4
Sources of Funds					
Revenue at Present Rates	$1,325,000	$1,338,300	$1,351,700	$1,365,200	$1,378,900
Miscellaneous Revenues	28,000	28,600	29,200	29,800	30,400
Total Revenues	$1,353,000	$1,366,900	$1,380,900	$1,395,000	$1,409,300
Application of Funds –					
Total Oper. & Maint. Exp.	$1,250,000	$1,312,500	$1,378,100	$1,447,000	$1,519,400
Taxes/Transfer Payments	53,000	80,298	81,102	81,912	82,734
Debt Service					
- Existing Debt Service	0	0	0	0	0
- New Debt Service	0	320,970	320,970	320,970	320,970
Cap. Improv. Funded From Rates	50,000	500,000	500,000	500,000	500,000
Total Revenue Requirements	$1,353,000	$2,213,768	$2,280,172	$2,349,882	$2,423,104
Balance/(Deficiency) of Funds	$0	($846,868)	($899,272)	($954,882)	($1,013,804)
Bal./(Defic.) as a % of Present Rates	0.0%	-63.3%	-66.6%	-69.9%	-73.5%
DSC - Before Rate Adjustment	0.00	(0.66)	(0.34)	(0.42)	(0.60)
DSC - After Rate Adjustment	0.00	2.56	2.56	2.56	2.56
Current Ave. Residential Bill ($/Mth)	$22.00				
Required Rate Adjustment	0.0%	63.3%	66.6%	69.9%	73.5%
Proposed Ave. Residential Bill ($/Mth)	$22.00	$35.92	$36.64	$37.39	$38.17

Residential Rate Impacts



Option 1: Rate financed, full fund R&R	Option 2: 100% Debt yr 1, Full fund R&R

Option 3 – Capital Financing Plan

Option 3 - Year 2 Funding w/ Grant, Phase in of R&R Funding

	Current Year	Year 1	Year 2	Year 3	Year 4
Capital Improvement Projects					
Treatment Plant Expansion	$0	$0	$4,400,000	$0	$0
Renewals & Replacements (Mains)	50,000	200,000	300,000	400,000	500,000
Total Capital Improv. Proj.	$50,000	$200,000	$4,700,000	$400,000	$500,000
Less: Funding Sources					
Bond Funds	$0	$0	$3,300,000	$0	$0
Grants	0	0	1,100,000	0	0
Total Outside Funding Sources	$0	$0	$4,400,000	$0	$0
Net Capital Improv. Funded from Rates	$50,000	$200,000	$300,000	$400,000	$500,000

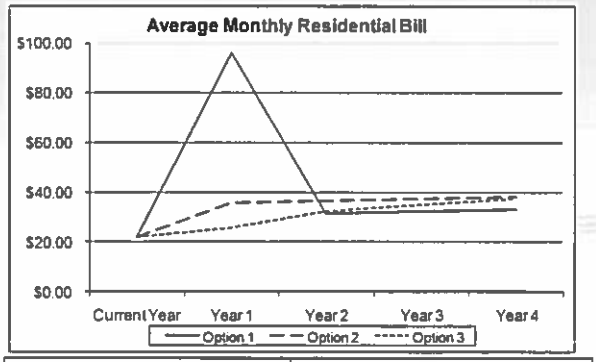
Debt issued at 5% for 20 years. DS = $264,801

Option 3 – Revenue Requirements

Option 3 - Year 2 Funding w/ Grant, Phase in of R&R Funding

	Current Year	Year 1	Year 2	Year 3	Year 4
Sources of Funds					
Revenue at Present Rates	$1,325,000	$1,338,300	$1,351,700	$1,365,200	$1,378,900
Miscellaneous Revenues	28,000	28,600	29,200	29,800	30,400
Total Revenues	$1,353,000	$1,366,900	$1,380,900	$1,396,000	$1,409,300
Application of Funds –					
Total Oper. & Maint. Exp.	$1,250,000	$1,312,500	$1,378,100	$1,447,000	$1,519,400
Taxes/Transfer Payments	53,000	80,298	81,102	81,912	82,734
Debt Service					
- Existing Debt Service	0	0	0	0	0
- New Debt Service	0	0	264,801	264,801	264,801
Cap. Improv. Funded From Rates	50,000	200,000	300,000	400,000	500,000
Total Revenue Requirements	$1,353,000	$1,592,798	$2,024,003	$2,193,713	$2,366,936
Balance/(Deficiency) of Funds	$0	($225,898)	($643,103)	($798,713)	($957,636)
Bal.(Defic.) as a % of Present Rates	0.0%	-16.9%	-47.5%	-58.5%	-69.4%
DSC - Before Rate Adjustment	0.00	0.00	(0.30)	(0.61)	(0.73)
DSC - After Rate Adjustment	0.00	0.00	2.13	2.81	2.89
Current Ave. Residential Bill ($/Mth)	$22.00				
Required Rate Adjustment	0.0%	16.9%	47.5%	58.5%	69.4%
Proposed Ave. Residential Bill ($/Mth)	$22.00	$26.71	$32.47	$34.87	$37.28

Residential Rate Impacts



Option 1: Rate financed, full fund R&R	Option 2: 100% Debt yr 1. Full fund R&R
Option 3: Debt & grant, Phase in R&R	

Option 4 – Capital Financing Plan

Option 4 - Year 3 Financing, Phase-in of R&R Funding

	Current Year	Year 1	Year 2	Year 3	Year 4
Capital Improvement Projects					
Treatment Plant Expansion	$0	$0	$0	$4,840,000	$0
Renewals & Replacements (Mains)	50,000	150,000	250,000	400,000	500,000
Total Capital Improv. Proj.	$50,000	$150,000	$250,000	$5,240,000	$500,000
Less: Funding Sources					
Bond Funds	$0	$0	$0	$4,840,000	$0
Grants	0	0	0	0	0
Total Outside Funding Sources	$0	$0	$0	$4,840,000	$0
Net Capital Improv. Funded from Rates	$50,000	$150,000	$250,000	$400,000	$500,000

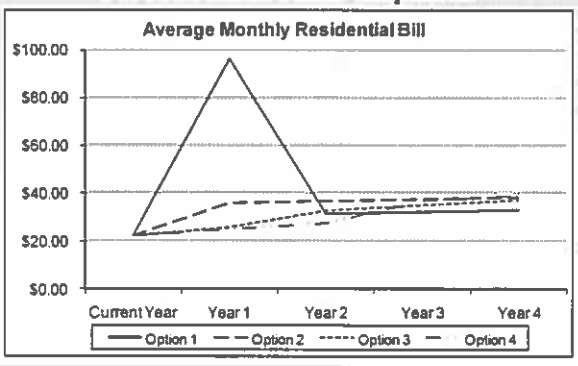
Debt issued at 5% for 20 years. DS = $388,374

Option 4 – Revenue Requirements

Option 4 - Year 3 Financing, Phase-in of R&R Funding

	Current Year	Year 1	Year 2	Year 3	Year 4
Sources of Funds					
Revenue at Present Rates	$1,325,000	$1,338,300	$1,351,700	$1,365,200	$1,378,900
Miscellaneous Revenues	26,000	28,600	29,200	29,800	30,400
Total Revenues	$1,363,000	$1,366,900	$1,380,900	$1,395,000	$1,409,300
Application of Funds –					
Total Oper. & Maint. Exp.	$1,250,000	$1,312,500	$1,378,100	$1,447,000	$1,519,400
Taxes/Transfer Payments	53,000	80,298	81,102	81,912	82,734
Debt Service					
- Existing Debt Service	0	0	0	0	0
- New Debt Service	0	0	0	388,374	388,374
Cap. Improv. Funded From Rates	50,000	150,000	250,000	400,000	500,000
Total Revenue Requirements	$1,363,000	$1,542,798	$1,709,202	$2,317,286	$2,490,508
Balance/(Deficiency) of Funds	$0	($176,898)	($328,302)	($922,286)	($1,081,208)
Bal./(Defic.) as a % of Present Rates	0.0%	-13.1%	-24.3%	-67.6%	-78.4%
DSC - Before Rate Adjustment	0.00	0.00	0.00	(0.34)	(0.50)
DSC - After Rate Adjustment	0.00	0.00	0.00	2.03	2.29
Current Ave. Residential Bill ($/Mth)	$22.00				
Required Rate Adjustment	0.0%	13.1%	24.3%	67.6%	78.4%
Proposed Ave. Residential Bill ($/Mth)	$22.00	$24.89	$27.34	$36.86	$39.25

Residential Rate Impacts



Option 1: Rate financed, full fund R&R	Option 2: 100% Debt yr 1, Full fund R&R
Option 3: Debt & grant, Phase in R&R	Option 4: 100% debt yr 3, Phase in R&R

Case Study: Issues to be Resolved/Reviewed/Discussed

- What would you recommend for the timing and funding of the treatment plant?
- Are there other alternatives you would consider?
- How should renewals and replacements be funded, and at what level?
- What should be the timing of these renewals and replacements?

Evaluation Sheet

Item (5=Optimal, 1=Poor)	Option 1 Rate Funded Full R&R	Option 2 100% Debt Yr 1 Full R&R	Option 3 Debt/Grant Yr 2 Phase in R&R	Option 4 100% Debt Yr 3 Phase in R&R
Timing of treatment plant				
Treatment plant funding method				
Timing of R&R				
R&R funding level				
Other Risks/Benefits				

American Water Works Association

Section 5 - Cost of Service Studies

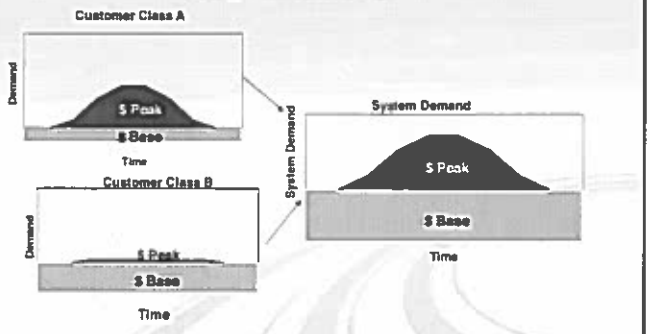
What is Cost of Service?

- Cost of service is:
  - A method to equitably allocate the revenue requirements of the utility between the various customer classes of service (e.g. residential, commercial, etc.)
- The cost of service provides two key pieces of information
  - Allocated total costs to each class of service
  - Average unit costs
    - $/Customer/Month
    - $/1,000 gallons or $/CCF

Why Cost of Service?

- The fundamental question: Do cost differences exist to serve the various customer classes of service?
- Costs of operating the utility are not accounted for on a customer class-by-class basis.
  - e.g. – the utility repairs a main, not a *residential* main.
- Many costs are incurred for the joint benefit of all customers, while other costs may benefit only certain specific customers.
- Not all customers consume water in the same manner (pattern) or require the same facilities to be served.

Those Who Cause the Cost, Pay The Cost



Benefits of Cost of Service?

- Generally Accepted as "Fair and Equitable"
- Avoids Interclass Subsidies
- Rates Equal Cost of Service Provided
- Can Provide an Accurate "Price Signal"
- Legally Defendable

Background—Basic Steps to Cost-Based Rate Making

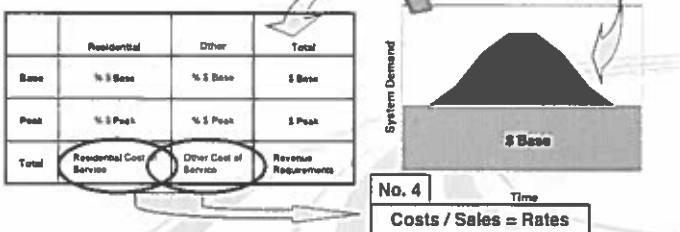
1. Revenue Requirements—How much money should be targeted
2. Classify to system costs
3. Allocate to Customer Classes
4. Design Rates

No. 3

O&M
+ Taxes/transfers
+ Debt service
+ Cash financed capital
= Revenue Requirements

No. 1

No. 2



No. 4

Costs / Sales = Rates

Cost of Service Terminology

- Types of Costs (Cost of Service Studies)
  - **Average embedded costs.** Average embedded costs are those predicted on a system's historical and embedded accounting costs.
  - **Marginal costs.** Marginal costs are the additional (incremental) costs incurred by increasing water consumption by one unit, or the cost savings by reducing consumption by one unit.
- Analytical Steps of a Cost of Service Study [FAD]

Where – **Functionalization.** The preliminary arrangement of costs according to functions performed by the water system. Major functions usually defined as source of supply, pumping, purification, transmission, distribution and general.

Why – **Allocation.** The process of allocating the functionalized costs to commodity, capacity, public fire protection and customer-related cost components.

Who – **Distribution.** The distribution of allocated costs to customer classes of service using prescribed distribution techniques.

Cost of Service Terminology – Cont'd

- Defining Customer Base
  - **Class of service or customer class.** A group of customers having homogeneous (similar) usage characteristics or facility requirements (e.g., residential, commercial, etc.)
  - **Service levels (line sizes).** The levels at which water may be delivered and received by customers of the water system.

Cost of Service Terminology - Cont'd

- Types of Costs
  - **Common costs.** Costs which are incurred in the production of more than one utility service. Common costs are often found in municipal operations where the same department has responsibility for the sale of two services—e.g. water, electricity or wastewater.
  - **Joint costs.** Costs that are incurred in which more than one customer or customer class of service receives benefits or use of facilities.
  - **Direct assignment.** Cost incurred to serve a specific individual customer or class. These costs can be directly assigned to that customer or class without classification to a cost component.

Cost of Service Terminology - Cont'd

- System Cost Components (Classification /Allocation Methods)

  Commodity-Demand

  - **Commodity Costs.** These costs are associated with the total consumption (flow) of water over a specified period of time (e.g. annual).
  - **Demand (Capacity) Costs.** Costs associated with the maximum rate (demand) required at one point in time or the maximum size of facilities required to meet this demand. Often measured as peak-hour or peak-day requirements.

  Base –Extra Capacity

  - **Base Costs**. Costs associated with total annual consumption plus the average day component of peak period use.
  - **Extra-Capacity Costs**. Costs associated with meeting demands over and above base use costs (i.e. – difference between total peak demand and base (average) use.

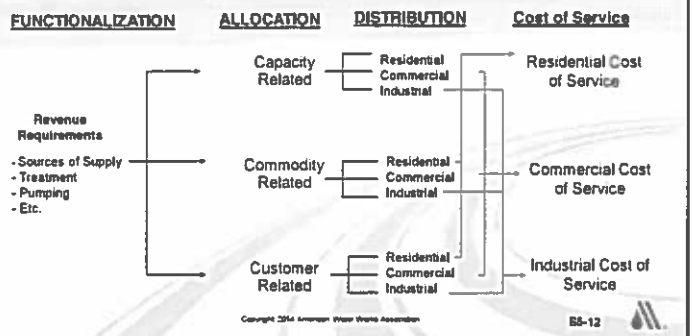
Classification / Allocation Methods Compared

Commodity/Demand	Base Extra-Capacity
• Engineering Design Criteria.	• Engineering Design and Operational Criteria.
• Was the facility designed (cost incurred) to meet the annual demand (commodity) or a peak rate of flow (demand).	• Was the facility designed (cost incurred) to meet the annual demand (base) or was it designed to meet a peak rate of flow (capacity). If capacity then what portion is operated to meet average demands (base) and what proportion is extra-capacity.

Cost of Service Terminology - Cont'd

- **System Component Costs (continued)**
  - **Customer Related Costs.** Costs associated with having a customer on the water system. These costs vary with the addition or deletion of customers on the system.
  - **Revenue Related Costs** – Costs that vary based upon the amount of revenue received by the utility.
  - **Fire Protection Related Costs.** Costs related to the public fire protection function. May also be related to the private fire protection function.

Overview of the Water Cost of Service Analysis



The Ten–Step Approach to Conducting the Study

- **Step 1**—Put the Team Together
- **Step 2**—Identify Management and Policy Objectives
- **Step 3**—Establish a Test Period, Method of Setting Revenue Requirements (cash or utility), and Allocation Method (commodity-demand or base extra-capacity)
- **Step 4**—Calculate a Revenue Requirement
- **Step 5**—Functionalize Revenue Requirement and Capital Investment
  - ✓ Source of Supply
  - ✓ Treatment
  - ✓ Transmission
  - ✓ Distribution
  - ✓ Admin./General

The Ten–Step Approach to Conducting the Study – Cont'd

- **Step 6**—Allocate Revenue Requirement and Investment by Its Cost-Causal Nature
  - ✓ Commodity
  - ✓ Capacity
  - ✓ Customer
  - ✓ Fire Protection
  - ✓ Revenue Related
  - ✓ Direct Assignment
- **Step 7**—Calculate Distribution Factors
- **Step 8**—Distribute Costs to Customer Classes
- **Step 9**—Summarize Results (Revenue from Existing Rates vs. Cost of Service)
- **Step 10**—Design New Rates to Meet Class Revenue Responsibility

Step 1
Putting the Team Together

- Not a One-Person Job
- Need a Leader
- Need Emphasis of Importance from Top Management
- Areas Involved
  - Accounting/Finance
  - Customer Service/Billing
  - Engineering/Operations
  - Meter Readers

Step 2 – Identify Management and Policy Objectives

- Revenue Stability and Sufficiency
- Continuity in Rate Philosophy
- Fairness and Equity
- Cost-Based
- Ability to Pay
- Conservation—Efficient Usage
- Simplicity (Administration & Customer Understanding)
- Feasibility
- Legally Defendable

Step 3
Selection of the Test Period

- Types
  - Historical (recent periods)
  - Pro forma (historical based; adjusted for any known changes)
  - Projected (budgeted or future)
- Considerations
  - Data availability
  - Timing of adjustment
  - Past rate methodologies
  - Regulatory requirements

Step 4 – Calculate a Revenue Requirement

- Determine the Total Cost to be Recovered from Rates and Allocated Within the Cost of Service Analysis
- Available Methods:

Cash Basis	***Utility Basis***
+ O&M	+ O&M
+ Taxes/Transfers	+ Taxes/Transfers
+ Debt Service (P+I)	+ Depreciation Exp.
+ CIP From Rates	+ Return on Rate Base
= Total Revenue Requirement	= Total Revenue Requirement

Step 5 – Functionalize Revenue Requirement and Capital Investment

Cash Basis:

- Operation and maintenance expenses by account number
- Taxes or transfer payments
- Debt service
- Capital improvements financed with operating revenues
- List of dedicated facilities/direct assignments
- Original cost of plant in service by account detail
- Accumulated depreciation by account

Utility Basis:

- Operation and maintenance expenses by account number
- Taxes or transfer payments
- Depreciation expense by plant account
- Weighted average cost of capital (rate of return)
- List of dedicated facilities/direct assignments
- Original cost of plant in service by account detail
- Accumulated depreciation by account
- Working capital
- Contributions in aid of construction

Step 5 - Functionalization of the Data – Cont'd

- Functionalization of Expenses and Investment *(Consistent with the National Association of Regulatory Utility Commissioners (NARUC) Uniform System of Accounts)*

Asset Account Number	Item	Expense Account Number
310's	Source & Supply	600–617
320's	Pumping—Electric & Hydraulic	620–633
330's	Purification/Treatment	640–652
340's	Transmission—Reservoirs, Mains, Services, Meters, Hydrants, and Fountains	660–678
350's	Distribution—Reservoirs, Mains, Services, Meters, Hydrants, and Fountains	660–678
390's	Customers Service/Accounting	901–910
	Administration and General	920–932

Step 6
Allocation Considerations

- Allocation
  - The process of segregating capital investment and expenses to capacity, commodity and customer related cost components.
- Cost Causation
  - Why did you build the plant? Why did you incur the expense?
  - What determines the need for additions?
  - How did you determine the size?
- How is the Asset Designed and / or Used?
- Methodologies
  - Base-extra capacity method.
  - Commodity demand method.
  - Combined method.

Step 6 Allocation of Investment –
(Continued)

Plant Component	Commodity	Capacity	Customer	Public Fire Protection
Source of Supply Plant	X	X		
Treatment Plant	X	X		
Pumping Plant	X	X		
Transmission Plant	?	X		?
Distribution Plant				
Reservoirs		X		X
Mains		X	X	X
Meters		?	X	
Services		?	X	
General Plant	X	X	X	X

Step 6 Allocation of Expenses
(Continued)

Expense Component	Commodity	Capacity	Customer	Public Fire Protection
Source of Supply Exp.	X	X		
Treatment Expenses	X	?		
Chemicals	X			
Electricity	X	?		
All Other Treat. Exp.	X	X		
Pumping Expenses	X	X		
Electricity	X	?		
All Other Pumping Exp.	X	X		
Transmission Expenses	?	X		?
Distribution O&M Expenses				
Reservoirs	?	X		X
Mains	?	X	X	X
Meters	?	?	X	
Services	?	?	X	
Customer Service/Accting			X	
Admin. & General Exp.	X	X	X	X

Note: classification of expenses generally follows the classification of the corresponding plant account

Step 7
Calculate Distribution Factors

Objective:

Distribute costs on a "fair and equitable" basis to each class of service

Measurements Needed to Determine Distribution Factors

- **Capacity**
  - Peak hour contribution by class
  - Peak day contribution by class
- **Commodity**
  - Sales with line loss responsibility by class
- **Customer**
  - Actual number of customers by class of service
  - Customers per class, weighted for customer accounting, meter reading
  - Number of meters by size, by class of service
- **Public Fire Protection**
  - Insurance services organization (ISO) fire flow requirements

Step 7 Example of a Commodity Distribution Factor – Cont'd

Customer Class	Metered Water Sales (CCF)	Plus: % Losses	Total CCF at the Source	% of Total
Residential	2,525,000	6.0%	2,676,500	51.45%
Commercial	1,107,800	6.0%	1,174,268	22.57%
Municipal	398,700	6.0%	422,622	8.12%
Industrial	876,300	6.0%	928,878	17.86%
TOTAL	4,907,800		5,202,268	100.0%
ALLOCATION FACTOR				**(COMM-1)**

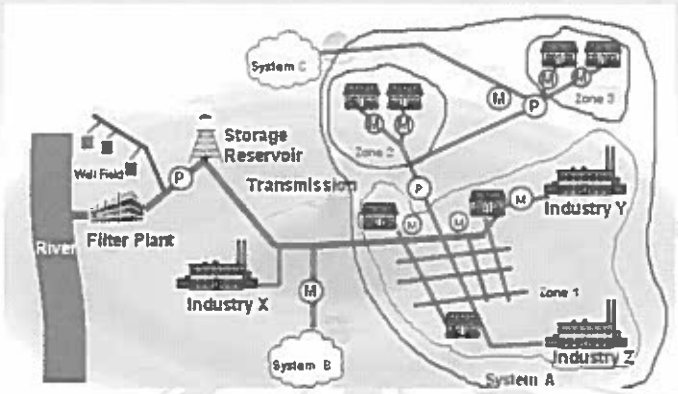
Step 8 – Distribute Costs to Classes of Service

- Distribute previously allocated plant investment and revenue requirements.
- Utilize distribution factors developed in Step 7.
- Distribute Classified Cost Components.
  - Capacity-related, commodity-related, customer-related, fire protection-related and direct assignment.
- Same analytical process for cash basis vs. utility basis.
- End result: Determines the cost of providing service to each customer class.

Step 8 Example of the Distribution of Net Revenue Requirements – Cont'd

Cost Component	Total	Residential	Commercial	Municipal	Industrial	Basis of Allocation
Commodity Related	$2,365,422	$1,216,979	$533,929	$192,162	$422,352	COMM-1
Capacity Related	$4,128,012	$2,756,151	$765,835	$239,359	$366,666	CAP-1
Customer Related						
- Actual Customer	$608,180	$507,670	$100,342	$118	$48	CUST-1
- Weighted for:						
Customer Accounting	930,916	716,283	212,383	252	2,018	CUST-2
Meters & Services	803,563	399,780	202,285	342	1,156	CUST-3
Total Customer Related	$2,142,659	$1,623,734	$514,990	$713	$3,222	
Fire Protection Related	$674,279	$375,681	$297,018	$169	$1,411	PFP-1
Revenue Related	$133,500	$81,290	$30,815	$7,422	$13,973	RR-1
Direct Assignment	$67,127	$0	$0	$67,127	$0	Dir. Assgn.
Total Net Revenue Requirements	$9,511,000	$6,053,836	$2,142,587	$506,953	$807,624	

Water System Network



Step 9 Summarize Results

- Summary Table
  - -- Cash vs. utility basis
- Table Compares Present Rate Levels to Proposed Rate Levels, By Class of Service
- Shows Required Change in Revenue by Class in Order to Equitably Recover Costs

Example of the Summary Table for the Cost of Service Study (Cash Basis)

Exhibit 10
Summary of Average Embedded Water Cost of Service Study
(Cash Basis)

Description	Total	Residential	Commercial	Municipal	Industrial	Source
Revenues at Present Rates	$8,646,550	$5,255,000	$1,995,850	$480,700	$905,000	Exhibit 7
Less:						
Allocated Revenue Requirement	$9,511,000	$6,053,636	$2,142,587	$506,953	$807,624	Exhibit 9
Balance/(Deficiency) of Funds	($864,450)	($798,636)	($146,737)	($26,253)	$97,376	
% Change Over Present Rates	10.0%	15.0%	7.4%	5.5%	-10.8%	

Example of the Summary Table for the Cost of Service Study (Utility Basis)

Exhibit 15
Summary of Average Embedded Water Cost of Service Study
(Utility Basis)

Description	Total	Residential	Commercial	Municipal	Industrial	Source
Revenues at Present Rates	$8,646,550	$5,255,000	$1,995,850	$480,700	$905,000	Exhibit 7
Less:						
Allocated Revenue Requirement	$8,438,830	$5,322,385	$1,920,373	$464,001	$732,071	Exhibit 14
Net Income	$207,720	($67,385)	$75,477	$16,699	$172,929	
Rate Base	$10,557,466	$6,321,411	$2,360,604	$710,703	$1,144,748	Exhibit 13
Present Return on Rate Base	2.0%	-0.9%	3.2%	2.3%	15.1%	
Proposed Return Component	$1,072,170	$641,975	$241,764	$72,176	$116,256	
Proposed Rate of Return	10.2%	10.2%	10.2%	10.2%	10.2%	
Proposed Rate Revenues	$9,511,000	$5,964,360	$2,162,137	$536,177	$848,327	
Balance/(Deficiency) of Funds	($864,450)	($699,360)	($166,287)	($55,477)	$56,673	
% Change Over Present Rates	10.0%	13.3%	8.3%	11.5%	-6.3%	

Step 10- Design New Rates Start with Calculation of Average Unit Costs

- Final analytical step of the cost of service is to calculate average unit costs.
- Classified costs are divided by appropriate billing units to produce an average unit cost.
- Average unit costs are used as a starting point for rate design.

Example Table of Average Unit Costs (Cost-Based Rates)

Cost Component	Total	Residential	Commercial	Municipal	Industrial
Commodity Costs - $/CCF	$0.48	$0.48	$0.48	$0.48	$0.48
Capacity Costs - $/CCF	$0.84	$1.09	$0.69	$0.60	$0.42
Public Fire Prot. - $/CCF	$0.14	$0.15	$0.27	$0.00	$0.00
Rev./Direct/Other - $/CCF	$0.04	$0.03	$0.03	$0.19	$0.02
Total Cost - $/CCF	**$1.50**	**$1.75**	**$1.47**	**$1.27**	**$0.92**
Cust.Costs - $/Cust./Mth	**$7.00**	**$6.35**	**$10.19**	**$11.88**	**$134.23**

Step 10 – Design New Rates to Meet Class Revenue Responsibility

- **Cost of Service is the Basis for:**
  - Revenue Levels Collected from Each Class of Service.
  - Fixed Meter or Customer Charges.
  - Variable Charges.
  - Fire Protection Rates (Public and Private).
  - Subsidies—Economic/Development Welfare.

Case Example

- Developed on a "Cash" and "Utility" Basis.
- Intended to Demonstrate Basic Mechanics of the Study.
- Numbers and Assumptions are for Example Only.
- Typical Approach Used—Specifics of Allocation and Distribution Techniques will be Discussed after Case Example; e.g., Allocation Split of Reservoirs (60%/40%) (Sections 6 and 7).

Notes Page

Functionalization and Allocation of Rate Base

Exhibit 1

Functionalization and Allocation of Plant In-Service (Rate Base)

Page 1 of 2

Acct. No.	Account Description	Total Rate Base	Commodity (COM)	Capacity (CAP)	Direct Customer (DC)	Weighted by: Customer Accounting (WCA)	Meters & Services (WMS)	Pub. Fire Protection (PFP)	Revenue Related (REV)	Direct Assignment (DA)	Basis of Allocation
	Intangible Plant										
301.0	Organization	630 889	69 346	96 226	52 080	50	51 407	51 639	50	5 160	As Factor "ST&D"
303.0	Franchises and Consents	45 334	11 866	20 994	4 645	0	3 169	4 368	0	341	As Factor "ST&D"
	Total Intangible Plant	905 334	917 131	530 113	56 697	50	54 596	56 206	50	5491	
	Source of Supply										
310.0	Land and Land Rights	5126 466	861 572	843 634	50	50	50	50	50	50	69% DDM 30% CAP
311.0	Structures & Improvements	466 764	291 697	157 867	0	0	0	0	0	0	69% DDM 30% CAP
312.0	Collecting & Impounding Reservoirs	985 788	678 997	91 789	0	0	0	0	0	0	69% DDM 30% CAP
314.0	Wells and Springs	899 324	369 361	195 763	0	0	0	0	0	0	69% DDM 30% CAP
315.0	Infiltration Galleries & Tunnels	347 363	162 765	65 594	0	0	0	0	0	0	69% DDM 30% CAP
317.0	Other Water Source Plant	164 793	107 116	57 677	0	0	0	0	0	0	69% DDM 30% CAP
	Total Source of Supply	$2 436 532	$1 663 739	$862 793	$0	$0	$0	$0	$0	$0	
	Water Treatment										
321.0	Structures & Improvements	$2 466 965	$1 616 665	$875 084	$0	$0	$0	$0	$0	$0	69% DDM 30% CAP
332.0	Water Treatment Equipment	3 848 700	2 329 655	1 342 045	0	0	0	0	0	0	69% DDM 30% CAP
	Total Water Treatment	$6 334 663	$3 922 544	$2 112 139	$0	$0	$0	$0	$0	$0	
	Transmission & Distribution										
340.0	Land and Land Rights	$291 710	$0	$108 389	$60 139	$0	$34 468	$47 131	$0	$51 671	As Other Trans. & Dist. Plant
341.0	Structures - Transmission	1 277 714	0	1 127 714	0	0	0	0	0	150 000	100% CAP 0.0 - Municipal
342.0	Distribution Reservoirs	2 276 405	0	1 035 643	0	0	0	340 983	0	0	69% CAP 19% PFP
343.0	Transmission Mains	6 264 243	0	3 334 661	2 066 146	0	0	1 033 434	0	0	6.3% CAP 13% AC 19% PFP
345.0	Services	648 671	0	0	0	0	648 671	0	0	0	100% WCMS
346.0	Meters	726 678	0	0	0	0	726 678	0	0	0	100% WCMS
348.0	Hydrants	966 139	0	0	0	0	0	966 139	0	0	100% PFP
349.0	Other Transmission Plant	327 145	0	176 361	98 736	0	34 966	82 305	0	4 121	As Other Trans. & Dist. Plant
	Total Trans. & Distribution	$12 529 668	$0	$6 784 277	$2 162 886	$0	$1 477 339	$2 023 761	$0	$205 792	
	Total Supply, Trans. & T&D Plant	$23 206 672	$6 506 283	$9 979 306	$2 162 886	$0	$1 477 339	$2 023 761	$0	$211 706	
	% Total Supply, Trans. & T&D Plant	100.0%	28.2%	43.1%	9.3%	0.0%	7.3%	8.8%	0.0%	0.9%	Factor "ST&D"

Funct. and Allocation of Rate Base – Cont'd

Exhibit 1

Functionalization and Allocation of Plant In-Service (Rate Base)

Page 2 of 2

Acct. No.	Account Description	Total Plant Base	Commodity (COM)	Capacity (CAP)	Direct Customer (DC)	Weighted by: Customer Accounting (WCA)	Meters & Services (WMS)	Pub. Fire Protection (PFP)	Revenue Related (REV)	Direct Assignment (DA)	Basis of Allocation
	General Plant										
389.0	Structures	$2 228 466	$963 617	$1 [illegible]	$238 146	$0	$156 566	$214 888	$0	$16 728	As Factor "ST&D"
391.0	Office Equipment	466 366	[illegible]	[illegible]	84 768	0	56 668	42 913	0	5 424	As Factor "ST&D"
393.0	Stores Equipment	21 [illegible]	86 337	67 [illegible]	21 052	0	14 047	26 309	0	1 366	As Factor "ST&D"
394.0	Tools & Shop Equipment	1 [illegible]	679 914	641 [illegible]	167 213	0	126 003	176 913	0	13 734	As Factor "ST&D"
395.0	Lab Equipment	366 694	84 366	95 362	21 180	0	14 543	19 822	0	1 963	As Factor "ST&D"
397.0	Communication Equipment	234 335	62 561	166 967	34 435	0	16 [illegible]	23 971	0	1 791	As Factor "ST&D"
398.0	Misc. Equipment	4 [illegible] 122	966 884	166 966	42 252	0	36 966	39 725	0	3 687	As Factor "ST&D"
	Total General Plant	$6 979 466	$1 462 [illegible] 86	$2 [illegible] 806	$671 572	$0	$ 462 282	$637 366	$0	$41 291	
	TOTAL PLANT IN SERVICE	$30 637 365	$6 668 649	$12 [illegible] 036	$2 730 764	$0	$1 874 221	$2 667 466	$0	$260 166	Factor "Plant in Service"
	% OF TOTAL PLANT IN SERV.	100.00%	26.22%	40.19%	10.29%	0.00%	7.34%	9.84%	0.00%	0.79%	
	Less: Accumulated Depreciation										
	Intangible Plant	(537 367)	(69 [illegible]%	(51 [illegible]	(53 638)	$0	(52 [illegible]	(53 883)	$0	(5356)	As Intangible Plant
	Source of Supply Plant	(1 226 469)	(765 [illegible]	(436 [illegible]	0	0	0	0	0	0	As Source of Supply Plant
	Water Treatment Plant	(2 [illegible] 336)	(1 [illegible] 786	(547 [illegible]	0	0	0	0	0	0	As Water Treatment Plant
	Trans. & Distribution Plant	(6 [illegible] 467)	0	(3 [illegible]	(1 [illegible] 146)	0	(767 [illegible]	(1 [illegible] 234)	0	(61 967)	As T&D Plant
	General Plant	(2 [illegible] 888)	(666 [illegible]	(1 [illegible]	(366 [illegible]	0	(196 [illegible]	(267 [illegible]	0	(19 764)	As General Plant
	Total Accumulated Depr.	($13 [illegible] 353)	($3 [illegible]	($6 [illegible]	($1 [illegible]	$0	($ [illegible]	($1 [illegible]	$0	($102 011)	
	Less: Contributions in Aid										
	• Distribution Mains	($3 [illegible]	$0	($1 [illegible]	($1 [illegible]	$0	$0	($ [illegible]	$0	$0	As Distribution Mains
	• Meters & Services	[illegible]	0	0	0	0	[illegible]	0	0	0	As Meters & Services
	Total Contributions in Aid	($4 [illegible]	$0	($1 [illegible]	($1 [illegible]	$0	[illegible]	($ [illegible]	$0	$0	
	Plus: Working Capital										
	• Inventory & Supplies	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	As Plant in Service
	• Prepayments	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	As Plant in Service
	• 1/8 O&M	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	as O&M Exp.
	Total Working Capital	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
	TOTAL RATE BASE	[illegible]	$4 628 [illegible]	$4 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Factor "Rate Base"
	% TOTAL RATE BASE	[illegible]	[illegible]%	[illegible]%	[illegible]%	[illegible]%	[illegible]%	[illegible]%	[illegible]%	[illegible]%	

Functionalization and Classification of the Net Revenue Requirements (Cash Basis)

Exhibit 2
Functionalization and Allocation Net Revenue Requirements

Page 1 of 3

Acct. No.	Account Description	Total $ Expenses	Commodity (C-Only)	Capacity (C-Ad)	Actual Customer (-NC)	Weighted for: Customer Accounting (W/C-A)	Meters & Services (W/C-MS)	Fire Protection (FP)	Revenues Related (RR)	Direct Assign (D-A)	Basis of Allocation
	SOURCE OF SUPPLY										
601.0	Operating Labor & Expense	$329 000	$209 300	$112 700	$0	$0	$0	$0	$0	$0	As Source of Supply Plant
602.0	Operating Supply & Expense	182 000	118 300	63 700	0	0	0	0	0	0	As Source of Supply Plant
603.0	Electricity	125 400	125 400	0	0	0	0	0	0	0	100% - CCOM
604.0	Maintenance Labor	213 300	139 000	74 329	0	0	0	0	0	0	As Source of Supply Plant
605.0	Maintenance of Source Plant	769 000	720 700	48 300	0	0	0	0	0	0	As Source of Supply Plant
	Total Source of Supply Expense	$1 943 000	$1721 000	$321 029	$0	$0	$0	$0	$0	$0	
	TREATMENT EXPENSE										
638.0	Operation Labor	$919 000	$334 700	$140 250	$0	$0	$0	$0	$0	$0	As Treatment Plant
631.0	Chemicals	106 400	106 100	0	0	0	0	0	0	0	100% - CCOM
632.0	Operating Supply & Expense	122 000	79 300	42 700	0	0	0	0	0	0	As Treatment Plant
634.0	Maintenance Labor	227 000	147 000	79 400	0	0	0	0	0	0	As Treatment Plant
635.0	Maintenance of Treatment Plant	141 000	106 645	34 345	0	0	0	0	0	0	As Treatment Plant
	Total Treatment Expense	$1 276 400	$863 845	$306 695	$0	$0	$0	$0	$0	$0	
	TRANSMISSION EXPENSE										
640.0	Operation Labor	$191 000	$0	$191 000	$0	$0	$0	$0	$0	$0	As Trans. Plant
641.0	Operating Supplies & Expense	123 000	0	123 000	0	0	0	0	0	0	As Trans. Plant
642.0	Maintenance Labor	82 000	0	82 000	0	0	0	0	0	0	As Trans. Plant
643.0	Maintenance Supply & Expense	33 900	0	33 900	0	0	0	0	0	0	As Trans. Plant
	Total Transmission Expense	$429 900	$0	$429 900	$0	$0	$0	$0	$0	$0	
	DISTRIBUTION EXPENSE										
650.0	Maint. Of Transmission Lines	$353 000	$0	$311 559	$0	$0	$0	$0	$0	$41 441	As Plant Account 6341.0
660.0	Operation Labor	444 000	0	229 002	76 300	0	62 896	71 737	0	5 063	As Total T&D Plant
661.0	Operating Supplies & Expense	74 000	0	39 067	12 717	0	9 726	11 856	0	632	As Total T&D Plant
672.0	Maint. Of Distribution Reservoirs	232 000	0	197 200	0	0	0	34 800	0	0	As Plant Account 6342.0
673.0	Maint. Of Distribution Mains	466 000	0	292 300	196 300	0	0	77 600	0	0	As Plant Account 6343.0
675.0	Maint. Of Services	144 000	0	0	0	0	144 000	0	0	0	As Plant Account 6345.0
676.0	Maint. Of Meters	226 000	0	0	0	0	229 000	0	0	0	As Plant Account 6346.0
677.0	Maint. Of Hydrants	136 000	0	0	0	0	0	136 000	0	0	As Plant Account 6348.0
679.0	Maint. Of Other Plant	94 000	0	26 771	6 300	0	11 000	8 911	0	1 739	As Distr Acct. #650.0-677.0
	Total Distribution Expense	$2 146 000	$0	$1 096 400	$290 311	$0	$441 161	$342 704	$0	$48 209	

Functionalization and Allocation of the Net Revenue Requirements (Cash Basis) – Cont'd

Exhibit 2
Functionalization and Allocation Net Revenue Requirements

Page 2 of 3

Acct. No.	Account Description	Total $ Expenses	Commodity (C-Only)	Capacity (C-Ad)	Actual Customer (-NC)	Weighted for: Customer Accounting (W/C-A)	Meters & Services (W/C-MS)	Fire Protection (FP)	Revenues Related (RR)	Direct Assign (D-A)	Basis of Allocation
	CUSTOMER ACCOUNTING										
902.0	Meter Reading	$432 000	$0	$0	$0	$432 000	$0	$0	$0	$0	100% - W/CA
903.0	Accounting & Collection	296 000	0	0	0	296 000	0	0	0	0	100% - W/CA
904.0	Uncollectible Accounts	13 000	0	0	13 000	0	0	0	0	0	100% - AC
	Total Customer Acct. Expense	$745 000	$0	$0	$13 000	$847 000	$0	$0	$0	$0	
	TOT AL O&M & Cust. Acct. Exp.	$6 882 000	$1 859 126	$2 262 778	$384 011	$847 000	$441 161	$342 704	$0	$48 209	
	% TOT AL O&M & Cust. Acct. Exp.	100.00%	30.70%	38.39%	4.72%	12.39%	7.66%	6.13%	0.00%	0.00%	Footer "O&M"
	ADMIN. & GENERAL EXPENSES										
920.0	Admin. & Gen. Salaries	$662 000	$167 007	$229 298	$27 678	$71 601	$45 917	$30 666	$0	$9 121	Footer O&M
921.0	Office Supplies Expense	231 000	58 306	80 004	10 000	25 779	16 229	10 157	0	2 629	Footer O&M
923.0	Outside Services	232 000	58 583	71 358	10 007	25 922	16 304	14 219	0	2 641	Footer O&M
924.0	Property Insurance	144 000	36 284	49 349	6 203	795	5 976	10 566	0	1 467	As Rate Base
926.0	Employee Pensions & Benefits	462 000	122 764	162 225	21 040	54 032	36 697	26 360	0	4 878	Footer O&M
928.0	Regulatory Commission Expense	32 000	14 000	25 464	2 466	6 369	4 105	3 187	0	406	Footer O&M
930.0	Misc. General Expense	162 000	46 000	63 014	7 940	19 002	12 761	9 638	0	1 438	Footer O&M
933.0	Misc. General Plant Expense	131 000	27 002	51 053	9 184	16 084	10 336	8 029	0	1 313	Footer O&M
	Total Admin. & General Exp.	$1 997 000	$687 023	$760 817	$93 969	$228 384	$154 327	$124 022	$0	$17 766	
	TOT AL OP&M, & MAINT. EXP.	$7 999 400	$2 182 149	$2 987 791	$384 011	$915 384	$595 415	$466 726	$0	$65 971	
	TAXES										
408.1	State Taxes	$146 000	$0	$0	$0	$0	$0	$0	$146 000	$0	100% - RR
408.3	City Taxes	124 000	0	0	0	0	0	0	124 000	0	100% - RR
408.3	Social Security Taxes	134 000	36 807	53 967	6 388	16 534	10 811	9 343	0	1 152	Footer O&M
	Total Taxes	$442 000	$36 807	$53 967	$6 388	$16 534	$10 811	$9 343	$330 000	$1 152	
	DEBT SERVICE										
	1997 Revenue Bond	$117 000	$78 070	$41 230	$0	$0	$0	$0	$0	$0	As Treatment Plant
	2007 Revenue Bond	226 700	0	192 395	0	0	0	33 946	0	0	As Distribution Reservoirs
	Total Debt Service	$343 700	$78 070	$233 625	$0	$0	$0	$33 946	$0	$0	

Functionalization and Classification of the Net Revenue Requirements (Cash Basis) – Cont'd

Exhibit 2
Functionalization and Allocation Net Revenue Requirements

Page 3 of 3

Acct. No.	Account Description	Total $ Expenses	Commodity (C-Only)	Capacity (C-Ad)	Actual Customer (-NC)	Weighted for: Customer Accounting (W/C-A)	Meters & Services (W/C-MS)	Fire Protection (FP)	Revenues Related (RR)	Direct Assign (D-A)	Basis of Allocation
	CASH FINANCED CAPITAL ADDITIONS										
	Source of Supply Improvements	$198 000	$100 700	$84 300	$0	$0	$0	$0	$0	$0	As Source of Supply Plant
	Transmission Improvements	765 000	0	765 000	0	0	0	0	0	0	As Trans. Plant
	Distribution Mains	765 000	0	765 000	349 000	0	0	135 000	0	0	As Dist. Mains
	Distribution Reservoirs	329 000	0	276 200	0	0	0	46 700	0	0	As Dist. Reservoirs
	General Plant Improvements	80 000	20 979	39 879	5 301	0	6 829	7 711	0	901	As General Plant
	Other Misc. Improvements	39 000	7 807	13 679	3 679	0	2 111	2 907	0	775	As General Plant
	Total Capital Additions	$1 900 000	$129 887	$983 358	$358 277	$0	$7 740	$179 382	$0	$8427	
	TOT AL REVENUE REQUIREMENT	$9 877 000	$2 436 023	$4 215 306	$812 007	$921 909	$613 799	$866 346	$330 000	$86 082	
	Less: Miscellaneous Revenue										
	Other Operating Revenues	(114 000)	$0	$0	$0	$0	$0	$0	($114 000)	$0	100% RR
	Water Sales	(183 000)	(68 638)	(82 462)	(4 438)	(662)	(16 359)	(13 227)	0	(1 864)	As Rate Base
	Miscellaneous Revenue	(91 000)	0	0	0	0	0	0	(91 000)	0	100% RR
	Jobbing Income - Net	(7 000)	(1 000)	(5 001)	0	0	0	(740)	0	0	As Cost Service
	Total Misc. Revenue	($395 000)	($71 000)	($87 264)	($4 438)	($662)	($16 359)	($13 967)	($179 000)	($1 864)	
	TOT AL NET REV. REQUIREMENT	$9 477 000	$2 365 023	$4 128 042	$807 569	$920 247	$597 440	$852 379	$151 000	$84 218	

Commodity Distribution Factor

Exhibit 3
Development of Commodity Distribution Factor

Customer Class	Metered Water Sales (CCF)	Plus: % Losses	Total CCF at the Source	% of Total
Residential	2,525,000	6.0%	2,676,500	51.45%
Commercial	1,107,800	6.0%	1,174,268	22.57%
Municipal	398,700	6.0%	422,622	8.12%
Industrial	876,300	6.0%	928,878	17.86%
TOTAL	4,907,800		5,202,268	100.0%
DISTRIBUTION FACTOR				(COMM-1)

Capacity Distribution Factor

Exhibit 4
Development of Capacity Distribution Factor

Customer Class	Total CCF at the Source	Average Day Use in MGD	Peaking Factor	Peak Day Use (MGD)	% of Total
Residential	2,676,500	5.485	3.00	16.455	66.77%
Commercial	1,174,268	2.406	1.90	4.572	18.55%
Municipal	422,622	0.866	1.65	1.429	5.80%
Industrial	928,878	1.904	1.15	2.189	8.88%
TOTAL	5,202,268			24.645	100.0%
Actual Peak Day (measured)				*24.700*	
DISTRIBUTION FACTOR				(CAP-1)	

Note: 748 Gallons = 1 CCF
Average Day in MGD Conversion = Annual CCF*748/1,000,000/365

Customer Distribution Factors

Exhibit 5
Development of Customer Distribution Factor

Customer Class	Average Number of Customers	% of Total	Customer Accounting Weighting Factor	Customers Weighted for Cust. Accounting	% of Total	Meters & Services Weighting Factor	Weighted Customer	% of Total
Residential	21,300	83.47%	1.0	21,300	76.94%	$125.00	$2,662,500	66.24%
Commercial	4,210	16.50%	1.5	6,315	22.81%	320.00	1,347,200	33.52%
Municipal	5	0.02%	1.5	8	0.03%	455.00	2,275	0.06%
Industrial	2	0.01%	30.0	60	0.22%	3,850.00	7,700	0.19%
TOTAL	25,517	100.0%		27,683	100.0%		$4,019,675	100.0%
DISTRIBUTION FACTOR		(CUST-1)			(CUST-2)			(CUST-3)

Public Fire Protection Distribution Factor

Exhibit 6
Development of Public Fire Protection Distribution Factor

Customer Class	Number of Units	Public Fire Protection Requirements (Gallons/Minute)	Duration (Minutes)	Total FP Requirement (MG)	% of Total
Residential	21,300	1,250 Gallons/Min	60 Minutes	1,598	55.72%
Commercial	4,210	2,500 Gallons/Min	120 Minutes	1,263	44.05%
Municipal	2	3,000 Gallons/Min	120 Minutes	1	0.03%
Industrial	5	5,000 Gallons/Min	240 Minutes	6	0.21%
TOTAL	25,517			2,867	100.0%
DISTRIBUTION FACTOR					(PFP-1)

Revenue Related Distribution Factor

Exhibit 7
Development of Revenue Related Allocation Factor

Customer Class	Revenues at Present Rates	% of Total
Residential	$5,265,000	60.89%
Commercial	1,995,850	23.08%
Municipal	480,700	5.56%
Industrial	905,000	10.47%
TOTAL	$8,646,550	100.0%
DISTRIBUTION FACTOR		(REV-1)

Distribution of Rate Base (Plant)

Exhibit 8
Distribution of Plant in Service (Rate Base)

Cost Component	Total	Residential	Commercial	Municipal	Industrial	Basis of Distribution
Commodity Related	$4,028,576	$2,072,651	$909,340	$327,274	$719,312	COMM-1
Capacity Related	$4,757,348	$3,176,340	$882,591	$275,851	$422,566	CAP-1
Customer Related						
- Actual Customer	$255,439	$213,225	$42,144	$50	$20	CUST-1
- Weighted for:						
Customer Accounting	57,227	44,033	13,055	16	124	CUST-2
Meters & Services	588,800	390,002	197,337	333	1,128	CUST-3
Total Customer Related	901,467	647,260	252,537	399	1,272	
Public Fire Protection	$763,087	$425,161	$336,137	$192	$1,597	PFP-1
Revenue Related	$0	$0	$0	$0	$0	RR-1
Direct Assignment	$106,968	$0	$0	$106,968	$0	Dir. Assign.
Total Rate Base	$10,557,486	$6,321,411	$2,380,604	$710,703	$1,144,748	

Distribution of the Net Revenue Requirements (Cash Basis)

Exhibit 9
Distribution of Net Revenue Requirements (Cash Basis)

Cost Component	Total	Residential	Commercial	Municipal	Industrial	Basis of Distribution
Commodity Related	$2,365,422	$1,216,979	$533,929	$182,162	$422,352	COMM-1
Capacity Related	$4,128,012	$2,756,151	$765,835	$239,359	$366,666	CAP-1
Customer Related						
- Actual Customer	$608,180	$507,670	$100,342	$119	$48	CUST-1
- Weighted for:						
Customer Accounting	930,918	716,263	212,363	252	2,018	CUST-2
Meters & Services	603,563	399,780	202,285	342	1,156	CUST-3
Total Customer Related	$2,142,659	$1,623,734	$514,990	$713	$3,222	
Fire Protection Related	$674,279	$375,681	$297,018	$169	$1,411	PFP-1
Revenue Related	$133,500	$81,290	$30,815	$7,422	$13,973	RR-1
Direct Assignment	$87,127	$0	$0	$87,127	$0	Dir. Assign.
Total Net Revenue Requirements	$9,511,000	$6,053,836	$2,142,587	$506,953	$807,624	

Summary of the "Cash Basis" Cost of Service Study

Exhibit 10
Summary of Average Embedded Water Cost of Service Study
(Cash Basis)

Description	Total	Residential	Commercial	Municipal	Industrial	Source
Revenues at Present Rates	$8,646,550	$5,265,000	$1,995,850	$460,700	$905,000	Exhibit 7
Less:						
Allocated Revenue Requirement	$9,511,000	$6,053,836	$2,142,587	$506,953	$807,624	Exhibit 9
Balance/(Deficiency) of Funds	($864,450)	($788,836)	($146,737)	($26,253)	$97,376	
% Change Over Present Rates	10.0%	15.0%	7.4%	5.5%	-10.8%	

Average Unit Costs (Cash Basis)

Exhibit 11
Development of Average Unit Costs (Cash Basis)

Cost Component	Total	Residential	Commercial	Municipal	Industrial	Source
Distributed Commodity Costs -	$2,365,422	$1,216,979	$533,929	$182,162	$422,352	Exhibit 9
Commodity Costs - $/CCF	$0.48	$0.48	$0.48	$0.48	$0.48	
Distributed Capacity Costs -	$4,128,012	$2,756,151	$765,835	$239,359	$366,666	Exhibit 9
Capacity Costs - $/CCF	$0.84	$1.09	$0.69	$0.60	$0.42	
Distributed Public Fire Prot. Costs -	$674,279	$375,681	$297,018	$169	$1,411	Exhibit 9
Public Fire Protection - $/CCF	$0.14	$0.15	$0.27	$0.00	$0.00	
Distributed Revenue/Direct/Other -	$200,627	$81,290	$30,815	$74,549	$13,973	Exhibit 9
Revenue/Direct/Other - $/CCF	$0.04	$0.03	$0.03	$0.19	$0.02	
Total Cost - $/CCF	$1.50	$1.75	$1.47	$1.27	$0.92	
Distributed Customer Costs -	$2,142,659	$1,623,734	$514,990	$713	$3,222	Exhibit 9
Customer Costs - $/Cust./Mth	$7.00	$6.35	$10.18	$11.89	$134.23	
Basic Data						
Annual Water Flow - CCF	4,907,600	2,525,000	1,107,800	398,700	876,300	Exhibit 3
Number of Customers	25,517	21,300	4,210	5	2	Exhibit 5

What To Do????

- What if the numbers look funky?
- Have you done the "dumb test?"
- Do you show them to anyone, let alone the City Council?
- Must the city follow the cost of service results in establishing rates?
- What are the possible ramifications?

Legal Considerations

- Basic tenet of municipal rate setting
  - Rates established in a lawful manner by a municipality or municipal authority are presumed to be reasonable, fair and lawful.
  - Those challenging rates bear a heavy burden to prove that the rates are unjustly discriminatory or unreasonable. However, . . .
- The three big legal words -
  - Arbitrary
    - Lack of process or analysis
  - Capricious
    - Unpredictable
  - Discriminatory
    - Unjust and unreasonable

Defining Discriminatory Rates

- Discrimination must be unjust and unreasonable
  - "I must admit that I possess no instinct by which to know the 'reasonable' from the 'unreasonable' in prices and must seek some conscious design for decision." – Supreme Court Justice Jackson, 1944
- Economic discrimination – early railroads
- A lack of uniformity in rates is not sufficient to show discrimination

Defining Discriminatory Rates – Cont'd

- Discrimination must "draw an unfair line or strike an unfair balance between those in like circumstances having equal rights and privileges."
- Courts have not developed a clear, definitive definition.
- Liberty Rice Mill, Inc. v. City of Kaplan.
- Chapter 34 of the M1 manual.

Fictionalization and Allocation of the Net Revenue Requirements (Utility Basis)

Exhibit 12
Functionalization and Allocation of Net Revenue Requirements
(Utility Basis)

Account Description	Total	Commodity (COM)	Capacity (CAP)	Actual Customer (AC)	Weighted by: Customer Accounting (WCA)	Meters & Services (WCMS)	Fire Protection (FP)	Revenue Related (RR)	Direct Assign. (DA)	Basis of Allocation
Total Operation & Maint. Exp.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	$0	[illegible]	From "Cash Basis" Exhibit Ex. [illegible]
Total Taxes	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	From "Cash Basis" Exhibit Ex. 2
Depreciation Expense										
Source of Supply Plant	[illegible]	[illegible]	[illegible]	0	0	0	0	0	0	As Source of Supply Plant
Water Treatment Plant	[illegible]	[illegible]	[illegible]	0	0	0	0	0	0	As Water Treatment Plant
Trans. & Distribution Plant	[illegible]	0	[illegible]	[illegible]	0	[illegible]	[illegible]	0	[illegible]	As T&D Plant
General Plant	[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	0	[illegible]	As General Plant
Total Depreciation Expense	[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	0	[illegible]	
TOTAL REQUIR. BEFORE RETURN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

Distribution of Rate Base (Plant)

Exhibit 13
Distribution of Rate Base
(Utility Basis)

Cost Component	Total [1]	Residential	Commercial	Municipal	Industrial	Basis of Distribution
Commodity Related	$4,028,576	$2,072,651	$909,340	$327,274	$719,312	COMM-1
Capacity Related	$4,757,348	$3,176,340	$882,591	$275,851	$422,566	CAP-1
Customer Related						
- Actual Customer	$255,439	$213,225	$42,144	$50	$20	CUST-1
- Weighted for:						
Customer Accounting	57,227	44,033	13,055	16	124	CUST-2
Meters & Services	588,800	390,002	197,337	333	1,128	CUST-3
Total Customer Related	$901,467	$647,260	$252,537	$399	$1,272	
Public Fire Protection	$763,087	$425,161	$336,137	$192	$1,597	PFP-1
Revenue Related	$0	$0	$0	$0	$0	RR-1
Direct Assignment	$106,968	$0	$0	$106,968	$0	Dir. Assign.
Total Net Rev. Requirements	$10,557,466	$6,321,411	$2,380,604	$710,703	$1,144,748	

[1] Total in column ties to bottom line of Exhibit 1.

Distribution of the Net Revenue Requirements (Utility Basis)

Exhibit 14
Distribution of the Net Revenue Requirements (Utility Basis)

Cost Component	Total [1]	Residential	Commercial	Municipal	Industrial	Basis of Distribution
Commodity Related	$2,274,604	$1,170,255	$513,429	$184,784	$406,136	COMM-1
Capacity Related	$3,255,817	$2,173,813	$604,024	$188,786	$289,195	CAP-1
Customer Related						
- Actual Customer	$419,495	$350,169	$69,212	$82	$33	CUST-1
- Weighted for						
Customer Accounting	$931,908	717,047	212,589	252	2,020	CUST-2
Meters & Services	$645,950	427,856	216,491	366	1,237	CUST-3
Total Customer Related	$1,997,354	$1,495,071	$498,292	$700	$3,290	
Fire Protection Related	$529,635	$295,092	$233,302	$133	$1,108	PFP-1
Revenue Related	$309,000	$188,154	$71,325	$17,179	$32,342	RR-1
Direct Assignment	$72,419	$0	$0	$72,419	$0	Dir. Assgn.
Total Net Revenue Requirements	$8,438,830	$5,322,385	$1,920,373	$464,001	$732,071	

[1] Total to be distributed ties to bottom line of Exhibit 12.

Summary of the "Utility Basis" Cost of Service Study

Exhibit 15
Summary of Average Embedded Water Cost of Service Study
(Utility Basis)

Description	Total	Residential	Commercial	Municipal	Industrial	Source
Revenues at Present Rates	$8,646,550	$5,265,000	$1,995,850	$480,700	$905,000	Exhibit 7
Less:						
Allocated Revenue Requirement	$8,438,830	$5,322,385	$1,920,373	$464,001	$732,071	Exhibit 14
Net Income	$207,720	($57,385)	$75,477	$16,699	$172,929	
Rate Base	$10,557,466	$6,321,411	$2,380,604	$710,703	$1,144,748	Exhibit 13
Present Return on Rate Base	2.0%	-0.9%	3.2%	2.3%	15.1%	
Proposed Return Component	$1,072,170	$641,975	$241,764	$72,176	$116,256	
Proposed Rate of Return	10.2%	10.2%	10.2%	10.2%	10.2%	
Proposed Rate Revenues	$9,511,000	$5,964,360	$2,162,137	$536,177	$848,327	
Balance/(Deficiency) of Funds	($864,450)	($699,360)	($166,287)	($55,477)	$56,673	
% Change Over Present Rates	10.0%	13.3%	8.3%	11.5%	-6.3%	

Note: For this case example, the proposed rate of return is set at the level required to balance to the cash basis revenue requirements

Average Unit Costs (Utility Basis)

Exhibit 16
Development of Average Unit Costs
(Utility Basis)

Cost Component	Total	Residential	Commercial	Municipal	Industrial	Source
Distributed Commodity Costs -	$2,274,604	$1,170,255	$513,429	$184,784	$406,136	Exhibit 14
Commodity Costs - $/CCF	$0.46	$0.46	$0.46	$0.46	$0.46	
Distributed Capacity Costs -	$3,255,817	$2,173,813	$604,024	$188,786	$289,195	Exhibit 14
Capacity Costs - $/CCF	$0.66	$0.86	$0.55	$0.47	$0.33	
Distributed Public Fire Prot. Costs -	$529,635	$295,092	$233,302	$133	$1,108	Exhibit 14
Public Fire Protection - $/CCF	$0.11	$0.12	$0.21	$0.00	$0.00	
Distributed Revenue/Direct/Other -	$381,419	$188,154	$71,325	$89,596	$32,342	Exhibit 14
Revenue/Direct/Other - $/CCF	$0.08	$0.07	$0.06	$0.22	$0.04	
Distributed Return Component -	$1,072,170	$641,975	$241,764	$72,176	$116,256	Exhibit 15
Return Component - $/CCF	$0.22	$0.25	$0.22	$0.18	$0.13	
Total Cost - $/CCF	$1.53	$1.77	$1.50	$1.34	$0.96	
Distributed Customer Costs -	$1,997,354	$1,495,071	$498,292	$700	$3,290	Exhibit 14
Customer Costs - $/Cust./Mth	$6.52	$5.85	$9.86	$11.67	$137.09	
Basic Data						
Annual Water Flow - CCF	4,907,800	2,525,000	1,107,800	398,700	876,300	Exhibit 3
Number of Customers	25,517	21,300	4,210	5	2	Exhibit 5

Comparison of the Cost Allocation Methods

	Total	Residential	Commercial	Municipal	Industrial	Source
Cash Basis -						
Allocated Revenue Requirements	$9,511,000	$6,053,836	$2,142,567	$506,953	$807,624	Exhibit 10
% Change Over Present Rate Levels	10.0%	15.0%	7.4%	5.5%	-10.8%	
Average Unit Costs -						
$/Customer/Month	$7.00	$6.35	$10.19	$11.88	$134.23	Exhibit 11
$/CCF	$1.50	$1.75	$1.47	$1.27	$0.92	
Utility Basis -						
Allocated Revenue Requirements	$9,511,000	$5,954,360	$2,162,137	$535,177	$848,327	Exhibit 15
% Change Over Present Rate Levels	10.0%	13.3%	8.3%	11.5%	-6.3%	
Average Unit Costs -						
$/Customer/Month	$6.52	$5.85	$9.86	$11.67	$137.09	Exhibit 16
$/CCF	$1.53	$1.77	$1.50	$1.34	$0.96	

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Section 6 – Allocation Procedures

Allocation Procedures

- Divide Costs Between Commodity, Capacity, Customer or Public Fire Protection Related.
- Why the Cost Was Incurred—How it Was Sized—How it is Used.
- Many Classifications are Judgmental in Nature, but Still Must be Defendable and Reasonable.
- Problem of Data Constraints—Taking the Leap of Faith and Making Assumptions Where Necessary.
- Consider Time Required to Gather Data vs. Sensitivity of Data (Assumption) With the Analysis - Refine Data Over Time.

Methods of Allocation

- Base-Extra Capacity Method
  - Details of the methodology and a case example can be found in the AWWA M-1 Manual
- Commodity Demand Method
  - Details of the methodology and a case example can be found in the AWWA M-1 Manual
- Combined Method
  - Utilizes concepts and techniques of the two methods

Base-Extra Capacity Allocation Guidelines

Item Description	Base	Extra Capacity		Customer Related		Direct Fire Prot.
		Max Day	Max Hour	Meters & Services	Billing & Collecting	
1. Source of Supply	X					
Pumping						
2. Purchased Power	X	X				
3. Other	X	X				
Water Treatment						
4. Chemicals	X					
5. Other	X	X				
Transmission and Distribution						
6. Mains	X	X	X			
7. Storage (Reservoirs)	X		X			
8. Meters and Services				X		
9. Hydrants						X
10. Other	X	X	X	X		X
Customer Accounting						
11. Meter Reading & Collection					X	
12. Uncollectable Accounts	X	X	X	X	X	X
Administrative & General						
13. Salaries	X	X	X	X	X	X
14. Employee Benefits	X	X	X	X	X	X
15. Insurance	X	X	X	X	X	
16. Other	X	X	X	X	X	X

Commodity-Demand Method Allocation Guidelines

Item Description	Commodity	Demand		Customer Related		Direct Fire Prot.
		Max Day	Max Hour	Meters & Services	Billing & Collecting	
1. Source of Supply	X					
Pumping						
2. Purchased Power	X	X				
3. Other		X				
Water Treatment						
4. Chemicals	X					
5. Other		X				
Transmission and Distribution						
6. Mains		X	X			
7. Storage (Reservoirs)			X			
8. Meters and Services				X		
9. Hydrants						X
10. Other	X	X	X	X		X
Customer Accounting						
11. Meter Reading & Collection					X	
12. Uncollectable Accounts	X	X	X	X	X	X
Administrative & General						
13. Salaries	X	X	X	X	X	X
14. Employee Benefits	X	X	X	X	X	X
15. Insurance	X	X	X	X	X	
16. Other	X	X	X	X	X	X

Combined Method Allocation

Item Description	Commodity	Capacity	Customer Related		Public Fire Protection	Direct Assign.
			Actual	Weighted		
1. Source of Supply	X	X				
Pumping						
2. Purchased Power	X					
3. Other	X	X				
Water Treatment						
4. Chemicals	X					
5. Other	X	X				
Transmission and Distribution						
6. Mains		X	X		X	
7. Storage (Reservoirs)		X			X	
8. Meters and Services				X		
9. Hydrants					X	
10. Other	X	X	X	X	X	
Customer Accounting						
11. Meter Reading & Collection				X		
12. Uncollectable Accounts						X
Administrative & General						
13. Salaries	X	X	X	X	X	X
14. Employee Benefits	X	X	X	X	X	X
15. Insurance	X	X	X	X	X	X
16. Other	X	X	X	X	X	X

Allocation Procedures

- Source of Supply
  - Generally provides two cost components—capacity and commodity
  - Classification must consider how or why the cost was incurred or sized
    - Example of methods to classify
      - Method 1: Average day to peak day use
        Average day = 7.5 MGD Peak day = 12.7 MGD
        Therefore: 59% = commodity (7.5/12.7)
        41% = capacity (peak day)
      - Method 2: Specific use of the facilities
        - » Individual wells used only for peak use = 100% capacity related
        - » Supply providing year-round base load use = 100% commodity related

Allocation Procedures – Cont'd

- Transmission
  - Generally sized to meet peak requirements
- Purification (Treatment)
  - Chemicals
  - Plant and other expenses may be split
  - Between commodity and capacity—same as source of supply plant (?)
- Pumping
  - Generally sized to meet peak flow requirements
  - Electricity is considered 100% commodity related

Allocation Procedures – Cont'd

- Distribution Storage (Reservoirs)
  - Provides two components to the system – capacity and storage for fire flow
  - Consider fire flow requirements to total storage capacity
    - Example
      - Assume: fire flow requirements equal to 4,000 gpm flow and 180 minutes duration, System has 12 MG total storage
      - 4,000 gpm x 180 minutes = 720,000 gallons
      - .72 MG / 12 MG Total Storage Capacity
      - = 6.0% public fire protection and 94.0% peak day capacity

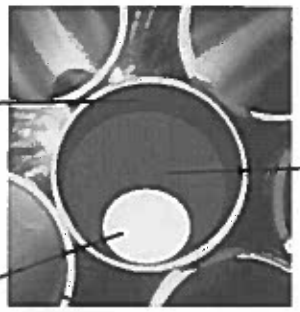
Allocation Procedures – Cont'd

- Distribution Mains
  - Consider three cost components
    - customer
    - capacity
    - fire protection
  - Minimum system theory (see next slide)
  - Data requirements

- Meters and Services
  - Generally considered customer related
  - Weighted approach to classify and allocate equitably
  - May use a minimum size approach to classify between customer and capacity

Theory of the Minimum System Analysis

Distribution Mains



"We have to have a distribution system in place, ready to deliver water, regardless of whether the customer consumes water"

Example of the Distribution Main Analysis

Pipe Size	Linear Feet	Installed Cost $/LF	Replacement Cost
2"	2,700	$ 8.00	$ 21,600
3"	11,400	12.00	136,800
4"	323,600	16.00	5,177,600
6"	566,139	20.00	11,322,780
8"	154,800	28.00	4,334,400
10"	95,900	32.00	3,068,800
12"	33,400	40.00	1,336,000
Total	1,187,939		$25,397,980

Assume:

1. 2" main is smallest installed (minimum size)
2. 6" main is required for peak domestic flows
3. Larger mains are required to meet fire flow requirements

Customer % =

$ for 2" equivalent = 1,187,939 x $8.00/LF = $9,503 ,512

$9,503,512 / $25,397,980 = 37.4% Customer Component

Example of the Distribution Main Analysis- Cont'd

Capacity Component =

Capacity % = $\frac{\text{[(2" - 6" Costs) + (Equival. 6" Cost for Larger Mains)] – Customer Component}}{\text{Total Replacement Cost}}$

$ for 2" - 6" = $21,600 + $136,800 + $5,177,600 + $11,322,780 = $16,658,780

Equival. for 8" - 12" = ((154,800 + 95,900 + 33,400 L.F.) * $20.00/L.F.)
Equival. for 8" - 12" = $5,682,000

Capacity % = $\frac{\$16,648,780 + \$5,682,000 - \$9,503,512}{\$25,397,980} = 50.5\%$

Fire Protection Component % =

1 minus (Customer % + Capacity %)

1 - (.374 + .505) = 12.1% Fire Protection Component

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Section 7 Distribution Procedures

Overview of Distribution Procedures and Methodologies

- Distribution methods should equitably distribute the allocated costs for:
  - Commodity
  - Capacity
  - Customer
  - Fire protection
- Need to develop a distribution factor for each cost allocator used in your study, except direct assignment.
- There are alternative techniques and approaches to distributing costs.

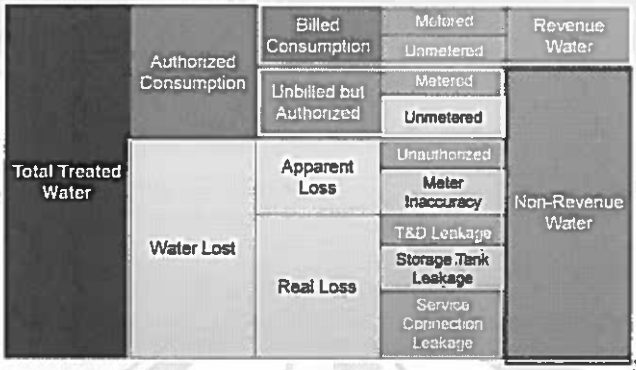
Overview of Distribution Procedures and Methodologies – Cont'd

- Allocation/Distribution Methods.
  - Commodity/demand—assignment to either commodity or demand.
  - Base/extra capacity.
    - Base/Maximum = % to Base (Commodity)
    - Extra/Maximum = % to Extra (Capacity)
  - Others (combined approach).
  - See AWWA M-1 Manual for case examples of commodity/demand and base/extra capacity methods.
- Which Method to Use?
  - Nature of system costs—planning considerations.
  - System constraints.
  - Data availability.

Developing Commodity or Base Distribution Factors

- Commodity or base costs are related to total flow.
- Method Should Equitably Distribute Allocated Costs.
  - Sales at the meter + adjustment for losses = sales at the source.
- Considerations.
  - Normalcy of data.
    - Weather
    - Industrial customers
    - Billing errors/adjustments
  - Test period - Historical vs. Projected Data.
  - Be consistent in units of measurement.
  - Label the units of measurement on reports and studies.
  - Different level of losses for different classes of service.

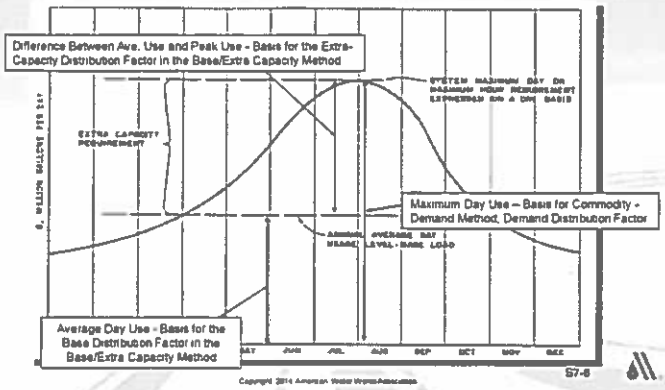
Tracking Losses – Where Does the Water Go?



Developing Demand Distribution Factors

- Demand or Extra-Capacity is related to peak period use (contribution).
- Need to define the peak period cost.
  - e.g. peak day, peak hour, peak season.
- Defining peak distribution under the methodology selected.
  - Commodity-demand method.
  - Base-extra capacity method.
  - Combined method.

Defining Demand Use for Purposes of Distribution Factors



Developing Demand Distribution Factors

- Considerations
  - Availability of data
    - Sample metering
    - Demand meters
    - Borrowed data
    - Literature review
    - Billing records
  - Use at the time of the peak vs. potential to peak
  - Contract maximums for industrial customers
- Techniques
  - Average to peak (day) [peaking factors]
  - Meter size

Alternative Method of Developing the Capacity Distribution Factor

Meter Size	5/8 x 3/4"	3/4"	1"	1-1/2"	2"	3"	4"	6"	8"	Total Actual Meters	Total Weighted Meters	% of Total
GPM Flow [1]	20	30	50	100	160	300	500	1,000	1,600			
Capacity Rating Factor	1.00	1.50	2.50	5.00	8.00	15.00	25.00	50.00	80.00			
Residential												
- Actual Meters	5,168	465	65	10	0	0	0	0	0	5,708		
- Weighted Meters	5,168	698	163	50	0	0	0	0	0		6,079	54.00%
Commercial												
- Actual Meters	2,523	550	123	130	55	0	4	0	0	3,385		
- Weighted Meters	2,523	825	308	650	440	0	100	0	0		4,846	43.10%
Industrial												
- Actual Meters	0	0	0	0	0	2	4	2	0	8		
- Weighted Meters	0	0	0	0	0	30	100	100	0		230	2.00%
Municipal												
- Actual Meters	10	5	15	3	0	2	0	0	0	35		
- Weighted Meters	10	8	38	15	0	30	0	0	0		101	0.90%
Total										9,136	11,256	100.00%

(CAP-1)

Developing Customer Distribution Factors

- Customer Distribution Factors
  - Actual vs. weighted
  - Types of weighted costs
    - Customer accounting/billing/meter reading
    - Meters and services (capital costs)
  - Weighting factors
    - Level of effort
    - Actual costs (e.g., meters)
    - "Hassle factor"

Distribution of Fire Protection Costs

- Public Fire Protection
  - Consideration of fire flow requirements by class of service
    - Stated in gallons/minute (gpm)
    - Duration (minutes)
  - Insurance services organization (ISO) flow requirements
  - Weighted approach (see case example)
- Private fire protection as a class of service
  - See M1 Manual (Fire Protection Chapter)
  - October 1996 – AWWA Journal

Private Fire Protection

- Private Fire Protection typically charges for "stand-by" capacity.
  - Typically charged on line size or number of sprinkler heads.
- Maine PUC – establishes a curve of the relationship of number of customers and PFP revenue (see P. 219 of M1).
  - In 1987, stated PFP revenues should fall between 6% and 30%.

Private Fire Protection – Cont'd

- Key Issues (Possible Arguments)
  - Is there really a cost associated with "stand-by" capacity?
  - Has the customer already paid for that capacity via another charge?
  - For the customer, insurance savings off-setting PFP cost.
  - PFP is required by code.
  - PFP quickly suppresses the fire, thereby saving significant amounts of water that would have been used without PFP.
    - Decreases fire fighting hazards
  - Cost-based vs. market (value)-based rates.

Costs Prorated Between Public & Private Fire Protection Using the Equivalent – Connection Method

	Total	Public	Private	
Costs to be prorated	$176,000	$116,746	$59,254	Alloc. Factor FP-1
Direct Costs - Hydrants	43,000	43,000	—	Direct
Direct Costs - Private Fireline	28,000	—	28,000	Direct
	$247,000	$159,746	$87,254	

	Number	Size Factor	Equiv. 6" Connections	Allocation
Public Fire Hydrants (6" Mains)				
Area A	576	1.00	576	
Area B	355	1.00	355	
Area C	788	1.00	788	
	1,719		1,719	66.3%
Private Fire Services				
4" Service	257	0.44	113	
6" Service	553	1.00	553	
8" Service	120	1.72	206	
	930		872	33.7%
Total Equivalent 6" Connections			2,591	100.0%
ALLOCATION FACTOR				(FP-1)

Development of the Fire Protection Rates

- Public Charge Per Connection
  Cost per Hydrant = $92.93 Per Year
  ($159,746/1,719 hydrants)
- Private Charge Per Connection
  - 4" Service — $44.00 Per Year
  - 6" Service — $100.01 Per Year (Total Private Costs/Total Equiv. Connect.)
  - 8" Service — $172.01 Per Year

Rate Differentials for Inside vs. Outside City Customers

- Most municipal utilities have a rate differential for inside vs. outside City customers
  - Typical range of differentials - 0% to 100%
- Basis for the differential
  - Ownership
  - Risk
  - Fair return on investment
  - Other??
- Cost Allocation Issues –
  - Can you demonstrate a 50% or 100% cost differential between inside and outside customers?

One Approach - Ignore the Issue

- Some utilities simply maintain the current rate differential and do not allocate costs to inside vs. outside City within the cost of service study.
- Rate differential is addressed (maintained) in the rate design process.
- Warning – you may be challenged – then you will need to prove cost-basis for the differential.

Example of a Rate Design Maintaining Existing Differentials

Target Revenue Levels	→ $2,550,000							
Units of Consumption								
No. of Customers								
Inside City	10,200							
Outside City	300							
	Actual		Weighted					
Consumption (CCF)	CCF Usage	Differential	CCF Usage					
Inside City	1,224,000	1.00	1,224,000					
Outside City	32,400	1.50	48,600					
Total Use	1,256,400		1,272,600					
Proposed Rate Design								
	Proposed	No. of						
Customer Charge	Rate	Customers	Months					
Inside City	$5.00	10,200	12	=	$612,000	Weighted	Inside	
Outside City	$7.50	300	12	=	27,000	Usage	City Rate	
Balance of Revenues to Be Collected				→	$1,911,000	1,272,600	$1.50	
	Proposed	Actual	Resulting					
Consumption Charges	Rate	CCF Usage	Revenue					
Inside City	$1.50	1,224,000	$1,836,020					
Outside City	$2.25	32,400	72,980					
Total			$1,911,000					

Using the Rate of Return Approach

- Technically correct approach.
  - Differential is not necessarily a fixed percentage.
  - Inside City customers earn a "fair" return on their investment from Outside customers.
    - Use a weighted cost of capital approach for outside City customers.
  - Inside City customers pay the difference between the total revenue requirements and the amount paid by the outside City customers.
- This approach may also be used for wholesale rate setting.

Calculation of Inside vs. Outside City Rate of Return

Line No.	Description	Total	Inside City Residential	Inside City Commercial	Outside City Residential	Outside City Commercial	Notes
1	Revenues at Present Rates	$11,717,400	$7,530,000	$2,327,000	$1,540,000	$320,400	
	Less						
2	Allocated Revenue Requirement	$7,439,000	$4,875,000	$1,385,000	$1,020,000	$159,000	O&M, Taxes, Deprec.
3	Net Income	$4,278,400	$2,655,000	$942,000	$520,000	$161,400	L1 - L2
4	Rate Base	$79,150,000	$53,550,000	$16,800,000	$6,900,000	$1,900,000	From COSA
5	Present Return on Rate Base	5.4%	5.0%	5.6%	7.5%	8.5%	L3 / L4
6	Proposed Rate of Return	7.00%	6.5%	6.5%	11.0%	11.0%	Cost of Capital Analysis
7	Proposed Return Component	$5,540,750	$3,480,750	$1,092,000	$759,000	$209,000	L4 x L6
8	Proposed Rate Revenues	$12,979,750	$8,355,750	$2,477,000	$1,779,000	$368,000	L2 + L7
9	Balance (Deficiency) of Funds	($1,262,350)	($825,750)	($150,000)	($239,000)	($47,600)	L1 - L8
10	% Change Over Present Rates	10.8%	11.0%	6.4%	15.5%	14.9%	L8 / L1

Step 1 - Calculate overall required return from revenue requirements

Step 3 – Rate of return for inside City must balance to overall needs

Step 2 – Calculate a "fair" rate of return for Outside City based upon weighted cost of capital

American Water Works Association

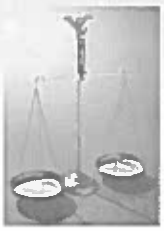
Section 8 - Rate Design

Goals of Rate Design

- From the customer's perspective, easy to understand.
- From the utility's perspective, easy to administer.
- Continuity in philosophy.
- Equitable and non-discriminating (cost-based).
- Effective in yielding total revenue requirements.
- Provide revenue stability and predictability, with a minimum of unexpected changes.
- Promote Efficient Allocation of Resources – Discourage wasteful use.
- Freedom from controversy over interpretation.

Adapted from James C. Bonbright: Principles of Public Utility Rates

Trade-Offs in Designing Rates



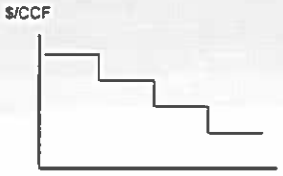
- Fixed charges vs. variable charges
- Customer's preferences vs. the utility's preference
- Customer/Commodity Rate
  - Rate A = $5.00/month + $1.75/CCF
  - Rate B = $10.00/month + $1.20/CCF

Basic Formulas

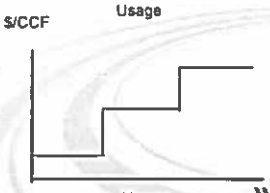
- Remember that a rate is a cost divided by a demand (volume)
- Consumption Charge:
  - Four types: (a) decreasing block, (b) uniform block, (c) increasing block, (d) seasonal
  - Generally recovers consumption related costs
  - Formula: Consumption related costs / annual water consumption
- Fixed Charge:
  - Four types: (a) service or customer charge, (b) meter charge, (c) minimum charge, (d) readiness to serve
  - Generally recovers customer/billing related costs
  - Formula: Customer related costs / No. of customer bills per year

Types of Consumption Rate Structures

- **Declining Block**
  - 0 – 10 CCF @ $1.90/CCF
  - 11 – 100 CCF @ 1.80/CCF
  - 101 – 1,000 CCF @ 1.70/CCF
  - 1,001 – CCF @ 1.60/CCF



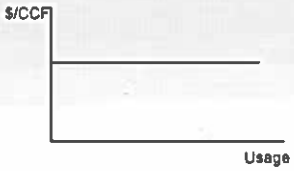
- **Inverted (Increasing) Block**
  - 0 – 10 CCF @ $1.50/CCF
  - 11 – 50 CCF @ 1.75/CCF
  - 51 – CCF @ 2.05/CCF



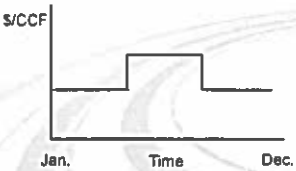
Note: May also be called a "tiered" rate structure

Types of Consumption Rate Structures
(continued)

- **Uniform Block**
  All Usage: $1.75/CCF



- **Seasonal Rate**
  Summer: $2.10/CCF
  Winter: $1.40/CCF

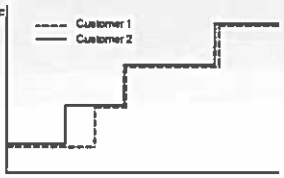


Types of Consumption Rate Structures

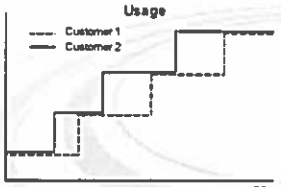
- Individualized
  - Customized based on each individual's use or other specific characteristics
- Examples
  - *Individualized AWC.* Increasing block structure with first block threshold based on average winter consumption
  - *Water budgets.* Volumetric allotments for indoor and outdoor use based on customer's specific characteristics

Types of Consumption Rate Structures
(continued)

- Individualized
  - Blk 1: 0 – AWC
  - Blk 2: AWC + 20 ccf
  - Blk 3: Over AWC + 20 ccf



- Water budget
  - Blk 1: 0 – 50% of budget
  - Blk 2: 51 – 100% of budget
  - Blk 3: 101 - 150% of budget
  - Blk 4: Over 150% of budget



Calculation of Consumption Charge Example 1: Uniform Block Rate

Example: Residential Consumption Charge Uniform Block	
Cost Data from Exhibit 11	
Commodity	$1,216,979
Capacity	2,756,151
Public Fire	375,681
Revenue/Direct/Other	81,290
Total	$4,430,102
Annual Water Sales–CCF	2,525,000
Rate $/CCF	$1.75

Calculation of Consumption Charge Example 2: Increasing Block Rate

Distribution of Annual Water Sales

Consumption Blocks (CCF)	Water Sales per Block	Percent
Block 1: 0 - 10	1,515,000	60%
Block 2: 11 - 40	883,750	35%
Block 3: Over 40	126,250	5%
Total	2,525,000	100%

Calculation of water sales by block can be determined from bill distribution (see AWWA M1)

Example: Residential Consumption Charge
Increasing Block

Total Cost $ 4,430,102

	Water Sales per Block (CCF)	Price Differential	Rate $/CCF	Revenue Per Block
Block 1	1,515,000	1.00	$1.43	$ 2,169,846
Block 2	883,750	1.50	$2.15	$ 1,898,615
Block 3	126,250	2.00	$2.86	$ 361,641
	2,525,000			$ 4,430,102

Block 1 = Total Cost / [(Blk1 Cons)+(Blk2 Cons x Differ)+(Blk3 Cons x Differ)]
Block 2 = Block 1 Rate x Block 2 Price Differential
Block 3 = Block 1 Rate x Block 3 Price Differential

Bill Distribution Calculation Example

Monthly Billing Detail, ccf

Cust	Class	Apr	May	Jun	Jul	Aug	Sep	Total
John Doe	SFR	8	12	15	25	55	40	155

Bill Distribution Analysis

Block	Threshold	Apr	May	Jun	Jul	Aug	Sep	Total	% Dist
1	First 10 ccf	8	10	10	10	10	10	58	37.4%
2	Next 30 ccf	0	2	5	15	30	30	82	52.9%
3	Over 40 ccf	0	0	0	0	15	0	15	9.7%
	Total Use	8	12	15	25	55	40	155	100.0%

Bill Distribution Calculation Example

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		TOTAL USE	CUMULATIVE	BLOCK USE	CUMULATIVE USE BILLED		CUMULATIVE ACCOUNTS	
USAGE BLOCK gallons	NO. OF BILLS IN BLOCK (#)	OF BILLS STOPPING IN BLOCK gallons	BILLS THROUGH BLOCK (#)	FOR BILLS PASSING THRU gallons	USAGE gallons	% OF Usage	NO. OF BILLS	% OF BILLS
0	579	0	21,801	-	-	0.0%	579	2.6%
1	970	970	20,831	21,801	21,801	18.7%	1,549	6.9%
2	1,950	3,900	18,881	20,831	42,632	36.6%	3,499	15.6%
3	2,958	8,874	15,923	18,881	61,513	52.7%	6,457	28.9%
4	3,459	13,836	12,464	15,923	77,436	66.4%	9,916	44.3%
5	3,466	17,330	8,998	12,464	89,900	77.1%	13,382	59.8%
6	2,804	16,824	6,194	8,998	98,898	84.8%	16,186	72.3%
7	2,076	14,532	4,118	6,194	105,092	90.1%	18,262	81.6%
8	1,356	10,848	2,762	4,118	109,210	93.6%	19,618	87.7%
9	974	8,766	1,788	2,762	111,972	96.0%	20,592	92.0%
10	635	6,350	1,153	1,788	113,760	97.5%	21,227	94.8%
11	418	4,598	735	1,153	114,913	98.5%	21,645	96.7%
12	299	3,588	436	735	115,648	99.2%	21,944	98.1%
13	176	2,288	260	436	116,084	99.5%	22,120	98.8%
14	153	2,142	107	260	116,344	99.8%	22,273	99.5%
15	105	1,575	2	107	116,451	99.9%	22,378	100.0%
100	2	200	-	170	116,621	100.0%	22,380	100.0%
Total	22,380	116,621						

Calculation of Consumption Charge Example 3: Seasonal Rate

Distribution of Annual Water Sales (CCF)

Season	Water Sales per Block	Percent
Winter	1,010,000	40%
Summer	1,515,000	60%
Total	2,525,000	100%

Example: Residential Consumption Charge
Seasonal Rate

Total Cost $ 4,430,102

	Water Sales per Block (CCF)	Price Differential	Rate $/CCF	Revenue Per Season
Winter	1,010,000	1.00	$1.10	$ 1,107,525
Summer	1,515,000	2.00	$2.19	$ 3,322,576
	2,525,000			$ 4,430,102

Water Budget Rate Structure

- Indoor budget allotment examples
  - Indoor use requirements
  - Outdoor use requirements

Water Budget = Indoor allotment + outdoor allotment

- Budget allotment can vary by month (billing cycle) or be based on an annual allotment

Water Budget Rate Structure

- Indoor component examples
  - Size of household, gallons per capita per day, billing cycle
  - Average winter consumption
- Outdoor components
  - Landscaped area (ft^2)
  - Evapotranspiration index (ET inches)
  - Crop coefficient (K_c%)
  - Irrigation efficiency (%)

Calculation of Monthly Budgets
A Detailed Example

Description	May	Jun	Jul
Indoor Budget (AWC), gallons	5,000	5,000	5,000
Outdoor Budget			
Irrigable Area = 7,000 sq ft			
Evapotranspiration (ET), inches	5.20	6.60	7.10
Crop Coefficient (K_s)	0.70	0.70	0.70
Irrigation Efficiency	0.90	0.90	0.90
Total Plant Requirement[1]	4.04	5.13	5.52
Conversion Factor[2]	0.62	0.62	0.62
Square Feet	7,000	7,000	7,000
Monthly Budget, gallons[3]	17,553	22,279	23,966
Total Monthly Budget, rounded	23,000	27,000	29,000
Block Thresholds			
Blk 1: 0 - 100% of budget	23,000	27,000	29,000
Blk 2: 100 - 150% of Bugdet	34,500	40,500	43,500
Blk 3: Over 150% of Budget	>34,500	>40,500	>43,500

*(1) Plant Requirement = ET * K_s * (1/Efficiency(%))*
(2) Conversion factor (acre-inches to gallons)
*(3) Plant Requirement * Conversion Factor * Square Feet*

S8-15

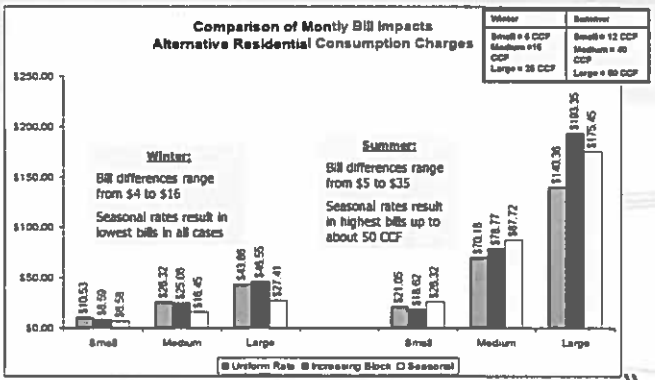
Comparison of Residential Consumption Charge Alternatives and Bill Impacts

Comparison of Rates and Consumption Charges				
Uniform Rate	Increasing Block		Seasonal	
$1.75	Block 1: 0 - 10	$1.43	Winter	$1.10
	Block 2: 11 - 40	$2.15	Summer	$2.19
	Block 3: Over 40	$2.86		

Season / Customer	Consumption	Comparison of Consumption Charges		
	(CCF)	Uniform Rate	Increasing Block	Seasonal
Winter				
Small	6	$10.53	$8.59	$6.58
Medium	15	$26.32	$25.06	$16.45
Large	25	$43.86	$46.55	$27.41
Summer				
Small	12	$21.05	$18.62	$26.32
Medium	40	$70.18	$78.77	$87.72
Large	80	$140.36	$193.35	$175.45

S8-16

Graphical Comparison of Residential Consumption Charge Alternatives & Bill Impacts

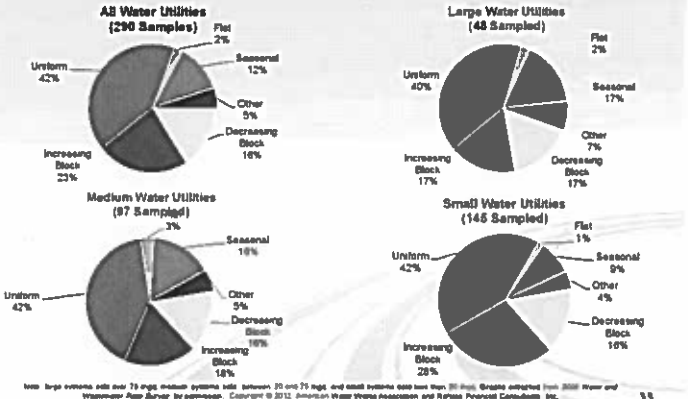


S8-17

Comparison of the Different Types of Rate Designs There is NO PERFECT Design

Type	Pros	Cons
Declining block		
Uniform rates		
Increasing block		
Seasonal		
Seasonal increasing/decreasing block		
Lifeline (special considerations)		

Summary of Types of Residential Consumption Charges 2012 Survey of 206 Water Utilities—Representing 50 States



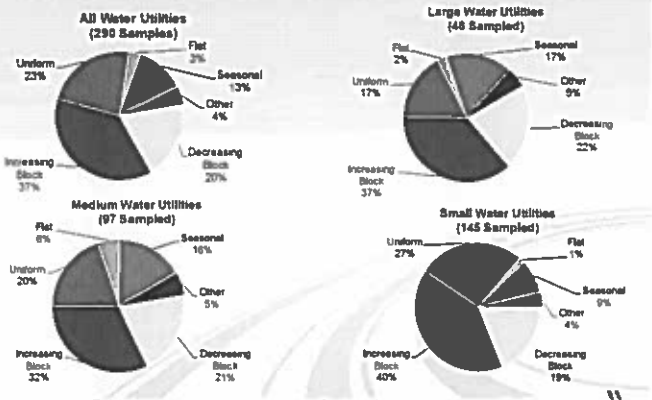
Note: large systems sell over 75 mgd, medium systems sell between 20 and 75 mgd, and small systems sell less than 20 mgd. Graphs adapted from 2008 Water and Wastewater Rate Survey by permission. Copyright © 2012 American Water Works Association and Raftelis Financial Consultants, Inc.

Residential Consumption Charges by Region 2012 Survey of 290 Water Utilities—Representing 50 States

	Dec. Block	Uniform	Inc. Block	Flat	Seasonal	Other	N/R
Northeast	32%	32%	18%	0%	9%	5%	5%
South	14%	19%	52%	0%	8%	5%	2%
Midwest	33%	29%	21%	3%	5%	2%	7%
West	1%	19%	40%	5%	22%	7%	6%

Graphs extracted from 2008 *Water and Wastewater Rate Survey*, by permission. Copyright © 2008, American Water Works Association and Raftelis Financial Consultants, Inc.

Summary of Nonresidential Consumption Charges 2012 Survey of 290 Water Utilities—Representing 50 States



Graphs extracted from *2012 Water and Wastewater Rate Survey*, by permission. Copyright © 2012, American Water Works Association and Raftelis Financial Consultants, Inc.

Non-residential Consumption Charges by Region 2012 Survey of 206 Water Utilities—Representing 50 States

	Dec. Block	Uniform	Inc. Block	Flat	Seasonal	Other	N/R
Northeast	(32%)	32%	23%	0%	9%	0%	5%
South	19%	35%	(26%)	2%	8%	5%	6%
Midwest	(38%)	31%	14%	3%	5%	0%	9%
West	1%	36%	(20%)	5%	22%	7%	8%

Graphs extracted from *2012 Water and Wastewater Rate Survey*, by permission. Copyright © 2012, American Water Works Association and Raftelis Financial Consultants, Inc.

Types of Fixed Charges

- Customer (Service) Charge
  - A fixed charge per bill that is the same for all customers
- Meter Charge
  - Fixed charge per bill that varies by meter size
- Readiness to Serve
  - A uniform or by meter size fixed charge that may recover additional costs above customer, billing, and meter charge costs
- Minimum Charge
  - Fixed charge or a meter charge that includes a volume allowance

Examples of Fixed Charges (Residential Class)

Example: Customer Charge

Data From Exhibit 11		Residential
Customer Related Costs	$	1,623,734
Number of Customers		21,300
Bills per Year		12
Total Bills per Year		255,600
Customer Charge	$	6.35

Example: Minimum Charge

	Residential
Customer Charge	$6.35
Consumption Allowance (CCF)	3
Consumption Rate (Uniform Block)	$1.75
Consumption Component	$5.25
Minimum Charge (incl. first 3 CCF)	$11.60

Example: Meter Charge

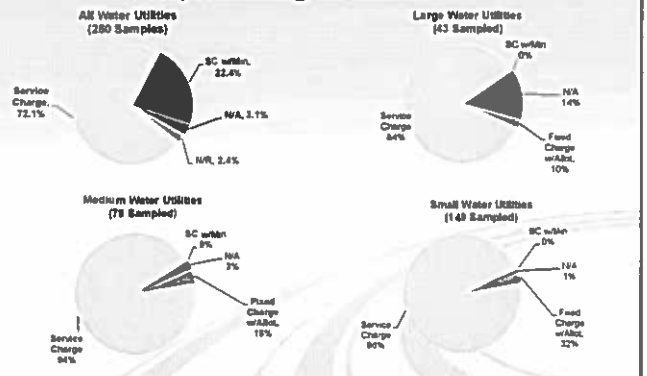
Meter Size	Number of Residential Customers	Equiv. Meter Factor	Number of Equivalent Meters	Monthly Meter Charge
5/8 x 3/4	7,350	1	7,350	$ 3.45
3/4	10,110	1.5	15,165	$ 5.18
1	2,110	2.5	5,275	$ 8.63
1.5	1,050	5	5,250	$ 17.27
2	780	8	6,240	$ 27.63
3	-	15	-	$ 51.80
4	-	25	-	$ 86.34
6	-	50	-	$ 172.68
8	-	80	-	$ 276.29
	21,300		39,180	

5/8 X 3/4 Monthly Meter Charge = $16.23734 / 39180 =

Monthly Meter Charge for 3/4 inch and above = $3.45 x Equiv. Meter Factor

Equiv. Meter Factors from Section 7

Fixed Charges 2012 Survey of 290 Water Utilities Representing 50 States



Note: large systems sold over 75 mgd; medium systems sold between 20 and 75 mgd; and small systems sold less than 20 mgd. Results extracted from *2012 Water and Wastewater Rate Survey* by permission. Copyright © 2012, American Water Works Association and Raftelis Financial Consultants, Inc.

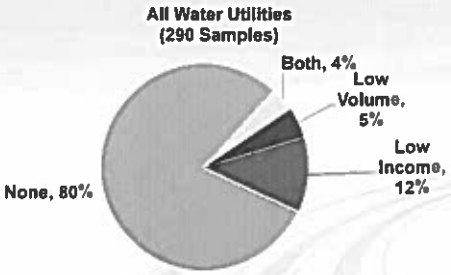
Issues to Consider During a Rate Study

- Customer related
  - One rate schedule or different rates for different classes of service
  - Impacts on different income levels and customer groups
  - Lifeline rates, senior discounts
  - Frequency of billing
  - New rate structure transition – mitigate bill impacts
  - The need for Citizens' Rate Advisory Committees ("CRAC's")

Issues to Consider During a Rate Study

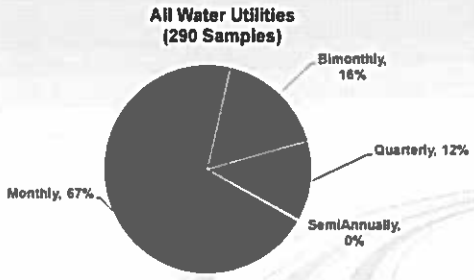
- Consumption/conservation/efficient use
  - Indoor vs. outdoor use, conservation and seasonal rates
  - Price elasticity – short-term vs. long-term impacts
  - Conservation vs. marketing of water
  - Financial impacts from conservation – the need to raise rates?
- Politics
  - How often to raise rates
  - Regional political pressures
  - Timing of rate adjustments

Summary of Water Utilities w/Payment Plan Asst. Programs 2012 Survey of 290 Water Utilities—Representing 50 States



Graphs extracted from *2012 Water and Wastewater Rate Survey*, by permission. Copyright © 2012, American Water Works Association and Raftelis Financial Consultants, Inc.

Residential Billing Frequency

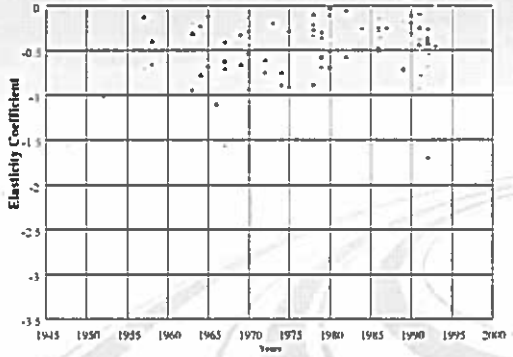


Note: If utility indicated a billing for more than one category, then each data point reflects those responses. Graphs extracted from *2008 Water and Wastewater Rate Survey*, by permission. Copyright © 2008, American Water Works Association and Raftelis Financial Consultants, Inc.

Technical Considerations

- Accuracy of water revenue projections by class
- Elasticity Impacts
  - Price elasticity is a measure of the price sensitivity of consumption by consumer
    - Elasticity = $\frac{\%\text{ change in consumption}}{\%\text{ change in real price}}$
  - Elasticity is usually expressed as a decimal percentage number. For example, given an elasticity of -.1, and a 60% upward price change, the resulting consumption change is a downward 6% or (-.1 x 60).
  - Problem of determining or estimating elasticity
- Bill frequency distribution
  - Needed for designing blocked or tiered rates, See AWWA M1 Manual

Graph Research Findings on the Price Elasticity of Water Demand (N = 112)



Examples of Elasticity Studies From California

	Range of Elasticities
Single Family Residential Customers	
Winter Season	-0.10 to -0.30
Summer Season	-0.20 to -0.50
Multi-Family Residential Customers	
Winter Season	-0.00 to -0.15
Summer Season	-0.05 to -0.20

Source: Dziegielewski, B. Municipal and Industrial Water Use in the Metropolitan Water District Service Area

Author	Study Date	Study Area	Type of Demand	Estimated Elasticity
Renwick, et.al.	1998	9 Metro areas of No. & So. Cal	Long-term Residential - Year round - Summer	 -0.15 -0.20
Metzner	1998	San. Francisco	Long-term Residential	-0.25
Weber	1998	Oakland/East Bay	Long-term Residential	-0.1 to -0.25
MWD of So. Cal.	1998	Coastal So. Cal.	Long-term Residential - Year round - Summer	 -0.29 to -0.36 -0.03 to -0.15

Source: AWWA Journal, March 2001, Jones, et al

Indoor vs. Outdoor Use in California

Community or Area	Indoor %	Outdoor %
Coastal Region		
Oakland	66	34
Los Angeles	65	35
Southern Marin County	55	45
Salinas	60	40
San Diego	65	35
San Francisco	81	19
Santa Barbara	62	38
Santa Rosa	54	46
Central Valley		
Chico	41	59
Fresno	40	60
Merced	35	65
Sacramento	47	53
Stockton	48	52
Visalia	39	61
Inland Southern California and Deserts		
Blythe	37	63
El Centro	53	47
Ridgecrest	37	63
San Bernardino	50	50
Victorville	36	64

Source: AWWA Journal, March 2001, Jones, et al.

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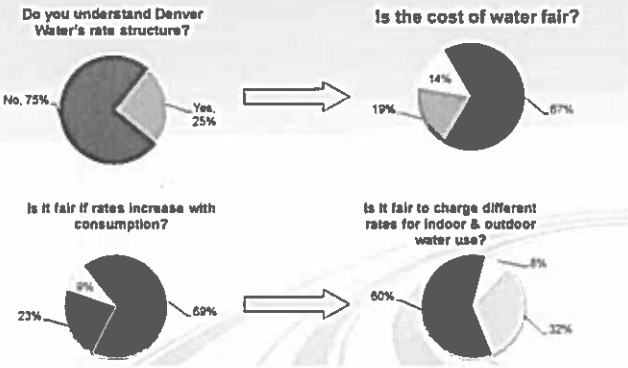
Comparison of Average Monthly Water Charges 2006 and 2012

(7,480 gal [10 Ccf])

Note: large systems sold over 75 mgd, medium systems sold between 20 and 75 mgd, and small systems sold less than 20 mgd. Data for graphic provided by Raftelis Financial Consulting Inc. From preliminary pre-released results of *2012 Water and Wastewater Rate Survey*.

S8-34

Are Denver's Rates Fair?



Source: Customer Perceptions of Denver Water Rates, conducted for Denver Water by BBC Research & Consulting, Final Report, October 10, 2008

S8-35

American Water Works Association

Section 9 – How to Effectively Present Your Rate Study

Why Do Some Presentations Fail? Common Mistakes

-
-
-
-
-
-
-

Survey of Communication Practices

What are the most difficult topics?

Issue	Freq. of Responses	% of Respondents
Rates	29	17%
Drought, Conservation, Supply	26	15%
Specific contaminants	22	13%
Water Quality	20	11%
Projects	19	11%
Management	19	11%
Consumer Confidence Reports	18	10%
Regulations	12	7%
Fiscal	12	7%
Pollution	10	6%
Treatment, Meters Employee Issues	< 6	<3%

Who are the tougest audiances?
(% of Respondents)

Issue	Most Difficult	Least Difficult
Residential Customers	49%	11%
Citizens' Groups	39%	9%
Media	29%	13%
Business Customers	24%	23%
Regulators	23%	37%
Elected Officials	18%	36%
Employees	6%	70%

AWWA Journal, Jan. 2003: Water Utility Communication Practices – What Contributes to Success?

What Makes Topics Difficult to Communicate?

- Reasons often cited for difficult communication
  - Opposition
  - Lack of Understanding (i.e. by target audiences)
  - Complexity (i.e. topic was difficult for people to understand)
  - Internal Logistics
- Note: first 3 reasons are external/educational issues
  - Conclusion: Devote more time to educating customers and communicating on an on-going basis to build rapport

AWWA Journal, Jan. 2003: Water Utility Communication Practices – What Contributes to Success?

Principles of Authentic Communication©

- **Truthful** – Accurate and factually correct.
- **Fundamental** – Deals with the core issues and central facts of the situation.
- **Comprehensive** – Tells the whole story, including meanings and implications of the issue.
- **Relevant** – Takes into account and makes connections with the interested parties.
- **Clear** – Uses language that is appropriate for the audiences and avoids jargon and keeps technical terms to a minimum, or clearly explains them when needed.

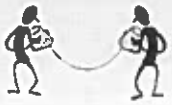
Principles of Authentic Communication© - Cont'd

- **Timely** – Communicated when known and provided early enough to allow feedback before action or major decisions.
- **Consistent** – Doesn't oppose or contradict earlier communication.
- **Accessible** – Information easily available to parties. Major parties available to discuss information. Meetings well promoted so all parties are aware.
- **Compassionate** – Show respect and care for the circumstances, attitudes, beliefs and feelings of others.

Principles of Authentic Communication© - Cont'd

- **Allow for Feedback** – Communication solicits response, either via email, face-to-face meetings, telephone conversations, response cards or other feedback mechanisms

How Well Do Utilities Communicate?



- Respondents to Utility Communication
  - Only 42% thought their communication was clear
  - Only 33% thought their information was accessible
  - Only 26% thought their communication was timely
- When asked "What would you do differently?"
  - Most frequent response was communicate earlier (timeliness)

Tom and Todd's Guide to Effective Rate Presentations

- Educating the Policymaker
  - Begin educating at the start of the study and continue throughout the study
- Simple and Logical Handouts
  - Organized to follow the thought process of how you reached your recommendation
- Clearly Stated Objectives of the Meeting
  - State the policy decision needed or the policy direction required
- Consider the Meeting Format; Workshops vs. City Council Meetings – Public and Press
- Isolate the Key Issues

Develop Presentation Materials For Your Target Audience

- Typical Target Audiences
  - City Councils—Board of Directors/Trustees
  - Advisory Committee Members
  - Utility Customers
  - Public Utility Commission
  - Management/Staff Meetings
- Think about the level of detail to present and handouts

Tips for Working With Advisory Committees

- Standing committee or review a specific issue(s)?
- Group size - # of members
  - Plan for a high drop-out rate
- Selecting the members
  - Issue of fair representation
  - Avoid "ding-a-lings"
- Setting a specific meeting time
- Limiting the number of meetings?
- Meeting facilitator?
- Setting a clear objective for the group
  - At the end, we need your recommendation on issue X
- Setting clear limitations
  - e.g. – advisory committee is not reviewing the budget, the board has reviewed and adopted it.
- Educate
- Expect lots of work to make it happen!

Working With The Press and Media

- Rule No. 1 – Be truthful
- Rule No. 2 – The newspaper article will never say what you want it to say unless you write it yourself
  - Press releases
- Rule No. 3 – You are never off the record
- Rule No. 4 – Be friendly. Don't be rude, confrontational or lose your temper
- Rule No. 5 – Never say "No comment"
- Rule No. 6 – If you foresee or have a problem, own up to it and then immediately discuss corrective actions

Planning Your Presentation

- What is the key message you want to deliver?
- At the same time, if applicable, what is the decision you need?
- Can you provide alternatives or options for the policymaker to consider?
- Going in, what are the key questions you think your target audience wants answered?
- Can you anticipate any follow-up questions that may arise after your presentation?
- Are you the right person to make the presentation?
- Be prepared to summarize your entire presentation in 5 minutes or less!

Presentation Tips

- Consider the style/formality of the meeting
  - When in Rome . .
- Remind policymakers of any discussions, direction or decisions made at previous meetings on the topic
- Try to be brief – sometimes, less can be more
- Handouts
  - Technical
  - Informational
- Use of visual/graphs

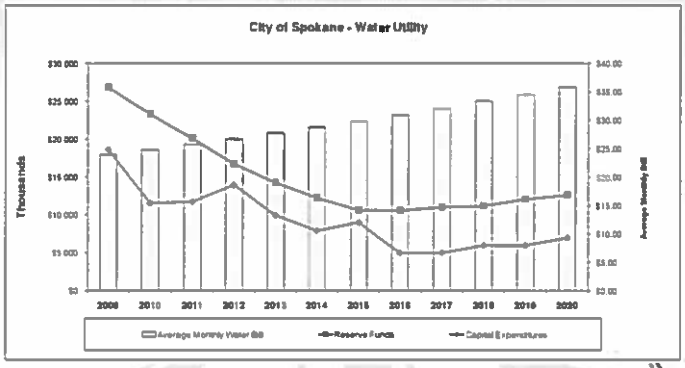
Example of the Summary of the Water Revenue Requirement ($000)

	CY 2009	CY 2010	CY 2011	CY 2012	CY 2013
Sources of Funds					
Rate Revenues	$33,982	$33,982	$33,982	$34,152	$34,323
Miscellaneous Revenues	$4,107	$3,719	$3,909	$3,936	$3,961
Total Source of Funds	$38,090	$37,701	$37,891	$38,088	$38,283
Application of Funds					
Total Operations & Maintenance	$25,687	$26,625	$27,596	$28,603	$29,504
Taxes and Transfers	8,787	8,747	8,757	8,801	8,845
CIP From Rates					
CIP From Rates Capital Plan	$3,225	$3,225	$3,225	$3,242	$3,258
CIP From Rates Ops. Complex	0	0	0	0	0
Total CIP from Rates	$3,225	$3,225	$3,225	$3,242	$3,258
Debt Service	$1,070	$1,147	$1,111	$1,050	$1,037
Additional Capital Improvement Funding	(650)	(1,024)	(722)	(418)	(6)
TOTAL REVENUE REQUIREMENT	$38,090	$38,720	$39,967	$41,278	$42,639
Balance/(Deficiency) of Funds Before Added Tax	$0	($1,019)	($2,077)	($3,190)	($4,355)
Plus: Additional Taxes with Rate Increase	$0	$255	$520	$798	$1,090
Balance/(Deficiency) of Funds With Added Tax	$0	($1,274)	($2,596)	($3,988)	($5,445)
Balance as a % of Rate Adjustment Required	0.00%	3.75%	7.64%	11.68%	15.67%
Proposed Rate Adjustment	0.00%	3.75%	3.75%	3.75%	3.75%

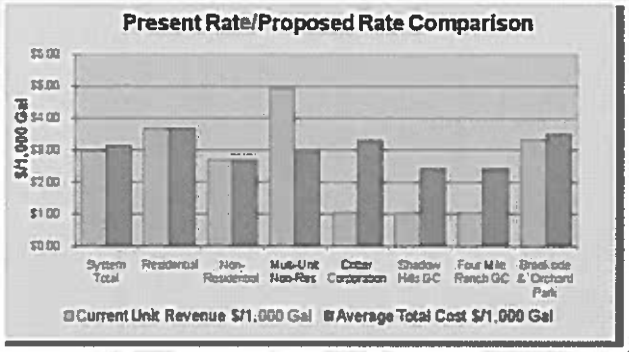
Example of a Summary of a Water Rate Transition Plan

Year	Present Average Monthly Bill	Proposed Rate Increase	Customer Bill on Proposed Rate Increase	Monthly Bill Difference	Cumulative Bill Difference
Present					
2009	$23.93				
Projected					
2010		3.75%	$24.82	$0.90	$0.90
2011		3.75%	$25.75	$0.93	$1.83
2012		3.75%	$26.72	$0.97	$2.79
2013		3.75%	$27.72	$1.00	$3.80
2014		3.75%	$28.78	$1.04	$4.84
2015		3.75%	$29.84	$1.08	$5.91
2016		3.75%	$30.96	$1.12	$7.03
2017		3.75%	$32.12	$1.16	$8.19
2018		3.75%	$33.32	$1.20	$9.40
2019		3.75%	$34.57	$1.25	$10.65
2020		3.75%	$35.87	$1.30	$11.94

Example of a Summary of Water Capital and Reserve Funding

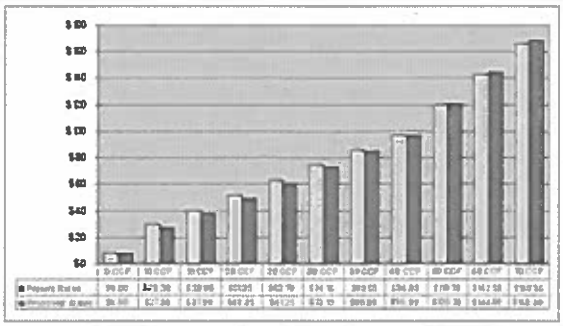


Example of the Comparison of Average Unit Costs by Class of Service



Example of a Simple Bill Comparison

Bill Comparison at Varying Levels of Use - $/Month



Example of the Presentation of "Affordability" and Projected Rates

		Range of Affordability		
		1.50%	2.00%	2.50%
Median Household Income	$36,500			
Annual Bill at Affordability Limit		$547.50	$730.00	$912.50
Monthly Bill at Affordability Limit		$45.63	$60.83	$76.04
Average Rate - 4 Year Period				
2009 - 2012	$40.47	Pass	Pass	Pass
2013 - 2016	$61.08	Fail	Fail	Pass
2017 - 2020	$72.90	Fail	Fail	Pass

Final Caveats/Tips

- Talk to your audience.
- Listen to questions carefully - Respond as appropriate.
- Catchy phrases or analogies help.
- Never take a calculator or your work papers to a public hearing/meeting.
- Be candid/honest—but don't say "quite honestly".
- Tolerate disagreement.
- Be as emotionally detached as possible from the final decision.
- Stay cool under all circumstances!

How To Print Your Certificate of Completion

1. After the seminar, Go to www.awwa.org, click on **"Welcome Please Log In."** If you do not have a log in click on "Welcome Please Log In" then "Register" to create one. Contact customer service at 800.926.7337 if you assistance.
2. On the right hand side click on **"My Account"** underneath your name.
3. On the left hand side click on **"My Transcript Information."**
4. To print your official transcript click on **"print list."**
5. To print training certificates click on **"download certificate."**

Thank you for attending

AWWA's
Financial Management:
Cost of Service Rate-Making
Seminar!

Session Overview

"Growth Paying Its Own Way"

"Growth Paying for Growth"

- Defining System Development Charges (SDC's)
- Comparison Between SDC's and Rates
- SDC Approaches
- SDC Examples
- Legal Considerations

A System Development Charge By Any Other Name.....

- SDCs
- Tap fees
- Hook-up fees
- Capacity fees
- Expansion charges
- Plant investment fees
- Impact fees
- General facility charges
- Connection charges
- Dedicated capacity charges

System Development Charge: *A Working Definition*

- One-time charge
- Fee for new customer demand only
- Fee required of all new customers desiring water service or existing customers requesting increased water service capacity
- Charge based on the value of the utility's capacity and the amount of capacity needed by the new customer
- Should not be used to fund operations

Typical SDC Objectives

- Equity between existing and new customers - Development pay its own way
- Funding for system expansion
- Minimize debt
- Diversify revenue sources
- Lowering water rates through additional capital funding
- Recoup previous expansion costs funded by existing ratepayers

SDCs Recover the Cost of Capacity over Time

- SDCs components
  - Require valuation of capacity
  - Require estimation of new customer capacity needs
  - New customer pays for its capacity needs
  - Payback ends when capacity is depleted
- Cash flow analysis
  - Project future cost
  - Project future demand
  - Develop unit cost (costs divided by demand)
  - Payback is based on time period for projections

Basic Steps to Calculate SDC

- Determine cost or value of facilities and associated capacity
- Estimate new customer demand requirements
- Apply credits – outstanding principal, grants, contributions
- Calculate unit cost – ($/mgd; $/ERU)
- Apply unit cost to assessment schedule

How SDCs are Different than Rates

Rates

How much money do I need this **year**?

↓

Cost of Service Analysis

↓

Residential Rates | Industrial Rates | Commercial Rates

SDCs

What is the value of a unit of system capacity?

↓

Value & Capacity Analysis

↓

New customer capacity needs

↓

SDC

The element of time is the key difference!

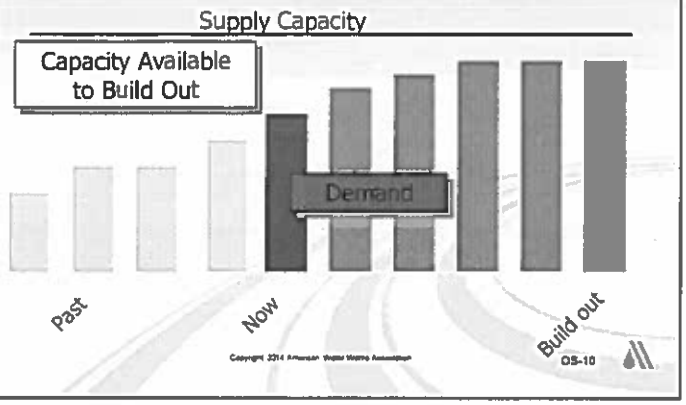
Time is the Key Difference Between Rates and SDCs

Rates Recover Annual Costs	SDCs Recover Capacity Costs
Annual Revenue Requirements / Annual Usage = Rates	Capacity Value / Capacity Available = Capacity Unit Value
Rates x Customer Usage = Bill	Capacity Unit Value x Customer Capacity = System Development Charge
Annual Timeframe	*Multiple Year Timeframe*

Capacity Issues Affect Methods of Determining SDCs

- Buy-In Approach
- Incremental (Marginal) Approach
- Combined Approach

When is the Cost of Capacity an Issue?
Case 1 - Existing Capacity Will Meet Future Needs



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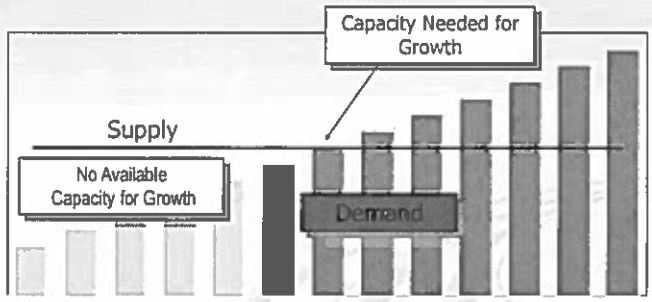
When is the Cost of Capacity an Issue?
Case 2 – No Existing Capacity for Future Needs



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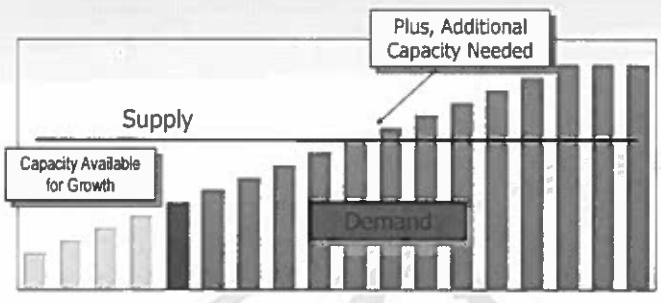
When is the Cost of Capacity an Issue?
Case 3—Some Capacity is Available But More is Needed



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Buy-In Approach

- Applies to utilities with available capacity for growth
- The new customer (development) "buys into" the system *– but doesn't 'own' anything*
- Methods to value existing assets:
  - Original Cost (OC)
  - Original Cost Less Depreciation (OCLD)
  - Replacement Cost New (RCN)
  - Replacement Cost New Less Depreciation (RCNLD)
- Asset valuation should be reduced by outstanding liabilities used to finance existing facilities.
- Other credits include contributed facilities and grants

Incremental (Marginal) Approach

- Applies to utilities with little to no available capacity to serve growth
- New customer pays for next increment of future capacity required to serve them
- Capital plan planning horizon: important for determining future capacity units
- Determine which projects and/or portion of project costs are growth-related

Buy-in Approach Example

Pumping Facilities

Description	Useful Life	Years in Service	Original Cost	Cost Index	Replacement Value	% Depreciated	% Eligible SDC	Pump Station SDC
Pump Station 1	25	29	$541,075	2.0	$1,065,918	100%	100%	$0
Pump Station 2	25	19	1,352,780	1.8	2,177,976	76%	100%	$22,714
Land	Land	NA	1,048,750	1.5	1,804,588	0%	100%	1,804,588
Pump Station 4B	40	10	777,615	1.4	1,065,333	25%	100%	798,999
Zone 3 P.S.	40	2	1,397,100	1.0	1,452,984	5%	50%	690,167
P.S. Imp.	35	1	580,675	1.0	580,675	3%	100%	563,255
Total			$5,697,995		$7,947,473			$4,179,723

Less: Outstanding Principal	($500,000)
Equals: Net Equity	$3,679,723
Divided by Pump Station Capacity, mgd	24
Equals: Unit Cost of Capacity, $ per mgd	$153,322
Divided by: 1,000,000 gallons ($ per gpd)	$0.15332
Multiplied by: 5/8" Demand Equivalend (gpd)	625.0
Equals: Pump Station Component Value of SDC	$95.83

(1) % SDC eligible reflects the amount of the facility to be included in the SDC. The remaining amount reflects contributions such as grants, CIAC, etc.
(2) Assumes new customer demands of 91,250 gallons per year with a maximum day peaking factor of 2.5. The peak demand of 625.0 gallons per year is the product of annual demand and peaking factor.

Buy-in Approach
All Facilities

Description	Gross SDC	Less: SDC Credit	Net SDC 5/8" Meter
Source of Supply	$1,048.25	($220.00)	$828.25
Treatment	1,845.90	(543.50)	1,302.40
Pumping	108.85	(13.02)	95.83
Transmission	228.45	(55.65)	172.80
General Plant	54.90	0.00	54.90
Total	**$3,286.35**	**($832.17)**	**$2,454.18**

Incremental Approach Example
Pumping Facilities

Description	Useful Life	Years in Service	Original Cost	% Expansion	% Eligible SDC	Pump Station SDC
Pump Station 1 Exp	25	29	$565,000	50%	100%	$282,500
Land	25	19	128,000	100%	100%	128,000
Pump Station 5	Land	NA	425,000	25%	100%	106,250
Zone 8 P.S. Exp.	40	10	538,000	100%	50%	269,000
General Imp.	40	2	125,000	0%	100%	0
Total			**$1,781,000**			**$785,750**

Divided by Additional Capacity, mgd	4.0
Equals: Unit Cost of Capacity, $ per mgd	$196,438
Divided by: 1,000,000 gallons ($ per gpd)	$0.19644
Multiplied by: 5/8" Demand Equivalend (gpd)	625.0
Equals: Pump Station Component Value of SDC	**$122.77**

Hybrid (Combined) Approach

- Used by utilities with available capacity and planned future capacity
- Combines the buy-in and incremental cost approach
- Weighted average of the buy-in and incremental costs – *not a simple sum of the unit costs!*

Combined Approach
Pumping Facilities

Description	Value	Outstanding Principal	Net Value	Capacity mgd	Unit Value $ per mgd
Existing Capacity	$4,179,723	($500,000)	$3,679,723	24	N/A
Future Capacity	785,750	0	785,750	4	N/A
Total	**$4,965,473**	**($500,000)**	**$4,465,473**	**$28**	**$159,481**

Divided by: 1,000,000 gallons ($ per gpd)	$0.16
Multiplied by: 5/8" Demand Equivalend (gpd)	625
Equals: Pump Station Component Value of SDC	**$99.68**

SDC by Meter Size

Meter Size	Max Safe Operating Capacity[1,2]	Capacity Ratio	SDC
Inches	*gpm*		
5/8"	20	1.0	$2,454
3/4"	30	1.5	$3,681
1"	50	2.5	$6,135
1 1/2"	100	5.0	$12,271
2"	160	8.0	$19,633
3"	320	16.0	$39,267
4"	500	25.0	$61,355

(1) Maximum safe operating capacity varies by type of meter (e.g. Displacement, Single Jet, Turbine)
(2) See Table VI.2-5, Page 274, M-1 Manual

Other SDC Structures

- Lot size
- Number of units (multifamily)
- Units + retail floor area (mixed use)
- Gross floor area (commercial)
- Demands – annual, peak
- Plumbing fixtures
- Irrigable area (irrigation)
- Other fixtures – barstools, restaurant seats, number of laundry machines, employees

Legal Considerations

- **State Laws and Regulations**
- **Rational Nexus—relationship between the price & cost incurred**
  - Connection be established between new development and the new or expanded facility to accommodate such development
  - Identification of the cost of those new or expanded facilities needed to accommodate development
  - Appropriate apportionment of cost to new development in relationship to benefits reasonably received
- **Reasonable relationship to the burden imposed to provide capacity**
- **Reasonable relationship does not mean mathematically exact**

Taxation Issues
Is the SDC a –Fee" or a –Tax"?

- Utility likely has legislative authority to impose, collect and spend SDC's. However, how it is assessed, collected and spent must clearly qualify the payment as a "fee" and not a "tax."
- Important to characterize the SDC as a regulation and not as a revenue raising device.
- "The regulatory defense is met when demonstrating that new development creates the need for new facilities; but without payment of fees in exchange for benefits provided by such facilities, the revenues are unavailable to provide facilities and therefore the community is unable to accommodate new development." [1]

[1] - Nelson, Arthur, System Development Charges For Water, Wastewater and Stormwater Facilities

Concluding Comments

- SDC's are an effective method to finance the cost of growth
- Creates equity between existing customers and new customers
- Helps shelter existing customers from the cost of growth
- Must be established and applied in a legal manner
- SDCs revenue can be volatile and should not be considered a reliable source of revenue

Developing Financial Policies
To Aid in Strategic Planning and Setting Rates

By: Tom Gould, Vice President
HDR Engineering, Inc.
Bellevue, Washington

Introduction

The water utility industry is constantly changing, but there is always one constant - the need for strong financial performance to support the strategic objectives of the utility. Weak financial performance makes it difficult, if not impossible, to attain or even maintain service at an adequate level. The development of financial policies provides an important and valuable management tool for utilities to meet their strategic plans.

Developing Strategic Plans

Water utilities traditionally have not thought about strategic plans and as a result, have not developed such plans. Utilities have traditionally operated from year-to-year, and simply met challenges as they were incurred along the way. As the industry has evolved in recent years, utility management is now faced with increasingly complex regulatory issues, new competitive challenges from outside forces, and increased price sensitivity by customers. Successfully meeting these new challenges requires the ability to address each issue in an organized manner, and prioritize them into a strategic plan.

At its most basic definition, and as used within this paper, a strategic plan is an organized management plan that contains the utility's vision of a desired level of service or management objectives. It provides the utility with a roadmap focusing on specific goals and objectives.

Developing a strategic plan may sound like an extensive and complicated process. In some cases, it does not necessarily have to be extensive or complicated. Rather, a strategic plan may be as simple as a statement of key initiatives, with short statements (goals) to measure the utility's effectiveness against that initiative.

A simple example of a strategic initiative may be the following:

> *"The utility will protect, sustain and enhance the environmental quality of our resources. To achieve this initiative, the utility will development and implement a cost-effective conservation program"*

In the example noted above, the utility will need to take a number of steps or actions to achieve it. However, a key component of achieving any initiative of the utility is the financial position of the utility. That is, the utility will need to have sufficient financial resources available to supply the people and programs necessary to achieve the initiative. One method to help assure that the utility has the necessary financial resources available to support their strategic initiatives is to develop written financial policies. Written financial policies can aid in establishing cost-based rates, while at the same time creating an environment for long-term financial stability and adequacy of funds.

Why Establishing Written Financial Policies Is Important

One of the challenges of managing a public utility is working with a Board or City Council and determining the financial and management parameters around which the utility should be operated. On the other side, as a Board or City Council member it can sometimes be challenging to understand all the financial complexities of operating and managing a contemporary water utility. Establishing written financial policies, particularly as they relate to establishing the rates for the utility, is one way to bridge the communication gap between management and policymakers concerning this complex issue.

While written financial policies help bridge the communication gap between management and policy makers, they also provide other significant benefits. Among these are the following:

- ***Provides Management With Clear Direction*** - By developing written financial policies, the policy maker has provided to management clear direction and boundaries for the financial management of the utility. This eliminates the need for management to "guess" the policy maker's intentions or to constantly return to the policy maker to obtain direction on specific financial issues.
- ***Provides Consistent Financial Decisions*** - A set of financial policies provides uniform guidance that should result in consistent and uniform management decisions around each specific financial issue over the long-term.
- ***Provides Policy Makers With the Basis or Reasoning Behind Past Decisions*** - One of the challenges for the management of any public utility is working with an elected Board or City Council. As these elected individuals come and go, it is important that any new Board or City Council member understand the past and current financial philosophy of the remaining members. To that end, written financial policies provide the clear and written link between past and present decisions.
- ***Provides a Strong Message to the Outside Financial Community*** - Establishment of written financial policies for water utilities is not a common practice. Therefore, by establishing a comprehensive set of written financial policies, the utility is making a strong statement to the financial community that it is well-managed. When going before rating agencies, presenting a set of written financial policies will provide a very positive message on the utility's behalf.

In summary, the overall objective in establishing written financial policies is to establish clear policy direction for management. In doing so, it will create greater consistency in the overall financial performance of the utility.

Establishing Written Financial Policies

There is no specific approach or framework that must be used to establish written financial policies. However, in establishing the policies care should be taken to ensure that they are comprehensive and organized in a logical manner. At the same time, financial policies should

be flexible. Flexibility refers to the fact that most financial policies are guidelines. As an example, the utility may establish a financial policy on the types of reserves to be maintained and the recommended minimum level of the reserves. Therefore, when a reserve falls below the established minimum level, it should trigger some management action, but not necessarily a specific action stated within the policy. Management should be provided with the flexibility to determine the most appropriate course of action (e.g. wait and watch, reduce spending, increase rates, etc.). In essence, the policymaker establishes the "ends" or desired results and management is left with selecting the appropriate "means" to get there.

One way in which financial policies can be organized is in the following manner:

1. **GLOBAL POLICY STATEMENT**
   - 1.1 General Policy Statement
     - 1.1.1 Specific Policy Statement

Utilizing the above framework, the following example demonstrates the general approach.

1. **FACILITIES SHALL BE MAINTAINED AT SUCH A LEVEL THAT IT PROVIDES FOR THE PUBLIC WELL-BEING AND THE SAFETY OF THE RESIDENTS**

   The utility's operation and maintenance (O&M) program will be maintained at a level that assures system reliability and efficiency. A well-thought out maintenance program will extend the life of the system, that will in turn reduce infrastructure costs in the long-run.

   - 1.1 Sufficient funding shall be made available for adequate maintenance and/or replacement of capital plant and equipment
     - 1.1.1 The utility will adequately fund costs for meeting current industry standards and regulation (e.g. Safe Drinking Water Act) in the annual financial review and budgeting process.
     - 1.1.2 The utility will develop a 5-year capital improvement plan and update it annually.
     - 1.1.3 The capital plan will consider all mandated capital, growth related capital and renewal/replacement capital needs.
     - 1.1.4 The utility will make all capital improvements according to the adopted Capital Improvement Plan.

As can be seen, the basic framework for developing the financial policies should help to organize the planning process, particularly as it relates to meeting any strategic objectives the utility may have.

Types of Financial Policies To Consider

In establishing financial policies, there are a variety of areas or topics that policies can be developed around. At the very minimum, the utility must take into account, and be in compliance with any legal covenants (e.g. debt service coverage) or regulatory mandates. Therefore, in establishing a set of financial policies the starting point of the process should be

the review of any bond covenants and/or Federal/State requirements. As an example, revenue bond covenants often require the establishment and funding of certain reserves and the maintenance of rates at a sufficient level to assure meeting or exceeding debt service coverage ratios. At the same time, the utility may have certain Federal or State requirements that may appropriately be included within the financial policies. As an example, a utility may be legally required to establish "conservation-based" rates for the utility.

Most, if not all utilities, have adopted financial policies that cover policy issues such as investment policies, etc. The focus of this paper is on establishing financial policies to aid in setting rates to meet strategic plans. Therefore, the discussion below will focus only on those policies that have a direct impact on the rate setting process and meeting strategic plans.

There are a number of very basic and fundamental questions that a utility must answer in order to address their strategic plan. Among these basic questions are the following:

- ✓ Does the utility and its customers desire to have "cost-based" rates?
- ✓ Should the utility be financially operated as a "business?" If so, what are the appropriate financial and operating goals to be established for the utility (i.e. target debt service coverage ratios, reserves, service levels, etc.)?
- ✓ How should the cost of growth be paid for? Growth pays for growth? Some level of subsidy to encourage growth and economic development? The entire cost of growth should be absorbed into the existing customer base?
- ✓ What level of financial risk is the utility willing to incur? Should the utility build infrastructure in advance of growth (i.e. build it and they will come)?
- ✓ Should capital be paid for on a "pay-as-you-go" basis, or should long-term debt be used, and if so, how much and under what conditions?
- ✓ Is the utility in the business to sell as much water as possible or conserve water? Should the utility attempt to control or change a customer's consumption patterns?

Many of the questions raised above are rarely discussed from a policy perspective, let alone answered via written financial policies for the utility. Provided below are some examples of global policy statements that begin to formally address these kinds of strategic issues.

Example of
Financial Policies/Guidelines to Aid in Setting Rates

These recommended financial policies and guidelines have been developed to assist the [*name of utility*] in achieving financial and rate stability from year-to-year.

In addition, these proposed policies should provide consistency in decision-making to both the [*governing body, e.g. City Council*] and utility management.

These proposed policies and guidelines should be used as a starting point in the utility's overall utility financial planning and rate setting process.

The proposed policies and guidelines listed below should be reviewed over time to determine if they are still relevant and appropriate.

1. **Rates Should Be Established Utilizing a "Generally Accepted" Rate Setting Methodology.**

   When reviewing rates, it is important to use a methodology that is "generally accepted" in the financial and rate setting community as well as the water, sewer and storm water utility industry. This will assure a legally defendable approach as well as consistency of the analysis over time.

   1.1 **It is recommended the City use the following "generally accepted" approaches to establish rates for each utility.**
   - **Revenue requirement analysis**
   - **Cost of service analysis**
   - **Rate design analysis**

   REVENUE REQUIREMENTS:

   1.1.1 Revenue requirements will be established on a "cash basis" approach that will include operation & maintenance expenses, taxes/transfers, debt service (P&I) and capital improvements funded from rates.

   1.1.2 Revenues and costs will be annually projected for a projected five-year time period.

   1.1.3 Projections of O&M costs should include any estimated incremental O&M costs associated with future capital improvements.

   1.1.4 The administrative transfer fee from utility enterprise funds to the General Fund is a payment for various services provided by the General Fund. The amount of each year's transfer fee shall be based on the reasonable estimated general fund costs incurred by the utility enterprise funds, of the General Fund costs.

   1.1.5 Costs associated with mandated program requirements will be identified and included within the "cash basis" approach.

   1.1.6 Any wholesale cost increases imposed upon the City by a water or sewer supplier/partner should be equitably passed through to the City's ratepayers at the same time such rates become effective upon the City.

COST OF SERVICE:

1.2.1 A cost of service study will be utilized to equitably allocate the water and sewer costs to the customer classifications of service.

1.2.2 The cost allocation methodology will utilize techniques that are "generally accepted" by the industry (e.g. American Water Works Association, Water Environment Federation).

1.2.3 The water cost of service will, at a minimum, consider the following cost components:

- ✓ *Commodity/base costs* – those costs that vary with the total amount, or flow of water consumed by a customer over an extended period of time (e.g. electricity and chemicals)
- ✓ *Capacity costs* – those costs that vary with maximum demand, or the maximum rates of flow to customers (e.g. sizing facilities to meet peak demands)
- ✓ *Public fire protection costs* – those costs related to the public fire protection function (e.g. hydrants and over-sizing of mains)
- ✓ *Customer related costs* – those costs that vary with the number of customers on the system (e.g. postage, meter maintenance expense)
- ✓ *Revenue related costs* – those costs associated with the amount of revenue received by the utility (e.g. a gross proceeds tax, delinquent fees)

1.2.4 The sewer cost of service will, at a minimum, consider the following cost components:

- ✓ *Volume costs* – those costs that vary with the total flow of wastewater contributed by a customer over an extended period of time.
- ✓ *Strength costs* – those treatment related costs associated with the strength of wastewater (biochemical oxygen demand and suspended solids).
- ✓ *Customer related costs* – those costs that vary with the number of customers on the system (e.g. postage, meter maintenance expense)
- ✓ *Revenue related costs* – those costs associated with the amount of revenue received by the utility (e.g. a gross proceeds tax, delinquent fees)

1.2.5 The water and sewer cost of service will consider the specific circumstances and unique characteristics of the City's systems in the cost allocation methodology.

RATE DESIGN:

1.3.1 User charges (rates) will be established so that operating revenues are at least equal to the direct and indirect operating costs, to include costs of administration for each individual utility.

1.3.2 Rate designs will be reflective of utility needs, and also reflect the greater public purpose and policy goals of the City Council (e.g. conservation, economic development, ability to pay, etc.).

1.3.3 Rates will recognize and attempt to incorporate a fixed charge for the up-front fixed costs associated with serving customers and a usage or volumetric charge that attempts to recover the variable costs of operating the utility.

1.3.4 Rates will be set at a level that recovers necessary costs, by classification, yet flexible enough to accomplish the City's objectives (e.g. public purpose programs).

1.3.5 Rates should be designed to be equitable and detailed to a level to reflect the service provided (e.g., private fire protection, multi-family services, etc.).

2. The City's Utilities Should Continue to be Managed to Attempt to Maintain Financial Stability Over Time.

The City's utilities, like any other business, should strive to maintain financial stability over time, as it has done in the past. Financial stability is not only a prudent financial management goal; it can also minimize financial costs in the long-term (e.g. unnecessary borrowing). Above all, financial stability will provide the community with the confidence of knowing a strong, consistent management team is managing the utility.

2.1 Financial Policies and Measures Will be Developed to Measure, Manage and Achieve Financial Stability.

RESERVES:

2.1.1 The City will maintain utility reserves required by law, ordinance and bond covenant, so as to provide cash working capital for normal and ordinary operations, and also provide some insurance against economic downturns and emergencies.

2.1.2 Minimum reserve funds, excluding bond reserve funds, will be as follows:

Operating Reserves – Operating reserves are composed of Active Working Capital Cash and Operating Reserves. These reserves reflect the timing difference between billing for revenues and payment of expenses. The Operating Reserve can also be used to cover unanticipated cash operating expenses or lower than expected revenue collections. The basis for establishing a minimum total operating reserve level for each utility will be ## days of the O&M expenses for that utility. Based upon 2005 O&M levels, the minimum operating reserve for each utility is as follows:

- Water utility $_____
- Sewer utility $_____
- Storm water utility $_____

Catastrophe/Emergency Reserves – The catastrophe/emergency reserve is essentially to protect the City's utilities against the financial impacts from unanticipated emergencies. It provides funding for emergency repairs or failure of essential equipment that needs to be immediately replaced. At a minimum, the contingency reserve will be set equal to $###,### ($###,### water/$###,### sewer). This level of contingency/emergency reserves will be deemed sufficient to finance the required cash flow until such time that adequate emergency financing can be secured from conventional outside resources.

Capital Reserves – Capital reserves are used to fund the cash flow requirements of capital infrastructure construction. These reserves can increase and decrease significantly depending on funding sources available and the capital projects that are planned during the year. The City should, however, set a minimum funding level for each utility as follows:

Funding should be based upon the five (5) year average of the annual capital expenditures contained within the City's capital improvement plan for each utility. Based upon the 2005 – 2009 capital improvement plan, the following minimum reserves are recommended:

- Water utility $#,###,###
- Sewer utility $#,###,###
- Storm water utility $###,###

Bond Reserves – Bond reserves may be legally required for specific debt issues. Bond reserves will be established in accordance with the legal covenants of the debt issue.

2.1.3 The City Council may establish other reserves for specific needs that are over and above the reserves noted above.

2.1.4 Maintenance of minimum reserves should not, on its own, trigger the need for a rate adjustment, (e.g. rates will be reviewed after two consecutive years of loss of revenue or diminishing reserves as a result of covering costs).

LIQUIDITY:

2.2.1 The City's utilities will maintain sufficient reserves, and of such a nature, that it maintains liquidity equal to # months of operating expenses.

CASH FLOW:

2.3.1 Each utility should have annual net income (total revenue less O&M, taxes, debt service and capital projects funded from rates) greater than or equal to zero ($).

TARGET DEBT SERVICE COVERAGE:

2.4.1 The City should have an annual debt service coverage ratio greater than or equal to 1.## (e.g. 1.50) on all outstanding debt that carries a legal bond covenant. The City will maintain a debt service coverage ratio of 1.30 on all outstanding debt service. (Industry norm for revenue bond coverage ratio covenants is 1.25.)

CAPITAL IMPROVEMENT FUNDING FROM RATES:

2.5.1 On an annual basis, each utility should adequately fund through its rates an amount for capital improvement funding.

2.5.2 To achieve policy 2.5.1, the following minimum funding for each utility should be included within the rates, and escalated (increased) over time to reflect the impacts of inflation and replacement cost of infrastructure. *[Note: generally targets an amount ≥ annual depreciation expense].*

- Water utility $#,###,###
- Sewer utility $#,###,###
- Storm water utility $###,###

2.5.3 As new large capital facilities are added to the City, consideration may be given to phasing-in the rate impact of policy 2.5.1.

3. **Rates Should be Stable Over Time.**

Financial stability of a utility also provides rate stability. Rate stability reinforces that costs are being managed and controlled, thereby gaining customers' confidence of the management team's credibility.

3.1 Rates Should be Stable in Their Ability to Generate Sufficient Revenues, but also in the Customer's Perception of the Rate Changes from Year to Year.

3.1.1 Rates should be reviewed by the City, on an annual basis, to assure that they provide sufficient revenues.

3.1.2 Annual rate reviews will consider a five-year projected period to attempt to stabilize and minimize rates over time.

3.1.3 Needed rate adjustments will attempt to minimize impacts to customers by phasing-in large rate adjustments over time.

3.14 Rates should reflect pass-through components for costs that fluctuate and are not controllable by the City, such as wastewater treatment costs and energy costs.

3.1.5 A comprehensive rate study will be conducted by an outside party at least every 5 years in order to assess the fairness of the rates to the City's ratepayers and to ensure that the necessary revenue is available for the City's operating and capital needs.

4. **The City will maintain utility facilities at a level that will provide for the public well-being and safety of the residents.**

The City's operating and maintenance (O&M) program will be maintained at a level that assures system reliability and efficiency. A well thought out maintenance program will extend the life of the system that will in turn reduce infrastructure costs in the long-term.

4.1 Sufficient funding should be made to provide for adequate maintenance and/or replacement of capital plant and equipment. This is to protect the City's capital investment and to minimize future maintenance and replacement costs.

4.1.1 The City will adequately fund costs for meeting current industry standards and regulations (e.g. Safe Drinking Water Act) in the annual financial review.

4.1.2 The City will develop a 5-year capital improvement plan and update it annually. The capital improvement plan will be coordinated with the operating budget and impacts to ratepayers.

4.1.3 The City will make all capital improvements according to an adopted Capital Improvement Program.

4.1.4 The City's capital improvement program for each utility will consider mandated capital, growth related capital and replacement, reproduction and refurbishment capital.

5. **The City will consider the impacts of rates on their customers and financial and operating needs will be balanced against the rates and financial impacts.**

Utility rates are the primary communication the City has with its utility customers. Whenever possible, the City's rates should be easy to understand, stable from year-to-year and minimize the overall impacts to customers.

5.1 Rates will be easy to understand and the City will attempt to keep rate increases to a minimum.

5.1.1 Rates for each utility will be structured to promote understanding by the City's customers (e.g. bills that are easy to hand calculate and understand).

5.1.2 Rate adjustments will be phased-in, over time, when large financial impacts to customers are anticipated (e.g. eliminate rate shock).

5.2 Rates will be reviewed for their overall competitiveness.

5.2.1 Any rate adjustment to a utility should consider the City's "competitiveness" with neighboring utilities.

5.2.2 The "competitiveness" of the City's rates should not necessarily take precedence over prudent financial and business practices.

WATER SUPPLY SYSTEM
CAPITAL IMPROVEMENT PROGRAM
FISCAL YEARS 1994-95 THROUGH 1998-99
SUMMARY OF FUNDING REQUIREMENTS BASED ON YEAR OF PROJECT INITIATION

Category	1994-95	1995-96	1996-97	1997-98	1998-99	Remaining	Total
Metro Area Construction	$ 45,642,000	$ 23,178,000				$ 5,985,000	$ 74,805,000
Urban System Improvements	11,044,000	6,600,000	$ 13,800,000	$ 6,600,000	$ 6,600,000	6,600,000	51,244,000
Maintenance & Repair	509,000						509,000
Mechanical Maintenance	11,729,000	13,100,000	2,100,000	600,000	600,000	600,000	28,729,000
Computer Systems	30,535,000		1,500,000				32,035,000
PLANT REPLACEMENT & RENOVATION							
General Plant	15,063,000	8,000,000				3,157,000	26,220,000
Water Works Park	30,237,000	55,000,000	60,800,000	1,650,000	800,000	42,500,000	190,987,000
Springwells	28,183,000	10,000,000					38,183,000
Northeast	691,000	3,424,000		750,000			4,865,000
Southwest	1,292,000	4,450,000	1,000,000				6,742,000
Lake Huron	2,122,000	17,800,000	1,000,000				20,922,000
Pumping Stations & Reservoirs	11,346,000	30,440,000	5,300,000	16,000,000	6,400,000	6,400,000	75,886,000
TOTAL	$ 188,393,000	$ 171,992,000	$ 85,500,000	$ 25,600,000	$ 14,400,000	$ 65,242,000	$ 551,127,000
TOTAL (inflated 4% annually)	$ 188,393,000	$ 178,872,000	$ 92,477,000	$ 28,797,000	$ 16,846,000	$ 79,377,000	$ 584,762,000

WATER SUPPLY SYSTEM
CAPITAL IMPROVEMENT PROGRAM
FISCAL YEARS 1994-95 THROUGH 1998-99
SUMMARY OF PROJECTED EXPENDITURES SPREAD BY FISCAL YEAR

Category	1994-95	1995-96	1996-97	1997-98	1998-99	Remaining	Total
Metro Area Construction	$ 20,349,000	$ 27,871,000	$ 16,600,000	$ 4,000,000		$ 5,985,000	$ 74,805,000
Urban System Improvements	8,806,000	8,602,000	8,036,000	9,600,000	$ 9,600,000	6,600,000	51,244,000
Maintenance & Repair	509,000						509,000
Mechanical Maintenance	4,743,000	7,114,000	7,572,000	4,100,000	4,600,000	600,000	28,729,000
Computer Systems	11,286,000	10,932,000	9,292,000	350,000	175,000		32,035,000
PLANT REPLACEMENT & RENOVATION							
General Plant	5,726,000	8,346,000	7,360,000	1,381,000	250,000	3,157,000	26,220,000
Water Works Park	12,357,000	24,760,000	44,370,000	47,950,000	19,050,000	42,500,000	190,987,000
Springwells	6,039,000	16,397,000	12,595,000	3,152,000			38,183,000
Northeast	621,000	1,120,000	1,250,000	1,874,000			4,865,000
Southwest	1,202,000	3,390,000	1,250,000	600,000	300,000		6,742,000
Lake Huron	1,490,000	2,032,000	5,450,000	5,450,000	6,500,000		20,922,000
Pumping Stations & Reservoirs	3,560,000	16,651,000	16,835,000	16,190,000	16,250,000	6,400,000	75,886,000
TOTAL	$ 76,688,000	$ 127,215,000	$ 130,610,000	$ 94,647,000	$ 56,725,000	$ 65,242,000	$ 551,127,000
TOTAL (inflated 4% annually)	$ 76,688,000	$ 129,386,000	$ 135,738,000	$ 101,173,000	$ 62,400,000	$ 79,377,000	$ 584,762,000

WATER SUPPLY SYSTEM
CAPITAL IMPROVEMENT PROGRAM
FISCAL YEARS 1994-95 THROUGH 1998-99
FUNDING REQUIREMENTS BASED ON YEAR OF PROJECT INITIATION
(000)

Category	1994-95	1995-96	1996-97	1997-98	1998-99	Remaining	Total
Metro Area Construction							
Ongoing Projects	$ 34,541						$ 34,541
New Projects	11,101	$ 23,178				$ 5,985	40,264
	$ 45,642	$ 23,178				$ 5,985	$ 74,805
Urban System Improvements							
Ongoing Projects	$ 7,044						$ 7,044
New Projects	4,000	$ 6,600	$ 13,800	$ 6,600	$ 6,600	$ 6,600	44,200
	$ 11,044	$ 6,600	$ 13,800	$ 6,600	$ 6,600	$ 6,600	$ 51,244
Maintenance & Repair							
Ongoing Projects	$ 509						$ 509
New Projects							
	$ 509						$ 509
Mechanical Maintenance							
Ongoing Projects	$ 10,679						$ 10,679
New Projects	1,050	$ 13,100	$ 2,100	$ 600	$ 600	$ 600	18,050
	$ 11,729	$ 13,100	$ 2,100	$ 600	$ 600	$ 600	$ 28,729
Computer Systems							
Ongoing Projects	$ 27,710						$ 27,710
New Projects	2,825		$ 1,500				4,325
	$ 30,535		$ 1,500				$ 32,035
PLANT REPLACEMENT & RENOVATION							
General Plant							
Ongoing Projects	$ 5,583						$ 5,583
New Projects	9,480	$ 8,000				$ 3,157	20,637
	$ 15,063	$ 8,000				$ 3,157	$ 26,220
Water Works Park							
Ongoing Projects	$ 20,487						$ 20,487
New Projects	9,750	$ 55,000	$ 60,800	$ 1,650	$ 800	$ 42,500	170,500
	$ 30,237	$ 55,000	$ 60,800	$ 1,650	$ 800	$ 42,500	$ 190,987

WATER SUPPLY SYSTEM
CAPITAL IMPROVEMENT PROGRAM
FISCAL YEARS 1995-96 THROUGH 1998-99
FUNDING REQUIREMENTS BASED ON YEAR OF PROJECT INITIATION
(000)

Category	1994-95	1995-96	1996-97	1997-98	1998-99	Remaining	Total
Springwells							
Ongoing Projects	$ 27,783						$ 27,783
New Projects	400	$ 10,000					10,400
	$ 28,183	$ 10,000					$ 38,183
Northeast							
Ongoing Projects	$ 156						$ 156
New Projects	535	$ 3,424		$ 750			4,709
	$ 691	$ 3,424		$ 750			$ 4,865
Southwest							
Ongoing Projects	$ 952						$ 952
New Projects	340	$ 4,450	$ 1,000				5,790
	$ 1,292	$ 4,450	$ 1,000				$ 6,742
Lake Huron							
Ongoing Projects	$ 1,922						$ 1,922
New Projects	200	$ 17,800	$ 1,000				19,000
	$ 2,122	$ 17,800	$ 1,000				$ 20,922
Pumping Stations & Reservoirs							
Ongoing Projects	$ 1,226						$ 1,226
New Projects	10,120	$ 30,440	$ 5,300	$ 16,000	$ 6,400	$ 6,400	74,660
	$ 11,346	$ 30,440	$ 5,300	$ 16,000	$ 6,400	$ 6,400	$ 75,886
SUBTOTAL-PLANT REPLACEMENT & RENOVATION							
Ongoing Projects	$ 58,109						$ 58,109
New Projects	30,825	$ 129,114	$ 68,100	$ 18,400	$ 7,200	$ 52,057	305,696
	$ 88,934	$ 129,114	$ 68,100	$ 18,400	$ 7,200	$ 52,057	$ 363,805
SUMMARY - TOTAL COSTS							
Ongoing Projects	$ 138,592						$ 138,592
New Projects	49,801	$ 171,992	$ 85,500	$ 25,600	$ 14,400	$ 65,242	412,535
TOTAL CAPITAL COSTS	$ 188,393	$ 171,992	$ 85,500	$ 25,600	$ 14,400	$ 65,242	$ 551,127

WATER SUPPLY SYSTEM
CAPITAL IMPROVEMENT PROGRAM
FISCAL YEARS 1994-95 THROUGH 1998-99
PROJECTED EXPENDITURES SPREAD BY FISCAL YEAR
(000)

Category	1994-95	1995-96	1996-97	1997-98	1998-99	Remaining	Total
Metro Area Construction							
Ongoing Projects	$ 19,248	$ 15,293					$ 34,541
New Projects	1,101	12,578	$ 16,600	$ 4,000		$ 5,985	40,264
	$ 20,349	$ 27,871	$ 16,600	$ 4,000		$ 5,985	$ 74,805
Urban System Improvements							
Ongoing Projects	$ 5,606	$ 1,202	$ 236				$ 7,044
New Projects	3,200	7,400	7,800	$ 9,600	$ 9,600	$ 6,600	44,200
	$ 8,806	$ 8,602	$ 8,036	$ 9,600	$ 9,600	$ 6,600	$ 51,244
Maintenance & Repair							
Ongoing Projects	$ 509						$ 509
New Projects							
	$ 509						$ 509
Mechanical Maintenance							
Ongoing Projects	$ 3,693	$ 3,514	$ 3,472				$ 10,679
New Projects	1,050	3,600	4,100	$ 4,100	$ 4,600	$ 600	18,050
	$ 4,743	$ 7,114	$ 7,572	$ 4,100	$ 4,600	$ 600	$ 28,729
Computer Systems							
Ongoing Projects	$ 10,586	$ 9,982	$ 7,142				$ 27,710
New Projects	700	950	2,150	$ 350	$ 175		4,325
	$ 11,286	$ 10,932	$ 9,292	$ 350	$ 175		$ 32,035
PLANT REPLACEMENT & RENOVATION							
General Plant							
Ongoing Projects	$ 3,046	$ 2,046	$ 360	$ 131			$ 5,583
New Projects	2,680	6,300	7,000	1,250	$ 250	$ 3,157	20,637
	$ 5,726	$ 8,346	$ 7,360	$ 1,381	$ 250	$ 3,157	$ 26,220
Water Works Park							
Ongoing Projects	$ 10,657	$ 9,060	$ 770				$ 20,487
New Projects	1,700	15,700	43,600	$ 47,950	$ 19,050	$ 42,500	170,500
	$ 12,357	$ 24,760	$ 44,370	$ 47,950	$ 19,050	$ 42,500	$ 190,987

WATER SUPPLY SYSTEM
1995-99 CAPITAL IMPROVEMENT PROGRAM
PROJECTED EXPENDITURES SPREAD BY FISCAL YEAR
PLANT REPLACEMENT AND RENOVATION - WATER WORKS PARK
NEW PROJECTS
(000)

Project Title	Contract No.	FAHIS No.	Type	1994-95	1995-96	1996-97	1997-98	1998-99	Remaining	Total
Water Works Park Rehabilitation Construction Scheduling			S/D	$ 200	$ 200	$ 200	$ 150			$ 750
Belle Isle/Water Works Park Intake Improvements	CS-1152	460101	C	500	500					1,000
Filter Building Facilities Rehabilitation	WW-519A		C	1,000	5,000	2,000				8,000
Filter Rehabilitation	WW-519C		C		10,000	27,000	18,000			55,000
Prechlorination/Fluoride Bldg. and Chlorine Process Rehab.	CS-1195		C			200	6,600	$ 8,400		15,200
Chemical Handling Process Rehab.	CS-1193		C			5,500	2,800			8,300
Rapid Mix, Slow Mix & Settling Facilities Rehabilitation	CS-1194		C			1,600	5,500	5,300		12,400
Wash Water Process & Building Rehabilitation	CS-1192		C			1,600	7,000	3,800		12,400
Screen House Building Rehab.	CS-1191		C			500	2,000			2,500
Water Works Park Reservoir No.1 Rehabilitation	CS-1197 WW-527		C			5,000	5,000			10,000
Facilities Rehabilitation - Stage 3			D				750	750		1,500
Facilities Rehabilitation - Stage 3			C						$ 15,000	15,000

WATER SUPPLY SYSTEM
1995-99 CAPITAL IMPROVEMENT PROGRAM
PROJECTED EXPENDITURES SPREAD BY FISCAL YEAR
PLANT REPLACEMENT AND RENOVATION - WATER WORKS PARK
NEW PROJECTS (Con't)
(000)

Project Title	Contract No.	FAHIS No.	Type	1994-95	1995-96	1996-97	1997-98	1998-99	Remaining	Total
Facilities Rehabilitation - Stage 4			D						$ 2,500	$ 2,500
Facilities Rehabilitation - Stage 4			C						25,000	25,000
Chlorine Bldg. Addition & Existing Facilities Rehabilitation	CS-1036		S/D				$ 150			150
Chlorine Bldg. Addition & Existing Facilities Rehabilitation	CS-1036		C					$ 800		800
TOTAL - Spread by Fiscal Year				$ 1,700	$ 15,700	$ 43,600	$ 47,950	$ 19,050	$ 42,500	$ 170,500
- By Year of Project Initiation				9,750	55,000	60,800	1,650	800	42,500	170,500

8" Transmission Main Extension

SE 18th Street to 129th Place SE, Tiffany Park.

CIP Project No:	25
Cost:	$240,000
Completion:	2015

7. ROLLING HILLS 490 ZONE

490 Zone Reservoir

Construct a second reservoir on the existing Rolling Hills Reservoir site with a capacity of 5.0 million gallons and an overflow elevation of 490. This reservoir will provide all of the storage deficit necessary in the 490 Zone for saturation. This reservoir also contains the standby storage necessary in the Rolling Hills 590 Zone, since constructing a ground level reservoir is less expensive than an elevated tank in the 590 Zone. (It should be noted that this reservoir is smaller than the reservoir recommended in the Rolling Hills Reservoir pre-design report. In the pre-design report, it was assumed that the reservoir construction would precede the construction of the Maplewood Facilities and the additional reservoir capacity was necessary to provide service when one reservoir was out of service for cleaning. We recommend that an amendment be prepared for the Rolling Hills Reservoir pre-design report which determines if this 5.0 million gallons should be constructed in one or more phases.) This project also includes installing a fourth pump in the No. Talbot Hill pump Station to raise pumping capacity into the zone by 2,300 gpm to meet saturation demand conditions. The remaining 5,000 gpm deficit will be provided by either the Maplewood Pump Station or the Scenic Hill Pump Station.

CIP Project No:	26
Cost:	$3,200,000
Completion:	1995

Scenic Hill Pump Station (located near City Hall)

Construct a booster pump station in the Scenic Hill area to pump from the Downtown 196 Zone to the Rolling Hills 490 Zone with a capacity of 5,000 gpm. The station will provide 5,000 gpm of the deficit supply requirement of 7,300 gpm for the 490 Zone. The remaining 2,300 gpm will be provided with the pump addition at the North Talbot Hill Pump Station. This Pump Station is necessary as a backup supply to the zone in the event that the Maplewood Booster is out of service. This project also includes water transmission lines from the Pump Station to the 490 Zone.

CIP Project:	23
Cost:	$2,991,000
Completion:	2010

12" Pipeline Extension

From Scenic Hill 490 Pump Station to Mill Avenue South, and from Pump station along railroad right-of-way.

wells is incorrect, additional wells will need to be constructed to match the system growth shown in TABLE 8-6.

CIP Project No:	20
Cost:	$3,527,000 (11 & 17 only)
Completion:	1992 (11 & 17 only)
Cost:	4,198,000 (10, 11 & 12)
Completion:	2000

Springbrook Springs Reclamation

Engineering investigation of reclamation alternatives and construction of facilities to restore the output from Springbrook Springs.

CIP Project No:	33
Cost:	$825,000
Completion:	2000

Repaint Mount Olivet Reservoir

Sand-blast and recoat interior and exterior of the existing Mount Olivet Reservoir.

CIP Project No:	15
Cost:	$200,000
Completion:	1990

Well 8 Electrical Upgrade

Rebuild the electrical and motor control system on existing Well No. 8.

CIP Project No:	67
Cost:	$120,000
Completion:	1990

16" Main Replacement

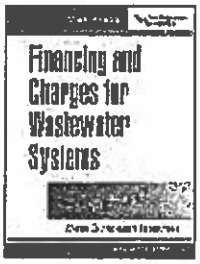
Park Avenue North from Bronson Way North to North 5th Street and 12" main replacement Wells Avenue North from the Wells Avenue Bridge to North 3rd Street.

CIP Project No:	8
Cost:	$701,000
Completion:	2005

12" Main Extension

Between South 192nd Street and SW 43rd Street, and the West Valley Highway and Talbot Road South. Construct new pressure zone as area develops.

Financing & Charges for Wastewater Systems - MOP 27



Order No: WPM402
Medium: Book
Publisher: WEFPress
Year: 2004

Focusing on issues of increasing urgency, this comprehensive manual of practice teaches the reader expert methods for handling all financial aspects of wastewater collection and treatment. Created and peer-reviewed by international authorities at the Water Environment Federation, *Financing and Charging for Wastewater Systems* delivers up-to-date options, tools, and techniques for managing assets, financing capital improvements, and developing rates and charges that accurately and fairly reflect costs of service.

Featuring numerous case studies of real-world applications, the guidebook explains and illustrates choices in methods of analysis, structuring, and equitable allocation of the costs of wastewater collection and treatment. *Financing and Charges for Wastewater Systems* untangles the complexities involved in integrating the multiple considerations entailed in developing fair cost allocations and rates for service, and provides tested methods for confronting complicated decisions. Of interest to utility managers, municipal officials, engineers, accountants, rate analysts, attorneys, and all others involved in this arena, this authoritative professional resource conveys sound financial strategies for managing functions of increasing consequence and cost. There is no better guide to the financial side of wastewater management. *Published by WEFPress. Hard cover. 300 pages. 2004.*

Contents:

- Institutional Issues
- Financial Management and Accounting for Wastewater Systems
- Financing Capital Improvements
- Determination of Revenue Requirements
- Allocating Costs of Services to Cost-Causative Components
- Distribution of Costs of Services to Customer Classes
- Development and Design of a Schedule of Rates and Charges
- Rates for Reuse or Reclaimed Water
- System Development Charges
- Implementing Rate Studies
- Affordability Utility Approach to Cost Allocation
- Municipal Utility Case Law

CASE : City of Pikeville

CASE NO : 2019-00080

RE : Public Service Commission Second Data Request to MWD

Q 4. Refer to the Mountain District's First Request, Item 29, and the Commission's Order in Case No. 2002-00022.1 Listed in Table II of the Order are miles of main that are jointly used by Mountain District and Pikeville.

a. Provide this information for the instant case.

b. If these miles of main are no longer in use by both Mountain District and Pikeville as jointly used lines, explain why.

WITNESS : CONNIE ALLEN, P.E.

RESPONSE Q4:

a. MWD cannot provide the information requested because it does not have the same hydraulic study information that was available in 2002. As discussed above, the City of Pikeville Rate Study of 2008 provided the same inch-mile data as the 2002 case. Pikeville made corrections to that study, but not to the inch-mile data. Without any additional current information from Pikeville, MWD can only assume that the 2002/2008 inch-mile data is the most accurate available. Because Pikeville prepared a hydraulic study for the 2002 case but chose not to provide the same detail in this case, MWD and the Commission can only rely on the verified data previously provided.

In Response to MWD's DR 1-29, Pikeville said it "...does not know why the number of miles for certain sized lines decreased between the information provided in 2002 and the current case. Pikeville believes it is using the most current and accurate data in this case." Given the lack of current, verifiable data about Pikeville's system, no conclusive determination can be made about the Pikeville transmission/distribution system.

b. See (a).

AFFIDAVIT

COMMONWEALTH OF KENTUCKY

COUNTY OF MERCER

Affiant, Connie Lea Allen, P.E., after being first sworn, deposes and says that she is authorized to submit this testimony on behalf of Mountain Water District and that the information contained in the testimony is true and accurate to the best of her knowledge, information and belief.

Connie Lea Allen, P.E.

This instrument was produced, signed, acknowledged and declared by Connie Lea Allen, P. E. to be her act and deed the 8th day of August, 2019.

Notary Public
Registration Number: 560434

My Commission expires: 7/23/2020

AFFIDAVIT

COMMONWEALTH OF KENTUCKY)
) SS
COUNTY OF MERCER)

Affiant, Roy Sawyers, appearing personally before me a notary public for and of the Commonwealth of Kentucky and after being first sworn, deposes, states, acknowledges, affirms and declares that he is the District Administrator, that he is authorized to submit this Response on behalf of Mountain Water District, and that the information contained in the Response is true and accurate to the best of his knowledge, information and belief, after a reasonable inquiry, and as to those matters that are based on information provided to him, he believes to be true and correct.

Roy B Sawyers

Roy Sawyers

This instrument was produced, signed, acknowledged and declared by Roy Sawyers to be his act and deed the 12th day of August, 2019.

Donna S. Mullins

Notary Public

Registration Number: 582338

My Commission expires: July 29, 2021