

Economic Synthesis of Water Rates in Delaware and Surrounding River Basins

August 21, 2000

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MEMORANDUM

TO: Water Purveyors (Distribution List)

FROM: Gerald J. Kauffman P.E., Water Resources Engineer

DATE: October 11, 2000

SUBJECT: Water Rate Inventory

Several months ago your office kindly provided tariff data for our update of an earlier water rate inventory of purveyors in Delaware and the surrounding states of Maryland, New Jersey, and Pennsylvania. Enclosed is the final report entitled: "Economic Synthesis of Water Rates in Delaware and Surrounding River Basins". The final report has been edited to incorporate review comments regarding the draft report. Should you have any questions or comments, please forward them by mail, fax, or email at jerryj@udel.edu by December 1, 2000. Thank you.

Distribution:

Joseph DiNunzio, Artesian Water Co.
Nancy Trushell, United Water Delaware
George Sarris, City of Newark
Chip Patterson, New Castle Board of Water and Light
Kash Srinivasan, City of Wilmington
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Stacy Fysz, City of Trenton
Frank Impagliazzo, New Jersey American Water Company
Billing Department, Perryville Department of Water
Beth Moran, City of Elkton

ACKNOWLEDGEMENTS

This report was prepared by Gerald J. Kauffman P.E., Water Resources Engineer with the University of Delaware, College of Human Services, Education, and Public Policy in the Institute for Public Administration, Water Resources Agency with assistance by Kareem Ali, Undergraduate Research Assistant with the WRA and a student in the University of Delaware, Bioresources Engineering Department. The authors would like to thank the public- and investor-owned water purveyors in Delaware and the surrounding States of Maryland, New Jersey, and Pennsylvania for providing the water rate data for this inventory. We hope the data compiled in this report will be used to optimize water supply management in Delaware.

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**ECONOMIC SYNTHESIS OF WATER RATES
IN DELAWARE AND SURROUNDING RIVER BASINS
October 11, 2000**

Introduction

The University of Delaware, Institute for Public Administration, Water Resources Agency (WRA) conducted an inventory of water rates for public- and investor-owned water utilities within Delaware and the surrounding states of Maryland, New Jersey, and Pennsylvania. The purpose of this inventory is to summarize and compare residential and wholesale water rates for Delaware and the surrounding mid-Atlantic region. The authors intend this report to be useful to water providers, Federal, State, and local water agencies and the public. This report is an update of the original water rate inventory conducted in September 1996.

Data Collection

The WRA obtained water rate data from the water utilities in each of the four states according to the following procedure. Over thirty utilities were contacted by telephone and by fax and were requested to forward published water rate data. Responses were received from 26 water purveyors. Once received by the WRA, the water data were summarized in a computer database using Excel 97. Appendix A contains the database which includes the name of the water utility, contact person, address, and residential and wholesale water rate information. Appendix B includes the water rate tariffs submitted by the water providers.

Methods

Once the water rate data were summarized in the database, the WRA computed typical rates based on residential and wholesale use. Residential water rates were computed assuming a quarterly residential use of 15,000 gallons per customer. Wholesale rates were obtained from published information and contracts between interconnected water supply utilities.

Quarterly residential rates were computed based on four factors: the service charge, fire protection fee, quarterly consumption rates, and quarterly use fees. The following formula was used to calculate residential average quarterly water charges for the inventory:

$$AQC = (SC) + (FP) + X(QCR) + (QU)$$

Where:

AQC = Average Quarterly Charge (\$/quarter)
SC = Service Charge (\$/quarter)
FP = Fire Protection Fee (\$/quarter)

X = Thousands of gallons used quarterly
QCR = Quarterly Consumption Rate (\$/1000 gal.)
QU = Quarterly Use Fee(\$/quarter)

Average quarterly water rates (\$/1000 gal.) were determined by computing the AQC, the average quarterly charge (\$/quarter) and dividing by 15 (based on 15,000 gallons per quarter).

For example residential water rates for the hypothetical Town of White Clay would be calculated as follows:

Given:

AQC = Average Quarterly Charge = \$? /quarter
SC = Service Charge = \$ 20.00/quarter
FP = Fire Protection Fee = \$ 5.00 /quarter
X = 15 thousand of gallons used quarterly
QCR = Quarterly Consumption Rate = \$ 2.00/1000 gal.
QU = Quarterly Use Fee = \$ 0 /quarter

So:

AQC = \$20.00 + \$5.00 + 15,000(\$2.00/1000 gal) + \$ 0.00
AQC = Average Quarterly Charge = \$ 55.00/quarter

And:

Average Quarterly Rate = \$ 55.00/15 = \$ 3.67/1000 gal.

Observations

Residential Water Rates

Among the water purveyors sampled in the four States, the average public sector residential water rates were about 40 percent lower than water rates in the investor-owned sector. For the 35 water rates tabulated, the mean water rate is \$ 3.29 per 1000 gallons and the minimum is 1.33 and the maximum is 5.88. For the 29 public water rates, the mean is \$ 2.97 per 1000 gallons and the minimum to maximum is 1.33 to 5.88. For the 6 investor-owned water rates, the mean is \$ 4.85 per 1000 gallons and the minimum to maximum is 4.10 to 5.36 (Table 1).

In Delaware, the average public water rates are half of the investor-owned water rates. The 18 public water purveyors in Delaware have a mean water rate of \$ 2.43 per 1000 gallons compared to the 3 investor-owned water rates where the mean is \$ 4.81 per 1000 gallons.

In the states of Maryland, New Jersey, and Maryland, the public water rates are 20 percent lower than the investor-owned water rates. The 11 public water purveyors sampled in these three states have a mean water rate of \$ 3.84 per 1000 gallons compared to the 3 investor-owned water rates where the mean is \$ 4.89 per 1000 gallons.

Wholesale Water Rates

The mean of the 12 wholesale water rates sampled is \$ 1.81 per 1000 gallons and the minimum to maximum is 0.24 to 3.61. Wholesale water is water sold from one water purveyor to another usually through an interconnected water main pipe system.

TABLE 1
Residential Water Rate Statistical Summary
January 2000

Water Purveyor Category	Population (n)	Mean (\$/1000 gal.)	Min. - Max. (\$/1000 gal.)
Delaware			
Public	18	2.43	1.33 - 3.67
Investor-owned	3	4.81	4.64 - 4.90
MD, NJ, MD			
Public	11	3.84	1.62 - 5.88
Investor-owned	3	4.89	4.10 - 5.36
Total	35	3.29	1.33 - 5.88
Public	29	2.97	1.33 - 5.88
Investor-owned	6	4.85	4.10 - 5.36

TABLE 2
Residential Water Rates in Delaware
January 2000

Purveyor	Average Quarterly Charge (\$)	Average Quarterly Rate* (\$/1000 gal.)
<u>New Castle County</u>		
Artesian Water Company	69.60	4.64
Delaware City	47.10	3.14
Newark		
Inside city (Dec-Aug)	27.26	1.82
Inside city (Sep-Nov)	31.60	2.11
Outside city (Dec-Aug)	36.43	2.43
Outside city (Sep-Nov)	42.33	2.82
NC Board of Water & Light	51.05	3.40
Tidewater Utilities	73.37	4.89
United Water Delaware	73.44	4.90
Wilmington		
Inside city	25.47	1.70
Outside city	42.90	2.86
<u>Kent County</u>		
Dover		
Inside city	28.50	1.90
Outside city	42.75	2.85
<u>Sussex County</u>		
Georgetown	41.25	2.75
Lewes	25.80	1.72
Milford	35.00	2.33
Rehoboth		
In town rates (Oct-Mar)	20.00	1.33
In town rates (Apr-Sep)	27.50	1.83
Out of town rates (Oct-Mar)	40.00	2.67
Out of town rates,(Apr-Sep)	55.00	3.67
Sussex County DPW	36.75	2.45

* Quarterly residential water use of 15,000 gallons per customer

TABLE 3

Residential Water Rates in Pennsylvania
January 2000

Purveyor	Average Quarterly Charge (\$)	Average Quarterly Rate* (\$/1000 gal.)
Chester Water Authority (East)	63.00	4.20
Chester Water Authority (West)	79.95	5.33
City of Coatesville Authority	88.20	5.88
Downingtown MWA	86.25	5.75
North Wales Water Authority	66.00	4.40
Penn Gas & Water (Scranton)	65.20	4.35
Phila. Suburb. Water Co. (main)	80.40	5.36
Philadelphia Water Department	32.49	2.17

* Quarterly residential water use of 15,000 gallons per customer

TABLE 4

Residential Water Rates in New Jersey
January 2000

Purveyor	Average Quarterly Charge (\$)	Average Quarterly Rate* (\$/1000 gal.)
Camden	55.52	3.70
NJ American Water Company	78.24	5.22
Salem	43.37	2.89
Trenton	49.08	3.27

* Quarterly residential water use of 15,000 gallons per customer

TABLE 5
Residential Water Rates in Maryland
January 2000

Purveyor	Average Quarterly Charge (\$)	Average Quarterly Rate* (\$/1000 gal.)
Elkton	24.30	1.62
Perryville	45.00	3.00

* Quarterly residential water use of 15,000 gallons per customer

TABLE 6
Wholesale Water Rate Inventory
January 2000

Water Utility	Wholesale Rate (\$/1000 gallons)
Artesian Water Company (to United Water Delaware)	2.29
Artesian Water Company (to Newark)	3.05
Camden, NJ	3.34
Chester Water Authority (to Artesian)	1.97
Chester Water Authority (to United Water)	1.59
New Castle Board of Water & Light (to Artesian)	1.16
Trenton, NJ	3.61
United Water Delaware (to Newark)	1.69
Wilmington (to Artesian Water Company)	1.15
Wilmington (Hoopes Reservoir raw to United Water)	0.24
Wilmington (Finished to United Water Delaware)	1.25
Philadelphia Water Dept. (to Bucks County)	0.45
Mean	1.81

APPENDIX A

Residential Water Rate Data Base

**Appendix A
Residential Water Rate Data**

6-Jan-00

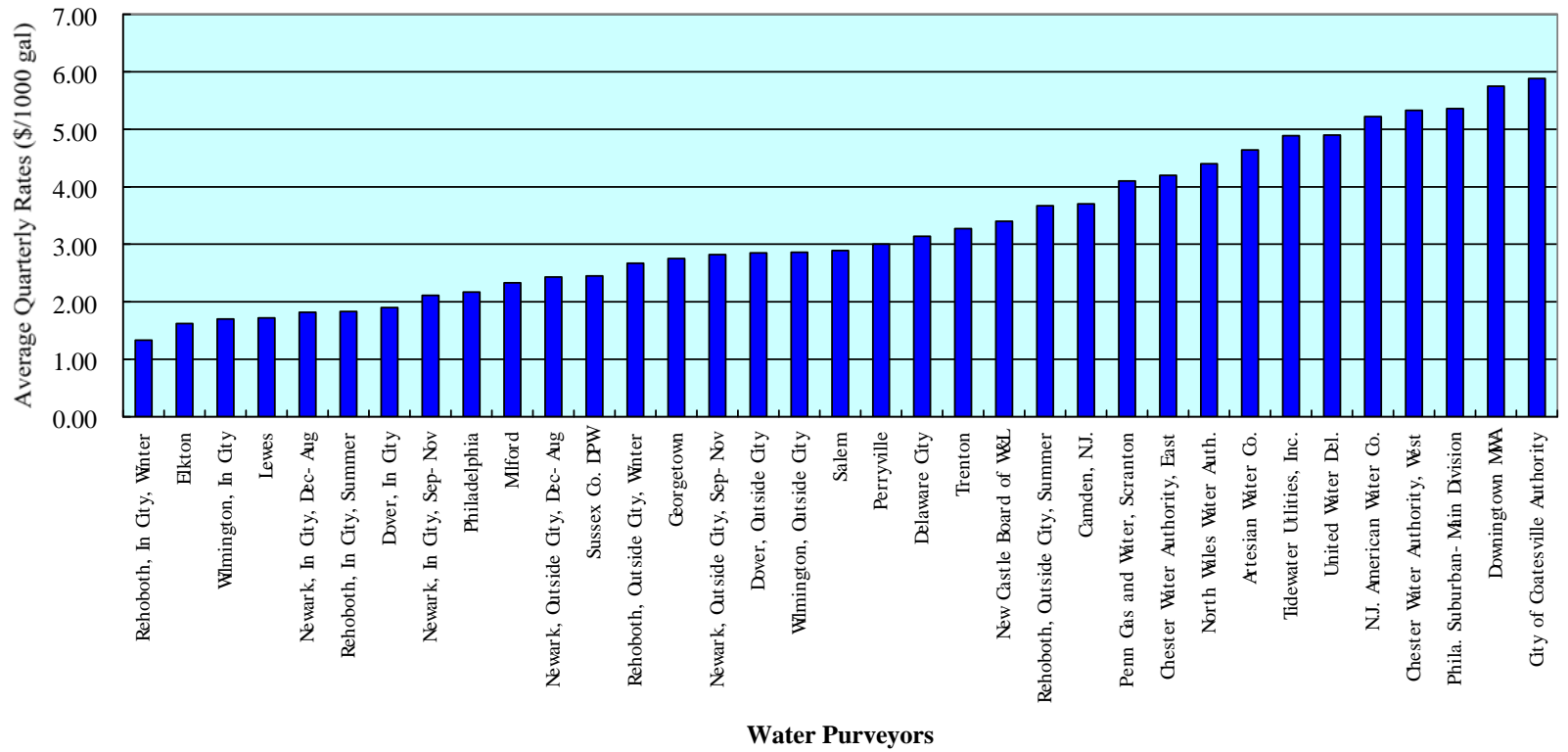
Water Utility (Delaware)	Contact				Verbal	Informa tion	Effect ive	A	B	C	D	E	A+B+C+ D+E=F	F/15= G	
	Person	Address	Phone #	Fax #	Reque st Date	Recei ved Date	Date of Water Rate	Servic e	Fire	Quarterly	Quarter	Avg.	Quarter	Avg. Quarter	
								Charge (\$)	Protect (\$)	Rate (\$)	Rate (\$)	Quarter Use Fee (\$)	Quarter Charge (\$)	Rate (\$/1000)	
Artesian Water Co.	Joseph DiNunzio	664 Churchman's Rd. Newark, DE 19702	(302) 453-6900	(302) 453-6957	3-9-1999	4-6-1999	5-12-1998	20.06	5.07	2.86 x 5 = 14.3 (0-5000 gal)	3.047 x 10 = 30.47 (5,001-15,000 gal)	0.00	69.60	4.64	
United Water Del	Nicole	P.O. Box 6508 Wilmington, DE 19804 2000 First S First St. Ind. Pk	(302) 633-5905	(302) 633-5910	3-9-1999	3-10-1999	5-11-1998	28.35	6.42	2.578 x 15 = 38.67		0.00	73.44	4.90	
City of Newark	Carol Timmenay	220 Elkton Rd. Newark, DE 19711	(302) 366-7158	(302) 366-7067	3-9-1999	07/01/99	07/01/99	0.00	0.00	1.66 x 9.5 = 15.77 (0-9500 gal)	2.09 x 5.5 = 11.49 (9501 - 15,000 gal)	0.00	27.26	1.82	
										Inside City (12/1-8/31)					
										Inside City (9/1-11/30)					
										Outside City (12/1-8/31)					
									1.92 x 9.5 = 18.24 (0-9500 gal)	2.43 x 5.5 = 13.36 (9501 - 15,000 gal)	0.00	31.60	2.11		
									2.19 x 9.5 = 20.81 (0-9500 gal)	2.84 x 5.5 = 15.62 (9501 - 15,000 gal)	0.00	36.43	2.43		
									2.54 x 9.5 = 24.13 (0-9500 gal)	3.31 x 5.5 = 18.20 (9501 - 15,000 gal)	0.00	42.33	2.82		
New Castle Board of Water & Light	Chip Patterson	216 Chestnut St. New Castle, DE 19720-	(302) 323-2332	(302) 323-2337	3-9-1999	3-9-1999	7-1-1985	5.00	0.00	3.07 x 15 = 46.05		0.00	51.05	3.40	
City of Wilmington	Linda Gibbs	800 French St. Wilmington, DE 19801	(302) 571-4320	(302) 571-1955	3-9-1999			0.00	0.00	1.698 x 15 = 25.47		0.00	25.47	1.70	
										Inside City					
								0.00	0.00	2.86 x 15 = 42.9		0.00	42.90	2.86	
Tidewater Utilities	Kathleen Shields	603 Main St. Odessa, DE 19730 P.O. Box 1000 Odessa, DE 19730-1000	(302) 376-1501	(302) 376-1510	3-9-1999	3-15-1999	9-1-1991	37.37	4.50	2.1 x 15 = 31.50		0.00	73.37	4.89	

City of Delaware City	Paul Morrill	407 Clinton St. Delaware City, DE 19706	(302) 834-4573	(302)	3-9-1999	4-6-1999	10-1-1997	22.50	0.00	1.64 x 15 = 24.60	0.00	47.10	3.14	
City of Dover	Candy Breeding	5 East Reed St. Dover, DE 19901 P.O. Box 475 Dover, DE 19903	(302) 736-7035	(302) 736-7193	3-9-1999	3-11-1999	4-1-1995							
	Inside City							0.00	0.00	1.9 x 15 = 28.5	0.00	28.50	1.90	
	Outside City							0.00	0.00	2.85 x 15 = 42.75	0.00	42.75	2.85	
Town of Georgetown	Debbie Pfeil	39 The Circle Georgetown, DE 19947	(302) 856-7391	(302) 856-6348	3-9-1999	3-12-1999	07/01/95	0.00	0.00	2.75 x 15 = 41.25	0.00	41.25	2.75	
Lewes Board of Public Works	Maria Donofrio	P.O. Box 518 Lewes, DE 19958	(302) 645-6228	(302) 645-6358	3-9-1999	3-12-1999	10-1-1996	1.50	0.00	0.9 x 15 = 13.50	10.80	25.80	1.72	
City of Rehoboth	Greg Ferrese	229 Rehoboth Ave. Post Office Box C Rehoboth, DE 19971	(302) 227-6181	(302) 227-4643	3-9-1999	3-22-1999	7-1-1994							
	In Town City Rates: Winter (Oct-Mar)							8.00	0.00	0.8 x 15 = 12.00	0.00	20.00	1.33	
	Summer (Apr-Sep)							8.00	0.00	1.3 x 15 = 19.5	0.00	27.50	1.83	
	Out of Town Rates: Winter(Oct-Mar)							16.00	0.00	1.6 x 15 = 24.00	0.00	40.00	2.67	
	Summer (Apr-Sep)							16.00	0.00	2.6 x 15 = 39.00	0.00	55.00	3.67	
Sussex County DPW	Leon Collins	P.O. Box 601 Race & Pine St. Georgetown, DE 19947	(302) 855-7871	(302) 854-5381	3-9-1999	3-25-1999	7-1-1998	0.00	0.00	2.45 x 15 = 36.75	0.00	36.75	2.45	
City of Milford	Bea Moore	P.O. Box 159 Milford, DE 19963	(302) 422-6616	(302) 422-1120	3-9-1999	3-11-1999	1-13-1997	0.00	0.00	3.00 x 5 = 15.00 (0 - 5000 gal)	2.2 x 5 = 11.00 (5001 - 10,000 gal)	1.8 x 5 = 9.00 (10,001-15,000 gal)	35.00	2.33
Philadelphia Suburban Water Co. Main Division	Robert Griffin	7621 Lancaster Ave. Bryn Mawr, PA 19010	(610) 645-1130	(610) 645-1055	3-9-1999	3-12-1999	10-24-1997	19.50	0.00	4.06 x 15 = 60.9	0.00	80.40	5.36	
Philadelphia Water Dept.	James Aleo	1101 Market St. Floor-5 Philadelphia, PA 19107	(215) 685-6166	(215) 685-6162	3-9-1999	3-9-1999	7-1-1995	8.04	0.00	1.63 x 15 = 24.45	0.00	32.49	2.17	
Chester Water Authority	Kim Koterba	P.O. Box 467 Chester, PA	(610) 876-8181	(610) 876-1657	3-9-	3-17-	9-1-1996							

		19013			1999	1999								
* Village-Green East									16.50	12.90	2.24 x 15 = 33.6	0.00	63.00	4.20
* Village-Green West									16.50	17.40	3.07 x 15 = 46.05	0.00	79.95	5.33
Downingtown Municipal Water Authority	Lucy Miller	P.O. Box 184 Downingtown, PA 19335-	(610) 269-0128	(610) 269-2329	3-9-1999	3-11-1999			0.00	0.00	5.75 x 15 = 86.25	0.00	86.25	5.75
Penn Gas & Water *Scranton	Mrs. Ellis	39 Public Square Wilkes Barre, PA 18761	(717) 961-8771	(717) 829-8652	3-9-1999	6-26-95			0.00	0.00	4.1 x 15 = 61.5	0.00	61.50	4.10
City of Coatesville Authority (Coatesville/Octoraro)	Patty Hudock	114 E. Lincoln Hwy. Coatesville, PA 19320	(610) 384-4400 ext 125	(610) 380-8532	3-9-1999	3-11-1999	10-1-1993		5.85	0.00	5.49 x 15 = 82.35	0.00	88.20	5.88
North Wales Water Authority	Tod von Mechaw	200 W. Walnut St. North Wales, PA 19454	(215) 699-4836	(215) 616-5598	3-9-1999	3-16-1999	11-1-1994		12.00	0.00	3.6 x 15 = 54	0.00	66.00	4.40
City of Salem	Delores Frey	1 New Market St. Salem, NJ 08079	(609) 935-0371	(609) 935-6360	3-9-1999	3-11-1999	1-1-1997		0.00	0.00	43.37 per qtr.	0.00	43.37	2.89
City of Camden	Sam Werntz	North Branch, NJ 08876 P.O. Box 5489	1-800 334-9781	(609) 541-3199	3-9-1999	3-18-1999	4-1-1996		17.42	0.00	2.54 x 15 = 38.1 (0-29,920 gal)		55.52	3.70
City of Trenton	Stacy A. Fysz	333 Courtland Trenton, NJ 08638	(609) 989-3208	(609) 989-3943	3-9-1999	3-17-1999	10-15-1998		27.78	0.00	1.42 x 15 = 21.3	0.00	49.08	3.27
N.J. American Water Co.	Frank Impagliazzo	500 Grove Street Haddon Heights, NJ 08035	(609) 547-3211	(609) 787-4858	3-9-1999	4-21-1999	4-6-1999		18.54	0.00	3.98 x 15 = 59.7	0.00	78.24	5.22
Perryville Dept. of Water	Billing Department	P.O. Box 773 Perryville, MD 21903	(410) 692-6066	(410) 642-6391	3-9-1999	7-27-95			0.00	0.00	3 x 15 = 45.00	0.00	45.00	3.00
City of Elkton	Beth Moran	107 North St. Elkton, MD 21921	(410) 398-4170	(410) 392-6633	3-9-1999	3-9-1999	7-1-1995		16.20	0.00	1.62 x 5 = 8.1 (10,001 - 15,000 gal)	0.00	24.30	1.62

* Based on assumed quarterly residential water-use of 15,000 gallons per customer

Average Quarterly Residential Water Rates (15,000 gal. per quarter)



APPENDIX B

Water Rate Tariffs Submitted by the Water Purveyors

(for hard copies please contact Gerald Kauffman at jerryk@udel.edu)