



Frankfort Plant Board

Water
Cable
Electric
Security
Local Phone
Digital Cable
Long Distance
Community TV
Ethernet/Internet
Cable Modem/ISP
Cable Advertising

September 17, 2014

RECEIVED

SEP 17 2014

PUBLIC SERVICE
COMMISSION

Mr. Jeff Derouen, Executive Director
Kentucky Public Service Commission
211 Sower Blvd.
P.O. Box 615
Frankfort, KY 40602-0615

RE: Case No. 2014-00254

Dear Mr. Derouen:

Enclosed for filing please find an original and six (6) copies of the Supplemental Response to the Attorney General's Initial Data Requests dated August 19, 2014.

I appreciate your assistance. If you have any questions or require additional information, please contact me at (502) 352-4541 or hprice@fewpb.com.

Sincerely,

Hance Price

Hance Price
Staff Attorney

HP/kp

Enclosures

cc: Donald T. Prather, Esq.
Raymond Edelman, Esq.
Jennifer Black Hans, Esq.
Gregory T. Dutton, Esq.

Equal Opportunity/Affirmative Action Employer

317 West Second Street (P.O. Box 308) Frankfort, Kentucky 40602 Phone (502) 352-4372
Fax (502) 223-3887 www.fpb.cc

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

RECEIVED

In the Matter of:

SEP 17 2014

PUBLIC SERVICE
COMMISSION

PROPOSED ADJUSTMENT OF THE WHOLESALE)
WATER SERVICE RATES OF FRANKFORT) CASE NO. 2014-00254
ELECTRIC AND WATER PLANT BOARD)

FEWPB'S RESPONSE TO ATTORNEY GENERAL'S INITIAL DATA REQUESTS

4. Reference KRS 278.015(2) and 807 KAR 5:068 Section 2. Confirm that if not for this proceeding, end-user ratepayers of the water districts affected by this wholesale rate increase would have no transparent and public mechanism for challenging the subsequent pass-through rate increases.

Witness(es): Herbbie Bannister, David Denton, David Billings

Response: Attached

22. Reference: Cost of Service Study, Sch. B, p. 4.

a. Why are Debt Service on 2013 Bonds, Coverage on 2013 Bonds, and Debt Service on KIA Loans allocated using factor 2 instead of factor 17?

b. For each loan, please provide a workpaper showing separately interest expense, repayment (or amortization) of principal, and total debt service.

Witness(es): Paul R. Herbert, Connie Heppenstall, David Denton

Response: Attached

23. Reference: Cost of Service Study, Sch. C, p. 2. Please provide the specific calculations, data, and assumptions used to determine the maximum day ratio

for each customer class. Please supply any and all spreadsheets and workpapers with data in all cells and rows fully intact and fully accessible.

Witness(es): Paul R. Herbert, Connie Heppenstall

Response: Attached

24. Reference: Cost of Service Study, Sch. C, p. 4. How was it determined that the maximum fire demand is 5,000 gallons per minute for a duration of four hours? Please provide any associated calculations, studies, and workpapers with data in all cells and rows fully intact and fully accessible.

Witness(es): Paul R. Herbert, Connie Heppenstall

Response: Attached

26. Reference: Cost of Service Study, Sch. C, p. 6. Please provide the specific calculations, data, and assumptions used to determine the maximum hour ratio for each customer class.

Witness(es): Paul R. Herbert, Connie Heppenstall

Response: Attached

29. Reference: Cost of Service Study, Sch. C, p. 19.

a. Are the figures shown for Utility Plant in Service gross plant figures or net plant figures (that is, net of accrued depreciation and contributions)?

b. If they are gross plant figures, please provide comparable schedules showing accrued depreciation, customer contributions, and contributions in aid of construction. Please provide this information in an electronic spreadsheet file with data in all cells and rows fully intact and fully accessible.

c. If they are net plant figures, please provide an electronic workpaper with data in all cells and rows fully intact and fully accessible showing the calculation of net plant, taking into account gross plant, accrued depreciation, customer contributions, and contributions in aid of construction.

Witness(es): Paul R. Herbert, Connie Heppenstall, David Denton

Response: Attached

32. Reference Herbert Testimony page 5, lines 152-154.

a. What steps is FPB taking to minimize purchased electrical power costs?

b. What steps is FPB taking to minimize treatment chemical costs?

Witness(es): Paul R. Herbert, Connie Heppenstall, David Billings

Response: Attached

33. What specific steps has FPB taken to limit water loss since 2008?

Witness(es): David Billings

Response: Attached

35. Reference Herbert Testimony page 7, lines 186-192.

a. Does FPB use mains anywhere on its system larger than 10 inches for distribution? Where?

b. Does FPB use mains anywhere on its system 10 inches or smaller for transmission? Where?

Witness(es): Paul R. Herbert, Connie Heppenstall, David Billings

Response: Attached

CERTIFICATION

I, Hance Price, certify that I am the attorney supervising the preparation of these Responses on behalf of the Frankfort Electric and Water Plant Board and that the Responses and attachments thereto are true and accurate to the best of my knowledge, information and belief formed after reasonable inquiry.

Respectfully Submitted,

Hance Price

Hance Price
317 West Second Street
Frankfort, Kentucky 40601

Attorney for Frankfort Electric and
Water Plant Board

This the 17th day of September, 2014.

CERTIFICATE OF SERVICE

I, Hance Price, certify that on the 17th day of September, 2014 an original and six (6) copies of FEWPB's Supplemental Response to the Attorney General's Initial Data Requests dated August 19, 2014 was served by hand delivery to:

Mr. Jeff Derouen, Executive Director
Kentucky Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, KY 40602-0615

Counsel further certifies that true and accurate copies of the Supplemental Response were served by mail to:

Kentucky Attorney General's Office
Hon. Jennifer Black Hans
Hon. Gregory T. Dutton
Assistant Attorneys General
1024 Capital Center Drive
Suite 200
Frankfort, KY 40601

Hon. Donald T. Prather
500 Main Street, Suite 5
Shelbyville, KY 40065

Hon. Raymond Edelman
148 South Main Street
Lawrenceburg, KY 40342

Hance Price
Hance Price

Frankfort Electric and Water Plant Board

Supplemental Responses to

Attorney General's Initial Data Requests

dated August 19, 2014

Case No. 2014-00254

PSC CASE NO. 2014-00254

ITEM 4

Frankfort Electric and Water Plant Board
Supplemental Responses to
Attorney General's Initial Data Requests dated August 19, 2014
Case No. 2014-00254

ITEM 4: Reference KRS 278.015(2) and 807 KAR 5:068 Section 2. Confirm that if not for this proceeding, end-user ratepayers of the water districts affected by this wholesale rate increase would have no transparent and public mechanism for challenging the subsequent pass-through rate increases.

Response: FPB restates its objection to Item 4. Item 4 demands an interpretation of KRS 278.015(2) and 807 KAR 5:068 Section 2. It seeks no data or facts. Rather, based in the statute, it seeks to determine whether the districts' customers could challenge the rate increase. This calls for a legal conclusion and does not require a response. Jewish Hospital Assoc. v. Struck Constr. Co., 77 F.R.D. 59, 60 (W.D. Ky. 1978).

Frankfort Electric and Water Plant Board
Supplemental Responses to
Attorney General's Initial Data Requests
dated August 19, 2014
Case No. 2014-00254

PSC CASE NO. 2014-00254

ITEM 22

Frankfort Electric and Water Plant Board
Supplemental Responses to
Attorney General's Initial Data Requests dated August 19, 2014
Case No. 2014-00254

ITEM 22: Reference: Cost of Service Study, Sch. B, p. 4.

- a. Why are Debt Service on 2013 Bonds, Coverage on 2013 Bonds, and Debt Service on KIA Loans allocated using factor 2 instead of factor 17?
- b. For each loan, please provide a workpaper showing separately interest expense, repayment (or amortization) of principal, and total debt service.

Response: b. See Attachment

ELECTRIC AND WATER PLANT BOARD
ELECTRIC AND WATER REFUNDING REVENUE BONDS
SERIES 2009

Sinking Fund Schedule

Date	Principal Sinking Fund Deposit	Interest Sinking Fund Deposit	Total P & I Sinking Fund Deposits	Principal Withdrawals	Interest Withdrawals	P & I Sinking Fund Balance
12/20/2009	75,833.34	21,977.32	97,810.66			97,810.66
01/20/2010	75,833.34	21,977.32	97,810.66			195,621.32
02/20/2010	75,833.34	21,977.32	97,810.66			293,431.98
03/20/2010	75,833.34	21,977.32	97,810.66			391,242.64
04/20/2010	75,833.34	21,977.32	97,810.66			489,053.30
05/20/2010	75,833.34	21,977.32	97,810.66			586,863.96
06/01/2010					(131,863.89)	455,000.07
06/20/2010	75,833.34	24,724.47	100,557.81			555,557.88
07/20/2010	75,833.34	24,724.47	100,557.81			656,115.69
08/20/2010	75,833.33	24,724.47	100,557.80			756,673.49
09/20/2010	75,833.33	24,724.47	100,557.80			857,231.29
10/20/2010	75,833.33	24,724.47	100,557.80			957,789.09
11/20/2010	75,833.33	24,724.47	100,557.80			1,058,346.89
12/01/2010				(916,000.00)	(148,346.88)	0.00
12/20/2010	77,916.67	23,207.81	101,124.48			101,124.48
01/20/2011	77,916.67	23,207.81	101,124.48			202,248.97
02/20/2011	77,916.67	23,207.81	101,124.48			303,373.45
03/20/2011	77,916.67	23,207.81	101,124.48			404,497.93
04/20/2011	77,916.67	23,207.81	101,124.48			505,622.41
05/20/2011	77,916.67	23,207.81	101,124.48			606,746.89
06/01/2011					(139,346.88)	467,500.01
06/20/2011	77,916.67	23,207.81	101,124.48			568,624.49
07/20/2011	77,916.67	23,207.81	101,124.48			669,748.97
08/20/2011	77,916.67	23,207.81	101,124.48			770,873.45
09/20/2011	77,916.67	23,207.81	101,124.48			871,997.93
10/20/2011	77,916.67	23,207.81	101,124.48			973,122.41
11/20/2011	77,916.67	23,207.81	101,124.48			1,074,246.89
12/01/2011				(935,000.00)	(139,246.88)	0.00
12/20/2011	79,166.67	21,649.48	100,816.15			100,816.16
01/20/2012	79,166.67	21,649.48	100,816.15			201,632.31
02/20/2012	79,166.67	21,649.48	100,816.15			302,448.46
03/20/2012	79,166.67	21,649.48	100,816.15			403,264.61
04/20/2012	79,166.67	21,649.48	100,816.15			504,080.76
05/20/2012	79,166.67	21,649.48	100,816.15			604,896.91
06/01/2012					(129,896.88)	475,000.03
06/20/2012	79,166.67	21,649.48	100,816.15			575,816.18
07/20/2012	79,166.67	21,649.48	100,816.15			676,632.33
08/20/2012	79,166.67	21,649.48	100,816.15			777,448.48
09/20/2012	79,166.67	21,649.48	100,816.15			878,264.63
10/20/2012	79,166.67	21,649.48	100,816.15			979,080.78
11/20/2012	79,166.67	21,649.48	100,816.15			1,079,896.93
12/01/2012				(950,000.00)	(129,896.88)	0.00
12/20/2012	81,250.00	20,066.15	101,316.15			101,316.20
01/20/2013	81,250.00	20,066.15	101,316.15			202,632.35
02/20/2013	81,250.00	20,066.15	101,316.15			303,948.50
03/20/2013	81,250.00	20,066.15	101,316.15			405,264.65
04/20/2013	81,250.00	20,066.15	101,316.15			506,580.80
05/20/2013	81,250.00	20,066.15	101,316.15			607,896.95
06/01/2013					(120,396.88)	487,500.07
06/20/2013	81,250.00	20,066.13	101,316.13			588,816.20
07/20/2013	81,250.00	20,066.13	101,316.13			690,132.33
08/20/2013	81,250.00	20,066.13	101,316.13			791,448.46
09/20/2013	81,250.00	20,066.14	101,316.14			892,764.60
10/20/2013	81,250.00	20,066.14	101,316.14			994,080.74
11/20/2013	81,250.00	20,066.14	101,316.14			1,095,396.88
12/01/2013				(975,000.00)	(120,396.88)	0.00
12/20/2013	83,333.33	18,034.90	101,368.23			101,368.23
01/20/2014	83,333.33	18,034.90	101,368.23			202,736.46
02/20/2014	83,333.33	18,034.90	101,368.23			304,104.69
03/20/2014	83,333.33	18,034.90	101,368.23			405,472.92
04/20/2014	83,333.33	18,034.90	101,368.23			506,841.15
05/20/2014	83,333.33	18,034.90	101,368.23			608,209.38
06/01/2014					(108,209.38)	500,000.00
06/20/2014	83,333.33	18,034.90	101,368.23			601,368.23
07/20/2014	83,333.33	18,034.90	101,368.23			702,736.46
08/20/2014	83,333.33	18,034.90	101,368.23			804,104.69
09/20/2014	83,333.33	18,034.90	101,368.23			905,472.92
10/20/2014	83,333.33	18,034.90	101,368.23			1,006,841.15
11/20/2014	83,333.33	18,034.90	101,368.23			1,108,209.38

ELECTRIC AND WATER PLANT BOARD
ELECTRIC AND WATER REFUNDING REVENUE BONDS
SERIES 2009

Sinking Fund Schedule

Date	Principal Sinking Fund Deposit	Interest Sinking Fund Deposit	Total P & I Sinking Fund Deposits	Principal Withdrawals	Interest Withdrawals	P & I Sinking Fund Balance
12/01/2013				(1,000,000.00)	(108,209.38)	0.00
12/20/2014	85,416.67	15,743.23	101,159.90			101,159.90
01/20/2015	85,416.67	15,743.23	101,159.90			202,319.80
02/20/2015	85,416.67	15,743.23	101,159.90			303,479.70
03/20/2015	85,416.67	15,743.23	101,159.90			404,639.60
04/20/2015	85,416.67	15,743.23	101,159.90			505,799.50
05/20/2015	85,416.67	15,743.23	101,159.90			606,959.40
06/01/2015					(64,459.38)	542,500.02
06/20/2015	85,416.67	15,743.23	101,159.90			643,659.92
07/20/2015	85,416.67	15,743.23	101,159.90			744,819.82
08/20/2015	85,416.67	15,743.23	101,159.90			845,979.72
09/20/2015	85,416.67	15,743.23	101,159.90			947,139.62
10/20/2015	85,416.67	15,743.23	101,159.90			1,048,299.52
11/20/2015	85,416.67	15,743.23	101,159.90			1,149,459.42
12/01/2015				(1,025,000.00)	(94,459.38)	0.00
12/20/2015	88,333.33	13,180.73	101,514.06			101,514.10
01/20/2016	88,333.33	13,180.73	101,514.06			203,028.16
02/20/2016	88,333.33	13,180.73	101,514.06			304,542.22
03/20/2016	88,333.33	13,180.73	101,514.06			406,056.28
04/20/2016	88,333.33	13,180.73	101,514.06			507,570.34
05/20/2016	88,333.33	13,180.73	101,514.06			609,084.40
06/01/2016					(79,084.38)	529,000.02
06/20/2016	88,333.33	13,180.73	101,514.06			631,514.08
07/20/2016	88,333.33	13,180.73	101,514.06			733,028.14
08/20/2016	88,333.33	13,180.73	101,514.06			834,542.20
09/20/2016	88,333.33	13,180.73	101,514.06			936,056.26
10/20/2016	88,333.33	13,180.73	101,514.06			1,037,570.32
11/20/2016	88,333.33	13,180.73	101,514.06			1,139,084.38
12/01/2016				(1,050,000.00)	(79,084.38)	0.00
12/20/2016	91,250.00	10,309.90	101,559.90			101,559.90
01/20/2017	91,250.00	10,309.90	101,559.90			203,119.80
02/20/2017	91,250.00	10,309.90	101,559.90			304,679.70
03/20/2017	91,250.00	10,309.90	101,559.90			406,239.60
04/20/2017	91,250.00	10,309.90	101,559.90			507,799.50
05/20/2017	91,250.00	10,309.90	101,559.90			609,359.40
06/01/2017					(61,859.38)	547,500.02
06/20/2017	91,250.00	10,309.90	101,559.90			649,059.92
07/20/2017	91,250.00	10,309.90	101,559.90			750,619.82
08/20/2017	91,250.00	10,309.90	101,559.90			852,179.72
09/20/2017	91,250.00	10,309.90	101,559.90			953,739.62
10/20/2017	91,250.00	10,309.90	101,559.90			1,055,299.52
11/20/2017	91,250.00	10,309.90	101,559.90			1,156,859.42
12/01/2017				(1,095,000.00)	(61,859.38)	0.00
12/20/2017	94,583.33	7,116.15	101,699.48			101,699.52
01/20/2018	94,583.33	7,116.15	101,699.48			203,399.00
02/20/2018	94,583.33	7,116.15	101,699.48			305,098.48
03/20/2018	94,583.33	7,116.15	101,699.48			406,797.96
04/20/2018	94,583.33	7,116.15	101,699.48			508,497.44
05/20/2018	94,583.33	7,116.15	101,699.48			610,196.92
06/01/2018					(42,696.88)	567,500.04
06/20/2018	94,583.33	7,116.15	101,699.48			669,199.52
07/20/2018	94,583.33	7,116.15	101,699.48			770,899.00
08/20/2018	94,583.33	7,116.15	101,699.48			872,598.48
09/20/2018	94,583.33	7,116.15	101,699.48			974,297.96
10/20/2018	94,583.33	7,116.15	101,699.48			1,075,997.44
11/20/2018	94,583.33	7,116.15	101,699.48			1,177,696.92
12/01/2018				(1,135,000.00)	(42,696.88)	0.00
12/20/2018	98,333.33	3,687.50	102,020.83			102,020.87
01/20/2019	98,333.33	3,687.50	102,020.83			204,041.70
02/20/2019	98,333.33	3,687.50	102,020.83			306,062.53
03/20/2019	98,333.33	3,687.50	102,020.83			408,083.36
04/20/2019	98,333.33	3,687.50	102,020.83			510,104.19
05/20/2019	98,333.33	3,687.50	102,020.83			612,125.02
06/01/2019					(22,125.00)	589,000.02
06/20/2019	98,333.33	3,687.50	102,020.83			691,020.85
07/20/2019	98,333.33	3,687.50	102,020.83			793,041.68
08/20/2019	98,333.33	3,687.50	102,020.83			895,062.51
09/20/2019	98,333.33	3,687.50	102,020.83			997,083.34
10/20/2019	98,333.33	3,687.50	102,020.83			1,100,104.17
11/20/2019	98,333.33	3,687.50	102,020.83			1,202,125.00
12/01/2019				(1,180,000.00)	(22,125.00)	0.00
Total	\$10,265,000.00	\$1,876,160.85	\$12,141,160.85	(10,265,000.00)	(1,876,160.85)	

Final

\$3,920,000

Electric and Water Plant Board
of the City of Frankfort
Electric and Water Revenue Bonds, Series 2013

Debt Service Schedule

Date	Principal	Coupon	Interest	Total P+I	Fiscal Total
09/12/2013	-	-	-	-	-
12/01/2013	-	-	22,512.26	22,512.26	-
06/01/2014	-	-	51,293.75	51,293.75	-
06/30/2014	-	-	-	-	73,806.01
12/01/2014	355,000.00	2.000%	51,293.75	406,293.75	-
06/01/2015	-	-	47,743.75	47,743.75	-
06/30/2015	-	-	-	-	454,037.50
12/01/2015	360,000.00	2.000%	47,743.75	407,743.75	-
06/01/2016	-	-	44,143.75	44,143.75	-
06/30/2016	-	-	-	-	451,887.50
12/01/2016	370,000.00	2.000%	44,143.75	414,143.75	-
06/01/2017	-	-	40,443.75	40,443.75	-
06/30/2017	-	-	-	-	454,587.50
12/01/2017	375,000.00	2.000%	40,443.75	415,443.75	-
06/01/2018	-	-	36,693.75	36,693.75	-
06/30/2018	-	-	-	-	452,137.50
12/01/2018	385,000.00	2.000%	36,693.75	421,693.75	-
06/01/2019	-	-	32,843.75	32,843.75	-
06/30/2019	-	-	-	-	454,537.50
12/01/2019	390,000.00	2.500%	32,843.75	422,843.75	-
06/01/2020	-	-	27,968.75	27,968.75	-
06/30/2020	-	-	-	-	450,812.50
12/01/2020	400,000.00	3.000%	27,968.75	427,968.75	-
06/01/2021	-	-	21,968.75	21,968.75	-
06/30/2021	-	-	-	-	449,937.50
12/01/2021	415,000.00	3.250%	21,968.75	436,968.75	-
06/01/2022	-	-	15,225.00	15,225.00	-
06/30/2022	-	-	-	-	452,193.75
12/01/2022	430,000.00	3.500%	15,225.00	445,225.00	-
06/01/2023	-	-	7,700.00	7,700.00	-
06/30/2023	-	-	-	-	452,925.00
12/01/2023	440,000.00	3.500%	7,700.00	447,700.00	-
06/30/2024	-	-	-	-	447,700.00
Total	\$3,920,000.00	-	\$674,562.26	\$4,594,562.26	-

Raymond James

Public Finance

KENTUCKY INFRASTRUCTURE AUTHORITY
 REPAYMENT SCHEDULE
 LOAN #F08-04
 FRANKFORT ELECTRIC AND WATER PLANT BOARD
 FINAL

1.00% Rate
 \$186,422.22 P & I Calculation

Payment Date	Principal Due	Interest Due	Interest Rate	Principal & Interest	Servicing Fee	Credit Due	Total Payment	Principal Balance	R & M Reserve	Total Reserve
								\$8,743,306.92		
06/01/12	\$152,705.69	\$33,627.34	1.0000%	\$186,333.03	\$8,429.13	\$0.00	\$194,762.16	\$6,590,601.23	\$17,500.00	\$17,500.00
12/01/12	\$153,469.21	\$32,953.01	1.0000%	\$186,422.22	\$8,238.25	\$0.00	\$194,660.47	\$6,437,132.02	\$0.00	\$17,500.00
06/01/13	\$154,236.56	\$32,185.66	1.0000%	\$186,422.22	\$8,046.42	\$0.00	\$194,468.64	\$6,282,895.48	\$17,500.00	\$35,000.00
12/01/13	\$155,007.74	\$31,414.48	1.0000%	\$186,422.22	\$7,853.62	\$0.00	\$194,275.84	\$6,127,887.72	\$0.00	\$35,000.00
06/01/14	\$155,782.78	\$30,639.44	1.0000%	\$186,422.22	\$7,659.86	\$0.00	\$194,082.08	\$5,972,104.94	\$17,500.00	\$52,500.00
12/01/14	\$156,561.70	\$29,860.52	1.0000%	\$186,422.22	\$7,465.13	\$0.00	\$193,887.35	\$5,815,543.24	\$0.00	\$52,500.00
06/01/15	\$157,344.50	\$29,077.72	1.0000%	\$186,422.22	\$7,269.43	\$0.00	\$193,691.65	\$5,658,198.74	\$17,500.00	\$70,000.00
12/01/15	\$158,131.23	\$28,290.99	1.0000%	\$186,422.22	\$7,072.75	\$0.00	\$193,494.97	\$5,500,067.51	\$0.00	\$70,000.00
06/01/16	\$158,921.88	\$27,500.34	1.0000%	\$186,422.22	\$6,875.08	\$0.00	\$193,297.30	\$5,341,145.63	\$17,500.00	\$87,500.00
12/01/16	\$159,716.49	\$26,705.73	1.0000%	\$186,422.22	\$6,676.43	\$0.00	\$193,098.65	\$5,181,429.14	\$0.00	\$87,500.00
06/01/17	\$160,515.07	\$25,907.15	1.0000%	\$186,422.22	\$6,476.79	\$0.00	\$192,899.01	\$5,020,914.07	\$17,500.00	\$105,000.00
12/01/17	\$161,317.65	\$25,104.57	1.0000%	\$186,422.22	\$6,276.14	\$0.00	\$192,698.38	\$4,859,596.42	\$0.00	\$105,000.00
06/01/18	\$162,124.24	\$24,297.98	1.0000%	\$186,422.22	\$6,074.50	\$0.00	\$192,496.72	\$4,697,472.18	\$17,500.00	\$122,500.00
12/01/18	\$162,934.86	\$23,487.38	1.0000%	\$186,422.22	\$5,871.84	\$0.00	\$192,294.06	\$4,534,537.32	\$0.00	\$122,500.00
06/01/19	\$163,749.53	\$22,672.69	1.0000%	\$186,422.22	\$5,668.17	\$0.00	\$192,090.39	\$4,370,787.79	\$17,500.00	\$140,000.00
12/01/19	\$164,568.28	\$21,853.94	1.0000%	\$186,422.22	\$5,463.48	\$0.00	\$191,885.70	\$4,206,219.51	\$0.00	\$140,000.00
06/01/20	\$165,391.12	\$21,031.10	1.0000%	\$186,422.22	\$5,257.77	\$0.00	\$191,679.99	\$4,040,828.39	\$17,500.00	\$157,500.00
12/01/20	\$166,218.08	\$20,204.14	1.0000%	\$186,422.22	\$5,051.04	\$0.00	\$191,473.26	\$3,874,610.31	\$0.00	\$157,500.00
06/01/21	\$167,049.17	\$19,373.05	1.0000%	\$186,422.22	\$4,843.26	\$0.00	\$191,265.48	\$3,707,561.14	\$17,500.00	\$175,000.00
12/01/21	\$167,884.41	\$18,537.81	1.0000%	\$186,422.22	\$4,634.45	\$0.00	\$191,056.67	\$3,539,676.73	\$0.00	\$175,000.00
06/01/22	\$168,723.84	\$17,698.38	1.0000%	\$186,422.22	\$4,424.60	\$0.00	\$190,846.82	\$3,370,952.89	\$0.00	\$175,000.00
12/01/22	\$169,567.46	\$16,854.76	1.0000%	\$186,422.22	\$4,213.69	\$0.00	\$190,635.91	\$3,201,385.43	\$0.00	\$175,000.00
06/01/23	\$170,415.29	\$16,006.93	1.0000%	\$186,422.22	\$4,001.73	\$0.00	\$190,423.95	\$3,030,970.14	\$0.00	\$175,000.00
12/01/23	\$171,267.37	\$15,154.85	1.0000%	\$186,422.22	\$3,788.71	\$0.00	\$190,210.93	\$2,859,702.77	\$0.00	\$175,000.00
06/01/24	\$172,123.71	\$14,298.51	1.0000%	\$186,422.22	\$3,574.63	\$0.00	\$189,996.85	\$2,687,579.06	\$0.00	\$175,000.00
12/01/24	\$172,984.32	\$13,437.90	1.0000%	\$186,422.22	\$3,359.47	\$0.00	\$189,781.69	\$2,514,594.74	\$0.00	\$175,000.00
06/01/25	\$173,849.25	\$12,572.97	1.0000%	\$186,422.22	\$3,143.24	\$0.00	\$189,565.46	\$2,340,745.49	\$0.00	\$175,000.00
12/01/25	\$174,718.49	\$11,703.73	1.0000%	\$186,422.22	\$2,925.93	\$0.00	\$189,348.15	\$2,166,027.00	\$0.00	\$175,000.00
06/01/26	\$175,592.08	\$10,830.14	1.0000%	\$186,422.22	\$2,707.53	\$0.00	\$189,129.75	\$1,990,434.92	\$0.00	\$175,000.00
12/01/26	\$176,470.05	\$9,952.17	1.0000%	\$186,422.22	\$2,488.04	\$0.00	\$188,910.26	\$1,813,964.87	\$0.00	\$175,000.00
06/01/27	\$177,352.40	\$9,069.82	1.0000%	\$186,422.22	\$2,267.46	\$0.00	\$188,689.68	\$1,638,612.47	\$0.00	\$175,000.00
12/01/27	\$178,239.16	\$8,183.06	1.0000%	\$186,422.22	\$2,045.77	\$0.00	\$188,467.99	\$1,458,373.31	\$0.00	\$175,000.00
06/01/28	\$179,130.35	\$7,291.87	1.0000%	\$186,422.22	\$1,822.97	\$0.00	\$188,245.19	\$1,279,242.96	\$0.00	\$175,000.00
12/01/28	\$180,026.01	\$6,396.21	1.0000%	\$186,422.22	\$1,599.05	\$0.00	\$188,021.27	\$1,099,216.95	\$0.00	\$175,000.00
06/01/29	\$180,926.14	\$5,496.08	1.0000%	\$186,422.22	\$1,374.02	\$0.00	\$187,796.24	\$918,290.81	\$0.00	\$175,000.00
12/01/29	\$181,830.77	\$4,591.45	1.0000%	\$186,422.22	\$1,147.86	\$0.00	\$187,570.08	\$736,460.04	\$0.00	\$175,000.00
06/01/30	\$182,739.92	\$3,682.30	1.0000%	\$186,422.22	\$920.58	\$0.00	\$187,342.80	\$553,720.12	\$0.00	\$175,000.00
12/01/30	\$183,653.62	\$2,768.60	1.0000%	\$186,422.22	\$692.15	\$0.00	\$187,114.37	\$370,066.50	\$0.00	\$175,000.00
06/01/31	\$184,571.89	\$1,850.33	1.0000%	\$186,422.22	\$462.58	\$0.00	\$186,884.80	\$185,494.61	\$0.00	\$175,000.00
12/01/31	\$185,494.61	\$927.61	1.0000%	\$186,422.22	\$231.87	\$0.00	\$186,654.09	\$0.00	\$0.00	\$175,000.00
Totals	\$6,743,308.92	\$713,492.69		\$7,456,788.61	\$178,395.42	\$0.00	\$7,635,195.03		\$175,000.00	

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Frankfort Electric and Water Plant Board
Supplemental Responses to
Attorney General's Initial Data Requests
dated August 19, 2014
Case No. 2014-00254

PSC CASE NO. 2014-00254

ITEM 23

Frankfort Electric and Water Plant Board
Supplemental Responses to
Attorney General's Initial Data Requests dated August 19, 2014
Case No. 2014-00254

ITEM 23: Reference: Cost of Service Study, Sch. C, p. 2. Please provide the specific calculations, data, and assumptions used to determine the maximum day ratio for each customer class. Please supply any and all spreadsheets and workpapers with data in all cells and rows fully intact and fully accessible.

Response: Attached is a summary of maximum day and hour ratios from demand studies conducted for Pennsylvania-American, Illinois-American, and Aqua Pennsylvania (formerly Philadelphia Suburban Water) water companies compared to ratios used for Frankfort. The schedule shows that the ratios selected for Frankfort fall within the range of results of the actual demand studies. Also attached are copies of the demand studies relied upon for the judgments used for Frankfort.

FRANKFORT PLANT BOARD
SUMMARY OF MAXIMUM DAY AND HOUR RATIOS

	<u>Residential</u>	<u>Commercial</u>	<u>Industrial</u>	<u>OPA</u>	<u>Wholesale</u>	<u>System</u>
<u>Maximum Day Ratios</u>						
Frankfort	2.00	1.80	-	1.80	1.80	1.80
Pennsylvania-American	2.50	2.50	1.80	2.50	2.00	1.40
Aqua Pennsylvania	2.10	2.00	1.70	2.00	1.50	1.40
Illinois-American:						
Zone 1	2.05	1.75	1.55	1.90	2.05	1.33
Champaign	2.15	1.90	1.35	1.75	1.95	1.59
Chicago Metro	2.10	2.35	2.40	2.45	1.70	2.20
Lincoln	2.00	1.70	1.45	1.55	2.20	1.31
Pekin	2.20	1.85	1.45	2.05	-	1.47
Sterling	2.05	1.90	1.45	1.85	-	1.50
<u>Maximum Hour Ratios</u>						
Frankfort	4.50	3.80	-	3.80	4.00	2.50
Pennsylvania-American	6.00	5.00	2.70	5.00	5.00	2.10
Aqua Pennsylvania	4.50	3.80	2.70	3.80	2.00	2.00
Illinois-American:						
Zone 1	2.60	1.90	1.60	2.10	2.20	1.86
Champaign	2.85	2.10	1.40	1.95	2.20	2.23
Chicago Metro	3.10	2.95	2.85	3.05	1.80	3.08
Lincoln	2.75	2.00	1.65	1.85	1.80	1.83
Pekin	2.95	2.10	1.55	2.30	-	2.06
Sterling	3.15	2.45	1.80	2.45	-	2.10

PENNSYLVANIA-AMERICAN WATER COMPANY
RESPONSES TO RATE STRUCTURE
AND COST OF SERVICE FILING REQUIREMENTS

RS1c., cont.

CUSTOMER CLASS DEMAND STUDY

The purpose of the customer class demand study is to develop empirical bases for the maximum day and hour extra capacity factors used in the cost allocation study. The current study of customer demands is being conducted pursuant to the Plan for Conducting Further Customer Class Demand Studies submitted to the Pennsylvania Public Utility Commission on April 29, 1992. In accordance with the plan, this report sets forth the data obtained thus far in the study and the current conclusions of maximum day and hour ratios.

Recording devices were installed at Sales for Resale customers in the Spring of 1992; at Commercial, Public and Industrial customers in the Spring of 1993; and at Residential customers in the Summer and Fall of 1993.

The usage data have been reviewed to determine the maximum day and hour usage for each customer being monitored. The maximum usage was divided by the customer's average usage during the year in which the maximum was recorded to determine ratios of maximum day and hour demand to average demand. These data are presented in the schedule which begins on page 14 of 31.

Residential. The residential maximum day and hour ratios used in the most recent cost allocation study were 2.5 and 6.0, respectively. Maximum day and hour ratios used in studies of other water utilities which were based on empirical demands range from 2.1 to 2.5 and 4.4 to 4.5, respectively. The observed maximum day ratios of selected clusters

PENNSYLVANIA-AMERICAN WATER COMPANY
RESPONSES TO RATE STRUCTURE
AND COST OF SERVICE FILING REQUIREMENTS

RS1c., cont.

of Pennsylvania-American residential customers range from 1.81 to 6.80 and average 3.12. The observed maximum hour ratios range from 4.88 to 19.64 and average 8.95.

Based on the previous estimates and the current indications, a maximum day ratio of 2.5 is used in the allocation study. The observed maximum hour ratios continue to be higher than those experienced in other utilities and confirm the continued use of a maximum hour ratio of 6.0 for the purposes of the allocation study.

Commercial and Public. The commercial and public maximum day and hour ratios used in the most recent study were 2.5 and 5.0, respectively. Maximum day ratios used in studies of other water utilities which were based on empirical demands range from 1.6 to 2.0. The maximum hour ratios range from 3.3 to 3.8. The observed maximum day ratios of selected commercial and public customers range from 1.06 to 46.38 and average 2.69 for commercial and 3.31 for public customers. The observed maximum hour ratios range from 1.18 to 128.43 and average 6.24 for commercial and 8.10 for public customers.

Based on the previous estimates and the current indications, maximum day and hour ratios of 2.5 and 5.0, respectively, are used in the allocation study for both commercial and public customers.

Industrial. The industrial maximum day and hour ratios used in the most recent study were 1.8 and 2.7, respectively. Maximum day and hour ratios used in studies of other water utilities which were based on empirical demands range from 1.5 to 1.7 and 2.5 to 2.7,

PENNSYLVANIA-AMERICAN WATER COMPANY
RESPONSES TO RATE STRUCTURE
AND COST OF SERVICE FILING REQUIREMENTS

RS1c., cont.

respectively. The observed maximum day ratios of selected industrial customers range from 1.09 to 6.94 and average 1.78. The observed maximum hour ratios range from 1.43 to 19.61 and average 2.82.

The observed maximum day and hour ratios appear to confirm the continued use of a 1.8 maximum day to average day ratio and 2.7 maximum hour to average hour ratio for the industrial class.

Sales for Resale (Other Water Utilities). The maximum day and hour ratios of Sales for Resale customers vary widely depending on the customer's use of water, i.e., base load, peak load, or total load and, therefore, the class has been segregated into lower peaking, Group A customers and higher peaking, Group B customers. The observed maximum day ratios of selected Group A customers range from 1.04 to 7.17 and average 2.76 and the maximum day ratios of selected Group B customers range from 5.68 to 67.19 and average 11.41. The observed maximum hour ratios of selected Group A customers range from 1.99 to 25.55 and average 7.10 and the maximum hour ratios of selected Group B customers range from 6.34 to 1,612.50 and average 21.54. Based on the observed maximum day and hour ratios of the selected Group A and Group B customers, maximum day and hour ratios of 2.0 and 5.0, respectively, are retained for Group A customers and maximum day and hour ratios of 10.0 and 20.0, respectively, are retained for Group B customers in the allocation study.

PENNSYLVANIA-AMERICAN WATER COMPANY

SUMMARY OF OBSERVED MAXIMUM DAY DEMAND RATIOS

	Number of Customers	Average Day Consumption	Maximum Day		Ratio
			Consumption	Date	
<u>Residential:</u>					
Mon Valley	10	1,322	6,907	05/24/1997	5.22
Norristown	24	4,429	11,846	03/17/1995	2.67
Clarion 52	13	1,977	5,028	10/28/1998	2.54
Clarion 53	14	1,579	5,345	10/13/1997	3.39
Lawrence	42	3,669	7,633	09/25/1995	2.08
Riverton 41	12	1,068	4,873	11/26/1997	4.56
Riverton 43	11	2,469	7,037	06/29/1997	2.85
Yardley	19	3,940	8,447	09/05/1995	2.14
Washington 7	13	2,524	7,046	07/14/1999	2.79
Washington 51	10	1,692	8,249	06/23/1997	4.88
Berwick	15	2,230	8,162	07/25/1993	3.66
Indiana	14	3,309	12,887	02/02/1997	3.89
Butler	11	2,159	6,805	04/24/1994	3.15
Pittsburgh 1	12	1,781	4,717	09/24/1998	2.65
Pittsburgh 2	12	1,633	5,422	08/19/1996	3.32
Pittsburgh 3	12	2,117	8,812	05/24/1996	4.16
Pittsburgh 4	7	1,503	2,929	04/20/2000	1.95
Pittsburgh 5	12	1,749	8,540	06/09/1998	4.88
Pittsburgh 6	12	2,356	7,422	07/15/1995	3.15
Pittsburgh 7	11	3,708	12,378	07/06/1997	3.34
Pittsburgh 8	15	1,822	5,115	03/30/1999	2.81
Pittsburgh 9	10	1,854	11,169	09/26/1998	6.02
Pittsburgh 10	17	1,764	3,865	07/14/1997	2.19
Pittsburgh 11	14	2,380	5,644	08/08/1998	2.37
Pittsburgh 12	11	1,302	8,851	01/16/1998	6.80
Pittsburgh 13	10	1,251	2,794	07/23/1996	2.23
Northeast (Blakely)	19	2,397	4,347	06/05/1999	1.81
Northeast (Plymoth)	20	3,105	6,583	05/27/1999	2.12
Northeast (Scranton)	17	2,619	6,395	12/01/1999	2.44

PENNSYLVANIA-AMERICAN WATER COMPANY

SUMMARY OF OBSERVED MAXIMUM HOUR DEMAND RATIOS

	Number of Customers	Average Hour Consumption	Maximum Hour			
			Consumption	Date	Hour	Ratio
<u>Residential:</u>						
Mon Valley	10	55	536	05/24/1997	7-8 PM	9.75
Norristown	21	172	852	07/18/1995	9-10 AM	4.95
Clarion 52	10	51	354	08/21/1995	8-9 AM	6.94
Clarion 53	13	68	532	10/10/1998	6-7 PM	7.82
Lawrence	42	153	746	09/25/1995	9-10 AM	4.88
Riverton 41	13	76	601	08/26/1995	4-5 PM	7.91
Riverton 43	14	129	1,026	06/17/1994	9-10 PM	7.95
Yardley	12	78	1,532	07/05/1993	3-4 PM	19.64
Washington 7	13	106	1,001	07/06/1997	6-7 PM	9.44
Washington 51	13	48	380	06/19/1994	9-10 AM	7.92
Berwick	14	102	1,331	08/07/1999	1-2 PM	13.05
Indiana	14	86	706	06/04/1994	12-1 PM	8.21
Butler	11	90	766	04/24/1994	4-5 PM	8.51
Pittsburgh 1	12	74	754	09/24/1998	6-7 PM	10.19
Pittsburgh 2	12	68	708	08/19/1996	4-5 PM	10.41
Pittsburgh 3	14	102	830	04/29/2000	2-3 PM	8.14
Pittsburgh 4	12	90	873	06/24/1999	8-9 AM	9.70
Pittsburgh 5	12	73	645	06/21/1998	11-12 AM	8.84
Pittsburgh 6	12	99	962	06/17/1994	9-10 PM	9.72
Pittsburgh 7	11	112	933	09/02/2000	4-5 AM	8.33
Pittsburgh 8	14	77	1,236	04/15/1999	7-8 AM	16.05
Pittsburgh 9	8	49	777	06/03/2000	1-2 PM	15.86
Pittsburgh 10	17	71	521	07/27/1998	9-10 PM	7.34
Pittsburgh 11	14	99	932	07/27/1998	6-7 PM	9.41
Pittsburgh 12	10	49	541	04/24/1999	1-2 AM	11.04
Pittsburgh 13	10	58	528	05/14/1999	5-6 PM	9.10
Northeast (Blakely)	19	102	743	06/06/1999	6-7 PM	7.28
Northeast (Plymoth)	20	125	1,077	02/04/1999	4-5 PM	8.62
Northeast (Scranton)	17	109	599	12/01/1999	10-11 PM	5.50

PENNSYLVANIA-AMERICAN WATER COMPANY

Summary of Observed Maximum Day and Hour Demand Ratios
Commercial Customers

Customer Name	District	Test Period		Annual Consumption		Maximum Day During Test Period			Maximum Hour During Test Period			
		From	To	Average Day	Average Hour	Gallons	Ratio	Date	Gallons	Ratio	Hour	Date
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Berwick Hospital	Berwick	04/14/1993	12/13/1994	39,033.0	1,626.4	58,651.4	1.50	08/19/1993	5,208.0	3.20	8-9 AM	03/24/1994
		12/01/1994	12/22/1995	39,022.2	1,625.9	58,226.0	1.49	08/16/1995	5,909.0	3.63	10-11 AM	09/05/1995
		12/13/1995	12/27/1996	60,143.0	2,506.0	98,815.0	1.64	05/31/1996	7,058.0	2.82	1-2 PM	08/27/1996
		12/13/1996	12/12/1997	33,061.0	1,377.5	74,091.0	2.24	12/19/1996	6,632.0	4.81	11-12 AM	12/19/1996
		12/12/1997	12/22/1998	24,465.0	1,019.4	80,837.0	3.30	03/27/1998	5,269.0	5.17	5-6 PM	02/18/1998
		12/11/1998	12/21/1999	30,368.0	1,265.3	55,815.0	1.84	07/06/1999	6,252.0	4.94	12-1PM	01/06/1999
		12/10/1999	12/21/2000	26,201.0	1,091.7	51,162.0	1.95	12/15/1999	4,007.0	3.67	2-3PM	12/15/1999
Slate Belt Nursing	Bangor	04/19/1993	12/16/1994	18,642.0	776.8	29,273.0	1.57	11/24/1993	3,198.0	4.12	10-11 AM	11/24/1993
		12/08/1994	12/26/1995	17,076.2	711.5	29,577.0	1.73	12/18/1995	1,823.0	2.56	2-3 PM	12/18/1995
		01/12/1996	12/20/1996	23,053.4	960.6	35,430.0	1.54	07/01/1996	2,033.0	2.12	9-10 AM	07/16/1996
		12/10/1996	12/18/1997	17,771.0	740.5	28,446.0	1.60	01/13/1997	2,009.0	2.71	10-11 AM	11/17/1997
		12/18/1997	12/17/1998	13,331.0	555.5	21,925.0	1.64	01/14/1998	2,585.0	4.65	8-9 AM	11/01/1998
		12/03/1999	12/14/2000	17,107.0	713.0	24,222.0	1.42	09/14/2000	2,480.0	3.48	5-6AM	06/10/2000
Alpine Retirement Center	Hershey	04/07/1993	12/17/1994	15,030.0	626.3	19,830.0	1.32	11/30/1994	3,648.0	5.82	3-4 PM	05/06/1994
		12/12/1994	12/29/1995	14,620.5	609.2	25,200.0	1.72	06/08/1995	3,079.0	5.05	2-3 PM	09/15/1995
		12/20/1995	10/31/1996	17,927.9	747.0	44,833.0	2.50	06/19/1996	4,124.0	5.52	7-8 PM	06/18/1996
		12/19/1996	12/31/1997	17,928.0	747.0	32,124.0	1.79	08/31/1997	3,423.0	4.58	7-8 PM	08/31/1997
		12/31/1997	12/29/1998	12,951.0	539.6	28,745.0	2.22	06/05/1998	3,635.0	6.74	2-3 PM	12/20/1998
		12/17/1998	12/29/1999	18,047.0	752.0	36,079.0	2.00	06/29/1999	4,236.0	5.63	8-9 AM	07/25/1999
		12/17/1999	12/28/2000	14,796.0	616.5	54,575.0	3.69	06/25/2000	4,040.0	6.55	9-10 AM	02/22/2000
Hershey Ent. & Res. Co.	Hershey	07/13/1993	12/17/1994	36,379.0	1,515.8	157,559.1	4.33	08/07/1993	12,929.8	8.53	1-2 PM	08/07/1993
		01/04/1995	11/02/1995	36,379.5	1,515.8	141,657.0	3.89	08/19/1995	11,677.0	7.70	2-3 PM	08/18/1995
		09/19/1997	11/28/1997	38,870.3	1,619.6	48,450.0	1.25	09/20/1997	3,620.0	2.24		
		12/19/1997	12/29/1998	41,361.0	1,723.4	178,308.0	4.31	07/05/1998	17,770.0	10.31	1-2 PM	07/05/1998
		12/17/1998	12/29/1999	50,148.0	2,089.5	67,984.0	1.36	08/19/1999	3,703.0	1.77	8-9 AM	06/22/1999
		12/17/1999	12/28/2000	45,177.0	1,882.4	212,077.0	4.69	08/19/2000	14,115.0	7.50	1-2 PM	08/19/2000
Hershey Ent. & Res. Co.	Hershey	04/06/1993	12/17/1994	20,175.0	840.6	63,843.0	3.16	08/06/1994	11,373.0	13.53	4-5 AM	09/28/1994
		12/12/1994	11/02/1995	20,183.6	841.0	61,583.0	3.05	08/11/1995	3,938.0	4.68	11-12 AM	08/26/1995
		07/17/1997	12/31/1997	27,338.0	1,139.1	136,275.0	4.98	07/19/1997	13,855.0	12.16	3-4 PM	07/19/1997
		12/31/1997	12/29/1998	15,051.0	627.1	65,580.0	4.36	07/25/1998	7,656.0	12.21	2-3 PM	05/23/1998
		04/15/1999	12/29/1999	19,921.0	830.0	89,278.0	4.48	09/25/1999	10,751.0	12.95	2-3 PM	09/25/1999

PENNSYLVANIA-AMERICAN WATER COMPANY

Summary of Observed Maximum Day and Hour Demand Ratios
Commercial Customers

Customer Name (1)	District (2)	Test Period		Annual Consumption		Maximum Day During Test Period			Maximum Hour During Test Period			
		From (3)	To (4)	Average Day (5)	Average Hour (6)	Gallons (7)	Ratio (8)	Date (9)	Gallons (10)	Ratio (11)	Hour (12)	Date (13)
Stough's Mobile Park	Riverton	04/05/1993	12/19/1994	41,051.0	1,710.5	134,492.0	3.28	02/05/1994	6,966.0	4.07	8-9 AM	02/05/1994
		12/08/1994	10/30/1995	35,692.1	1,487.2	55,218.0	1.55	02/12/1995	3,899.0	2.62	8-9 AM	01/05/1995
		12/17/1996	12/30/1997	41,429.0	1,726.2	66,950.0	1.62	01/20/1997	5,170.0	3.00	10-11 AM	06/25/1997
		12/30/1997	12/29/1998	29,971.0	1,248.8	51,092.0	1.70	01/01/1998	2,882.0	2.31	11-12 AM	01/01/1998
		12/16/1998	12/29/1999	27,080.0	1,128.3	55,687.0	2.06	01/16/1999	3,024.0	2.68	1-2 PM	01/16/1999
Pennsylvania Blue Shield	Riverton	12/17/1999	12/29/2000	26,031.0	1,084.6	50,905.0	1.96	01/25/2000	2,584.0	2.38	6-7 PM	01/25/2000
		04/05/1993	12/16/1994	68,015.0	2,834.0	133,197.1	1.96	07/06/1993	10,414.0	3.67	11-12 AM	09/02/1993
		04/17/1997	12/30/1997	66,040.0	2,751.7	124,238.0	1.88	07/15/1997	24,486.0	8.90	7-8 AM	08/23/1997
		12/30/1997	12/29/1998	56,314.0	2,346.4	111,684.0	1.98	06/26/1998	10,049.0	4.28	10-11 AM	06/26/1998
		12/16/1998	12/29/1999	49,301.0	2,054.2	107,184.0	2.17	07/06/1999	8,302.0	4.04	7-8 AM	06/28/1999
12/17/1999	12/29/2000	45,672.0	1,903.0	146,070.0	3.20	06/26/2000	17,735.0	9.32	8-9 AM	05/26/2000		
Raddisson	Riverton	04/05/1993	12/16/1994	21,511.0	896.3	77,147.0	3.59	06/28/1994	7,410.0	8.27	7-8 AM	06/28/1994
		12/08/1994	12/28/1995	30,730.1	1,280.4	145,190.0	4.72	11/24/1995	12,965.0	10.13	4-5 PM	11/24/1995
		02/15/1996	11/26/1996	29,821.9	1,242.6	56,456.0	1.89	09/10/1996	10,827.0	8.71	3-4 PM	09/10/1996
		12/17/1996	12/30/1997	28,159.0	1,173.3	58,884.0	2.09	05/17/1997	6,971.0	5.94	9-10 AM	05/22/1997
		12/30/1997	12/29/1998	25,464.0	1,061.0	80,978.0	3.18	04/14/1998	7,475.0	7.05	1-2 PM	04/14/1998
		12/16/1998	12/29/1999	52,824.0	2,201.0	86,479.0	1.64	08/02/1999	13,103.0	5.95	1-2 PM	08/23/1999
12/17/1999	12/29/2000	52,824.0	2,201.0	71,230.0	1.35	08/12/2000	7,392.0	3.36	8-9 AM	08/24/2000		
South Hills Health	Pittsburgh	04/11/1993	12/09/1994	139,936.0	5,830.7	289,312.0	2.07	08/19/1993	39,773.0	6.82	2-3 AM	08/19/1993
		11/30/1994	12/12/1995	36,543.6	1,522.7	189,476.0	5.18	04/29/1995	20,014.0	13.14	9-10 PM	04/29/1995
		12/22/1995	12/10/1996	27,604.1	1,150.2	45,332.0	1.64	10/02/1996	3,804.0	3.31	12-1 PM	10/04/1996
		12/10/1996	12/09/1997	21,921.0	913.4	40,938.0	1.87	07/16/1997	6,518.0	7.14	10-11 AM	12/04/1997
		11/30/1998	12/10/1999	34,059.0	1,419.1	57,293.0	1.68	09/07/1999	4,063.0	2.86	11-12 PM	10/11/1999
11/30/1999	12/08/2000	37,519.0	1,563.3	69,653.0	1.86	07/31/2000	6,737.0	4.31	7-8 AM	08/08/2000		
Marriott Inn	Pittsburgh	04/11/1993	12/12/1994	69,354.0	2,889.8	145,848.5	2.10	07/27/1993	13,991.0	4.84	9-10 AM	08/25/1993
		12/01/1994	12/13/1995	66,371.2	2,765.5	123,490.0	1.86	07/15/1995	11,960.0	4.32	9-10 AM	06/18/1995
		12/01/1995	12/11/1996	63,521.9	2,646.7	535,505.0	8.43	11/30/1996	52,479.0	19.83	9-10 AM	11/30/1996
		12/11/1996	12/10/1997	61,810.0	2,575.4	682,219.0	11.04	06/27/1997	83,268.0	32.33	6-7 AM	06/27/1997
		12/02/1998	12/14/1999	57,891.0	2,412.1	682,988.0	11.80	07/18/1999	70,355.0	29.17	7-8 AM	07/18/1999
12/02/1999	12/12/2000	47,160.0	1,965.0	656,112.0	13.91	07/29/2000	71,100.0	36.18	5-6 AM	06/25/2000		
South Park Mobile Est.	Pittsburgh	04/15/1993	12/07/1994	81,774.0	3,407.3	205,983.0	2.52	01/09/1994	9,801.0	2.88	7-8 PM	06/15/1994
		11/28/1994	07/21/1995	87,574.2	3,648.9	139,656.0	1.59	02/06/1995	10,175.0	2.79	4-5 PM	01/14/1995
Mon View Heights	Pittsburgh	04/11/1993	12/05/1994	121,787.0	5,074.5	442,564.0	3.63	01/24/1994	19,268.0	3.80	8-9 AM	01/24/1994
		11/23/1994	12/05/1995	113,043.0	4,710.1	324,356.0	2.87	02/14/1995	24,126.0	5.12	11-12 AM	02/14/1995

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Summary of Observed Maximum Day and Hour Demand Ratios
Commercial Customers

Customer Name (1)	District (2)	Test Period		Annual Consumption		Maximum Day During Test Period			Maximum Hour During Test Period			
		From (3)	To (4)	Average Day (5)	Average Hour (6)	Gallons (7)	Ratio (8)	Date (9)	Gallons (10)	Ratio (11)	Hour (12)	Date (13)
Standard Enterprises	Pittsburgh	04/11/1993	12/08/1994	26,783.0	1,116.0	32,523.4	1.21	04/24/1993	2,908.9	2.61	7-8 AM	04/25/1993
		11/29/1994	12/11/1995	24,426.0	1,017.8	32,645.0	1.34	12/24/1995	2,579.0	2.53	10-11 AM	01/07/1995
		12/28/1995	12/09/1996	28,098.9	1,170.8	29,693.0	1.06	12/08/1996	2,170.0	1.85	10-11 AM	12/29/1995
		12/09/1996	12/08/1997	28,342.0	1,180.9	33,086.0	1.17	01/18/1997	2,477.0	2.10	10-11 AM	01/17/1997
		11/26/1998	12/08/1999	25,617.0	1,067.4	35,519.0	1.39	08/31/1999	2,463.0	2.31	7-8 AM	06/25/1999
Pennsburg Village Borough	Pittsburgh	04/11/1993	12/12/1994	60,889.0	2,537.0	147,540.0	2.42	05/16/1994	10,918.0	4.30	7-8 AM	05/17/1994
		11/29/1996	12/10/1997	55,829.0	2,326.2	84,360.0	1.51	11/23/1997	29,549.0	12.70	10-11 AM	09/07/1997
		12/10/1997	12/14/1998	70,227.0	2,926.1	131,080.0	1.87	03/12/1998	18,253.0	6.24	2-3 PM	03/12/1998
		12/02/1998	12/14/1999	85,331.0	3,555.5	114,960.0	1.35	04/22/1999	10,407.0	2.93	7-8 AM	04/20/1999
		12/02/1999	12/12/2000	45,279.0	1,886.6	90,187.0	1.99	02/20/2000	6,713.0	3.56	6-7 AM	05/02/2000
Kossmann Development Co.	Pittsburgh	04/11/1993	12/16/1994	18,436.0	768.2	33,036.0	1.79	01/24/1994	4,297.0	5.59	6-7 AM	06/07/1994
		12/07/1994	11/15/1995	18,684.9	778.5	43,914.0	2.35	03/03/1995	7,418.0	9.53	2-3 PM	03/03/1995
		12/07/1995	12/16/1996	16,345.2	681.1	41,180.0	2.52	11/18/1996	2,352.0	3.45	6-7 PM	11/18/1996
		12/16/1996	08/14/1997	15,193.0	633.0	24,244.0	1.60	05/03/1997	1,893.0	2.99	1-2 PM	
Sacred Heart Hospital	Norristown	05/28/1993	11/07/1994	79,075.0	3,294.8	618,628.9	7.82	07/12/1993	44,666.7	13.56	12-1 PM	08/04/1993
Sacred Heart Hospital	Norristown	04/27/1993	12/07/1994	53.0	2.2	129.0	2.43	03/22/1994	94.0	42.73	5-6 PM	09/12/1993
		11/28/1994	12/12/1995	30.1	1.3	96.0	3.19	11/17/1995	42.0	32.31	2-3 PM	11/17/1995
		01/01/1996	06/11/1996	31.2	1.3	109.0	3.49	01/02/1996	48.0	36.92	1-2 PM	01/02/1996
		10/31/1997	12/12/1997	43.0	1.8	129.0	3.00	11/13/1997	39.0	21.67	10-11 AM	11/07/1997
Marshal Woods Apartments	Norristown	04/29/1993	10/12/1994	33,675.0	1,403.1	72,696.0	2.16	05/14/1994	3,632.9	2.59	6-7 PM	05/04/1993
		08/02/1995	12/14/1995	38,097.3	1,587.4	50,340.0	1.32	08/04/1995	4,604.0	2.90	10-11 AM	08/22/1995
		02/01/1996	12/16/1996	38,538.4	1,605.8	91,507.0	2.37	05/19/1996	5,634.0	3.51	11-12 AM	05/19/1996
		12/16/1996	12/16/1997	34,523.0	1,438.5	84,911.0	2.46	05/14/1997	5,564.0	3.87	7-8 AM	05/14/1997
		12/31/1998	12/13/1999	35,874.0	1,494.8	83,555.0	2.33	04/15/1999	5,803.0	3.88	6-7 AM	04/15/1999
12/02/1999	12/13/2000	27,857.0	1,160.7	94,077.0	3.38	05/16/2000	5,723.0	4.93	6-7 AM	05/17/2000		
Marshal Woods Apartments	Norristown	04/29/1993	12/09/1994	16,647.0	693.6	27,158.0	1.63	08/24/1993	2,175.8	3.14	7-8 AM	06/28/1993
		11/30/1994	12/14/1995	19,490.4	812.1	33,312.0	1.71	07/03/1995	2,646.0	3.26	9-10 AM	07/03/1995
		02/01/1996	12/16/1996	20,890.4	870.4	31,786.0	1.52	10/15/1996	2,630.0	3.02	6-7 AM	10/15/1996
		12/16/1996	12/16/1997	17,792.0	741.3	26,505.0	1.49	12/13/1997	2,238.0	3.02	7-8 AM	12/05/1997
		12/31/1998	05/13/1999	19,401.0	808.4	27,018.0	1.39	05/02/1999	1,769.0	2.19	7-8 AM	03/27/1999
12/02/1999	12/13/2000	19,389.0	807.9	28,546.0	1.47	10/24/2000	2,201.0	2.72	11-12 PM	10/26/2000		

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PENNSYLVANIA-AMERICAN WATER COMPANY

Summary of Observed Maximum Day and Hour Demand Ratios
Commercial Customers

Customer Name (1)	District (2)	Test Period		Annual Consumption		Maximum Day During Test Period			Maximum Hour During Test Period			
		From (3)	To (4)	Average Day (5)	Average Hour (6)	Gallons (7)	Ratio (8)	Date (9)	Gallons (10)	Ratio (11)	Hour (12)	Date (13)
		Montgomery Hospital	Norristown	07/28/1994	12/08/1994	87,550.0	3,647.9	97,286.0	1.11	08/15/1994	6,268.0	1.72
		12/02/1996	12/12/1997	78,376.0	3,265.7	92,447.0	1.18	09/20/1997	4,828.0	1.48	2-3 PM	02/18/1997
		12/28/1999	10/12/1999	63,390.0	2,641.3	256,124.0	4.04	07/16/1999	15,876.0	6.01	9-10 AM	07/16/1999
		11/30/1999	08/11/2000	62,998.0	2,624.9	137,009.0	2.17	12/01/1999	6,768.0	2.58	10-11 AM	11/30/1999
Fox Water Haul	Butler	12/19/1994	05/30/1995	17,161.0	715.0	31,386.0	1.83	03/16/1995	11,363.0	15.89	12-1 PM	04/25/1995
		06/19/1997	12/02/1997	18,571.0	773.8	33,797.0	1.82	07/24/1997	6,937.0	8.96	3-4 PM	07/22/1997
		06/16/1999	12/29/1999	31,725.0	1,322.0	35,107.0	1.11	06/26/1999	4,540.0	3.43	3-4PM	07/12/1999
Days Inn	Butler	04/09/1993	12/20/1994	30,051.0	1,252.1	43,744.0	1.46	06/18/1994	6,478.0	5.17	9-10 AM	10/13/1994
		12/09/1994	05/18/1995	26,312.9	1,096.4	61,539.0	2.34	03/18/1995	4,633.0	4.23	10-11 AM	02/18/1995
		07/10/1996	09/23/1996	24,324.1	1,013.5	43,145.0	1.77	08/03/1995	3,658.0	3.61	8-9 AM	07/28/1996
		06/10/1997	12/23/1997	23,244.0	968.5	37,060.0	1.59	08/09/1997	3,150.0	3.25	9-10 AM	11/22/1997
		12/23/1997	12/21/1998	23,268.0	969.5	39,790.0	1.71	06/24/1998	4,168.0	4.30	9-10 AM	08/16/1998
Overnite Transportation	Riverton	12/08/1994	12/28/1995	14,598.6	608.3	25,550.0	1.75	06/01/1995	2,659.0	4.37	7-8 PM	12/15/1995
		12/12/1995	11/26/1995	14,861.6	619.2	26,084.0	1.76	08/22/1996	2,220.0	3.59	12-1 PM	08/22/1996
		12/17/1996	12/30/1997	12,163.0	506.8	27,871.0	2.29	12/16/1997	2,390.0	4.72	7-8 PM	12/04/1997
		12/30/1997	12/29/1998	11,253.0	468.9	29,595.0	2.63	05/21/1998	2,669.0	5.69	9-10 PM	10/19/1998
		01/13/1999	12/29/1999	16,514.0	688.1	39,538.0	2.39	11/24/1999	3,383.0	4.92	7-8 PM	11/24/1999
Evangelical Community Hospital	White Deer	06/09/1995	10/24/1995	54,198.6	2,258.3	76,668.0	1.41	10/18/1995	2,659.0	1.18	1-2 PM	09/15/1995
		04/11/1996	12/27/1996	43,867.7	1,827.8	76,034.0	1.73	05/20/1996	14,742.0	8.07	3-4 PM	05/17/1996
		12/27/1996	01/06/1998	36,411.0	1,517.1	76,121.0	2.09	08/27/1997	18,455.0	12.16	8-9 AM	08/27/1997
		01/06/1998	01/06/1998	50,984.0	2,124.3	92,042.0	1.81	07/29/1998	15,637.0	7.36	8-9 AM	07/29/1998
		12/14/1998	12/23/1999	46,714.0	1,946.4	108,683.0	2.33	10/19/1999	31,248.0	16.05	9-10 AM	10/19/1999
		12/15/1999	11/22/2000	44,734.0	1,863.9	123,807.0	2.77	10/27/2000	38,427.0	20.62	12-1 PM	10/27/2000
Trinity United Methodist Church	White Deer	12/09/1998	12/18/1999	152.0	6.3	414.0	2.72	06/26/1999	151.0	23.97	7-8 AM	05/22/1999
		12/10/1999	10/24/2000	146.0	6.1	665.0	4.55	06/09/2000	274.0	44.92	3-4 PM	06/09/2000
Union Garden Apartments	Fayette	04/07/1993	12/21/1994	14,788.0	616.2	18,631.0	1.26	11/16/1993	1,709.9	2.77	9-10 AM	07/14/1993
		12/12/1994	12/22/1995	15,538.4	647.4	38,757.0	2.49	11/28/1995	2,070.0	3.20	12-1 PM	11/23/1995
		12/12/1995	12/23/1996	14,765.8	615.2	19,161.0	1.30	09/08/1996	1,675.0	2.72	12-1 PM	03/23/1996
		12/23/1996	12/26/1997	15,293.0	637.2	22,155.0	1.45	11/29/1997	1,600.0	2.51	11-12 AM	05/26/1997
		12/26/1997	12/23/1998	11,940.0	497.5	22,600.0	1.89	08/03/1998	1,841.0	3.70	12-1 PM	08/03/1998
		12/11/1998	12/23/1999	13,300.0	554.2	23,986.0	1.80	06/12/1999	1,869.0	3.37	10-11AM	06/25/1999
		12/12/1999	12/22/2000	17,678.0	736.6	45,484.0	2.57	12/21/2000	2,375.0	3.22	5-6PM	12/11/2000

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PENNSYLVANIA-AMERICAN WATER COMPANY

Summary of Observed Maximum Day and Hour Demand Ratios
Commercial Customers

Customer Name	District	Test Period		Annual Consumption		Maximum Day During Test Period			Maximum Hour During Test Period			
		From	To	Average Day	Average Hour	Gallons	Ratio	Date	Gallons	Ratio	Hour	Date
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Jameson Hospital	Lawrence	04/07/1994	09/21/1994	65,960.0	2,748.3	139,126.0	2.11	03/11/1994	9,860.0	3.59	7-8 PM	03/11/1994
		12/09/1994	12/28/1995	63,838.4	2,659.9	153,941.0	2.41	05/11/1995	10,374.0	3.90	5-6 AM	05/11/1995
		01/15/1996	04/24/1996	60,144.7	2,506.0	88,595.0	1.47	08/07/1996	8,464.0	3.38	2-3 PM	02/06/1996
		05/19/1997	12/31/1997	60,145.0	2,506.0	112,270.0	1.87	10/09/1997	13,445.0	5.37	10-11 AM	08/07/1997
		12/31/1997	12/22/1998	80,241.0	3,343.4	135,268.0	1.69	06/25/1998	23,386.0	6.99	9-10 AM	07/09/1998
		12/11/1998	12/22/1999	80,287.0	3,345.3	131,487.0	1.64	09/24/1999	13,637.0	4.08	3-4 PM	06/18/1999
Jameson Hospital	Lawrence	04/11/1994	09/21/1994	26,845.0	1,118.5	97,108.4	3.62	07/10/1993	6,804.0	6.08	12-1 AM	04/26/1994
		12/09/1994	12/28/1995	27,418.1	1,142.4	119,219.0	4.35	05/11/1995	8,995.0	7.87	5-6 AM	05/11/1995
		12/14/1995	11/21/1996	27,874.0	1,161.4	57,876.0	2.08	08/07/1996	9,318.0	8.02	2-3 PM	02/06/1996
		05/09/1997	12/23/1997	26,704.0	1,112.7	141,277.0	5.29	07/16/1997	10,602.0	9.53	1-2 PM	08/17/1997
Stony Creek Management Off Norristown		04/21/1993	10/03/1994	5,618.0	234.1	28,067.3	5.00	05/26/1993	3,396.0	14.51	11-12 AM	09/02/1993
		02/24/1999	07/07/1999	3,295.0	137.3	11,039.0	3.35	05/29/1999	3,598.0	26.21	11-12 PM	06/04/1999
		09/27/2000	11/03/2000	4,870.0	202.9	7,867.0	1.62	10/16/2000	882.0	4.35	9-10 AM	10/08/2000
Connellsville Towers	Fayette	04/07/1993	12/21/1994	7,914.0	329.8	17,751.0	2.24	08/22/1993	1,645.8	4.99	9-10 AM	06/21/1993
		12/12/1994	12/22/1995	8,989.0	374.5	18,519.0	2.06	08/15/1995	1,459.0	3.90	1-2 AM	08/11/1995
		12/12/1995	12/23/1996	8,390.1	349.6	18,339.0	2.19	05/09/1996	1,369.0	3.92	8-9 AM	09/05/1996
		12/23/1996	12/26/1997	9,892.0	412.2	18,774.0	1.90	06/25/1998	1,390.0	3.37	2-3 AM	06/28/1998
		12/26/1997	12/23/1998	6,125.0	255.2	13,521.0	2.21	08/10/1998	1,519.0	5.95	7-8 AM	05/16/1998
		12/11/1998	12/23/1999	7,146.0	297.8	10,251.0	1.43	02/15/1999	776.0	2.61	4-5 PM	02/15/1999
IUP Campus Towers	Indiana	12/13/1999	12/22/2000	6,748.0	281.2	9,971.0	1.48	05/22/2000	979.0	3.48	11-12 AM	07/09/2000
		04/13/1993	12/15/1994	5,080.0	211.7	12,610.0	2.48	11/16/1993	1,044.0	4.93	12-1 PM	10/10/1993
		11/30/1994	12/13/1995	5,926.6	246.9	14,337.0	2.42	08/30/1995	4,260.0	17.25	4-5 AM	08/30/1995
		11/30/1995	01/07/1997	4,116.2	171.5	11,298.0	2.74	09/22/1996	729.0	4.25	11-12 AM	10/10/1996
		01/07/1997	12/10/1997	4,644.0	193.5	12,914.0	2.78	09/11/1997	1,122.0	5.80	9-10 AM	09/03/1997
		12/10/1997	12/09/1998	6,068.0	252.8	14,158.0	2.33	04/29/1998	931.0	3.68	7-8 AM	04/22/1998
Hershey Medical Center	Hershey	11/27/1998	12/09/1999	4,649.0	193.7	9,975.0	2.15	11/21/1999	822.0	4.24	8-9PM	03/17/1999
		11/29/1999	12/08/2000	4,210.0	175.4	11,275.0	2.68	01/22/2000	859.0	4.90	9-10AM	09/01/2000
		12/17/1998	12/29/1999	413,568.0	17,232.0	831,963.0	2.01	07/06/1999	49,767.0	2.89	11-12 PM	07/28/1999
		12/17/1999	12/28/2000	426,149.0	17,756.2	574,468.0	1.35	05/08/2000	50,178.0	2.83	12-1 PM	05/08/2000

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PENNSYLVANIA-AMERICAN WATER COMPANY

Summary of Observed Maximum Day and Hour Demand Ratios
Commercial Customers

Customer Name (1)	District (2)	Test Period		Annual Consumption		Maximum Day During Test Period			Maximum Hour During Test Period			
		From (3)	To (4)	Average Day (5)	Average Hour (6)	Gallons (7)	Ratio (8)	Date (9)	Gallons (10)	Ratio (11)	Hour (12)	Date (13)
Becks	Indiana	04/13/1993	12/13/1994	6,245.0	260.2	12,198.8	1.95	08/26/1993	1,195.1	4.59	12-1 AM	04/25/1993
		12/02/1994	12/28/1995	7,250.7	302.1	12,984.0	1.79	12/20/1995	1,263.0	4.18	10-11 AM	01/13/1995
		12/29/1995	11/14/1996	5,445.5	226.9	12,903.0	2.37	01/04/1996	950.0	4.19	5-6 AM	02/18/1996
		01/15/1997	12/15/1997	1,522.0	63.4	6,577.0	4.32	08/13/1997	795.0	12.54	11-12 AM	08/08/1997
		12/15/1997	12/14/1998	1,154.0	48.1	3,773.0	3.27	04/10/1998	349.0	7.26	10-11 PM	04/09/1998
		12/14/1998	12/14/1999	1,866.0	77.8	3,638.0	1.95	11/23/1999	389.0	5.00	10-11PM	07/26/1999
Quasitronics	Washington	04/27/1993	12/22/1994	408.0	17.0	6,292.0	15.42	10/17/1993	428.0	25.18	1-2 PM	12/13/1993
		12/12/1994	07/14/1995	413.7	17.2	1,311.0	3.17	06/08/1995	296.0	17.21	11-12 AM	05/16/1995
		01/17/1997	01/08/1998	483.0	20.1	2,172.0	4.50	01/22/1997	274.0	13.63	11-12 AM	03/17/1997
		01/08/1998	12/09/1998	573.0	23.9	5,012.0	8.75	09/07/1998	266.0	11.13	7-8 AM	09/10/1998
		01/14/1999	12/21/1999	418.0	17.4	1,409.0	3.37	09/01/1999	245.0	14.08	5-6 AM	08/12/1999
		12/20/1999	09/01/2000	1,342.0	55.9	5,519.0	4.11	07/21/2000	251.0	4.49	6-7 AM	07/21/2000
Rolling Hills Country Club	Washington	07/12/1993	12/21/1994	37,766.0	1,573.6	305,053.0	8.08	09/13/1993	25,983.0	16.51	5-6 AM	08/08/1993
		12/12/1994	07/14/1995	37,361.6	1,556.7	225,666.0	6.04	07/10/1995	23,885.0	15.34	9-10 PM	07/11/1995
		01/08/1997	08/26/1997	34,919.0	1,455.0	175,748.0	5.03	07/17/1997	20,341.0	13.98	2-3 AM	05/07/1997
		04/30/1998	12/09/1998	33,425.0	1,392.7	206,188.0	6.17	07/13/1998	21,136.0	15.18	3-4 AM	07/15/1998
		02/12/1999	12/21/1999	48,577.0	2,024.0	261,274.0	5.38	05/03/1999	24,213.0	11.96	2-3 AM	05/08/1999
		12/20/1999	09/01/2000	24,956.0	1,039.9	187,724.0	7.52	07/27/2000	24,461.0	23.52	12-1 AM	07/28/2000
Canonsburg General Hospital	Washington	04/27/1993	12/22/1994	16,419.0	684.1	37,947.0	2.31	06/16/1994	4,179.0	6.11	12-1 PM	07/28/1993
		12/22/1994	07/14/1995	17,591.0	733.0	27,391.0	1.56	05/17/1995	2,253.0	3.07	2-3 PM	05/17/1995
		12/26/1997	12/31/1998	14,735.0	614.0	45,003.0	3.05	08/21/1998	2,660.0	4.33	4-5 PM	08/21/1998
		01/05/1999	12/21/1999	29,648.0	1,235.3	59,308.0	2.00	07/30/1999	3,684.0	2.98	10-11 AM	08/03/1999
		02/23/2000	09/01/2000	23,274.0	969.8	28,417.0	1.22	04/03/2000	2,335.0	2.41	12-1 PM	03/15/2000
McDonalds Corporation 7061 Mon-Valley	Mon-Valley	04/07/1993	12/21/1994	10,531.0	438.8	23,552.2	2.24	09/04/1993	1,800.5	4.10	5-6 PM	07/06/1993
		01/10/1995	12/22/1995	7,279.5	303.3	14,808.0	2.03	03/04/1995	955.0	3.15	8-9 PM	04/05/1995
		12/12/1995	12/23/1996	1,995.9	83.2	4,711.0	2.36	07/17/1996	678.0	8.15	9-10 PM	07/04/1996
		12/23/1996	12/26/1997	3,073.0	128.0	9,255.0	3.01	07/16/1997	1,417.0	11.07	11-12 AM	08/30/1997
		12/26/1997	12/22/1998	3,512.0	146.3	12,383.0	3.53	01/09/1998	1,196.0	8.17	6-7 PM	01/09/1998
Taylor's Beauty Salon	Northeast	04/16/1997	12/22/1997	381.0	15.9	884.0	2.32	05/15/1997	167.0	10.50	4-5 PM	08/28/1997
		12/22/1997	12/22/1998	250.0	10.4	839.0	3.36	12/17/1998	161.0	15.48	8-9 PM	12/17/1998
		12/13/1999	12/21/2000	204.0	8.5	795.0	3.90	06/01/2000	155.0	18.24	5-6 PM	04/27/2000

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Summary of Observed Maximum Day and Hour Demand Ratios
Commercial Customers

Customer Name (1)	District (2)	Test Period		Annual Consumption		Maximum Day During Test Period			Maximum Hour During Test Period			
		From (3)	To (4)	Average Day (5)	Average Hour (6)	Gallons (7)	Ratio (8)	Date (9)	Gallons (10)	Ratio (11)	Hour (12)	Date (13)
ABC Supply Company	Northeast	04/16/1997	12/22/1997	177.0	7.4	8,210.0	46.38	09/28/1997	378.0	51.08	3-4 AM	09/28/1997
		12/22/1997	12/22/1998	122.0	5.1	311.0	2.55	06/11/1998	118.0	23.14	1-2 PM	06/11/1998
		12/14/1998	12/23/1999	123.0	5.1	583.0	4.74	12/14/1999	383.0	75.10	3-4 PM	12/14/1999
		12/23/1999	12/21/2000	457.0	19.0	9,335.0	20.43	05/13/2000	799.0	42.05	8-9 PM	05/13/2000
Sacred Heart Church Ctr.	Northeast	04/16/1997	12/22/1997	51.0	2.1	172.0	3.37	06/16/1997	172.0	81.90	2-3 PM	06/16/1997
		12/22/1997	12/22/1998	28.0	1.2	656.0	23.43	03/08/1998	313.0	260.83	12-1 PM	03/08/1998
		01/11/1999	11/23/1999	30.0	1.3	301.0	10.03	05/14/1999	136.0	104.62	9-10 AM	04/29/1999
		12/13/1999	12/21/2000	15.0	0.6	306.0	20.40	02/07/2000	149.0	248.33	9-10 AM	07/28/2000
Allantic Veal & Lamb	Northeast	04/16/1997	12/22/1997	5,675.0	236.5	38,185.0	6.73	12/17/1997	2,348.0	9.93	4-5 PM	12/18/1997
		12/22/1997	12/22/1998	8,104.0	337.7	34,027.0	4.20	01/13/1998	2,603.0	7.71	4-5 PM	02/18/1998
		12/14/1998	12/23/1999	941.0	39.2	6,761.0	7.18	10/05/1999	1,120.0	28.57	7-8 AM	02/19/1999
		12/13/1999	12/21/2000	790.0	32.9	5,134.0	6.50	02/04/2000	1,209.0	36.75	8-9 AM	09/29/2000
Atlantic Veal & Lamb	Northeast	04/16/1997	12/22/1997	3,735.0	155.6	17,814.0	4.77	05/12/1997	1,206.0	7.75	2-3 PM	08/08/1997
		12/22/1997	12/22/1998	5,495.0	229.0	30,352.0	5.52	01/18/1998	1,462.0	6.38	3-4 AM	01/15/1998
		01/11/1999	12/23/1999	3,806.0	158.6	21,442.0	5.63	12/16/1999	1,556.0	9.81	11-12 PM	04/15/1999
		12/13/1999	12/21/2000	2,421.0	100.9	27,337.0	11.29	01/27/2000	1,624.0	16.10	11-12 PM	01/27/2000
Atlantic Veal & Lamb	Northeast	04/16/1997	12/22/1997	350.0	14.6	8,877.0	25.36	06/29/1997	964.0	66.03	12-1 PM	06/26/1997
		12/22/1997	12/22/1998	468.0	19.5	6,577.0	14.05	01/25/1998	501.0	25.69	9-10 AM	05/13/1998
		12/14/1998	12/23/1999	132.0	5.5	607.0	4.60	09/03/1999	423.0	76.91	10-11 AM	09/03/1999
		12/13/1999	12/21/2000	190.0	7.9	2,657.0	13.98	04/03/2000	305.0	38.61	12-1 PM	04/03/2000

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Summary of Observed Maximum Day and Hour Demand Ratios
Industrial Customers

Customer Name (1)	District (2)	Test Period		Annual Consumption		Maximum Day During Test Period			Maximum Hour During Test Period			
		From (3)	To (4)	Average Day (5)	Average Hour (6)	Gallons (7)	Ratio (8)	Date (9)	Gallons (10)	Ratio (11)	Hour (12)	Date (13)
Sunshine Quality Products	Frackville	04/16/1993	12/07/1994	16,399.0	683.3	46,775.0	2.85	12/16/1993	6,458.0	9.45	8-9 AM	12/09/1993
		11/28/1994	12/14/1995	20,754.8	864.8	42,529.0	2.05	06/16/1995	5,369.0	6.21	9-10 AM	10/13/1995
		12/06/1995	12/13/1996	24,789.0	1,032.9	51,305.0	2.07	08/12/1996	5,596.0	5.42	7-8 AM	08/12/1996
		12/13/1996	04/10/1997	7,396.0	308.2	49,942.0	6.75	12/23/1996	5,337.0	17.32	10-11 AM	12/23/1996
Hershey Foods	Hershey	12/12/1994	11/02/1995	506,142.5	21,089.3	788,846.0	1.56	06/14/1995	39,246.0	1.86	12-1 PM	06/14/1995
		08/19/1997	01/07/1998	527,753.0	21,989.7	575,319.0	1.09	09/16/1997	31,455.0	1.43	12-1 PM	09/05/1997
		01/07/1998	01/07/1999	319,899.0	13,329.1	554,841.0	1.73	09/03/1998	28,003.0	2.10	12-1 PM	09/03/1998
		12/24/1998	01/06/2000	367,490.0	15,312.1	678,823.0	1.85	06/11/1999	49,049.0	3.20	5-6 AM	05/03/1999
		12/24/1999	01/05/2001	595,257.0	24,802.4	689,392.0	1.16	04/25/2000	44,503.0	1.79	10-11 AM	03/28/2000
American Car & Foundry Co	White Deer	04/15/1993	12/20/1994	199,592.0	8,316.3	268,221.0	1.34	02/02/1994	11,611.0	1.40	7-8 AM	01/24/1994
		01/09/1997	01/06/1998	122,937.0	5,122.4	141,916.0	1.15	08/26/1997	8,045.0	1.57	6-7 AM	08/04/1997
		01/06/1998	12/23/1998	93,545.0	3,897.7	120,635.0	1.29	09/22/1998	6,780.0	1.74	5-6 AM	04/06/1998
		12/14/1998	12/23/1999	87,570.0	3,648.8	150,912.0	1.72	06/28/1999	8,426.0	2.31	3-4 AM	06/28/1999
		12/15/1999	11/22/2000	52,149.0	2,172.9	128,451.0	2.46	08/07/2000	7,535.0	3.47	6-7 AM	08/14/2000
H. Warshaw & Sons	White Deer	04/15/1993	12/20/1994	296,953.0	12,373.0	512,993.7	1.73	07/23/1993	34,006.3	2.75	9-10 PM	07/23/1993
		12/09/1994	10/24/1995	316,738.4	13,197.4	503,504.0	1.59	03/14/1995	28,354.0	2.15	5-6 PM	03/14/1995
		04/11/1996	12/27/1996	266,653.4	11,110.6	447,067.0	1.68	05/22/1996	28,503.0	2.57	5-6 AM	04/17/1996
		12/27/1996	12/26/1997	266,653.0	11,110.5	477,177.0	1.79	12/16/1997	39,258.0	3.53	6-7 AM	12/16/1997
		12/26/1997	12/23/1998	239,760.0	9,990.0	314,316.0	1.31	02/05/1998	36,566.0	3.66	3-4 AM	07/07/1998
		12/14/1998	12/22/1999	158,637.0	6,609.9	328,733.0	2.07	10/26/1999	26,943.0	4.08	10-11 AM	12/17/1998
		12/15/1999	11/22/2000	135,040.0	5,626.7	293,361.0	2.17	05/03/2000	22,443.0	3.99	4-5 AM	08/23/2000
GTE Products Corporation	Warren	04/23/1993	12/01/1994	386,313.0	16,096.4	501,847.0	1.30	11/09/1994	29,842.0	1.85	6-7 AM	08/22/1994
		11/22/1994	11/09/1995	358,465.8	14,936.1	557,840.0	1.56	10/18/1995	28,386.0	1.90	10-11 AM	03/30/1995
		11/21/1995	12/27/1996	284,808.2	11,867.0	535,122.0	1.88	12/06/1995	25,505.0	2.15	7-8 PM	12/06/1995
		11/21/1997	12/31/1998	279,323.0	11,638.5	504,952.0	1.81	11/04/1998	27,876.0	2.40	9-10 AM	11/12/1998
		12/21/1998	01/03/2000	356,247.0	14,843.6	505,932.0	1.42	12/02/1999	46,620.0	3.14	3-4 PM	12/02/1999
		12/21/1999	12/01/2000	333,031.4	13,876.3	700,470.0	2.10	09/20/2000	55,372.0	3.99	10-11 AM	09/20/2000
Loranger Plastics	Warren	04/23/1993	12/01/1994	69,688.0	2,903.7	107,081.0	1.54	08/31/1993	4,843.0	1.67	9-10 AM	08/31/1993
		11/22/1994	12/01/1995	51,063.8	2,127.7	71,277.0	1.40	06/08/1995	3,501.0	1.65	12-1 AM	06/22/1995
		11/21/1995	12/27/1996	41,480.3	1,728.3	63,245.0	1.52	08/20/1996	2,826.0	1.64	4-5 PM	08/19/1996
		12/27/1996	01/02/1998	34,655.0	1,444.0	71,186.0	2.05	03/06/1997	3,777.0	2.62	6-7 PM	03/05/1997
		01/02/1998	12/31/1998	25,824.0	1,076.0	43,994.0	1.70	08/26/1998	2,808.0	2.61	10-11 AM	09/29/1998
		12/21/1998	01/03/2000	8,263.0	344.3	24,050.0	2.91	05/02/1999	2,005.0	5.82	10-11 AM	04/22/1999
		12/21/1999	12/01/2000	9,044.0	376.8	24,036.0	2.66	09/16/2000	1,479.0	3.93	8-9 PM	09/20/2000

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PENNSYLVANIA-AMERICAN WATER COMPANY

Summary of Observed Maximum Day and Hour Demand Ratios
Industrial Customers

Customer Name (1)	District (2)	Test Period		Annual Consumption		Maximum Day During Test Period			Maximum Hour During Test Period			
		From (3)	To (4)	Average Day (5)	Average Hour (6)	Gallons (7)	Ratio (8)	Date (9)	Gallons (10)	Ratio (11)	Hour (12)	Date (13)
Lukens Steel Company	Norristown	04/26/1993	11/04/1994	71,786.0	2,991.1	155,896.0	2.17	10/28/1994	11,303.0	3.78	4-5 AM	10/28/1994
		07/28/1995	11/10/1995	92,086.3	3,836.9	125,964.0	1.37	08/22/1995	6,293.0	1.64	1-2 PM	08/25/1995
		01/29/1996	08/08/1996	114,495.6	4,770.7	199,628.0	1.74	07/12/1996	9,176.0	1.92	2-3 PM	07/18/1996
Anchor Glass	Fayette	04/07/1993	12/21/1994	100,641.0	4,193.4	321,912.0	3.20	01/29/1994	14,263.0	3.40	10-11 PM	01/22/1994
		02/06/1995	05/18/1995	98,945.5	4,122.7	118,512.0	1.20	03/10/1995	9,436.0	2.29	1-2 PM	03/10/1995
		02/09/1996	11/21/1996	70,769.3	2,948.7	107,516.0	1.52	03/17/1996	6,897.0	2.34	7-8 AM	03/19/1996
		03/12/1997	10/23/1997	67,777.0	2,824.0	133,934.0	1.98	07/27/1997	18,100.0	6.41	9-10 PM	07/27/1997
		12/11/1998	12/23/1999	124,955.0	5,206.5	412,773.0	3.30	07/06/1999	19,164.0	3.68	2-3AM	01/07/1999
		12/13/1999	12/22/2000	90,133.0	3,755.5	515,552.0	5.72	08/21/2000	33,305.0	8.87	11-12 PM	08/21/2000
Dennis Lumber	Fayette	04/07/1993	12/21/1994	11,121.0	463.4	36,207.0	3.26	11/13/1993	6,304.0	13.60	1-2 PM	09/27/1993
		12/12/1994	12/22/1995	8,935.6	372.3	34,664.0	3.88	01/12/1995	3,892.0	10.45	8-9 AM	01/30/1995
		12/12/1995	01/07/1997	6,766.0	281.9	36,083.0	5.33	10/07/1996	3,111.0	11.04	11-12 AM	12/16/1995
		01/07/1997	12/26/1997	8,415.0	350.6	31,945.0	3.80	12/09/1997	6,160.0	17.57	4-5 PM	12/09/1997
		12/26/1997	12/23/1998	12,890.0	537.1	51,137.0	3.97	11/09/1998	4,522.0	8.42	2-3 AM	09/01/1998
		01/12/1999	11/23/1999	11,132.0	463.8	27,627.0	2.48	06/21/1999	3,384.0	7.30	11-12 PM	10/16/1999
International Paper	White Deer	04/15/1993	11/18/1994	915,216.0	38,134.0	1,865,174.0	1.82	05/17/1994	91,557.1	2.40	8-9 AM	06/28/1993
		02/08/1995	10/24/1995	719,201.4	29,966.7	884,877.0	1.23	07/10/1995	68,354.0	2.28	9-10 PM	06/21/1995
		04/11/1996	12/27/1996	747,833.7	31,159.7	1,455,181.0	1.95	12/16/1996	91,905.0	2.95	3-4 PM	12/06/1996
		12/27/1996	12/27/1997	688,916.0	28,704.8	1,060,844.0	1.54	08/22/1997	97,035.0	3.38	6-7 AM	03/22/1997
		12/27/1997	12/24/1998	584,033.0	24,334.7	1,113,325.0	1.91	10/07/1998	96,341.0	3.96	8-9 AM	12/30/1997
		12/14/1998	12/23/1999	673,108.0	28,046.2	1,310,309.0	1.95	10/13/1999	100,669.0	3.59	4-5 PM	05/25/1999
		12/15/1999	11/22/2000	683,160.0	28,465.0	2,655,602.0	3.89	04/04/2000	162,949.0	5.72	3-4 AM	03/21/2000
		Hercules, Inc.	Mon-Valley	04/08/1993	12/20/1994	197,860.0	8,244.2	281,030.0	1.42	07/13/1994	32,814.0	3.98
12/09/1995	12/22/1995			174,794.0	7,283.1	301,307.0	1.72	08/20/1995	123,325.0	16.93	9-10 PM	08/20/1995
12/11/1995	12/20/1996			163,447.0	6,810.3	251,162.0	1.54	10/17/1996	32,711.0	4.80	12-1 PM	02/23/1996
12/20/1996	12/30/1997			212,030.0	8,834.6	415,181.0	1.96	10/01/1997	77,023.0	8.72	12-1 AM	09/16/1997
12/30/1997	12/21/1998			174,892.0	7,287.2	301,929.0	1.73	11/24/1998	39,488.0	5.42	7-8 PM	08/26/1998
12/11/1998	12/22/1999			257,256.0	10,719.0	755,458.0	2.94	09/23/1999	76,569.0	7.14	1-2 AM	09/24/1999
12/09/1999	12/20/2000			239,605.0	9,983.5	354,078.0	1.48	08/16/2000	73,306.0	7.34	12-1 PM	09/19/2000

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Summary of Observed Maximum Day and Hour Demand Ratios
Industrial Customers

Customer Name	District	Test Period		Annual Consumption		Maximum Day During Test Period			Maximum Hour During Test Period			
		From	To	Average Day	Average Hour	Gallons	Ratio	Date	Gallons	Ratio	Hour	Date
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
ARMCO	Butler	07/07/1993	12/19/1994	2,332,703.0	97,196.0	2,901,206.0	1.24	04/19/1994	186,452.0	1.92	6-7 AM	09/08/1993
		11/28/1994	05/18/1995	2,582,468.0	107,602.8	2,902,356.0	1.12	01/12/1995	156,437.0	1.45	11-12 PM	03/17/1995
		07/17/1996	09/23/1996	2,631,377.0	109,640.7	3,250,217.0	1.24	07/19/1996	176,226.0	1.61	2-3 AM	07/23/1996
		06/09/1997	12/22/1997	2,099,505.0	87,479.4	3,429,507.0	1.63	09/16/1997	214,557.0	2.45	5-6 PM	09/16/1997
		12/22/1997	12/21/1998	1,854,373.0	77,265.5	3,261,700.0	1.76	10/16/1998	155,158.0	2.01	4-5 AM	10/16/1998
		11/26/1998	11/19/1999	1,995,830.0	83,159.6	3,294,341.0	1.65	07/05/1999	226,831.0	2.73	3-4AM	08/19/1999
U. S. Steel	Mon-Valley	09/08/1994	12/19/1994	825,014.0	34,375.6	1,526,857.0	1.85	06/16/1994	75,078.0	2.18	2-3 PM	07/11/1994
		12/09/1994	12/21/1995	593,483.0	24,728.5	1,250,641.0	2.11	08/22/1995	65,317.0	2.64	12-1 PM	08/23/1995
		12/11/1996	12/22/1997	674,017.0	28,084.0	1,297,352.0	1.92	03/11/1997	64,533.0	2.30	3-4 PM	03/11/1997
		12/22/1997	12/21/1998	606,338.0	25,264.1	870,755.0	1.44	09/21/1998	53,415.0	2.11	11-12 PM	09/17/1998
		12/11/1998	12/22/1999	655,990.0	27,332.9	1,180,366.0	1.80	11/10/1999	68,747.0	2.52	2-3 PM	11/17/1999
		12/09/1999	12/20/2000	402,838.0	16,784.9	964,692.0	2.39	06/01/2000	51,317.0	3.06	1-2 PM	06/01/2000
American Home Foods	White Deer	04/15/1993	12/19/1994	442,258.5	18,427.4	2,314,219.0	5.23	08/17/1993	138,200.0	7.50	11-12 PM	08/20/1993
		12/09/1994	10/24/1995	423,364.4	17,640.2	799,215.0	1.89	09/06/1995	47,767.0	2.71	11-12 PM	09/06/1995
		12/13/1996	01/06/1998	1,054,919.0	43,955.0	1,789,537.0	1.70	10/09/1997	110,860.0	2.52	11-12 PM	10/14/1997
		01/06/1998	01/20/1999	1,210,485.0	50,436.9	2,558,869.0	2.11	09/16/1998	143,683.0	2.85	12-1 AM	09/17/1998
		12/14/1998	10/26/1999	1,326,734.0	55,280.6	2,604,540.0	1.96	09/29/1999	162,134.0	2.93	10-11 AM	10/12/1999
		12/15/1999	11/22/2000	1,505,140.0	62,714.2	2,683,144.0	1.78	02/09/2000	156,878.0	2.50	12-1 PM	08/11/2000
United Refining	Warren	04/23/1993	12/19/1994	651,304.0	27,138.0	1,655,902.0	2.54	08/27/1993	72,042.0	2.65	12-1 PM	08/24/1993
		11/22/1994	12/01/1995	157,300.0	6,554.2	510,282.0	3.24	11/03/1995	52,306.0	7.98	1-2 PM	08/14/1995
		11/21/1995	12/27/1996	130,179.0	5,424.1	456,226.0	3.50	12/14/1995	27,632.0	5.09	10-11 AM	12/02/1995
		12/27/1996	01/02/1998	273,663.0	11,402.6	650,502.0	2.38	05/15/1997	39,483.0	3.46	6-7 PM	04/26/1997
		01/02/1998	12/31/1998	369,419.0	15,392.5	1,764,224.0	4.78	08/29/1998	81,955.0	5.32	11-12 PM	08/29/1998
		12/21/1998	01/03/2000	208,434.0	8,684.8	911,595.0	4.37	07/24/1999	62,272.0	7.17	12-1 PM	04/14/1999
		12/21/1999	12/01/2000	172,017.0	7,167.4	1,193,052.0	6.94	07/31/2000	87,816.0	12.25	11-12 PM	06/29/2000
Titanium Industrial	Frackville	11/27/1998	12/10/1999	20,190.0	841.3	48,831.0	2.42	07/22/1999	2,389.0	2.84	5-6AM	06/26/1999
		12/07/1999	12/13/2000	15,362.0	640.1	38,655.0	2.52	10/10/2000	1,934.0	3.02	12-1PM	05/10/2000
INMETCO	Lawrence	12/16/1998	12/22/1999	102,137.0	4,255.7	166,983.0	1.63	05/23/1999	19,997.0	4.70	5-6 PM	03/16/1999
		12/09/1999	01/23/2001	151,471.0	6,311.3	525,646.0	3.47	08/15/2000	77,213.0	12.23	2-3 AM	06/19/2000
Koppel Steel	Mon Valley	01/11/1999	10/24/2000	605,710.0	25,237.9	912,470.0	1.51	06/07/1999	52,270.0	2.07	6-7 AM	06/07/1999

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Summary of Observed Maximum Day and Hour Demand Ratios
Industrial Customers

Customer Name (1)	District (2)	Test Period		Annual Consumption		Maximum Day During Test Period			Maximum Hour During Test Period			
		From (3)	To (4)	Average Day (5)	Average Hour (6)	Gallons (7)	Ratio (8)	Date (9)	Gallons (10)	Ratio (11)	Hour (12)	Date (13)
Harris Semiconductor	Northeast	04/30/1997	12/22/1997	898,532.0	37,438.8	1,359,754.0	1.51	07/25/1997	69,610.0	1.86	11-12 PM	07/25/1997
		12/22/1997	12/22/1998	822,506.0	34,271.1	1,358,871.0	1.65	08/10/1998	65,311.0	1.91	12-1 PM	08/21/1998
		12/14/1998	12/23/1999	826,298.0	34,429.1	1,046,735.0	1.27	09/11/1999	54,504.0	1.58	9-10 AM	07/17/1999
		12/13/1999	12/21/2000	728,883.0	30,370.1	1,099,464.0	1.51	09/12/2000	55,019.0	1.81	6-7 PM	09/15/2000
Thompson Cons. Electr.	Northeast	04/16/1997	12/22/1997	647,135.0	26,964.0	829,031.0	1.28	08/10/1997	50,904.0	1.89	1-2 AM	10/26/1997
		12/22/1997	12/22/1998	705,859.0	29,410.8	900,891.0	1.28	04/03/1998	55,507.0	1.89	2-3 PM	06/25/1998
		12/14/1998	12/23/1999	654,135.0	27,255.6	831,238.0	1.27	09/03/1999	49,743.0	1.83	11-12 AM	10/10/1999
		12/13/1999	12/21/2000	622,342.0	25,930.9	867,531.0	1.39	06/02/2000	51,508.0	1.99	10-11 AM	10/09/2000
Lion Inc.	Northeast	04/16/1997	12/22/1997	369,494.0	15,395.6	657,355.0	1.78	12/09/1997	40,700.0	2.64	12-1 PM	11/24/1997
		12/22/1997	12/22/1998	284,939.0	11,872.5	676,840.0	2.38	01/14/1998	41,937.0	3.53	11-12 AM	01/05/1998
		12/14/1998	12/23/1999	322,421.0	13,434.2	767,610.0	2.38	06/09/1999	41,736.0	3.11	7-8 AM	06/10/1999
Quaker Oats	Northeast	09/10/1997	12/22/1998	284,039.0	11,835.0	492,819.0	1.74	07/23/1998	32,586.0	2.75	8-9 PM	06/29/1998
		12/14/1998	12/23/1999	270,428.0	11,267.8	617,494.0	2.28	07/22/1999	48,794.0	4.33	5-6 PM	09/23/1999
		12/13/1999	11/21/2000	545,397.0	22,724.9	732,115.0	1.34	08/16/2000	41,691.0	1.83	5-6 AM	07/10/2000
Inter Metro Industries	Northeast	04/16/1997	12/22/1997	180,711.0	7,529.6	296,494.0	1.64	09/09/1997	14,448.0	1.92	1-2 PM	09/19/1997
		12/22/1997	12/22/1998	151,658.0	6,319.1	286,579.0	1.89	11/12/1998	14,393.0	2.28	7-8 PM	02/10/1998
		12/14/1998	11/23/1999	185,755.0	7,739.8	287,127.0	1.55	12/22/1998	13,574.0	1.75	10-11 AM	03/18/1999
		12/13/1999	12/21/2000	130,133.0	5,422.2	304,429.0	2.34	09/26/2000	16,606.0	3.06	5-6 PM	10/02/2000
Angelica Corporation	Northeast	04/16/1997	12/22/1997	157,234.0	6,551.4	266,160.0	1.69	07/28/1997	14,140.0	2.16	9-10 AM	12/09/1997
		01/14/2000	12/21/2000	118,925.0	4,955.2	211,339.0	1.78	08/15/2000	21,985.0	4.44	2-3 PM	08/15/2000
Jaunty Textile	Northeast	07/21/1997	12/22/1997	299,944.0	12,497.7	555,840.0	1.85	12/02/1997	42,360.0	3.39	11-12 AM	09/22/1997
		12/22/1997	12/22/1998	262,170.0	10,923.8	642,422.0	2.45	07/29/1998	48,219.0	4.41	9-10 AM	09/30/1998
		12/14/1998	12/23/1999	98,629.0	4,109.5	396,067.0	4.02	01/27/1999	47,255.0	11.50	1-2 PM	02/01/1999
		12/13/1999	12/21/2000	34,204.0	1,425.2	157,278.0	4.60	12/14/1999	27,953.0	19.61	6-7 AM	05/23/2000
Westlake United Corp.	Northeast	04/16/1997	12/22/1997	60,562.0	2,523.4	281,046.0	4.64	07/20/1997	42,951.0	17.02	8-9 AM	08/10/1997
		12/22/1997	12/22/1998	60,562.0	2,523.4	228,557.0	3.77	08/21/1998	41,619.0	16.49	5-6 PM	08/23/1998
		12/14/1998	12/23/1999	80,726.0	3,363.6	319,420.0	3.96	07/12/1999	39,055.0	11.61	12-1 AM	07/12/1999
		12/13/1999	12/21/2000	97,064.0	4,044.3	253,623.0	2.61	12/14/2000	42,240.0	10.44	6-7 AM	12/17/2000
Techneglass	Northeast	07/16/1997	12/22/1997	771,611.0	32,150.5	723,490.0	0.94	08/04/1997	41,290.0	1.28	12-1 AM	08/04/1997
		12/22/1997	12/22/1998	553,540.0	23,064.2	574,683.0	1.04	01/19/1998	33,546.0	1.45	4-5 PM	01/20/1998
		12/14/1998	12/23/1999	545,569.0	22,732.0	793,093.0	1.45	05/22/1999	36,605.0	1.61	12-1 PM	04/26/1999
		12/13/1999	12/21/2000	355,891.0	14,828.8	847,397.0	2.38	05/09/2000	55,597.0	3.75	12-1 AM	10/04/2000

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Summary of Observed Maximum Day and Hour Demand Ratios
Public Customers

Customer Name (1)	District (2)	Test Period		Annual Consumption		Maximum Day During Test Period			Maximum Hour During Test Period			
		From (3)	To (4)	Average Day (5)	Average Hour (6)	Gallons (7)	Ratio (8)	Date (9)	Gallons (10)	Ratio (11)	Hour (12)	Date (13)
Nesco Sewage Disp. Pl.	Berwick	04/14/1993	12/13/1994	3,086.0	128.6	13,703.0	4.44	02/24/1994	896.4	6.97	4-5 PM	06/03/1993
		12/01/1994	12/22/1995	164.4	6.9	5,142.0	31.28	05/31/1994	717.0	103.91	7-8 AM	08/03/1995
		12/13/1995	12/27/1996	123.3	5.1	1,776.0	14.40	05/03/1996	655.0	128.43	9-10 AM	05/03/1996
		12/27/1996	12/26/1997	285.0	11.9	2,902.0	10.18	04/21/1997	1,071.0	90.00	1-2 PM	04/21/1997
		12/26/1997	12/22/1998	495.0	20.6	2,951.0	5.96	04/14/1998	1,227.0	59.56	1-2 PM	04/14/1998
		12/11/1998	12/21/1999	264.0	11.0	1,318.0	4.99	06/09/1999	804.0	73.09	9-10AM	06/09/1999
		12/10/1999	12/21/2000	323.0	13.5	3,737.0	11.57	05/17/2000	1,136.0	84.15	6-7AM	06/21/2000
DDRE Post 1	Riverton	04/05/1993	12/16/1994	183,391.0	7,641.3	675,575.9	3.68	05/18/1993	35,738.5	4.68	9-10 AM	05/18/1993
		01/11/1995	12/28/1995	200,539.7	8,355.8	377,668.0	1.88	05/10/1995	38,423.0	4.60	7-8 AM	05/15/1995
		12/20/1995	08/29/1996	200,276.7	8,344.9	644,748.0	3.22	08/26/1996	30,699.0	3.68	8-9 AM	08/26/1996
		01/17/1997	12/30/1997	200,408.2	8,350.3	636,324.0	3.18	09/22/1997	39,578.0	4.74	3-4 AM	11/25/1997
		12/30/1997	12/29/1998	100,605.0	4,191.9	718,955.0	7.15	05/12/1998	45,838.0	10.93	10-11 AM	11/14/1998
		01/14/1999	12/29/1999	162,705.0	6,779.4	1,272,150.0	7.82	11/18/1999	102,695.0	15.15	11-12 AM	11/30/1999
		12/17/1999	12/29/2000	174,654.3	7,277.3	641,722.0	3.67	07/07/2000	64,204.0	8.82	9-10 AM	01/07/2000
U.S. Navy Depot	Riverton	07/13/1993	12/19/1994	289,890.0	12,078.8	855,554.0	2.95	02/15/1994	68,165.0	5.64	9-10 AM	12/07/1993
		12/08/1994	12/28/1995	65,533.7	2,730.6	799,816.0	12.20	01/31/1995	57,290.0	20.98	9-10 AM	01/12/1995
		01/17/1996	11/26/1996	71,049.3	2,960.4	413,331.0	5.82	06/20/1996	58,159.0	19.65	4-5 PM	11/15/1996
		08/18/1997	12/30/1997	44,447.0	1,852.0	170,901.0	3.85	09/22/1997	83,251.0	44.95	2-3 PM	09/22/1997
		12/16/1998	12/29/1999	102,516.0	4,271.5	662,426.0	6.46	12/01/1999	104,209.0	24.40	7-8 AM	07/22/1999
		12/17/1999	12/29/2000	181,930.0	7,580.4	1,125,813.0	6.19	08/16/2000	357,200.0	47.12	2-3 AM	08/26/2000
Clarion University	Clarion	04/21/1993	12/13/1994	162,589.0	6,774.5	391,876.7	2.41	05/02/1993	23,649.9	3.49	2-3 PM	04/29/1993
		12/02/1994	12/13/1995	142,691.2	5,945.5	360,644.0	2.53	09/03/1995	26,079.0	4.39	2-3 AM	05/30/1995
		12/01/1995	12/11/1996	146,907.9	6,121.2	384,193.0	2.62	10/23/1996	22,671.0	3.70	3-4 AM	10/23/1996
		11/28/1996	12/10/1997	150,657.0	6,277.4	406,999.0	2.70	10/06/1997	22,700.0	3.62	12-1 AM	09/09/1997
		12/10/1997	12/09/1998	112,866.0	4,702.8	318,557.0	2.82	11/13/1998	22,906.0	4.87	3-4 AM	03/19/1998
		11/27/1998	12/09/1999	99,882.0	4,161.8	283,177.0	2.84	05/09/1999	22,422.0	5.39	1-2AM	05/09/1999
		11/29/1999	12/08/2000	113,258.0	4,719.1	251,301.0	2.22	03/07/2000	22,812.0	4.83	3-4AM	04/14/2000
University of California	California	05/11/1993	12/20/1994	40,527.0	1,688.6	112,839.0	2.78	10/12/1994	10,375.0	6.14	8-9 PM	11/17/1994
		12/09/1994	06/29/1995	35,500.0	1,479.2	72,698.0	2.05	02/27/1995	13,657.0	9.23	6-7 PM	02/27/1995
		03/11/1997	11/21/1997	36,860.0	1,535.8	53,579.0	1.45	11/10/1997	3,649.0	2.38	9-10 AM	10/17/1997
		12/15/1997	12/22/1998	23,532.0	980.5	55,944.0	2.38	02/18/1998	3,982.0	4.06	10-11 AM	10/30/1998
		12/10/1998	12/22/1999	33,537.0	1,397.4	72,845.0	2.17	01/29/1999	31,210.0	22.33	7-8PM	02/22/1999

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Public Customers

Customer Name (1)	District (2)	Test Period		Annual Consumption		Maximum Day During Test Period			Maximum Hour During Test Period			
		From (3)	To (4)	Average Day (5)	Average Hour (6)	Gallons (7)	Ratio (8)	Date (9)	Gallons (10)	Ratio (11)	Hour (12)	Date (13)
University of California	California	05/11/1993	12/20/1994	78,419.0	3,267.5	148,681.0	1.90	11/17/1994	21,585.0	6.61	8-9 PM	11/17/1994
		12/09/1994	08/21/1995	76,584.9	3,191.0	191,301.0	2.50	02/27/1995	27,543.0	8.63	6-7 PM	02/27/1995
		03/11/1997	05/21/1997	58,001.0	2,416.7	101,614.0	1.75	03/31/1997	10,404.0	4.31	1-2 PM	04/16/1997
		12/15/1997	12/22/1998	48,018.0	2,000.8	117,270.0	2.44	09/17/1998	8,780.0	4.39	11-12 AM	11/19/1998
		02/10/1999	12/22/1999	67,951.0	2,831.3	154,278.0	2.27	09/14/1999	28,765.0	10.16	7-8PM	02/22/1999
		12/10/1999	12/21/2000	65,904.0	2,746.0	127,971.0	1.94	09/11/2000	11,469.0	4.18	6-6AM	08/30/2000
California State College	California	12/09/1999	12/21/2000	5,959.0	248.3	12,742.0	2.14	08/16/2000	2,415.0	9.73	12-1PM	03/08/2000
Warren County Schools	Warren	04/23/1993	12/01/1994	3,513.0	146.4	22,968.6	6.54	07/26/1993	2,968.0	20.27	10-11 AM	09/22/1993
		11/22/1994	12/01/1994	4,542.2	189.3	12,400.0	2.73	01/26/1995	1,850.0	9.77	12-1 PM	05/25/1995
		11/21/1995	12/27/1996	6,060.8	252.5	20,362.0	3.36	01/21/1996	1,679.0	6.65	11-12 AM	09/17/1996
		12/27/1996	01/02/1998	5,198.0	216.6	20,217.0	3.89	04/14/1997	5,001.0	23.09	9-10 PM	04/14/1997
		01/02/1998	12/31/1998	6,058.0	252.4	13,807.0	2.28	03/17/1998	1,586.0	6.28	12-1 PM	02/18/1998
		12/21/1998	01/03/2000	5,074.4	211.4	15,003.0	2.96	06/02/1999	2,233.0	10.56	2-3 PM	12/18/1999
12/21/1999	12/01/2000	5,074.4	211.4	20,258.0	3.99	10/03/2000	2,931.0	13.86	12-1 PM	05/04/2000		
Housing Authority	Lawrence	04/08/1993	05/24/1994	37,135.0	1,547.3	48,394.3	1.30	08/29/1993	3,519.4	2.27	3-4 PM	07/07/1993
		12/08/1994	12/28/1995	36,424.7	1,517.7	67,015.0	1.84	07/15/1995	5,340.0	3.52	5-6 PM	07/14/1995
		02/12/1996	11/22/1996	77,810.1	3,242.1	190,711.0	2.45	11/17/1996	8,180.0	2.52	8-9 AM	11/18/1996
		05/09/1997	12/23/1997	32,719.0	1,363.3	39,917.0	1.22	07/17/1997	2,384.0	1.75	1-2 PM	06/22/1997
		12/23/1997	12/22/1998	31,055.0	1,294.0	49,290.0	1.59	12/17/1998	2,365.0	1.83	2-3 PM	12/19/1998
AHI Dodge Association	Mon-Valley	04/08/1993	11/21/1994	67,909.0	2,829.5	122,350.9	1.80	07/12/1993	17,342.5	6.13	3-4 PM	07/12/1993
		12/09/1994	12/21/1995	22,340.8	930.9	49,382.0	2.21	12/12/1994	3,463.0	3.72	6-7 PM	12/19/1994
		12/11/1996	12/30/1997	17,415.0	725.6	23,659.0	1.36	01/20/1997	2,131.0	2.94	11-12 AM	09/01/1997
		12/30/1997	12/21/1998	11,655.0	485.6	22,239.0	1.91	01/20/1998	3,738.0	7.70	2-3 PM	03/26/1998
Allegheny County Housing	Mon-Valley	04/15/1993	11/21/1994	3,601.0	150.0	16,253.0	4.51	08/13/1994	1,360.0	9.07	12-1 PM	01/11/1994
		02/03/1995	12/21/1995	5,785.2	241.1	12,926.0	2.23	09/03/1995	936.0	3.88	8-9 PM	07/06/1995
		02/09/1996	11/22/1996	4,593.2	191.4	9,597.0	2.09	02/16/1996	607.0	3.17	7-8 PM	11/21/1996
		12/12/1996	11/21/1997	2,298.0	95.8	8,732.0	3.80	12/15/1996	585.0	6.11	10-11 PM	08/19/1997
		12/11/1997	10/22/1998	3,088.0	128.7	9,562.0	3.10	01/24/1998	557.0	4.33	10-11 PM	02/03/1998
		12/11/1998	12/22/1999	3,732.0	155.5	17,037.0	4.57	12/16/1999	907.0	5.83	5-6 PM	10/02/1999

PENNSYLVANIA-AMERICAN WATER COMPANY

Summary of Observed Maximum Day and Hour Demand Ratios
Public Customers

Customer Name (1)	District (2)	Test Period		Annual Consumption		Maximum Day During Test Period			Maximum Hour During Test Period			
		From (3)	To (4)	Average Day (5)	Average Hour (6)	Gallons (7)	Ratio (8)	Date (9)	Gallons (10)	Ratio (11)	Hour (12)	Date (13)
Allegheny County Housing	Mon-Valley	04/08/1993	12/19/1994	11,567.0	482.0	31,684.0	2.74	08/04/1994	5,723.0	11.87	10-11 PM	08/04/1994
		12/09/1994	12/21/1995	8,579.2	357.5	10,746.0	1.25	08/13/1995	1,259.0	3.52	1-2 PM	11/23/1995
		12/12/1995	11/22/1996	8,324.7	346.9	16,920.0	2.03	10/22/1996	1,325.0	3.82	9-10 PM	10/22/1996
		01/10/1997	08/22/1997	8,461.0	352.5	10,048.0	1.19	02/09/1997	1,162.0	3.30	1-2 PM	06/28/1997
Allegheny County Parks	Mon-Valley	05/27/1993	12/19/1994	39,494.0	1,645.6	241,042.0	6.10	01/08/1994	15,741.0	9.57	4-5 AM	01/08/1994
		12/09/1994	12/21/1995	49,442.5	2,060.1	126,478.0	2.56	09/08/1995	28,617.0	13.89	3-4 PM	09/08/1995
		12/11/1995	12/20/1996	34,145.5	1,422.7	86,223.0	2.53	02/21/1996	4,431.0	3.11	3-4 PM	02/16/1996
		12/11/1997	12/21/1998	11,846.0	493.6	36,027.0	3.04	06/14/1998	3,621.0	7.34	10-11 AM	06/05/1998
		01/07/2000	11/21/2000	8,110.0	337.9	30,759.0	3.79	02/09/2000	1,295.0	3.83	12-1 AM	01/25/2000
U.S. Penitentiary	White Deer	12/15/1998	12/24/1999	324,053.0	13,502.2	594,866.0	1.84	05/20/1999	32,812.0	2.43	3-4 AM	05/21/1999
		12/15/1999	10/25/2000	133,270.0	5,552.9	459,661.0	3.45	10/19/2000	31,815.0	5.73	12-1 AM	09/17/2000
Chase Prison	Northeast	08/11/1997	12/22/1997	145,128.0	6,047.0	371,074.0	2.56	10/24/1997	28,955.0	4.79	11-12 PM	10/23/1997
		12/22/1997	12/22/1998	133,863.0	5,577.6	596,321.0	4.45	01/15/1998	64,195.0	11.51	2-3 PM	02/04/1998
		12/14/1998	12/23/1999	125,093.0	5,212.2	534,610.0	4.27	01/21/1999	50,867.0	9.76	11-12 AM	01/21/1999
		12/13/1999	10/23/2000	96,288.0	4,012.0	539,977.0	5.61	04/20/2000	41,444.0	10.33	12-1 AM	04/20/2000
Retreat State Correctional	Northeast	04/16/1997	12/22/1997	119,843.0	4,993.5	462,250.0	3.86	12/19/1997	29,263.0	5.86	4-5 PM	12/17/1997
		12/22/1997	12/22/1998	185,336.0	7,722.3	330,585.0	1.78	12/23/1997	24,927.0	3.23	4-5 PM	12/30/1997
		12/14/1998	12/23/1999	182,494.0	7,603.9	305,916.0	1.68	01/13/1999	19,162.0	2.52	5-6 PM	03/26/1999
		12/13/1999	12/21/2000	123,626.0	5,151.1	360,210.0	2.91	08/12/2000	10,265.0	1.99	12-1 PM	08/21/2000

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PENNSYLVANIA-AMERICAN WATER COMPANY

Summary of Observed Maximum Day and Hour Demand Ratios
Sales for Resale

Customer Name	District	Test Period		Annual Consumption		Maximum Day During Test Period			Maximum Hour During Test Period			
		From	To	Average Day	Average Hour	Gallons	Ratio	Date	Gallons	Ratio	Hour	Date
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Group A:												
Oakdale Borough	Pittsburgh	05/06/1992	12/15/1994	129,123.0	5,380.1	216,432.4	1.68	12/20/1992	45,866.0	8.53	10-11 AM	08/21/1994
		12/06/1994	12/15/1995	140,213.7	5,842.2	553,135.0	3.94	11/05/1995	55,412.0	9.48	7-8 AM	11/05/1995
		12/07/1995	12/10/1996	113,016.7	4,709.0	263,751.0	2.33	12/17/1995	14,079.0	2.99	11-12 AM	12/17/1995
		12/10/1996	12/12/1997	115,022.0	4,792.6	732,875.0	6.37	12/01/1997	46,716.0	9.75	10-11 AM	11/05/1997
		12/04/1998	12/15/1999	144,588.5	6,024.5	896,780.0	6.20	11/10/1999	43,146.0	7.16	10-11 AM	11/13/1999
03/25/1999	12/13/2000	117,131.5	4,880.5	840,382.0	7.17	12/03/2000	116,934.0	23.96	11-12 AM	05/15/2000		
Connoquenessing	Butler	04/23/1992	12/19/1994	96,340.0	4,014.2	176,493.8	1.83	08/10/1992	19,868.7	4.95	12-1 AM	08/09/1992
		12/08/1994	05/19/1995	98,543.8	4,106.0	124,211.0	1.26	05/08/1995	8,415.0	2.05	10-11 AM	05/19/1995
		07/10/1996	09/20/1996	95,856.4	3,994.0	167,160.0	1.74	08/04/1996	20,464.0	5.12	7-8 PM	08/04/1996
		08/08/1997	12/23/1997	100,547.0	4,189.5	105,023.0	1.04	12/22/1997	12,702.0	3.03	9-10 AM	09/24/1997
		12/23/1997	12/18/1998	87,276.0	3,636.5	194,024.0	2.22	09/27/1998	10,097.0	2.78	6-7 PM	08/21/1998
12/09/1998	11/22/1999	144,129.0	6,005.4	201,051.0	1.39	07/20/1999	11,967.0	1.99	1-2PM	07/27/1999		
Franklin Township	Lawrence	05/14/1992	09/20/1994	32,904.0	1,371.0	83,686.0	2.54	12/28/1992	6,335.5	4.62	2-3 PM	12/18/1992
		12/08/1994	12/29/1995	41,981.6	1,749.2	77,043.0	1.84	06/20/1995	5,767.0	3.30	7-8 PM	08/02/1995
		06/12/1996	07/24/1996	35,631.0	1,484.6	67,630.0	1.90	07/06/1996	5,789.0	3.90	2-3 PM	07/03/1996
		12/10/1996	12/30/1997	41,319.0	1,721.6	90,550.0	2.19	06/09/1997	5,812.0	3.38	8-9 AM	01/04/1997
		12/30/1997	12/22/1998	39,622.0	1,650.9	88,616.0	2.24	05/13/1998	5,636.0	3.41	7-8 AM	03/27/1998
		12/11/1998	12/22/1999	49,002.0	2,041.8	86,446.0	1.76	11/25/1999	4,477.0	2.19	12-1 AM	10/14/1999
12/09/1999	08/21/2000	35,392.0	1,474.7	91,942.0	2.60	07/02/2000	4,368.0	2.96	2-3 PM	05/03/2000		
North Fayette Munic. Auth Fayette		05/15/1992	12/21/1994	33,206.0	1,383.6	78,431.7	2.36	10/10/1992	35,356.0	25.55	9-10 AM	10/10/1992
		12/12/1994	12/22/1995	30,968.5	1,290.4	83,007.0	2.68	09/12/1995	10,724.0	8.31	4-5 AM	09/12/1995
		12/12/1995	11/21/1996	30,827.4	1,284.5	35,074.0	1.14	05/25/1996	3,802.0	2.96	6-7 PM	06/24/1996
		03/12/1997	12/26/1997	32,264.0	1,344.3	60,079.0	1.88	04/22/1997	12,775.0	9.50	2-3 AM	04/22/1997
		12/26/1997	12/23/1998	56,944.0	2,372.7	67,474.0	1.18	10/22/1998	15,794.0	6.66	7-8 PM	10/22/1998
12/13/1999	12/22/2000	41,202.0	1,716.8	46,582.0	1.13	07/13/2000	8,977.0	5.23	10-11AM	01/12/2000		
Indiana Munic.	Indiana	08/24/1992	10/05/1994	79,645.0	3,318.5	205,646.0	2.58	12/14/1994	34,054.0	10.26	11-12 AM	12/14/1994
		11/24/1994	12/28/1995	64,098.1	2,670.8	141,219.0	2.20	12/05/1995	32,292.0	12.09	3-4 AM	12/05/1995
		12/07/1995	11/14/1996	81,867.9	3,411.2	255,983.0	3.13	02/04/1996	28,370.0	8.32	2-3 PM	10/23/1996
		01/03/1997	12/15/1997	95,915.0	3,996.5	150,552.0	1.57	05/07/1997	18,942.0	4.74	2-3 PM	05/06/1997
		12/15/1997	12/14/1998	98,035.0	4,084.8	213,008.0	2.17	02/04/1998	31,326.0	7.67	12-1 PM	12/19/1997
		12/14/1998	12/14/1999	77,239.0	3,218.3	345,135.0	4.47	07/19/1999	33,514.0	10.41	6-7 PM	07/22/1999
12/02/1999	02/11/2000	96,388.0	4,016.2	153,662.0	1.59	01/17/2000	23,233.0	5.78	2-3 PM	01/08/2000		

PENNSYLVANIA-AMERICAN WATER COMPANY

Summary of Observed Maximum Day and Hour Demand Ratios
Sales for Resale

Customer Name (1)	District (2)	Test Period		Annual Consumption		Maximum Day During Test Period			Maximum Hour During Test Period			
		From (3)	To (4)	Average Day (5)	Average Hour (6)	Gallons (7)	Ratio (8)	Date (9)	Gallons (10)	Ratio (11)	Hour (12)	Date (13)
<u>Group A (cont.):</u>												
West Allegheny Munic.	Washington	05/12/1992	12/21/1994	49,587.0	2,066.1	116,924.0	2.36	08/16/1992	27,176.7	13.15	5-6 AM	08/16/1992
		12/12/1994	07/14/1995	65,566.3	2,731.9	195,101.0	2.98	12/28/1994	9,279.0	3.40	11-12 AM	12/29/1994
		01/13/1999	02/27/2000	20,837.0	868.2	24,530.0	1.18	12/28/1999	3,113.0	3.59	5-6 AM	03/08/1999
<u>Group B:</u>												
Kittanning Suburban	Kittanning	11/21/1995	10/31/1996	38.4	1.6	2,580.0	67.19	02/28/1996	2,580.0	1,612.50	1-2 PM	02/28/1996
Robinson Township	Pittsburgh	05/06/1992	11/14/1994	71,883.0	2,995.1	809,754.0	11.26	05/27/1994	35,748.0	11.94	4-5 AM	05/27/1994
		12/05/1994	12/15/1995	54,335.6	2,264.0	775,521.0	14.27	08/01/1995	34,670.0	15.31	4-5 AM	08/01/1995
		01/03/1996	08/14/1996	148,120.5	6,171.7	841,519.0	5.68	01/21/1996	39,108.0	6.34	4-5 AM	01/21/1996
		12/03/1998	12/15/1999	27,675.0	1,153.1	747,037.0	26.99	06/11/1999	45,074.0	39.09	6-7 PM	07/20/1999
Westmoreland Munic.	Mon Valley	07/27/1992	12/19/1994	11,900.0	495.8	448,000.0	37.65	08/26/1994	71,400.0	144.01	10-11 AM	08/26/1994
		01/10/1995	03/17/1995	12,015.1	500.6	94,430.0	7.86	02/09/1995	64,010.0	127.87	11-12 AM	02/09/1995



**Report on
Capacity Factors by Customer Class
for the
Illinois American Water Company**

January 2009

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Report on Capacity Factors by Customer Class

Introduction

Water rates are designed to recognize both the annual amount of water provided to a customer class and the relative peak demands placed on the system by each respective customer class. Peak system demands are typically expressed on a maximum day and maximum hour basis. Water treatment plants, pumping facilities, and transmission main systems must generally be designed to meet the maximum day requirements of the water system, and customer classes that require this extra capacity above average daily or base capacity needs must pay a proportionate share of the maximum day related costs. Similarly, adequate system storage capacity and distribution mains must typically be sufficient to meet the maximum hour demands on the system, and those customers that require this extra capacity above maximum day requirements must pay a proportionate share of the maximum hour related costs. A means of reasonably providing that each customer class pays its proportionate share of the system's base, maximum day extra capacity and maximum hour extra capacity costs is to conduct studies to determine the relative maximum day and maximum hour demands placed on the system by the various customer classes.

One method of determining relative customer class demands is to use automatic meter reading (AMR) equipment to periodically read and compile actual customer data for each service area. However, this technology is relatively new and has not been fully employed in the various Illinois American Water Company's service areas. Another method of determining customer class demands is to isolate areas serving a particular customer class and use a demand meter to read daily, hourly and even minute by minute usage for the customer class. This method can be very expensive and may reduce fire protection coverage and cause other operating complications due to the temporary changes in the normal operating conditions of the distribution system required to isolate groups of similar customers. The data obtained from such a study may also not reflect the actual system peak operating demands if the year monitored exhibits lower than normal demands due to milder or wetter than average weather conditions. A customer class demand study of this general nature was conducted in 2007 for the Interurban District. This district is part of the Southern Division consisting of the Alton, Cairo, and Interurban Districts, that have been combined with the Peoria, Streator, Pontiac and South Beloit Districts and is now collectively abbreviated as the SPSPSB rate group.

Another method that can be used to avoid the expense and operational issues associated with a metered demand study, and to relate customer demands from billing system information to historic maximum day and maximum hour demands of the system, is outlined in Appendix A of the American Water Works Association (AWWA) M1 manual titled "*Principles of Water Rates, Fees, and Charges*", Fifth Edition. This method has been used to estimate capacity factors by customer class in this report for each of the six water rate groups.

Purpose

The purpose of this report is to present our findings of a detailed study of capacity factors by customer class. The report determines capacity factors by customer class for each service area and, where required, consolidates those customer class capacity factors into a weighted average set of capacity factors for each rate group. The procedures used in this study are based on the methodology outlined in Appendix A of AWWA's M1 manual of water supply practices.

Scope

This report develops proposed cost allocation factors for each of the six rate groups based on an analysis of historic maximum day and maximum hour demands to average day system ratios. It also develops customer class capacity factors based on the system demands for each service area and analyses of monthly billed usage patterns for each customer class within the respective service areas. These capacity factor values are tested for reasonableness using an acceptable range of diversity factors commonly indicated for other water utilities.

General Methodology

As previously noted, the methodology for estimating customer class demand factors follows the methodology outlined in the industry's standard rates manual. A recent historic year was selected for analysis of customer demands in each service area based on system data that produced the highest system maximum day to average day ratio for each respective service area. Monthly customer class billing data for the selected year was analyzed to determine the average day usage within that year's maximum month for each customer class as well as the annual average day usage for each customer class. The system demands and relative customer class relationships between the average day for the maximum month and the average day for the year, combined with customer class adjustments for maximum day usage variations, were used to estimate maximum day demands by customer class for each service area. Similarly, the relationships between each system's maximum hour and maximum day demands, combined with maximum hour to maximum day variation adjustments by customer class, were applied to the maximum day capacity factors to determine maximum hour capacity factors by customer class. These maximum day and maximum hour capacity factors by class were applied to projected 2009 test year average daily water usage by customer class and summed to determine the maximum day and maximum hour non-coincidental demands for each service area or consolidated rate group. Coincidental demands for each service area were determined by applying the historic maximum system coincidental demand ratios to test year 2009 average daily usage by customer class. Diversity factors were developed by dividing the maximum day and maximum hour non-coincidental demands by the respective coincidental demands for each system. Customer class capacity factors were viewed to be reasonable if the overall system maximum day and maximum hour diversity factors fell within a range of 1.10 to 1.35.

Summary of Findings and Results

Detailed analyses of historic system operating data and monthly billed water usage by customer class result in the capacity ratios summarized in Table A. Applying these capacity ratios to projected 2009 test year average daily usage by customer class and comparing the resulting total maximum day and maximum hour non-coincidental demands to coincidental demands produces the diversity ratios shown in Table B which generally fall within the 1.10 to 1.35 range deemed typical for water utilities. This comparison verifies that the proposed capacity factors are reasonable in relation to the historic maximum day and maximum hour demands actually experienced by each system.

**Table A
Customer Class Capacity Factors**

Line No	District	Residential	Commercial	Industrial	Other Public Authority	Other Water Utilities	Large Customers
Maximum Day Capacity Factors							
1	SPSPSB	205%	175%	155%	190%	205%	140%
2	Champaign	215%	190%	135%	175%	195%	175%
3	Chicago Metro	210%	235%	240%	245%	170%	
4	Lincoln	200%	170%	145%	155%	220%	
5	Pekin	220%	185%	145%	205%		
6	Sterling	205%	190%	145%	185%		
Maximum Hour Capacity Factors							
7	SPSPSB	260%	190%	160%	210%	220%	145%
8	Champaign	285%	210%	140%	195%	220%	195%
9	Chicago Metro	310%	295%	285%	305%	180%	
10	Lincoln	275%	200%	165%	185%	180%	
11	Pekin	295%	210%	155%	230%		
12	Sterling	315%	245%	180%	245%		

**Table B
Diversity Ratios**

Line No	District	Diversity Ratios	
		Maximum Day	Maximum Hour
1	SPSPSB	1.29	1.28
2	Champaign	1.23	1.32
3	Chicago Metro	1.01	1.02
4	Lincoln	1.32	1.31
5	Pekin	1.22	1.25
6	Sterling	1.32	1.32

Plant Operating Statistics

Plant operating statistics were obtained from the various operating supervisors of the service areas representing the six water rate groups. Historically, this data represents the average annual pumpage of each system and the maximum recorded daily pumpage. On-site interviews of operation personnel and follow-up investigations modified this data to eliminate main breaks and other abnormalities that influenced the reported maximum day pumpage. In such cases, the second highest usage was used if a main break or other unusual occurrence did not occur on that day. Maximum hour records are generally available but difficult to obtain since they have not historically been recorded and summarized on a daily basis. In addition, an analysis of the drawdown of each reservoir within each system has not historically been conducted to determine the total maximum hour system demand by customers in each system. Therefore, to simplify data gathering efforts, maximum hour data used in this report was derived from detailed plant records of each system for the day the maximum day demand occurred. All operating supervisors concurred that system maximum hour demands typically occur during the system's maximum day of water usage.

Historic Maximum Day to Average Day Ratios

To determine the historic year to use for developing system cost allocation factors and for analyzing customer class usage data, a comparison of historic maximum day to average day ratios for each system was prepared. Data reviewed for this analysis included the most recent five full years of data or calendar years 2003 through 2007. Table 1 below shows the development of system maximum day to average day ratios for each of the four systems that equate to a separate rate group as well as the largest service area within each of the two rate groups composed of several service areas. As indicated by Table 1, the largest maximum day demand does not always occur in the same year as the highest maximum day to average day ratio. The Champaign, Lincoln, and Pekin districts have maximum day to average day ratios occurring in different years than their respective highest maximum day demands.

A similar analysis for the six largest service areas in each of the SPSPSB and Chicago Metro service areas was also conducted. For the SPSPSB District, the highest maximum day to average day ratios occurred in 2005 for Cairo and Streator; 2006 for Alton and Peoria; and 2007 for Interurban and Pontiac. Data was not available for the South Beloit District and available data for the Saunemin service area is so small that its impact would not alter the results of the six largest Districts within the SPSPSB rate group. Therefore, data related to the South Beloit District and the Saunemin service area is not considered in this report. Historic data for the six largest districts in the Chicago Metro rate group was deemed to be representative of the 24 service areas of the rate group. Therefore, only these six districts, which comprise about 85 to 90 percent of the rate group's total average day demands, were considered in the cost allocation factor analyses. These districts include Chicago Suburban, Homer Township, West Suburban, Fernway, Waycinden, and Valley View. The highest maximum day to average day ratio each of these districts was indicated to be in 2005.

Table 1
Historic Maximum Day and Average Day Demands

Year	SPSPSB	Champaign	Chicago	Lincoln	Pekin	Sterling
	(a)		(b)			
	Maximum Day Demand - mgd					
2003	58.93	31.57	11.07	3.20	10.41	2.36
2004	55.32	28.74	9.29	2.79	10.38	2.22
2005	59.79	32.19	15.06	3.40	10.84	2.45
2006	56.40	33.32	9.88	3.09	10.35	2.11
2007	59.94	34.01	12.65	3.11	10.57	2.00
	Average Day Demand - mgd					
2003	44.50	20.90	6.04	2.77	7.23	1.68
2004	43.87	21.29	6.32	2.59	7.31	1.57
2005	45.10	22.14	6.86	2.76	7.43	1.63
2006	43.94	21.00	6.35	2.49	7.06	1.65
2007	44.92	22.03	6.87	2.37	7.24	1.74
	Ratio of Maximum Day to Average Day Demand					
2003	1.32	1.51	1.83	1.16	1.44	1.40
2004	1.26	1.35	1.47	1.08	1.42	1.41
2005	1.33	1.45	2.20	1.23	1.46	1.50
2006	1.28	1.59	1.56	1.24	1.47	1.28
2007	1.33	1.54	1.84	1.31	1.46	1.15

mgd - million gallons per day

(a) Coincidental demands for the two water treatment plants serving the Interurban District.

(b) Demands for the West Suburban District within the Chicago Metro rate group.

Operating Statistics Summary

Plant operating statistics required for developing base extra capacity cost allocation factors and customer class capacity factors are summarized in Table 2. Line 1 of Table 2 shows the historic year indicated to have the highest maximum day to average day ratio for each rate group. Lines 2 through 6 shows data obtained from pumpage records for the year indicated by Line 1. Average day (AD) pumpage is shown on Line 2 in million gallons per day (mgd); maximum month of pumpage for the selected year is shown in thousand gallons (Mg) on Line 3; the estimated average day for the maximum month on Line 4; maximum day (MD) demand pumped on Line 5; and maximum hour (MH) pumped on Line 6. A review of water storage records available from the Supervisory Control and Data Acquisition (SCADA) system was made by Illinois American Water Company (IAWC) staff to estimate the amount of storage drawdown during the maximum hour of pumpage (Line 7).

Table 2
Summary of Operating Statistics

Line No.	Description	SPSPSB	Champaign	Chicago	Lincoln	Pekin	Sterling
		(a)		(a)			
1	Year of Maximum MD/AD Ratio	2005 - 2007	2006	2005	2007	2006	2005
2	AD Pumpage - mgd		21.004		2.373	7.055	1.632
3	Maximum Month - Mg		883,176		78,814	306,181	63,820
4	AD for Maximum Month -mgd		29.439		2.542	10.206	2.127
5	MD Demand - mgd		33.320		3.114	10.353	2.448
6	MH Pumped - mgd		33.350		3.937	11.976	3.004
7	MH Storage Contribution - mgd		4.689		0.000	0.106	0.577
8	MH Demand - mgd		38.039		3.937	12.082	3.581
9	MD/AD for Maximum Month		1.132		1.225	1.014	1.151
10	MD/AD Ratio	1.467	1.586	2.133	1.312	1.467	1.500
11	MH/AD Ratio	1.699	1.811	2.999	1.659	1.713	2.194
	AD - Average Day	mgd - million gallons per day					
	MD - Maximum Day	Mg - 1,000 gallons					
	MH - Maximum Hour						

(a) Demand ratios are based on the weighted average of noncoincidental demands in the six largest service areas.

This flow was added to the maximum hour of pumpage shown on Line 6 to determine the total maximum hour demand shown on Line 8 of Table 2. The maximum day (Line 5) to average day for the maximum month (Line 4) ratio is shown on Line 9. Ratios that can be used for cost allocation purposes are shown on Lines 10 and 11 of Table 2. The maximum day to average day ratio shown on Line 10 is determined by dividing the maximum day demand (Line 5) by the average day demand (Line 2). Similarly, the maximum hour to average day ratio shown on Line 11 is determined by dividing the maximum hour demand (Line 8) by average day demand (Line 2).

Consolidated SPSPSB Demands

Since the SPSPSB rate group includes several districts but applies a single rate structure for all of its customers, it is necessary to develop a single set of demand ratios for determining cost allocation and customer class capacity ratios. Since demand ratios are dimensionless, the weighted average of the respective coincidental system demands of each district can be used to determine demand ratios for the SPSPSB rate group. Table 2a below shows the operating statistics of the six largest districts in the rate group. As previously indicated, information for the South Beloit District was not available for analysis and data for the very small Saunemin service area was ignored since its typical average daily pumpage of 0.04 mgd can not influence the weighted averages developed in Table 2a. The weighted averages developed in this table are also shown in Table 2.

Table 2a
Summary of SPSPSB Operating Statistics

Line No	Description	Southern Division						Weighted Average
		Alton	Cairo	Interurban	Peoria	Streator	Pontiac	
1	Year of Maximum MD/AD Ratio	2006	2005	2007	2006	2005	2007	
2	AD Pumpage - mgd	8.742	0.871	44.918	22.945	2.319	1.669	
3	Maximum Month - Mg	360,302	37,247	1,748,955	975,141	92,952	56,623	
4	AD for Maximum Month -mgd	12.010	1.330	56.418	32.505	3.098	1.827	
5	MD Demand - mgd	13.729	1.990	59.942	38.012	3.427	2.443	
6	MH Pumped - mgd	15.300	2.450	62.509	39.090	3.859	2.520	
7	MH Storage Contribution - mgd	0.000	(0.088)	6.765	4.601	0.596	0.837	
8	MH Demand - mgd	15.300	2.362	69.274	43.691	4.455	3.357	
9	MD/AD for Maximum Month	1.143	1.496	1.062	1.169	1.106	1.337	
10	MD/AD Ratio	1.570	2.285	1.334	1.657	1.478	1.464	1.467
11	MH/AD Ratio	1.750	2.712	1.542	1.904	1.921	2.011	1.699

AD - Average Day mgd - million gallons per day
MD - Maximum Day Mg - 1,000 gallons
MH - Maximum Hour

Consolidated Chicago Metro Demands

The Chicago Metro rate group includes 24 districts. The six largest districts were determined to be representative of the entire rate group since their non-coincidental maximum day demands are about 85 percent of the group's combined maximum day demands and average daily demands are about 89 percent of the group's total average day demand. A summary of the operating statistics for the six largest districts and development of weighted average demand ratios is shown below in Table 2c. The weighted averages developed in this table are also shown in Table 2.

Table 2b
Summary of Chicago Metro Operating Statistics

Line No	Description	Chicago	Valley		Homer	West	Weighted Average	
		Suburban	View	Waycinden	Fernway	Township		Suburban
1	Year of Maximum MD/AD Ratio	2005	2005	2005	2005	2005	2005	
2	AD Pumpage - mgd	1.958	0.754	0.609	0.592	2.436	6.856	
3	Maximum Month - Mg	74,180	31,198	22,701	24,520	123,460	289,794	
4	AD for Maximum Month -mgd	2.393	1.006	0.732	0.791	4.115	9.660	
5	MD Demand - mgd	3.350	1.410	1.109	1.139	6.100	15.055	
6	MH Pumped - mgd	3.353	2.010	1.181	1.558	7.154	18.654	
7	MH Storage Contribution - mgd	0.629	0.000	0.105	0.000	2.274	2.684	
8	MH Demand - mgd	3.982	2.010	1.286	1.558	9.428	21.338	
9	MD/AD for Maximum Month	1.400	1.401	1.514	1.440	1.482	1.559	
10	MD/AD Ratio	1.711	1.870	1.821	1.924	2.504	2.196	2.133
11	MH/AD Ratio	2.034	2.666	2.112	2.632	3.870	3.112	2.999

AD - Average Day mgd - million gallons per day
MD - Maximum Day Mg - 1,000 gallons
MH - Maximum Hour

Cost Allocation Factors

Water systems include a variety of service facilities; each designed and operated to fulfill a given function. In order to provide adequate service to its customers at all times, the IAWC must be capable of not only providing the total amount of water used, but also supplying water at maximum rates of demand.

Since all customers do not exert their maximum demand for water at the same time, capacities of water facilities are designed to meet the peak coincidental demands that all classes of customers, as a whole, place on the system. For every water service facility on the system, there is an underlying average demand, or uniform rate of usage exerted by the customers for which the base cost component applies. For those facilities designed solely to meet average day demand, costs are allocated 100 percent to the base cost component. Extra capacity requirements associated with coincidental demands in excess of average annual daily use are further related to maximum daily and maximum hourly demands.

Analysis of historical system maximum day and maximum hour demands to average day demands results in appropriate ratios for the allocation of capital costs and operating expenses to base and extra capacity cost components. Maximum day to average day ratios shown on Line 10 of Table 2 and maximum hour to average day ratios shown on Line 11 of Table 2 can be used to develop cost allocation factors. Table 3 shows the resulting cost allocation factors based on the ratios presented in Table 2.

Table 3
Cost Allocation Factors

Line No	Description	SPSPSB	Champaign	Chicago	Lincoln	Pekin	Sterling
Indicated Cost Allocation Factors							
Maximum Day Allocation							
1	Base	68.17%	63.05%	46.88%	76.22%	68.17%	66.67%
2	Maximum Day	31.83%	36.95%	53.12%	23.78%	31.83%	33.33%
Maximum Hour Allocation							
3	Base	58.86%	55.22%	33.34%	60.28%	58.38%	45.58%
4	Maximum Day	27.49%	32.36%	37.78%	18.81%	27.26%	22.79%
5	Maximum Hour	13.65%	12.42%	28.88%	20.91%	14.36%	31.63%

A maximum day to average day ratio of 1.467, as shown in Table 2 for SPSPSB, indicates that 68.17 (1/1.467) percent of the capacity of facilities designed and operated to meet maximum day demand is required for average or base use. Accordingly, the remaining 31.83 ([1.467-1]/1.467) percent is required for maximum day extra capacity requirements. A maximum hour to average day ratio of 1.699, as shown in Table 2 for SPSPSB, indicates that 58.86 (1/1.699) percent of the capacity of facilities designed and operated for maximum hour demand is needed for average or base use, while 27.49 ([1.467-1]/1.699) percent is utilized for maximum day extra capacity uses, and the

remaining 13.65 $([1.699-1.467]/1.699)$ percent is required to meet maximum hour extra capacity in excess of maximum day demands.

Coincidental maximum day to average day and maximum hour to average day demand ratios used in this section to develop cost allocation factors are also used to determine diversity factors. Diversity factors are determined by dividing total maximum day and maximum hour non-coincidental demands (the sum of the products of each customer class's annual average usage times the respective proposed customer class capacity factors) by total maximum day and maximum hour coincidental demands and are used as a basis for verifying the reasonableness of non-coincidental customer class capacity factors. Therefore, both cost allocations and units of service used to allocate costs to customer classes can be tied back to the historic system peak demands actually experienced by each water system.

Customer Class Capacity Factors

Customer class capacity factors developed in this report are determined on a non-coincidental demand basis, i.e., maximum day and maximum hour demands for all customer classes do not occur at the same time. The rationale for the use of non-coincidental customer class demands for allocation of costs among the various customer classes can be explained by way of example as discussed in Appendix A of the AWWA Manual M1. For example, if it is assumed that a water utility was going to build a separate water system for each of its customer classes, then the separate water systems would need to be sized to meet the base, maximum day extra capacity and maximum hour extra capacity demand requirements of each customer class. The costs associated with each of the individual water systems would be the responsibility of the respective customer class. However, this would result in a combined set of systems having more capacity and associated costs than actually required since a water utility can build a single system which recognizes the diversities of the magnitude and timing of the demands of the various customer classes. The use of diversified coincidental demands of all customer classes enables the utility to size and build a much smaller overall water system. An appropriate method of allocating costs related to the smaller, more efficient, and less costly water system among the individual customer classes would be to allocate the costs associated with this smaller system on the basis of the non-coincidental demands of each customer class previously considered for their separate water systems. This method allows all customer classes to proportionately share in the economies of scale and cost savings associated with this smaller, integrated, and diverse water system.

Billed Usage

The first step in determining customer class capacity factors is to analyze customer class annual and monthly usage patterns for a historic year when the water system experienced the highest maximum day to average day ratio. Table 4 summarizes annual water usage by customer class for the years having the highest system maximum day to average day demand ratios.

Prior to calendar year 2007, billing cycles were set on quarterly cycles consisting of three monthly billing periods of 4, 4, and 5 weeks. Under this billing procedure, part of the December usage from one year would not be recorded until January of the following year. IAWC converted to a monthly billing basis in December 2006. As such December 2006 includes a full month of billed usage and calendar year 2007 includes a full year of billed usage.

Usage in 2005 includes part of the usage from December 2004 but does not include part of the December 2005 usage. Since customer growth was modest in 2005, it is assumed that the December 2004 usage recognized in January 2005 was approximately equal to usage in December 2005 that was recognized in January 2006. Therefore, it is reasonable to expect usage in calendar year 2005 represents a full year of billed water usage for purposes of this report. However, since the conversion was made in 2006, January 2006 includes part of December 2005 usage and all of December 2006 usage. Therefore, 2006 annual usage needs to be adjusted for the December 2005 usage recognized in 2006. This adjustment was estimated to be equal to half the usage reported in

Table 4
Billed Annual Water Usage

Line No	District	Residential Mg	Commercial Mg	Industrial Mg	Other Public Authority Mg	Other Water Utilities Mg	Large Customers Mg	Total Mg
SPSPSB - 2007								
1	Alton	957,039	516,047	216,540	91,258	817,574		2,598,458
2	Cairo	51,569	20,144	133,061	33,197			237,971
3	Interurban	3,764,226	1,479,462	1,320,108	443,141	4,710,925	1,444,907	13,162,769
4	Peoria	3,157,472	1,828,648	602,305	402,532	169,791		6,160,748
5	Streator	396,151	86,136	43,242	9,679			535,208
6	Pontiac	266,102	89,430	17,724	125,760		44,762	543,778
7	Total SPSPSB	8,592,559	4,019,867	2,332,980	1,105,567	5,698,290	1,489,669	23,238,932
8	Champaign - 2006 (a)	3,078,542	1,184,866	655,974	212,012	228,458	1,231,361	6,591,211
Chicago Metro - 2007								
9	Chicago Suburban	483,538	64,492		9,156	45,849		603,035
10	Fernway	167,505	17,707		1,342			186,554
11	Homer Township	620,666	64,806		3,029			688,501
12	Valley View	187,185	8,366		3,165			198,716
13	Waycinden	108,497	67,721					176,218
14	West Suburban	1,517,410	511,265	31,059	59,692			2,119,426
15	Total Chicago Metro	3,084,801	734,357	31,059	76,384	45,849		3,972,450
16	Lincoln - 2007	284,905	144,442	93,796	204,383			727,526
17	Pekin - 2006 (a)	820,479	246,005	1,066,536	179,805			2,312,824
18	Sterling - 2005 (b)	362,651	118,327	17,392	18,493			516,863

Mg - 1,000 gallons

- (a) Recognizes annual usage adjustments for conversion from 4/4/5 billing cycle to monthly billing cycle.
(b) Usage carried over from December 2004 due to the 4/4/5 billing cycle is assumed equal to December 2005 usage recognized in January 2006.

December 2006. Therefore, since 2006 exhibited the highest system maximum day to average day demand ratio for the Champaign and Pekin systems for a recent five-year period, 2006 annual billed usage for these two districts was adjusted by subtracting half of the December 2006 usage from recorded 2006 annual usage.

The billed usage and associated billed days for the maximum month of the selected year having the highest maximum day to average day ratio can be used to determine the minimum maximum day requirement for each customer class. Table 5 summarizes the maximum month of billed usage and associated number of days billed for each district and rate group during the maximum month for the years indicated in Table 4.

Table 5
Maximum Monthly Usage and Days Billed

Line No	District	Residential	Commercial	Industrial	Other Public Authority	Other Water Utilities	Large Customers
Maximum Month							
	SPSPSB						
1	Alton	98,772	59,453	22,121	13,429	94,375	
2	Cairo	5,793	2,229	16,136	3,327		
3	Interurban	402,417	155,572	138,045	46,667	552,023	147,690
4	Peoria	338,090	194,515	89,187	61,133	18,959	
5	Streator	37,976	8,393	4,104	1,431		
6	Pontiac	26,038	9,226	1,726	11,524		6,497
7	Champaign	614,586	239,379	61,310	41,724	27,373	137,258
	Chicago Metro						
8	Chicago Suburban	45,971	7,178		1,864	5,058	
9	Fernway	31,475	3,361		265		
10	Homer Township	83,745	7,725		334		
11	Valley View	19,102	779		574		
12	Waycinden	10,529	7,247				
13	West Suburban	162,016	70,307	3,565	8,895		
14	Lincoln	50,916	25,639	9,083	20,873		
15	Pekin	94,370	25,945	98,971	21,792		
16	Sterling	37,670	13,817	1,573	2,142		
Days Billed within Maximum Month							
	SPSPSB						
17	Alton	31	31	29	31	31	
18	Cairo	33	33	36	33		
19	Interurban	29	29	32	33	26	32
20	Peoria	30	30	32	30	26	
21	Streator	31	30	31	31		
22	Pontiac	32	29	29	32		29
23	Champaign	56	55	32	55	30	31
	Chicago Metro						
24	Chicago Suburban	30	33		32	31	
25	Fernway	62	61		63		
26	Homer Township	31	30		30		
27	Valley View	30	30		30		
28	Waycinden	30	29				
29	West Suburban	32	28	24	33		
30	Lincoln	59	59	33	35		
31	Pekin	31	29	30	30		
32	Sterling	31	32	30	32		

Maximum Day Demands

Maximum day capacity factors for each customer class can be determined based on billed usage relationships between the average day for the maximum month within a selected year, the system’s relationships between the maximum day demand and the average day of the maximum month pumped within a selected year, and adjustments to account for customer usage variations. Table 6 shows the average day billed usage during the maximum month as determined by dividing the billed usage during the maximum month for each customer class by the respective number of days billed, as presented in Table 5. Table 6 also shows the average day billed usage for each customer class determined by dividing the average annual usage shown in Table 4 by 365 days.

The ratio of the average day usage of each customer class during the maximum month divided by the average annual usage of each customer class represents the minimum maximum day capacity factor for each customer class. Table 7 summarizes the minimum maximum day capacity factors for each customer class and district. A comparison of these factors with capacity factors used in prior cost of service calculations shows that a few of the prior capacity factors may be understated. This includes industrial customers in Peoria and West Suburban, other public authority customers in Peoria, Chicago Suburban, and Valley View, and the Large Other Public Authority customer class in Champaign.

Adjustment factors used to adjust the minimum maximum day capacity factors shown in Table 7 to capacity factors representative of the system’s coincidental maximum day demand is summarized in Table 8. The first column of this table shows the system’s maximum day demand divided by the average day for the month of maximum pumpage to the system as previously summarized by Line 9 of Tables 2, 2a, and 2b. Column 2 shows each systems’ maximum hour to maximum day relationship. Column 3 of Table 8 presents adjustment factors by district required to adjust the minimum maximum day residential capacity factors for daily usage variations during the maximum month as illustrated in the figure below.

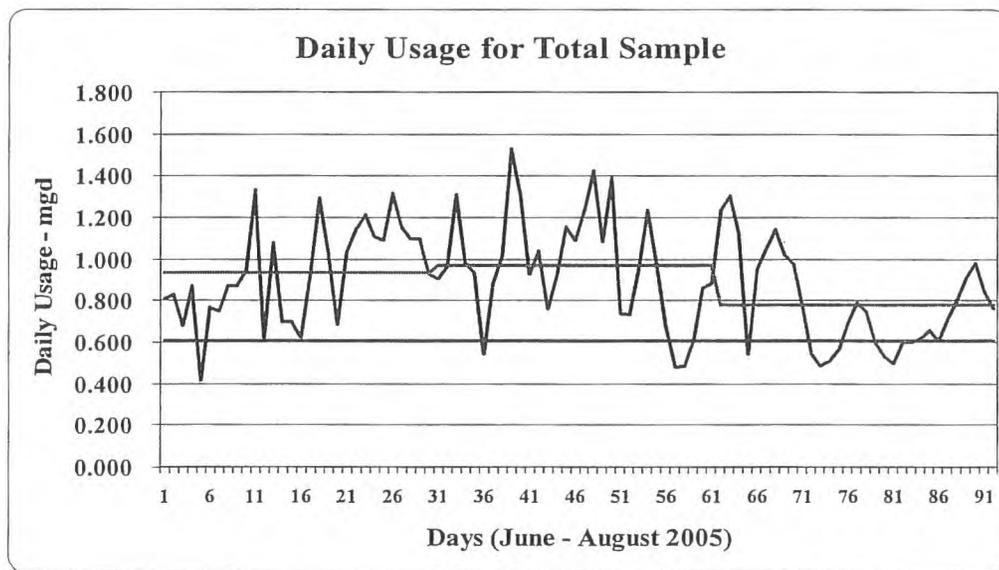


Table 6
Average Day Billed Usage

Line No	District	Residential	Commercial	Industrial	Other Public Authority	Other Water Utilities	Large Customers
Average Day Usage during Maximum Month - Mg/day							
SPSPSB							
1	Alton	3,186.2	1,917.8	762.8	433.2	3,044.4	
2	Cairo	175.5	67.5	448.2	100.8		
3	Interurban	13,876.4	5,364.6	4,313.9	1,414.2	21,231.7	4,615.3
4	Peoria	11,269.7	6,483.8	2,787.1	2,037.8	729.2	
5	Streator	1,225.0	279.8	132.4	46.2		
6	Pontiac	813.7	318.1	59.5	360.1		224.0
7	Champaign	10,974.8	4,352.3	1,915.9	758.6	912.4	4,427.7
Chicago Metro							
8	Chicago Suburban	1,532.4	217.5		58.3	163.2	
9	Fernway	507.7	55.1		4.2		
10	Homer Township	2,701.5	257.5		11.1		
11	Valley View	636.7	26.0		19.1		
12	Waycinden	351.0	249.9				
13	West Suburban	5,063.0	2,511.0	148.5	269.5		
14	Lincoln	863.0	434.6	275.2	596.4		
15	Pekin	3,044.2	894.7	3,299.0	726.4		
16	Sterling	1,215.2	431.8	52.4	66.9		
Average Day Usage - Mg/day							
SPSPSB							
17	Alton	2,622.0	1,413.8	593.3	250.0	2,239.9	
18	Cairo	141.3	55.2	364.6	91.0		
19	Interurban	10,312.9	4,053.3	3,616.7	1,214.1	12,906.6	3,958.6
20	Peoria	8,650.6	5,010.0	1,650.2	1,102.8	465.2	
21	Streator	1,085.3	236.0	118.5	26.5	0.0	
22	Pontiac	729.0	245.0	48.6	344.5	0.0	122.6
23	Champaign	8,434.4	3,246.2	1,797.2	580.9	625.9	3,373.6
Chicago Metro							
24	Chicago Suburban	1,324.8	176.7		25.1	125.6	
25	Fernway	458.9	48.5		3.7		
26	Homer Township	1,700.5	177.6		8.3		
27	Valley View	512.8	22.9		8.7		
28	Waycinden	297.3	185.5				
29	West Suburban	4,157.3	1,400.7	85.1	163.5		
30	Lincoln	780.6	395.7	257.0	560.0		
31	Pekin	2,247.9	674.0	2,922.0	492.6		
32	Sterling	993.6	324.2	47.6	50.7		

Mg/Day - 1,000 gallons/day

Table 7
Minimum Maximum Day Capacity Factors

Line No	District	Residential	Commercial	Industrial	Other Public Authority	Other Water Utilities	Large Customers
SPSPSB							
1	Alton	121.5%	135.6%	128.6%	173.3%	135.9%	
2	Cairo	124.2%	122.4%	123.0%	110.8%		
3	Interurban	134.6%	132.3%	119.3%	116.5%	164.5%	116.6%
4	Peoria	130.3%	129.4%	168.9%	184.8%	156.8%	
5	Streator	112.9%	118.6%	111.7%	174.1%		
6	Pontiac	111.6%	129.8%	122.6%	104.5%		182.7%
7	Champaign	130.1%	134.1%	106.6%	130.6%	145.8%	131.2%
Chicago Metro							
8	Chicago Suburban	115.7%	123.1%		232.2%	129.9%	
9	Fernway	110.6%	113.6%		114.4%		
10	Homer Township	158.9%	145.0%		134.2%		
11	Valley View	124.2%	113.3%		220.7%		
12	Waycinden	118.1%	134.7%				
13	West Suburban	121.8%	179.3%	174.6%	164.8%		
14	Lincoln	110.6%	109.8%	107.1%	106.5%		
15	Pekin	135.4%	132.7%	112.9%	147.5%		
16	Sterling	122.3%	133.2%	110.0%	132.1%		

Table 8
Adjustment Factors

Line No	District	(1)	(2)	(3)	(4)
		System Max Day (a)	System Max Hour (b)	Residential Daily Variation	Residential Hourly Variation
SPSPSB					
1	Alton	1.143	1.114	1.400	1.100
2	Cairo	1.496	1.187	1.400	1.100
3	Interurban	1.062	1.156	1.400	1.100
4	Peoria	1.169	1.149	1.400	1.100
5	Streator	1.106	1.300	1.400	1.100
6	Pontiac	1.337	1.374	1.400	1.100
7	Champaign	1.132	1.142	1.400	1.150
Chicago Metro					
8	Chicago Suburban	1.400	1.189	1.100	1.050
9	Fernway	1.440	1.368	1.100	1.050
10	Homer Township	1.482	1.546	1.100	1.050
11	Valley View	1.401	1.426	1.100	1.050
12	Waycinden	1.514	1.160	1.100	1.050
13	West Suburban	1.559	1.417	1.100	1.050
14	Lincoln	1.225	1.264	1.400	1.100
15	Pekin	1.014	1.167	1.600	1.150
16	Sterling	1.151	1.463	1.450	1.050

Mg/day - 1,000 gallons/day

- (a) Represents the system's maximum day demand divided by the average daily flow pumped during the year's maximum month.
- (b) Ratio of the systems' maximum hour to maximum day demands.

The graph of daily usage fluctuations is based on actual daily pumpage records of 2,161 residential accounts within four Chicago Metro districts. Residential customers served in these four districts represent 99.3 percent of the total customers served with the remaining 15 (0.7 percent) customers within the sample being commercial customers. The lower horizontal line in the figure represents the sample average annual usage of 0.604 million gallons per day (mgd) while the upper horizontal line represents the average day usage for each month within the three-month summer period of 2005. As indicated, the maximum month occurs in July and has an average daily usage of 0.969 mgd. The maximum daily flow for this period occurred on July 9, 2005 with a flow of 1.529 or 1.578 times the average day for the maximum month (July) of calendar year 2005. Therefore, to estimate the maximum day for the residential class based on the billed usage relationship between the average day during the maximum month and the annual average day, the residential class daily variation adjustment can be as high as 1.578 times the average day usage within the maximum month.

Since the daily variation adjustment is used in conjunction with the system's maximum day to average day within the maximum month ratio, the residential variation should typically be less than indicated by the figure. In addition, the demands of the other customer classes should typically be

lower than those for the residential customer class because the system’s maximum day to average day within the maximum month ratio would typically be a weighted average of all customer classes. This would indicate the need for lower daily variation adjustments for other customer classes. However, in this case, when the sample is almost entirely composed of residential customers, the system’s coincidental maximum day demand and the residential non-coincidental class demand should be about the same. In this specific case, the residential daily adjustment value would be close to 1.0. Column 4 of Table 8 shows residential adjustment factors used to adjust daily values to reflect hourly variations within the maximum day above coincidental system variations.

Table 9 shows the percentages applied to the residential daily variation adjustment to estimate their respective daily variations. Applying the system maximum day adjustment factors shown in Table 8 and the daily variation adjustments, determined by multiplying the residential variation factors shown in Table 8 by the customer class variation factors shown in Table 9, results in the estimated customer class capacity factors shown in Table 10 below.

**Table 9
Customer Class Variations**

Line No	District	Customer Class Variations
1	Residential	100.0%
2	Commercial	85.0%
3	Industrial	80.0%
4	Other Public Authority	85.0%
5	Other Water Utilities	85.0%
6	Large Industrial	80.0%
7	Large Other Public Authority	85.0%

**Table 10
Estimated Maximum Day Capacity Factors**

Line No	District	Residential	Commercial	Industrial	Other Public Authority	Other Water Utilities	Large Customers
SPSPSB							
1	Alton	195%	185%	165%	235%	185%	
2	Cairo	260%	220%	205%	195%		
3	Interurban	200%	165%	140%	145%	210%	140%
4	Peoria	215%	180%	220%	255%	220%	
5	Streator	175%	155%	140%	230%		
6	Pontiac	210%	205%	185%	165%		275%
	Weighted Average	205%	175%	155%	190%	205%	140%
7	Champaign	215%	190%	135%	175%	195%	175%
Chicago Metro							
9	Chicago Suburban	180%	160%		305%	170%	
10	Fernway	175%	155%		155%		
11	Homer Township	260%	200%		185%		
12	Valley View	190%	150%		290%		
13	Waycinden	195%	190%				
14	West Suburban	210%	260%	240%	240%		
15	Weighted Average	210%	235%	240%	245%	170%	
16	Lincoln	200%	170%	145%	155%		
17	Pekin	220%	185%	145%	205%		
18	Sterling	205%	190%	145%	185%		

Since rates for the SPSPSB and Chicago Metro rate groups are applied to all of the districts within each rate group, a weighted average of the capacity factors, based on their relative average day requirements, was determined for each rate group. In addition, the residential and commercial classes within the Champaign and Lincoln districts are billed on a bimonthly billing basis making the average day within a two-month period lower than the average within the maximum month. Therefore, an additional adjustment of 1.05 is applied to the two bimonthly customer classes within the two districts. All values shown in Table 10 have been rounded to the nearest five percent.

The customer class capacity factors shown in Table 10 appear to represent typical customer class demands found in other water systems where residential customers have the highest demands, with lower demands exerted by commercial customers and still lower demands exerted by industrial customers. However, this does not appear to be the case for the Chicago Metro rate group where both commercial and industrial capacity factors exceed those determined for residential customers. Investigation of the large customers served in the West Suburban District revealed two large food processors in the commercial class that have significant monthly fluctuations in their water usage. The district also serves a large water bottler that can increase or decrease production as required by market conditions. The only industrial customer served in the West Suburban District is a large ice plant that has seasonal production primarily in the months of May through September with modest ice production during the cooler season months. Maximum day capacity factors for the Other Public Authority customer class are influenced by irrigation needs from high schools and municipal golf courses included in this customer class.

Maximum Hour Demands

Once the maximum day capacity factors by customer class are determined, the customer class maximum hour capacity factors can be estimated based on the maximum day customer class capacity factors, the relationship of the system's maximum hour to maximum day ratio and hourly variation adjustments by customer class. The hourly variation adjustments recognize that the residential customer class typically drives the peak hourly demand in the system with lesser influences by the other customer classes. Therefore, the residential customer class likely exerts a greater hourly demand on the system than indicated by the system's maximum hour to maximum day ratio and other customer classes exert an equal or lesser demand on the system than indicated by the system's maximum hour to maximum day ratio.

Table 11 shows a summary of estimated maximum hour capacity factors by customer class for each service area considered by this report. Values shown in this table were determined by applying the unrounded maximum day capacity factors used to develop Table 10 by the respective system's maximum hour to maximum day ratios as shown in Column 2 of Table 8 and by the residential hourly variation adjustments shown in Column 4 of Table 8 and as modified by the customer class adjustment factors shown in Table 9.

Table 11
Estimated Maximum Hour Capacity Factors

Line No	District	Residential	Commercial	Industrial	Other Public Authority	Other Water Utilities	Large Customers
SPSPSB							
1	Alton	240%	190%	160%	245%	195%	
2	Cairo	340%	240%	215%	220%		
3	Interurban	255%	180%	145%	160%	225%	140%
4	Peoria	270%	195%	225%	275%	235%	
5	Streator	250%	190%	160%	280%		
6	Pontiac	315%	265%	220%	215%		330%
	Weighted Average	260%	190%	160%	210%	220%	145%
7	Champaign	285%	210%	140%	195%	220%	195%
8	Chicago Metro						
9	Chicago Suburban	220%	170%		320%	180%	
10	Fernway	250%	185%		190%		
11	Homer Township	420%	275%		255%		
12	Valley View	285%	190%		370%		
13	Waycinden	240%	195%				
14	West Suburban	310%	330%	285%	305%		
15	Weighted Average	310%	295%	285%	305%	180%	
16	Lincoln	275%	200%	165%	185%		
17	Pekin	295%	210%	155%	230%		
18	Sterling	315%	245%	180%	245%		

Comparison of Non-coincidental Class Demands to System Coincidental Demands

A reasonableness test of calculated customer class capacity factors can be performed by comparing the sum of the non-coincidental customer class demands to the coincidental demand. The total non-coincidental demand is determined by applying the customer class capacity factors summarized in Tables 10 and 11 to the respective average annual usage by customer class projected for test year 2009. Coincidental demand is equal to the total projected test year 2009 usage for all customer classes multiplied by the system's highest maximum day and maximum hour ratios during a recent five-year period as previously presented on Lines 10 and 11 of Table 2. The ratio of the non-coincidental to coincidental demands is considered reasonable if it falls within a range of 1.1 to 1.35.

Table 12 presents a summary of units of service for the SPSPSB rate group. These units of service include the average day usage by customer class and the maximum day extra capacity and maximum hour extra capacity required for cost allocations to customer classes under the base extra capacity allocation methodology. As indicated by Line 10 of this table, the maximum day and maximum hour diversity ratios fall within the range of reasonableness.

Table 12
SPSPSB Test Year 2009 Units of Service

Line No	Customer Class	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Water Usage		Maximum Day			Maximum Hour		
		Annual	Average Day	Capacity Factor	Total Capacity	Extra Capacity	Capacity Factor	Total Capacity	Extra Capacity
		Ccf	Ccf/day (2) / 365		Ccf/day (2) x (3)	Ccf/day (4) - (2)		Ccf/day (2) x (6)	Ccf/day (7) - (4)
1	Residential	11,916,019	32,647	205%	66,926	34,279	260%	84,882	17,956
2	Commercial	5,447,019	14,923	175%	26,115	11,192	190%	28,354	2,238
3	Industrial	3,934,375	10,779	155%	16,707	5,928	160%	17,246	539
4	Large Industrial	2,051,004	5,619	140%	7,867	2,248	145%	8,148	281
5	Other Public Authority	1,551,716	4,251	190%	8,077	3,826	210%	8,927	850
6	Other Water Utilities	7,186,515	19,689	205%	40,362	20,673	220%	43,316	2,953
7	Total	32,086,648	87,908		166,055	78,147		190,873	24,818
8	Total noncoincidental demand				166,055			190,873	
9	Total coincidental demand				128,999			149,390	
10	Ratio non to coincidental demand (Diversity Factor)				1.29			1.28	
11	Diversity Factor Typical Range for Utilities				1.10 - 1.35			1.10 - 1.35	

Ccf - Hundred cubic feet

Ccf/Day - Hundred cubic feet/Day

Similar calculations for the other service areas produce maximum day and maximum hour diversity factors within the targeted range except for the Metro Chicago rate group as indicated in Table 13. Since the service areas included in the Chicago Metro rate group are primarily composed of residential customers, the diversity ratio approaches 1.0 due to little customer class diversity and thus falls outside of the typical diversity ratio range of other more typical water utilities.

Table 13
Diversity Ratios

Line No	District	Diversity Ratios	
		Maximum Day	Maximum Hour
1	SPSPSB	1.29	1.28
2	Champaign	1.23	1.32
3	Chicago Metro	1.01	1.02
4	Lincoln	1.32	1.31
5	Pekin	1.22	1.25
6	Sterling	1.32	1.32

Comparison with Prior Studies

Another test of reasonableness for the proposed customer class diversity factors is to compare them to customer class capacity factors used in prior studies as shown in Table 14. Factors used prior to the 2007 rate hearing were taken from exhibits filed in Docket 00-0340 and exhibits filed in Docket 02-0690 while those used in the 2007 rate hearing were taken from exhibits filed for Docket 07-0507.

The proposed maximum day capacity factors are very similar to those used in prior studies. The maximum day capacity factors for other public authorities, including the large other public utility in the Champaign District, are generally higher than previously applied. This is likely attributed to changes in irrigation requirements. The proposed maximum hour capacity factors are generally lower than used in previous studies, however, the proposed maximum hour capacity ratios result in maximum hour diversity ratios that fall within the 1.10 to 1.35 range typically experienced by other water utilities.

Table 14
Coparison of Customer Class Capacity Factors

Line No	Customer Class	Maximum Day / Average Day Ratios			Maximum Hour / Average Day Ratios		
		Prior to 2007	2007 Uniform	Proposed	Prior to 2007	2007 Uniform	Proposed
SPSPSB Customer Class Demand Summary							
1	Residential	210%	220%	205%	300%	600%	260%
2	Commercial	175%	150%	175%	210%	430%	190%
3	Industrial	165%	170%	155%	200%	300%	160%
4	Large Industrial	133%		140%	148%		145%
5	Other Public Authority	175%	140%	190%	210%	280%	210%
6	Other Water Utilities	165%	130%	205%	200%	200%	220%
7	Diversity Factor	1.24	1.19	1.29	1.39	2.41	1.28
Champaign Customer Class Demand Summary							
8	Residential	225%	220%	215%	300%	600%	285%
9	Commercial	180%	150%	190%	250%	430%	210%
10	Industrial	150%	170%	135%	200%	300%	140%
11	Other Public Authority	190%	140%	175%	250%	280%	195%
12	Large Other Public Auth.	125%	130%	175%	150%	150%	195%
13	Other Water Utilities	150%	130%	195%	150%	200%	220%
14	Diversity Factor	1.19	1.14	1.23	1.36	2.40	1.32
Chicago Metro Customer Class Demand Summary							
15	Residential	225%	220%	210%	300%	600%	310%
16	Commercial	180%	150%	235%	250%	430%	295%
17	Industrial	0%	170%	240%	0%	300%	285%
18	Other Public Authority	0%	140%	245%	0%	280%	305%
19	Other Water Utilities	0%	130%	170%	0%	200%	180%
20	Diversity Factor	1.01	0.96	1.01	0.97	1.86	1.02
Lincoln Customer Class Demand Summary							
21	Residential	225%	220%	200%	275%	600%	275%
22	Commercial	170%	150%	170%	200%	430%	200%
23	Industrial	150%	170%	145%	175%	300%	165%
24	Other Public Authority	150%	140%	155%	175%	280%	185%
25	Diversity Factor	1.38	1.33	1.32	1.30	2.59	1.31
Pekin Customer Class Demand Summary							
26	Residential	275%	220%	220%	400%	600%	295%
27	Commercial	200%	150%	185%	250%	430%	210%
28	Industrial	150%	170%	145%	200%	300%	155%
29	Other Public Authority	150%	140%	205%	200%	280%	230%
30	Diversity Factor	1.34	1.24	1.22	1.59	2.40	1.25
Sterling Customer Class Demand Summary							
31	Residential	225%	220%	205%	300%	600%	315%
32	Commercial	180%	150%	190%	250%	430%	245%
33	Industrial	150%	170%	145%	200%	300%	180%
34	Other Public Authority	200%	140%	185%	250%	280%	245%
35	Diversity Factor	1.40	1.31	1.32	1.28	2.41	1.32
36	Targeted Diversity Range		1.10 - 1.35			1.10 - 1.35	

CUSTOMER CLASS DEMAND STUDY

The purpose of the customer class demand study is to develop empirical bases for the maximum day and hour extra capacity factors used in the cost allocation study. The study of customer demands is being conducted in accordance with the plans submitted by the Company to the Pennsylvania Public Utility Commission during the course of the rate proceeding at Docket No. R-911892.

Previous reports on the customer class demand study were submitted as Exhibit No. 9-A in Docket No. R-00922476, and as part of Exhibit No. 50-B in Docket Nos. R-00932868, R-00953343 and R-00973952. The initial report sets forth descriptions of the selection of customers, the initial experience with data collection in 1991, and the data obtained in 1992. Subsequent reports included the observed maximum day and hour use for each customer or group of customers being monitored during the 1992 through 1996 data collection periods.

This report sets forth the data through the 1996 monitoring period as shown in the schedule on pages 7 through 22 of this response. Data during each period were reviewed to determine the maximum day and hour use for each customer or group of customers being monitored. The maximum use was divided by the average use for the year in which the monitoring was performed to develop indications of maximum day and hour ratios for the customer's classification.

The customers and customer groups, i.e., residential neighborhoods, were classified based on their revenue or billing category or, with respect to residential

neighborhoods, the housing density and annual use. The monitoring results were organized in this manner, inasmuch as data related to the proportions of the customer classification represented by these categories were available. For example, the Company prepares an analysis of consumption in each of its load control areas which indicates the housing density, high, medium or low, the number of residential customers and their annual consumption. The neighborhoods were grouped according to housing density and annual consumption, e.g., medium density housing with customers whose average annual use is between 60,000 and 70,000 gallons. Similarly, commercial and public customers were organized by revenue categories such as apartments, colleges, etc., and industrial customers were organized based on their billing frequency, quarterly or monthly.

Average ratios were calculated for each category and also are presented in the schedule on pages 7 through 22 of this response. The average ratios of the categories for which empirical data were available, and estimated ratios for six residential categories representing 3.49 percent of residential consumption, are weighted to determine the composite ratios for the several classifications in the schedule on pages 23 and 24 of this response.

Residential. The residential maximum day and hour ratios used in the most recent cost allocation study were 2.1 and 4.5, respectively. The maximum day ratio used in studies of other water utilities which were based on empirical demands is 2.5 and the maximum hour ratios range from 4.5 to 6.0.

The observed maximum day ratios of selected Philadelphia Suburban residential neighborhoods range from 0.76 to 5.27. The observed maximum hour ratios range from 1.31 to 33.86. The average maximum day and hour ratios by residential neighborhood category range from 1.23 to 3.87 and from 2.57 to 7.31, respectively. The weighted ratios, as shown in the schedule on page 23 of this response, are 2.119 for maximum day and 4.508 for maximum hour. The weighted maximum day and hour ratios of 2.1 and 4.5 confirm their continued use in the cost allocation study.

Commercial and Public. The commercial and public maximum day and hour ratios used in the most recent study were 2.0 and 3.8, respectively. Maximum day and hour ratios used in studies of other water utilities which were based on empirical demands range from 1.6 to 2.5 and 3.3 to 5.0, respectively.

The observed maximum day ratios of selected commercial and public customers range from 0.70 to 9.88. The observed maximum hour ratios range from 1.85 to 39.95. The average maximum day and hour ratios by revenue category range from 1.28 to 6.36 and from 2.52 to 23.84, respectively. The upper end of each range represents data for a golf course. A review of the data indicates that the golf course would likely contribute to the peak day load; however, its peak hour occurs in the early morning and would not occur at the same time as the peak hour of other commercial and public customers.

Thus, the weighted maximum day ratio of 2.0, as shown in the schedule on page 24 of this response, continues to be used for the commercial and public classifications. It includes the effect of the golf course and is within the range of

ratios used in other studies. The weighted maximum hour ratio excluding the golf course data of 3.8 is maintained for use in the cost allocation study and also is within the range of ratios used in other studies.

The weighted ratios for commercial and public customers do not reflect the initial data obtained in 1996 for six small commercial customers as shown in the schedule on page 18 of this response. The ratios for the small customers are generally higher than the weighted ratios of the other commercial and public customers. However, inasmuch as limited data are available, no further increase in the ratios for these classifications is proposed.

Industrial. The industrial maximum day and hour ratios used in the most recent study were 1.7 and 2.7, respectively. Maximum day ratios used in studies of other water utilities which were based on empirical demands range from 1.5 to 1.8 for day and the maximum hour ratio is 2.7.

The observed maximum day ratios of selected industrial customers range from 1.03 to 3.10. The observed maximum hour ratios range from 1.43 to 6.25. The average maximum day ratios by billing frequency are 1.68 and 1.73 and the weighted maximum day ratio is 1.69. The average maximum hour ratios by billing frequency are 2.58 and 3.12 and the weighted maximum hour ratio is 2.73.

Based on the current estimates, estimates of other utilities and the observed ratios during 1992-1996; maximum day and hour ratios of 1.7 and 2.7, respectively, continue to be used in the allocation study.

Sales to Other Water Utilities. The Sales to Other Water Utilities maximum day and hour ratios used in the most recent cost allocation study were

10.0 and 20.0, respectively, for the customers located in the Main Division. Maximum day and hour ratios used in a study for another water utility which were based on empirical demands range from 2.0 to 10.0 for maximum day and 5.0 to 20.0 for maximum hour. The observed maximum day ratios of selected resale customers range from 1.46 to 20.23. The observed maximum hour ratios range from 4.80 to 52.52. The maximum day and hour ratios for the Bristol Division customers in the last study were estimated at 1.5 and 2.0, respectively.

As a result of acquisitions since the last study, the Company has lost and gained Sales to Other Water Utilities customers. There are now several customers with relatively uniform demand characteristics. These customers have been assigned maximum day and hour ratios of 1.50 and 2.00, respectively, and designated as Group A. There also are several customers whose demand characteristics are less favorable, but collectively, not as high as the Main Division customers in the last study. Maximum day and hour ratios of 3.00 and 5.00, respectively, have been assigned to these customers, designated as Group B.

PHILADELPHIA SUBURBAN WATER COMPANY

SUMMARY OF OBSERVED MAXIMUM DAY AND HOUR DEMAND RATIOS DURING THE PERIOD 1992-1996

AREA	LCA	NUMBER OF CUST.	TEST PERIOD		AVERAGE ANNUAL CONSUMPTION CORRESPONDS WITH TEST YEAR			MAXIMUM DAY DURING TEST PERIOD			MAXIMUM HOUR DURING TEST PERIOD			
			FROM	TO	ANNUAL AVG DAY	ANNUAL AVG HOUR	PER DAY PER CUST.	GALLONS	RATIO	DATE	GALLONS	RATIO	HOUR	DATE
			(5)	(6)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
RESIDENTIAL - LOW DENSITY														
ANNUAL USE OF 70-90,000														
Pocapcon	527	105	05/01/92	08/31/92	19,523.0	813.5	185.9	32,165.0	1.65	5/23/92	3,041.0	3.74	10-11 AM	5/23/92
		105	05/01/93	08/31/93	21,431.0	893.0	204.1	44,528.0	2.08	7/12/93	4,486.0	5.02	8-9 PM	7/12/93
		105	08/01/94	10/31/94	20,837.0	872.4	199.4	27,184.0	1.30	8/17/94	2,598.0	2.98	10-11 AM	8/17/94
Average for Annual Use of 70-90,000									1.67			3.91		
ANNUAL USE OF 90-99,999														
Narberth	247	37	05/24/93	10/09/93	8,265.0	344.4	223.4	18,427.8	2.23	6/3/93	1,822.7	4.42	11-12 AM	6/3/93
		37	05/02/94	10/21/94	8,812.0	367.2	239.2	17,181.0	1.85	8/7/94	1,351.0	3.68	8-10 AM	9/15/94
		37	05/24/95	10/09/95	8,538.5	355.8	230.8	20,182.0	2.36	6/04/95	1,886.0	5.24	4-5 PM	6/04/95
		37	04/12/96	09/18/96	8,678.0	361.6	234.5	14,006.1	1.61	8/2/96	4,054.4	11.21	11-12 AM	8/31/96
Average for Annual Use of 90-99,000									2.18			4.45		
ANNUAL USE OF 90-109,999														
Abington	346	48	05/14/92	07/31/92	12,271.0	511.3	255.6	36,798.5	2.92	5/18/92	3,648.4	7.14	3-4 PM	5/23/92
		48	05/17/93	10/09/93	12,701.0	528.2	264.8	50,780.4	4.00	7/13/93	5,333.4	10.08	11-12 AM	7/18/93
		48	08/02/94	10/21/94	12,135.0	505.6	262.8	63,940.0	5.27	8/13/94	11,822.0	23.58	2-3 AM	8/13/94
		48	05/24/95	10/09/95	12,399.0	515.4	257.7	62,395.0	4.24	6/17/95	4,419.0	8.57	3-4 PM	6/17/95
		48	04/12/96	09/17/96	12,628.0	528.1	263.0	58,447.4	4.71	5/28/96	4,401.8	8.37	2-3 AM	5/28/96
Wheatshoe/	354	40	05/01/92	08/25/92	12,788.0	532.8	319.7	40,827.4	3.20	8/22/92	2,652.7	4.98	4-5 AM	8/22/92
		40	05/17/93	10/09/93	11,891.0	485.5	297.3	38,088.8	3.34	7/10/93	3,088.8	6.18	7-8 PM	7/9/93
		40	05/08/94	10/21/94	11,493.0	478.9	287.3	30,338.0	2.64	6/18/94	2,757.0	5.76	8-9 PM	6/23/94
		40	05/24/95	07/27/95	12,056.7	502.4	301.4	54,888.0	4.54	7/15/95	4,243.0	8.45	10-11 AM	7/04/95
		40	04/12/96	09/17/96	9,518.0	396.5	237.9	21,041.0	2.21	7/23/96	5,239.0	13.21	12-1 PM	4/26/96
Average for Annual Use of 90-100,000									3.87			7.31		
ANNUAL USE OF > 100,000														
Raenor	230	51	05/14/92	10/01/92	17,430.0	728.3	341.8	48,388.0	2.77	7/11/92	3,036.8	5.01	9-10 AM	8/28/92
		51	05/17/93	10/09/93	20,720.0	863.3	408.3	68,835.7	3.38	7/11/93	5,117.1	5.93	9-10 PM	7/11/93
		51	05/02/94	10/21/94	19,227.0	801.1	377.0	58,287.0	2.82	7/13/94	4,374.0	5.48	10-11 AM	8/28/94
		51	05/24/95	10/09/95	18,125.7	768.9	375.0	68,558.0	3.64	6/4/95	4,463.0	5.58	7-8 AM	9/8/95
		51	08/07/96	09/18/96	16,480.0	685.4	322.5	57,288.0	3.48	6/8/96	3,685.7	5.38	7-8 AM	6/7/96
Average for Annual Use of > 100,000									3.18			5.28		

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PHILADELPHIA SUBURBAN WATER COMPANY

SUMMARY OF OBSERVED MAXIMUM DAY AND HOUR DEMAND RATIOS DURING THE PERIOD 1982-1986

AREA (1)	LCA (2)	NUMBER OF CUST. (3)	TEST PERIOD		AVERAGE ANNUAL CONSUMPTION CORRESPONDS WITH TEST YEAR (gallons)			MAXIMUM DAY DURING TEST PERIOD			MAXIMUM HOUR DURING TEST PERIOD			
			FROM	TO	ANNUAL AVG DAY	ANNUAL AVG HOUR	PER DAY PER CUST.	GALLONS	TEST RATIO	DATE	GALLONS	TEST RATIO	HOUR	DATE
			(5)	(6)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
RESIDENTIAL-MEDIUM DENSITY														
ANNUAL USE OF 60-69,999														
Narberth	283	48	05/01/82	08/30/82	6,942.0	289.3	144.8	12,489.7	1.80	7/15/82	3,758.9	13.00 *	6-8 AM	6/15/82
		48	08/08/83	10/08/83	6,872.0	278.0	139.0	10,148.8	1.82	8/19/83	1,301.7	4.88	8-9 PM	7/8/83
		48	04/28/84	10/21/84	5,777.0	240.7	120.4	10,584.0	1.83	6/5/84	1,175.0	4.88	7-8 PM	6/5/84
		48	08/29/85	10/08/85	6,483.7	289.3	134.7	13,489.0	2.08	7/30/85	1,303.0	4.84	6-7 PM	7/30/85
		48	04/12/86	08/18/86	6,828.0	284.4	142.2	8,488.0	1.24	5/5/86	876.2	3.43	9-10 PM	4/20/86
Average for Annual Use of 50-60,000									1.81		4.80			
ANNUAL USE OF 69-79,999														
Frazier	117	54	04/30/82	10/01/82	10,588.0	439.9	186.5	17,535.6	1.88	5/23/82	1,507.9	3.43	9-10 AM	7/11/82
		54	05/17/83	10/08/83	10,840.0	443.3	197.0	18,081.5	1.70	8/23/83	1,876.4	3.78	7-8 PM	7/27/83
		54	05/12/84	10/21/84	8,937.0	414.0	182.8	16,280.0	1.64	7/12/84	1,585.0	3.76	8-9 PM	7/5/84
		54	05/24/85	10/08/85	10,378.3	432.4	181.8	16,848.0	1.82	7/14/85	1,588.0	3.80	8-9 PM	6/14/85
Willow Grove	344	27	08/30/82	10/01/82	4,470.0	186.3	186.8	7,828.0	1.71	8/28/82	874.2	4.88	5-8 AM	7/14/82
		27	05/17/83	10/08/83	4,888.0	195.3	173.6	10,751.4	2.29	8/18/83	1,124.5	5.78	6-7 PM	7/8/83
		27	05/03/84	10/21/84	4,882.0	208.0	184.9	21,315.0	4.27	8/18/84	7,042.0	33.86 *	9-10 AM	8/18/84
		27	05/24/85	10/08/85	4,716.7	198.5	174.7	14,589.0	3.09	7/13/85	1,267.0	6.40	3-4 PM	6/18/85
		27	04/12/86	08/17/86	4,882.0	202.8	180.1	8,784.9	1.80	8/18/86	807.5	3.99	7-8 PM	5/20/86
Stratford	219	23	08/02/82	10/01/82	4,285.0	178.5	188.3	7,834.4	1.78	8/14/82	803.5	4.50	6-8 PM	7/30/82
		23	05/17/83	10/08/83	4,824.0	192.7	201.0	15,830.6	3.38	7/12/83	1,382.9	7.23	6-7 PM	6/28/83
		23	05/02/84	10/21/84	4,500.0	187.5	186.7	12,473.0	2.77	7/10/84	3,709.0	18.78 *	10-11 AM	6/10/84
		23	05/24/85	10/08/85	4,489.7	188.2	184.3	12,818.0	2.87	8/21/85	1,214.0	6.52	1-2 PM	6/24/85
		23	04/12/86	08/18/86	4,811.0	192.1	200.5	8,937.0	1.88	8/27/86	876.3	4.56	7-8 PM	6/2/86
Average for Annual Use of 60-70,000									2.35		4.97			

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PHILADELPHIA SUBURBAN WATER COMPANY

SUMMARY OF OBSERVED MAXIMUM DAY AND HOUR DEMAND RATIOS DURING THE PERIOD 1982-1986

AREA (1)	LCA (2)	NUMBER OF CUST. (3)	TEST PERIOD		AVERAGE ANNUAL CONSUMPTION CORRESPONDS WITH TEST YEAR (gallons)			MAXIMUM DAY DURING TEST PERIOD			MAXIMUM HOUR DURING TEST PERIOD			
			FROM (5)	TO (6)	ANNUAL AVG DAY (8)	ANNUAL AVG HOUR (9)	PER DAY PER CUST. (10)	GALLONS (11)	TEST RATIO (12)	DATE (13)	GALLONS (14)	TEST RATIO (15)	HOUR (16)	DATE (17)
RESIDENTIAL-MEDIUM DENSITY														
ANNUAL USE OF 50-69,999														
ANNUAL USE OF 70-89,999														
Lawrence Park	405	77	04/30/82	10/01/82	15,540.0	647.5	201.8	28,427.8	1.70	8/23/82	4,008.4	6.19	7-8 PM	5/15/82
		77	05/17/83	10/08/83	15,483.0	645.1	201.1	28,340.0	1.83	6/11/83	2,890.9	4.12	8-9 PM	7/11/83
		77	05/08/84	10/18/84	16,086.0	670.3	208.9	29,777.0	1.85	8/7/84	2,514.0	3.75	8-9 PM	7/8/84
		77	05/24/85	10/08/85	15,703.0	654.3	203.9	24,803.0	1.58	8/18/85	2,316.0	3.54	10-11 AM	8/18/85
		77	04/12/86	09/17/86	14,888.0	620.3	193.4	23,140.5	1.55	6/18/86	2,170.7	3.50	11-12 AM	5/19/86
St. Albans	254	22	03/23/82	08/31/82	4,288.0	175.4	181.3	11,321.5	2.89	4/7/82	802.6	5.15	7-8 AM	4/7/82
		22	05/17/83	10/08/83	4,128.0	171.8	187.5	6,285.8	1.82	7/10/83	884.9	5.15	7-8 PM	7/12/83
		22	05/02/84	10/21/84	4,387.0	182.8	189.4	8,488.0	1.47	7/10/84	692.0	3.79	4-5 PM	7/10/84
		22	05/24/85	10/08/85	4,240.7	178.7	182.8	8,737.0	2.08	8/28/85	801.0	4.53	5-6 PM	7/14/85
		22	05/18/86	08/28/86	3,801.0	158.4	172.8	5,478.3	1.44	5/23/86	707.2	4.47	7-8 PM	6/8/86
Average for Annual Use of 70-89,000									1.81			4.41		
ANNUAL USE OF 80-99,999														
Wyncote	336	35	05/24/83	10/08/83	7,485.0	311.9	213.8	14,089.0	1.88	8/4/83	1,456.8	4.67	3-4 PM	7/18/83
		35	05/08/84	10/21/84	8,227.0	342.8	235.1	23,475.0	2.88	8/8/84	1,854.0	4.83	6-7 PM	8/8/84
		35	05/24/85	10/08/85	7,858.0	327.3	224.5	28,451.0	3.37	7/08/85	2,154.0	6.58	7-8 PM	7/08/85
		35	04/12/86	09/17/86	8,843.0	401.8	275.5	18,094.8	1.57	6/18/86	1,814.0	4.51	12-1 PM	7/14/86
Average for Annual Use of 80-99,000									2.70			5.38		

* Not included in average.

PHILADELPHIA SUBURBAN WATER COMPANY

SUMMARY OF OBSERVED MAXIMUM DAY AND HOUR DEMAND RATIOS DURING THE PERIOD 1982-1986

AREA (1)	LCA (2)	NUMBER OF CUST. (3)	TEST PERIOD		AVERAGE ANNUAL CONSUMPTION CORRESPONDS WITH TEST YEAR (gallons)			MAXIMUM DAY DURING TEST PERIOD			MAXIMUM HOUR DURING TEST PERIOD			
			FROM	TO	ANNUAL AVG DAY	ANNUAL AVG HOUR	PER DAY PER CUST.	GALLONS	TEST RATIO	DATE	GALLONS	TEST RATIO	HOUR	DATE
			(5)	(6)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
RESIDENTIAL-HIGH DENSITY ANNUAL USE OF 80-90,000														
Darby	424	35	05/07/82	08/31/82	5,845.0	235.2	188.8	7,604.8	1.35	8/23/82	731.8	3.11	7-8 AM	8/14/82
		38	05/17/83	10/08/83	5,161.0	215.0	143.4	8,078.7	1.57	7/5/83	738.7	3.44	11-12 AM	7/10/83
		38	05/02/84	10/21/84	5,467.0	228.6	152.4	11,847.0	2.12	8/25/84	901.0	3.94	4-5 PM	8/14/84
		35	05/24/85	10/08/85	5,431.0	228.3	190.9	12,840.0	2.38	7/15/85	785.0	3.47	10-11 AM	7/15/85
		35	04/12/86	07/23/86	5,593.0	233.0	155.4	4,243.4	0.78	8/14/86	304.7	1.31	1-2 PM	8/14/86
Cherry Heights	416	84	05/07/82	10/01/82	12,577.0	524.0	148.7	16,824.4	1.32	8/8/82	1,404.7	2.88	9-10 AM	8/1/82
		84	05/17/83	10/08/83	12,215.0	508.0	145.4	15,388.1	1.28	7/5/83	1,481.5	2.87	10-11 AM	7/11/83
		84	05/02/84	10/21/84	12,717.0	528.9	151.4	17,258.0	1.38	7/10/84	1,535.0	2.90	10-11 AM	8/4/84
		84	05/24/85	10/08/85	12,503.0	521.0	148.8	28,116.0	2.25	7/24/85	4,477.0	8.98	1-2 PM	8/2/85
		84	04/12/86	07/23/86	12,888.0	540.4	154.4	18,041.3	1.24	4/20/86	1,488.7	2.75	11-12 PM	4/21/86
Average for Annual Use of 80-90,000									1.59		3.59			
ANNUAL USE OF 60-70,000														
Upper Darby	412	74	05/07/82	08/31/82	12,831.0	538.8	174.7	13,388.0	1.04	7/18/82	1,254.4	2.33	9-10 AM	8/27/82
		74	05/17/83	10/08/83	11,704.0	487.7	158.2	18,172.1	1.38	7/17/83	1,472.3	3.02	9-10 AM	7/14/83
		74	08/22/84	10/21/84	12,683.0	528.5	171.4	16,315.0	1.28	8/11/84	1,288.0	2.38	10-11 AM	10/8/84
		74	05/24/85	10/08/85	12,439.3	518.3	168.1	15,337.0	1.23	8/20/85	1,318.0	2.84	12-1 PM	8/12/85
		74	04/12/86	09/17/86	11,864.0	494.3	180.3	15,181.0	1.28	5/5/86	1,298.8	2.83	11-12 AM	8/9/86
Average for Annual Use of 60-70,000									1.23		2.57			

PHILADELPHIA SUBURBAN WATER COMPANY

SUMMARY OF OBSERVED MAXIMUM DAY AND HOUR DEMAND RATIOS DURING THE PERIOD 1982-1988

Test Site (1)	Test Period		Test Days (4)	Average Annual Consumption Corresponds with Test Period (gallons)		Maximum Day During Test Period			Maximum Hour During Test Period			
	From (2)	To (3)		Average Day (5)	Average Hour (6)	Gallons (7)	Ratio (8)	Date (9)	Gallons (10)	Ratio (11)	Hour (12)	Date (13)
	COMMERCIAL AND PUBLIC											
APARTMENTS												
Valley Stream Village	07/13/82	08/03/82	21	28,045.1	1,085.2	29,806.2	1.14	10/4/82	2,956.0	2.72	6-7 AM	8/30/82
	08/14/82	10/05/82	21									
	07/08/83	07/19/83	13	24,909.6	1,037.9	31,017.3	1.25	10/3/83	2,910.0	2.60	7-8 AM	10/1/83
	08/17/83	08/30/83	13									
	08/28/83	10/11/83	13									
	08/08/84	08/21/84	15	24,976.0	1,040.7	30,678.2	1.23	8/20/84	2,754.3	2.65	12-1 PM	10/30/84
	07/05/84	07/18/84	13									
	08/18/84	08/29/84	13									
	10/14/84	11/04/84	21									
Greenhill Condo Assoc.	07/20/83	08/03/83	14	119,880.8	4,889.2	154,880.9	1.29	8/5/83	11,466.6	2.29	10-11 AM	8/5/83
	08/31/83	09/13/83	13									
	10/12/83	10/25/83	13									
	08/24/84	08/06/84	13	119,836.0	4,987.3	163,143.9	1.36	7/21/84	13,144.0	2.63	9-10 AM	5/26/84
	08/20/84	07/05/84	16									
	07/18/84	08/01/84	14									
	08/29/84	09/12/84	14									
Cambridge Hall Apart.	05/08/82	07/30/82	85	26,394.6	1,099.8	46,867.5	1.74	5/8/82	3,979.7	3.62	8-9 AM	5/25/82
	08/31/82	10/01/82	31									
	05/17/83	10/08/83	144	22,231.5	926.3	37,136.9	1.67	5/24/83	3,311.7	3.58	8-9 AM	6/28/83
	08/20/84	10/21/84	123	30,240.0	1,280.0	36,522.0	1.21	7/21/84	3,257.0	2.57	7-8 AM	9/21/84
				28,064.0	1,169.3							
	04/15/86	09/18/86	156	26,734.0	1,113.9	46,521.2	1.70	5/20/86	3,501.0	3.14	7-8 AM	5/17/86
Total Apartments				449,511.6	18,729.7	574,273.1	1.28		47,291.3	2.52		

PHILADELPHIA SUBURBAN WATER COMPANY

SUMMARY OF OBSERVED MAXIMUM DAY AND HOUR DEMAND RATIOS DURING THE PERIOD 1992-1996

Test Site	Test Period		Test Days	Average Annual Consumption Corresponds with Test Period (gallons)		Maximum Day During Test Period			Maximum Hour During Test Period			
	From	To		Average Day	Average Hour	Gallons	Ratio	Date	Gallons	Ratio	Hour	Date
	(2)	(3)		(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
HOSPITALS												
Fitzgerald Mercy Hospital	07/07/93	07/20/93	13	37,401.9	1,558.4	51,650.1	1.38	8/24/93	5,254.8	3.37	7-8 AM	7/11/93
	08/17/93	08/30/93	13									
	09/28/93	10/12/93	14									
	09/22/94	07/05/94	13	40,488.0	1,686.0	66,581.2	1.65	8/3/94	5,627.7	3.34	10-11 AM	8/3/94
	09/01/94	08/29/94	28									
	09/29/95	07/24/95	28	38,250.7	1,593.8	58,649.0	1.53	9/29/95	4,747.0	2.98	7-8 AM	7/20/95
	09/05/95	10/03/95	28									
Holy Redeemer Hospital	06/07/93	07/07/93	30	94,141.8	3,922.6	129,821.7	1.38	8/4/93	9,187.7	2.34	2-3 PM	8/3/93
	08/03/93	08/16/93	13									
	07/05/94	07/18/94	13	100,636.0	4,193.1	146,532.5	1.46	7/13/94	10,299.6	2.48	2-3 PM	7/13/94
	08/16/94	08/29/94	13									
	09/12/94	09/27/94	16									
	06/12/95	06/28/95	14	102,691.7	4,276.8	115,941.0	1.13	9/8/95	9,377.0	2.19	12-1 PM	9/8/95
	07/24/95	08/02/95	9									
	09/06/95	09/18/95	13									
Total Hospitals				413,585.9	17,232.7	589,175.5	1.38		44,493.8	2.58		

PHILADELPHIA SUBURBAN WATER COMPANY

SUMMARY OF OBSERVED MAXIMUM DAY AND HOUR DEMAND RATIOS DURING THE PERIOD 1982-1986

Test Site	Test Period		Test Days	Average Annual Consumption Corresponds with Test Period (gallons)		Minimum Day During Test Period			Maximum Hour During Test Period			
	From	To		Average Day	Average Hour	Gallons	Ratio	Date	Gallons	Ratio	Hour	Date
	(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
BUSINESS												
Strawbridge & Clothier	07/07/83	07/20/83	13	10,536.2	439.0	22,245.1	2.11	7/14/83	2,255.9	5.14	3-4 PM	7/10/83
	08/17/83	08/30/83	13									
	04/22/84	05/08/84	17	10,307.0	429.5	14,541.2	1.41	4/24/84	1,655.5	3.85	2-3 PM	8/30/84
	08/27/84	10/14/84	17									
	05/15/85	05/31/85	16	10,423.1	434.3	25,925.0	2.48	6/15/85	4,404.0	10.14	11-12 AM	10/18/85
	08/12/85	08/28/85	14									
	08/22/85	09/05/85	14									
	10/18/85	10/31/85	15									
08/21/86	08/28/86	08	8,538.0	434.3	18,811.5	1.97	8/28/86	1,641.7	3.78	3-4 PM	7/8/86	
Stouffer Restaurant & Inn	08/04/83	08/16/83	12	54,189.9	2,257.9	90,900.1	1.68	8/7/83	8,589.7	3.80	8-9 AM	8/2/83
	08/31/83	09/13/83	13									
	10/11/83	10/25/83	14									
	07/05/84	07/18/84	13	50,780.0	2,115.0	116,219.6	2.29	8/3/84	10,810.5	5.11	12-1 PM	8/3/84
	08/01/84	08/16/84	15									
	08/29/84	09/12/84	14									
	08/27/84	10/14/84	17									
	07/24/85	08/08/85	15	55,985.9	2,331.9	94,148.0	1.68	8/3/85	7,175.0	3.08	12-1 PM	8/4/85
08/22/85	09/05/85	14										
08/17/85	10/02/85	15										
Arco Chemical Company	08/22/82	07/13/82	21	112,934.4	4,705.8	202,818.4	1.80	8/25/82	13,519.6	2.87	8-9 PM	8/25/82
	08/24/82	08/14/82	21									
	06/07/83	07/08/83	29	118,808.2	4,942.0	208,727.8	1.78	6/20/83	13,623.4	2.78	6-7 AM	6/20/83
	05/24/84	06/08/84	13	122,677.0	5,111.5	219,105.0	1.79	7/20/84	15,844.4	3.08	3-4 PM	7/28/84
	07/18/84	08/01/84	14									
	08/29/84	09/12/84	14									

PHILADELPHIA SUBURBAN WATER COMPANY

SUMMARY OF OBSERVED MAXIMUM DAY AND HOUR DEMAND RATIOS DURING THE PERIOD 1992-1996

Test Site	Test Period		Test Days	Average Annual Consumption Corresponds with Test Period (gallons)		Maximum Day During Test Period			Maximum Hour During Test Period			
	From	To		Average Day	Average Hour	Gallons	Ratio	Date	Gallons	Ratio	Hour	Date
	(2)	(3)		(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
BUSINESS.cont.												
Rydal Presbyterian Home	06/03/93	06/30/93	27	71,729.6	2,968.7	101,008.9	1.41	6/9/93	6,863.0	2.30	9-10-AM	6/13/93
	06/28/93	10/12/93	14									
	06/21/94	07/06/94	14	67,368.0	2,807.0	66,711.9	1.32	7/21/94	6,672.2	2.36	2-3 AM	7/25/94
	07/16/94	08/01/94	14									
	06/30/95	08/13/95	14	75,851.6	3,160.5	142,806.0	1.86	6/6/95	18,692.0	5.91	6-9 AM	6/6/95
	07/10/95	07/28/95	15									
	08/07/95	08/21/95	14									
Cher Francisco of PA	06/24/93	06/08/93	15	120,271.2	5,011.3	246,325.9	2.06	6/4/93	23,585.2	4.71	4-5 PM	6/3/93
	06/21/93	07/08/93	15									
	06/03/93	06/16/93	13									
	06/06/94	06/15/94	9	146,250.0	6,177.1	269,158.6	1.82	6/6/94	24,566.1	3.96	12-1 PM	6/13/94
	07/18/94	08/01/94	14									
	06/29/94	08/12/94	14									
	06/30/95	08/12/95	13	167,999.2	6,999.6	376,487.0	2.25	8/10/95	22,184.0	3.17	6-9 AM	8/10/95
	06/28/95	07/11/95	15									
	08/07/95	08/22/95	15									
	10/16/95	10/31/95	15									
CIBA Geigy	07/06/93	07/19/93	13	29,214.5	1,217.3	52,431.0	1.79	6/20/93	5,899.4	4.84	1-2 PM	9/30/93
	08/17/93	08/30/93	13									
	06/28/93	10/11/93	13									
	07/05/94	07/18/94	13	32,498.0	1,354.1	53,965.1	1.66	8/12/94	5,122.3	3.78	1-2 PM	7/12/94
	08/01/94	08/16/94	15									
	08/12/94	08/27/94	15									
	08/12/95	08/26/95	14	26,666.0	1,110.6	42,698.0	1.60	8/6/95	5,395.0	4.85	12-1 PM	7/25/95
	07/24/95	08/08/95	15									
	08/22/95	09/05/95	14									

PHILADELPHIA SUBURBAN WATER COMPANY

SUMMARY OF OBSERVED MAXIMUM DAY AND HOUR DEMAND RATIOS DURING THE PERIOD 1992-1996

Test Site	Test Period		Test Days	Average Annual Consumption Corresponds with Test Period (gallons)		Maximum Day During Test Period			Maximum Hour During Test Period			
	From	To		Average Day	Average Hour	Gallons	Ratio	Date	Gallons	Ratio	Hour	Date
	(2)	(3)		(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
BUSINESS cont.												
Stroehmann Bakery	07/07/93	07/20/93	13	38,512.1	1,604.7	82,367.9	1.62	7/8/93	5,011.2	3.12	4-5 AM	7/11/93
	08/17/93	08/30/93	13									
	04/22/94	05/09/94	17	34,131.0	1,422.1	51,646.2	1.51	6/15/94	2,626.1	1.85	5-6 AM	6/15/94
	06/06/94	06/20/94	14									
	06/29/94	08/12/94	14									
	10/14/94	11/04/94	21									
	05/16/95	06/30/95	15	30,023.0	1,251.0	40,086.0	1.34	10/26/95	3,056.0	2.44	7-8 AM	5/20/95
	05/30/95	08/13/95	14									
	08/21/95	09/05/95	15									
	10/16/95	10/31/95	15									
Total Business				1,387,432.9	58,304.9	2,542,947.1	1.62		206,965.1	3.58		
GOLF COURSE												
Springfield Club Sprinkler	07/20/93	08/03/93	14	34,282.2	1,428.4	192,339.5	5.61	7/28/93	29,280.2	20.50	5-6 AM	8/2/93
	08/31/93	09/13/93	13									
	10/12/93	10/26/93	14									
	08/06/94	08/20/94	14	27,908.0	1,166.5	193,729.5	6.92	6/10/94	27,650.5	23.98	4-5 PM	10/23/94
	07/20/94	08/01/94	12									
	08/16/94	08/29/94	13									
	10/14/94	11/04/94	21									
	08/28/95	07/10/95	14	31,180.7	1,299.6	208,733.0	6.69	8/7/95	35,708.0	27.48	6-7 AM	7/4/95
	08/02/95	08/22/95	20									
	09/08/95	09/19/95	13									
Total Golf Course				93,468.9	3,894.5	594,801.6	6.38		92,639.7	23.84		

PHILADELPHIA SUBURBAN WATER COMPANY

SUMMARY OF OBSERVED MAXIMUM DAY AND HOUR DEMAND RATIOS DURING THE PERIOD 1982-1986

Test Site	Test Period		Test Days	Average Annual Consumption Corresponds with Test Period (gallons)		Maximum Day During Test Period			Maximum Hour During Test Period			
	From	To		Average Day	Average Hour	Gallons	Ratio	Date	Gallons	Ratio	Hour	Date
	(2)	(3)		(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
HOTELS												
Radisson Hotel	07/07/83	07/20/83	13	46,082.3	1,920.5	76,844.1	1.70	8/29/83	6,371.2	3.32	9-10 AM	8/29/83
	08/17/83	08/30/83	13									
	08/20/84	07/05/84	16	44,422.0	1,850.9	71,194.9	1.60	8/4/84	5,748.5	3.11	7-8 AM	9/15/84
	08/01/84	08/16/84	15									
	09/12/84	09/27/84	16									
	05/30/85	06/12/85	13	34,874.2	1,463.1	79,733.0	2.29	8/27/85	7,588.0	5.22	7-8 AM	8/29/85
	08/22/86	09/09/86	16									
	09/17/86	10/02/86	16									
Total Hotels				125,368.50	5,224.52	229,471.97	1.83		19,707.72	3.77		
COLLEGES												
Swarthmore College	08/24/82	09/14/82	21	79,908.7	3,329.5	134,937.9	1.69	8/25/82	26,744.3	8.03	8-9 PM	8/25/82
	04/28/83	05/11/83	16	85,064.0	3,543.9	69,417.6	0.70	5/3/83	8,883.5	2.51	5-6 PM	4/29/83
	04/22/84	05/09/84	17	79,800.0	3,325.0	118,423.0	1.48	9/14/84	12,370.7	3.72	7-8 PM	4/28/84
	09/12/84	10/10/84	28									
	05/15/85	05/31/85	18	60,741.4	2,630.9	89,491.0	1.47	10/8/85	10,008.0	3.95	7-8 AM	5/28/85
	10/03/85	10/31/85	28									
	08/28/86	09/19/86	24	57,836.0	2,409.8	416,829.5	7.20	8/31/86	66,782.6	27.30	10-11 PM	8/28/86
Immaculata College	04/28/83	05/12/83	16	30,440.5	1,268.4	30,906.6	1.02	5/4/83	3,517.3	2.77	9-10 AM	5/10/83
	09/14/83	09/28/83	14									
	04/22/84	05/09/84	17	35,188.0	1,468.2	57,802.0	1.64	11/2/84	5,008.5	3.42	9-10 AM	4/28/84
	09/27/84	11/04/84	38									
	05/15/85	05/30/85	15	30,206.6	1,268.6	33,785.0	1.12	10/25/85	4,088.0	3.25	9-10 AM	10/25/85
	10/18/85	10/31/85	15									
Total Colleges				459,174.20	19,132.28	941,172.57	2.05		136,430.90	7.13		

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PHILADELPHIA SUBURBAN WATER COMPANY

SUMMARY OF OBSERVED MAXIMUM DAY AND HOUR DEMAND RATIOS DURING THE PERIOD 1982-1986

Test Site (1)	Test Period		Test Days (4)	Average Annual Consumption Corresponds with Test Period (gallons)		Maximum Day During Test Period			Maximum Hour During Test Period			
	From	To		Average	Average	Gallons	Ratio	Date	Gallons	Ratio	Hour	Date
	(2)	(3)		Day	Hour	(7)	(8)	(9)	(10)	(11)	(12)	(13)
PRIVATE SCHOOLS												
V.F. Military Academy	08/24/82	08/14/82	21	16,947.5	706.1	62,541.2	3.69	9/4/82	9,268.5	13.13	7-8 AM	9/4/82
	05/10/83	05/25/83	15	16,617.5	784.1	32,514.4	1.73	9/19/83	3,739.5	4.77	10-11 PM	5/10/83
	08/14/83	08/28/83	14									
	04/22/84	05/12/84	20	21,954.0	914.6	33,058.1	1.51	4/27/84	3,543.7	3.87	5-6 AM	5/5/84
	05/15/85	05/30/85	15	20,627.8	868.5	47,280.0	2.29	10/6/85	4,943.0	5.75	10-11 PM	10/5/85
	10/03/85	10/31/85	28									
	08/17/86	07/20/86	33	30,483.0	1,270.1	82,040.9	2.69	8/1/86	7,845.8	6.18	7-8 AM	8/2/86
	08/20/86	08/19/86	30									
Total Private Schools				108,629.8	4,534.6	257,434.7	2.37		29,341.5	6.47		
PUBLIC SCHOOLS												
Marpie Nwtn. High Sch.	08/14/82	10/05/82	21	10,413.9	433.9	23,420.7	2.25	9/30/82	4,291.3	9.89	8-9 AM	9/30/82
	05/10/83	05/25/83	15	6,285.5	281.9	16,235.6	2.58	5/11/83	6,320.7	24.13	12-1 PM	5/11/83
	08/14/83	08/28/83	14									
	04/22/84	05/24/84	32	10,202.0	425.1	19,255.0	1.89	5/11/84	4,284.3	10.03	9-10 AM	9/20/84
	08/12/84	10/14/84	32									
	05/15/85	05/31/85	16	7,037.9	293.2	23,975.0	3.41	5/17/85	8,118.0	27.88	7-8 AM	5/30/85
	08/16/85	10/30/85	42									
Total Public Schools				33,939.3	1,414.1	82,886.3	2.44		22,994.3	18.28		

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PHILADELPHIA SUBURBAN WATER COMPANY

SUMMARY OF OBSERVED MAXIMUM DAY AND HOUR DEMAND-RATIOS DURING THE PERIOD 1982-1996

Test Site	Test Period		Test Days	Average Annual Consumption Corresponds with Test Period (gallons)		Maximum Day During Test Period			Maximum Hour During Test Period			
	From	To		Average Day	Average Hour	Gallons	Ratio	Date	Gallons	Ratio	Hour	Date
	(2)	(3)		(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
OTHER PUBLIC												
US Postal Service	07/20/83	08/03/83	14	12,367.8	814.9	23,789.0	1.83	7/28/83	1,761.4	3.42	3-4 PM	10/20/83
	08/14/83	09/28/83	14									
	10/11/83	10/25/83	14									
	05/24/84	06/08/84	13	14,216.0	592.4	28,388.9	2.00	5/26/84	3,240.1	5.47	2-3 PM	7/6/84
	07/05/84	07/18/84	13									
	08/01/84	08/16/84	15									
	10/14/84	11/04/84	21									
	06/19/85	06/12/85	24	11,094.7	462.3	21,736.00	1.98	6/31/85	1,543.00	3.34	7-8 AM	6/28/85
	06/28/85	07/11/85	15									
	08/21/85	09/05/85	15									
Total Other Public				37,670.60	1,809.60	73,832.88	1.98		6,544.53	4.17		
SMALL COMMERCIAL												
Great Valley Presb. Church	07/22/86	09/16/86	56	252.00	10.5	2,488.95	9.88	8/14/86	419.50	39.95	1-2 PM	8/30/86
Story Winn Fuel Co.	07/23/86	09/16/86	55	124.00	5.2	251.50	2.03	8/4/86	136.98	26.90	4-5 PM	8/4/86
Stratford Pharmacy	07/22/86	09/16/86	56	64.00	2.7	147.28	2.30	8/24/86	32.56	12.21	9-10 AM	8/3/86
Dayton Sure Grip	07/23/86	09/16/86	55	407.00	17.0	529.55	1.30	8/11/86	85.94	5.07	11-12 AM	8/21/86
Dollar Land	07/22/86	09/16/86	56	386.00	16.1	297.30	0.77	7/29/86	50.80	3.16	1-2 PM	7/25/86
McCausland Jeep Eagle	07/22/86	09/16/86	56	357.00	14.9	2,676.20	7.50	8/21/86	289.30	20.12	3-4 PM	8/28/86
				1,500.00	66.25	6,390.78	4.02		1,027.08	15.60		

PHILADELPHIA SUBURBAN WATER COMPANY

SUMMARY OF OBSERVED MAXIMUM DAY AND HOUR DEMAND RATIOS DURING THE PERIOD 1992-1996

Test Site	Test Period		Test Days	Average Annual Consumption Corresponds with Test Period (gallons)		Maximum Day During Test Period			Maximum Hour During Test Period			
	From	To		Average Day	Average Hour	Gallons	Ratio	Date	Gallons	Ratio	Hour	Date
	(2)	(3)		(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
INDUSTRIAL												
QUARTERLY INDUSTRIAL												
Johnson Matthey, Inc.	07/07/93	07/20/93	13	35,706.6	1,487.6	61,767.6	1.73	7/12/93	3,631.6	2.44	1-2 PM	6/20/93
	08/17/93	08/30/93	13									
	09/28/93	10/11/93	13									
	07/18/94	08/01/94	14	47,696.0	1,967.4	77,226.3	1.62	7/21/94	4,225.5	2.13	1-2 PM	7/21/94
	08/29/94	09/12/94	14									
	10/14/94	11/04/94	21									
	08/12/95	08/28/95	14	38,349.3	1,597.9	67,770.0	1.77	8/15/95	3,969.0	2.46	8-9 PM	6/16/95
	07/07/95	07/22/95	15									
	08/19/95	10/03/95	14									
Martin Marietta	08/03/92	08/22/92	19	63,341.0	2,639.2	153,614.6	2.43	8/19/92	13,017.5	4.93	12-1 PM	6/19/92
	08/10/92	08/24/92	14									
	07/20/93	08/03/93	14	77,567.4	3,232.0	102,563.9	1.32	8/8/93	4,633.3	1.43	8-9 AM	9/8/93
	08/31/93	09/13/93	13									
	07/08/94	07/18/94	13	54,000.0	2,250.0	76,572.3	1.42	7/9/94	3,946.2	1.75	1-2 PM	7/9/94
	10/14/94	11/12/94	29									
	08/31/95	08/12/95	12	29,642.5	1,243.4	42,486.0	1.42	8/2/95	3,638.0	2.93	4-5 PM	6/5/95
	07/26/95	08/07/95	13									
	08/19/95	10/03/95	14									
	08/21/96	08/20/96	60	37,048.0	1,543.7	69,966.0	1.89	8/28/96	4,349.1	2.82	10-11 AM	6/25/96

PHILADELPHIA SUBURBAN WATER COMPANY

SUMMARY OF OBSERVED MAXIMUM DAY AND HOUR DEMAND RATIOS DURING THE PERIOD 1992-1996

Test Site	Test Period		Test Days	Average Annual Consumption Corresponds with Test Period (gallons)		Maximum Day During Test Period			Maximum Hour During Test Period			
	From	To		Average Day	Average Hour	Gallons	Ratio	Date	Gallons	Ratio	Hour	Date
	(2)	(3)		(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
QUARTERLY INDUSTRIAL cont.												
7-UP Bottling Co.	06/03/92	06/22/92	19	35,131.7	1,463.8	74,324.9	2.12	6/11/92	5,353.4	3.66	9-10 PM	6/11/92
	06/03/92	06/24/92	21									
	07/20/93	08/03/93	14	42,385.5	1,766.1	64,942.9	1.53	7/28/93	5,754.0	3.26	3-4 PM	7/28/93
	08/31/93	09/13/93	13									
	10/12/93	10/28/93	14									
	05/12/94	05/24/94	12	49,966.0	2,061.9	92,695.2	1.86	5/9/94	7,940.4	3.81	8-9 AM	5/9/94
	06/21/94	07/05/94	14									
	08/01/94	08/16/94	15									
	08/12/94	08/27/94	15									
	05/31/95	06/13/95	13	46,561.0	1,940.0	82,705.0	1.78	6/23/95	12,121.0	6.25	8-9 AM	6/12/95
	08/21/95	09/05/95	15									
Total Quarterly Industrial				567,596.2	23,233.3	996,638.6	1.73		72,579.1	3.12		
MONTHLY INDUSTRIAL												
Philadelphia Electric	07/13/92	08/03/92	21	327,595.6	13,649.8	936,624.5	2.87	7/15/92	51,953.2	3.81	1-2 PM	7/15/92
	07/20/93	08/03/93	14	540,274.0	22,511.4	667,669.1	1.61	7/27/93	62,799.8	2.34	12-1 AM	7/24/93
	08/31/93	09/28/93	28									
	10/12/93	10/28/93	14									
	05/09/94	05/24/94	15	579,810.0	24,150.4	818,363.2	1.41	5/12/94	49,436.0	2.05	9-10 AM	5/16/94
	08/27/94	11/04/94	38									
	07/24/95	08/02/95	9	277,197.6	11,549.9	361,711.0	1.30	8/6/95	20,922.0	1.81	6-7 AM	8/7/95
	08/22/95	09/08/95	15									
	09/19/95	10/03/95	14									
	06/21/96	08/16/96	57	263,279.0	11,903.3	676,066.0	3.10	6/21/96	47,015.1	3.96	4-5 AM	6/27/96

PHILADELPHIA SUBURBAN WATER COMPANY

SUMMARY OF OBSERVED MAXIMUM DAY AND HOUR DEMAND RATIOS DURING THE PERIOD 1992-1995

Test Site	Test Period		Test Days	Average Annual Consumption Corresponds with Test Period (gallons)		Maximum Day During Test Period			Maximum Hour During Test Period			
	From	To		Average Day	Average Hour	Gallons	Ratio	Date	Gallons	Ratio	Hour	Date
	(2)	(3)		(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
MONTHLY INDUSTRIAL cont.												
Boeing Helicopter-Ridley	05/24/93	06/08/93	16	370,820.6	15,438.4	475,887.2	1.28	9/15/93	30,247.6	1.98	6-7 AM	8/16/93
	08/14/93	08/28/93	15									
	08/08/94	08/20/94	14	345,833.0	14,409.7	429,367.2	1.24	9/15/94	25,020.6	1.74	12-1 PM	6/15/94
	08/12/94	08/27/94	14									
	08/15/95	05/30/95	16	305,071.8	12,711.3	807,571.0	1.99	5/25/95	48,207.0	3.64	1-2 PM	5/25/95
	06/28/95	07/10/95	14									
Boeing Helicopter-Essexington	05/24/93	06/08/93	16	167,960.4	6,997.9	173,363.8	1.03	6/1/93	15,337.0	2.19	9-10 AM	5/25/93
	06/21/93	07/07/93	18									
	06/08/94	06/20/94	14	185,115.0	7,754.8	206,178.1	1.11	8/15/94	17,881.6	2.28	11-12 AM	8/28/94
	07/05/94	07/20/94	15									
	08/16/94	08/28/94	13									
	05/15/95	05/30/95	16	160,581.8	6,890.9	188,919.0	1.24	8/28/95	22,861.0	3.42	11-12 PM	5/22/95
	06/28/95	07/10/95	14									
McNeil CPC	06/21/93	07/07/93	18	105,772.9	4,407.2	178,254.5	1.67	8/13/93	13,045.5	2.86	10-11 AM	8/16/93
	08/03/93	08/16/93	13									
	08/14/93	08/28/93	14									
	07/05/94	07/18/94	13	104,978.0	4,374.1	180,217.5	1.72	7/8/94	11,820.2	2.73	11-12 AM	7/8/94
	08/16/94	08/28/94	13									
	08/27/94	10/14/94	17									
Total Monthly Industrial				3,754,779.6	156,449.2	6,313,282.1	1.68		404,336.7	2.58		

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PHILADELPHIA SUBURBAN WATER COMPANY

SUMMARY OF OBSERVED MAXIMUM DAY AND HOUR DEMAND RATIOS DURING THE PERIOD 1992-1996

Test Site	Test Period		Test Days	Average Annual Consumption Corresponds with Test Period (gallons)		Maximum Day During Test Period			Maximum Hour During Test Period			
	From	To		Average Day	Average Hour	Gallons	Ratio	Date	Gallons	Ratio	Hour	Date
	(2)	(3)		(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
SALES TO OTHER WATER UTILITIES												
PA Water Company	06/06/94	06/21/94	15	4,094.0	170.8	70,891.6	17.24	6/6/94	6,524.6	38.25	7-8 AM	6/6/94
	06/16/94	06/29/94	13									
	10/18/94	11/04/94	17									
	05/19/95	05/31/95	12	690.0	28.8	5,470.0	7.93	5/23/95	1,510.0	52.52	10-11 AM	5/23/95
	06/28/95	07/10/95	14									
	06/07/95	06/21/95	14									
	06/19/95	10/03/95	14									
	06/21/96	07/22/96	31	827.0	34.5	1,209.6	1.46	6/29/96	165.4	4.80	10-11 AM	5/23/95
Warminster Township Auth.	07/20/93	06/03/93	14	95,415.1	3,975.6	375,116.9	3.93	7/29/93	74,008.0	18.77	10-11 AM	7/29/93
	06/31/93	06/13/93	13									
	10/12/93	10/28/93	14									
	06/06/94	06/21/94	15	38,925.0	1,621.9	787,331.5	20.23	6/19/94	70,666.6	43.69	8-9 PM	6/19/94
	06/29/94	06/12/94	14									
	10/14/94	11/04/94	21									
	06/12/95	07/11/95	29	67,170.1	2,796.8	715,543.0	10.65	9/12/95	73,148.0	28.13	9-10 AM	6/20/95
	06/07/95	06/21/95	14									
	06/05/95	06/19/95	14									
Total Sales to Other Water Utilities				207,121.20	8,630.10	1,955,262.57	9.44		226,820.60	26.28		

PHILADELPHIA SUBURBAN WATER COMPANY

WEIGHTED MAXIMUM DAY AND HOUR RATIOS BY CUSTOMER CLASSIFICATION

Annual Average Consumption Per Customer	1994 Consumption		Maximum Day Ratio		Maximum Hour Ratio	
	Consumption	Percent of	Average	Weighted	Average	Weighted
	1000 Gals	Total	Ratio	Ratio	Ratio	Ratio
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Residential						
High Density						
80-90,000	189,775	1.03%	1.59	0.016	3.59	0.037
90-100,000	2,549,823	15.61%	1.23	0.192	2.57	0.401
100-110,000	48,030	0.29%	2.00	0.008	4.00	0.012
Subtotal	2,788,728	16.93%		0.214		0.460
Medium Density						
60-70,000	114,094	0.70%	1.81	0.013	4.80	0.034
70-80,000	5,736,801	35.10%	2.35	0.825	4.97	1.744
80-90,000	3,858,377	22.39%	1.81	0.405	4.41	0.987
90-100,000	953,157	5.83%	2.70	0.157	5.36	0.312
100-110,000	139,241	0.85%	2.50	0.021	5.00	0.043
>110,000	114,757	0.70%	2.50	0.018	5.00	0.036
Subtotal	10,716,228	65.57%		1.439		3.155
Low Density						
< 60,000	4,918	0.03%	1.50	0.000	3.50	0.001
60-70,000	108,053	0.65%	2.00	0.013	4.00	0.026
70-80,000	157,800	0.97%	2.00	0.019	4.00	0.039
80-90,000	465,275	2.85%	1.67	0.048	3.91	0.111
90-100,000	860,489	5.27%	2.18	0.115	4.46	0.235
100-110,000	599,022	3.67%	3.87	0.142	7.31	0.288
>110,000	662,817	4.06%	3.18	0.128	5.50	0.223
Subtotal	2,856,373	17.50%		0.466		0.903
Total Residential	<u>16,339,329</u>	<u>100.00%</u>		<u>2.119</u>		<u>4.508</u>

PHILADELPHIA SUBURBAN WATER COMPANY

WEIGHTED MAXIMUM DAY AND HOUR RATIOS BY CUSTOMER CLASSIFICATION

Revenue Class	Annual Consumption		Maximum Day Ratio		Maximum Hour Ratio	
	Consumption (1,000 gals)	Percent of Total	Average Ratio	Weighted Ratio	Average Ratio	Weighted Ratio
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Commercial and Public</i>						
Apartments	335,800	25.17%	1.28	0.322	2.52	0.835
Hospitals	292,454	21.91%	1.38	0.302	2.68	0.696
Business	317,548	23.80%	1.82	0.433	3.58	0.853
Golf Course	94,242	7.08%	6.36	0.449	23.84	1.683
Hotels	37,627	2.82%	1.83	0.052	3.77	0.106
Colleges	220,739	16.54%	2.05	0.339	7.13	1.179
Private Schools	35,984	2.70%	2.37	0.084	6.47	0.175
Total Commercial and Public	<u>1,334,502</u>	<u>1.0000</u>		<u>1.991</u>		<u>5.197</u>
Total Excluding Golf Course				1.827		3.781
<i>Industrial</i>						
Quarterly Industrial	5,573,673	28.73%	1.73	0.46	3.12	0.84
Monthly Industrial	<u>15,278,698</u>	<u>73.27%</u>	<u>1.68</u>	<u>1.23</u>	<u>2.58</u>	<u>1.89</u>
Total Industrial	<u>20,850,371</u>			<u>1.69</u>		<u>2.73</u>

Frankfort Electric and Water Plant Board

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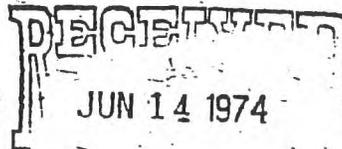
ITEM 24

Frankfort Electric and Water Plant Board
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ITEM 24: Reference: Cost of Service Study, Sch. C, p. 4. How was it determined that the maximum fire demand is 5,000 gallons per minute for a duration of four hours? Please provide any associated calculations, studies, and workpapers with data in all cells and rows fully intact and fully accessible.

Response: See attachment.

**GRADING SCHEDULE
FOR
MUNICIPAL FIRE PROTECTION**



GANNETT PLEASANT Y.B.
CARPENTE



**INSURANCE SERVICES OFFICE
160 WATER STREET
NEW YORK, N. Y. 10038
1974**

GRADING SCHEDULE

WATER SUPPLY

An adequate and reliable water supply is an essential part of the fire-fighting facilities of a municipality.

Minimum Recognized Water Supply. In order to be recognized for grading purposes, a water supply shall be capable of delivering at least 250 gpm for a period of 2 hours, or 500 gpm for one hour, for fire protection plus consumption at the maximum daily rate. Any water supply which cannot meet this minimum requirement shall not be graded, and a deficiency of 1,950 points shall be assigned.

Adequacy and Reliability. A water supply is considered to be adequate if it can deliver the required fire flow for the number of hours specified in Table 4, with consumption at the maximum daily rate; if this delivery is possible under certain emergency or unusual conditions, the water supply is also considered to be reliable.

TABLE 4.

REQUIRED DURATION FOR FIRE FLOW

Required Fire Flow gpm	Required Duration Hours
10,000 and greater	10
9,500	9
9,000	9
8,500	8
8,000	8
7,500	7
7,000	7
6,500	6
6,000	6
5,500	5
5,000	5
4,500	4
4,000	4
3,500	3
3,000	3
2,500 and less	2

In order to provide reliability, duplication of some or all parts of a water supply system will be necessary, the need for duplication being dependent upon the extent to which the various parts may reasonably be expected to be out of service as a result of maintenance and repair work, an emergency, or some unusual condition. The introduction of storage, either as part of the supply works or on the distribution system, may partially or completely offset the need for duplicating various parts of the system; the value of the storage depends upon its amount, location, and availability.

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ITEM 26

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ITEM 26: Reference: Cost of Service Study, Sch. C, p. 6. Please provide the specific calculations, data, and assumptions used to determine the maximum hour ratio for each customer class.

Response: Attached is a summary of maximum day and hour ratios from demand studies conducted for Pennsylvania-American, Illinois-American, and Aqua Pennsylvania (formerly Philadelphia Suburban Water) water companies compared to ratios used for Frankfort. The schedule shows that the ratios selected for Frankfort fall within the range of results of the actual demand studies. Also attached are copies of the demand studies relied upon for the judgments used for Frankfort. See attachments at Item #23 of this Response.

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ITEM 29

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ITEM 29: Reference: Cost of Service Study, Sch. C, p. 19.

- a. Are the figures shown for Utility Plant in Service gross plant figures or net plant figures (that is, net of accrued depreciation and contributions)?
- b. If they are gross plant figures, please provide comparable schedules showing accrued depreciation, customer contributions, and contributions in aid of construction. Please provide this information in an electronic spreadsheet file with data in all cells and rows fully intact and fully accessible.
- c. If they are net plant figures, please provide an electronic workpaper with data in all cells and rows fully intact and fully accessible showing the calculation of net plant, taking into account gross plant, accrued depreciation, customer contributions, and contributions in aid of construction.

Response: See attached Disc containing an electronic version of the spreadsheet.

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ITEM 32

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ITEM 32: Reference Herbert Testimony page 5, lines 152-154.

- a. What steps is FPB taking to minimize purchased electrical power costs?
- b. What steps is FPB taking to minimize treatment chemical costs?

Response:

- a. FPB has past and ongoing projects at the water treatment plant and distribution pumping stations involving electrical/efficiency improvements. For example, the water treatment plant routinely rebuilds its high and low service pumps to factory specifications when they fall behind in efficiency as a result of wear. In addition, other improvements such as internal bowl coatings have been successfully applied which improve overall pump efficiency. In the distribution system, some of our more inefficient pumps have been identified and replaced with more efficient motor/pump/control combination.
- b. During our chemical feed project at the water treatment plant, various improvements were made with respect to metering, control, and monitoring of our chemical feed facilities that have resulted in an increase in overall dosing efficiency. For example, FPB installed improved dosing pumps, individually metered chemical feeds and programmable logic controllers. In addition, the FPB now purchases chemicals via reverse auction process that has resulted in lower overall chemical costs.

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ITEM 33

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ITEM 33: What specific steps has FPB taken to limit water loss since 2008?

Response: FPB controls water losses both proactively and reactively. Proactive water loss consists of leak detection personnel employing acoustic detection equipment. If leaks are identified, repair is followed up on in a timely fashion. In addition, FPB test all of our large meters on an ongoing basis to ensure accuracy, therefore minimizing water loss. Minimizing loss due to breaks or interruptions (reactive) requires the ability to isolate a repair area in a timely fashion. To do so, FPB has mapped all our valves and dispatch a valve maintenance crew that visit and operate each valve on an ongoing basis to ensure they can be found and are operational when the need arises.

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ITEM 35

Frankfort Electric and Water Plant Board
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ITEM 35: Reference Herbert Testimony page 7, lines 186-192.

- a. Does FPB use mains anywhere on its system larger than 10 inches for distribution? Where?
- b. Does FPB use mains anywhere on its system 10 inches or smaller for transmission? Where?

Response: Item 35 requires FPB to distinguish between lines that serve a transmission function and those that serve a distribution function. However, within its system FPB does not make this distinction. FPB's system operates as a unified whole. Previously, David Billings explained in Case No. 2008-00250, that "looped lines (generally 10 inches and smaller in diameter) in the Plant Board's system increase the delivery capabilities, increase the water quality by limiting dead ends, and increase the reliability of service." Hence, it is not possible to characterize lines as serving one function or the other.