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**BEFORE
NEW JERSEY BOARD OF PUBLIC UTILITIES**

MIDDLESEX WATER COMPANY

BPU DOCKET NO.

**DIRECT TESTIMONY
OF
CONSTANCE E. HEPPENSTALL
REGARDING THE COST OF SERVICE STUDY AND
TARIFF DESIGN
MAY 2023**

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**BEFORE
NEW JERSEY BOARD OF PUBLIC UTILITIES**

MIDDLESEX WATER COMPANY

**BPU DOCKET NO. _____
DIRECT TESTIMONY OF CONSTANCE E. HEPPENSTALL**

8 **I. WITNESS INTRODUCTION**

9 **Q. Please state your name and address.**

10 A. My name is Constance E. Heppenstall. My business address is 1010 Adams Avenue,
11 Audubon, Pennsylvania.

12 **Q. By whom are you employed?**

13 A. I am employed by Gannett Fleming Valuation and Rate Consultants, LLC as Senior
14 Project Manager. My duties and responsibilities include the preparation of
15 accounting and financial data for revenue requirement and cash working capital
16 claims, the allocation of cost of service to customer classifications, and the design of
17 customer rates in support of public utility rate filings.

18 **Q. Have you previously testified in rate case proceedings before regulatory
19 agencies?**

20 A. Yes. I have testified before the Public Utilities Commission of Ohio, Pennsylvania
21 Public Utility Commission, the Arizona Corporation Commission, the Kentucky
22 Public Service Commission, the Virginia State Corporate Commission, the Missouri
23 Public Service Commission, the State of Nevada Public Utilities Commission, the
24 Hawaii Public Service Commission, the West Virginia Public Service Commission,
25 the Indiana Utility Regulatory Commission, the New Jersey Board of Public Utilities,
26 and the California Public Utility Commission concerning revenue requirements, cost

1 of service allocation and rate design. A list of cases in which I have testified is
2 attached to my testimony.

3 **Q. What is your educational background?**

4 A. I have a Bachelor of Arts in Economics from the University of Virginia,
5 Charlottesville, Virginia and a Master of Science in Industrial Administration from
6 the Tepper School of Business at Carnegie-Mellon University, Pittsburgh,
7 Pennsylvania.

8 **Q. Do you have any professional affiliations?**

9 A. Yes. I am a member of the American Water Works Association, the National
10 Association of Water Companies and the Pennsylvania Municipal Authorities
11 Association.

12 **Q. Briefly describe your work experience.**

13 A. I joined the Valuation and Rate Division of Gannett Fleming, Inc. in August 2006, as
14 a Rate Analyst and was promoted to my current position in 2012. Prior to my
15 employment at Gannett Fleming, Inc., I was a Vice President of PriMuni, LLP where
16 I developed financial analyses to test proprietary software in order to ensure its
17 pricing accuracy in accordance with securities industry's conventions. From 1987 to
18 2001, I was employed by Commonwealth Securities and Investments, Inc. as a public
19 finance professional where I created and implemented financial models for public
20 finance clients to create debt structures to meet clients' needs. From 1986 to 1987, I
21 was a public finance associate with Mellon Capital Markets.

22 **Q. What is the purpose of your testimony in this proceeding?**

1 A. The purpose of my testimony is to explain Middlesex Water Company's (Company)
2 cost of service allocation studies for the water operations, set forth in Exhibit P-8 of
3 the Company's filing. This exhibit presents the results of the cost of service study I
4 performed for the Company's water operations.

5 **Q. Briefly describe the purpose of your cost allocation study.**

6 A. The purpose of the study was to allocate the total cost of service, which is the total
7 revenue requirement, to the several customer classifications. The cost of service
8 includes operation and maintenance expenses, depreciation expense and
9 amortizations, taxes other than income, income taxes and net operating income. In
10 the study, the total costs were allocated to the residential, commercial, industrial,
11 public authority, various wholesale customers, and fire protection classifications in
12 accordance with generally accepted principles and procedures. The cost-of-service
13 allocation results in indications of the relative cost responsibilities of each class of
14 customers. The allocated cost of service is one of several criteria appropriate for
15 consideration in designing customer rates to produce the required revenues.

16 **Q. Please describe the method of cost allocation that was used in your study.**

17 A. The base-extra capacity method, as described in the 2017 and prior editions of
18 Principles of Water Rates, Fees and Charges published by the American Water
19 Works Association (AWWA), or the M1 Manual, was used to allocate the pro forma
20 costs. The method is a recognized and accepted method for allocating the cost of
21 providing water service to customer classifications in proportion to the classification'
22 use of the commodity, facilities, and services. It is general accepted as a sound
23 method for allocating the cost of water service and has been used by the Company

1 for decades. It is also my understanding from my general knowledge of the industry
2 that the NJBPU and the other major water companies in New Jersey generally rely on
3 the base extra capacity method to determine the costs of service to their customers,
4 and all, like Middlesex, then propose individual judgements to turn that cost of
5 service into an appropriate rate design which is then acted upon by the NJBPU. .

6 **Q. Is the Base Extra Capacity Method described in Exhibit P-8?**

7 **A.** Yes. It is described on pages 1 through 2 of Exhibit P-8.

8 **Q. Please describe the procedure followed in the cost allocation study.**

9 **A.** Each element of cost in the pro forma cost of service was allocated to cost functions
10 and customer classifications through the use of appropriate allocation factors. This
11 allocation is presented in Schedule B of Exhibit P-8. The customer classifications
12 include residential, commercial, industrial, wholesale customers including East
13 Brunswick, Edison/Highland Park, Rahway, and South River Basin customers as
14 well as the various fire protection classifications. The items of cost, which include
15 operation and maintenance expenses, depreciation and amortization costs, taxes
16 other than income taxes, income taxes and net operating income are identified in
17 column 1 of Schedule B. The cost of each item, shown in column 3, is allocated to
18 the several customer classifications based on allocation factors referenced in column
19 2. The development of the allocation factors is presented in Schedule C of the
20 exhibit. The four basic cost functions are base, extra capacity, customer and fire
21 protection costs.

22 Base Costs are generally costs that tend to vary with the quantity of water
23 used, plus costs associated with supplying, treating, pumping and distributing water

1 to customers under average load conditions, without the elements necessary to meet
2 peak demands. Base costs are allocated to customer classifications based on average
3 daily usage.

4 Extra Capacity Costs are generally costs associated with meeting usage
5 requirements in excess of average. They include the operating and capital costs for
6 additional plant and system capacity beyond that required for average use. Extra
7 capacity costs were subdivided into costs to meet maximum day extra capacity and
8 maximum hour extra capacity requirements. Extra capacity costs are allocated to
9 customer classifications based on estimated maximum day and hour demands in
10 excess of average use for each classification.

11
12 Customer Costs are generally costs associated with serving customers
13 regardless of their usage or demand characteristics. Customer costs are subdivided
14 into customer facilities costs, which include meters and services, and customer
15 accounting costs, which include billing and meter reading functions. Customer costs
16 are allocated to classes based on the number and size of meters and the number of
17 bills.

18 Fire Protection Costs are generally costs associated with providing the
19 facilities to meet the potential peak demand of fire protection service as well as
20 direct costs such as the cost for fire hydrants.

21 **Q. Please provide examples of the cost allocation process.**

22 **A.** I will use some of the larger cost items to illustrate the principles and considerations
23 used in the cost allocation methodology. Purchased electric power and treatment

1 chemicals are examples of costs that tend to vary with the amount of water
2 consumed and are considered base costs. Thus, Factor 1 assigns these costs to
3 customer classifications based on average daily usage. However, since many of the
4 wholesale customers are billed on a take or pay contract, Factor 1D was used to
5 allocate these costs based on actual water used by the Wholesale customers. The
6 source of supply, pumping, purification and transmission costs are associated with
7 meeting usage requirements in excess of the average, generally to meet maximum
8 day requirements. Costs of this nature are allocated partially as base costs, roughly
9 proportional to average daily consumption, partially as maximum day extra capacity
10 costs, in proportion to maximum day extra capacity, and, in the case of certain
11 pumping stations and transmission mains, partially as fire protection costs, through
12 the use of Factors 2 and 3. The development of the allocation factors, referenced as
13 Factors 2 and 3 shown in Schedule C, is based on the system peak day ratio and the
14 potential demand of fire protection. Factors 2A, 3A, 2B, 3B, 2C and 4C are
15 variations of Factors 2 and 3 and include usage only for the class of customers that
16 benefit from the cost being allocated. Costs associated with distribution mains and
17 storage facilities are allocated partly on the basis of average consumption and partly
18 on the basis of maximum hour extra demand, including the demand for fire
19 protection service, because these facilities are designed and operated to meet
20 maximum hour and fire demand requirements. The development of the factors,
21 referenced as Factors 4 and 5, used for these allocations is shown in Schedule C of
22 Exhibit P-8. The entire wholesale class is excluded from the allocation of
23 distribution mains (Factor 4) since these customers are connected to larger mains and

1 do not benefit from the smaller distribution mains. Factor 5A is similar to Factor 5
2 but includes usage only for the class of customers that benefit from the cost being
3 allocated. Operation and maintenance costs for transmission and distribution mains
4 are allocated on a combined bases of Factor 3 (maximum day with fire) for
5 transmission mains and Factor 4 (maximum hour) for distribution mains. The
6 weighting of the factors is based on the footage of mains and is referenced as Factor
7 6. Costs associated with meters and services facilities are allocated to customer
8 classifications based on meter and service equivalents using Factors 8 and 9. Factors
9 8A and 9A allocate costs related to meters and services for the wholesale customers.
10 Billing and collecting costs and meter reading are assigned to customer
11 classifications based on the number of bills using Factor 12. Operating and capital
12 costs associated with public fire hydrants were assigned directly to the fire protection
13 class (Factor 7). Administrative and general costs are allocated on the basis of
14 allocated direct costs excluding those costs such as purchased power and chemicals,
15 which require little administrative and general expense, or Factor 14. Annual
16 depreciation accruals are allocated on the basis of the function of the facilities
17 represented by the depreciation expense for each depreciable plant account. The
18 original cost less depreciation of utility plant in service is similarly allocated for the
19 purpose of developing factors, referenced as Factor 18, for allocating items such as
20 net operating income. Factor 20 allocates Franchise and Other Taxes and is based on
21 total cost of service, excluding East Brunswick as East Brunswick does not incur
22 these taxes. Factor 18, as well as Factor 14 discussed earlier, are composite
23 allocation factors. Composite factors are factors that result from the allocation of

1 other costs in the cost of service study. Composite factors are generated internally in
2 the cost allocation program based on the results of allocating other costs. Factors 10,
3 15, 16, 17 and 19 also are composite factors. Refer to Schedule C of Exhibit P-8 for
4 a description of the basis of each composite factor.

5 **Q. What was the source of the total cost of service data set forth in column 3 of**
6 **Schedule C of Exhibit P-8?**

7 **A.** The pro forma costs of service data were furnished by the Company and my study
8 then used that data to allocate the costs as appropriate.

9 **Q. Refer to Factor 2 and 3 and explain what factors were considered in estimating**
10 **the maximum day extra capacity and maximum hour extra capacity demands**
11 **used for the various customer classifications.**

12 **A.** Pursuant to the guidelines in the M-1 Manual referred to above, the maximum
13 demands I used were based on judgments which considered many factors including
14 but not limited to field studies of customer class demands conducted for other water
15 utilities, field observations of the service areas of the Company, the class factors
16 used in the last cost of service study, and generally accepted customer class
17 maximum day and Maximum hour demand ratios. These demands are the same
18 demands which have been used in Company's prior cases.

19 **Q. Have you summarized the results of your cost allocation study?**

20 **A.** Yes. The results are summarized in columns 1, 2 and 3 of Schedule A of Exhibit P-
21 8. Each customer classification identified in column 1 is brought forward from
22 Schedule B and shown in column 2. Column 3 presents each customer
23 classification's cost responsibility as a percent of the total cost.

1 **Q. Have you compared these cost responsibilities with the proportionate revenue**
2 **under existing rates for each customer classification?**

3 **A.** Yes. A comparison of the allocated cost responsibilities and the percentage of
4 revenue under existing rates can be made by comparing columns 3 and 5 of Schedule
5 A of Exhibit P-8. A similar comparison of the percentage cost responsibilities
6 (relative cost of service) and the percentage of pro forma revenues (relative
7 revenues) under propped rates - Step 2 can be made by comparing columns 3 and 7
8 of Schedule A of Exhibit P-8. The proposed increase and the percent increases by
9 class are shown in columns 8 and 9, respectfully

10 CUSTOMER RATE DESIGN

11 **Q. Are you responsible for the design of the rate schedules proposed by the**
12 **Company in this proceeding?**

13 **A.** Yes, I am.

14 **Q. Did you supply a hypothetical rate design that would have the effect of moving**
15 **all classes fully to their cost of service?**

16 **A.** Yes, I prepared this per the Company's request. This hypothetical rate design is
17 presented in Schedule K.

18 **Q. Are you recommending that in this case the Company adopt this rate design?**

19 **A.** No, I do not. I do not recommend this hypothetical rate design. As is fairly
20 common in the regulated water industry, there are many public policies which impact
21 the difficulties of utilizing pure cost of service for Commission acceptable rate
22 designs. Two clearer examples of this in my actual recommendations involve how
23 Public Fire Charges would otherwise be impacted and in support of many

1 Commissions' efforts (including my understanding of NJBPU policies) to encourage
2 reasonable gradualism when changing various class rates while approaching actual
3 costs of service.

4 **Q. Is the recommended proposed rate structure presented in your exhibit?**

5 **A.** Yes. A comparison of the present and proposed rate schedules is presented in
6 Schedule I of Exhibit P-8.

7 **Q. What are the appropriate factors to be considered in the design of the rate
8 structure?**

9 **A.** In preparing a more appropriate rate structure based on the pro forma costs which are
10 required to serve customers, I believe Commissions should consider the allocated
11 costs of service, the impact of very steep changes from the present rate structure, the
12 understandability and ease of application of the rate structure, community and social
13 influences, gradualism, and the value of service. General guidelines should be
14 developed with management to determine the extent to which each of these criteria is
15 to be incorporated in the rate structure to be designed, inasmuch as the pricing of a
16 service ultimately should be a function of management's beliefs in conjunction with
17 the public policy decisions made by the state Commissions.

18 There is also one fundamental concept which I believe needs to be understood in any
19 discussion of cost of service for any utility. Each utility is designed and operated in
20 unique ways for the long term, and cost of service generally has to follow that
21 fundamental reality. Most water utility assets are long lived and once designed and
22 operated in consistent ways, that design, installation generally drives how the utility
23 operates its system.

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In addition, investment in the primary Middlesex system were designed, installed and operated as an integrated system. The revisions to environmental state and federal regulations concerning the PFAS family of chemicals is a good example of the effect of the integrated nature of the primary Middlesex system.

My understanding is that while the Park Avenue facility was being constructed and capacity was restricted, Middlesex had to operate its integrated system in a way to insure reliable service to all its customers. It is not clear that would have been accomplished without the appropriate design and investment over the years required to provide safe and reliable service to all its classes of customers, both north and south of the Raritan River.

As other Company witnesses detail in their testimonies, and as cost of service studies and rate design recommendations accept, water utility infrastructure is designed and operated to service all customers for the long term and the design, installation, and operation over the long term drive those allocations and costs.

Q. Did you discuss rate design guidelines with Company management?

A. Yes. The guidelines generally established for me to consider were that my rate design proposals, to the greatest reasonable extent possible (1) maintain the existing rate structure applicable to all classifications excluding wholesale, which includes a service charge by meter size and a volumetric charge design. Wholesale customers currently have single-block volumetric charge for treatment and, for some wholesale

1 customers, a separate transmission charge; ¹(2) reflect customer or fixed charges and
2 volumetric charges to produce revenues among the classes in conformity with or
3 toward the indicated cost of service and to generate sufficient revenues to recover the
4 total cost of service. We also generally discussed certain public policies such as
5 recognizing the pressures on municipal budgets and attempting to limit the impact of
6 public fire charges on our fire districts and municipalities who use those services.

7 **Q. Do the proposed rates generally comply with the guidelines enumerated?**

8 **A.** Yes, I believe they do.

9 **Q.** Please describe the recommended increase to Public Fire customer class.

10 **A.** The proposed increase to Public Fire is 4.0%. The Public Fire service rate
11 recommendation is not cost of service based, but as noted above, recognizes the
12 public policies surrounding the difficulties governmental entities who are customers
13 of this service have with respect to their local property taxes. The difficulty, of
14 course, is that as we artificially limit the impact of the rate increases on this customer
15 class, the differences between the pure cost of providing this service and the resulting
16 rate design simply gets more stark. However, it is also true that often the same
17 customers receiving public fire service and property taxes overlap. I have allocated
18 the deficiency created by the 4% increase limitation on Public Fire to the General
19 Metered Service and Private Fire customer classes. So while this is at variance with

¹ It is my understanding from my work with the industry that the NJBPU has favored for decades, originally for conservation purposes, that water companies should generally use a single block rate tariff within each tariff class so each unit of water used should be priced at the same rate rather than use the kind of variable rate structures in use for the period before roughly the 1980s. I am generally aware of the tariffs of many of the BPU regulated water utilities in New Jersey and this seems to be the practice of those utilities which would not be the case if BPU policies were not as I have described them.

1 pure cost of service principles, I believe it is an appropriate rate design adjustment to
2 pure cost of service.

3 **Q. Please explain the development of the service charges.**

4 **A.** The development of the service charges is set forth on Schedule G of Exhibit P-8.
5 Service charges should recover the cost of customer facilities such as meters and
6 services and the cost of customer accounting including billing and collecting and
7 meter reading costs. Schedule G shows the cost of service for these cost functions in
8 column 2. These amounts were taken from an analysis of customer costs generated
9 within the cost allocation study. The costs associated with meters are divided by the
10 total 5/8-inch meter equivalents and by 12 months to determine the monthly cost
11 related to a 5/8-inch meter. The costs associated with services are divided by 3/4-
12 inch service equivalents and by 12 months to determine the monthly cost related to a
13 3/4-inch. Costs associated with billing and collecting, and meter reading are divided
14 by the number of metered customers multiplied by 12 to determine the cost per bill
15 for these functions. The sum of the monthly costs for a 5/8-inch meter is \$25.35.
16 The service charges for the monthly and quarterly 5/8-inch meter customers were set
17 to equal the indicated cost of service explained above. The monthly charge was
18 increased from \$20.20 to \$25.35 or about 25.5% and the quarterly charge was
19 increased from \$60.60 to \$76.05 or about 25.5%. The monthly rates for the larger-
20 sized meters are determined by the same percentage increase as the 5/8-inch monthly
21 increase. The quarterly rates are equal to three times the monthly rates to reflect that
22 there are three months in each quarter. .

23 **Q. How were the volumetric rates determined?**

1 **A.** After the proposed service charges were applied to the bill analysis, the existing
2 volumetric rates were increased so that revenues from each class moved toward the
3 indicated cost of service and that total revenues equaled the proposed revenue
4 requirement.

5 **Q.** **Does that conclude your direct testimony?**

6 **A.** Yes.

CONSTANCE E. HEPPENSTALL – LIST OF CASES TESTIFIED

Year	Jurisdiction	Docket No.	Client Utility	Subject
2010	AZ CC	W-01303A-09-0343 and SW-01303A-09-0343	Arizona American Water Company	Rate Consolidation
2010	PA PUC	R-2010-2179103	City of Lancaster – Bureau of Water	Revenue Requirements
2012	PA PUC	R-2012-2311725	Hanover Borough	Cost of Service/Revenue Requirements
2012	PA PUC	R-2012-2310366	City of Lancaster – Sewer Fund	Revenue Requirements
2013	PA PUC	R-2013-2350509	City of DuBois – Bureau of Water	Revenue Requirements
2013	PA PUC	R-2013-2390244	City of Bethlehem – Bureau of Water	Revenue Requirements
2014	PA PUC	R-2014-2418872	City of Lancaster – Bureau of Water	Revenue Requirements
2014	PA PUC	R-2014-2428304	Hanover Borough	Revenue and Revenue Requirements
2015	KY PSC	Case No.2015-000143	Northern Kentucky Water District	Cost of Service
2016	PA PUC	R-2016-2554150	City of DuBois – Bureau of Water	Cost of Service/Revenue Requirements
2016	AZ CC	WS-01303A-16-0145	EPCOR Water Arizona, Inc.	Cost of Service/Rate Design
2017	MO PSC	WR-2017-0285	Missouri-American Water Company	Cost of Service/Rate Design
2017	MO PSC	SR-2017-0286	Missouri-American Water Company	Cost of Service/Rate Design
2017	VA SCC	PUR-2017-00082	Aqua Virginia, Inc	Cost of Service
2017	AZ CC	WS-01303A-17-0257	EPCOR Water Arizona, Inc	Cost of Service/Rate Design
2017	HI PUC	2017-0446	Hana Water Systems, LLC – North	Cost of Service/Rate Design
2017	HI PUC	2017-0447	Hana Water Systems, LLC – South	Cost of Service/Rate Design
2018	PA PUC	2018-200208	SUEZ Water Pennsylvania	Revenue Requirements
2018	KY PSC	2018-00208	Water Service Corp of KY	Cost of Service/Rate Design
2018	WV PSC	18-0573-W-42t	West Virginia American Water Co.	Cost of Service
2018	IN IRC	50208	Indiana American Water Company	Cost of Service/Demand Study
2018	KY PSC	2018-00291	Northern Kentucky Water District	Cost of Service/Rate Design
2018	KY PSC	2018-0358	Kentucky American Water	Cost of Service/Rate Design
2019	PA PUC	R-2019-3006904	Newtown Artesian Water Co.	Revenue Reqmts./Rate Design
2019	PA PUC	R-2019-3010955	City of Lancaster – Sewer Fund	Rev. Reqmts./Cost of Service/Rates
2020	PA PUC	R-2020-3017206	Philadelphia Gas Works	Cost of Service
2020	PA PUC	R-2020-3019369	Pennsylvania American Water Co.	Cost of Service/Rate Design
2020	PA PUC	R-2020-3019371	Pennsylvania American Water Co.	Cost of Service/Rate Design
2020	PA PUC	R-2020-3020256	City of Bethlehem	Rev. Reqmts./Cost of Service/Rates
2020	CA PUC	A2101003	San Jose Water Company	Rate Design
2020	VA SCC	PUR-2020-00106	Aqua Virginia, Inc.	Cost of Service
2021	PUCO	21-0595-WW-AIR	Aqua Ohio, Inc	Cost of Service
2021	PUCO	21-0596-ST-AIR	Aqua Ohio, Inc	Cost of Service
2021	PA PUC	R-2021-3026116	Hanover Borough	Cost of Service
2021	NJ BPU	WR21071007	Atlantic City Sewerage Co.	Rev. Reqmts./Cost of Service/Rates
2021	PA PUC	R-2021-3027385	Aqua Pennsylvania	Cost of Service/Rate Design
2021	PA PUC	R-2021-3027386	Aqua Pennsylvania	Cost of Service/Rate Design
2021	PA PUC	R-2021-3026682	City of Lancaster – Bureau of Water	Cost of Service/Rate Design
2021	NV PUC	21-12025	Great Basin Water Company	Cost of Service/Rate Design
2022	PA PUC	R-2021-3030218	UGI Utilities, Inc. – Gas Division	Cost of Service
2022	PA PUC	R-2022-3031704	Borough of Ambler	Rev. Req./Rate Design
2022	PA PUC	R-2022-30316732	Pennsylvania American Water	Cost of Service
2022	PA PUC	R-2022-3031340	York Water Company	Cost of Service/Rate Design
2022	PA PUC	R-2022-3032806	York Water Company	Cost of Service/Rate Design
2022	KY PSC	2022-00161	Northern Kentucky Water District	Cost of Service/Rate Design
2022	PUCO	22-1094-WW-AIR	Aqua Ohio Inc.	Cost of Service
2022	PUCO	22-1096-ST-AIR	Aqua Ohio Inc.	Cost of Service
2023	PA PUC	R-2023-3037933	Philadelphia Gas Works	Cost of Service

MIDDLESEX WATER COMPANY

COST OF SERVICE ALLOCATION STUDY

Prepared by:



GANNETT FLEMING

Excellence Delivered As Promised

TABLE OF CONTENTS

PART I. INTRODUCTION	1
Plan of Report	1
Basis of Study	1
Allocation Procedures	1
Base Costs	2
Extra Capacity Costs.....	2
Customer Costs	2
Fire Protection Costs.....	2
Results of Study.....	2
PART II. COST OF SERVICE BY CUSTOMER CLASSIFICATION.....	4
SCHEDULE A. Comparison of Pro Forma Cost of Service with Revenues Under Present and Cost of Service Rates.....	5
SCHEDULE B. Cost of Service Allocated to Customer Classifications	6
SCHEDULE C. Factors for Allocating Cost of Service to Customer Classifications	11
SCHEDULE D. Basis for Allocating Demand Related Costs of Fire Service to Private and Public Fire Protection Customer Classifications.....	48
SCHEDULE F. Summary of Average Dp2aily Send Out and Maximum Daily Usage for the Years 2008-2022	49
SCHEDULE G. Calculation of Monthly Customer Costs.....	50
SCHEDULE H. Comparison of Revenues Under Present and Proposed Recommended Rates.....	51
SCHEDULE I. Present and Proposed Recommended Rates.....	52
SCHEDULE J. Bill Analysis Under Present and Proposed Recommended Rates	54
SCHEDULE K. Bill Analysis Under Present and Cost of Service Rates.....	55

**MIDDLESEX WATER COMPANY
COST OF SERVICE ALLOCATION STUDY
FOR 2023 RATE CASE
WATER OPERATIONS**

PART I. INTRODUCTION

PLAN OF THE REPORT

The report sets forth the results of the cost of service allocation study based on pro forma costs for water operations as of the adjusted test year, for Middlesex Water Company. Part I, Introduction, contains statements with respect to the basis of the study, the procedures employed, and a summary of the results of the study. Part II, Cost of Service by Customer Classification, presents detailed schedules of the allocation of costs to customer classifications, as well as the bases for the allocations. Schedule A in Part II summarizes the cost allocation and the revenues produced under present and proposed rates.

BASIS OF STUDY

The purpose of the cost allocation study was to determine the relative cost of service responsibilities of the several customer classifications based on considerations of quantity of water consumed, variability of rate of consumption, and costs associated with customer metering, billing and accounting. The allocation study incorporated generally-accepted principles and procedures for allocating the several categories of cost to customer classifications in proportion to each classification's use of facilities, commodities and services required in providing water service.

ALLOCATION PROCEDURES

The allocation study was based on the Base-Extra Capacity Method for allocating costs to customer classifications. The method is described in the 2017 and prior editions of the Water Rates Manual published by the American Water Works Association. The four basic categories of cost responsibility are base, extra capacity, customer, and fire

protection costs. The following discussion presents a brief description of these costs and the manner in which they were allocated.

Base Costs are costs that tend to vary with the quantity of water used, plus costs associated with supplying, treating, pumping, and distributing water to customers under average load conditions, without the elements necessary to meet peak demands. Base costs were allocated to customer classifications on the basis of average daily usage.

Extra Capacity Costs are costs associated with meeting usage requirements in excess of the average. They include operating and capital costs for additional plant and system capacity beyond that required for average use. The extra capacity costs in this study are subdivided into costs necessary to meet maximum day extra demand and costs to meet maximum hour extra demand. The extra capacity costs were allocated to customer classifications on the bases of each classification's maximum day and hour usage in excess of average usage.

Customer Costs are costs associated with serving customers regardless of their usage or demand characteristics. Customer costs include the operating and capital costs related to meters and services, meter reading costs, and billing and collecting costs. The customer costs were allocated on the bases of the relative cost of meters and services, and the number of customers.

Fire Protection Costs are costs associated with providing the facilities to meet the potential peak demand of fire protection service. Fire Protection costs are subdivided into costs to meet Public Fire Protection and Private Fire Protection demands. The extra capacity costs assigned to fire protection service were allocated to Public and Private Fire Protection on the basis of the total relative demands of the hydrants and fire service lines. Public fire costs were reallocated to the residential and commercial classes based on meter equivalents.

RESULTS OF STUDY

The results of the cost of service allocation study are set forth in Part II. The data summarized in Schedule A, Comparison of Cost of Service with Revenues Under Present and Proposed Rates, constitute the principal results of the cost allocation study and subsequent rate design.

The cost of service by customer classification shown in column 2 of Schedule A is developed in Schedule B, Cost of Service Allocated to Customer Classifications. The allocation of the total cost of service to the several customer classifications was performed by applying the allocation factors referenced in column 2 of Schedule B to the cost of service set forth in column 3. The bases for the allocation factors are presented in Schedule C.

**PART II. COST OF SERVICE BY
CUSTOMER CLASSIFICATION**

MIDDLESEX WATER COMPANY
TOTAL WATER

COMPARISON OF PROFORMA COST OF SERVICE WITH REVENUES UNDER PRESENT AND COST OF SERVICE RATES

Customer Classification (1)	Proforma Cost of Service		Proforma Revenues, Under Present Rates		Pro Forma Revenues Under COS Rates		COS Increase	
	Amount (Schedule B) (2)	Percent of Total (3)	Amount (4)	Percent of Total (5)	Amount (5)	Percent of Total (5)	Amount (5)	Percent Increase (5)
Residential	\$ 67,624,856	47.6%	\$ 46,552,768	43.0%	\$ 67,624,634	47.6%	\$ 21,071,866	45.3%
Commercial	20,815,216	14.6%	20,555,054	19.0%	20,815,322	14.6%	260,268	1.3%
Industrial	10,610,111	7.5%	11,970,720	11.1%	10,610,106	7.5%	(1,360,614)	-11.4%
Total General Metered Service	\$ 99,050,183	69.7%	\$ 79,078,543	73.1%	\$ 99,050,062	69.7%	\$ 19,971,520	25.3%
Wholesale 1 - East Brunswick	7,561,073	5.3%	5,109,767	4.7%	7,562,134	5.3%	2,452,367	48.0%
Wholesale 2 - Edison/Hld Park	3,697,784	2.6%	2,766,554	2.6%	3,698,345	2.6%	931,791	33.7%
Wholesale 3 - Rahway	297	0.0%	-	0.0%	-	0.0%	-	-
Wholesale 4 - South River Basin	13,464,690	9.5%	9,834,216	9.1%	13,464,321	9.5%	3,630,104	36.9%
Private Fire Service	7,840,371	5.5%	6,263,222	5.8%	7,840,379	5.5%	1,577,156	25.2%
Public Fire	10,472,354	7.4%	5,170,681	4.8%	10,472,350	7.4%	5,301,668	102.5%
Total Sales	142,086,752	100.0%	108,222,984	100.0%	142,087,590	100.0%	33,864,607	31.3%
Rounding					(838)		(838)	0.0%
Other Revenues	\$ 226,843		\$ 226,843		\$ 226,843		-	
Total	\$ 142,313,595		\$ 108,449,827		\$ 142,313,595		\$ 33,863,769	31.2%

MIDDLESEX WATER COMPANY
TOTAL WATER

COST OF SERVICE ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref.	Cost of Service	Residential	Commercial	Industrial	Wholesale 1 East Brunswick	Wholesale 2 Edison/Hld Park	Wholesale 3 Rahway	Wholesale 4 So. River Basin	Fire Protection Private	Fire Protection Public
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
OPERATION AND MAINTENANCE EXPENSES											
SOURCE OF SUPPLY EXPENSES											
Supervision Labor - Oper	2	-	-	-	-	-	-	-	-	-	-
Contract Operations	1A	2,737,219	1,003,419	499,327	319,198	-	274,373	-	594,983	29,966	15,953
Purchased Water - NJWSA	1B	4,505,128	2,420,161	1,204,334	769,879	-	-	-	-	72,276	38,478
Miscellaneous Expense	2C	118,571	59,415	20,311	11,505	-	-	-	26,039	849	452
TOTAL SS EXPENSE		7,360,918	3,482,995	1,723,972	1,100,582	-	274,373	-	621,022	103,090	54,883
POWER AND PUMPING EXPENSES											
Supervision Labor - Oper	3	79,082	26,444	8,913	5,019	13,638	5,287	-	11,463	1,934	6,384
Supervision Expense	3	-	-	-	-	-	-	-	-	-	-
Power - CJO Plant	1D	2,138,889	644,786	320,862	205,113	408,230	148,060	-	382,330	19,256	10,251
Power - CJO D&R Intake	1D	594,711	179,281	89,215	57,031	113,507	41,168	-	106,306	5,354	2,850
Power - CJO Booster	1D	17,126	5,163	2,569	1,642	3,269	1,186	-	3,061	154	82
Power - Other	1B	951,839	511,329	254,450	162,659	-	-	-	-	15,270	8,130
Operation Labor	3	1,987,374	664,552	223,993	126,136	342,738	132,860	-	288,079	48,594	160,423
Operation Expense	3	65,260	21,822	7,355	4,142	11,255	4,363	-	9,460	1,596	5,268
Miscellaneous Labor	3	-	-	-	-	-	-	-	-	-	-
Miscellaneous Expense	3	400,643	133,970	45,156	25,428	69,094	26,784	-	58,075	9,796	32,340
Maint Expense - Structures - Labor	3	-	-	-	-	-	-	-	-	-	-
Maint Expense - Structures - Expense	3	224,744	75,151	25,330	14,264	38,759	15,025	-	32,578	5,495	18,142
Maint Expense - Equipment - Labor	3	238	80	27	15	41	16	-	34	6	19
Maint Expense - Equipment - Expense	3	262,485	87,771	29,584	16,660	45,267	17,548	-	38,048	6,418	21,188
TOTAL PUMPING EXPENSES		6,722,391	2,350,350	1,007,454	618,110	1,045,798	392,294	-	929,435	113,873	265,078
WATER TREATMENT											
Supervision Labor - Oper	2	631,987	234,329	78,974	44,470	120,843	46,844	-	101,572	3,233	1,721
Supervision Expense - Oper	2	-	-	-	-	-	-	-	-	-	-
Chemicals - CJO	1D	2,832,724	853,949	424,947	271,650	540,657	196,089	-	506,354	25,502	13,577
Chemicals - Wells	1D	78,491	23,662	11,775	7,527	14,981	5,433	-	14,030	707	376
Operation Labor	2	717,135	265,900	89,614	50,462	137,125	53,155	-	115,257	3,669	1,953
Operation Sludge Removal	1	2,415,216	703,464	350,062	223,779	496,241	192,354	-	417,123	21,008	11,184
Operation Expense	1D	479,982	144,695	72,004	46,029	91,610	33,226	-	85,797	4,321	2,300
Miscellaneous Expense	2	443,965	164,614	55,479	31,240	84,891	32,908	-	71,353	2,271	1,209
Maint Expense - Structures - Labor	2	-	-	-	-	-	-	-	-	-	-
Maint Expense - Structures - Expense	2	732,146	271,465	91,490	51,518	139,995	54,268	-	117,669	3,746	1,994
Maint Expense - Equipment - Labor	2	1,835	680	229	129	351	136	-	295	9	5
Maint Expense - Equipment - Expense	2	111,037	41,170	13,875	7,813	21,232	8,230	-	17,846	568	302
TOTAL WT EXPENSE		8,444,518	2,703,927	1,188,449	734,618	1,647,925	622,643	-	1,447,297	65,036	34,624

MIDDLESEX WATER COMPANY
TOTAL WATER

COST OF SERVICE ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref.	Cost of Service	Residential	Commercial	Industrial	Wholesale 1 East Brunswick	Wholesale 2 Edison/Hld Park	Wholesale 3 Rahway	Wholesale 4 So. River Basin	Fire Protection Private	Fire Protection Public
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
TRANSMISSION AND DISTRIBUTION EXPENSES											
Supervision Labor - Oper	10	350,410	172,868	49,959	26,098	676	278	-	27,539	26,241	46,752
Storage Facility Expenses	5	1,439	541	117	59	96	37	-	81	105	402
Operation Labor T & D - Small Mains	4	7,073	4,047	1,077	592	-	-	-	-	306	1,051
Operation Expense - T & D - Small Mains	4	1,519	869	231	127	-	-	-	-	66	226
Operation Labor T & D - Edison & HP	3A	1,600	658	224	127	-	133	-	287	41	130
Operation Expense - T & D - Edison & HP	3A	343	141	48	27	-	28	-	62	9	28
Operation Labor T & D - Transmission	3C	1,136,137	513,433	175,539	99,436	-	-	-	225,035	29,871	92,824
Operation Expense - T & D - Transmission	3C	243,909	110,225	37,685	21,347	-	-	-	48,311	6,413	19,928
Operation Labor T & D - Distribution	4	1,120,716	641,242	170,716	93,729	-	-	-	-	48,532	166,498
Operation Expense - T & D - Distribution	4	240,598	137,664	36,650	20,122	-	-	-	-	10,419	35,744
Operation Labor - Meters	8	537,340	235,590	75,336	29,665	-	-	-	-	196,749	-
Operation Expense - Meters	8	79,292	34,765	11,117	4,377	-	-	-	-	29,033	-
Operation Labor - Cust Installations	8	-	-	-	-	-	-	-	-	-	-
Operation Expense - Cust Installations	8	-	-	-	-	-	-	-	-	-	-
Miscellaneous Labor - Oper	10	74,490	36,748	10,620	5,548	144	59	-	5,854	5,578	9,938
Miscellaneous Expense - Oper	10	317,552	156,658	45,275	23,650	612	252	-	24,957	23,781	42,368
Rents	DA	219,614	-	-	-	-	-	-	219,614	-	-
Supervision Labor - Maint	10	44,478	21,942	6,341	3,313	86	35	-	3,496	3,331	5,934
Supervision Expense - Tank Painting	5	165,152	62,030	13,452	6,792	11,056	4,284	-	9,293	12,099	46,146
Maintenance Labor - Storage	5	-	-	-	-	-	-	-	-	-	-
Maintenance Expense - Storage	5	-	-	-	-	-	-	-	-	-	-
Maintenance Labor - Small Mains	4	411	235	63	34	-	-	-	-	18	61
Maintenance Expense - Small Mains	4	4,971	2,844	757	416	-	-	-	-	215	738
Maint.Labor T & D - Edison & HP	3A	93	38	13	7	-	8	-	-	2	8
Maint. Expense - T & D - Edison & HP	3A	1,124	463	157	89	-	93	-	17	29	91
Maint. Labor T & D - Transmission	3C	66,011	29,831	10,199	5,777	-	-	-	202	1,736	5,393
Maint. Expense - T & D - Transmission	3C	798,434	360,821	123,362	69,880	-	-	-	13,075	20,992	65,233
Maint. Labor T & D - Distribution	4	65,115	37,257	9,919	5,446	-	-	-	158,146	2,820	9,674
Maint. Expense - T & D - Distribution	4	787,597	450,640	119,973	65,869	-	-	-	-	34,106	117,009
Maintenance Labor - Services	9	52,327	39,441	6,240	1,001	-	-	-	-	5,644	-
Maintenance Expense - Services	9	239,644	180,629	28,580	4,586	-	-	-	-	25,850	-
Maintenance Labor - Meters	8	-	-	-	-	-	-	-	-	-	-
Maintenance Expense - Meters	8	21,934	9,617	3,075	1,211	-	-	-	-	8,031	-
Maintenance Labor - Hydrants	7	91,779	-	-	-	-	-	-	-	-	91,779
Maintenance Expense - Hydrants	7	118,630	-	-	-	-	-	-	-	-	118,630
Misc. Payroll	10	-	-	-	-	-	-	-	-	-	-
TOTAL T & D EXPENSE		6,789,733	3,241,236	936,726	489,324	12,669	5,207	-	735,969	492,017	876,585
CUSTOMER ACCOUNTS											
Supervision Labor	12	266,673	213,327	42,318	3,050	12	23	12	23	7,862	47
Supervision Expense	12	9,214	7,370	1,462	105	0	0	0	1	272	2
Meter Reading Labor	13	462,000	380,875	75,554	5,446	21	42	21	42	-	-
Meter Reading Expense	13	77,449	63,849	12,666	913	3	7	3	7	-	-
Customer Records Labor	12	1,058,529	846,777	167,975	12,107	46	92	46	92	31,207	185
Customer Records Expense	12	382,772	306,201	60,741	4,378	17	33	17	33	11,285	67
Uncollectible Accounts	12	468,942	375,133	74,415	5,364	20	41	20	41	13,825	82
Customer Account Expenses	12	-	-	-	-	-	-	-	-	-	-
TOTAL CUSTOMER ACCOUNTING EXPENSE		2,725,578	2,193,532	435,131	31,363	120	239	120	239	64,451	382

MIDDLESEX WATER COMPANY
TOTAL WATER

COST OF SERVICE ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref.	Cost of Service	Residential	Commercial	Industrial	Wholesale 1 East Brunswick	Wholesale 2 Edison/Hld Park	Wholesale 3 Rahway	Wholesale 4 So. River Basin	Fire Protection Private	Fire Protection Public
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
ADMINISTRATIVE AND GENERAL EXPENSES											
Miscellaneous Exp - Labor	14										
Miscellaneous Gen Expense	14	1,427,458	746,165	205,753	92,120	76,679	29,602	8	116,060	56,737	102,334
Admin and Gen Salaries	14	7,385,096	3,860,360	1,064,486	476,590	396,708	153,150	42	600,448	303,880	529,433
Admin and Gen Expenses	14										
Office Supplies and Exp	14	2,004,703	1,047,904	286,957	129,372	107,687	41,573	11	162,993	82,489	143,716
Outside Services	14	(835,396)	(436,681)	(120,414)	(53,911)	(44,875)	(17,324)	(5)	(67,922)	(34,375)	(59,889)
Regulatory Comm Expense	19	859,152	408,905	125,863	64,156	45,719	22,359	2	81,417	47,408	63,323
Transportation Clearing - Labor	14										
Transportation Clearing - Expense	14										
Life Insurance	14										
Property Insurance	14	310,366	162,235	44,736	20,029	16,672	6,436	2	25,234	12,771	22,250
Injuries and Damages	14	1,949,417	1,019,005	280,988	125,804	104,718	40,426	11	158,498	80,214	139,752
Workers Compensation	16	462,438	235,738	65,000	28,489	29,012	11,236	3	39,906	20,668	32,387
Pensions and Benefits	16	4,181,248	2,131,480	587,712	257,591	262,314	101,595	31	360,817	186,875	292,832
Office Rentals	14	813,193	425,074	117,213	52,479	43,683	16,864	5	66,117	33,461	58,297
General Maint. - Labor	14	488,787	255,500	70,454	31,543	26,256	10,136	3	39,741	20,112	35,041
General Maint. - Expense	14	2,582,545	1,349,956	372,247	166,662	138,728	53,556	15	209,975	106,266	185,141
Maint of Grounds - Labor	14										
Maint on Customer's Deposits	14	46	24	7	3	2	1	0	4	2	3
Interest on Customer's Deposits	14										
Variance (Antenna Revenue)	14	(85,130)	(44,500)	(12,271)	(5,494)	(4,573)	(1,765)	(0)	(6,922)	(3,503)	(6,103)
TOTAL A & G EXPENSE		21,543,924	11,161,169	3,090,732	1,385,431	1,198,731	467,846	128	1,786,366	915,006	1,538,516
Total Operation & Maintenance Expenses		53,587,062	25,133,208	8,382,465	4,359,429	3,905,243	1,762,602	248	5,520,328	1,753,472	2,770,067
DEPRECIATION EXPENSE											
SOURCE OF SUPPLY											
Supply Structures-D&R	2	6,760	2,506	845	476	1,293	501	-	1,086	35	18
Supply Structures-Other	2B	32,067	20,460	7,098	4,045	-	-	-	-	303	161
Intakes	2	9,383	3,479	1,173	680	1,794	695	-	1,508	48	26
Wells-CJO	2A	4,577	2,088	710	402	-	420	-	912	29	16
Wells-Other	2B	17,697	11,291	3,917	2,232	-	-	-	-	167	89
Supply Mains	2	156,094	57,877	19,506	10,984	29,847	11,570	-	25,087	799	425
PUMPING PLANT											
Structures - D&R	3	77,155	25,800	8,696	4,897	13,306	5,158	-	11,184	1,887	6,228
Structures - CJO	3A	170,853	70,291	23,915	13,520	-	14,155	-	30,692	4,381	13,900
Structures - Oak St Booster	DA	120	-	-	-	-	-	-	120	-	-

MIDDLESEX WATER COMPANY
TOTAL WATER

COST OF SERVICE ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref.	Cost of Service (3)	Wholesale				Fire Protection				
			Residential (4)	Commercial (5)	Industrial (6)	East Brunswick (7)	Wholesale 2 Edison/Hld Park (8)	Wholesale 3 Rahway (9)	Wholesale 4 So. River Basin (10)	Private (11)	Public (12)
Structures - Other Pumping	3B	112,555	64,767	22,472	12,806	-	-	-	3,191	9,319	
Power Production Equipment - CJO	2	109,470	40,589	13,680	7,703	8,114	-	-	560	298	
Power Production Equipment - Other	3B	16,150	9,293	3,224	1,837	-	-	17,594	458	1,337	
Electric Pumping Equipment - D&R	3	249,395	83,395	28,109	15,829	16,673	-	-	6,098	20,131	
Electric Pumping Equipment - CJO Thermal	2	22	8	3	2	2	-	-	0	0	
Electric Pumping Equipment - Oak St	DA	655	-	-	-	655	-	-	0	0	
Electric Pumping Equipment - North Meter Pit	DA	9	-	-	-	9	-	-	-	-	
Electric Pumping Equipment - East Brunswick	DA	130	-	-	-	130	-	-	-	-	
Electric Pumping Equipment - Other	3B	305,377	175,723	60,969	34,744	-	-	-	8,657	25,284	
Other Pumping Equipment - CJO Booster	2B	12,987	8,286	2,875	1,638	-	-	-	123	65	
Other Pumping Equipment - Other	3B	26,955	15,511	5,382	3,067	-	-	-	764	2,232	
WATER TREATMENT											
Structures - CJO	2	2,585,425	958,625	323,079	181,926	191,636	-	-	13,228	7,042	
Structures - North Meter Pit	DA	111	-	-	-	-	-	415,525	-	-	
Structures - Other	2B	10,062	6,420	2,227	1,269	-	-	-	95	51	
Water Treatment Equipment - CJO	2	2,013,258	746,477	251,580	141,665	149,226	-	-	10,301	5,484	
Water Treatment Equipment - No. Meter Pit	DA	49	-	-	-	-	-	323,567	-	-	
Water Treatment Equipment - Tices Lane	DA	39	-	-	-	-	-	49	-	-	
Water Treatment Equipment - Other	2B	(6,706)	(4,279)	(1,485)	(846)	-	-	-	(63)	(34)	
TRANS & DIST PLANT											
Reservoirs and Standpipes - CJO	5	42,444	15,942	3,457	1,746	1,101	-	-	3,109	11,860	
Reservoirs and Standpipes - Other	5B	35,719	16,278	4,333	2,380	-	-	-	2,702	10,026	
Small Mains	4A	12,488	9,735	2,753	-	-	-	-	-	-	
T&D Mains - East Brunswick	DA	540	-	-	540	-	-	-	-	-	
T&D Mains - Edison & HP	3A	2,825	1,162	395	224	234	-	-	72	230	
T&D Mains - CJO PS	3	2,667	892	301	169	178	-	-	65	215	
T&D Mains - Oak St PS	DA	661	-	-	-	-	-	661	-	-	
T&D Mains - North Meter Pit	DA	77	-	-	-	-	-	77	-	-	
Transmission Mains	3C	2,005,898	906,487	309,921	175,558	-	-	397,309	52,739	163,884	
Distribution Mains	4	1,978,672	1,132,139	301,406	165,482	-	-	-	85,685	293,960	
Services-Retail	9	2,326,997	1,753,946	277,518	44,527	-	-	-	251,007	-	
Services-Wholesale	8A	1,932	-	-	-	317	-	-	-	-	
Meters-Retail	8	2,035,382	892,388	285,364	112,368	-	-	-	745,262	-	
Meters-Wholesale	8A	1,115	-	-	-	183	-	-	-	-	
Meters-Other	8	-	-	-	-	-	-	-	-	-	
Fire Hydrants	7	617,111	-	-	-	-	-	-	-	617,111	
Other T&D	4	55,317	31,651	8,426	4,626	-	-	-	2,395	8,218	
GENERAL PLANT											
Office and Warehouse Building	17	418,826	197,491	57,018	28,840	7,916	-	-	29,715	40,290	
Office Furniture	17	2,618,536	1,234,732	356,482	180,310	49,492	-	-	185,778	251,894	
Transportation Equipment	17	1,258,320	593,342	171,305	86,647	23,783	-	-	89,274	121,046	
Stores	17	-	-	-	-	-	-	-	-	-	
Tools, Shop and Garage Equipment	17	129,459	61,044	17,624	8,914	2,447	-	-	9,185	12,453	
Lab Equipment	2	32,389	12,009	4,047	2,279	2,401	-	-	166	88	
Power Operated Equipment	17	259	122	35	18	5	-	-	18	25	
Communication Equipment	17	252,321	118,978	34,350	17,375	4,769	-	-	17,901	24,272	
Miscellaneous Equipment	17	505	238	69	35	10	-	-	36	49	
Total Depreciation Expense		19,741,107	9,277,185	2,612,782	1,270,350	490,985	1,227,583	1,688,360	1,526,168	1,647,693	

MIDDLESEX WATER COMPANY
TOTAL WATER

COST OF SERVICE ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref.	Cost of Service	Residential	Commercial	Industrial	Wholesale 1 East Brunswick	Wholesale 2 Edison/Hld Park	Wholesale 3 Rahway	Wholesale 4 So. River Basin	Fire Protection Private	Fire Protection Public
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Acquisition Adjustment	17	3,440	1,622	468	237	167	65	-	305	244	331
Taxes Other Than Income											
PROPERTY TAXES-SOURCE	2B	554,369	353,713	122,713	69,927	-	-	-	-	5,231	2,785
PROPERTY TAXES-PUMPING D&R RWPS	3	29,636	9,910	3,340	1,881	5,111	1,981	-	4,296	725	2,392
PROPERTY TAXES-PUMPING OTHER	3B	44,552	25,636	8,895	5,069	-	-	-	-	1,263	3,689
PROPERTY TAXES-TREATMENT	2B	835,041	532,795	184,842	105,330	-	-	-	-	7,880	4,195
PROPERTY TAXES-STORAGE	5B	113,316	51,640	13,748	7,549	-	-	-	-	8,573	31,806
PROPERTY TAXES-TRANSMISSION MAINS	3C	14,334	6,478	2,215	1,255	-	-	-	2,839	377	1,171
PROPERTY TAXES-GENERAL PLANT	14	345,756	180,734	49,837	22,313	18,573	7,170	-	28,112	14,227	24,787
Payroll Taxes	16	1,397,354	712,331	196,411	86,086	87,664	33,953	10	120,583	62,453	97,863
Franchise and Other taxes	20	18,259,575	9,178,925	2,825,312	1,440,142	-	501,911	40	1,827,603	1,064,197	1,421,444
Total Taxes, Other Than Income		21,593,932	11,052,163	3,407,312	1,739,550	111,348	545,015	53	1,983,433	1,164,926	1,590,132
Total Operating Expenses		94,925,541	45,464,178	14,403,026	7,369,566	5,244,342	2,798,668	300	9,192,427	4,444,811	6,008,223
Income Taxes	18	3,075,201	1,445,102	418,269	211,391	151,125	58,730	(0)	278,639	221,164	290,780
Utility Income Available for Return	18	44,312,853	20,823,541	6,027,152	3,046,093	2,177,677	846,289	(2)	4,015,120	3,186,914	4,190,069
Total Cost of Service		142,313,596	67,732,820	20,848,448	10,627,050	7,573,145	3,703,688	298	13,486,187	7,852,889	10,489,073
Less: Other Water Revenues	19	226,844	107,964	33,232	16,939	12,071	5,904	0	21,497	12,517	16,719
Total Other Water Revenues		226,844	107,964	33,232	16,939	12,071	5,904	0	21,497	12,517	16,719
Total Cost of Service Related to Sales of Water		142,086,752	67,624,856	20,815,216	10,610,111	7,561,073	3,697,784	297	13,464,690	7,840,371	10,472,354

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS

FACTOR 1. ALLOCATION OF COSTS WHICH VARY WITH THE AMOUNT OF WATER CONSUMED

Factors are based on the pro forma test year average daily consumption for each customer classification.

Customer Classification (1)	Average Daily Consumption, 1000 Gallons (2)	Allocation Factor (3)
Residential	9,755	0.2913
Commercial	4,854	0.1449
Industrial	3,103	0.0927
Wholesale 1 - EB	6,881	0.2055
Wholesale 2 - Ed/Hlp	2,667	0.0796
Wholesale 3 - Rahway	0	0.0000
Wholesale 4 - SRB	5,784	0.1727
Private Fire Protection	291	0.0087
Public Fire Protection	155	0.0046
Total	<u>33,492</u>	<u>1.0000</u>

FACTOR 2. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND MAXIMUM DAY EXTRA CAPACITY FUNCTIONS.

Factors are based on the weighting of the factors for average daily consumption (Factor 1) and the factors derived from maximum day extra capacity demand for each customer classification, as follows:

Customer Classification (1)	Average Daily Consumption		Maximum Day Extra Capacity		Allocation Factor (6)=(3)+(5)
	Allocation Factor 1 (2)	Weighted Factor (3)=(2)x 0.5882	Allocation Factor (4)	Weighted Factor (5)=(4)x 0.4118	
Residential	0.2913	0.1713	0.4844	0.1995	0.3708
Commercial	0.1449	0.0853	0.0964	0.0397	0.1250
Industrial	0.0927	0.0545	0.0385	0.0159	0.0704
Wholesale 1 - EB	0.2055	0.1209	0.1709	0.0704	0.1912
Wholesale 2 - Ed/Hlp	0.0796	0.0468	0.0662	0.0273	0.0741
Wholesale 3 - Rahway	0.0000	0.0000	0.0000	0.0000	0.0000
Wholesale 4 - SRB	0.1727	0.1016	0.1436	0.0591	0.1607
Private Fire Protection	0.0087	0.0051			0.0051
Public Fire Protection	0.0046	0.0027			0.0027
Total	<u>1.0000</u>	<u>0.5882</u>	<u>1.0000</u>	<u>0.4118</u>	<u>1.0000</u>

The derivation of the maximum day extra capacity factors in column 4 and the basis for the column 3 and 5 weightings are presented on the following page.

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 2. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND
MAXIMUM DAY EXTRA CAPACITY FUNCTIONS, cont.

Customer Classification	Average Daily Consumption, 1000 Gallons	Maximum Day Extra Capacity		
		Factor*	Rate of Flow, 1000 Gallons Per Day	Allocation Factor
(1)	(2)	(3)	(4)=(2)x(3)	(5)
Residential	9,755	1.00	9,755	0.4844
Commercial	4,854	0.40	1,942	0.0964
Industrial	3,103	0.25	776	0.0385
Wholesale 1 - EB	6,881	0.50	3,441	0.1709
Wholesale 2 - Ed/Hlp	2,667	0.50	1,334	0.0662
Wholesale 3 - Rahway	0	0.50	0	0.0000
Wholesale 4 - SRB	5,784	0.50	2,892	0.1436
Total	33,046		20,140	1.0000

The weighting of the factors is based on the maximum day ratio of 1.70.

	Maximum Day Ratio	Weight
Average Day	1.00	0.5882
Maximum Day Extra Capacity	0.70	0.4118
Total	1.70	1.0000

* Ratio of maximum day to average day minus 1.0.

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS

FACTOR 1A. ALLOCATION OF COSTS WHICH VARY WITH THE AMOUNT OF WATER CONSUMED EXCLUDING EAST BRUNSWICK

Factors are based on the pro forma test year average daily consumption for each customer classification.

Customer Classification	Average Daily Consumption, 1000 Gallons	Allocation Factor
(1)	(2)	(3)
Residential	9,755	0.3666
Commercial	4,854	0.1824
Industrial	3,103	0.1166
Wholesale 1 - EB	0	0.0000
Wholesale 2 - Ed/Hlp	2,667	0.1002
Wholesale 3 - Rahway	0	0.0000
Wholesale 4 - SRB	5,784	0.2174
Private Fire Protection	291	0.0109
Public Fire Protection	155	0.0058
Total	26,611	1.0000

FACTOR 2A. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND MAXIMUM DAY EXTRA CAPACITY FUNCTIONS EXCLUDING EAST BRUNSWICK

Factors are based on the weighting of the factors for average daily consumption (Factor 1) and the factors derived from maximum day extra capacity demand for each customer classification, as follows:

Customer Classification	Average Daily Consumption		Maximum Day Extra Capacity		Allocation Factor
	Allocation Factor 1A	Weighted Factor	Allocation Factor	Weighted Factor	
(1)	(2)	(3)=(2)x	(4)	(5)=(4)x	(6)=(3)+(5)
		0.5882		0.4118	
Residential	0.3666	0.2156	0.5842	0.2406	0.4562
Commercial	0.1824	0.1073	0.1163	0.0479	0.1552
Industrial	0.1166	0.0686	0.0465	0.0191	0.0877
Wholesale 1 - EB	0.0000	0.0000	0.0000	0.0000	0.0000
Wholesale 2 - Ed/Hlp	0.1002	0.0590	0.0799	0.0329	0.0919
Wholesale 3 - Rahway	0.0000	0.0000	0.0000	0.0000	0.0000
Wholesale 4 - SRB	0.2174	0.1279	0.1732	0.0713	0.1992
Private Fire Protection	0.0109	0.0064			0.0064
Public Fire Protection	0.0058	0.0034			0.0034
Total	1.0000	0.5882	1.0000	0.4118	1.0000

The derivation of the maximum day extra capacity factors in column 4 and the basis for the column 3 and 5 weightings are presented on the following page.

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 2A. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND
MAXIMUM DAY EXTRA CAPACITY FUNCTIONS EXCLUDING EAST BRUNSWICK

Customer Classification	Average Daily Consumption, 1000 Gallons	Maximum Day Extra Capacity		
		Factor*	Rate of Flow, 1000 Gallons Per Day	Allocation Factor
(1)	(2)	(3)	(4)=(2)x(3)	(5)
Residential	9,755	1.00	9,755	0.5842
Commercial	4,854	0.40	1,942	0.1163
Industrial	3,103	0.25	776	0.0465
Wholesale 1 - EB	0	0.50	0	0.0000
Wholesale 2 - Ed/Hlp	2,667	0.50	1,334	0.0799
Wholesale 3 - Rahway	0	0.50	0	0.0000
Wholesale 4 - SRB	5,784	0.50	2,892	0.1732
Total	26,164		16,699	1.0000

The weighting of the factors is based on the maximum day ratio of 1.70.

	Maximum Day Ratio	Weight
Average Day	1.00	0.5882
Maximum Day Extra Capacity	0.70	0.4118
Total	1.70	1.0000

* Ratio of maximum day to average day minus 1.0.

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS

FACTOR 1B. ALLOCATION OF COSTS WHICH VARY WITH THE AMOUNT OF WATER CONSUMED- FRANCHISE ONLY

Factors are based on the pro forma test year average daily consumption for each customer classification.

Customer Classification	Average Daily Consumption, 1000 Gallons	Allocation Factor
(1)	(2)	(3)
Residential	9,755	0.5372
Commercial	4,854	0.2673
Industrial	3,103	0.1709
Wholesale 1 - EB	0	0.0000
Wholesale 2 - Ed/Hlp	0	0.0000
Wholesale 3 - Rahway	0	0.0000
Wholesale 4 - SRB	0	0.0000
Private Fire Protection	291	0.0160
Public Fire Protection	155	0.0085
Total	18,159	1.0000

FACTOR 2B. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND MAXIMUM DAY EXTRA CAPACITY FUNCTIONS- FRANCHISE ONLY

Factors are based on the weighting of the factors for average daily consumption (Factor 1) and the factors derived from maximum day extra capacity demand for each customer classification, as follows:

Customer Classification	Average Daily Consumption		Maximum Day Extra Capacity		Allocation Factor
	Allocation Factor 1B	Weighted Factor	Allocation Factor	Weighted Factor	
(1)	(2)	(3)=(2)x 0.5882	(4)	(5)=(4)x 0.4118	(6)=(3)+(5)
Residential	0.5372	0.3160	0.7821	0.3221	0.6380
Commercial	0.2673	0.1572	0.1557	0.0641	0.2214
Industrial	0.1709	0.1005	0.0622	0.0256	0.1261
Wholesale 1 - EB	0.0000	0.0000	0.0000	0.0000	0.0000
Wholesale 2 - Ed/Hlp	0.0000	0.0000	0.0000	0.0000	0.0000
Wholesale 3 - Rahway	0.0000	0.0000	0.0000	0.0000	0.0000
Wholesale 4 - SRB	0.0000	0.0000	0.0000	0.0000	0.0000
Private Fire Protection	0.0160	0.0094			0.0094
Public Fire Protection	0.0085	0.0050			0.0050
Total	1.0000	0.5882	1.0000	0.4118	1.0000

The derivation of the maximum day extra capacity factors in column 4 and the basis for the column 3 and 5 weightings are presented on the following page.

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 2B. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND
MAXIMUM DAY EXTRA CAPACITY FUNCTIONS - FRANCHISE ONLY

Customer Classification	Average Daily Consumption, 1000 Gallons	Maximum Day Extra Capacity		
		Factor*	Rate of Flow, 1000 Gallons Per Day	Allocation Factor
(1)	(2)	(3)	(4)=(2)x(3)	(5)
Residential	9,755	1.00	9,755	0.7821
Commercial	4,854	0.40	1,942	0.1557
Industrial	3,103	0.25	776	0.0622
Wholesale 1 - EB	0	0.50	0	0.0000
Wholesale 2 - Ed/Hlp	0	0.50	0	0.0000
Wholesale 3 - Rahway	0	0.50	0	0.0000
Wholesale 4 - SRB	0	0.50	0	0.0000
Total	<u>17,713</u>		<u>12,473</u>	<u>1.0000</u>

The weighting of the factors is based on the maximum day ratio of 1.70.

	Maximum Day Ratio	Weight
Average Day	1.00	0.5882
Maximum Day Extra Capacity	<u>0.70</u>	<u>0.4118</u>
Total	<u>1.70</u>	<u>1.0000</u>

* Ratio of maximum day to average day minus 1.0.

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS

FACTOR 1C. ALLOCATION OF COSTS WHICH VARY WITH THE AMOUNT OF WATER CONSUMED EXCLUDING EAST BRUNSWICK/ED HLD PARK

Factors are based on the pro forma test year average daily consumption for each customer classification.

Customer Classification (1)	Average Daily Consumption, 1000 Gallons (2)	Allocation Factor (3)
Residential	9,755	0.4074
Commercial	4,854	0.2027
Industrial	3,103	0.1296
Wholesale 1 - EB	0	0.0000
Wholesale 2 - Ed/Hlp	0	0.0000
Wholesale 3 - Rahway	0	0.0000
Wholesale 4 - SRB	5,784	0.2416
Private Fire Protection	291	0.0122
Public Fire Protection	155	0.0065
Total	23,943	1.0000

FACTOR 2C. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND MAXIMUM DAY EXTRA CAPACITY FUNCTIONS EXCLUDING EAST BRUNSWICK

Factors are based on the weighting of the factors for average daily consumption (Factor 1) and the factors derived from maximum day extra capacity demand for each customer classification, as follows:

Customer Classification (1)	Average Daily Consumption		Maximum Day Extra Capacity		Allocation Factor (6)=(3)+(5)
	Allocation Factor 1C (2)	Weighted Factor (3)=(2)x 0.5882	Allocation Factor (4)	Weighted Factor (5)=(4)x 0.4118	
Residential	0.4074	0.2396	0.6349	0.2614	0.5011
Commercial	0.2027	0.1193	0.1264	0.0520	0.1713
Industrial	0.1296	0.0762	0.0505	0.0208	0.0970
Wholesale 1 - EB	0.0000	0.0000	0.0000	0.0000	0.0000
Wholesale 2 - Ed/Hlp	0.0000	0.0000	0.0000	0.0000	0.0000
Wholesale 3 - Rahway	0.0000	0.0000	0.0000	0.0000	0.0000
Wholesale 4 - SRB	0.2416	0.1421	0.1882	0.0775	0.2196
Private Fire Protection	0.0122	0.0072			0.0072
Public Fire Protection	0.0065	0.0038			0.0038
Total	1.0000	0.5882	1.0000	0.4118	1.0000

The derivation of the maximum day extra capacity factors in column 4 and the basis for the column 3 and 5 weightings are presented on the following page.

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS

FACTOR 1D. ALLOCATION OF COSTS WHICH VARY WITH THE AMOUNT OF WATER CONSUMED.

Factors are based on the pro forma test year actual average daily consumption for each customer classification.

<u>Customer Classification</u> (1)	<u>Average Daily Consumption, 1000 Gallons</u> (2)	<u>Allocation Factor</u> (3)
Residential	9,755	0.3015
Commercial	4,854	0.1500
Industrial	3,103	0.0959
Wholesale 1 - EB	6,176	0.1909
Wholesale 2 - Ed/Hlp	2,240	0.0692
Wholesale 3 - Rahway	0	0.0000
Wholesale 4 - SRB	5,784	0.1788
Private Fire Protection	291	0.0090
Public Fire Protection	<u>155</u>	0.0048
Total	<u><u>32,360</u></u>	<u><u>1.0000</u></u>

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 2C. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND
MAXIMUM DAY EXTRA CAPACITY FUNCTIONS EXCLUDE EB, EDISION HLD PARK

Customer Classification	Average Daily Consumption, 1000 Gallons	Maximum Day Extra Capacity		
		Factor*	Rate of Flow, 1000 Gallons Per Day	Allocation Factor
(1)	(2)	(3)	(4)=(2)x(3)	(5)
Residential	9,755	1.00	9,755	0.6349
Commercial	4,854	0.40	1,942	0.1264
Industrial	3,103	0.25	776	0.0505
Wholesale 1 - EB	0	0.50	0	0.0000
Wholesale 2 - Ed/Hlp	0	0.50	0	0.0000
Wholesale 3 - Rahway	0	0.50	0	0.0000
Wholesale 4 - SRB	5,784	0.50	2,892	0.1882
Total	23,497		15,365	1.0000

The weighting of the factors is based on the maximum day ratio of 1.70.

	Maximum Day Ratio	Weight
Average Day	1.00	0.5882
Maximum Day Extra Capacity	0.70	0.4118
Total	1.70	1.0000

* Ratio of maximum day to average day minus 1.0.

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 3. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE, MAXIMUM DAY EXTRA CAPACITY AND FIRE PROTECTION FUNCTIONS TREATMENT FUNCTIONS

Factors are based on the weighting of the average daily consumption, the maximum day extra capacity demand, and the fire protection demand for each customer classification.

Customer Classification	Average Daily Consumption		Maximum Day Extra Capacity		Fire Protection		Allocation Factor (8)=(3)+(5)+(7)
	Allocation Factor (2)	Weighted Factor (3)=(2) X 0.5306	Allocation Factor (4)	Weighted Factor (5)=(4) X 0.3713	Allocation Factor (6)	Weighted Factor (7)=(6) X 0.0981	
Residential	0.2913	0.1545	0.4844	0.1798			0.3344
Commercial	0.1449	0.0769	0.0964	0.0358			0.1127
Industrial	0.0927	0.0492	0.0385	0.0143			0.0635
Wholesale 1 - EB	0.2055	0.1090	0.1709	0.0634			0.1725
Wholesale 2 - Ed/Hlp	0.0796	0.0423	0.0662	0.0246			0.0669
Wholesale 3 - Rahway	0.0000	0.0000	0.0000	0.0000			0.0000
Wholesale 4 - SRB	0.1727	0.0916	0.1436	0.0533			0.1450
Private Fire Protection	0.0087	0.0046			0.2022	0.0198	0.0245
Public Fire Protection	0.0046	0.0025			0.7978	0.0783	0.0807
Total	1.0000	0.5306	1.0000	0.3713	1.0000	0.0981	1.0000

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 3A. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE, MAXIMUM DAY EXTRA CAPACITY, EXCLUDING EAST BRUNSWICK, AND FIRE PROTECTION FUNCTIONS TREATMENT FUNCTIONS

Factors are based on the weighting of the average daily consumption, the maximum day extra capacity demand, and the fire protection demand for each customer classification.

Customer Classification	Average Daily Consumption		Maximum Day Extra Capacity		Fire Protection		Allocation Factor (8)=(3)+(5)+(7)
	Allocation Factor (2)	Weighted Factor (3)=(2) X 0.5306	Allocation Factor (4)	Weighted Factor (5)=(4) X 0.3713	Allocation Factor (6)	Weighted Factor (7)=(6) X 0.0981	
Residential	0.3666	0.1945	0.5842	0.2169			0.4114
Commercial	0.1824	0.0968	0.1163	0.0432			0.1400
Industrial	0.1166	0.0619	0.0465	0.0173			0.0791
Wholesale 1 - EB	0.0000	0.0000	0.0000	0.0000			0.0000
Wholesale 2 - Ed/Hlp	0.1002	0.0532	0.0799	0.0297			0.0828
Wholesale 3 - Rahway	0.0000	0.0000	0.0000	0.0000			0.0000
Wholesale 4 - SRB	0.2174	0.1153	0.1732	0.0643			0.1796
Private Fire Protection	0.0109	0.0058			0.2022	0.0198	0.0256
Public Fire Protection	0.0058	0.0031			0.7978	0.0783	0.0814
Total	1.0000	0.5306	1.0000	0.3713	1.0000	0.0981	1.0000

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 3B. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE, MAXIMUM DAY EXTRA CAPACITY AND FIRE PROTECTION FUNCTIONS TREATMENT FUNCTIONS - FRANCHISE ONLY

Factors are based on the weighting of the average daily consumption, the maximum day extra capacity demand, and the fire protection demand for each customer classification.

Customer Classification	Average Daily Consumption		Maximum Day Extra Capacity		Fire Protection		Allocation Factor (8)=(3)+(5)+(7)
	Allocation Factor (2)	Weighted Factor (3)=(2) X 0.5306	Allocation Factor (4)	Weighted Factor (5)=(4) X 0.3713	Allocation Factor (6)	Weighted Factor (7)=(6) X 0.0981	
Residential	0.5372	0.2850	0.7821	0.2904			0.5754
Commercial	0.2673	0.1418	0.1557	0.0578			0.1997
Industrial	0.1709	0.0907	0.0622	0.0231			0.1138
Wholesale 1 - EB	0.0000	0.0000	0.0000	0.0000			0.0000
Wholesale 2 - Ed/Hlp	0.0000	0.0000	0.0000	0.0000			0.0000
Wholesale 3 - Rahway	0.0000	0.0000	0.0000	0.0000			0.0000
Wholesale 4 - SRB	0.0000	0.0000	0.0000	0.0000			0.0000
Private Fire Protection	0.0160	0.0085			0.2022	0.0198	0.0283
Public Fire Protection	0.0085	0.0045			0.7978	0.0783	0.0828
Total	1.0000	0.5306	1.0000	0.3713	1.0000	0.0981	1.0000

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 3C. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE, MAXIMUM DAY EXTRA CAPACITY AND FIRE PROTECTION FUNCTIONS TREATMENT FUNCTIONS EXCLUDE EB AND EDISON/HLD PARK

Factors are based on the weighting of the average daily consumption, the maximum day extra capacity demand, and the fire protection demand for each customer classification.

Customer Classification	Average Daily Consumption		Maximum Day Extra Capacity		Fire Protection		Allocation Factor (8)=(3)+(5)+(7)
	Allocation Factor (2)	Weighted Factor (3)=(2) X 0.5306	Allocation Factor (4)	Weighted Factor (5)=(4) X 0.3713	Allocation Factor (6)	Weighted Factor (7)=(6) X 0.0981	
Residential	0.4074	0.2162	0.6349	0.2357			0.4519
Commercial	0.2027	0.1076	0.1264	0.0469			0.1545
Industrial	0.1296	0.0688	0.0505	0.0188			0.0875
Wholesale 1 - EB	0.0000	0.0000	0.0000	0.0000			0.0000
Wholesale 2 - Ed/Hlp	0.0000	0.0000	0.0000	0.0000			0.0000
Wholesale 3 - Rahway	0.0000	0.0000	0.0000	0.0000			0.0000
Wholesale 4 - SRB	0.2416	0.1282	0.1882	0.0699			0.1981
Private Fire Protection	0.0122	0.0065			0.2022	0.0198	0.0263
Public Fire Protection	0.0065	0.0034			0.7978	0.0783	0.0817
Total	1.0000	0.5306	1.0000	0.3713	1.0000	0.0981	1.0000

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 3. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE, MAXIMUM DAY EXTRA CAPACITY AND FIRE PROTECTION FUNCTIONS, cont.

The weighting of the factors is based on the potential demand of general and fire protection service. The bases for the potential demand of general service are the maximum day ratio of 1.70 and the average daily system sendout 38.9 MGD. The system demand for fire protection is 12,000 Gallons per minute for 10 hours.

	<u>Ratio</u>	Rate of Flow, <u>(GPD)</u>	<u>Weight</u>
Average Day	1.00	38,880,998	0.5306
Maximum Day Extra Capacity	<u>0.70</u>	<u>27,216,698</u>	<u>0.3713</u>
Subtotal	<u>1.70</u>	66,097,696	0.9019
Fire Protection		<u>7,200,000</u>	<u>0.0981</u>
Total		<u>73,297,696</u>	<u>1.0000</u>

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 4. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND MAXIMUM HOUR EXTRA CAPACITY FUNCTIONS.

Factors are based on the weighting of the average daily consumption, the maximum day extra capacity demand, and the fire protection demand for each customer classification.

Customer Classification	Average Hourly Consumption		Maximum Hour Extra Capacity		Fire Protection		Allocation Factor (9)=(4)+(6)+(8)
	1000 gallons (2)	Allocation Factor (3)	Allocation Factor (5)	Weighted Factor (4)=(3) X 0.4091	Allocation Factor (7)	Weighted Factor (8)=(7) X 0.1818	
Residential	406.5	0.5372	0.8614	0.2198	0.3524		0.5722
Commercial	202.3	0.2673	0.1050	0.1094	0.0430		0.1523
Industrial	129.3	0.1709	0.0336	0.0699	0.0137		0.0836
Wholesale 1 - EB	0.0	0.0000	0.0000	0.0000	0.0000		0.0000
Wholesale 2 - Ed/Hlp	0.0	0.0000	0.0000	0.0000	0.0000		0.0000
Wholesale 3 - Rahway	0.0	0.0000	0.0000	0.0000	0.0000		0.0000
Wholesale 4 - SRB	0.0	0.0000	0.0000	0.0000	0.0000		0.0000
Private Fire Protection	12.1	0.0160		0.0065		0.2022	0.0433
Public Fire Protection	6.5	0.0086		0.0035		0.7978	0.1486
Total	756.7	1.0000	1.0000	0.4091	0.4091	1.0000	1.0000
							0.1818

The maximum hour extra capacity factors in column 5 are determined on the following page.

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 4A. ALLOCATION OF COSTS ASSOCIATED WITH SMALL MAINS

Factors are based on the weighting of the average daily consumption, the maximum day extra capacity demand, and the fire protection demand for

Customer Classification (1)	Average Hourly Consumption		Maximum Hour Extra Capacity		Fire Protection		Allocation Factor (9)=(4)+(6)+(8)
	1000 gallons (2)	Allocation Factor (3)	Allocation Factor (5)	Weighted Factor (4)=(3) X 0.5000	Allocation Factor (7)	Weighted Factor (8)=(7) X 0.0000	
Residential	406.5	0.6677	0.8913	0.4457			0.7795
Commercial	202.3	0.3323	0.1087	0.0543			0.2205
Industrial	0.0	0.0000	0.0000	0.0000			0.0000
Wholesale 1 - EB	0.0	0.0000	0.0000	0.0000			0.0000
Wholesale 2 - Ed/Hlp	0.0	0.0000	0.0000	0.0000			0.0000
Wholesale 3 - Rahway	0.0	0.0000	0.0000	0.0000			0.0000
Wholesale 4 - SRB	0.0	0.0000	0.0000	0.0000			0.0000
Private Fire Protection	0.0	0.0000			0.2022	0.0000	0.0000
Public Fire Protection	0.0	0.0000			0.7978	0.0000	0.0000
Total	608.8	1.0000	1.0000	0.5000	1.0000	0.0000	1.0000

The maximum hour extra capacity factors in column 5 are determined on the following page.

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 4. ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND MAXIMUM HOUR EXTRA CAPACITY FUNCTIONS, cont.

The weighting of the factors is based on the potential demand of general and fire protection service. The bases for the potential demand of general service are the maximum hour ratio of 2.0 and the average daily system sendout for 2022 of 38.9MGD. The system demand for fire protection is 12,000 gallons per minute.

	Ratio	Rate of Flow, (GPM)	Weight
Average Hour	1.00	27,001	0.4091
Maximum Hour Extra Capacity	1.00	27,001	0.4091
Subtotal	2.00	54,002	0.8182
Fire Protection		12,000	0.1818
Total		66,002	1.0000

The maximum hour extra capacity factors in column 5 of Factor 4 are determined as follows:

Customer Classification	Average Hourly Consumption 1000 Gallons	Maximum Hour Extra Capacity		
		Factor*	1000 Gallons Per Hour	Allocation Factor
(1)	(2)	(3)	(4)=(2)x(3)	(5)
Residential	406.5	2.45	995.9	0.8614
Commercial	202.3	0.60	121.4	0.1050
Industrial	129.3	0.30	38.8	0.0336
Wholesale 1 - EB	0.0		0.0	0.0000
Wholesale 2 - Ed/Hlp	0.0		0.0	0.0000
Wholesale 3 - Rahway	0.0		0.0	0.0000
Wholesale 4 - SRB	0.0		0.0	0.0000
Total	738.1		1,156.1	1.0000

* Ratio of Maximum Hour To Average Hour Minus 1.0.

The maximum hour extra capacity factors in column 5 of Factor 4A are determined as follows:

Customer Classification	Average Hourly Consumption 1000 Gallons	Maximum Hour Extra Capacity		
		Factor*	1000 Gallons Per Hour	Allocation Factor
(1)	(2)	(3)	(4)=(2)x(3)	(5)
Residential	406.5	2.45	995.9	0.8913
Commercial	202.3	0.60	121.4	0.1087
Industrial	0.0	0.30	0.0	0.0000
Wholesale 1 - EB	0.0		0.0	0.0000
Wholesale 2 - Ed/Hlp	0.0		0.0	0.0000
Wholesale 3 - Rahway	0.0		0.0	0.0000
Wholesale 4 - SRB	0.0		0.0	0.0000
Total	608.8		1,117.3	1.0000

* Ratio of Maximum Hour To Average Hour Minus 1.0.

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 5. ALLOCATION OF COSTS ASSOCIATED WITH STORAGE FACILITIES., EXCLUDING EAST BRUNSWICK AND ED/HLP

Factors are based on the weighting of the average hourly consumption, the maximum hour extra capacity demand, and the fire protection demand for each customer classification.

Customer Classification	Average Hourly Consumption			Maximum Hour Extra Capacity			Fire Protection			Allocation Factor (9)=(4)+(6)+(8)
	1000 Gallons (2)	Allocation Factor (3)	Weighted Factor (4)=(3) X 0.3258	Allocation Factor (5)	Weighted Factor (6)=(5) X 0.3258	Allocation Factor (7)	Weighted Factor (8)=(7) X 0.3483	Allocation Factor (9)=(4)+(6)+(8)		
Residential	406.5	0.2913	0.0949	0.8614	0.2807				0.3756	
Commercial	202.3	0.1450	0.0472	0.1050	0.0342				0.0815	
Industrial	129.3	0.0927	0.0302	0.0336	0.0109				0.0411	
Wholesale 1 - EB	286.7	0.2054	0.0669	0.0000	0.0000				0.0669	
Wholesale 2 - Ed/Hlp	111.1	0.0796	0.0259	0.0000	0.0000				0.0259	
Wholesale 3 - Rahway	0.0	0.0000	0.0000	0.0000	0.0000				0.0000	
Wholesale 4 - SRB	241.0	0.1727	0.0563	0.0000	0.0000				0.0563	
Private Fire Protection	12.1	0.0087	0.0028			0.2022	0.0704		0.0733	
Public Fire Protection	6.5	0.0047	0.0015			0.7978	0.2779		0.2794	
Total	1,395.5	1.0000	0.3258	1.0000	0.3258	1.0000	0.3483		1.0000	

The weighting of the factors is based on the ratio of the capacity required for a 10 hour demand of fire flow, as related to total storage capacity. The calculation is shown on the following page.

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 5. ALLOCATION OF COSTS ASSOCIATED WITH STORAGE FACILITIES, cont.

The weighting of the factors is based on the ratio of the capacity required for a 10 hour demand of fire flow, as related to total storage capacity.

$$\text{Fire Protection Weight} = \frac{12,000 \text{ GPM} \times 60 \text{ Min.} \times 10 \text{ Hrs.}}{20,670,000 \text{ Gallons}} = 0.3483$$

$$\text{General Service Weight} = 1.0000 - 0.3483 = 0.6517$$

The weighting of the average hourly consumption and maximum hour extra demand for general service is based on the maximum hour ratio, as follows:

	Maximum Hour Ratio	Percent	Weight
Average Hour	1.00	50.00	0.3258
Extra Capacity Maximum Hour	1.00	50.00	0.3258
Total	2.00	100.00	0.6517

The maximum hour extra capacity factors in column 5 of the previous page are determined as follows:

Customer Classification (1)	Average Hourly Consumption 1000 Gallons (2)	Maximum Hour Extra Capacity		
		Factor* (3)	1000 Gallons Per Hour (4)=(2)x(3)	Allocation Factor (5)
Residential	406.5	2.45	995.8	0.8614
Commercial	202.3	0.60	121.4	0.1050
Industrial	129.3	0.30	38.8	0.0336
Wholesale 1 - EB	286.7	0.00	0.0	0.0000
Wholesale 2 - Ed/Hlp	111.1	0.00	0.0	0.0000
Wholesale 3 - Rahway	0.0	0.00	0.0	0.0000
Wholesale 4 - SRB	241.0	0.00	0.0	0.0000
Total	1,376.9		1,156.0	1.0000

* Ratio of Maximum Hour To Average Hour Minus 1.0.

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 5A. ALLOCATION OF COSTS ASSOCIATED WITH STORAGE FACILITIES EXCLUDING EAST BRUNWICK

Factors are based on the weighting of the average hourly consumption, the maximum hour extra capacity demand, and the fire protection demand for each customer classification.

Customer Classification	Average Hourly Consumption			Maximum Hour Extra Capacity			Fire Protection		
	1000 Gallons (2)	Allocation Factor (3)	Weighted Factor (4)=(3) X 0.3258	Allocation Factor (5)	Weighted Factor (6)=(5) X 0.3258	Allocation Factor (7)	Weighted Factor (8)=(7) X 0.3483	Allocation Factor (9)=(4)+(6)+(8)	
Residential	9,755.1	0.3666	0.1194	0.8614	0.2807			0.4001	
Commercial	4,854.4	0.1824	0.0594	0.1050	0.0342			0.0937	
Industrial	3,103.2	0.1166	0.0380	0.0336	0.0109			0.0489	
Wholesale 1 - EB	0.0	0.0000	0.0000	0.0000	0.0000			0.0000	
Wholesale 2 - Ed/Hlp	2,667.4	0.1002	0.0327	0.0000	0.0000			0.0327	
Wholesale 3 - Rahway	0.0	0.0000	0.0000	0.0000	0.0000			0.0000	
Wholesale 4 - SRB	5,784.4	0.2174	0.0708	0.0000	0.0000			0.0708	
Private Fire Protection	291.3	0.0109	0.0036			0.2022	0.0704	0.0740	
Public Fire Protection	155.1	0.0058	0.0019			0.7978	0.2779	0.2798	
Total	26,610.9	1.0000	0.3258	1.0000	0.3258	1.0000	0.3483	1.0000	

The weighting of the factors is based on the ratio of the capacity required for a 4 hour demand of fire flow, as related to total storage capacity. The calculation is shown on the following page.

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 5A. ALLOCATION OF COSTS ASSOCIATED WITH STORAGE FACILITIES EXCLUDE EAST BRUNWICK

The weighting of the factors is based on the ratio of the capacity required for a 10 hour demand of fire flow, as related to total storage capacity.

$$\text{Fire Protection Weight} = \frac{12,000 \text{ GPM} \times 60 \text{ Min.} \times 10 \text{ Hrs.}}{20,670,000 \text{ Gallons}} = 0.3483$$

$$\text{General Service Weight} = 1.0000 - 0.3483 = 0.6517$$

The weighting of the average hourly consumption and maximum hour extra demand for general service is based on the maximum hour ratio, as follows:

	Maximum Hour Ratio	Percent	Weight
Average Hour	1.00	50.00	0.3258
Extra Capacity Maximum Hour	1.00	50.00	0.3258
Total	2.00	100.00	0.6517

The maximum hour extra capacity factors in column 5 of the previous page are determined as follows:

Customer Classification	Average Hourly Consumption 1000 Gallons	Maximum Hour Extra Capacity		
		Factor*	1000 Gallons Per Hour	Allocation Factor
(1)	(2)	(3)	(4)=(2)x(3)	(5)
Residential	406.5	2.45	995.8	0.8614
Commercial	202.3	0.60	121.4	0.1050
Industrial	129.3	0.30	38.8	0.0336
Wholesale 1 - EB	0.0	0.00	0.0	0.0000
Wholesale 2 - Ed/Hlp	111.1	0.00	0.0	0.0000
Wholesale 3 - Rahway	0.0	0.00	0.0	0.0000
Wholesale 4 - SRB	241.0	0.00	0.0	0.0000
Total	1,090.2		1,156.0	1.0000

* Ratio of Maximum Hour To Average Hour Minus 1.0.

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 5B. ALLOCATION OF COSTS ASSOCIATED WITH STORAGE FACILITIES - FRANCHISE ONLY

Factors are based on the weighting of the average hourly consumption, the maximum hour extra capacity demand, and the fire protection demand for each customer classification.

Customer Classification	Average Hourly Consumption			Maximum Hour Extra Capacity			Fire Protection		
	1000 Gallons (2)	Allocation Factor (3)	Weighted Factor (4)=(3) X 0.3258	Allocation Factor (5)	Weighted Factor (6)=(5) X 0.3258	Allocation Factor (7)	Weighted Factor (8)=(7) X 0.3483	Allocation Factor (9)=(4)+(6)+(8)	
Residential	9,755.1	0.5372	0.1750	0.8614	0.2807			0.4557	
Commercial	4,854.4	0.2673	0.0871	0.1050	0.0342			0.1213	
Industrial	3,103.2	0.1709	0.0557	0.0336	0.0109			0.0666	
Wholesale 1 - EB	0.0	0.0000	0.0000	0.0000	0.0000			0.0000	
Wholesale 2 - Ed/Hlp	0.0	0.0000	0.0000	0.0000	0.0000			0.0000	
Wholesale 3 - Rahway	0.0	0.0000	0.0000	0.0000	0.0000			0.0000	
Wholesale 4 - SRB	0.0	0.0000	0.0000	0.0000	0.0000			0.0000	
Private Fire Protection	291.3	0.0160	0.0052			0.2022	0.0704	0.0757	
Public Fire Protection	155.1	0.0085	0.0028			0.7978	0.2779	0.2807	
Total	18,159.1	1.0000	0.3258	1.0000	0.3258	1.0000	0.3483	1.0000	

The weighting of the factors is based on the ratio of the capacity required for a 10 hour demand of fire flow, as related to total storage capacity. The calculation is shown on the following page.

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 5B. ALLOCATION OF COSTS ASSOCIATED WITH STORAGE FACILITIES- FRANCHISE ONLY

The weighting of the factors is based on the ratio of the capacity required for a 10 hour demand of fire flow, as related to total storage capacity.

$$\text{Fire Protection Weight} = \frac{12,000 \text{ GPM} \times 60 \text{ Min.} \times 10 \text{ Hrs.}}{20,670,000 \text{ Gallons}} = 0.3483$$

$$\text{General Service Weight} = 1.0000 - 0.3483 = 0.6517$$

The weighting of the average hourly consumption and maximum hour extra demand for general service is based on the maximum hour ratio, as follows:

	Maximum Hour Ratio	Percent	Weight
Average Hour	1.00	50.00	0.3258
Extra Capacity Maximum Hour	1.00	50.00	0.3258
Total	2.00	100.00	0.6517

The maximum hour extra capacity factors in column 5 of the previous page are determined as follows:

Customer Classification	Average Hourly Consumption 1000 Gallons	Maximum Hour Extra Capacity		
		Factor*	1000 Gallons Per Hour	Allocation Factor
(1)	(2)	(3)	(4)=(2)x(3)	(5)
Residential	406.5	2.45	995.8	0.8614
Commercial	202.3	0.60	121.4	0.1050
Industrial	129.3	0.30	38.8	0.0336
Wholesale 1 - EB	0.0	0.00	0.0	0.0000
Wholesale 2 - Ed/Hlp	0.0	0.00	0.0	0.0000
Wholesale 3 - Rahway	0.0	0.00	0.0	0.0000
Wholesale 4 - SRB	0.0	0.00	0.0	0.0000
Total	738.0		1,156.0	1.0000

* Ratio of Maximum Hour To Average Hour Minus 1.0.

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 6.. ALLOCATION OF COSTS ASSOCIATED WITH TRANSMISSION AND DISTRIBUTION MAINS.

Factors are based on the weighting of the maximum daily consumption with fire, Factor 3, and the maximum hour consumption, Factor 4, for each customer classification, as follows:

Customer Classification	Maximum Daily Consumption w/ Fire		Maximum Hourly Consumption		Allocation Factor
	Allocation Factor 3	Weighted Factor	Allocation Factor 4	Weighted Factor	
(1)	(2)	(3)=(2)X	(4)	(5)=(4)X	(6)=(3)+(5)
		0.1464		0.8536	
Residential	0.3344	0.0490	0.5722	0.4884	0.5374
Commercial	0.1127	0.0165	0.1523	0.1300	0.1465
Industrial	0.0635	0.0093	0.0836	0.0714	0.0807
Wholesale 1 - EB	0.1725	0.0252	0.0000	0.0000	0.0252
Wholesale 2 - Ed/Hlp	0.0669	0.0098	0.0000	0.0000	0.0098
Wholesale 3 - Rahway	0.0000	0.0000	0.0000	0.0000	0.0000
Wholesale 4 - SRB	0.1450	0.0212	0.0000	0.0000	0.0212
Private Fire Protection	0.0245	0.0036	0.0433	0.0370	0.0405
Public Fire Protection	0.0807	0.0118	0.1486	0.1268	0.1386
Total	1.0000	0.1464	1.0000	0.8536	1.0000

The weighting of the factors is based on the footage of mains, designated as either transmission mains or distribution mains, as follows:

	Footage of Mains	Weight
Transmission Mains (Larger than 12-inch)	570,847	0.1464
Distribution Mains (12 inch and under)	3,328,596	0.8536
Total	3,899,443	1.0000

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 7. ALLOCATION OF COSTS ASSOCIATED WITH FIRE HYDRANTS.

Costs are assigned directly to Public Fire Protection.

<u>Customer Classification</u> (1)	<u>Allocation Factor</u> (3)
Public Fire Protection	<u>1.0000</u>
Total	<u><u>1.0000</u></u>

FACTORS 8 AND 8A. ALLOCATION OF COSTS ASSOCIATED WITH METERS.

Factors are based on the relative cost of meters by size and customer classification, as developed on the following page and summarized below.

<u>Customer Classification</u> (1)	<u>Meter Equivalentants</u> (2)	<u>Factor 8 Allocation Factor</u> (2)	<u>Factor 8A Allocation Factor Original Cost</u> (3)
Residential	61,540	0.4384	
Commercial	19,679	0.1402	
Industrial	7,749	0.0552	
Wholesale 1 - EB	0	0.0000	0.1217
Wholesale 2 - Ed/Hlp	0	0.0000	0.1640
Wholesale 3 - Rahway	0	0.0000	
Wholesale 4 - SRB	0	0.0000	0.7143
Private Fire	<u>51,394</u>	<u>0.3662</u>	
Total	140,362	<u><u>1.0000</u></u>	<u><u>1.0000</u></u>

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 9. ALLOCATION OF COSTS ASSOCIATED WITH SERVICES.

Factors are based on the relative cost of services by size and customer classification, as developed on the following page and summarized below.

<u>Customer Classification</u> (1)	<u>Service Equivalents</u> (2)	<u>Allocation Factor</u> (3)
Residential	56,565	0.7537
Commercial	8,950	0.1193
Industrial	1,436	0.0191
Wholesale 1 - EB	0	0.0000
Wholesale 2 - Ed/Hlp	0	0.0000
Wholesale 3 - Rahway	0	0.0000
Wholesale 4 - SRB	0	0.0000
Private Fire Protection	<u>8,095</u>	<u>0.1079</u>
 Total	 75,046	 <u><u>1.0000</u></u>

MIDDLESEX WATER COMPANY

BASIS FOR ALLOCATING METER COSTS TO CUSTOMER CLASSIFICATIONS

Meter Size (1)	5/8" Equivalent (2)	Residential		Commercial		Industrial		Private Fire Protection		Total	
		Number of Meters (3)	Weighting (4)=(2)X(3)	Number of Meters (5)	Weighting (6)=(2)X(5)	Number of Meters (7)	Weighting (8)=(2)X(7)	Number of Meters (9)	Weighting (10)=(2)X(9)	Number of Meters (11)	Weighting (12)
5/8	1.0	45,708	45,708	1,021	1,021	0	0	0	0	46,729	46,729
3/4	1.5	7,831	11,747	397	596	2	3	0	0	8,230	12,346
1	2.5	1,282	3,205	503	1,258	8	20	12	30	1,793	4,513
1-1/2	5.0	112	560	397	1,985	20	100	0	0	529	2,645
2	8.0	40	320	998	7,984	37	296	53	424	1,075	9,024
3	15.0	0	0	235	3,525	38	570	40	600	273	4,695
4	25.0	0	0	60	1,500	80	2,000	286	7,150	140	10,650
6	50.0	0	0	7	350	52	2,600	313	15,650	59	18,600
8	80.0	0	0	12	960	17	1,360	273	21,840	29	24,160
Over 8	100.0	0	0	5	500	8	800	57	5,700	13	7,000
Total		54,973	61,540	3,635	19,679	262	7,749	1,034	51,394	58,870	140,362

MIDDLESEX WATER COMPANY

BASIS FOR ALLOCATING SERVICE COSTS TO CUSTOMER CLASSIFICATIONS

Service Size (1)	3/4" Equivalent (2)	Residential		Commercial		Industrial		Private Fire Protection		Total	
		Number of Services (3)	Weighting (4)=(2)X(3)	Number of Services (5)	Weighting (6)=(2)X(5)	Number of Services (7)	Weighting (8)=(2)X(7)	Number of Services (9)	Weighting (10)=(2)X(9)	Number of Services (11)	Weighting (12)
3/4	1.00	53,539	53,539	1,418	1,418	2	2	0	0	54,959	54,959
1	2.00	1,282	2,564	503	1,006	8	16	12	24	1,805	3,586
1-1/2	2.70	112	302	397	1,072	20	54	0	0	529	1,428
2	4.00	40	160	998	3,992	37	148	53	212	1,128	4,300
3	4.00	0	0	240	960	38	152	40	160	318	1,112
4	5.30	0	0	60	318	88	466	286	1,516	434	784
6	8.00	0	0	7	56	52	416	313	2,504	372	472
8	10.70	0	0	12	128	17	182	273	2,921	302	310
Over 8	13.30	0	0	5	67	8	106	57	758	70	173
Total		54,973	56,565	3,635	8,950	262	1,436	1,034	8,095	59,917	67,124

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 10. ALLOCATION OF TRANSMISSION AND DISTRIBUTION OPERATION SUPERVISION AND ENGINEERING, STRUCTURES AND IMPROVEMENTS, AND OTHER EXPENSES.

Factors are based on transmission and distribution operation expenses other than those being allocated, as follows:

<u>Customer Classification</u>	<u>Transmission & Distribution Operating Expenses</u>	<u>Allocation Factor</u>
(1)	(2)	(3)
Residential	\$ 2,853,020	0.4933
Commercial	824,531	0.1426
Industrial	430,716	0.0745
Wholesale 1 - EB	11,152	0.0019
Wholesale 2 - Ed/Hlp	4,583	0.0008
Wholesale 3 - Rahway	-	0.0000
Wholesale 4 - SRB	454,509	0.0786
Private Fire Protection	433,086	0.0749
Public Fire Protection	<u>771,593</u>	<u>0.1334</u>
Total	<u><u>5,783,190</u></u>	<u><u>1.0000</u></u>

FACTOR 11. NOT USED IN THIS ALLOCATION.

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 12. ALLOCATION OF BILLING AND COLLECTING COSTS.

Factors are based on the total number of bills.

<u>Customer Classification</u> (1)	<u>Total Number of Bills</u> (2)	<u>Allocation Factor</u> (3)
Residential	219,892	0.8000
Commercial	43,620	0.1587
Industrial	3,144	0.0114
Wholesale 1 - EB	12	0.0000
Wholesale 2 - Ed/Hlp	24	0.0001
Wholesale 3 - Rahway	12	0.0000
Wholesale 4 - SRB	24	0.0001
Private Fire Protection	8,104	0.0295
Public Fire Protection	<u>48</u>	<u>0.0002</u>
 Total	 <u><u>274,880</u></u>	 <u><u>1.0000</u></u>

FACTOR 13. ALLOCATION OF METER READING COSTS.

Factors are based on the number of metered customer bills.

<u>Customer Classification</u> (1)	<u>Total Metered Customer Bills</u> (2)	<u>Allocation Factor</u> (3)
Residential	219,892	0.8244
Commercial	43,620	0.1635
Industrial	3,144	0.0118
Wholesale 1 - EB	12	0.0000
Wholesale 2 - Ed/Hlp	24	0.0001
Wholesale 3 - Rahway	12	0.0000
Wholesale 4 - SRB	<u>24</u>	<u>0.0001</u>
 Total	 <u><u>266,728</u></u>	 <u><u>1.0000</u></u>

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 14. ALLOCATION OF ADMINISTRATIVE AND GENERAL EXPENSES

Factors are based on the allocation of all other operation and maintenance expenses excluding purchased water, power, chemicals and waste disposal.

<u>Customer Classification</u> (1)	<u>Operation & Maintenance Expenses</u> (2)	<u>Allocation Factor</u> (3)
Residential	\$ 8,244,281	0.5227
Commercial	2,273,342	0.1441
Industrial	1,017,817	0.0645
Wholesale 1 - EB	847,220	0.0537
Wholesale 2 - Ed/Hlp	327,071	0.0207
Wholesale 3 - Rahway	90	0.0000
Wholesale 4 - SRB	1,282,331	0.0813
Private Fire Protection	648,973	0.0411
Public Fire Protection	<u>1,130,669</u>	<u>0.0717</u>
Total	<u>\$ 15,771,795</u>	<u>1.0000</u>

FACTOR 15. ALLOCATION OF CASH WORKING CAPITAL

Factors are based on the allocation of all other operation and maintenance expenses excluding regulatory expense.

<u>Customer Classification</u> (1)	<u>Operation & Maintenance Expenses</u> (2)	<u>Allocation Factor</u> (3)
Residential	\$ 25,133,208	0.4690
Commercial	8,382,465	0.1564
Industrial	4,359,429	0.0814
Wholesale 1 - EB	3,905,243	0.0729
Wholesale 2 - Ed/Hlp	1,762,602	0.0329
Wholesale 3 - Rahway	248	0.0000
Wholesale 4 - SRB	5,520,328	0.1030
Private Fire Protection	1,753,472	0.0327
Public Fire Protection	<u>2,770,067</u>	<u>0.0517</u>
Total	<u>\$ 53,587,062</u>	1.0000

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 16. ALLOCATION OF LABOR RELATED TAXES AND BENEFITS.

Factors are based on the allocation of direct labor expense.

<u>Customer Classification</u> (1)	<u>Direct Labor Expense</u> (2)	<u>Allocation Factor</u> (3)
Residential	\$ 8,226,654	0.5098
Commercial	2,268,330	0.1406
Industrial	994,196	0.0616
Wholesale 1 - EB	1,012,428	0.0627
Wholesale 2 - Ed/Hlp	392,117	0.0243
Wholesale 3 - Rahway	121	0.0000
Wholesale 4 - SRB	1,392,609	0.0863
Private Fire Protection	721,263	0.0447
Public Fire Protection	1,130,212	0.0700
Total	<u>\$ 16,137,931</u>	<u>1.0000</u>

FACTOR 17. ALLOCATION OF ORGANIZATION, FRANCHISES AND CONSENTS,
MISCELLANEOUS INTANGIBLE PLANT AND OTHER RATE BASE ELEMENTS.

Factors are based on the allocation of the original cost less depreciation other than those items being allocated, as follows:

<u>Customer Classification</u> (1)	<u>Original Cost Less Depreciation</u> (2)	<u>Allocation Factor</u> (3)
Residential	\$ 292,063,027	0.4715
Commercial	84,322,127	0.1361
Industrial	42,650,451	0.0689
Wholesale 1 - EB	30,125,771	0.0486
Wholesale 2 - Ed/Hlp	11,706,735	0.0189
Wholesale 3 - Rahway	-	0.0000
Wholesale 4 - SRB	54,992,586	0.0888
Private Fire Protection	43,943,762	0.0709
Public Fire Protection	59,582,855	0.0962
Total	<u>\$ 619,387,314</u>	<u>1.0000</u>

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 18. ALLOCATION OF INCOME TAXES AND INCOME AVAILABLE FOR RETURN.

Factors are based on the allocation of the original cost measure of value rate base as shown on the following pages and summarized below.

Customer Classification	Original Cost Measure of Value	Allocation Factor
(1)	(2)	(3)
Residential	\$ 293,702,982	0.4699
Commercial	85,009,202	0.1360
Industrial	42,963,225	0.0687
Wholesale 1 - EB	30,714,774	0.0491
Wholesale 2 - Ed/Hlp	11,936,381	0.0191
Wholesale 3 - Rahway	(34)	0.0000
Wholesale 4 - SRB	56,630,754	0.0906
Private Fire Protection	44,949,426	0.0719
Public Fire Protection	59,098,300	0.0946
Total	<u>\$ 625,005,009</u>	<u>1.0000</u>

FACTOR 19. ALLOCATION OF REGULATORY COMMISSION EXPENSES, ASSESSMENTS AND OTHER WATER REVENUES.

The factors are based on the allocation of the total cost of service, excluding those items being allocated.

Customer Classification	Total Cost of Service	Allocation Factor
(1)	(2)	(3)
Residential	\$ 67,323,915	0.4759
Commercial	20,722,585	0.1465
Industrial	10,562,894	0.0747
Wholesale 1 - EB	7,527,425	0.0532
Wholesale 2 - Ed/Hlp	3,681,328	0.0260
Wholesale 3 - Rahway	296	0.0000
Wholesale 4 - SRB	13,404,770	0.0948
Private Fire Protection	7,805,481	0.0552
Public Fire Protection	10,425,750	0.0737
Total	<u>\$ 141,454,445</u>	<u>1.0000</u>

MIDDLESEX WATER COMPANY
TOTAL WATER

COST OF SERVICE ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref.	Cost of Service	Wholesale					Fire Protection			
			Residential	Commercial	Industrial	East Brunswick	Edison/Hld Park	Rahway	Wholesale 4 So. River Basin	Private	Public
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
RATE BASE											
SOURCE OF SUPPLY											
Water Rights - CJO	2A	105,088	47,939	16,309	9,219	-	9,653	-	20,931	677	360
ROW - Supply Main	2	11,152	4,135	1,394	785	-	827	-	1,792	57	30
Water Rights - Other	2B	16,968	10,826	3,756	2,140	-	-	-	-	160	85
Well Field Land	2B	166,511	106,242	36,858	21,003	-	-	-	-	1,571	837
Supply Structures-D&R	2	152,806	56,658	19,095	10,752	-	11,326	-	24,559	782	416
Supply Structures-Other	2B	724,904	462,522	160,462	91,437	-	-	-	-	6,841	3,642
Intakes	2	24,228	8,983	3,028	1,705	-	1,796	-	3,894	124	66
Wells-CJO	2A	18,777	8,566	2,914	1,647	-	1,725	-	3,740	121	64
Wells-Other	2B	72,599	46,322	16,070	9,157	-	-	-	-	685	365
Supply Mains	2	11,185,461	4,147,350	1,397,753	787,075	-	829,087	-	1,797,708	57,229	30,467
PUMPING PLANT											
Land - D&R	3	2,947	985	332	187	-	197	-	427	72	238
Land - Oak St	DA	6,272	47,743	16,565	9,440	-	-	-	6,272	2,352	6,870
Land - Other	3B	82,970	367,314	123,806	69,718	-	73,435	-	159,228	26,859	88,670
Structures - D&R	3	1,098,469	813,379	274,156	154,384	-	162,614	-	352,595	59,476	196,350
Structures - CJO	3A	2,432,448	-	-	-	-	208	-	1,219	-	-
Structures - Oak St Booster	DA	1,706	-	-	-	-	-	-	-	-	-
Structures - Other Pumping	3B	1,602,458	922,100	319,935	182,318	-	-	-	-	45,427	132,677
Power Production Equipment - CJO	2	1,174,625	435,528	146,783	82,653	-	87,065	-	188,784	6,010	3,199
Power Production Equipment - Other	3B	173,290	99,716	34,598	19,716	-	-	-	14,348	4,912	14,348
Electric Pumping Equipment	2	4,414,714	1,476,223	497,573	280,195	-	295,132	-	639,934	107,945	356,361
Electric Pumping Equipment - CJO Thermal	3	391	145	49	28	-	29	-	63	2	1
Electric Pumping Equipment - Oak St	DA	11,591	-	-	-	-	-	-	11,591	-	-
Electric Pumping Equipment - North Meter Pit	DA	155	-	-	-	-	-	-	155	-	-
Electric Pumping Equipment - East Brunswick	DA	2,306	-	-	-	-	-	-	2,306	-	-
Electric Pumping Equipment - Other	3B	5,405,684	3,110,586	1,079,260	615,027	-	-	-	-	153,242	447,569
Other Pumping Equipment - CJO Booster	2B	184,056	117,436	40,742	23,216	-	-	-	-	1,737	925
Other Pumping Equipment - Other	3B	382,014	219,822	76,270	43,463	-	-	-	-	10,829	31,629
WATER TREATMENT											
Land - CJO	2	143,861	53,341	17,977	10,123	-	10,663	-	23,121	736	392
Structures - CJO	2	84,910,739	31,483,240	10,610,584	5,974,818	-	6,293,739	-	13,646,709	434,432	231,283
Structures - North Meter Pit	DA	3,635	-	-	-	-	-	-	3,635	-	-
Structures - Other	2B	330,463	210,851	73,150	41,684	-	-	-	-	3,118	1,660
Water Treatment Equipment - CJO	2	51,079,590	18,939,312	6,382,989	3,594,260	-	3,786,113	-	8,209,424	261,341	139,132
Water Treatment Equipment - No. Meter Pit	DA	1,240	-	-	-	-	-	-	1,240	-	-
Water Treatment Equipment - Tices Lane	2	984	365	123	69	-	73	-	158	5	3
Water Treatment Equipment - Other	2B	(170,153)	(108,566)	(37,664)	(21,463)	-	-	-	-	(1,606)	(855)
TRANSMISSION & DISTRIBUTION											
Land - ROW 48" Main	3A	61,673	25,373	8,633	4,880	-	5,109	-	11,079	1,582	5,018
Land - ROW SRB	3	563,859	195,235	65,806	37,057	-	39,032	-	84,633	14,276	47,130
Land - ROW Other	3	155,805	52,099	17,560	9,889	-	10,416	-	22,585	3,810	12,577
Land - Storage	5B	64,547	29,415	7,831	4,300	-	-	-	-	4,884	18,117
Reservoirs and Standpipes - CJO	5	899,232	337,746	73,245	36,982	-	23,327	-	50,601	65,876	251,260
Reservoirs and Standpipes - Other	5B	756,743	344,862	91,810	50,413	-	-	-	-	57,255	212,404
Small Mains	4A	927,153	722,740	204,413	-	-	-	-	-	-	-
T&D Mains - East Brunswick	DA	40,090	-	-	-	-	40,090	-	-	-	-
T&D Mains - Edison & HP	3A	209,715	86,279	29,354	16,595	-	17,374	-	37,673	5,378	17,062
T&D Mains - CJO PS	3	197,971	66,199	22,313	12,565	-	13,235	-	28,697	4,841	15,980
T&D Mains - Oak St PS	DA	49,092	-	-	-	-	34,142	-	49,092	-	-
T&D Mains - North Meter Pit	DA	5,683	-	-	-	-	-	-	-	-	-
Transmission Mains	3C	148,921,774	67,299,375	23,009,142	13,033,769	-	-	-	29,496,964	3,915,418	12,167,087

MIDDLESEX WATER COMPANY
TOTAL WATER

COST OF SERVICE ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account (1)	Factor Ref. (2)	Cost of Service (3)	Residential (4)	Commercial (5)	Industrial (6)	Wholesale 1 East Brunswick (7)	Wholesale 2 Edison/Hid Park (8)	Wholesale 3 Rahway (9)	Wholesale 4 So. River Basin (10)	Fire Protection Private (11)	Fire Protection Public (12)
Distribution Mains	4	146,900,497	84,052,257	22,376,965	12,285,717	-	-	-	-	6,361,398	21,824,160
Services-Retail	9	58,269,609	43,920,001	6,949,244	1,114,965	-	-	-	-	6,285,378	-
Services-Wholesale	8A	48,367	-	-	-	5,886	7,932	-	34,548	-	-
Meters-Retail	8	70,981,727	31,121,069	9,951,763	3,918,706	-	-	-	-	25,990,189	-
Meters-Wholesale	8A	38,871	-	-	-	4,731	6,375	-	27,765	-	-
Meters-Other	8	-	-	-	-	-	-	-	-	-	-
Fire Hydrants	7	23,163,460	-	-	-	-	-	-	-	-	-
Other T&D	4	1,084,214	620,356	165,155	90,676	-	-	-	-	46,951	23,163,460
GENERAL											
General Land	17	1,121,028	528,605	152,615	77,193	54,525	21,188	-	99,531	79,534	107,839
Office and Warehouse Building	17	11,533,639	5,438,519	1,570,166	794,196	560,973	217,992	-	1,024,019	818,279	1,109,495
Ronson Rd. WH and Shop	17	227,501	107,275	30,972	15,666	11,065	4,300	-	20,199	16,141	21,885
Office Furniture	17	16,008,974	7,548,797	2,179,429	1,102,363	778,645	302,578	-	1,421,364	1,135,791	1,540,006
Transportation Equipment	17	2,666,062	1,257,142	362,952	183,583	129,672	50,390	-	236,708	189,149	256,466
Stores	17	-	-	-	-	-	-	-	-	-	-
Tools, Shop and Garage Equipment	17	1,813,092	854,937	246,831	124,848	88,185	34,268	-	160,976	128,634	174,413
Lab Equipment	2	272,284	100,957	34,025	19,159	52,064	20,182	-	43,761	1,393	742
Power Operated Equipment	17	3,872	1,826	527	267	188	73	-	344	275	372
Communication Equipment	17	2,171,764	1,024,063	295,659	149,546	105,630	41,047	-	192,821	154,080	208,916
Misc. Equipment	17	5,104	2,407	695	351	248	96	-	453	362	491
RWIP	17	14,489	6,832	1,973	998	705	274	-	1,286	1,028	1,394
Total Utility Plant in Service		654,952,840	308,833,430	89,163,945	45,099,461	31,855,607	12,378,942	-	58,150,287	46,467,035	63,004,132

MIDDLESEX WATER COMPANY
TOTAL WATER

COST OF SERVICE ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref.	Cost of Service	Residential	Commercial	Industrial	Wholesale 1 East Brunswick	Wholesale 2 Edison/Hid Park	Wholesale 3 Rahway	Wholesale 4 So. River Basin	Fire Protection Private	Fire Protection Public
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Other Rate Base Items											
CIAC/Advances T&D Mains	6	(20,901,053)	(11,231,424)	(3,062,577)	(1,686,318)	(527,676)	(204,550)	-	(443,525)	(847,417)	(2,897,567)
CIAC/Advances Meters	8	(39,004)	(17,101)	(5,468)	(2,153)	-	-	-	-	(14,281)	-
CIAC/Advances Services	9	(560,337)	(422,347)	(66,826)	(10,722)	-	-	-	-	(60,442)	-
CIAC/Advances Hydrants	7	(612,674)	-	-	-	-	-	-	-	-	(612,674)
CIAC Pumping Plant	3	(340,944)	(114,007)	(38,427)	(21,639)	(58,798)	(22,793)	-	(49,421)	(8,336)	(27,521)
Materials and Supplies	6	5,285,674	2,840,318	774,496	426,454	133,444	51,729	-	112,163	214,303	732,767
Materials and Supplies - Stores	14	-	-	-	-	-	-	-	-	-	-
Cash Working Capital	17	11,173,271	5,268,592	1,521,106	769,381	543,446	211,181	-	992,024	792,712	1,074,829
Deferred Income Taxes	17	(56,354,393)	(26,573,089)	(7,671,972)	(3,880,513)	(2,740,966)	(1,065,127)	-	(5,003,451)	(3,998,183)	(5,421,092)
Unamortized Acquisition Adjustment	17	154,967	73,073	21,097	10,671	7,537	2,929	-	13,759	10,994	14,907
Regulatory Assets/Liability	17	36,221,888	17,079,902	4,931,174	2,494,206	1,761,761	684,612	-	3,215,977	2,569,840	3,484,417
Injuries and Damages Reserve	16	(31,834)	(16,228)	(4,475)	(1,961)	(1,997)	(774)	(0)	(2,747)	(1,423)	(2,229)
Retirement Plan Reserve	16	(4,105,790)	(2,093,014)	(577,105)	(252,942)	(257,581)	(99,762)	(31)	(354,306)	(183,503)	(287,547)
Road Opening Permit Deposit	4	241,602	138,238	36,803	20,206	-	-	-	-	10,462	35,893
Customer Deposits	12	(79,205)	(63,360)	(12,569)	(906)	(3)	(7)	(3)	(7)	(2,335)	(14)
Total Other Rate Base Elements		(29,947,831)	(15,130,448)	(4,154,743)	(2,136,236)	(1,140,833)	(442,561)	(34)	(1,519,534)	(1,517,609)	(3,905,832)
Total Original Cost Measure of Value		625,005,009	293,702,982	85,009,202	42,963,225	30,714,774	11,936,381	(34)	56,630,754	44,949,426	59,098,300

MIDDLESEX WATER COMPANY

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS, cont.

FACTOR 20. ALLOCATION OF FRANCHISE AND OTHER TAXES

Factors are based on the allocation of the cost of service, excluding East Brunswick and other costs allocated using Factor 20.

<u>Customer Classification</u> (1)	<u>Cost of Service</u> (2)	<u>Allocation Factor</u> (3)
Residential	\$ 58,553,895	0.5027
Commercial	18,023,136	0.1547
Industrial	9,186,908	0.0789
Wholesale 1 - EB	-	0.0000
Wholesale 2 - Ed/Hlp	3,201,776	0.0275
Wholesale 3 - Rahway	257	0.0000
Wholesale 4 - SRB	11,658,584	0.1001
Private Fire Protection	6,788,691	0.0583
Public Fire Protection	<u>9,067,629</u>	<u>0.0778</u>
 Total	 <u><u>\$ 116,480,877</u></u>	 <u><u>1.0000</u></u>

MIDDLESEX WATER COMPANY

BASIS FOR ALLOCATING DEMAND RELATED COSTS OF FIRE SERVICE
TO PRIVATE AND PUBLIC FIRE PROTECTION CUSTOMER CLASSIFICATIONS

<u>Description</u> (1)	<u>Restrictive Diameters Squared</u> (2)	<u>Quantity</u> (3)	<u>Relative Demand</u> (4)=(2)x(3)	<u>Allocation Factor</u> (5)
<u>PRIVATE FIRE PROTECTION</u>				
<u>Fire Lines</u>				
1 -inch	1.00	12	12	
2 -inch	4.00	53	212	
3 -inch	9.00	40	360	
4 -inch	16.00	286	4,576	
6 -inch	36.00	313	11,268	
8 -inch	64.00	273	17,472	
10 -inch	100.00	56	5,600	
12 -inch	144.00	1	144	
Private Hydrants	32.75	0	0	
Total Private Fire Protection		1034	39,644	0.2022
<u>PUBLIC FIRE PROTECTION</u>				
<u>Hydrant</u>	<u>Nozzle Sizes</u>			
6" Standard	4 1/2" & 2-2 1/2"	32.75	4,775	156,381
Total Public Fire Protection		4,775	156,381	0.7978
Total Fire Protection		5,809	196,025	1.0000

MIDDLESEX WATER COMPANY

SUMMARY OF AVERAGE DAILY SEND OUT AND MAXIMUM DAILY USAGE
FOR THE YEARS 2008-2022

Year	Average Daily Send out (MGD)	Maximum Daily Use		Maximum Daily Use	
		MGD	Ratio to Average	MGD	Ratio to Average
(1)	(2)	(3)	(4)		
2008	45.9	62.5	1.36	76.00	1.66
2009	45.4	58.4	1.29	81.45	1.79
2010	46.0	80.1	1.74	90.55	1.97
2011	42.7	72.4	1.69	84.25	1.97
2012	43.0	67.4	1.57	80.80	1.88
2013	40.2	52.9	1.32	66.20	1.65
2014	39.1	51.8	1.33	64.95	1.66
2015	39.6	54.4	1.37	71.10	1.80
2016	41.1	56.4	1.37	74.95	1.82
2017	39.6	55.0	1.39	65.60	1.66
2018	37.0	55.9	1.51	67.90	1.83
2019	36.1	47.8	1.32	61.00	1.69
2020	37.6	55.0	1.46	69.30	1.84
2021	38.2	60.8	1.59	71.60	1.87
2022	38.9	56.9	1.46	75.80	1.95

MIDDLESEX WATER COMPANY

CALCULATION OF MONTHLY CUSTOMER COST

		<u>5/8 Inch Cost Per Month</u>
(1) Cost Related to Meters	\$ 7,356,079	
(2) Meter Equivalents X 12	1,684,344	
(3) Cost per Bill - Meter related		\$ 4.37
(4) Cost Related to Services	\$ 8,351,643	
(5) Service Equivalents X 12	803,412	
(6) Cost per Bill - Services related		\$ 10.40
(7) Cost Related to Billing and Collecting	\$ 7,475,911	
(8) Number of Customers X 12	706,440	
(9) Cost per Bill - Billing and Collecting		\$ 10.58
(10) Cost Related to Unrecovered Public Fire		
(11) Meter Equivalents X 12		
(12) Cost per Bill - Public Fire related		
(13) Total Customer Charge (3)+(6)+(9)+(12)		<u>\$ 25.35</u>

MIDDLESEX WATER COMPANY
TOTAL WATER

COMPARISON OF REVENUES UNDER PRESENT AND PROPOSED RECOMMENDED RATES

Customer Classification (1)	Proforma Revenues, Under Present Rates		Pro Forma Revenues Under Proposed Recommended Rates		Proposed Increase	
	Amount (2)	Percent of Total (3)	Amount (4)	Percent of Total (5)	Amount (6)	Percent Increase (7)
Residential	\$ 46,552,768	43.0%	\$ 61,124,852	43.0%	\$ 14,572,084	31.3%
Commercial	20,555,054	19.0%	27,139,414	19.1%	6,584,359	32.0%
Industrial	11,970,720	11.1%	15,881,171	11.2%	3,910,450	32.7%
Total General Metered Service	\$ 79,078,543	73.1%	\$ 104,145,436	73.3%	\$ 25,066,893	31.7%
Wholesale 1 - East Brunswick	5,109,767	4.7%	7,562,134	5.3%	2,452,367	48.0%
Wholesale 2 - Edison/Hld Park	2,766,554	2.6%	3,698,345	2.6%	931,791	33.7%
Wholesale 3 - Rahway	-	0.0%	-	0.0%	-	-
Wholesale 4 - South River Basin	9,834,216	9.1%	13,464,321	9.5%	3,630,104	36.9%
Private Fire Service	6,263,222	5.8%	7,839,833	5.5%	1,576,610	25.2%
Public Fire	5,170,681	4.8%	5,376,484	3.8%	205,803	4.0%
Total Sales	108,222,984	100.0%	142,086,552	100.0%	33,863,568	31.3%
Rounding			201		201	
Other Revenues	\$ 226,843		\$ 226,843		-	0.0%
Total	\$ 108,449,827		\$ 142,313,596		\$ 33,863,769	31.2%

MIDDLESEX WATER COMPANY
PRESENT AND PROPOSED RECOMMENDED RATES

GENERAL WATER SERVICE
CONSUMPTION CHARGES

	/-----RATE PER TCF-----\ <u>CURRENT</u> <u>PROPOSED</u>	
BASE RATE	\$66.5289	\$89.1407 WQ Adjusted Rate

GENERAL WATER SERVICE FACILITIES CHARGES

METER SIZE	/-----MONTHLY-----\ <u>CURRENT</u> <u>PROPOSED</u>		/-----QUARTERLY-----\ <u>CURRENT</u> <u>PROPOSED</u>	
	5/8"	\$20.20	\$25.35	\$60.60
3/4"	30.32	38.10	\$90.96	\$114.30
1"	50.52	63.40	\$151.56	\$190.20
1 1/2"	101.02	126.80	\$303.06	\$380.40
2"	161.64	202.90	\$484.92	\$608.70
3"	303.06	380.30	\$909.18	\$1,140.90
4"	505.10	633.90	\$1,515.30	\$1,901.70
6"	1,010.19	1,267.70	\$3,030.57	\$3,803.10
8"	1,616.29	2,028.40	\$4,848.87	\$6,085.20
10"	2,323.41	2,915.80	\$6,970.23	\$8,747.40
12"	4,343.75	5,451.20	\$13,031.25	\$16,353.60

PRIVATE FIRE SERVICE WITH HOSE CONNECTIONS

METER SIZE	/-----MONTHLY-----\ <u>CURRENT</u> <u>PROPOSED</u>		/-----QUARTERLY-----\ <u>CURRENT</u> <u>PROPOSED</u>	
	2"	\$70.66	\$87.34	\$211.98
3"	155.43	192.11	\$466.29	\$576.33
4"	259.47	320.70	\$778.41	\$962.10
6"	530.97	656.28	\$1,592.91	\$1,968.84
8"	760.26	939.68	\$2,280.78	\$2,819.04
10"	1,219.48	1,507.28	\$3,658.44	\$4,521.84
12"	1,803.21	2,228.77	\$5,409.63	\$6,686.31

PRIVATE FIRE SERVICE WITHOUT HOSE CONNECTIONS

METER SIZE	/-----MONTHLY-----\ <u>CURRENT</u> <u>PROPOSED</u>		/-----QUARTERLY-----\ <u>CURRENT</u> <u>PROPOSED</u>	
	1"	\$23.57	\$29.13	\$70.71
2"	58.29	72.05	\$174.87	\$216.15
3"	116.72	144.27	\$350.16	\$432.81
4"	193.66	239.36	\$580.98	\$718.08
6"	393.60	486.49	\$1,180.80	\$1,459.47
8"	562.75	695.56	\$1,688.25	\$2,086.68
10"	901.12	1,113.78	\$2,703.36	\$3,341.34
12"	1,331.78	1,646.08	\$3,995.34	\$4,938.24

SUMMARY OF PROPOSED RATES

MUNICIPAL SERVICE - PUBLIC FIRE

	<u>CURRENT</u>	<u>PROPOSED</u>
INCH FOOT	\$0.04056	\$0.04056
HYDRANT	\$783.72	\$ 826.82

MIDDLESEX WATER COMPANY
PRESENT AND PROPOSED RECOMMENDED RATES

SERVICE UNDER CONTRACT (RATE SCHEDULE NO. 5)

RATE PER MILLION GALLONS

	<u>CURRENT</u>	<u>PROPOSED</u>
ALL WATER USE	\$2,841.55	\$3,798.60

SERVICE UNDER CONTRACT (RATE SCHEDULE NO. 6)

RATE PER MILLION GALLONS

	<u>CURRENT</u>	<u>PROPOSED</u>
ALL WATER USE	\$2,034.35	\$3,010.71

TRANSMISSION SERVICE SOUTH RIVER BASIN (RATE SCHEDULE NO. 7)

RATE PER MILLION GALLONS

	<u>CURRENT</u>	<u>PROPOSED</u>
ALL WATER USE	\$1,460.00	\$2,072.76

TRANSMISSION SERVICE - NORTHEAST SECTOR (RATE SCHEDULE NO. 8)

RATE PER MILLION GALLONS

	<u>CURRENT</u>	<u>PROPOSED</u>
ALL WATER USE	\$1,565.83	\$2,223.01

MIDDLESEX WATER COMPANY
BILL ANALYSIS UNDER PRESENT AND PROPOSED RECOMMENDED RATES

			EXISTING			Proposed		
RESIDENTIAL	MONTHLY	QTRLY	MONTHLY	QTRLY	REVENUE	MONTHLY	QTRLY	REVENUE
	BILLS	BILLS	RATE	RATE		RATE	RATE	
5/8"		182,832		\$ 60.60	\$ 11,079,619		\$ 76.05	\$ 13,904,374
3/4"		31,324		90.96	2,849,231		114.30	3,580,333
1"		5,128		151.56	777,200		190.20	975,346
1 1/2"		448		303.06	135,771		380.40	170,419
2"		160		484.92	77,587		608.70	97,392
					14,919,408			18,727,864
USAGE (CCF)		476,018,185		0.0664541	31,633,360		0.0890659	42,396,988
					<u>\$ 46,552,768</u>			<u>\$ 61,124,852</u>
			EXISTING			EXISTING		
COMMERCIAL	MONTHLY	QTRLY	MONTHLY	QTRLY	REVENUE	MONTHLY	QTRLY	REVENUE
	BILLS	BILLS	RATE	RATE		RATE	RATE	
5/8"	12,252		\$ 20.20		\$ 247,490	\$ 25.35		\$ 310,588
3/4"	4,764		30.32		144,444	38.10		181,508
1"	6,036		50.52		304,939	63.40		382,682
1 1/2"	4,764		101.02		481,259	126.80		604,075
2"	11,976		161.64		1,935,801	202.90		2,429,930
3"	2,820		303.06		854,629	380.30		1,072,446
4"	720		505.10		363,672	633.90		456,408
6"	84		1,010.19		84,856	1,267.70		106,487
8"	144		1,616.29		232,746	2,028.40		292,090
10"	48		2,323.41		111,524	2,915.80		139,958
12"	12		4,343.75		52,125	5,451.20		65,414
					4,813,485			6,041,588
USAGE (CCF)		236,878,825		0.0664541	15,741,569		0.0890659	21,097,826
					<u>\$ 20,555,054</u>			<u>\$ 27,139,414</u>
			EXISTING			EXISTING		
INDUSTRIAL	MONTHLY	QTRLY	MONTHLY	QTRLY	REVENUE	MONTHLY	QTRLY	REVENUE
	BILLS	BILLS	RATE	RATE		RATE	RATE	
5/8"	0		\$ 20.20		\$ -	\$ 25.35		\$ -
3/4"	24		30.32		728	38.10		914
1"	96		50.52		4,850	63.40		6,086
1 1/2"	240		101.02		24,245	126.80		30,432
2"	444		161.64		71,768	202.90		90,088
3"	456		303.06		138,195	380.30		173,417
4"	960		505.10		484,896	633.90		608,544
6"	624		1,010.19		630,359	1,267.70		791,045
8"	204		1,616.29		329,723	2,028.40		413,794
10"	96		2,323.41		223,047	2,915.80		279,917
					1,907,811			2,394,236
USAGE (CCF)		151,426,462		0.0664541	10,062,909		0.0890659	13,486,934
					<u>\$ 11,970,720</u>			<u>\$ 15,881,171</u>
GENERAL METERED SERVICE REVENUE					\$ 79,078,543	\$ 104,145,436		
			EXISTING			EXISTING		
PRIVATE FIRE WITH HOSE	MONTHLY	QTRLY	MONTHLY	QTRLY	REVENUE	MONTHLY	QTRLY	REVENUE
	BILLS	BILLS	RATE	RATE		RATE	RATE	
1"	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2"	12	8	70.66	211.98	2,544	87.34	\$262.02	3,144
3"	0	0	155.43	466.29	0	192.11	\$576.33	0
4"	120	28	259.47	778.41	52,932	320.70	\$962.10	65,423
6"	948	4	530.97	1,592.91	509,731	656.28	\$1,968.84	630,029
8"	1,500	0	760.26	2,280.78	1,140,390	939.68	\$2,819.04	1,409,520
10"	540	0	1,219.48	3,658.44	658,519	1,507.28	\$4,521.84	813,931
					2,364,116			2,922,047
PRIVATE FIRE WITHOUT HOSE	MONTHLY	QTRLY	MONTHLY	QTRLY	REVENUE	MONTHLY	QTRLY	REVENUE
	BILLS	BILLS	RATE	RATE		RATE	RATE	
1"	12	44	\$ 23.57	\$ 70.71	\$ 3,394	\$ 29.13	\$87.39	\$ 4,195
2"	324	92	58.29	174.87	34,974	72.05	\$216.15	43,230
3"	396	28	116.72	350.16	56,026	144.27	\$432.81	69,250
4"	2,736	164	193.66	580.98	625,134	239.36	\$718.08	772,654
6"	2,208	196	393.60	1,180.80	1,100,506	486.49	\$1,459.47	1,360,226
8"	1,752	8	562.75	1,688.25	999,444	695.56	\$2,086.68	1,235,315
10"	132	0	901.12	2,703.36	118,948	1,113.78	\$3,341.34	147,019
12"	12	0	1,331.78	3,995.34	15,981	1,646.08	\$4,938.24	19,753
					2,954,407			3,651,641
					5,318,523			6,573,688
USAGE (CCF)		14,215,819		0.0664541	944,699		0.0890659	1,266,145
					<u>\$ 6,263,222</u>			<u>\$ 7,839,833</u>
PUBLIC FIRE	INCH FEET	HYDRANTS	RATE	HYD. CHG	REVENUE	RATE	HYD. CHG	REVENUE
	35,217,412	4,775	\$ 0.040560	\$ 783.72	\$ 5,170,681	\$ 0.040560	\$826.82	\$ 5,376,484
USAGE (MG)			BASE RATE	TRANSMISSION RATE	REVENUE	BASE RATE	TRANSMISSION RATE	REVENUE
WHOLESALE 1	E. Brunswick	2,511.744	\$ 2,034.35		\$ 5,109,767	\$3,010.71		\$ 7,562,134
WHOLESALE 2	Edison/Hld Pk	973.607	\$ 2,841.55		\$ 2,766,554	\$ 3,798.60		\$ 3,698,345
WHOLESALE 3	Rahway	-	\$ 2,841.55	\$ 1,565.83	\$ -	\$ 3,798.60	\$2,223.01	\$ -
WHOLESALE 4	Old Bridge	984.132	\$ 2,841.55	\$ 1,460.00	\$ 4,233,295	\$ 3,798.60	\$2,072.76	\$ 5,778,196
	Marlboro	1,127.157	\$ 2,841.55		\$ 3,202,872	\$ 3,798.60		\$ 4,281,617
	Marlboro	1,642.500		\$ 1,460.00	\$ 2,398,050		\$2,072.76	\$ 3,404,508
		7,426.121			<u>\$ 17,710,538</u>			<u>\$ 24,724,800</u>
MISCELLANEOUS					121,233			121,233
BAYVIEW					105,611			105,611
ROUNDING					(1)			(1)
					<u>\$ 108,449,827</u>			<u>\$ 142,313,395</u>

MIDDLESEX WATER COMPANY
BILL ANALYSIS UNDER PRESENT AND COST OF SERVICE RATES

			EXISTING			COS Rates		
RESIDENTIAL	MONTHLY BILLS	QTRLY BILLS	MONTHLY RATE	QTRLY RATE	REVENUE	MONTHLY RATE	QTRLY RATE	REVENUE
5/8"		182,832		\$ 60.60	\$ 11,079,619		\$ 88.03	\$ 16,094,701
3/4"		31,324		90.96	2,849,231		132.13	4,138,840
1"		5,128		151.56	777,200		220.16	1,128,980
1 1/2"		448		303.06	135,771		440.24	197,228
2"		160		484.92	77,587		704.42	112,707
					14,919,408			21,672,456
USAGE (CCF)		476,018,185		0.0664541	31,633,360		0.0965345	45,952,177
					<u>\$ 46,552,768</u>			<u>\$ 67,624,634</u>
			EXISTING			COS Rates		
COMMERCIAL	MONTHLY BILLS	QTRLY BILLS	MONTHLY RATE	QTRLY RATE	REVENUE	MONTHLY RATE	QTRLY RATE	REVENUE
5/8"	12,252		\$ 20.20		\$ 247,490	\$ 20.46		\$ 250,676
3/4"	4,764		30.32		144,444	30.70		146,255
1"	6,036		50.52		304,939	51.16		308,802
1 1/2"	4,764		101.02		481,259	102.30		487,357
2"	11,976		161.64		1,935,801	163.69		1,960,351
3"	2,820		303.06		854,629	306.90		865,458
4"	720		505.10		363,672	511.49		368,273
6"	84		1,010.19		84,856	1,022.98		85,930
8"	144		1,616.29		232,746	1,636.75		235,692
10"	48		2,323.41		111,524	2,352.82		112,935
12"	12		4,343.75		52,125	4,398.73		52,785
					4,813,485			4,874,514
USAGE (CCF)		236,878,825		0.0664541	15,741,569		0.0672952	15,940,808
					<u>\$ 20,555,054</u>			<u>\$ 20,815,322</u>
			EXISTING			COS Rates		
INDUSTRIAL	MONTHLY BILLS	QTRLY BILLS	MONTHLY RATE	QTRLY RATE	REVENUE	MONTHLY RATE	QTRLY RATE	REVENUE
5/8"	0		\$ 20.20		\$ -	\$ 17.90		\$ -
3/4"	24		30.32		728	26.87		645
1"	96		50.52		4,850	44.78		4,299
1 1/2"	240		101.02		24,245	89.54		21,490
2"	444		161.64		71,768	143.27		63,612
3"	456		303.06		138,195	268.61		122,486
4"	960		505.10		484,896	447.69		429,782
6"	624		1,010.19		630,359	895.37		558,711
8"	204		1,616.29		329,723	1,432.58		292,246
10"	96		2,323.41		223,047	2,059.33		197,696
					1,907,811			1,690,967
USAGE (CCF)		151,426,462		0.0664541	10,062,909		0.0589008	8,919,140
					<u>\$ 11,970,720</u>			<u>\$ 10,610,106</u>
GENERAL METERED SERVICE REVENUE					\$ 79,078,543	\$ 99,050,062		
			EXISTING			COS Rates		
PRIVATE FIRE WITH HOSE	MONTHLY BILLS	QTRLY BILLS	MONTHLY RATE	QTRLY RATE	REVENUE	MONTHLY RATE	QTRLY RATE	REVENUE
1"	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2"	12	8	70.66	211.98	2,544	88.45	\$265.35	3,184
3"	0	0	155.43	466.29	0	194.57	\$583.71	0
4"	120	28	259.47	778.41	52,932	324.81	\$974.43	66,261
6"	948	4	530.97	1,592.91	509,731	664.67	\$1,994.01	638,083
8"	1,500	0	760.26	2,280.78	1,140,390	951.70	\$2,855.10	1,427,550
10"	540	0	1,219.48	3,658.44	658,519	1,526.56	\$4,579.68	824,342
					2,364,116			2,959,421
PRIVATE FIRE WITHOUT HOSE	MONTHLY BILLS	QTRLY BILLS	MONTHLY RATE	QTRLY RATE	REVENUE	MONTHLY RATE	QTRLY RATE	REVENUE
1"	12	44	\$ 23.57	\$ 70.71	\$ 3,394	\$ 29.51	\$88.53	\$ 4,249
2"	324	92	58.29	174.87	34,974	72.97	\$218.91	43,782
3"	396	28	116.72	350.16	56,026	146.11	\$438.33	70,133
4"	2,736	164	193.66	580.98	625,134	242.43	\$727.29	782,564
6"	2,208	196	393.60	1,180.80	1,100,506	492.71	\$1,478.13	1,377,617
8"	1,752	8	562.75	1,688.25	999,444	704.46	\$2,113.38	1,251,121
10"	132	0	901.12	2,703.36	118,948	1,128.03	\$3,384.09	148,900
12"	12	0	1,331.78	3,995.34	15,981	1,667.14	\$5,001.42	20,006
					2,954,407			3,698,372
					5,318,523			6,657,793
USAGE (CCF)		14,215,819		0.0664541	944,699		0.0831880	1,182,586
					<u>\$ 6,263,222</u>			<u>\$ 7,840,379</u>
PUBLIC FIRE	INCH FEET	HYDRANTS	RATE	HYD. CHG	REVENUE	RATE	HYD. CHG	REVENUE
	35,217,412	4,775	\$ 0.040560	\$ 783.72	\$ 5,170,681	\$ 0.082148	\$1,587.29	\$ 10,472,350
			BASE RATE	TRANSMISSION RATE	REVENUE	BASE RATE	TRANSMISSION RATE	REVENUE
WHOLESALE 1	E.Brunswick	2,511,744	\$ 2,034.35		\$ 5,109,767	\$3,010.71		\$ 7,562,134
WHOLESALE 2	Edison/Hld Pk	973,607	\$ 2,841.55		\$ 2,766,554	\$ 3,798.60		\$ 3,698,345
WHOLESALE 3	Rahway	-	\$ 2,841.55	\$ 1,565.83	\$ -	\$ 3,798.60	\$2,223.01	\$ -
WHOLESALE 4	Old Bridge	984,132	\$ 2,841.55	\$ 1,460.00	\$ 4,233,295	\$ 3,798.60	\$2,072.76	\$ 5,778,196
	Marlboro	1,127,157	\$ 2,841.55		\$ 3,202,872	\$ 3,798.60		\$ 4,281,617
	Marlboro	1,642,500		\$ 1,460.00	\$ 2,398,050		\$2,072.76	\$ 3,404,508
		7,426,121			<u>\$ 17,710,538</u>			<u>\$ 24,724,800</u>
MISCELLANEOUS					121,233			121,233
BAYVIEW					105,611			105,611
ROUNDING					(1)			(1)
					<u>\$ 108,449,827</u>			<u>\$ 142,314,433</u>