

PENNICHUCK WATER WORKS, INC.  
MERRIMACK, NEW HAMPSHIRE

REPORT ON  
COST OF SERVICE ALLOCATIONS  
AND WATER RATE DESIGN

by

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REPORT ON  
COST OF SERVICE ALLOCATIONS  
AND WATER RATE DESIGN  
PENNICHUCK WATER WORKS, INC.

INTRODUCTION

This report sets forth the procedures, findings, and results of a cost of service allocation study for Pennichuck Water Works, Inc. The cost of service allocation study developed herein is based on the financial and operating parameters developed by the Company for use in a rate filing scheduled to be made before the New Hampshire Public Utilities Commission in June 2008.

A discussion of the rationale employed for cost of service allocation studies, including a description of the allocations, together with illustrative tables and a general discussion of water rate design follows.

GENERAL

The total cost of service is a utility's revenue requirement. This amount is determined by establishing the revenues needed (that is, required) from all customers, in total, to permit the utility to recover its expenses and taxes, and to produce a fair return on its rate base. The determination of the Company's revenue requirement involves the issues pertaining to revenues, expenses, taxes, and rate base that are typically raised in a rate proceeding.

A water system furnishes service to a number of different customer classifications, each of which has different needs and conditions of service. A water utility incurs costs in relation to its operating requirements and its investment in system facilities necessary to meet the needs of its customers. As these needs vary among the different classes of customers, so also does the utility's cost of providing service to the respective customer classes. A cost of service allocation study allocates the total cost of service (that is, the revenue requirement) among classes of

customers in accordance with recognized principles and generally accepted procedures in order to obtain an indication of the relative cost responsibilities of each such class of customers. Additionally, a cost of service allocation study provides the cost information necessary to develop appropriate customer, volumetric, and fire protection charges. A cost of service allocation study is one of a number of factors that may be considered in developing a schedule of rates and charges which produce the required revenues.

Several bases or methods have evolved for use in the allocation of water utility costs. In most methods, the costs are allocated or assigned in two major steps: first to functional categories, and second to customer classifications. In this particular study, the cost allocation process is based upon the "Base-Extra Capacity Method" as recognized by the American Water Works Association as set forth in its Water Rates Manual. Costs are identified and allocated to functional cost categories of base and extra capacity cost, customer cost, and fire hydrant cost. Once the cost of service has been determined by functional cost category, the next step is the allocation of such costs to the customer classifications.

### FUNCTIONAL COSTS

Base costs include those costs which would generally be incurred if the water system were operated at a uniform rate throughout the year and customers received water on the same basis. That is, base costs are generally associated with the provision of service under average or base load conditions without meeting peak demand requirements or water use variations. Base costs include the operating costs of supply, treatment, pumping, and transmission and distribution facilities, as well as the capital costs for water plant investment associated with serving customers at a constant, average, rate of use.

Extra capacity costs include those costs related to peak rates of water use in excess of

average requirements. The amount of system costs related to peak or maximum demands is affected by the customer mix within the area being studied. For example, in an area which is principally residential in nature, the peak demands on the system are relatively high. Alternatively, in an area comprising a mix of industrial, as well as residential and commercial customers, the delivery of water to industrial customers on a year-round basis generally results in an overall system peak load factor that is lower than would be the case for an essentially residential area. Extra capacity costs include capital and operating charges for additional plant and system capacity beyond that required for an average rate of use. This study considers extra capacity costs which are related to maximum day and maximum hour extra demand criteria.

Customer costs include those costs associated with connecting and serving customers irrespective of the volume of water used or demand requirements imposed. Customer costs generally comprise capital and operating costs related to services, meters, and customer installations and meter reading, billing, and collecting expense. In this study, customer costs have been sub-divided into costs related to commercial operations (that is, billing and collecting activities) and costs related to meters and services.

Fire hydrant costs comprise costs related to the capital investment in and the maintenance of fire hydrants.

The costs of the water utility are assigned to the various functional cost categories through the use of allocation factors which are developed for each item of capital investment, operating expense, taxes, and other items. Certain costs, such as chemical costs for water treatment, are assigned entirely to the base cost function. Other costs, such as meter reading and billing, are assigned directly to the customer cost function. Many cost elements, however, are not specifically related to a single cost function and are therefore allocated on the basis of other

relevant factors. For example, the capital investment in and associated costs of facilities required to meet maximum daily demands are allocated to the base cost and extra capacity maximum day functions in accordance with the relationship of the system maximum day consumption to the average annual rate of consumption. That is, if the maximum daily rate of water consumption is equal to 15 million gallons per day, and average use is 10 million gallons per day, facilities required to meet maximum daily demands would be allocated 66.7 percent ( $10 \div 15$ ) to the base cost function and 33.3 percent ( $5 \div 15$ ) to the extra capacity maximum day function. Costs associated with facilities required to meet maximum hourly demands are allocated in a similar manner.

#### CUSTOMER CLASSIFICATIONS

Customer classifications, or equivalently customer classes, are the groupings of those customers who are generally recognized as having reasonably similar service, consumption, and demand characteristics. Additionally, the practical necessities of utilities' billing systems have also been a factor in the way customer groups have been established. Pennichuck Water Works, Inc. maintains detailed customer group classifications as follows: general metered service, contract sales and service, and municipal and private fire protection service. These classes parallel the rate schedules presently used by Pennichuck Water Works, Inc. For purposes of the allocations made in this study, the general metered service class and the contract sales class have been consolidated into a water service class.

Each customer classification is allocated a portion of the base and extra capacity cost, the customer cost and the fire hydrant cost. This is accomplished by allocating the functional costs to each customer class in the proportion that the respective class responsibility for costs bears to the total cost responsibility of all customers served by the system. The sum of all functional

costs attributable to a customer class is the total cost of service to be recovered from that class.

Each individual functional cost category is allocated to the customer classifications in accordance with the following methodology.

Base costs are costs that would be incurred in supplying water at the annual average rate of usage exclusive of costs incurred in meeting peak demand requirements or water use variations. Base costs are therefore allocated to the customer classes in the same proportion that the total annual volume of water used by each customer class is to the total annual system water use.

Extra capacity costs are costs incurred in meeting peak rates of water usage in excess of average requirements. Extra capacity maximum day costs are allocated to the customer classes in accordance with the maximum day demand of each customer class which is in excess of the average rate of consumption. For fire protection costs, demand estimates are made on the basis of system capacity and fire demand requirements. Extra capacity maximum hour costs are allocated on a similar basis except that the maximum hour demand in excess of the maximum day demand is used as the controlling factor.

Customer costs are allocated to the customer classes on the basis of the billing costs and the numbers of meters and services.

Customer class billing requirements are generally used to allocate the so-called "commercial" customer costs (that is, the costs related to billing and collection and the maintenance of customer records) to the various customer classes. These costs are a function of the total number of bills rendered during the year and are therefore allocated to the customer classes on the basis of the annual number of bills rendered to each class.

Neither the municipal fire protection class nor the private fire protection class has any responsibility for the customer cost-meters or customer cost-services functional components.

Such facilities are not used in the provision of municipal fire protection service and any such facilities used by the private fire protection class were installed by customers in that class. Hence, the water service class has sole responsibility for these facilities.

Fire hydrant functional costs are directly assigned to the public fire protection service customer class.

Finally, the base, the extra capacity, the customer, and the fire hydrant costs, when summarized by customer class, define the total cost of service to be recovered from each customer class. This summation also provides an indication of the responsibility of each customer class for each of the functional costs which together constitute the total cost of service.

#### REVENUE REQUIREMENT

As previously discussed, the total cost of service is synonymous with a utility's revenue requirement. The total revenue requirement for a water utility should be sufficient to guarantee the provision of adequate water service and to assure the maintenance, development, and perpetuation of the water system. The principal components of the revenue requirement for an investor-owned water utility comprise operation and maintenance expenditures; depreciation and amortization expenses; income and other taxes; and, operating income or return on investment. Cost of service studies for investor-owned water utilities reporting to a regulatory authority are often prepared in conjunction with the processing of a rate relief application and the concurrent development of a pro forma revenue requirement. This particular study is based on a total revenue requirement of \$25,131,775 as developed by Pennichuck Water Works, Inc. for filing in a rate proceeding before the New Hampshire Board of Public Utilities Commission. This revenue requirement provides for the following expense categories:

<u>Item</u>	<u>Amount</u>
Operation and Maintenance	\$10,245,378
Depreciation and Amortization	3,212,481
Taxes Other Than Income Tax	2,594,959
Income Taxes	3,070,460
Utility Operating Income	<u>6,008,497</u>
Total Revenue Requirement	<u>\$25,131,775</u>

As subsequently discussed in this report, the \$25,131,775 revenue requirement is allocated to the previously-defined functional costs. This functional cost allocation then becomes an input into both the development of rates and charges and the cost allocations to customer classes.

Additionally, it is noted that a portion of the \$25,131,775 revenue requirement is attained by other revenue not received from water sales or the provision of fire protection service. The management of Pennichuck Water Works, Inc. has projected other revenue to be \$234,916 on a pro forma basis. This other revenue amount is deducted from the total revenue requirement during the development of the functional cost allocations. Thus, the revenue to be attained from water sales and the provision of fire protection service is \$24,896,859.

#### PLANT INVESTMENT/RATE BASE

Pennichuck Water Works, Inc. maintains its plant investment accounts in accordance with the fixed capital reporting requirements of the New Hampshire Public Utilities Commission. Under this system, the original cost and the related depreciation reserve for utility plant in service as of December 31, 2007 has been set forth in the 2007 Annual report to the New Hampshire Public Utilities Commission as follows:



<u>Functional Plant Account</u>	<u>Original Cost</u>	<u>Depreciation Reserve</u>
Source of Supply and Pumping Plant	\$43,701,481	\$7,379,974
Treatment Plant	8,706,512	3,941,621
Transmission and Distribution Plant	74,656,002	18,831,381
General Plant	7,704,593	3,950,118
Intangible Plant	239,912	93,331
Adjustments	-----	<u>(3,666,676)</u>
Totals	<u>\$135,008,500</u>	<u>\$30,529,749</u>

The combination of the original cost and the depreciation reserve results in the net utility plant in service. This is an important input in the development of the net investment rate base which also includes contributions in aid of construction, customer advances for construction, customer deposits, working capital, deferred income taxes, deferred investment tax credits, and other items. The year-end December 31, 2007 rate base used in this study was developed by Pennichuck Water Works, Inc. and may be summarized as follows:

<u>Description</u>	<u>Amount</u>
Original Cost Utility Plant in Service	\$135,008,500
Depreciation Reserve	(30,529,749)
Acquisition Adjustment	(588,921)
Contributions in Aid of Construction	(22,683,056)
Working Capital	1,830,829
Materials and Supplies	1,135,139
Prepayments	412,019
Other & Deferred Charges	5,949,837
Customer Advances for Construction	(84,000)
Customer Deposits	(158,677)
Deferred Income Tax	(10,407,200)
Regulatory Liability	(904,996)
Unamortized ITC	(833,994)
Deferred Rental Credits	<u>(98,066)</u>
Total Rate Base	<u>\$78,047,665</u>

The rate base is allocated to the several functional cost categories in accordance with the

methodology previously described. The results of the rate base allocation are then subsequently used to allocate investment related revenue requirement items such as income taxes and utility operating income.

#### WATER PRODUCTION/SYSTEM DELIVERY

A necessary step in a water cost of service allocation study is the development of the appropriate allocation factors for the functional cost elements. Hence, it is necessary to determine the system-wide water production and delivery on average day, maximum day, and maximum hour bases. The water production records maintained by Pennichuck Water Works, Inc. are recorded in sufficient detail to enable this determination to be made.

A review of the Pennichuck Water Works, Inc. system delivery statistics for the 2004 through 2007 period indicates the ratio of maximum day to average day delivery ranged from about 1.64 times to about 1.77 times while the ratio of maximum hour to peak day delivery was 1.46 times during this period. Based on this review, a maximum day ratio of 1.75 times and a maximum hour ratio of 2.55 times (i.e.,  $1.46 \times 1.75 = 2.55$ ) were used in this study as being representative of system capabilities.

A maximum day ratio of 1.75 times means that for facilities allocated on a maximum day basis, 57.14 percent of the cost is allocated to the base cost function while 42.86 percent of the cost is allocated to the extra capacity cost maximum day function. Similarly, a maximum hour ratio of 2.55 times means that for facilities allocated on maximum hour basis, 39.22 percent of the cost is allocated to the base cost function and 60.78 percent of the cost is allocated to the extra capacity cost-maximum hour function.

#### FUNCTIONAL COST OF SERVICE ALLOCATION

The allocation of Pennichuck Water Works' cost of service to the previously defined

functional cost components is set forth on a series of four schedules attached hereto. Descriptions of the individual schedules are given below.

Schedule 1 presents the details, in tabular form, of the allocation of the original cost of plant in service and rate base to the previously defined cost functions. The left-most column of Schedule 1 sets forth an account number while the second column from the left gives a description of the item being allocated. The third column from the left sets forth the total cost of the item being allocated. The allocations to the several cost functions are shown in Columns 4 through 10, while the right-most column indicates an allocation code for the specific allocation factor used to assign each cost element to the cost functions. The allocations set forth on Schedule 1 utilize the utility plant in service and depreciation reserve data that were previously summarized in an earlier section of this report. The allocations to the cost functions were made in accordance with the concepts which were previously described.

Schedule 2 is constructed in a format which is similar to that of Schedule 1. Schedule 2, however, sets forth the details of the allocation of the operation and maintenance expense, the annual depreciation and amortization expense, taxes other than income taxes, income taxes, and utility operating income as adjusted by Pennichuck Water Works, Inc. for the twelve months ended December 31, 2007. The data utilized on Schedule 2 were previously summarized in the Revenue Requirement discussion in this report.

Schedule 3 is similar in format to Schedules 1 and 2. Schedule 3 sets forth the development of the labor benefits allocator.

The allocation codes mentioned above are simply reference numbers which designate groups of percentages which are used to allocate the total amount of any given cost element to the several cost functions. Schedule 4 contains a written description of the allocation bases used

to allocate cost elements to the cost functions together with a list of the allocation codes and factors. Additionally, Page 3 of Schedule 4 illustrates the development of several of the factors used in the allocation of cost elements to the cost functions.

#### CUSTOMER CLASS COST OF SERVICE ALLOCATION

The allocation of Pennichuck Water Works' cost of service to the customer classifications is set forth on a series of three schedules attached hereto. Descriptions of the individual schedules are given below.

Schedule 5 presents the details, in tabular form, of the allocation of the revenue requirement functional costs, as developed on Schedule 2, to the previously identified customer groups. The far left column of Schedule 5 describes the cost elements which were developed on Schedule 2, while the next column shows the total cost of the items being allocated. The allocations to the customer groups are shown in columns 3 through 5, while the right-most column indicates an allocation code for the specific allocation factor used to assign each cost element to the customer classes.

The allocation codes mentioned above are simply reference numbers which designate groups of percentages which are used to allocate the total amount of any given functional cost element to the customer classifications. Schedule 6 contains a written description of the allocation bases used to allocate cost elements to the customer classifications together with a list of the allocation codes and factors.

Schedule 7 sets forth the development of the factors used in the allocations to the customer classes. Page 1 of this schedule illustrates the annual consumption as well as the non-coincident maximum day and maximum hour demands by customer group. The consumption data are based on metered sales or, in the case of fire protection, an estimated usage. Maximum daily and

maximum hourly totals for customer classes are based on the application of customer class demand factors to the average consumption. Page 1 of Schedule 7 also develops the customer class allocation factors related to the number of bills.

Page 2 of Schedule 7 sets forth the development of the private and public fire protection allocation factors based on the number of units in service.

#### REVENUES FROM PRESENT RATES

Before designing a schedule of rates and charges based on the allocations set forth herein, revenues under present rates were calculated. This calculation was based on the reported number of meters and fire protection units in service at December 31, 2007 together with the reported billable volumetric water usage during calendar year 2007.

Schedule 8 attached hereto sets forth the calculation of revenues under present rates.

#### COST OF SERVICE ALLOCATION RESULTS

The results of the previously described cost of service allocations are set forth on Schedule 9 attached hereto and are compared thereon with the revenues projected to be received under the present rate schedule. In general, Schedule 9 shows that, on a percentage basis, the present rate revenues from water service are in reasonable accord with their cost of service indications. Revenues from municipal fire protection service are greater than the cost of service indication on a percentage basis. Finally, on a percentage basis, present rate revenues from private fire protection service are noticeably below their cost of service indication.

#### COST OF SERVICE RATE DESIGN

A rate design based upon the cost of service allocations is set forth on Schedule 10 attached hereto. Design of the individual rate elements will be discussed in the following paragraphs.

The costs of serving municipal fire protection customers are recovered through a two-part rate, namely a hydrant charge and an inch-foot charge. The hydrant charge is usually developed to recover the functional fire-hydrant costs and municipal fire protection's share of the functional customer costs, while the inch-foot charge is usually developed to recover the capacity costs allocated to municipal fire protection service.

As set forth on Page 1 of Schedule 10, on a cost of service basis, the monthly hydrant charge is \$16.17 while the inch-foot charge is \$0.11142 per year. Given that the present annual inch-foot charge is \$0.11370, it is recommended that no change be made to this charge. The proposed hydrant charge would then become \$14.75 per month as shown on Page 1 of Schedule 10.

The costs of serving private fire protection customers are recovered through periodic charges based on the size of the connection pipe entering the property. Costs to be recovered include the capacity costs allocated to private fire protection service and a share of the customer cost-commercial cost component.

Development of the private fire protection charges is illustrated on Page 2 of Schedule 10. Pennichuck Water Works' existing tariff contains only three private fire service size classifications namely, 4 inch and smaller, 6 inch, and 8 inch or larger. Rates paralleling the existing rate schedule have been developed and are set forth on Page 2 of Schedule 10; these rates are about 79 percent greater than the existing rates.

Customer costs include meter and service and billing and collecting related costs. These costs are incurred regardless of the amount of water, if any, that is used. These costs are usually recovered through a fixed charge designated as either a service charge or a customer charge. The existing general service-metered tariff of Pennichuck Water Works, Inc. includes a customer

charge which varies by meter size. This customer charge is a service charge which provides no water use allowance. This same general type of customer charge will be discussed herein.

As noted above, the existing Pennichuck customer charges vary by meter size. Schedule 11 attached hereto lists the existing monthly customer charges and ratios the charge for each meter size to the charge for a 5/8 inch meter. The resulting ratios are then compared with ratios developed from the relationship of the AWWA recommended operating capacities by meter size. The AWWA capacity ratios have acceptance as a general guide for the relationship of customer charges for one meter size to another. Given the similarity of the existing customer charge ratios to the AWWA standard, as illustrated on Schedule 11, the existing ratios will be used in the customer charge development.

One issue that is always of concern is revenue instability problems. One method of alleviating such revenue instability problems would be to increase the level of the customer charges so that they recover more than the functional customer costs. The inclusion of other fixed costs in addition to the functional customer costs will tend to enhance revenue and financial stability and would help stabilize cash flow.

The inclusion of other costs in addition to the functional customer costs in customer (service) charges is recognized in the water ratemaking literature. AWWA Water Rates Manual M1 states that "The service charge is designed to recover customer-related costs and possibly some capacity-related costs associated with readiness to serve..." (Fourth Edition, page 34). Additionally, AWWA Water Rates Manual M1 also notes that "a portion of distribution-main costs as well as a portion of demand-related costs are sometimes included in the determination of service charges." (Fourth Edition, page 39).

In addition to the above examples from the AWWA Water Rates Manual, further support

for the inclusion of other items in the customer charge may be obtained from Publication NRRI 93-13 of the National Regulatory Research Institute. That publication, entitled “Meeting Water Utility Revenue Requirements: Financing and Ratemaking Alternatives”, states on page 69 that “common (overhead) costs include those costs (for example, administrative and general) that are generally independent of the number of customers, maximum demand, average demand, and volume of usage. Common costs can be recovered via a periodic service charge.”

Page 3 of Schedule 10 sets forth the development of the proposed customer charges. As shown thereon, 50% of the non-customer, non-hydrant administrative and general costs were included in the customer charge development as recognition of other costs. It is noted that this methodology has been used in the past to design customer charges for Pennichuck Water Works.

As shown on Page 3 of Schedule 10, the proposed customer charges are about 11.4 percent greater than the present customer charges. The increase to the 5/8” customer charge is slightly less, in order to tie to the overall revenue requirement.

Having developed the municipal fire protection charges, the private fire protection charges, and the customer charges, the volumetric rate remains as the “balance sheet” to provide the remainder of the revenue requirement. Page 4 of Schedule 10 illustrates the development of the volumetric rate, showing the deduction of revenue from other rates and charges from the revenue requirement and the comparison with the present volume charge revenue.

It is noted that there are actually four volumetric rates, one for general service customers and one for each of the three contract service customers (i.e., Anheuser-Busch, Hudson, and Milford). The contracts with Anheuser-Busch, Hudson, and Milford each relate the individual contract volumetric rate to the general service volumetric rate. Hence, as shown on Page 4 of Schedule 10, the proposed volumetric rates are each 13.75 percent greater than the corresponding



present rate.

The proposed rates and charges, as discussed above in the report section, are summarized on Schedule 12 attached hereto.

The proposed rates and charges are applied to the billing parameters on Schedule 13 attached hereto. As shown on Page 5 of Schedule 13, the proposed rates and charges generate about \$152 less than the net water revenue requirement. This difference is only about 0.001 percent and is considered negligible.

Finally, Schedule 14 attached hereto compares the class cost of service indications with the proposed rate revenues. As shown thereon, there is excellent agreement between the cost of service indications and the revenues generated by the proposed rates.

#### CLOSURE

The studies discussed in this report have allocated Pennichuck Water Works' revenue requirement to functional cost classifications and then to customer classifications. A rate design based on these allocations has been developed.

The results of the studies discussed herein can provide reasonable guidelines to be utilized in establishing appropriate rate levels in the planned Pennichuck Water Works, Inc. rate proceeding. It must be noted that seldom, if ever, are rates exactly in line with the cost of service indications at any given time. Generally, minor differences will exist just as a matter of normal circumstances. Cost of service allocations are the products of analyses based in part on judgment and experience and their results provide a substantial aid in the design of rates. However, actual tariff design, in addition to relying on the results of cost of service analyses, should also include consideration of policy matters, impact of rate changes, future planning, special customer characteristics, and judicial, regulatory, and contract requirements.

PENNICHUCK WATER WORKS, INC.  
MERRIMACK, NEW HAMPSHIRE

ADDENDUM TO  
REPORT ON  
COST OF SERVICE ALLOCATIONS  
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ADDITIONAL RATE DESIGN SCENARIOS

by

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June 2008

ADDENDUM TO  
REPORT ON  
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PENNICHUCK WATER WORKS, INC.

The cost of service allocations and related rate design developed in the main body of this report were premised upon a net water revenue requirement of \$24,896,859. This amount has been characterized as the “Permanent Rate Increase” by the management of Pennichuck Water Works, Inc.

In addition to the Permanent Rate Increase, three other revenue requirement levels will be considered in the rate filing before the New Hampshire Public Utilities Commission. These levels and the corresponding revenue requirements are identified as the “Temporary Rate Increase” of \$24,150,046; the “Step 1 Rate Increase” of \$25,992,122; and, the “Step 2 Rate Increase” of \$27,188,271.

This addendum sets forth the design of rates and charges which will generate the revenue requirements under the Temporary Rate Increase, the Step 1 Rate Increase, and the Step 2 Rate Increase. Attached hereto are a series of schedules similar in format to Schedules 9, 10, 12, and 13 (i.e., the rate design schedules) of the main report. The schedules attached hereto are identified with “.Temp”, “.Step 1”, and “.Step 2” extensions according to the individual revenue requirement under consideration.

Page 5 of Schedule 13 of each of the rate designs set forth herein shows that the temporary rate design is within 0.002% of its revenue requirement; that the Step 1 rate design is within 0.004% of its revenue requirement; and, that the Step 2 rate design is within 0.002% of its revenue requirement. These differences are each considered negligible and are acceptable for rate design purposes.

PENNICHUCK WATER WORKS, INC.  
MERRIMACK, NEW HAMPSHIRE

SCHEDULES TO ACCOMPANY  
REPORT ON  
COST OF SERVICE ALLOCATIONS  
AND WATER RATE DESIGN

by

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June 2008

Pennichuck Water Works, Inc.  
Test Period Ending December 31, 2007  
Allocation of Rate Base

Description	Total Cost	Base Cost	Extra Cap Max Day	Extra Cap Max Hour	Customer Commercial	Customer Meters	Customer Services	Fire Hydrants	Allocation Code
<b>Utility Plant In Service at December 31, 2007</b>									
<b>Source of Supply and Pumping Plant</b>									
303 Land and Land Rights	810,703	348,856	251,747	0	0	0	0	0	21
304 Structures and Improvements	33,796,985	19,311,586	14,455,379	0	0	0	0	0	21
305 Collecting and Impounding Reservoirs	2,438,081	2,438,081	0	0	0	0	0	0	20
306 Lake, River and Other Intakes	286	163	123	0	0	0	0	0	21
307 Wells and Springs	690,001	394,267	295,734	0	0	0	0	0	21
308 Infiltration Galleries and Tunnels	1,543	882	861	0	0	0	0	0	21
309 Supply Mains	6,034	3,448	2,586	0	0	0	0	0	21
310 Power Generation Equipment	539,203	211,475	158,960	166,148	0	0	0	0	41
311 Pumping Equipment	5,620,687	2,204,428	1,653,038	1,763,203	0	0	0	0	41
Total Supply and Pumping Plant	43,701,483	24,911,284	16,857,848	1,932,351	0	0	0	0	
(Percent Code 34)	100.00 %	57.00 %	38.58 %	4.42 %	0.00 %	0.00 %	0.00 %	0.00 %	
<b>Water Treatment Plant</b>									
320 Water Treatment Equipment	8,706,512	4,974,901	3,731,611	0	0	0	0	0	21
Total Water Treatment Plant	8,706,512	4,974,901	3,731,611	0	0	0	0	0	
<b>Transmission and Distribution</b>									
330 Distribution Reservoirs and Standpipes	5,659,672	565,987	848,981	4,244,804	0	0	0	0	45
331 Transmission and Distribution Mains	51,936,991	20,369,688	15,274,669	16,292,634	0	0	0	0	44
333 Services	9,210,939	0	0	0	0	0	9,210,939	0	25
334 Meters and Meter Installations	4,285,824	0	0	0	0	4,285,824	0	0	24
335 Hydrants	3,150,135	0	0	0	0	0	0	3,150,135	26
Subtotal Transmission and Distribution	74,243,761	20,935,675	16,123,650	20,537,538	0	4,285,824	9,210,939	3,150,135	
Subtotal % (Percent Code 35)	100.00 %	28.20 %	21.72 %	27.66 %	0.00 %	5.77 %	12.41 %	4.24 %	
339 Other Plant and Miscellaneous Eq.	412,240	116,252	89,539	114,026	0	23,786	51,159	17,478	35
Total Transmission and Distribution	74,656,001	21,051,927	16,213,189	20,651,564	0	4,309,610	9,262,098	3,167,613	
Subtotal Above Utility Plant	127,063,996	50,938,112	36,802,648	22,563,915	0	4,309,610	9,262,098	3,167,613	
Subtotal % (Percent Code 29)	100.00 %	40.09 %	28.97 %	17.77 %	0.00 %	3.39 %	7.29 %	2.49 %	
		0.4009855	0.2896387	0.1777365	0	0.033917	0.072693	0.024929	
<b>Intangible Plant</b>									
301 Organization	26,852	10,765	7,779	4,772	0	910	1,958	668	29
302 Franchise	213,060	95,416	61,723	37,861	0	7,223	15,532	5,305	29
Total Intangible Plant	239,912	96,181	69,502	42,633	0	8,133	17,490	5,973	

Pennichuck Water Works, Inc.  
Test Period Ending December 31, 2007  
Allocation of Rate Base

Description	Total Cost	Base Cost	Extra Cap Max Day	Extra Cap Max Hour	Customer Commercial	Customer Meters	Customer Services	Fire Hydrants	Allocation Code
Utility Plant in Service at December 31, 2007 - Continued									
General Plant									
340 Office Furniture and Equipment	573,814	230,042	166,234	101,967	0	19,452	41,531	14,288	29
341 Transportation Equipment	2,206,900	884,748	639,339	382,166	0	74,814	160,883	54,952	29
343 Tools, Shop and Garage Equipment	211,188	84,665	61,181	37,528	0	7,159	15,368	5,259	29
344 Laboratory Equipment	87,601	87,601	0	0	0	0	0	0	20
345 Power Operated Equipment	305,989	122,671	88,645	54,374	0	10,373	22,307	7,619	29
346 Communication Equipment	790,951	317,092	229,139	140,552	0	28,813	57,660	19,695	29
347 Miscellaneous Equipment	3,063,708	1,228,240	887,556	544,421	0	103,860	223,344	76,285	29
348 Other Tangible Equipment	484,443	186,195	134,549	82,532	0	15,745	33,858	11,564	29
Total General Plant	7,704,592	3,141,252	2,206,643	1,353,540	0	258,216	555,279	189,662	
(Percent Code 39)	100.00 %	40.77 %	28.64 %	17.57 %	0.00 %	3.35 %	7.21 %	2.46 %	
Total Utility Plant in Service	135,008,500	54,175,545	39,078,793	23,980,088	0	4,575,959	9,894,867	3,363,248	
(Percent Code 30)	100.00 %	40.13 %	28.95 %	17.76 %	0.00 %	3.39 %	7.28 %	2.49 %	
Accumulated Depreciation Reserve at December 31, 2007									
Source of Supply and Pumping Plant	7,379,974	4,206,595	2,847,194	326,195	0	0	0	0	34
Water Treatment Plant	3,941,621	2,252,242	1,689,379	0	0	0	0	0	21
Transmission and Distribution	18,831,381	5,310,449	4,080,178	5,206,760	0	1,088,571	2,336,974	798,451	35
General Plant	3,950,118	1,610,463	694,036	1,131,314	0	132,329	284,804	97,172	39
Intangible Plant	93,331	37,416	27,038	16,585	0	3,164	6,804	2,324	29
Subtotal Accumulated Depreciation Reserve	34,198,425	13,417,155	9,785,101	6,245,576	0	1,222,064	2,628,582	897,947	
Subtotal % (Percent Code 28)	100.00 %	39.24 %	28.61 %	18.26 %	0.00 %	3.57 %	7.69 %	2.63 %	
Accumulated Depreciation - Loss	(2,734,382)	(1,072,971)	(782,307)	(499,298)	0	(87,617)	(210,274)	(71,915)	28
Accumulated Depreciation - Cost of Removal	(578,134)	(227,252)	(165,690)	(105,750)	0	(20,675)	(44,535)	(15,232)	28
Miscellaneous Adjustments	(353,160)	(138,580)	(101,039)	(84,487)	0	(12,608)	(27,158)	(9,298)	28
Total Accumulated Depreciation Reserve	30,529,749	11,978,352	8,736,085	5,576,041	0	1,091,164	2,346,815	801,512	
(Percent Code 28)	100.00 %	39.24 %	28.61 %	18.26 %	0.00 %	3.57 %	7.69 %	2.63 %	
Total Depreciated Utility Plant in Service	104,478,751	42,197,193	30,342,728	18,404,047	0	3,484,795	7,488,252	2,561,736	
(Percent Code 27)	100.00 %	40.39 %	29.04 %	17.62 %	0.00 %	3.33 %	7.17 %	2.45 %	

Pennichuck Water Works, Inc.  
Test Period Ending December 31, 2007  
Allocation of Rate Base

Description	Total Cost	Base Cost	Extra Cap Max Day	Extra Cap Max Hour	Customer Commercial	Customer Meters	Customer Services	Fire Hydrants	Allocation Code
<b>Acquisition Adjustment</b>									
Acquisition Adjustment at 12/31/07	844,805	339,060	244,600	150,055	0	28,642	61,509	21,039	30
Accum Amort Acq Adj	255,984	102,726	74,107	45,453	0	8,678	18,636	6,374	30
<b>Contributions In Aid of Construction</b>									
CIAC at 12/31/07	26,007,819	10,436,858	7,528,206	4,618,853	0	881,658	1,893,355	847,569	30
Amort of CIAC	3,324,563	1,334,147	962,461	590,442	0	112,703	242,028	82,782	30
Subtotal Rate Base Elements	81,206,774	32,858,148	23,805,490	14,270,944	0	2,695,876	5,794,052	1,982,264	
<b>Rate Base Additions</b>									
Working Capital	1,830,829	711,843	335,957	174,844	326,254	200,293	58,037	23,801	46
Materials and Supplies	927,169	363,636	272,680	290,853	0	0	0	0	44
Transmission and Distribution	90,320	0	0	0	0	90,320	0	0	24
Meters	18,532	0	7,943	0	0	0	0	0	21
Water Treatment	52,817	0	0	0	0	0	0	0	20
Chemicals	4,035	1,818	1,169	717	0	137	294	100	29
Transportation Equipment	10,570	4,146	3,108	3,316	0	0	0	0	41
Generator Fuel	21,456	0	0	0	21,456	0	0	0	23
Customer Billing Materials	10,240	4,105	2,967	1,820	0	347	746	255	29
General Supplies	1,135,139	436,811	287,867	296,706	21,456	90,804	1,040	355	
Total Materials and Supplies	412,019	165,343	119,280	73,175	0	13,967	29,995	10,259	30
Prepayments	5,949,837	2,387,570	1,722,478	1,058,691	0	201,899	433,148	148,151	30
Other and Deferred Charges	9,327,824	3,701,567	2,465,592	1,801,416	347,710	508,763	522,220	182,568	
<b>Rate Base Deductions</b>									
Customer Advances for Construction	84,000	32,845	24,704	26,351	0	0	0	0	44
Customer Deposits	158,677	0	0	0	0	0	158,677	0	25
Deferred Income Tax	10,407,200	4,176,409	3,012,884	1,848,318	0	352,804	757,644	259,140	30
Regulatory Liability	804,886	383,175	261,986	160,727	0	30,879	85,884	22,535	30
Unamortized ITC	833,894	334,682	241,441	148,117	0	28,272	60,715	20,767	30
Deferred Rental Credits	98,066	39,354	28,390	17,417	0	3,324	7,139	2,442	30
Total Rate Base Deductions	12,486,633	4,946,565	3,589,415	2,200,531	0	415,079	1,050,059	304,894	
Total Rate Base	78,047,965	31,613,150	22,501,657	13,871,429	347,710	2,787,590	5,266,213	1,859,846	
(Percent Code 33)	100.00 %	40.50 %	28.93 %	17.52 %	0.45 %	3.57 %	6.75 %	2.38 %	

Pennichuck Water Works, Inc.  
Test Period Ending December 31, 2007  
Allocation of Pro Forma Revenue Requirement

Description	Total Cost	Base Cost	Extra Cap Max Day	Extra Cap Max Hour	Customer Commercial	Customer Meters	Customer Services	Fire Hydrants	Allocation Code
<b>Pro Forma Operation and Maintenance Expenses</b>									
<u>Source of Supply</u>									
601 Operation Labor and Expenses	48,413	26,520	19,893	0	0	0	0	0	21
602 Purchased Water	256,065	148,316	108,749	0	0	0	0	0	21
603 Miscellaneous Expenses	8,181	4,675	3,506	0	0	0	0	0	21
610 Maintenance Super & Eng'g	372,296	212,731	159,567	0	0	0	0	0	21
Total Source of Supply	682,957	390,242	282,715	0	0	0	0	0	
<u>Pumping Expenses</u>									
623 Fuel or Power Purchased	1,146,913	974,876	114,691	57,346	0	0	0	0	43
624 Pumping Labor and Expenses	239,127	93,786	70,327	75,014	0	0	0	0	41
626 Miscellaneous Expenses	81,394	31,923	23,938	25,533	0	0	0	0	41
631 Maint. of Structures and Imp.	58,739	23,038	17,275	18,428	0	0	0	0	41
633 Maint. of Pumping Equipment	195,356	76,619	57,454	61,283	0	0	0	0	41
Total Pumping Expenses	1,721,529	1,200,242	283,685	237,602	0	0	0	0	
<u>Water Treatment Expenses</u>									
641 Chemicals	652,777	652,777	0	0	0	0	0	0	20
642 Operation Labor and Expenses	442,356	252,762	189,594	0	0	0	0	0	21
643 Miscellaneous Expenses	(41,976)	(23,985)	(17,991)	0	0	0	0	0	21
652 Maint. of Treatment Equipment	57,347	32,768	24,579	0	0	0	0	0	21
Total Water Treatment Expenses	1,110,504	914,322	196,182	0	0	0	0	0	
<u>Transmission and Distribution</u>									
662 Trans & Dist Operation	44,317	17,391	13,034	13,902	0	0	0	0	44
663 Trans & Dist Lines Expenses	91,485	0	0	0	0	91,485	0	0	24
664 Meter Expenses	6,362	0	0	0	0	0	6,362	0	25
Customer Installation Expenses									
Subtotal Trans & Dist Operation	142,164	17,391	13,034	13,902	0	91,485	6,362	0	
Subtotal % (Percent Code 37)	100.00 %	12.23 %	9.17 %	9.78 %	0.00 %	64.35 %	4.47 %	0.00 %	
660 Operation Super & Eng'g	851,220	104,104	78,057	83,249	0	547,760	38,050	0	37
665 Miscellaneous Expenses	(11,252)	(1,376)	(1,032)	(1,100)	0	(7,241)	(503)	0	37
Total Trans & Dist Operation	982,132	120,109	90,059	96,051	0	632,004	43,909	0	
<u>Trans &amp; Dist Maintenance</u>									
673 Maint. of Trans & Dist Mains	286,517	113,156	84,853	80,508	0	0	0	0	44
675 Maintenance of Services	105,425	0	0	0	0	0	105,425	0	25
676 Maintenance of Meters	18,322	0	0	0	0	18,322	0	0	24
677 Maintenance of Hydrants	61,708	0	0	0	0	0	0	61,708	26
Subtotal Trans & Dist Maintenance	473,972	113,156	84,853	90,508	0	18,322	105,425	61,708	
Subtotal % (Percent Code 38)	100.00 %	23.87 %	17.80 %	19.10 %	0.00 %	3.87 %	22.24 %	13.02 %	



Pennichuck Water Works, Inc.  
Test Period Ending December 31, 2007  
Allocation of Pro Forma Revenue Requirement

Description	Total Cost	Base Cost	Extra Cap Max Day	Extra Cap Max Hour	Customer Commercial	Customer Meters	Customer Services	Fire Hydrants	Allocation Code
Pro Forma Operation and Maintenance Expenses - Continued									
Trans & Dist Maintenance - Continued									
Maintenance of Misc. Equip.	102,758	24,528	18,394	19,627	0	3,977	22,853	13,379	38
Total Trans & Dist Maintenance	576,730	137,884	103,247	110,135	0	22,298	128,278	75,087	
Total Transmission and Distribution	1,558,862	257,793	193,306	206,186	0	654,303	172,187	75,087	
Customer Accounts Expenses									
Meter Reading Expenses	135,608	0	0	0	0	135,608	0	0	24
Customer Records Expenses	482,770	0	0	0	482,770	0	0	0	23
Uncollectible Accounts	52,212	0	0	0	52,212	0	0	0	23
Total Customer Accounts	660,590	0	0	0	544,982	135,608	0	0	
Subtotal Above O&M Expenses	3,696,687	998,630	741,448	386,442	544,982	789,911	172,187	75,087	
Less Purchased Water, Power, & Chemicals									
Subtotal % (Percent Code 47)	100.00 %	26.73 %	20.05 %	10.45 %	14.73 %	21.36 %	4.65 %	2.03 %	
Administrative and General Expenses									
Admin. and Gen'l Salaries	3,007,330	803,859	602,970	314,266	442,980	642,386	139,841	61,048	47
Office Supplies and Other Exp.	409,002	109,326	82,005	42,741	60,246	87,363	19,018	8,302	47
Admin. Expenses Transferred	(951,129)	(254,237)	(190,701)	(99,393)	(140,101)	(203,161)	(44,227)	(19,309)	47
Outside Services Employed	157,630	42,134	31,605	16,472	23,219	33,670	7,330	3,200	47
Property Insurance	350,011	140,459	101,328	62,162	0	11,865	25,481	8,716	30
Employee Pensions and Benefits	2,788,887	718,087	541,563	331,296	1,051,453	29,839	64,419	22,030	48
Regulatory Commission Exp.	50,104	13,393	10,046	5,236	7,380	10,702	2,330	1,017	47
Misc. General Expense	(1,818,585)	(432,650)	(324,528)	(168,143)	(238,419)	(345,732)	(75,265)	(32,868)	47
Maintenance of General Plant	297,896	78,628	59,728	31,130	43,850	63,631	13,852	6,047	47
Total Admin. and Gen'l Expenses	4,490,936	1,219,999	914,016	534,767	1,280,638	330,543	152,780	58,193	
Total O&M Expense	10,245,378	3,962,598	1,879,904	978,555	1,825,620	1,120,454	324,967	133,280	
(Percent Code 48)	100.00 %	38.87 %	18.35 %	9.55 %	17.82 %	10.94 %	3.17 %	1.30 %	

Pennichuck Water Works, Inc.  
Test Period Ending December 31, 2007  
Allocation of Pro Forma Revenue Requirement

Description	Total Cost	Base Cost	Extra Cap Max Day	Extra Cap Max Hour	Commercial	Customer Meters	Customer Services	Fire Hydrants	Allocation Code
<b>Pro Forma Depreciation Expense</b>									
301 Organization	1,343	538	388	239	0	48	98	33	28
302 Franchise	10,653	4,271	3,088	1,893	0	391	777	285	29
303 Land and Land Rights	(61)	(35)	(26)	0	0	0	0	0	21
304 Structures and Improvements	1,031,140	588,193	441,947	0	0	0	0	0	21
305 Collecting and Impounding Reservoirs	41,198	41,198	0	0	0	0	0	0	20
306 Lake, River and Other Intakes	3	2	1	0	0	0	0	0	21
307 Wells and Springs	22,615	12,922	9,893	0	0	0	0	0	21
308 Infiltration Galleries and Tunnels	18	10	8	0	0	0	0	0	21
309 Supply Mains	71	41	30	0	0	0	0	0	21
310 Power Generation Equipment	32,429	12,719	9,537	10,173	0	0	0	0	41
311 Pumping Equipment	209,435	82,140	61,585	65,700	0	0	0	0	41
320 Water Treatment Equipment	352,084	201,169	150,895	0	0	0	0	0	21
330 Distribution Reservoirs and Standpipes	119,072	11,907	17,881	88,304	0	0	0	0	45
331 Transmission and Distribution Mains	789,397	301,757	226,280	241,360	0	0	214,307	0	44
333 Services	214,307	0	0	0	0	0	0	0	25
334 Meters and Meter Installations	184,010	0	0	0	0	184,010	0	0	24
335 Hydrants	70,525	0	0	0	0	0	0	70,525	28
339 Other Plant and Miscellaneous Eq.	9,445	2,863	2,051	2,612	0	545	1,172	402	35
340 Office Furniture and Equipment	17,589	7,051	5,086	3,126	0	596	1,282	438	29
341 Transportation Equipment	185,418	74,334	53,716	32,849	0	6,286	13,517	4,616	29
343 Tools, Shop and Garage Equipment	10,025	4,019	2,904	1,781	0	340	731	250	29
344 Laboratory Equipment	3,036	3,036	0	0	0	0	0	0	20
345 Power Operated Equipment	16,041	6,431	4,847	2,850	0	544	1,168	400	29
346 Communication Equipment	41,309	18,661	11,887	7,341	0	1,400	3,011	1,029	28
347 Miscellaneous General Equipment	357,686	143,400	103,625	63,563	0	12,128	26,078	8,906	29
348 Other Tangible Equipment	18,022	7,225	5,221	3,203	0	611	1,314	448	29
114 Acquisition Adjustment	(27,026)	(10,846)	(7,824)	(4,800)	0	(916)	(1,967)	(673)	30
Cost of Removal Adjustment	(66,701)	(27,871)	(20,178)	(12,378)	0	(2,363)	(5,074)	(1,756)	30
<b>Total Depreciation Expense</b>	<b>3,620,073</b>	<b>1,483,735</b>	<b>1,082,521</b>	<b>508,915</b>	<b>0</b>	<b>203,686</b>	<b>256,413</b>	<b>84,903</b>	
<b>Amortization Expense</b>									
Amortization of CIAC	(446,433)	(178,154)	(128,242)	(76,287)	0	(15,134)	(32,500)	(11,116)	30
Other Amortization	36,841	15,587	11,244	6,898	0	1,317	2,828	967	30
<b>Total Amortization Expense</b>	<b>(407,592)</b>	<b>(183,567)</b>	<b>(117,998)</b>	<b>(72,389)</b>	<b>0</b>	<b>(13,817)</b>	<b>(29,672)</b>	<b>(10,149)</b>	
<b>Pro Forma Taxes Other Than Income Taxes</b>									
Payroll Taxes	481,046	123,870	93,420	57,149	188,550	5,147	11,112	3,800	48
Property Taxes	2,113,911	848,312	611,977	375,431	0	71,862	153,893	52,636	30
<b>Total Taxes Other Than Income Taxes</b>	<b>2,594,959</b>	<b>972,182</b>	<b>705,397</b>	<b>432,580</b>	<b>188,550</b>	<b>78,809</b>	<b>165,005</b>	<b>56,436</b>	

Pennichuck Water Works, Inc.  
Test Period Ending December 31, 2007  
Allocation of Pro Forma Revenue Requirement

Description	Total Cost	Base Cost	Extra Cap Max Day	Extra Cap Max Hour	Customer Commercial	Customer Meters	Customer Services	Fire Hydrants	Allocation Code
<b>Net Operating Income and Income Taxes</b>									
Net Operating Income	6,008,497	2,433,441	1,732,250	1,052,689	27,038	214,503	405,574	143,002	33
Income Taxes	3,070,460	1,243,536	885,214	537,945	13,817	109,615	207,256	73,077	33
Total	9,078,957	3,676,977	2,617,464	1,590,634	40,855	324,118	612,830	216,079	
Total Revenue Requirement	25,131,775	9,851,925	6,187,288	3,438,285	2,053,025	1,711,150	1,329,543	480,548	
Percents	100.00 %	39.60 %	24.54 %	13.68 %	8.17 %	6.81 %	5.29 %	1.91 %	
Less Other Revenue	(234,916)	(93,027)	(57,646)	(32,137)	(19,193)	(15,998)	(12,427)	(4,486)	
Net Water Revenues	24,896,859	9,858,898	6,109,640	3,406,158	2,033,832	1,695,152	1,317,116	476,063	
Percents	100.00 %	39.60 %	24.54 %	13.68 %	8.17 %	6.81 %	5.29 %	1.91 %	

Pennichuck Water Works, Inc.  
Test Period Ending December 31, 2007  
Allocation of Year 2007 Salaries and Wages - Development of Allocation Code 48

Description	Total Cost	Base Cost	Extra Cap Max Day	Extra Cap Max Hour	Customer Commercial	Customer Meters	Customer Services	Fire Hydrants	Allocation Code
<b>Salaries and Wages</b>									
Source of Supply	278,917	159,373	118,544	0	0	0	0	0	21
Pumping	754,258	295,820	221,827	238,611	0	0	0	0	41
Water Treatment	483,113	284,823	188,480	0	0	0	0	0	21
Transmission and Distribution	653,204	184,204	141,876	180,676	0	37,690	81,063	27,695	35
Customer Accounts	1,361,651	0	0	0	1,361,651	0	0	0	23
Subtotal Salaries and Wages	3,511,143	804,020	681,737	417,287	1,361,651	37,690	81,063	27,695	
Subtotal % (Percent Code 48)	100.00 %	25.75 %	19.42 %	11.88 %	38.78 %	1.07 %	2.31 %	0.79 %	
Administrative and General	3,046,363	784,438	591,604	361,908	1,181,380	32,598	70,371	24,066	48
Total Salaries and Wages	6,557,506	1,688,458	1,273,341	779,195	2,543,031	70,286	151,434	51,761	
(Percent Code 48)	100.00 %	25.75 %	19.42 %	11.88 %	38.78 %	1.07 %	2.31 %	0.79 %	

PENNICHUCK WATER WORKS, INC.  
Explanation of Factors Used in the Allocation to Cost Functions

<u>Allocation Code</u>	<u>Description</u>
20	This code allocates items 100 percent to Base Cost. Base Costs are costs which tend to vary with the quantity of water used and do not contain elements necessary to meet variations in demand.
21	This code allocates items to Base Cost and Extra Capacity Cost - Maximum Day in accordance with the ratio of the average annual system production per day to the maximum daily system production. Extra capacity costs are those costs associated with meeting rate of use requirements in excess of the average.
22	This code allocates items to Base Cost and Extra Capacity Cost - Maximum Hour in accordance with the ratio of the average annual system delivery per day to the maximum hourly system delivery.
23	This code allocates items 100 percent to Customer Cost - Commercial. Costs allocated by this code are commercial costs associated with serving customers irrespective of the amount of water used or the demand imposed on the system. They include billing, customer accounting, and collection expenses.
24	This code allocates items 100 percent to Customer Cost - Meters. Items allocated by this code are associated with the maintenance and capital charges for customer meters.
25	This code allocates items 100 percent to Customer Cost - Services. Items allocated by this code are associated with the maintenance and capital charges for customer water services.
26	This code allocates items 100 percent to Fire Hydrant Cost.
27	This code allocates items to the Cost Functions in accordance with the composite allocation of the depreciated cost of plant in service.
28	This code allocates items to the Cost Functions in accordance with the composite allocation of the accumulated depreciation reserve.
29	This code allocates items to the Cost Functions in accordance with the composite allocation of the original cost of non-general utility plant. It is used to allocate general plant items.
30	This code allocates items to the Cost Functions in accordance with the composite allocation of the total utility plant in service.
33	This code allocates items to the Cost Functions in accordance with the composite allocation of all rate base items.

PENNICHUCK WATER WORKS, INC.  
Explanation of Factors Used in the Allocation to Cost Functions

<u>Allocation Code</u>	<u>Description</u>
34	This code allocates items to the Cost Functions in accordance with the composite allocation of the original cost of supply and pumping plant.
35	This code allocates items to the Cost Functions in accordance with the composite allocation of the original cost of transmission and distribution plant.
37	This code allocates items to the Cost Functions in accordance with the composite allocation of transmission and distribution operation expenses.
38	This code allocates items to the Cost Functions in accordance with the composite allocation of transmission and distribution maintenance expenses.
39	This code allocates items to the Cost Functions in accordance with the composite allocation of the original cost of general plant.
41	This code allocates items to Base Cost, Extra Capacity Cost - Maximum Day, and Extra Capacity Cost - Maximum Hour to recognize the pumping requirements of the system.
43	This code is used to allocate purchased power expenses to Base Cost, Extra-Capacity Cost - Maximum Day, and Extra Capacity Cost - Maximum Hour. It gives recognition to the demand element in purchased power costs.
44	This code allocates transmission and distribution mains costs to Base Cost, Extra Capacity Cost - Maximum Day, and Extra Capacity Cost - Maximum Hour functions.
45	This code allocates distribution storage costs to Base Cost, Extra Capacity Cost - Maximum Day, and Extra Capacity Cost - Maximum Hour.
46	This code allocates items to the Cost Functions in accordance with the composite allocation of the total pro forma operation and maintenance expenses.
47	This code allocates certain administrative and general expenses based on the composite allocation of previously allocated functional expenses.
48	This code allocates items to the Cost Functions in accordance with the composite allocation of the total labor expenses.

Pennichuck Water Works, Inc.  
Summary of Functional Cost Allocation Factors

Allocation Code	Description	Base Cost	Extra Cap Max Day	Extra Cap Max Hour	Customer Commercial	Customer Meters	Customer Services	Fire Hydrants	Check Total
20	Base Cost	100.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00 %
21	Base/Ex Cap - Max Day	57.14	42.86	0.00	0.00	0.00	0.00	0.00	100.00 %
22	Base/Ex Cap - Max Hour	39.22	0.00	60.78	0.00	0.00	0.00	0.00	100.00 %
23	Commercial	0.00	0.00	0.00	100.00	0.00	0.00	0.00	100.00 %
24	Meters	0.00	0.00	0.00	0.00	100.00	0.00	0.00	100.00 %
25	Services	0.00	0.00	0.00	0.00	0.00	100.00	0.00	100.00 %
26	Fire Hydrants	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00 %
27	Depreciated Plant	40.39	29.04	17.82	0.00	3.33	7.17	2.45	100.00 %
28	Depreciation Reserve	39.24	28.61	18.28	0.00	3.57	7.68	2.63	100.00 %
29	Subtotal Plant in Service	40.09	28.97	17.77	0.00	3.39	7.28	2.49	100.00 %
30	Total Utility Plant in Service	40.13	28.95	17.76	0.00	3.38	7.28	2.49	100.00 %
33	Total Rate Base	40.50	28.83	17.52	0.45	3.57	6.75	2.38	100.00 %
34	Supply and Pumping Plant	57.00	38.58	4.42	0.00	0.00	0.00	0.00	100.00 %
35	T&D Plant	28.20	21.72	27.66	0.00	5.77	12.41	4.24	100.00 %
37	T&D Operation	12.23	9.17	9.78	0.00	64.35	4.47	0.00	100.00 %
38	T&D Maintenance	23.87	17.90	19.10	0.00	3.87	22.24	13.02	100.00 %
39	General Plant	40.77	28.64	17.57	0.00	3.35	7.21	2.46	100.00 %
41	Pumping	38.22	28.41	31.37	0.00	0.00	0.00	0.00	100.00 %
43	Purchased Power	85.00	10.00	5.00	0.00	0.00	0.00	0.00	100.00 %
44	T&D Mains	38.22	29.41	31.37	0.00	0.00	0.00	0.00	100.00 %
45	Distribution Storage	10.00	15.00	75.00	0.00	0.00	0.00	0.00	100.00 %
46	Total O&M Expense	38.87	18.35	9.55	17.82	10.94	3.17	1.30	100.00 %
47	Admin & Gen'l Expense	26.73	20.05	10.45	14.73	21.36	4.65	2.03	100.00 %
48	Labor Benefits	25.75	19.42	11.88	38.78	1.07	2.31	0.79	100.00 %
System Factors:									
Max Day - Average Day		175 %	57.14 %	42.86 %					
Max Hour - Average Day		255 %	39.22 %	29.41 %	60.78 %				
Pumping and T&D Mains		255 %	39.22 %	29.41 %	31.37 %				

Pennichuck Water Works, *nc.*

Allocation of Functional Costs to Classes

<u>Functional Cost Component</u>	<u>Amount</u>	<u>Water Service</u>	<u>Municipal Fire</u>	<u>Private Fire</u>	<u>Allocation Code</u>
Base Cost	9,858,898	9,760,309	70,984	27,605	60
Extra Capacity - Max Day	6,109,640	4,590,783	1,088,738	430,119	61
Extra Capacity - Max Hour	3,406,158	2,172,788	884,239	349,131	62
Customer - Commercial	2,033,832	1,924,208	814	108,810	63
Customer - Meters	1,695,152	1,695,152	0	0	64
Customer - Services	1,317,116	1,317,116	0	0	65
Fire Hydrants	476,063	0	476,063	0	70
Net Revenue Requirement	24,896,859	21,460,356	2,520,838	915,665	



PENNICHUCK WATER WORKS, INC.  
Explanation of Factors Used in the Allocation to Customer Groups

<u>Allocation Code</u>	<u>Description</u>
60	This code allocates Base Cost to the customer groups in accordance with the percentage of water used by each individual customer group.
61	This code allocates Extra Capacity Cost - Maximum Day to the customer groups in accordance with the ratio of the excess maximum day demand of each individual customer group to the total non-coincident excess daily demand for all customer groups.
62	This code allocates Extra Capacity Cost - Maximum Hour to the customer groups in accordance with the ratio of the excess maximum hour demand of each individual customer group to the total non-coincident excess hourly demand for all customer groups.
63	This code allocates Customer Cost - Commercial to the customer groups in accordance with the percentage of bills issued to each individual customer group.
64	This code allocates Customer Cost - Meters to the customer groups in accordance with the ratio of the number of equivalent meters in each individual customer group to the total number of equivalent meters for all customer groups.
65	This code allocates Customer Cost - Services to the customer groups on a basis similar to that for the allocation of Customer Cost - Meters.
70	This code allocates items entirely to the public fire service class.

Pennichuck Water Works, Inc.

Summary of Class Allocation Factors

<u>Allocation Code</u>	<u>Functional Cost Component</u>	<u>Water Service</u>	<u>Municipal Fire</u>	<u>Private Fire</u>	<u>Check Total</u>	
60	Base Cost	99.00	0.72	0.28	100.00	%
61	Extra Capacity - Max Day	75.14	17.82	7.04	100.00	%
62	Extra Capacity - Max Hour	63.79	25.96	10.25	100.00	%
63	Customer - Commercial	94.61	0.04	5.35	100.00	%
64	Customer - Meters	100.00	0.00	0.00	100.00	%
65	Customer - Services	100.00	0.00	0.00	100.00	%
70	Fire Hydrants	0.00	100.00	0.00	100.00	%

Pennichuck Water Works, Inc.  
Customer Class Allocation Factors

Customer Class	Annual Consumption				Maximum Day			Maximum Hour			Customer Costs		
	(1) CCFT	(2) MGD	(3) %	(4) % of AvDay	(5) Amount MGD	(6) Excess (5)-(2)	(7) %	(8) % of AvDay	(9) Amount MGD	(10) Excess (9)-(5)	(11) %	(12) Bills	(13) %
General Water	4,937,571	10.119	81.15	200	20.238	10.119	67.69	325	32.887	12.649	59.63	134,064	94.57
Anheuser-Busch	861,600	1.766	14.16	150	2.649	0.883	5.91	200	3.532	0.883	4.16	24	0.02
Hudson	182,214	0.373	2.99	150	0.560	0.187	1.25	150	0.560	0.000	0.00	12	0.01
Milford	42,400	0.087	0.70	150	0.131	0.044	0.29	150	0.131	0.000	0.00	12	0.01
Total Water Service	6,023,785	12.345	99.00		23.578	11.233	75.14		37.110	13.532	63.79	134,112	94.61
Municipal Fire	43,627	0.089	0.72		2.753	2.664	17.82		8.260	5.507	25.96	60	0.04
Private Fire	17,220	0.035	0.28		1.087	1.052	7.04		3.260	2.173	10.25	7,584	5.35
Total Fire Service	60,847	0.124	1.00		3.840	3.716	24.86		11.520	7.680	36.21	7,644	5.39
Grand Total	6,084,631	12.469	100.00		27.418	14.949	100.00		48.630	21.212	100.00	141,756	100.00
Allocation Code			60				61				62		63
Fire Requirements: 1.0% of total water consumption													
Fire Demand 8,000 gpm for 8 hours													
Fire Req'm'ts split 71.70% Municipal and 28.30% Private													

Fire Requirements: 1.0% of total water consumption  
Fire Demand 8,000 gpm for 8 hours  
Fire Req'mnts split 71.70% Municipal and 28.30% Private

Pennichuck Water Works, Inc.

Fire Service Capacity Units

	<u>Number</u>	<u>Capacity Ratio</u>	<u>Capacity Units</u>	<u>%</u>
Municipal Hydrants	2,458	1.00	2,458.00	71.70
Private Fire Services				
2"	25	0.11	2.75	
4"	102	0.44	44.88	
6"	359	1.00	359.00	
8"	274	1.78	487.72	
10"	6	2.78	16.68	
12"	13	4.00	52.00	
16"	1	7.11	7.11	
Total Private	780		970.14	28.30
Grand Total	3,238		3,428.14	100.00

Note:

Capacity ratios are based on the cross-sectional area of municipal hydrant branches and private fire service connections. The cross-sectional area of a 6" branch is taken as unity. All hydrant branches are considered as 6".

Capacity costs include the following functional costs:  
Base Costs, Extra Capacity Costs - Maximum Day, and  
Extra Capacity Costs - Maximum Hour.

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Present Rates

General Service - Metered

Residential

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Present Rate</u>	<u>Present Revenue</u>
5/8"	22,728	90,912	\$ 46.08	\$ 4,189,224.96
3/4"	311	1,244	66.33	82,514.52
1"	200	800	106.83	85,464.00
1 1/2"	130	520	208.17	108,248.40
2"	45	180	340.80	61,344.00
3"	19	76	624.96	47,496.96
4"	3	12	1,030.71	12,368.52
6"	0	0	2,045.22	0.00
8"	0	0	3,262.92	0.00
10"	0	0	4,683.18	0.00
Subtotal	23,436	93,744		\$ 4,586,661.36
<u>CCFT</u>				
Volume	3,706,390		\$ 2.40	\$ 8,895,336.00
Total Residential Revenue				\$ 13,481,997.36

Commercial

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Present Rate</u>	<u>Present Revenue</u>
5/8"	593	2,372	\$ 46.08	\$ 109,301.76
3/4"	171	684	66.33	45,369.72
1"	254	1,016	106.83	108,539.28
1 1/2"	219	876	208.17	182,356.92
2"	153	612	340.80	208,569.60
3"	17	68	624.96	42,497.28
4"	3	12	1,030.71	12,368.52
6"	2	8	2,045.22	16,361.76
8"	0	0	3,262.92	0.00
10"	0	0	4,683.18	0.00
Subtotal	1,412	5,648		\$ 725,364.84
<u>CCFT</u>				
Volume	862,696		\$ 2.40	\$ 2,070,470.40
Total Commercial Revenue				\$ 2,795,835.24

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Present Rates

General Service - Metered

Industrial

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Present Rate</u>	<u>Present Revenue</u>
5/8"	30	120	\$ 46.08	\$ 5,529.60
3/4"	17	68	66.33	4,510.44
1"	38	152	106.83	16,238.16
1 1/2"	30	120	208.17	24,980.40
2"	33	132	340.80	44,985.60
3"	15	60	624.96	37,497.60
4"	4	16	1,030.71	16,491.36
6"	2	8	2,045.22	16,361.76
8"	1	4	3,262.92	13,051.68
10"	0	0	4,683.18	0.00
Subtotal	170	680		\$ 179,646.60
	<u>CCFT</u>			
Volume	288,156		\$ 2.40	\$ 691,574.40
Total Industrial Revenue				\$ 871,221.00

Municipal

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Present Rate</u>	<u>Present Revenue</u>
5/8"	17	68	\$ 46.08	\$ 3,133.44
3/4"	9	36	66.33	2,387.88
1"	17	68	106.83	7,264.44
1 1/2"	25	100	208.17	20,817.00
2"	37	148	340.80	50,438.40
3"	8	32	624.96	19,998.72
4"	2	8	1,030.71	8,245.68
6"	1	4	2,045.22	8,180.88
8"		0	3,262.92	0.00
10"		0	4,683.18	0.00
Subtotal	116	464		\$ 120,466.44
	<u>CCFT</u>			
Volume	80,329		\$ 2.40	\$ 192,789.60
Total Municipal Revenue				\$ 313,256.04
Grand Total GWS Revenue				\$ 17,462,309.64

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Present Rates

Service to Contract Customers

Town of Milford

		<u>Present Rate</u>	<u>Present Revenue</u>
Annual Fixed Fee		\$ 81,000.00	\$ 81,000.00
Volume	<u>CCFT</u> 42,400	\$ 1.5108	\$ 64,057.92
Total Milford Revenue			\$ 145,057.92

Town of Hudson

		<u>Present Rate</u>	<u>Present Revenue</u>
Annual Demand Charge		\$ 32,800.00	\$ 32,800.00
Volume	<u>CCFT</u> 182,214	\$ 1.5249	\$ 277,858.13
Total Hudson Revenue			\$ 310,658.13

Anheuser-Busch

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Present Rate</u>	<u>Present Revenue</u>
6"	2	24	\$ 681.74	\$ 16,361.76
Volume	<u>CCFT</u> 861,600		1.2382	\$ 1,066,833.12
Total Anheuser-Busch Revenue				\$ 1,083,194.88
Grand Total Contract Revenue				\$ 1,538,910.93

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Present Rates

Fire Protection Service

Private Fire Protection

<u>Size</u>	<u>Number</u>	<u>Number of Bills</u>	<u>Present Rate</u>	<u>Present Revenue</u>
2"	25	300	\$ 29.35	\$ 8,805.00
4"	102	1,224	29.35	35,924.40
6"	359	4,308	49.25	212,169.00
8"	274	3,288	72.51	238,412.88
10"	6	72	72.51	5,220.72
12"	13	156	72.51	11,311.56
16"	1	12	72.51	870.12
Total	780	9,360		\$ 512,713.68

Municipal Fire Protection

<u>Size</u>	<u>Number</u>	<u>of Bills</u>	<u>Rate</u>	<u>Revenue</u>
Hydrant	2,458	60	\$ 13.84	\$ 408,224.64
Inch-Feet	18,344,114		0.11370	2,085,725.76
Total Municipal Fire Revenue				\$ 2,493,950.40



Pennichuck Water Works, Inc.  
Calculation of Revenues Under Present Rates

Total Present Rate Revenue

Grand Total GWS Revenue	\$ 17,462,309.64
Grand Total Contract Revenue	\$ 1,538,910.93
Grand Total Private Fire Revenue	\$ 512,713.68
Grand Total Municipal Fire Revenue	\$ 2,493,950.40
Grand Total Revenue	\$ 22,007,884.65
Total Customer Charge Revenue	\$ 5,628,501.00
Total Volume Charge Revenue	\$ 13,258,919.57
Total Contract Fixed Fee Revenue	\$ 113,800.00
Total Private Fire Revenue	\$ 512,713.68
Total Municipal Fire Revenue	\$ 2,493,950.40
Grand Total Revenue	\$ 22,007,884.65

Note: For purposes of this calculation, all general service customer charges are treated as quarterly bills and all fire service charges are treated as monthly bills.

Pennichuck Water Works, Inc.

Comparison of Present Rate Revenues and Cost of Service Indications

	<u>Present Rates</u>		<u>Cost of Service</u>	
	<u>\$</u>	<u>%</u>	<u>\$</u>	<u>%</u>
Water Service Revenue	19,001,220.57	86.34	21,460,356	86.20
Private Fire Revenue	512,713.68	2.33	915,665	3.68
Municipal Fire Revenue	2,493,950.40	11.33	2,520,838	10.12
Total Revenues	22,007,884.65	100.00	24,896,859	100.00

Pennichuck Water Works, Inc.

Rate Design

Municipal Fire Protection

Functional Allocations:	
Fire Hydrants	476,063
Customer - Commercial	814
Total	476,877
Number of Hydrants	2,458
Annual Cost per Hydrant	194.01
Monthly Charge per Hydrant	16.17
Quarterly Charge per Hydrant	48.51
Functional Allocations:	
Base Cost	70,984
Extra Capacity - Max Day	1,088,738
Extra Capacity - Max Hour	884,239
Total	2,043,961
Number of Inch-Feet	18,344,114
Annual Charge per Inch-Foot	0.11142
Note:	
Present Annual Charge per Inch-Foot =	0.11370
If the present inch-foot charge is maintained then the hydrant charge would be:	
Total Municipal Fire Protection Rev Reqmt	2,520,838
Less present inch-foot revenue	(2,085,726)
Adjusted Hydrant Rev Reqmt	435,112
Number of Hydrants	2,458
Annual Cost per Hydrant	177.02
Monthly Charge per Hydrant	14.75
Quarterly Charge per Hydrant	44.25

Pennichuck Water Works, Inc.

Rate Design

Private Fire Protection

Total Private Fire Protection Rev Reqmt	915,665
Present Private Fire Protection Revenue	512,714
Increase Required	78.59 %

<u>Size</u>	<u>Present Monthly Charge</u>	<u>Proposed Monthly Charge</u>	<u>Proposed Quarterly Charge</u>	<u>Increase</u>
2"	29.35	52.42	157.26	78.60 %
4"	29.35	52.42	157.26	78.60 %
6"	49.25	87.96	263.88	78.60 %
8"	72.51	129.50	388.50	78.60 %
10"	72.51	129.50	388.50	78.60 %
12"	72.51	129.50	388.50	78.60 %
16"	72.51	129.50	388.50	78.60 %

Pennichuck Water Works, Inc.

Rate Design

Customer Charges

Functional Allocations (Water Service):

Customer - Commercial	1,924,208
Customer - Meters	1,695,152
Customer - Services	1,317,116

Subtotal 4,936,476

Add: 50% of A&G Expenses

50% A&G Base Cost	610,000
50% A&G Max Day Cost	457,008
50% A&G Max Hour Cost	267,384

Subtotal 1,334,392

Total for Customer Charge 6,270,868

Present Customer Charge Revenue 5,628,501

Increase Required 11.41 %

<u>Meter Size</u>	<u>Present Monthly Charge</u>	<u>Proposed Monthly Charge</u>	<u>Proposed Quarterly Charge</u>	<u>Increase</u>	
5/8"	15.36	17.09	51.27	11.26	%
3/4"	22.11	24.63	73.89	11.40	%
1"	35.61	39.67	119.01	11.40	%
1 1/2"	69.39	77.31	231.93	11.41	%
2"	113.60	126.56	379.68	11.41	%
3"	208.32	232.09	696.27	11.41	%
4"	343.57	382.77	1,148.31	11.41	%
6"	681.74	759.53	2,278.59	11.41	%
8"	1,087.64	1,211.74	3,635.22	11.41	%
10"	1,561.06	1,739.18	5,217.54	11.41	%

Pennichuck Water Works, Inc.

Rate Design

Volumetric Charges

Net Water Revenue Requirement	24,896,859
Less Proposed Revenues:	
From Municipal Fire Protection	(2,520,792)
From Private Fire Protection	(915,696)
From Customer Charges	(6,264,354)
From Contract Fixed Fees	(113,800)
Net Required From Volume Charges	15,082,217
Present Volume Charge Revenue	13,258,920
Increase Required	13.75 %

	<u>Present Charge</u>	<u>Proposed Charge</u>	<u>Increase</u>
General Water	2.40	2.73	13.75 %
Anheuser-Busch	1.2382	1.4085	13.75 %
Hudson	1.5249	1.7346	13.75 %
Milford	1.5108	1.7185	13.75 %

Pennichuck Water Works, Inc.

Ratios of Present Rates

Customer Charges

<u>Meter Size</u>	<u>Monthly Present Rate</u>	<u>Present Ratio to 5/8"</u>	<u>AWWA Capacity Ratios</u>	<u>Present Ratio as % of AWWA</u>	
5/8"	15.36	1.00	1.00	100.00	%
3/4"	22.11	1.44	1.50	95.96	%
1"	35.61	2.32	2.50	92.73	%
1 1/2"	69.39	4.52	5.00	90.35	%
2"	113.60	7.40	8.00	92.45	%
3"	208.32	13.56	15.00	90.42	%
4"	343.57	22.37	25.00	89.47	%
6"	681.74	44.38	50.00	88.77	%
8"	1,087.64	70.81	80.00	88.51	%
10"	1,561.06	101.63	115.00	88.38	%

Pennichuck Water Works, Inc.  
Summary of Proposed Rates

General Service - Metered  
Schedule G-M

<u>Meter Size</u>	<u>Quarterly Proposed Charge</u>	<u>Monthly Proposed Charge</u>
5/8"	\$ 51.27	\$ 17.09
3/4"	73.89	24.63
1"	119.01	39.67
1 1/2"	231.93	77.31
2"	379.68	126.56
3"	696.27	232.09
4"	1,148.31	382.77
6"	2,278.59	759.53
8"	3,635.22	1,211.74
10"	5,217.54	1,739.18
Volumetric Charge per 100 cu. ft.	\$ 2.73	\$ 2.73

Municipal Fire Protection Service  
Schedule FP-M

	<u>Quarterly Proposed Charge</u>	<u>Monthly Proposed Charge</u>
Each Hydrant	\$ 44.25	\$ 14.75
Inch-Foot per year	\$0.11370	

Private Fire Protection Service  
Schedule FP-NM

<u>Connection Size</u>	<u>Quarterly Proposed Charge</u>	<u>Monthly Proposed Charge</u>
4" or smaller	\$ 157.26	\$ 52.42
6"	263.88	87.96
8" or larger	388.50	129.50

Special Contract Service

Anheuser-Busch

Volumetric Charge per 100 cu. ft.	\$ 1.4085
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Hudson

Annual Charge	\$ 32,800
Volumetric Charge per 100 cu. ft.	\$ 1.7346

Milford

Annual Fixed Fee	\$ 81,000
Volumetric Charge per 100 cu. ft.	\$ 1.7185



Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates

General Service - Metered

Residential

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
5/8"	22,728	90,912	\$ 51.27	\$ 4,661,058.24
3/4"	311	1,244	73.89	91,919.16
1"	200	800	119.01	95,208.00
1 1/2"	130	520	231.93	120,603.60
2"	45	180	379.68	68,342.40
3"	19	76	696.27	52,916.52
4"	3	12	1,148.31	13,779.72
6"	0	0	2,278.59	0.00
8"	0	0	3,635.22	0.00
10"	0	0	5,217.54	0.00
Subtotal	23,436	93,744		\$ 5,103,827.64
<u>CCFT</u>				
Volume	3,706,390		\$ 2.73	\$ 10,118,444.70
Total Residential Revenue				\$ 15,222,272.34

Commercial

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
5/8"	593	2,372	\$ 51.27	\$ 121,612.44
3/4"	171	684	73.89	50,540.76
1"	254	1,016	119.01	120,914.16
1 1/2"	219	876	231.93	203,170.68
2"	153	612	379.68	232,364.16
3"	17	68	696.27	47,346.36
4"	3	12	1,148.31	13,779.72
6"	2	8	2,278.59	18,228.72
8"	0	0	3,635.22	0.00
10"	0	0	5,217.54	0.00
Subtotal	1,412	5,648		\$ 807,957.00
<u>CCFT</u>				
Volume	862,696		\$ 2.73	\$ 2,355,160.08
Total Commercial Revenue				\$ 3,163,117.08

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates

General Service - Metered

Industrial

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
5/8"	30	120	\$ 51.27	\$ 6,152.40
3/4"	17	68	73.89	5,024.52
1"	38	152	119.01	18,089.52
1 1/2"	30	120	231.93	27,831.60
2"	33	132	379.68	50,117.76
3"	15	60	696.27	41,776.20
4"	4	16	1,148.31	18,372.96
6"	2	8	2,278.59	18,228.72
8"	1	4	3,635.22	14,540.88
10"	0	0	5,217.54	0.00
Subtotal	170	680		\$ 200,134.56
	<u>CCFT</u>			
Volume	288,156		\$ 2.73	\$ 786,665.88
Total Industrial Revenue				\$ 986,800.44

Municipal

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
5/8"	17	68	\$ 51.27	\$ 3,486.36
3/4"	9	36	73.89	2,660.04
1"	17	68	119.01	8,092.68
1 1/2"	25	100	231.93	23,193.00
2"	37	148	379.68	56,192.64
3"	8	32	696.27	22,280.64
4"	2	8	1,148.31	9,186.48
6"	1	4	2,278.59	9,114.36
8"		0	3,635.22	0.00
10"		0	5,217.54	0.00
Subtotal	116	464		\$ 134,206.20
	<u>CCFT</u>			
Volume	80,329		\$ 2.73	\$ 219,298.17
Total Municipal Revenue				\$ 353,504.37
Grand Total GWS Revenue				\$ 19,725,694.23

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates

Service to Contract Customers

Town of Milford

		<u>Proposed Rate</u>	<u>Proposed Revenue</u>
Annual Fixed Fee		\$ 81,000.00	\$ 81,000.00
Volume	<u>CCFT</u> 42,400	\$ 1.7185	\$ 72,864.40
Total Milford Revenue			\$ 153,864.40

Town of Hudson

		<u>Proposed Rate</u>	<u>Proposed Revenue</u>
Annual Demand Charge		\$ 32,800.00	\$ 32,800.00
Volume	<u>CCFT</u> 182,214	\$ 1.7346	\$ 316,068.40
Total Hudson Revenue			\$ 348,868.40

Anheuser-Busch

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
6"	2	24	\$ 759.53	\$ 18,228.72
Volume	<u>CCFT</u> 861,600		1.4085	\$ 1,213,563.60
Total Anheuser-Busch Revenue				\$ 1,231,792.32
Grand Total Contract Revenue				\$ 1,734,525.12

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates

Fire Protection Service

Private Fire Protection

<u>Size</u>	<u>Number</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
2"	25	300	\$ 52.42	\$ 15,726.00
4"	102	1,224	52.42	64,162.08
6"	359	4,308	87.96	378,931.68
8"	274	3,288	129.50	425,796.00
10"	6	72	129.50	9,324.00
12"	13	156	129.50	20,202.00
16"	1	12	129.50	1,554.00
Total	780	9,360		\$ 915,695.76

Municipal Fire Protection

<u>Size</u>	<u>Number</u>	<u>of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
Hydrant	2,458	60	\$ 14.75	\$ 435,066.00
Inch-Feet	18,344,114		0.11370	2,085,725.76
Total Municipal Fire Revenue				\$ 2,520,791.76

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates

Total Proposed Rate Revenue

Grand Total GWS Revenue	\$ 19,725,694.23
Grand Total Contract Revenue	\$ 1,734,525.12
Grand Total Private Fire Revenue	\$ 915,695.76
Grand Total Municipal Fire Revenue	\$ 2,520,791.76
Grand Total Proposed Revenue	\$ 24,896,706.87
Total Customer Charge Revenue	\$ 6,264,354.12
Total Volume Charge Revenue	\$ 15,082,065.23
Total Contract Fixed Fee Revenue	\$ 113,800.00
Total Private Fire Revenue	\$ 915,695.76
Total Municipal Fire Revenue	\$ 2,520,791.76
Grand Total Proposed Revenue	\$ 24,896,706.87
Net Water Revenue Requirement	\$ 24,896,859.00
Difference	\$ (152.13) -0.001%

Note: For purposes of this calculation, all general service customer charges are treated as quarterly bills and all fire service charges are treated as monthly bills.

Pennichuck Water Works, Inc.

Comparison of Cost of Service Indications and Proposed Rate Revenues

	<u>Cost of Service</u>		<u>Proposed Rates</u>	
	<u>\$</u>	<u>%</u>	<u>\$</u>	<u>%</u>
Water Service Revenue	21,460,356	86.20	21,460,219.35	86.20
Private Fire Revenue	915,665	3.68	915,695.76	3.68
Municipal Fire Revenue	2,520,838	10.12	2,520,791.76	10.12
Total Revenues	24,896,859	100.00	24,896,706.87	100.00

PENNICHUCK WATER WORKS, INC.  
MERRIMACK, NEW HAMPSHIRE

SCHEDULES TO ACCOMPANY

ADDENDUM TO

REPORT ON

COST OF SERVICE ALLOCATIONS

AND WATER RATE DESIGN

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ADDITIONAL RATE DESIGN SCENARIOS

by

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June 2008

PENNICHUCK WATER WORKS, INC.  
MERRIMACK, NEW HAMPSHIRE

RATE DESIGN FOR  
TEMPORARY RATE INCREASE



Pennichuck Water Works, Inc.

Comparison of Present Rate Revenues and Cost of Service Indications  
Temporary Rate Increase

	<u>Present Rates</u>		<u>Cost of Service</u>	
	\$	%	\$	%
Water Service Revenue	19,001,220.57	86.34	20,817,340	86.20
Private Fire Revenue	512,713.68	2.33	888,722	3.68
Municipal Fire Revenue	2,493,950.40	11.33	2,443,984	10.12
Total Revenues	22,007,884.65	100.00	24,150,046	100.00

Note: Above "Cost of Service" amounts result from applying the class percentages developed in the Cost of Service Allocation Study to the revenue being requested for the Temporary Rate Increase. The following ratios the Temporary Rate Increase to the Cost of Service Indications for rate design purposes.

	<u>COS Study</u>	<u>Temporary</u>
<u>Municipal Fire:</u>		
Hydrant	476,877	462,338
Inch-Foot	2,043,961	1,981,646
Total	2,520,838	2,443,984
<u>Water Service:</u>		
Customer Charge	6,270,868	6,080,113
Volume Charge	15,082,217	14,623,427
Fixed Fee	113,800	113,800
Total	21,466,885	20,817,340

Pennichuck Water Works, Inc.

Rate Design  
Temporary Rate Increase

Municipal Fire Protection

Indicated Revenue Requirements per Temporary Rate  
Increase Adjustment to Cost of Service results:

Hydrants	462,338
Inch-Foot	1,981,646
Total	2,443,984

Present Rate Revenue

Hydrants	408,225
Inch-Foot	2,085,726
Total	2,493,951

Present rate revenue is greater than adjusted COS amounts.

Difference = 49,967

No Change to municipal fire protection rates for temporary  
rate increase. Credit difference to private fire.

Pennichuck Water Works, Inc.

Rate Design  
Temporary Rate Increase

Private Fire Protection

Total Private Fire Protection Rev Reqmt	888,722
Less Credit from Municipal Fire Protection	(49,967)
Net Private Fire Protection Rev Reqmt	838,755
Present Private Fire Protection Revenue	512,714
Increase Required	63.59 %

<u>Size</u>	<u>Present Monthly Charge</u>	<u>Proposed Monthly Charge</u>	<u>Proposed Quarterly Charge</u>	<u>Increase</u>
2"	29.35	48.01	144.03	63.58 %
4"	29.35	48.01	144.03	63.58 %
6"	49.25	80.57	241.71	63.59 %
8"	72.51	118.62	355.86	63.59 %
10"	72.51	118.62	355.86	63.59 %
12"	72.51	118.62	355.86	63.59 %
16"	72.51	118.62	355.86	63.59 %

Pennichuck Water Works, Inc.

Rate Design  
Temporary Rate Increase

Customer Charges

Total for Customer Charge	6,080,113
Present Customer Charge Revenue	5,628,501
Increase Required	8.02 %

Meter Size	Present Monthly Charge	Proposed Monthly Charge	Proposed Quarterly Charge	Increase
5/8"	15.36	16.59	49.77	8.01 %
3/4"	22.11	23.88	71.64	8.01 %
1"	35.61	38.47	115.41	8.03 %
1 1/2"	69.39	74.96	224.88	8.03 %
2"	113.60	122.71	368.13	8.02 %
3"	208.32	225.03	675.09	8.02 %
4"	343.57	371.12	1,113.36	8.02 %
6"	681.74	736.42	2,209.26	8.02 %
8"	1,087.64	1,174.87	3,524.61	8.02 %
10"	1,561.06	1,686.26	5,058.78	8.02 %

Pennichuck Water Works, Inc.

Rate Design  
Temporary Rate Increase

Volumetric Charges

Net Water Revenue Requirement	24,150,046
Less Proposed Revenues:	
From Municipal Fire Protection	(2,493,950)
From Private Fire Protection	(838,754)
From Customer Charges	(6,079,410)
From Contract Fixed Fees	(113,800)
Net Required From Volume Charges	14,624,132
Present Volume Charge Revenue	13,258,920
Increase Required	10.30 %

	<u>Present Charge</u>	<u>Proposed Charge</u>	<u>Increase</u>
General Water	2.40	2.647	10.29 %
Anheuser-Busch	1.2382	1.3657	10.30 %
Hudson	1.5249	1.6820	10.30 %
Milford	1.5108	1.6664	10.30 %

Pennichuck Water Works, Inc.  
Summary of Proposed Rates  
Temporary Rate Increase

General Service - Metered  
Schedule G-M

<u>Meter Size</u>	<u>Quarterly Proposed Charge</u>	<u>Monthly Proposed Charge</u>
5/8"	\$ 49.77	\$ 16.59
3/4"	71.64	23.88
1"	115.41	38.47
1 1/2"	224.88	74.96
2"	368.13	122.71
3"	675.09	225.03
4"	1,113.36	371.12
6"	2,209.26	736.42
8"	3,524.61	1,174.87
10"	5,058.78	1,686.26
Volumetric Charge per 100 cu. ft.	\$ 2.647	\$ 2.647

Municipal Fire Protection Service  
Schedule FP-M

	<u>Quarterly Proposed Charge</u>	<u>Monthly Proposed Charge</u>
Each Hydrant	\$ 41.52	\$ 13.84
Inch-Foot per year	\$0.11370	

Private Fire Protection Service  
Schedule FP-NM

<u>Connection Size</u>	<u>Quarterly Proposed Charge</u>	<u>Monthly Proposed Charge</u>
4" or smaller	\$ 144.03	\$ 48.01
6"	241.71	80.57
8" or larger	355.86	118.62

Special Contract Service

Anheuser-Busch

Volumetric Charge  
per 100 cu. ft. \$ 1.3657

Hudson

Annual Charge \$ 32,800  
Volumetric Charge  
per 100 cu. ft. \$ 1.6820

Milford

Annual Fixed Fee \$ 81,000  
Volumetric Charge  
per 100 cu. ft. \$ 1.6664

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates  
Temporary Rate Increase  
General Service - Metered

Residential

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
5/8"	22,728	90,912	\$ 49.77	\$ 4,524,690.24
3/4"	311	1,244	71.64	89,120.16
1"	200	800	115.41	92,328.00
1 1/2"	130	520	224.88	116,937.60
2"	45	180	368.13	66,263.40
3"	19	76	675.09	51,306.84
4"	3	12	1,113.36	13,360.32
6"	0	0	2,209.26	0.00
8"	0	0	3,524.61	0.00
10"	0	0	5,058.78	0.00
Subtotal	23,436	93,744		\$ 4,954,006.56
<u>CCFT</u>				
Volume	3,706,390		\$ 2.647	\$ 9,810,814.33
Total Residential Revenue				\$ 14,764,820.89

Commercial

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
5/8"	593	2,372	\$ 49.77	\$ 118,054.44
3/4"	171	684	71.64	49,001.76
1"	254	1,016	115.41	117,256.56
1 1/2"	219	876	224.88	196,994.88
2"	153	612	368.13	225,295.56
3"	17	68	675.09	45,906.12
4"	3	12	1,113.36	13,360.32
6"	2	8	2,209.26	17,674.08
8"	0	0	3,524.61	0.00
10"	0	0	5,058.78	0.00
Subtotal	1,412	5,648		\$ 783,543.72
<u>CCFT</u>				
Volume	862,696		\$ 2.647	\$ 2,283,556.31
Total Commercial Revenue				\$ 3,067,100.03

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates  
Temporary Rate Increase  
General Service - Metered

Industrial

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
5/8"	30	120	\$ 49.77	\$ 5,972.40
3/4"	17	68	71.64	4,871.52
1"	38	152	115.41	17,542.32
1 1/2"	30	120	224.88	26,985.60
2"	33	132	368.13	48,593.16
3"	15	60	675.09	40,505.40
4"	4	16	1,113.36	17,813.76
6"	2	8	2,209.26	17,674.08
8"	1	4	3,524.61	14,098.44
10"	0	0	5,058.78	0.00
Subtotal	170	680		\$ 194,056.68
	<u>CCFT</u>			
Volume	288,156		\$ 2.647	\$ 762,748.93
Total Industrial Revenue				\$ 956,805.61

Municipal

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
5/8"	17	68	\$ 49.77	\$ 3,384.36
3/4"	9	36	71.64	2,579.04
1"	17	68	115.41	7,847.88
1 1/2"	25	100	224.88	22,488.00
2"	37	148	368.13	54,483.24
3"	8	32	675.09	21,602.88
4"	2	8	1,113.36	8,906.88
6"	1	4	2,209.26	8,837.04
8"		0	3,524.61	0.00
10"		0	5,058.78	0.00
Subtotal	116	464		\$ 130,129.32
	<u>CCFT</u>			
Volume	80,329		\$ 2.647	\$ 212,630.86
Total Municipal Revenue				\$ 342,760.18
Grand Total GWS Revenue				\$ 19,131,486.72



Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates  
Temporary Rate Increase  
Service to Contract Customers

Town of Milford

		<u>Proposed Rate</u>	<u>Proposed Revenue</u>
Annual Fixed Fee		\$ 81,000.00	\$ 81,000.00
Volume	<u>CCFT</u> 42,400	\$ 1.6664	\$ 70,655.36
Total Milford Revenue			\$ 151,655.36

Town of Hudson

		<u>Proposed Rate</u>	<u>Proposed Revenue</u>
Annual Demand Charge		\$ 32,800.00	\$ 32,800.00
Volume	<u>CCFT</u> 182,214	\$ 1.6820	\$ 306,483.95
Total Hudson Revenue			\$ 339,283.95

Anheuser-Busch

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
6"	2	24	\$ 736.42	\$ 17,674.08
Volume	<u>CCFT</u> 861,600		1.3657	\$ 1,176,687.12
Total Anheuser-Busch Revenue				\$ 1,194,361.20
Grand Total Contract Revenue				\$ 1,685,300.51

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates  
Temporary Rate Increase  
Fire Protection Service

Private Fire Protection

<u>Size</u>	<u>Number</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
2"	25	300	\$ 48.01	\$ 14,403.00
4"	102	1,224	48.01	58,764.24
6"	359	4,308	80.57	347,095.56
8"	274	3,288	118.62	390,022.56
10"	6	72	118.62	8,540.64
12"	13	156	118.62	18,504.72
16"	1	12	118.62	1,423.44
Total	780	9,360		\$ 838,754.16

Municipal Fire Protection

<u>Size</u>	<u>Number</u>	<u>of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
Hydrant	2,458	60	\$ 13.84	\$ 408,224.64
Inch-Feet	18,344,114		0.11370	2,085,725.76
Total Municipal Fire Revenue				\$ 2,493,950.40

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates  
Temporary Rate Increase  
Total Proposed Rate Revenue

Grand Total GWS Revenue	\$ 19,131,486.72
Grand Total Contract Revenue	\$ 1,685,300.51
Grand Total Private Fire Revenue	\$ 838,754.16
Grand Total Municipal Fire Revenue	\$ 2,493,950.40
Grand Total Proposed Revenue	\$ 24,149,491.79
Total Customer Charge Revenue	\$ 6,079,410.36
Total Volume Charge Revenue	\$ 14,623,576.87
Total Contract Fixed Fee Revenue	\$ 113,800.00
Total Private Fire Revenue	\$ 838,754.16
Total Municipal Fire Revenue	\$ 2,493,950.40
Grand Total Proposed Revenue	\$ 24,149,491.79
Net Water Revenue Requirement	\$ 24,150,046.00
Difference	\$ (554.21) -0.002%

Note: For purposes of this calculation, all general service customer charges are treated as quarterly bills and all fire service charges are treated as monthly bills.

PENNICHUCK WATER WORKS, INC.  
MERRIMACK, NEW HAMPSHIRE

RATE DESIGN FOR  
STEP 1 RATE INCREASE

Pennichuck Water Works, Inc.

Comparison of Present Rate Revenues and Cost of Service Indications  
Step 1 Rate Increase

	<u>Present Rates</u>		<u>Cost of Service</u>	
	\$	%	\$	%
Water Service Revenue	19,001,220.57	86.34	22,405,209	86.20
Private Fire Revenue	512,713.68	2.33	956,510	3.68
Municipal Fire Revenue	2,493,950.40	11.33	2,630,403	10.12
Total Revenues	22,007,884.65	100.00	25,992,122	100.00

Note: Above "Cost of Service" amounts result from applying the class percentages developed in the Cost of Service Allocation Study to the revenue being requested for the Step 1 Rate Increase. The following ratios the Step 1 Rate Increase to the Cost of Service Indications for rate design purposes.

	<u>COS Study</u>	<u>Step 1</u>
<u>Municipal Fire:</u>		
Hydrant	476,877	497,604
Inch-Foot	2,043,961	2,132,799
Total	2,520,838	2,630,403
<u>Water Service:</u>		
Customer Charge	6,270,868	6,546,430
Volume Charge	15,082,217	15,744,979
Fixed Fee	113,800	113,800
Total	21,466,885	22,405,209

Pennichuck Water Works, Inc.

Rate Design  
Step 1 Rate Increase

Municipal Fire Protection

Total Hydrant Revenue Requirement	497,604
Number of Hydrants	2,458
Annual Cost per Hydrant	202.44
Monthly Charge per Hydrant	16.87
Quarterly Charge per Hydrant	50.61
Total Inch-Foot Revenue Requirement	2,132,799
Number of Inch-Feet	18,344,114
Annual Charge per Inch-Foot	0.11627

Pennichuck Water Works, Inc.

Rate Design  
Step 1 Rate Increase

Private Fire Protection

Total Private Fire Protection Rev Reqmt	956,510
Present Private Fire Protection Revenue	512,714
Increase Required	86.56 %

<u>Size</u>	<u>Present Monthly Charge</u>	<u>Proposed Monthly Charge</u>	<u>Proposed Quarterly Charge</u>	<u>Increase</u>
2"	29.35	54.76	164.28	86.58 %
4"	29.35	54.76	164.28	86.58 %
6"	49.25	91.88	275.64	86.56 %
8"	72.51	135.27	405.81	86.55 %
10"	72.51	135.27	405.81	86.55 %
12"	72.51	135.27	405.81	86.55 %
16"	72.51	135.27	405.81	86.55 %

Pennichuck Water Works, Inc.

Rate Design  
Step 1 Rate Increase

Customer Charges

Total for Customer Charge	6,546,430
Present Customer Charge Revenue	5,628,501
Increase Required	16.31 %

<u>Meter Size</u>	<u>Present Monthly Charge</u>	<u>Proposed Monthly Charge</u>	<u>Proposed Quarterly Charge</u>	<u>Increase</u>
5/8"	15.36	17.87	53.61	16.34 %
3/4"	22.11	25.71	77.13	16.28 %
1"	35.61	41.41	124.23	16.29 %
1 1/2"	69.39	80.70	242.10	16.30 %
2"	113.60	132.12	396.36	16.30 %
3"	208.32	242.29	726.87	16.31 %
4"	343.57	399.60	1,198.80	16.31 %
6"	681.74	792.92	2,378.76	16.31 %
8"	1,087.64	1,265.02	3,795.06	16.31 %
10"	1,561.06	1,815.66	5,446.98	16.31 %



Pennichuck Water Works, Inc.

Rate Design  
Step 1 Rate Increase

Volumetric Charges

Net Water Revenue Requirement	25,992,122
Less Proposed Revenues:	
From Municipal Fire Protection	(2,630,468)
From Private Fire Protection	(956,506)
From Customer Charges	(6,547,695)
From Contract Fixed Fees	(113,800)
Net Required From Volume Charges	15,743,653
Present Volume Charge Revenue	13,258,920
Increase Required	18.74 %

	<u>Present Charge</u>	<u>Proposed Charge</u>	<u>Increase</u>
General Water	2.40	2.850	18.75 %
Anheuser-Busch	1.2382	1.4702	18.74 %
Hudson	1.5249	1.8107	18.74 %
Milford	1.5108	1.7939	18.74 %

Pennichuck Water Works, Inc.  
Summary of Proposed Rates  
Step 1 Rate Increase

General Service - Metered  
Schedule G-M

<u>Meter Size</u>	<u>Quarterly Proposed Charge</u>	<u>Monthly Proposed Charge</u>
5/8"	\$ 53.61	\$ 17.87
3/4"	77.13	25.71
1"	124.23	41.41
1 1/2"	242.10	80.70
2"	396.36	132.12
3"	726.87	242.29
4"	1,198.80	399.60
6"	2,378.76	792.92
8"	3,795.06	1,265.02
10"	5,446.98	1,815.66
Volumetric Charge per 100 cu. ft.	\$ 2.850	\$ 2.850

Municipal Fire Protection Service  
Schedule FP-M

	<u>Quarterly Proposed Charge</u>	<u>Monthly Proposed Charge</u>
Each Hydrant	\$ 50.61	\$ 16.87
Inch-Foot per year	\$0.11627	

Private Fire Protection Service  
Schedule FP-NM

<u>Connection Size</u>	<u>Quarterly Proposed Charge</u>	<u>Monthly Proposed Charge</u>
4" or smaller	\$ 164.28	\$ 54.76
6"	275.64	91.88
8" or larger	405.81	135.27

Special Contract Service

Anheuser-Busch

Volumetric Charge per 100 cu. ft.	\$ 1.4702
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Hudson

Annual Charge	\$ 32,800
Volumetric Charge per 100 cu. ft.	\$ 1.8107

Milford

Annual Fixed Fee	\$ 81,000
Volumetric Charge per 100 cu. ft.	\$ 1.7939

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates  
Step 1 Rate Increase  
General Service - Metered

Residential

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
5/8"	22,728	90,912	\$ 53.61	\$ 4,873,792.32
3/4"	311	1,244	77.13	95,949.72
1"	200	800	124.23	99,384.00
1 1/2"	130	520	242.10	125,892.00
2"	45	180	396.36	71,344.80
3"	19	76	726.87	55,242.12
4"	3	12	1,198.80	14,385.60
6"	0	0	2,378.76	0.00
8"	0	0	3,795.06	0.00
10"	0	0	5,446.98	0.00
Subtotal	23,436	93,744		\$ 5,335,990.56
	<u>CCFT</u>			
Volume	3,706,390		\$ 2.850	\$ 10,563,211.50
Total Residential Revenue				\$ 15,899,202.06

Commercial

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
5/8"	593	2,372	\$ 53.61	\$ 127,162.92
3/4"	171	684	77.13	52,756.92
1"	254	1,016	124.23	126,217.68
1 1/2"	219	876	242.10	212,079.60
2"	153	612	396.36	242,572.32
3"	17	68	726.87	49,427.16
4"	3	12	1,198.80	14,385.60
6"	2	8	2,378.76	19,030.08
8"	0	0	3,795.06	0.00
10"	0	0	5,446.98	0.00
Subtotal	1,412	5,648		\$ 843,632.28
	<u>CCFT</u>			
Volume	862,696		\$ 2.850	\$ 2,458,683.60
Total Commercial Revenue				\$ 3,302,315.88

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates  
Step 1 Rate Increase  
General Service - Metered

Industrial

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
5/8"	30	120	\$ 53.61	\$ 6,433.20
3/4"	17	68	77.13	5,244.84
1"	38	152	124.23	18,882.96
1 1/2"	30	120	242.10	29,052.00
2"	33	132	396.36	52,319.52
3"	15	60	726.87	43,612.20
4"	4	16	1,198.80	19,180.80
6"	2	8	2,378.76	19,030.08
8"	1	4	3,795.06	15,180.24
10"	0	0	5,446.98	0.00
Subtotal	170	680		\$ 208,935.84
Volume	<u>CCFT</u> 288,156		\$ 2.850	\$ 821,244.60
Total Industrial Revenue				\$ 1,030,180.44

Municipal

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
5/8"	17	68	\$ 53.61	\$ 3,645.48
3/4"	9	36	77.13	2,776.68
1"	17	68	124.23	8,447.64
1 1/2"	25	100	242.10	24,210.00
2"	37	148	396.36	58,661.28
3"	8	32	726.87	23,259.84
4"	2	8	1,198.80	9,590.40
6"	1	4	2,378.76	9,515.04
8"		0	3,795.06	0.00
10"		0	5,446.98	0.00
Subtotal	116	464		\$ 140,106.36
Volume	<u>CCFT</u> 80,329		\$ 2.850	\$ 228,937.65
Total Municipal Revenue				\$ 369,044.01
Grand Total GWS Revenue				\$ 20,600,742.39

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates  
Step 1 Rate Increase  
Service to Contract Customers

Town of Milford

		<u>Proposed Rate</u>	<u>Proposed Revenue</u>
Annual Fixed Fee		\$ 81,000.00	\$ 81,000.00
Volume	<u>CCFT</u> 42,400	\$ 1.7939	\$ 76,061.36
Total Milford Revenue			\$ 157,061.36

Town of Hudson

		<u>Proposed Rate</u>	<u>Proposed Revenue</u>
Annual Demand Charge		\$ 32,800.00	\$ 32,800.00
Volume	<u>CCFT</u> 182,214	\$ 1.8107	\$ 329,934.89
Total Hudson Revenue			\$ 362,734.89

Anheuser-Busch

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
6"	2	24	\$ 792.92	\$ 19,030.08
Volume	<u>CCFT</u> 861,600		1.4702	\$ 1,266,724.32
Total Anheuser-Busch Revenue				\$ 1,285,754.40
Grand Total Contract Revenue				\$ 1,805,550.65

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates  
Step 1 Rate Increase  
Fire Protection Service

Private Fire Protection

<u>Size</u>	<u>Number</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
2"	25	300	\$ 54.76	\$ 16,428.00
4"	102	1,224	54.76	67,026.24
6"	359	4,308	91.88	395,819.04
8"	274	3,288	135.27	444,767.76
10"	6	72	135.27	9,739.44
12"	13	156	135.27	21,102.12
16"	1	12	135.27	1,623.24
Total	780	9,360		\$ 956,505.84

Municipal Fire Protection

<u>Size</u>	<u>Number</u>	<u>of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
Hydrant	2,458	60	\$ 16.87	\$ 497,597.52
Inch-Feet	18,344,114		0.11627	2,132,870.13
Total Municipal Fire Revenue				\$ 2,630,467.65

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates  
Step 1 Rate Increase  
Total Proposed Rate Revenue

Grand Total GWS Revenue	\$ 20,600,742.39
Grand Total Contract Revenue	\$ 1,805,550.65
Grand Total Private Fire Revenue	\$ 956,505.84
Grand Total Municipal Fire Revenue	\$ 2,630,467.65
Grand Total Proposed Revenue	\$ 25,993,266.53
Total Customer Charge Revenue	\$ 6,547,695.12
Total Volume Charge Revenue	\$ 15,744,797.92
Total Contract Fixed Fee Revenue	\$ 113,800.00
Total Private Fire Revenue	\$ 956,505.84
Total Municipal Fire Revenue	\$ 2,630,467.65
Grand Total Proposed Revenue	\$ 25,993,266.53
Net Water Revenue Requirement	\$ 25,992,122.00
Difference	\$ 1,144.53 0.004%

Note: For purposes of this calculation, all general service customer charges are treated as quarterly bills and all fire service charges are treated as monthly bills.

PENNICHUCK WATER WORKS, INC.  
MERRIMACK, NEW HAMPSHIRE

RATE DESIGN FOR  
STEP 2 RATE INCREASE



Pennichuck Water Works, Inc.

Comparison of Present Rate Revenues and Cost of Service Indications  
Step 2 Rate Increase

	<u>Present Rates</u>		<u>Cost of Service</u>	
	\$	%	\$	%
Water Service Revenue	19,001,220.57	86.34	23,436,290	86.20
Private Fire Revenue	512,713.68	2.33	1,000,528	3.68
Municipal Fire Revenue	2,493,950.40	11.33	2,751,453	10.12
Total Revenues	22,007,884.65	100.00	27,188,271	100.00

Note: Above "Cost of Service" amounts result from applying the class percentages developed in the Cost of Service Allocation Study to the revenue being requested for the Step 2 Rate Increase. The following ratios the Step 2 Rate Increase to the Cost of Service Indications for rate design purposes.

	<u>COS Study</u>	<u>Step 2</u>
<u>Municipal Fire:</u>		
Hydrant	476,877	520,503
Inch-Foot	2,043,961	2,230,950
Total	2,520,838	2,751,453
<u>Water Service:</u>		
Customer Charge	6,270,868	6,849,233
Volume Charge	15,082,217	16,473,257
Fixed Fee	113,800	113,800
Total	21,466,885	23,436,290

Pennichuck Water Works, Inc.

Rate Design  
Step 2 Rate Increase

Municipal Fire Protection

Total Hydrant Revenue Requirement	520,503
Number of Hydrants	2,458
Annual Cost per Hydrant	211.76
Monthly Charge per Hydrant	17.65
Quarterly Charge per Hydrant	52.95
Total Inch-Foot Revenue Requirement	2,230,950
Number of Inch-Feet	18,344,114
Annual Charge per Inch-Foot	0.12162

Pennichuck Water Works, Inc.

Rate Design  
Step 2 Rate Increase

Private Fire Protection

Total Private Fire Protection Rev Reqmt	1,000,528
Present Private Fire Protection Revenue	512,714
Increase Required	95.14 %

<u>Size</u>	<u>Present Monthly Charge</u>	<u>Proposed Monthly Charge</u>	<u>Proposed Quarterly Charge</u>	<u>Increase</u>
2"	29.35	57.27	171.81	95.13 %
4"	29.35	57.27	171.81	95.13 %
6"	49.25	96.11	288.33	95.15 %
8"	72.51	141.50	424.50	95.15 %
10"	72.51	141.50	424.50	95.15 %
12"	72.51	141.50	424.50	95.15 %
16"	72.51	141.50	424.50	95.15 %

Pennichuck Water Works, Inc.

Rate Design  
Step 2 Rate Increase

Customer Charges

Total for Customer Charge	6,849,233
Present Customer Charge Revenue	5,628,501
Increase Required	21.69 %

<u>Meter Size</u>	<u>Present Monthly Charge</u>	<u>Proposed Monthly Charge</u>	<u>Proposed Quarterly Charge</u>	<u>Increase</u>
5/8"	15.36	18.69	56.07	21.68 %
3/4"	22.11	26.90	80.70	21.66 %
1"	35.61	43.32	129.96	21.65 %
1 1/2"	69.39	84.43	253.29	21.67 %
2"	113.60	138.23	414.69	21.68 %
3"	208.32	253.49	760.47	21.68 %
4"	343.57	418.08	1,254.24	21.69 %
6"	681.74	829.60	2,488.80	21.69 %
8"	1,087.64	1,323.54	3,970.62	21.69 %
10"	1,561.06	1,899.64	5,698.92	21.69 %

Pennichuck Water Works, Inc.

Rate Design  
Step 2 Rate Increase

Volumetric Charges

Net Water Revenue Requirement	27,188,271
Less Proposed Revenues:	
From Municipal Fire Protection	(2,751,616)
From Private Fire Protection	(1,000,533)
From Customer Charges	(6,848,664)
From Contract Fixed Fees	(113,800)
Net Required From Volume Charges	16,473,658
Present Volume Charge Revenue	13,258,920
Increase Required	24.25 %

	<u>Present Charge</u>	<u>Proposed Charge</u>	<u>Increase</u>
General Water	2.40	2.982	24.25 %
Anheuser-Busch	1.2382	1.5385	24.25 %
Hudson	1.5249	1.8947	24.25 %
Milford	1.5108	1.8772	24.25 %

Pennichuck Water Works, Inc.  
Summary of Proposed Rates  
Step 2 Rate Increase

General Service - Metered  
Schedule G-M

<u>Meter Size</u>	<u>Quarterly Proposed Charge</u>	<u>Monthly Proposed Charge</u>
5/8"	\$ 56.07	\$ 18.69
3/4"	80.70	26.90
1"	129.96	43.32
1 1/2"	253.29	84.43
2"	414.69	138.23
3"	760.47	253.49
4"	1,254.24	418.08
6"	2,488.80	829.60
8"	3,970.62	1,323.54
10"	5,698.92	1,899.64
Volumetric Charge per 100 cu. ft.	\$ 2.982	\$ 2.982

Municipal Fire Protection Service  
Schedule FP-M

	<u>Quarterly Proposed Charge</u>	<u>Monthly Proposed Charge</u>
Each Hydrant	\$ 52.95	\$ 17.65
Inch-Foot per year	\$0.12162	

Private Fire Protection Service  
Schedule FP-NM

<u>Connection Size</u>	<u>Quarterly Proposed Charge</u>	<u>Monthly Proposed Charge</u>
4" or smaller	\$ 171.81	\$ 57.27
6"	288.33	96.11
8" or larger	424.50	141.50

Special Contract Service

Anheuser-Busch

Volumetric Charge per 100 cu. ft.	\$ 1.5385
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Hudson

Annual Charge	\$ 32,800
Volumetric Charge per 100 cu. ft.	\$ 1.8947

Milford

Annual Fixed Fee	\$ 81,000
Volumetric Charge per 100 cu. ft.	\$ 1.8772

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates  
Step 2 Rate Increase  
General Service - Metered

Residential

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
5/8"	22,728	90,912	\$ 56.07	\$ 5,097,435.84
3/4"	311	1,244	80.70	100,390.80
1"	200	800	129.96	103,968.00
1 1/2"	130	520	253.29	131,710.80
2"	45	180	414.69	74,644.20
3"	19	76	760.47	57,795.72
4"	3	12	1,254.24	15,050.88
6"	0	0	2,488.80	0.00
8"	0	0	3,970.62	0.00
10"	0	0	5,698.92	0.00

Subtotal 23,436 93,744 \$ 5,580,996.24

CCFT  
Volume 3,706,390 \$ 2.982 \$ 11,052,454.98

Total Residential Revenue \$ 16,633,451.22

Commercial

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
5/8"	593	2,372	\$ 56.07	\$ 132,998.04
3/4"	171	684	80.70	55,198.80
1"	254	1,016	129.96	132,039.36
1 1/2"	219	876	253.29	221,882.04
2"	153	612	414.69	253,790.28
3"	17	68	760.47	51,711.96
4"	3	12	1,254.24	15,050.88
6"	2	8	2,488.80	19,910.40
8"	0	0	3,970.62	0.00
10"	0	0	5,698.92	0.00

Subtotal 1,412 5,648 \$ 882,581.76

CCFT  
Volume 862,696 \$ 2.982 \$ 2,572,559.47

Total Commercial Revenue \$ 3,455,141.23

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates  
Step 2 Rate Increase  
General Service - Metered

Industrial

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
5/8"	30	120	\$ 56.07	\$ 6,728.40
3/4"	17	68	80.70	5,487.60
1"	38	152	129.96	19,753.92
1 1/2"	30	120	253.29	30,394.80
2"	33	132	414.69	54,739.08
3"	15	60	760.47	45,628.20
4"	4	16	1,254.24	20,067.84
6"	2	8	2,488.80	19,910.40
8"	1	4	3,970.62	15,882.48
10"	0	0	5,698.92	0.00
Subtotal	170	680		\$ 218,592.72
Volume	<u>CCFT</u> 288,156		\$ 2.982	\$ 859,281.19
Total Industrial Revenue				\$ 1,077,873.91

Municipal

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
5/8"	17	68	\$ 56.07	\$ 3,812.76
3/4"	9	36	80.70	2,905.20
1"	17	68	129.96	8,837.28
1 1/2"	25	100	253.29	25,329.00
2"	37	148	414.69	61,374.12
3"	8	32	760.47	24,335.04
4"	2	8	1,254.24	10,033.92
6"	1	4	2,488.80	9,955.20
8"		0	3,970.62	0.00
10"		0	5,698.92	0.00
Subtotal	116	464		\$ 146,582.52
Volume	<u>CCFT</u> 80,329		\$ 2.982	\$ 239,541.08
Total Municipal Revenue				\$ 386,123.60
Grand Total GWS Revenue				\$ 21,552,589.96



Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates  
Step 2 Rate Increase  
Service to Contract Customers

Town of Milford

		<u>Proposed Rate</u>	<u>Proposed Revenue</u>
Annual Fixed Fee		\$ 81,000.00	\$ 81,000.00
Volume	<u>CCFT</u> 42,400	\$ 1.8772	\$ 79,593.28
Total Milford Revenue			\$ 160,593.28

Town of Hudson

		<u>Proposed Rate</u>	<u>Proposed Revenue</u>
Annual Demand Charge		\$ 32,800.00	\$ 32,800.00
Volume	<u>CCFT</u> 182,214	\$ 1.8947	\$ 345,240.87
Total Hudson Revenue			\$ 378,040.87

Anheuser-Busch

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
6"	2	24	\$ 829.60	\$ 19,910.40
Volume	<u>CCFT</u> 861,600		1.5385	\$ 1,325,571.60
Total Anheuser-Busch Revenue				\$ 1,345,482.00
Grand Total Contract Revenue				\$ 1,884,116.15

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates  
Step 2 Rate Increase  
Fire Protection Service

Private Fire Protection

<u>Size</u>	<u>Number</u>	<u>Number of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
2"	25	300	\$ 57.27	\$ 17,181.00
4"	102	1,224	57.27	70,098.48
6"	359	4,308	96.11	414,041.88
8"	274	3,288	141.50	465,252.00
10"	6	72	141.50	10,188.00
12"	13	156	141.50	22,074.00
16"	1	12	141.50	1,698.00
Total	780	9,360		\$ 1,000,533.36

Municipal Fire Protection

<u>Size</u>	<u>Number</u>	<u>of Bills</u>	<u>Proposed Rate</u>	<u>Proposed Revenue</u>
Hydrant	2,458	60	\$ 17.65	\$ 520,604.40
Inch-Feet	18,344,114		0.12162	2,231,011.14
Total Municipal Fire Revenue				\$ 2,751,615.54

Pennichuck Water Works, Inc.  
Calculation of Revenues Under Proposed Rates  
Step 2 Rate Increase  
Total Proposed Rate Revenue

Grand Total GWS Revenue	\$ 21,552,589.96
Grand Total Contract Revenue	\$ 1,884,116.15
Grand Total Private Fire Revenue	\$ 1,000,533.36
Grand Total Municipal Fire Revenue	\$ 2,751,615.54
Grand Total Proposed Revenue	\$ 27,188,855.01
Total Customer Charge Revenue	\$ 6,848,663.64
Total Volume Charge Revenue	\$ 16,474,242.47
Total Contract Fixed Fee Revenue	\$ 113,800.00
Total Private Fire Revenue	\$ 1,000,533.36
Total Municipal Fire Revenue	\$ 2,751,615.54
Grand Total Proposed Revenue	\$ 27,188,855.01
Net Water Revenue Requirement	\$ 27,188,271.00
Difference	\$ 584.01 0.002%

Note: For purposes of this calculation, all general service customer charges are treated as quarterly bills and all fire service charges are treated as monthly bills.