Manual on Water Rates

& Related Practices

MANUAL ON WATER RATES AND RELATED PRACTICES
(2nd Edition)

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FOREWORD

Water is the foundation for all life. In various ways, the human race depends on this resource. We are dependent on a water supply in everyday life. We face the demanding task of calculating a need-based distribution of water in respective quantity and quality at a cost.

Water is free. It's a product of nature, readily available in lakes, streams, acquifers, and from rain. In presenting the argument that water is free, people forget that it must be collected, treated, stored, and delivered; and always available for whatever needs the customer may have. These steps cost money, and so a responsible price for water must be set. Establishing realistic and fair rates is a key element in the operation of any water system.

Water is a value-added commodity. Its value raises issues of scarcity, competition, and the need for integrated water resource management. The cost of supplying water is increasing, especially the expense of complying with safe drinking water regulations. Cost issues also raise questions related to economies of scale and the structural character of the water supply industry. Finally, pricing deals with sending appropriate signals to customers about the value and cost of water.

INTRODUCTION

The water supply industry believes the public can be served best by self-sustained enterprises adequately financed with rates based on sound engineering, social, and economic principles. It is strongly advocated that a properly operated and managed water utility should be a self-sufficient enterprise.

This manual presents the basic elements involved in the evaluation and allocation of costs of service to the various classes of customers, as well as the development of rates to equitably recover the cost of service from each class of customer. The identification of an established fair market price must reflect the utility's need to maintain and meet future customer needs.

Full-cost pricing, meaning setting a price per unit of water that covers all the costs involved in treating water and delivering it to the customer, is the fairest way of charging for water. To charge the total cost of water to customers as fairly as possible, the system must be 100 percent metered. That means every service or customer must have a meter. If some customers are unmetered, flat rate must be incorporated as part of the total rate schedule, though by so doing, the accuracy and fairness of the rate schedule is automatically reduced.

The potential for substantial water rate-increases and accompanying rate shock looms large, rivaling the past experience of the country's energy utilities. Changes in pricing policies to encourage conservation and the wise use of water may add to the upward pressure on rates. As rates rise. so does concern about customer willingness and ability to pay for water service. All of these issues place demands on water supply managers and regulators as they evaluate costs, allocation of costs, and rate design

alternatives.

This manual presents the fundamentals of the rate-making process and related practices and serves as a resource that the policy maker or manager may draw on to guide the analysis of the validity of rates and the basis on which they are founded. Specific rate making for any particular water utility, based on sound engineering, social, and economic principles, may require the services of experts in rate matters.

This manual is not intended, nor should it be considered as a complete text of water-rate making and practices. The complexities of any system requires consideration of many factors not included in this presentation. Rather, this manual should be used as reference and guide for the procedures and practices used in developing cost-of-service analyses and establishing a structure of rates and charges that meet the objective of being cost-based, adequate, fair, reasonable, and equitable.

A glossary of terms commonly used in the rate-making process is provided to establish its uniformity in defining costs and allocation of costs for providing water utility service and arriving at a structure of rates.

LWUA CORPORATE CREDO

We are concerned with man --
his needs, his health, and his safety.

We develop viable institutions
to provide him and his community
with potable water --
a vital element of life.

We must sustain our own development
to make this commitment --
a continuing reality.

Chapter 1

Requisites of Water Rates

1. GENERAL REQUISITES

Water rates are instruments for recovering the cost of providing adequate water service to customers and must reflect not only the fixed costs of the supply system, but also on the operating expenses of the water district. The cost of service should be equated with revenue requirement for the purpose. Nevertheless, rates should satisfy the following general requisites:

a. Adequacy. The revenues generated out of a water-rate schedule must be sufficient to meet the various elements of revenue requirements of the district. The revenues should be enough to promote the district's growth and to ensure its viability. The rates should lead to stable revenues.

b. Public Service. The rates must be set at a reasonable level to reflect public service. Higher rates will have some effects on consumption. If the rate increase is relatively small, this effect will probably be minimal; if substantial, this effect may be severe.

c. Equitability and Socialized Pricing. The rates must be able to cover the cost of providing the service and to equitably distribute the cost of service to all classifications and sizes of connection. Rates should be made where some minimum level of consumption would be billed at a relatively low fixed cost to benefit the low income group while those who use greater quantities of water would be made to pay higher costs. Simply stated, higher levels of consumption would have higher unit costs.

d. Affordability Level. The rates must be kept affordable to low income group (LIG). The LIG is defined as that sector of residential consumers having the lowest capability to pay for water service. It has been ascertained that a water consumption of 10 cu.m. per month will provide for the basic requirements of those in the LIG. For this purpose, the minimum charge for 1/2" residential connection should not exceed 5% of the average income of the LIG in the service area. This is a measure of the reasonableness of rates and has been regarded as the maximum amount that this income group can pay for their monthly water bill.

e. Enforceability. The rates must be fair and reasonable. They should be justifiable and acceptable to the public. This, in essence, is the rationale why rates are subjected to public hearing as a requisite for confirmation.

f. Water Conservation. The rates must encourage broad water usage in order to achieve economies of scale, i.e., full utilization of system capacity and overall benefit to the community in terms of economic development, health and sanitation. The rates should promote an efficient allocation of water resources, thus discouraging unreasonable and wasteful usage of water.

g. Historical Continuity. The rates must reflect a sense of historical continuity, it being necessary that any rate increase should relate to a definite trend in recent years.

2. LEGAL REQUISITES

The established water rates for the water district should comply with the provisions of Sections 37 and 63 of PD 198, as amended.

a. Rates must be adequate to provide for:

(1) Reimbursement from all new customers for the cost of installing new services and meters;

(2) Revenue from all water deliveries and services performed by the district;

(3) Annual operating expense of the district;

(4) The maintenance of and the repair of the works;

(5) A reasonable surplus for replacement, extension and improvements; and

(6) Payment of interest and principal and provide a sinking fund for payment of debts of the district as they become due and establish fund for reasonable reserves.

b. The rates, after hearing had been conducted for the purpose, are subject to review by the Administration to establish compliance with the above-stated provisions. The confirmed rates are executory and enforceable after the lapse of seven calendar days from posting in a public place in the locality of the district, without prejudice to an appeal being taken by a water concessionaire to the National Water Resources Board (NWRB).

Further, LOI 700 requires, among others, as follows:

a. Ensure that the rates are not abruptly increased beyond the water users ability to pay, seeing to it that each increase, if warranted, does not exceed 60% of the current rate; and

b. The district concerned will conduct public hearings prior to any proposed increase in rates.

3. LWUA REQUISITES

a. For purposes of computing the percentage increase in water rates, the 60 percent limitation shall be based on the existing minimum and commodity charges and not on the effective billing rates.

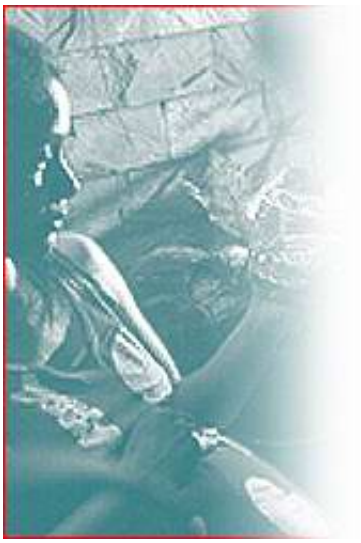
b. In order to ensure the viability of newly formed or depressed water districts, the 60 percent limitation on the increase in water rates shall not be applicable in the following cases:

1. A water district implementing water rates inherited from its predecessor which is not a water district may establish and propose new water rates without reference to the inherited water rates. Such new water rates shall be considered as the initial water rates.

2. A water district completely operational for at least 18 months may establish and propose new water rates without reference to the old water rates implemented prior to the disruption of its operation.

Chapter 2

Basic Guide to Water Rates



This subject should be used as a guide to address the need for basic but useful information on setting water rates. It is intended for small water systems to be used with proper consideration for higher methodology of procedures for bigger water systems.

1. FULL-COST PRICING

Full cost pricing means establishing a price per unit of water (per cu.m.) that covers all the costs involved in producing water and delivering it to the customer.

There are several reasons why full-cost pricing is used. First, it is the fairest way of charging for water. The price tells the customer what it costs to deliver the water to a house or place of business. Second, knowing that everyone must pay the full price, customers will have a tendency not to waste, and therefore, full-cost pricing acts as a conservation measure. Finally, water income will cover expenditures plus provide extra funds for emergencies and small additions or replacements of the system.

In all likelihood the accounting system may need to be updated to show true expenses, public meetings may be necessary to explain the rates and the system's operation, and meters may have to be installed.

To charge the total cost of water to the customers as fairly as possible, the system must be 100 percent metered. That means every service or customer must have a meter, and there must be a master meter on the outlet of each source of supply to show how much water was provided. If some customers are unmetered, a flat rate must be incorporated as part of the total rate schedule.

2. RATE STRUCTURE

A basic rate structure should be made up of two parts. The first part, the base rate, is a charge per customer to recover fixed expenses, including the cost of debt service, reserve requirements, and capital improvements. This charge guarantees enough income to meet the utility's basic costs during periods of low water sales due to drought or other reasons. The second part, called the unit rate, is a charge per unit of water sold to cover the cost of operation, maintenance, and administration. With this two-part structure, all customers share equally in the basic costs of the water system and each pays only for the water used.

It is important to note that a rate schedule that shares the fixed cost equally among all customers, regardless of how much water each uses, is fair only when the demand by all customers is relatively uniform (1/2 inch or 3/4 inch meters, for example). Customers with greater demand who require larger meters need to have an increased "base rate". The increase is calculated using an equivalent meter and service ratio.

a. Determining a base rate to cover fixed expenses. The base rate should cover debt service (repayment of all loan principal and interest payments, capital expenditures (capex), and a reserve. No matter how fair the rates are, sudden large increases upset customers and raise questions about the operations of the system. Income and expense needs may be projected for three to five years. Good practice calls for a yearly review of income and expenses to determine if the rate structure is still satisfactory or needs adjustment.

If there exists a 10 to 15 percent difference between water produced and water sold (as a result of leaks, unauthorized use, and so forth), there is the need to address the problem. That certainly is the case in the example (Figure 1), where the difference between water produced (238,000 cu.m.) and water sold (195,000 cu.m.) is 18 percent. Any reduction in unaccounted-for water will either produce savings (most likely in power, and chemicals) that will reduce the O & M costs or increase income. These savings should be included in the annual rate structure review.

To determine the base rate per month per meter (see Figure 2-1):

(1) Add all the fixed costs, such as the annual loan payment or debt service (P436,000.00), the capex (P261,000.00), and the reserve (P79,000.00), for a total of P776,000.00.

(2) Divide the annual cost of P776,000.00 by 12 to obtain the monthly cost of P64,667.00.

(3) To arrive at the base rate per month per customer, divide the P64,667.00 by the number of customers (865) for a price of P74.75.

b. Determining water unit cost (per thousand cu.m.).The O & M costs listed in Figure 1 form the basis for water unit cost. For most small systems, the unit rate will be the same for all users. In the example, provisions for inflation of 15 percent per year, which amounts to 30 percent the second year and 45 percent the third year, based on current expenses, has been included. This averages to an increase of 30 percent per year.

To determine the cost of water (per thousand cu.m.):

(1) Multiply the total O & M costs (P1,488,000.00) by 15 percent and add the result (P223,200.00) to the P1,488,000.00 for a total of P1,711,200.00.

(2) Divide this figure by the amount of water expected to be sold in thousands of cu.m. on average over the next three years (no expected increase in sales in the example) to determine the cost per thousand cu.m.

The calculations are P1,711,200.00 divided by 195 for a cost of P8,775.00 per thousand cu.m. For the purpose, this figure may be broken down further into 10-cu.m. segments or P87.75 per ten cu.m.

Under this rate structure, the bill for a customer using 30 cu.m. during a billing period would be calculated as follows:

Base charge = P 74.75
Water cost: (3.0 x 87.75) = 263.25
Total due = P338.00

Now that the rate has been established it should be tested to make sure it will produce the required revenues. Table 1 shows the estimated annual funds needed for operation of the sample system.

The expected annual revenues under the established rate of P74.75 for base cost and P8,775.00 per thousand cu.m. sold would be:

Base rate: P74.75 x 865 x 12 mos = P 775,905.00

Water sales:ÿP8,775.00 x 195 (thousand cu.m.) = 1,711,125.00
Total Income = P2,487,030.00

Referring to Table 1, note that the total funds needed amount to P2,487,200.00. The water rate very slightly underfunds the system the first year. At this point there is the need to make a rate chart based on the systems needs. The rate chart should include the base rate and the unit rate. For this example, the chart would look like this:

Water Used Water Bill
0 cu.m. P75.75
0 -10 cu.m. 162.50*
11 - 20 cu.m. 250.25
21 - 30 cu.m. 338.00
31 - 40 cu.m. 425.75
41 - 50 cu.m. 513.50

* Add P87.75 for each step
Note that in the example are not included income from other sources which for most small systems this additional revenue would be very small and can be ignored. In cases in which this added income becomes significant, however, it should be subtracted from the O & M costs before the calculating the cost of water per thousand cu.m.

3. EQUIVALENT METER AND SERVICE RATIO

When there are a number of customers that require considerably more water than residential customers, but still do not use a major portion of the system capacity, it may be necessary to use an equivalent meter and service ratio in establishing the water cost charge.

Assume that all 865 customers in the example are metered. That total includes 710 with 1/2-in. meters, 145 with 3/4-in. meters, and 10 with 1-in. meters. Recognizing that meter and service costs vary (depending on service pipe size, meter size, and materials used), the base cost will vary and can be distributed by an equivalent meter and service ratio. For this example (Table 2), a ratio of 1.0 for 1/2-in. meters, 1.6 for 3/4-in. meters, and 3.2 for 1-in. meters should be used. Table 2 shows how to calculate the charge compared to 1/2-in. meters. The table shows that the smallest meters pay a little less of the base rate and the larger meters pay a little more. The rest of the calculations (cost per thousand cu.m.) remains the same.

If the 974 equivalent 1/2-in. meters are to recover the monthly base charge of P64,667.00, divide P64,667.00 by 974, giving a monthly charge of P66.39. That figure compares to P74.75 in the original example. The monthly base charge would be P66.39 x 1.6 or P106.22, for the 3/4-in. meters, and P66.39 x 3.2, or P212.45, for the 1-in. meters.

4. UNMETERED RATE

If the water system has metered and unmetered customers, the utility must have a rate for both types of customers. In calculating unmetered rates, consider that:

a. Unmetered rates should reflect the fact that these customers generally use more water and, therefore, the use estimate can be adjusted upward. Waste can be a major cost problem.

b. Customers on unmetered rates do not require meter maintenance and meter reading costs and this can be a savings.

After determining the revenue requirements for unmetered customers, it is necessary to design the rates to produce this revenue (number of homes x average use in cu.m.).

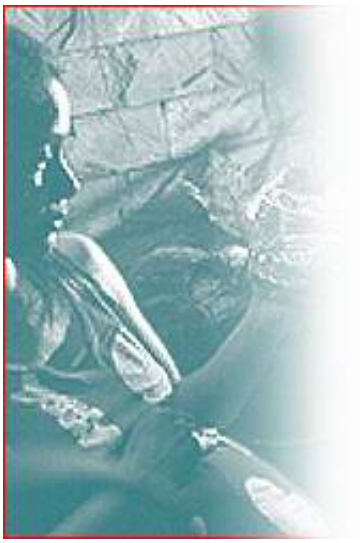
One method of designing unmetered rates involves the use of family units or equivalent family units. Using metered customer records, determine the amount of water used by the average family and adjust that figure upward (10 - 20 percent should be adequate) to account for potential waste because the service is not metered. For non-metered, multifamily buildings, multiply the single-family rate by the number of families living in the building. Industrial or commercial customers can be billed on the basis of equivalent family units. These can be determined by comparing water use by the various nonresidential services with single-family residential services. An alternate method uses the number of water fixtures in the building to determine billing.

5. PUBLIC FIRE PROTECTION RATES

The cost of fire protection can be distributed to all customers benefiting from such protection or through a separate charge. In the first case, the charge is usually the same for each customer and is added to the base charge. The second, and preferred method, is to make a separate charge directly to the municipality or fire district. The simplest method for recovering fire protection costs is on a per-hydrant basis. Determine the total fire protection expenses by adding the cost of all hydrants (including appurtenances) and all water used. The total cost is then divided by the number of hydrants to yield the cost per hydrant per year.

Chapter 3

Basic Connection Charges



There are two basic options of formulating water rate, either the flat rate or the metered rate.

1. FLAT RATE

Flat rate is a fixed monthly charge for the water service paid independently on the amount of water used, usually applied to unmetered connections. A flat charge is usually the first of water rates for a newly formed water district. It is based on such factors as the number of residents, number of rooms, number of plumbing fixtures, or other such physical features. For commercial establishment, water charge is based on the number of employees, the square-meter area of structure, the number of livestock, the number of recreational facilities, or other different items as the basis of charge. However, this practice is now being discouraged as it encourages wasteful usage of water.

2. METERED RATE

It is generally accepted that the charging for water in proportion to the amount and characteristics of use, and hence in proportion to cost, is more equitable than charging on a flat rate basis. Metering of service connections has long been recognized as the economical and equitable procedure for arriving at the appropriate water charges. Metered rates are imposed on the basis of the actual volume of water consumed for a billing period.

The prescribed rate structure consists of two components, namely, the minimum charge (MC) and the commodity charges (CC).

a. Minimum Charge (MC). This is also known as the service charge or the demand charge. Minimum charge is fixed depending on the size and the classification of service connection (customer class) and should cover the first 10 cu.m. of water consumption. The MC is established to cover fixed costs required to carry on vital water supply functions not directly connected with production and distribution.

The MC is set in accordance with the following criteria:

(1) The MC should be within the ability to pay of the low income users. It is established that a 10 cu.m. is enough to supply the domestic water need of low income users. Hence, the MC for 1/2" residential should not exceed 5% of the average monthly family

income of the low income group. In extreme cases where the MC exceeds the 5% of the average monthly family income, any of these two methods may be resorted to:

a) The MC may be halved to reduce the water bills of those consuming water not exceeding 5 cu.m. per month,

(b) A 3/8 in. connection may be used where the flow is regulated to give about a gallon per minute. The MC for this size of connection is equivalent to 40% of that of the 1/2 in. connection.

(2) The MC varies in proportion to the size of the meter such that the bigger the size of the meter, the higher the MC. This is accomplished through the application of capacity factor, also known as equivalent meter and service ratio, a way of reflecting the cost of providing the facilities to meet the demands of the consumers.

b. Commodity Charge (CC. Commodity charge is the amount charged per cu.m. in excess of the minimum charge (first 10 cu.m.) and computed to cover expenses related to production, distribution, and all other costs not recovered from the MC.

The CC is set in accordance with the following criteria:

(1) Volume after the first 10 cu.m. should be divided into quantity blocks of 10 cu.m., with number of blocks of not less than three.

(2) The unit price (cost per cu.m.) per block should increase as consumption increases. The unit price per block within a schedule (according to size and classification of connections) should be in ascending order, i.e. ascending quantity block rate structure.

(3) The incremental increase between blocks could either be at a uniform, increasing, or decreasing trend depending on how the market will react, the cost of alternative water supply, and the relative affluence of large consumers. An irregular or inconsistent incremental increase between quantity blocks should be avoided.

(4) The MC should be uniform per classification of service connection (customer class), regardless of the meter size.

3. COMPUTATION OF FLAT RATE

The following guidelines for computing flat rates (unmetered connections) must be observed:

a. Flat rate should be computed based on the actual average consumption of metered 1/2" residential connections times the existing metered rates (minimum charge + commodity charges) for said connections, using the following formula:

FR = AC x MR

Where:

FR = Flat Rate
AC = Average consumption of metered 1/2" residential connections but not lower than the national industry averages as follows:

(1) Small WDs - (1,1000 connections)
Average consumption, which is equal to or greater than 21 cubic meters times the existing metered rates.

(2) Medium WDs - (1,001 - 5,000 connections)
Average consumption, which is equal to or greater than 23 cubic meters times the existing metered rates.

(3) Large WDs - (above 5,000 connections)
Average consumption, which is equal to or greater than 30 cubic meters times the existing metered rates.

MR = Metered rates (minimum charge + commodity charges)

b. As a priority to metering, the water district should start with big users and those in high pressure areas.

4. CLASSIFICATION OF SERVICE CONNECTIONS

Water service connections are classified into three customer classes. Based on this classification, conversion factors are assigned and used in arriving at the corresponding water rates. The conversion factors are to be multiplied to the residential rates, both to the minimum and commodity charges.

Classification Conversion Factor

Residential/Government 1.0
Commercial/Industrial 2.0 (of Residential)

Commercial-A 1.75
Commercial-B 1.50
Commercial-C 1.25

Bulk/Wholesale 3.0 (of Residential)

The commercial class was deemed too general in classification and the districts found it difficult to deal with the various concessionaires regarding consistency in implementation. This led to the sub-classifications of commercial class with assigned lower conversion factors.

5. SUB-CLASSIFICATIONS OF COMMERCIAL CLASS

Classification Conversion Definition
Factor

Commercial 2.0

- Rest houses
- Hotels, lodges and the likes
- Hospitals, whether private or public
- Cafeterias managed by cooperatives, corporations, etc.
- Ice cream parlors
- Beer houses
- Bars, night clubs and disco pads
- Restaurants
- Gasoline stations
- Bus stations and/or terminals
- CHB and concrete products manufacturers
- Theaters
- Carenderias
- Confectioneries and bakeries
- Ice plants
- Private schools
- Boarding houses
- Billiard halls and other games and entertainment places
- Any residential user who sells or supplies water toothers

Commercial-A 1.75

- Photo services
- Dental and medical clinics
- Warehouses
- Groceries
- Gift shops
- Offices, including government banks
- Drugstores

- Wholesale and retail outlets
- Furniture shops
- Fish and meat stalls in public markets with individual water meters

Commercial-B 1.50

- Sari-sari stores
- Vulcanizing and repair shops
- Other premises utilized for selling foods or services including premises used for living quarters

Commercial-C 1.25

- Apartments whose owners assume payment of water bills using one central water meter

Chapter 4

Development of Water Rates

This subject outlines the basic elements involved in the determination and allocation of the costs of service to the various classes of customers, as well as the development of rates to equitably recover the costs of service from each class of customers (Figure 1). It is intended for self-sustaining water systems to assist them in developing adequate, fair, and equitable water rates.

1. DETERMINATION OF REVENUE REQUIREMENTS

In providing adequate water service to its customers, every water utility must receive sufficient total revenue to ensure proper operation and maintenance (O & M), development and perpetuation of the system, and maintenance of the utility's financial integrity. The first step in utility rate making is to determine the total annual operating revenue requirements for the period in which the rates are to be effective. The revenue requirements are the costs of service to be derived from rates.

One generally accepted and practiced approach to projecting total revenue requirements of a water utility is the cash-needs approach. The essence of the cash-needs approach is that the revenues of the utility must be sufficient to cover all cash needs, including debt obligations as they come due, for the period over which the rates are intended to be adequate.

Basic revenue-requirement components generally include O & M expense, debt-service requirements, and capital expenditures not debt-financed.

The O & M expense component of revenue requirements is based on actual expenditures derived from accounting records with adjustments to reflect the level of expenditure anticipated to be incurred during the period that rates are to be effective. Those revenue requirements of the utility that are generally classified as O & M expenses include salaries and wages, employee fringe benefits, purchased power, other purchased services, rent, chemicals, other materials and supplies, smaller items or equipment that do not extend the useful life of major facilities, and general overheads.

The debt service components of the revenue requirements consist of principal and interest requirements on loans outstanding during the period that rates are effective. The amount of cash required to pay principal and interest on outstanding debt is obtained from established debt-service schedules.

The establishment of the cash requirement for future plant improvements or additions is a decision generally affected by the nature of investment and utility financing policies. Capital expenditures (capex) are generally classified into three broad categories, viz., replacement of existing facilities, normal extensions and improvements, and major capital improvements and

replacements.

Other cash revenue requirements that may be required to be financed from water system revenues might include equity and reserve. Such additional requirements depend on each local situation and should be considered where applicable.

Revenue-required projections. Among the more significant problems confronting water utilities in recent years has been the impact of inflation. Rapidly escalating costs have affected every component of revenue requirements.

One of the most effective methods used to cope with the problem of rapidly increasing costs is the use of a "forward looking," or prospective, rate period, whereby rates are established to meet projected revenue requirements for a specified period. Table 4-1 shows the prospective projection of the cash revenue requirements of a hypothetical utility for a future five-year period and include O & M expense, debt-service requirements, reserve requirements, and capital improvements not debt-financed.

The example in Table 4-1 illustrates that revenues under existing rates are adequate to meet cash requirements in Year 1 but that revenues under existing rates are insufficient in subsequent years. Such an illustration reflects prudent planning in that Year 1 could very well be the current year, for which projections show that revenues will be adequate to meet revenue requirements but that projections for next year, Year 2, show a need for additional revenues.

In allocation of costs customer classes and design of rates, a period for which the initial rate change is to be adequate is usually considered to be the test year. For this example, it is assumed that rates are to be designed for a one-year period. Year 2 with subsequent rate changes possible necessary to meet the requirements in Year 3 and on.

Projection of expenses in the detail shown in Table-4-1is important for two reasons. First, it provides for small elements of expenses to be more accurately analyzed and projected. Second, the total requirement for O & M expense is separated into cost elements that are readily assignable to appropriate functional cost components in the cost-of-service allocation phase of the rate stud analysis.

The total test-year requirement, Year 2, in the example amounts to P3,727,000.00. This represents the total annual cost of service to be derived from rates anticipated to be incurred by the utility in the test year for providing service during the period of which rates are being designed.

The projected revenue requirements shown in Table 4-1 reflect the cash-needs determination of revenue requirements referred to at the beginning of the chapter.

The prospective procedure develops the revenue requirement for costs, both capital and operating, that are anticipated for the period that rates will be in effect. It is essential to first develop adequate historical data to serve as a basis for projecting future requirements. Historical data also provide the basis for the bridge between the actual costs of the past and the projected costs of the future. It has been the general practice to establish rates based on an actual historical test year, with certain adjustments to historical costs being allowed for known and measurable changes. Typically, such adjustments might include increases in salary and wage expenses resulting from a negotiated labor agreement, known increases in costs for electric power, fringe benefit adjustments, and the like.

While most revenue requirements usually need to be met from rates applicable to water service, some other revenue is derived from miscellaneous income items such as rentals and interest on invested capital.

2. ALLOCATION OF COSTS TO THE FUNCTIONAL COMPONENTS OF THE COST OF SERVICE

Consistent with the exercise of appropriate conservation considerations in providing service, a water utility is required to supply water in total amounts and at such rates of use as desired by the customer. A utility incurs costs in relation to the various expenditure requirements caused by meeting those customer needs. The costs to the utility of providing service vary among customers or classes of customers.

In seeking equitability in charges to the different customers, the basic premise in the establishment of adequate rate schedules is that they should reflect the cost of providing water service. A sound analysis of the adequacy of charges requires allocation of costs among the customers commensurate with their service requirements in order to recognize differences in costs of furnishing

service to different types of customers.

The purpose of cost allocation is to express the total utility cost of service, including O & M expense, debt service, and capital expenditures, in terms of:

Costs associated with supplying both the customer's average and peak rates of use or demands.
Costs related to customer meters, services, and accounts.
Direct costs incurred to provide for fire protection.
Those costs by functions, in turn, are further distributed to customer classes on the basis of their particular requirements for service.

Utility costs are allocated, or assigned, in two steps: first to appropriate cost components, then to customers. The cost components vary, depending on the basis of allocation used. One generally used method of cost allocation is the commodity-demand method. The cost allocation includes:

Allocation of costs applicable to the functional cost components of commodity, demand, customer, and direct fire-protection.

Distribution of costs by the various cost components to respective classes of customers in accordance with the respective responsibility of the customer classes for each of the component costs.

Commodity costs are costs that tend to vary with the quantity of water produced. They usually include costs of chemicals, a large part of power costs, and other elements that increase or decrease almost directly with the amount of water supplied. Costs related to impounded reservoir source of water supply or other costs that vary with average daily demands, such as raw-water transfer pumping costs, may also be considered as commodity costs. Purchased-water costs, if water is bought on a unit volume basis, would also be considered as commodity costs.

Demand costs are associated with providing facilities to meet the peak rates of use, or demands, placed on the system by the customers. They include capital-related costs on plant to meet peak requirements plus the associated O & expenses.

Customer costs comprise those costs associated with serving customers, irrespective of the amount or rate of water use. They include meter reading, billing, and customer accounting and collecting expenses, as well as maintenance and capital costs related to meters and services. In detailed studies, the costs for meter reading and billing and for customer accounting and collecting may be considered as one subcomponent and maintenance and capital costs on customer meters and services may be considered as another subcomponent.

Direct fire-protection costs are those costs that are applicable solely to the fire-protection function. Usually, such costs are simply those directly related to public fire hydrants and related branch mains and valves. It should be noted that the costs allocated to the direct fire-protection cost component are usually only a small part of the total cost of fire protection.

Table 4-2 presents an example of allocation of rate base. Each element of utility plant is assigned to commodity, demand, customer, or direct fire-service functions. The results of the allocation of rate base to the various cost components provide a basis for subsequent distribution of rate base, and capital costs related thereto, to customer classes.

For purposes of this illustration, the various elements of rate base in the table are the net book value (original cost less accrued depreciation) of the water system, based on the accounting records of the utility as projected for the test period.

Investment in source of supply, land, land rights and impounded reservoir structures in this example is allocated 100 percent to the commodity cost component in recognition of the fact that such facilities are sized principally to meet annual supply requirements in total, whether or not variations in daily needs are experienced.

Pumping plant and treatment plant, which meet maximum-day demands, are allocated 100 percent to the maximum-day demand cost component. Treated-water mains, which serve maximum-hour demands, are allocated 70 percent to the maximum-day demand cost component and 30 percent to the maximum-hour demand cost component. Rate base for distribution storage is allocated 100 percent to the maximum-hour demand cost component.

Meters and services are allocated to the customer cost component. Fire hydrants are allocated to the direct fire-service cost component.

The value of office buildings, furnitures and equipment, vehicles, and other general plant is allocated to cost components on the basis of the resulting allocation of other plant facilities.

Construction work in progress is allocated to cost components on the same basis as elements of plant in service. In this example, it is assumed that all construction work in progress is transmission and distribution mains.

In some water utility systems, the accounting records will show contributions in aid of construction that ordinarily are deducted from the rate base before applying rate-of-return percentages. Contributions should be deducted from plant value in accordance with the purposes for which the contributions were made. The example illustrated in Table 4-2 assumes that all contributions in this instance are related to customer meters and services.

Table 4-3 presents an example of the allocation of depreciation expense. The categories of items of depreciation expense are allocated to cost components in the same manner as described in the allocation of rate base.

Table 4-4 presents an example of allocation of O & M expense. In general, O & M expense for each facility is allocated to cost components in a manner similar to that for rate base. However, chemical costs, which tend to vary with the amount of water produced, are assigned 100 percent to the commodity cost function. Pumping power costs are allocated 71 percent to commodity cost and 29 percent to maximum-day demand cost in recognition of the fact that power costs vary with demand.

Employee benefits are allocated on the basis of the allocation of salaries and wages. Insurance is allocated on the basis of test-year rate base in Table 4-2. Other administration and general expense is allocated on the basis of all other expenses, exclusive of power and chemicals.

3. DISTRIBUTION OF THE FUNCTIONAL COSTS OF SERVICE TO CUSTOMER CLASSES

The cost of providing service can reasonably be determined for groups or classes of customers that have similar water-use characteristics and for special customers having unusual water-use or service requirements. It is an objective of rate making to assign costs to classes of customers in such a manner that rates can be designed that are nondiscriminatory and meet as nearly as possible the cost of providing service to such customer classes.

The three principal customer classes typical of most water utilities are residential, commercial, and industrial. Definition of these general customer classes differs among utilities, but in very broad terms, the following definitions are common:

Residential - One-and two-family dwellings, usually physically separate.
Commercial - Multifamily apartment buildings and nonresidential, non-industrial business enterprises.
Industrial - Manufacturing and processing establishments.
For specific utilities, there may be a breakdown of these general classes into more specific groups. For example, the commercial customer group may be subdivided into Commercial-A, Commercial-B, and Commercial-C.

In addition to the principal classes of service previously described, water utilities often provide service to certain special classes of customers. Two of those considered here are wholesale service, and fire-protection service.

Wholesale service is usually defined as a situation in which water is sold to a customer at one or more major points of delivery for resale to individual retail customers within the wholesale customers service area.

Fire-protection service has characteristics that are markedly different from other types of water service. The service provided is principally of a standby nature - that is, readiness to deliver relatively large quantities of water for short periods of time at any of a large number of points in the water distribution system while the total annual quantity of water delivered is relatively small.

As a step toward rate design, component costs may be distributed among customer classes in the proportion that the respective class responsibility for those costs bears to the total cost responsibility of all customer classes served by the system. This applies for each of the component costs of service. Responsibility for each component may be expressed in terms of the number of units of service required by each class of customer. The sum of all component costs attributable to a customer class is the total cost of service to be recovered from it.

The total cost of each component, such as commodity cost, may be divided by appropriate total customer requirements or unit of service to express a unit cost for each component. The unit costs of each component serve as a basis for designing rates. Unit of service is defined as an element of service for which a cost can be ascertained, such as thousand cu.m., hundred cu. ft., million gallons per day, monthly bill, etc.. As a basis for distributing component costs to customer classes, it is essential that the units of service attributable to the respective classes be established for the test year. This involves determining or estimating the total quantity of water to be used by each class in the test year and the peak rates of use by the class, usually for both maximum-day and maximum-hour rates of use. In addition, a determination needs to be made of the number of equivalent meters and services by class, as well as the number of bills by class.

Maximum rates of use may be expressed in terms of capacity factor - that is, a percentage relationship of the class maximum rate of use to average annual rate of use. Thus, if a customer class maximum-day rate of use is 2.5 times its average rate, it is said to have a maximum-day capacity factor of 250 percent.

The total annual quantity of water attributable to fire service is usually considered to be negligible, at least in relation to that of other classes.

Customer-related costs for meters and services may be properly distributed among customer classes by recognizing factors that are generally responsible for those costs being incurred. As an example, a method for distributing meter-and-service costs to customer classes is in proportion to the investment in meters and services installed for each customer class, based on the number of equivalent meters. Typical customer meter-and-service equivalent ratios based on investment are as follows:

Meter Size in.	Equivalent Meter-and-Service Ratio
1/2	1.0
3/4	1.6
1	3.2
1-1/2	8.0
2	20.0
3	36.0
4	72.0

Cost related to billing and collecting may be distributed among customer classes based on the total number of bills rendered to the respective classes in a test year. In some instances, it is appropriate to recognize, through billing ratios, that billing and collecting for larger services may incur more cost than for smaller services.

Table 4-5 shows the development of units of service.

Test-year units of service reflect the prospective average annual customer water-use requirements during the test-year study period considered in this example.

For each customer class, under the heading of Commodity in Table 4-5, the total annual water use in cubic meters is shown, as well as the average rate in cubic meters per day. Maximum-day capacity factors are applied to average-day rates of flow to develop total capacity by class. Extra capacity is the difference between maximum-hour capacity and maximum-day capacity. Fire protection service is considered to require negligible flow on an average basis but 97 cu.m. per day on a maximum daily basis. Maximum-hour extra capacity is developed similarly. Maximum-hour fire-protection service reflects the assumption that flow for fires is concentrated in a four-hour period.

All pertinent sources of information need to be investigated and studies in estimating customer-class capacity factors. Such data should include daily and hourly pumping records, recorded rates of flow in specific areas of the system, studies and interviews of large users regarding individual and group characteristics of use, specific-demand metering programs, and experience in studies of other utilities exhibiting like characteristics. Sound and logical inferences can be drawn from customer metering information, provided billing periods are sufficiently short to reflect seasonal differences, usually not to exceed three-month periods.

Equivalent meters and services are derived by applying equivalent ratios to the number of meters of each size by class. The number of bills is simply the total number of bills rendered annually for each class.

It should be recognized that the maximum total capacity on both a maximum-day and maximum-hour basis for the total system is the estimate of the sum of noncoincidental peaking requirements on the system; that is, it is the sum of the peaks for each class, regardless of the day or hour in which such peaks may occur.

Component costs can be directly distributed to respective customer classes in proportion to the respective units of service applicable to each class. For instance, costs of service are distributed among customer classes by application of unit costs of service to respective service requirements. Unit cost of service are based on total costs previously allocated to functional components and the total number of applicable units of service for the test year. Unit cost is defined as the cost of producing a unit of a product or service. An example would be the cost of treating a thousand cu.m. of potable water for use by the water utility's customers.

Unit costs are determined simply by dividing the test-year functionally allocated O & M and capital costs by the respective total system units-of-service requirements in the test year. Similar computation are made to determine unit costs for all other O & M expense and depreciation expense.

The determination of unit return on rate base is made by first calculating unit rate base. The functionally allocated total rate base is divided by respective total system units of service to yield unit rate base. Subsequently, unit return on rate base is derived by applying appropriate rates of return to the unit rate base.

Table 4-6 shows the development of unit costs of service.

For example, the commodity unit cost for O & M expense of P1.7682 per cu.m. may be derived by dividing the allocated commodity O & M expense of P495,100 by the total commodity-component units of service of 280,000 cu.m. Similar computations are made to determine unit costs for all other O & M expense and depreciation expense.

The determination of unit return on rate base is made by first calculating unit rate base. The functionally allocated total rate base is divided by respective total system units of service to yield unit rate base. Subsequently, unit return on rate base is derived by applying appropriate retail and wholesale rates of return to the unit rate base.

Distribution of costs to customer classes. The distribution of the costs of service to the utility's classes is accomplished by applying unit costs of service to individual customer-class units of water service. Commodity costs are distributed to customer classes on the basis of total annual use. Demand-related costs are distributed to the various classes in proportion to the class total responsibility, and customer costs are distributed based on equivalent meter and billing requirements.

Table 4-7 shows the cost distribution to customer classes.

As shown in Table 4-7, residential customers are projected to use 98,000 cu.m. of water in the test year; commercial customers, 48,000 cu.m.; industrial customers, 111,000 cu.m. Applying the retail commodity cost of P1.9698 per cu.m. to the respective units of service yield the distributed customer-class commodity cost of service. By definition, the unit commodity cost is the minimum rate at which water could be sold after customer costs are recovered. Wholesale distributed commodity costs are derived from the application of the unit commodity cost of P2.1132 per cu.m. to the wholesale commodity unit-of-service requirements. The higher unit commodity cost reflects the rate-of-return differential.

Demand-related costs for maximum-day and maximum-hour service requirements are distributed to the classes based on the application of total estimated class service demands and the unit costs of demand.

Customer costs, which include the category of meters and services and the category of billing and collecting, are generally treated separately in rate studies. Customer costs associated with meters and services may be distributed to customer classes on the basis of equivalent meter-and-service cost factors. Meter-and-service costs are based on the total number of equivalent 1/2 in. meters and are applied to customer-class equivalent meter units of service in order to determine allocated cost of service. Units based on equivalent 1/3 in. meters are used to allow for the fact that customer costs will vary and tend to increase with the size of the customer meter and service.

Billing and collecting costs may be related to the number of bills issued and, in turn, distributed to customer classes on the basis of the number of bills rendered to customers within each class. For example, customer-class responsibility is determined by applying the billing and collecting unit cost to the total estimated number of bills in each customer class rendered for the average

rate year.

A word of caution should be added that may prevent misinterpretation of the commodity cost of P1.9698 per cu.m. Under no circumstances is this the cost of water. Even with perfectly uniform use, demand and capacity costs must be added.

4. DEVELOPMENT AND DESIGN OF A SCHEDULE OF RATES AND CHARGES TO RECOVER THE REVENUE REQUIREMENTS

The final step in a cost-of-service rate study is the development of a schedule of rates to recover, as nearly as possible, the allocated costs of service from customers. A primary consideration in the derivation of water-rate schedules is the establishment of equitable charges to customers commensurable with the costs of providing that service. Rates are normally design to fit average conditions for groups of customers having similar service requirements. Adherence to the results of the cost-of-service determinations presents a practical basis for determining equitable water rates. Therefore, the basic objective of a rate study should be the development of a rate structure that will attain the maximum degree of requitability among customers, will be consistent with local practice and conditions, and will be in the best interest of both the community and the utility.

The design of a water-rate schedule that requires each customer class to pay its full cost of service takes into consideration unit costs applicable to the level of service rendered. Recognition of the degree to which each component is involved in providing the level of service rendered provides a basis for design of a schedule of rates.

Recovering customer costs. The method of recovering customer costs, such as meter reading and billing-and-collecting, should reflect factors such as meter reading and billing among customers, and it may consider the greater cost of billing for large meters and other factors.

Customer costs related to meter and billing-and-collecting are incurred regardless of the amount of water, if any, that is used. These costs are generally recovered through either a minimum charge or a service charge.

The minimum charge is usually designed to recover all customer-cost elements and both the volume and demand-related costs associated with an allowance for a specified quantity of water usage. The service charge is designed to recover customer-related costs and possibly some demand-related costs associated with readiness to serve, and, consequently, all water use would be billed under subsequent rate blocks. As with the minimum charge, the service may be graduated by meter size, based on an analysis of metering, billing, and other associated costs for customer services of varying sizes.

Recovering costs related to volume and demand. An important issue to be determined in rate design is whether the water rate schedule will consist of (1) a single rate per unit of volume, irrespective of the volume of use, or (2) two or more rate blocks. Because of load-factor effects, the rate for subsequent blocks generally decline for larger rates of use. Such a schedule is often referred to as a declining-block schedule. In some instances, there may be an inverted rate structure, whereby the charge for use beyond the first block would be priced at higher rate rather than at declining rates.

Consideration of the costs of service related to fire protection should normally be included in a cost-of-service study. Public fire-protection service would consist of the costs for fire hydrants and the backup facilities required to provide an adequate water supply in the event of fire. Charges for fire-protection service are based on costs not only of direct facilities, such as public hydrants and fire-service connections, but also the allocated share of costs for backup facilities in the water system. Rates for public fire protection are generally expressed as a total annual charge and may be expressed as an annual charge per hydrant.

Where wholesale or sale-for-resale service is provided, a careful analysis should be made of the cost-of-service elements entering into such service. It is important to carefully define and evaluate the cost of providing water on a wholesale basis and to design the rates accordingly.

Service-charge design. Customer costs, which are comprised of meter-and-service and billing-and-collecting related costs, maybe recovered from customers through a service charge. In addition, a portion of distribution-main costs as well as a portion of demand-related costs are sometimes included in the determination of service charges. No allowance for water use is included in the development of the service charge, and, therefore, the commodity and demand costs are recovered in the volume portion of the rate.

Block-rate design. Block rates provide a means of recovering costs for general service classes of residential, commercial, and

industrial users under a single rate schedule by recognizing the differing water-use and associated cost characteristics for each class of service. The blocks that ultimately control the charges for any particular system should be designed on the basis of customer-class water-use information derived from historical billing records for that system. Billing information is tabulated by customer class to establish quantity of usage and number of bills rendered at various usage levels.

Fire-protection service rate design. In the cost-of-service allocations, fire-protection service has been included as a class of service separate from regular retail service customers. Fire protection, like any other class of service, imposes on the utility certain demands and facility requirements with associated costs, and charges can be designed to recover costs for this service. The costs distributed to fire-protection service may include extra capacity costs associated with potential demands on the system by public fire-protection requirements and direct costs related to investment in, and maintenance of, public fire hydrants.

Minimum-bill design. Rather than utilizing a service charge that allows no water use, an alternative minimum charge that provides a customer with some volume of water for the charge may be designed as a part of the rate schedule. The initial block may be designed to recover customer costs and costs associated with use and capacity requirements of the smallest users. The remaining blocks are designed in the same manner discussed previously to recover costs beyond those of the smaller users.

The inverted or increasing block rates. The counter part to declining-block rates. Under such rates, the unit price rises with each successive block, resulting in both the incremental and average cost of water increasing with increased customer usage. The concept of an increasing price per unit of use frequently arises from the desire for conservation in total use.

Unmetered or flat rates. Refer to charges utilized where customer use is not metered. Such rates are applied to certain measures of customer service, such as the number of rooms, the number of plumbing fixtures, and other such elements. Such rates have been common in the past and continue to be used in some water utilities. In specific instances where water conservation is not a significant consideration and the installation of meters is unpractical, such rates can be designed to generally recover estimated costs of service, but they may contribute to excessive use of water with attendant higher total costs.

Lifeline rates. Consumers - advocate groups sometimes propose programs to reduce utility charges for residential customers who are poor. Such assistance is often described by the single category of lifeline rates. The lifeline concept of rate design is frequently proposed as an aid to economically disadvantaged and elderly residential customers who might not be able to pay their bills.

Chapter 5

Computation of Water Rates

The basic rationale of this subject is that the cost of providing water service to various classes of customers can be determined and that water rates should follow cost of service. Rates are computed using two basic methods, viz., Revenue-Unit Method (RUM) and Quantity-Block Method (QBM). While both methods adopt the socialized pricing concept by the application of the principle of cross-customer subsidy, each method has its own advantages and disadvantages over the other.

1. WATER-RATE STRATEGY

Water rates could be arbitrary, i.e., determined without serious study and planning. Arbitrary rates may prove to be very low and will not make the district self supporting or they may be too high as to defeat the purpose of serving the majority of water users, hence, the need for a good rate strategy. The general scheme on how the district should go about determining a rate structure that is fair and acceptable to the majority of water users and/or when to apply it is termed water-rate strategy.

In its operation, the district must consider two basic premises.

- All water drawn from the water system must be accounted and paid for.
- Rates must be high enough to meet the financial requirements of the district (for self-sufficiency), but low enough to be within the ability to pay of the majority of users (for public service).

A good rate strategy should consider the following factors:

- Ability to pay of the users - socio economic condition in the district.
- Cash requirements of the district - operational expenses and capital investment.
- Enforceability of the rates - can be justified and made acceptable to the public.
- Availability of reliable data - basis of realistic computations.

A good rate structure should combine the following chief characteristics:

- Revenue oriented, which gives primary consideration to financial requirements.
- Service oriented, which is primarily designed to favor the low income group.

2. REVENUE-UNIT METHOD (RUM)

This makes use of an arbitrary term called Revenue Units (RU) into which water consumption, paid at different rates, is converted to obtain a common reference to simplify computation. This method is revenue oriented, with a higher Minimum Charge (MC) and a uniform Commodity Charge (CC) regardless of consumption.

Most applicable to newly-formed water districts.
More applicable to districts with lesser concessionaires and with abundant water supply.
Applies the cross-customer subsidy in the first 10 cu.m. of consumption in the form of minimum charge, based on the size of connection.
Applies a low uniform commodity charge regardless of consumption rate.
The effective cost of water tends to decrease as consumption increases.
RUM Illustrative Exercise is shown in Appendix A.

3. QUANTITY-BLOCK METHOD (QBM)

This is based on the basic principle that high levels of consumption would have higher costs. It is less revenue oriented and more public-service oriented than RUM. This method makes use of quantity blocks (QB), 10 cu.m. per block, in which consumers pay uniform unit price per block and where the rates per block increase on the basis of assigned conversion factors.

Most applicable to more established and already going concern water districts.
More applicable to districts with relatively limited sources and where average consumption is relatively higher.
The minimum charge varies similarly as in the RUM.
The commodity charges increase as consumption increases in proportion to consumption rate.
The effective cost of water tends to increase as consumption rate.
QBM Illustrative Exercise is shown in Appendix B.

4. STANDARD METHOD

This utilizes a combination of the two methodologies, the Revenue Unit Method (RUM) and the Quantity Block Method (QBM). Water rates are computed in a manner whereby the Minimum Charge (MC) is controlled and the remaining revenue requirements are spread through the Commodity Charges (CC). This method has been devised to avoid a very high MC and at the same time to minimize the increments in the CC. The advantages of both RUM and the QBM are enhanced and their disadvantages discarded to come up with a rational schedule of rates that optimizes revenue generation and is socialized in structure as well.

Reduces the relatively high MC determined under the RUM by a certain percentage to make it affordable to the low-income consumers.
Discards the uniform CC obtained under the RUM since such pricing results in a reduced unit cost as consumption is increased.
Recovers the "loss revenues" as a result of the reduction of the MC obtained under the RUM by increasing the CC obtained under the QBM..
The over-all objective of meeting the cash requirements remains.
Illustrative Exercise for Combination Method is shown in Appendix C.

5. ILLUSTRATIVE EXERCISES

For the purpose of illustrating the various principles and techniques of computing water rates, a well established and a going concern hypothetical utility, the Maunlad Water District, has been developed. The district had years back undergone comprehensive improvements and is now faced with the problem of coping with the increasing cost of operation and maintenance and the debt servicing. Following the district's rate strategy as embodied in its 10-year cashflow projection, it is now imperative that this year's rates be increased to meet cash requirements. As in previous year's rate increases, the district has to take into serious consideration the various requisites of water rates.

Records of the Maunlad Water District show the following information:

Customer Class	Meter Size (in.)	Number of Connections*	Average Monthly Consumption per Connection (cu.m.)
Residential	1/2	9,800	32
Government	3/4	60	62
	1	3	120
	1-1/2	1	250
	2	1	600

Commercial/ -1/2 850 63
Industrial 3/4 65 200
1 15 552
1-1/2 2 1,000
2 11 2,050
3 2 3,000

Wholesale/Bulk 2 1 2,500
---
*All metered.

Estimated cash requirement - P2,500,000/month
Collection efficiency - 90 percent
Average income, LIG - P2,000/month

The following examples will illustrate computation of the water rates for Maunlad WD using the Revenue Unit Method (RUM), and Quantity Block Method (QBM), Combination RUM and QBM (CRQ).

a. RUM Method (RUM).

Using the above information, Table 5-1 was prepared. The date were obtained using the computations as shown in the footnotes. Note that the total RUs is 545,346 and the expected total receipts is P2,775,811.00.

Cash Requirement
Amount/Rus = ---
Total RU x Collection Efficiency

P2,500,000.00
= --- = P5.09/RU
545,346 x 0.90

Using the P5.09/RU, the MCs were computed as shown in columns 8 and 9, per connection and total for group, respectively. The proposed rates are as follows:

Customer Meter Rate Per Month
Class Size (in.) Minimum Charge + Commodity Charge
(Col. 8) (Amount/RU)

Residential /1/2 50.90 + P5.09/cum in excess of 10 cum
Government 3/4 81.44 + P5.09/cum in excess of 10 cum
1 162.88 + P5.09/cum in excess of 10 cum
1-1/2 407.20 + P5.09/cum in excess of 10 cum
2 1,018.00 + P5.09/cum in excess of 10 cum

Commercial/ 1/2 101.80 + P10.18/cum in excess of 10 cum
Industrial 3/4 162.88 + P10.18/cum in excess of 10 cum
1 225.76 + P10.18/cum in excess of 10 cum
1-1/2 814.40 + P10.18/cum in excess of 10 cum
2 2,036.00 + P10.18/cum in excess of 10 cum
3 3,664.00 + P10.18/cum in excess of 10 cum

Wholesale/Bulk 2 3,054.00 + P15.27/cum in excess of 10 cum
---

b. QB Method (QBM).

Using the same above information, Table 5-2 was prepared. The data were obtained using the computations as shown in the footnotes. Note that the total equivalent volume is 797,102 cu.m.

P2,500,000
Amount/cu.m. = ---------- = P3.48/cu.m.
797,102 x 0.90 (1st QB)

The amount per cubic meter (proposed rates) of water for the different quantity blocks by customer class that will yield the required total revenues are as follows:

Customer Quantity Blocks
Class 1st 2nd 3rd 4th 5th

Residential/ P3.48 P4.18 P5.01 P6.02 P7.24
Government

Commercial/ 6.96 8.35 10.02 12.04 14.48
Industrial

Wholesale/Bulk 10.44 12.53 15.03 18.06ÿÿ21.72

Table 5-3 shows the expected receipts that could be derived from the rates which total P2,774,461.00.

To determine the reasonableness of the above rates and whether the minimum charge for residential class is within the ability to pay of the low income group (LIG), compute and proceed as follows:

Based on the above unit price, a residential connector using 10 cu.m. (the mean low consumption) will pay P34.80/month and a residential connector using 32 cu.m. (the average consumption) will pay P138.74/month (P34.80 + 33.44).

P34.80 is also about 1.74 percent of the estimated average income of P2,000 per month of the low income household. This amount is well within the ability to pay of the LIG considering that the ceiling for the MC is 5 percent of the average income of the LIG. In this case, revision of rates is no longer necessary. Hence, the schedule of rates under this scheme is deemed reasonable.

c. Standard Method (SM)

Reduce by 30% as computed using RUM and the balance of the MC distributed to the four remaining quantity blocks as in the QBM. As earlier computed, the MC of P50.90 for a 1/2" residential connection using the RUM is quite a big disparity from the P34.80 obtained using the QBM. On the other hand, the CC of P5.09 (above 10 cu.m.) from the RUM is higher than the P4.22 (11-20 cu.m.) and P5.07 (21-30 cu.m.), and lower than the P6.08 (31-40 cu.m.) and P7.30 (over 40 cu.m.) CCs as developed from the QBM.

From the results of computation of rates using both RUM and QBM, compute the corresponding total minimum and commodity charges as follows:

Total
Minimum Charge Commodity Charge Expected
Method (1st 10 cu.m.) (Remaining 4 blocks) Receipts

RU P642,032.00 P2,133,779.00 P2,775,811.00
QB 409,178.00 2,365,283.00 2,774,461.00
Combination 449,422.00* 2,326,389.00** 2,775,811.00
---
* 70 percent of total MCs under RUM.
** Difference between total receipts under RUM and total MC under SM.

Comparing the revenues from the above figures, the MC under the SM would be increased by P40,244 (9.8 percent) over that of QBM. On the other hand, the total revenues from the CCs under the SM would be P35,143.00 (1.5 percent) less than that of the QBM.

Since the total MCs is increased to P449,422 (SM) from P409,178 (QBM), only P2,326,389.00 (SM) is then needed to be earned instead of P2,365,283.00 (QBM) from the CCs. Hence, the adjustment factor below is used.

$$\text{Adjustment Factor} = \frac{2,326,389.00}{2,365,283.00} = 0.98$$

Proposed Rates, Standard Method (SM)

Q u a n t i t y B l o c k
Customer Class 1st 2nd 3rd 4th 5th

Res/Gov MC (RUM)x 0.7 P4.10 P4.91 P5.90 P7.10
Com'l/Ind'l MC (RUM)x 0.7 8.20 9.82 11.80 14.20
Wholesale MC (RUM)x 0.7 12.30 14.73 17.70 21.30

Note: Rates for the last four blocks 0.98 times the

obtained by the QBM.

Going through the computation of proposed rates using the three methods, comparison was made on resulting rates, Table 5-4, and on earnings by MCs and by CCs in different quantity blocks, Table 5-5, to show the differences as described earlier in the chapter.

Under the RUM, MCs vary with the meter sizes (the bigger the size, the higher is the charge) and the CCs after the first ten (10) cubic meters is uniform, this time irrespective of meter sizes except that for commercial/industrial, which is twice that of residential/ government and wholesale/bulk which is three times as much. These are the typical characteristics of the RUM. Under the QBM, the MC disregards the sizes of connection but considers customer classification instead, and the CC increases with consumption through the different quantity blocks (consisting of 10 cu.m./block). Under the SM, the MC (RUM) is reduced and the balance of lost revenues recovered from the CCs which are likewise divided into blocks of 10 cu.m. each as in QBM with ascending rates.

On the basis of comparative earnings from the MC and CC, the MC obtained through the RUM comprises about 23 percent of the total revenues as compared to about 15 percent and 16 percent under the QBM and SM, respectively. The remaining balances are earned by the CC (RUM) and by the CC (QBM & CRO). It should be noted that slight differences in total earnings exist and which may be attributed to rounding off of figures.

It can, therefore, be noted in the above comparison that the Standard Method is a "compromise" method. RUM and QBM may be considered as extremes, while the Standard Method may be considered at the middle

Chapter 6

Cashflow Projection

The cashflow projection is a basic reference in the establishment and review of water rates. The cashflow indicates the sufficiency/insufficiency of existing and proposed rates; determines the need for any rate increase; serves as basis for monitoring the district's operations; determines the ability of the district to make forecasts; and presents the district's financial picture for a given period as a consequence of the rates.

1. PERIOD OF PROJECTION

Apart from the existing water rates of a district, new rates are established for the following reasons:

Purely, to meet increasing O & M expenses.

To make feasible arrears restructuring.

To make feasible restructuring of outstanding loans.

To make feasible grant of new loans.

The rate proposal shall be supported by an eight (8) year cash flow projection, which shall commence on the current year.

2. CONTENTS OF CASHFLOW

To serve its purpose, cashflow projection should contain the following basic information:

GENERAL DATA

Year-end Connection. Previous year-end connections plus the annual market growth.
Mid-year Connections. The average of the preceding year-end connections and the current year-end connections.
Market Growth. The increase in the number of connections for the current year.
Service Area Population. The population in the service area as projected.
% Population Served. The ratio of the number of year-end connections multiplied by the average number of persons per household to the service area population.
Consumption/Connection/Month - cum. Historical six months to one year billed water divided by the average number of service connections billed during the period.
Billed Water -'000 cum. The volume of water sold and paid for by the concessionaires, known also as the revenue-producing water. This is obtained by multiplying the mid-year connections by the consumption per connection per month (cum), multiplied by twelve months and divided by 1000.

Non Revenue Water (NRW), %. The difference between the production and the billed water expressed as a percentage of the former. This is the historical or target percentage of billed water and total production subtracted from 100. This represents losses in the system largely due to leaks and consumption of illegal connections.
Production - '000 cum The volume of water needed to be supplied by the district, taking into account the water demand as influenced by service growth. The water source should be capable of providing the required volume to be generated. This is computed as billed water divided by 1 minus non-revenue water (expressed in decimals).
Effective rate - P/cum. Historical water sales divided by billed water.
Percentage Rate Increase. The weighted average rate increase computed by applying the new rates to the average consumption per connection per month.
Collection Efficiency. The ratio of the actual collections to the collection target. It is a measure of performance of the district in collection enforcement. Historical collection efficiency shall be derived from at least one year's data.

b. RECEIPTS. The total amount of cash collections of the water district and consists of the following:

(1) Current Water Sales. The revenues from billed water. This is billed water multiplied by effective rate multiplied by collection efficiency.
(2) Collection of Previous Years' Arrears. This is computed as a percentage of water sales.

(3) Other Receipts. The cash collections from all other sources of funds, computed as current water sales multiplied by the historical percentage

(4) Total Cash Receipts. The summation of current water sales, collection of previous years' arrears, and other receipts.

c. DISBURSEMENTS. The total amount allocated for expenditures and comprises the following:

A. Operating and Maintenance (O&M) Expenses

(1) Salaries. The number of employees multiplied by the average salary per month multiplied by thirteen months.

(2) Power/Pumping Cost. Total production (cum) multiplied by the power or pumping cost per cubic meter produced.

(3) Chemical Cost. Production (cum) multiplied by the historical chemical cost per cubic meter produced multiplied by the escalation factor.

(4) Other O & M. Average served connections multiplied by other O&M cost per connection times 12 months.

(B) Debt Service. For payment of amortization for the loans availed from LWUA and other creditors comprising of current billings and settlement of arrears.

(C) Equity Contribution. The percentage of equity on total project cost or the absolute amount required from the District as counterpart to LWUA's financing.

(D) Capital Expenditures (Capex). For capital outlay to finance the cost of (a) tapping of new service connections, (b) NRW reduction if a Program of Work for the purpose is required, (c) Projects which will allow the WD to continue tapping new connections in cases where design year connections have been reached.

(E) Reserves. A standard entry in the cash flow projection, the amount to be disposed of according to particular priorities, usually 3% to 10% of total receipts. Cash disbursements not specifically mentioned above are classed in this group.

(F) Tax Provision. Thirty four percent (34%) of the projected Net Income after Interest Charges for Corporate Income Tax, and Franchise Tax computed at 2% of Gross Revenues.

d. TOTAL DISBUSEMENTS. The summation of all amounts allocated for expenditures.

e. CASH INFLOW (DEFICIT) Cash deficits (disbursements being greater than receipts) shall not be allowed for more than two consecutive years.

f. BEGINNING CASH BALANCE. Actual cash/funds balance free of customer deposits, loan and reserve funds

g. ENDING CASH BALANCE. The projected cash position of the District.

h. WATER RATES. Assists the evaluator in determining whether the periodic rate levels are sufficient to support the cash requirements. Care should be taken to ensure that the rate schedules are placed under the appropriate columns within the period of projection.

i. AVERAGE INCOME OF LOW INCOME GROUP & 5% MINIMUM CHARGE CEILING. For comparison, shows whether the rates (minimum charge) are within the capability of the low income group (LIG) to pay.

j. ASSUMPTIONS & JUSTIFICATIONS. Indicates the explanations relative to the data and information utilized in the projection. In making assumptions, reference should be made with the district's past data and experience in at least two years of prior operations, except in instances where the district is newly organized or where no data are available. In this case, reference could be made with appropriate industry averages.

A sample Cashflow Projection is shown in Figure 6-1.

3. COMPLIANCE TO MINIMUM STANDARDS

a. Water District (WD) Collection Efficiency or the ratio of current year collections to current year billings shall be at least 90%. All water rate increases shall be computed on the basis of this percentage or the actual and projected WD performance whichever is higher.

b. Non Revenue Water (NRW) shall not be more than 25%. In case the existing level of NRW is greater, a program of work (POW) for NRW reduction, including its required capital expense duly approved by the WD Board for implementation, shall be submitted. The POW shall not be longer than five years.

c. WDs with more than 1000 service connections shall have staffing ratio of not less than 1:120. Staffing for WDs with service connections of 1000 and below shall be as follows:

Number of Service Connections Maximum Number of Employees

300 and below 5
300 - 400 6
400 - 500 7
500 - 600 8
600 - 800 9
800 - 1000 10

d. Salaries of WD personnel shall not be projected beyond the level prescribed in the Salary Standardization Law (SSL). In case the SSL level has been reached, salary increases may be allowed only for merit reasons and when legislated.

e. Benefits and allowances of WD personnel subject to government regulation shall be limited to that which are allowed. These include representation, extraordinary, miscellaneous expenses and the like.

f. Capital expenditures shall give priority to: (1) NRW reduction, (2) service connection growth, and (3) source development.

g. For consistency in cash flow projections, inflation and escalation rates shall be as determined by NEDA.

Chapter 7

Adjustment of Water Rates

In the establishment of water rates, specifically in making projections, allowances for escalation of cost in relation to power, fuel, labor, and even foreign exchange are integral components. There are, however, some instances when abrupt increases in cost of these items are incurred and are not covered by these allowances for escalation, the experience of which might result to losses in operations. In such cases, adjustment of rates becomes necessary which should be considered as interim measure until the next water-rate increase where its effects can be reflected in the cashflow projection. Illustrated in this subject are standard formulas to be used for computing the adjustment of rates.

1. POWER-COST ADJUSTMENT

This formula is applied when water is pumped using electricity.

PCA = (PCa - PCb) (Bb/Ba)

Where:

Pca = Power-Cost Adjustment in P/cu.m.
PCa = Current Power Cost per cu.m.
PCb = Base Power Cost per cu.m.
Ba = Total Water Currently Billed in cu.m.
Bb = Total Water Produced in cu.m.

2. FUEL-COST ADJUSTMENT

This formula is applied when water is pumped using fuel.

FCA = (FCa - FCb) (Bb/Ba)

Where:

FCA = Fuel-Cost Adjustment in P/cu.m.
FCa = Current Fuel Cost per cu.m.
FCb = Base Fuel Cost per cu.m.
Ba = Total Water Currently Billed in cu.m.
Bb = Total Water Produced in cu.m.

3. LABOR-COST ADJUSTMENT

This formula is applied in the instance of mandatory wage increases imposed either through wage orders released by the National Labor Relations Commission (NLRC) or Congressional action.

LCA = ALC - ELC

Where:

LCA = Labor-Cost Adjustment in P/cu.m.
ALC = Adjusted Labor Cost in P/cu.m.

New Salary
= ---------- x Official Rate
Revenues

ELC = Existing Labor Cost, in P/cu.m.

Current Salary
= ---------- x Official Rate
Revenues

4. FOREIGN-EXCHANGE COST ADJUSTMENT

This formula is applied when the costs of the materials being used by the district, which are imported, are affected by the fluctuation of the foreign exchange.

FEA = (OER)ER - ER
Where:
FEA = Foreign-Exchange-Cost Adjustment in P/cu.m.
OER = Official Exchange-Rate Ratio, P/US$ (Using CB fig)

Current Exchange Rate (Using CB figure)
= ----------
Previous Exchange Rate (Using CB figure)

ER = Effective Rate

Total Sales, P
= ----------
Total Billing, cu.m.

5. ILLUSTRATIVE EXERCISES

The following sample exercises will serve as guide in the computation of adjustment of rates.

a. Power-Cost Adjustment

Computation:

Pumping Total Total Cu.M.
Month Cost Production Billed

November P219,541.47 390,000 cu.m. 175,804 cu.m.
December 241,889.86 390,000 cu.m. 175,804 cu.m.

P219,541.47

PCb = ----------
P390,000.00 cu.m.

= P0.56/cu.m.

P241,889.86
PCa = ----------
P390,000.00 cu.m.

= P0.62/cu.m.

Bb = 390,000 cu.m.

Ba = 175,804 cu.m.

Adjustment:

PCA = (PCa - PCb) (Bb/Ba):

PCA = (P0.62 - P0.56) (390,000/175,804)

= P0.06 x 2.218

= P0.13/cu.m.

Application to Water Billing:

Example A : Residential Connection using 25 cu.m.

PCA = 25 cu.m. x P0.13

= P3.25

Example B : Commercial Connection using 150 cu.m.

PCA = 150 cu.m. x P0.13

= P19.50

Residential Connection Billing (25 cu.m.)

Minimum Charge - P 44.80
Commodity Charge:

11-20 cu.m. 24.50
21-25 cu.m. 12.75

Total Water Bill P 82.05
Add:PCA 3.25

Total Bill P 85.30

Commercial Connection Billing (150 cu.m.)

Minimum Charge P 89.60

Commodity Charge:

11-20 cu.m. 49.00
21-30 cu.m. 51.00
31-50 cu.m. 708.00

Total Water Bill P897.60
Add:PCA 19.50

Total Bill P917.10

Check:

Increase in Power Cost = P241,889.86 - P219,541.47

= P22,348.39

PCA Billing = P0.13 x 175,804 cu.m.

= P22,854.52

b. Fuel-Cost Adjustment

Computation:

Pumping Total Total Cu.M.
Month Cost Production Billed

November P306,667.00 931,965 cu.m. 746,175 cu.m.
December 350,00.00 931,965 cu.m. 746,175 cu.m.

FCb = P306,667

931,965 cu.m.

= P0.329/cu.m.

FCa = P350,000

931,965 cu.m.

= P0.3755/cu.m.

Bb = 931,965 cu.m.

Ba = 746,175 cu.m.

Adjustment:

PCA = (FCa - FCb) (Bb/Ba)

FCA = (P0.3755 - P0.329) (931,965/746,175)

= P0.0465 x 1.248

= P0.058 say P0.06/cu.m.

Application to Water Billing:

Example A: Residential Connection using 25 cu.m.

FCA = 25 cu.m. x P0.06

= P1.50

Example B : Commercial Connection using 150 cu.m.

FCA = 150 cu.m. x P0.06

= P9.00

Residential Connection Billing (25 cu.m.)

Minimum Charge P44.80
Commodity Charge:

11-20 cu.m. 24.50
21-25 cu.m. 12.75

Total Water Bill P82.05
Add: FCA 1.50

Total Bill P83.55

Commercial Connection Billing (150 cu.m.)

Minimum Charge P89.60
Commodity Charge:

11-20 cu.m. 49.00
21-30 cu.m. 51.00
31-150 cu.m. 708.00

Total Water Bill P897.60
Add: FCA 9.00

Total Bill P906.60
=======

Check:

Increase in Fuel Cost = P350,000 - P306,667

= P43,333

FCA Billing = P0.06 x 746,175 cu.m.

= P44,770.50

c. Labor-Cost Adjustment

Salaries before Wage Order = P189,013.00
Salaries after Wage Order = 239,411.00
Effective Rate = 5.23
Total Water Sales = 904,902.00
Total Cu.M. Billed = 172,870.00 cu.m.

Computation/adjustment:

LCA = ALC - ELC

LCA = P239,411 P189,013
---------- x 5.23 - ---------- x 5.23
P904,902 904,902

= P1.383 - P1.092

= P0.291/cu.m.

Application to Water Billing:

Example A: Residential Connection using 25 cu.m.

LCA = 25 cu.m. x P0.291

= P7.275

Example B : Commercial Connection using 150 cu.m.

LCA = 150 cu.m. x P0.291

= P43.65

Residential Connection Billing (25 cu.m.)

Minimum Charge P44.80
Commodity Charge:

11-20 cu.m. 24.50
21-25 cu.m. 12.75

Total Water Bill P 82.05
Add: LCA 7.275

Total Bill P89.325

Commercial Connection Billing (150 cu.m.)

Minimum Charge P 89.60
Commodity Charge:

11-20 cu.m. 49.00
21-30 cu.m. 51.00
31-150 cu.m. 708.00

Total Water Bill P897.60

Add: LCA 43.65

Total Bill P941.25
=======

d. Foreign-Exchange Cost Adjustment

Current Exchange Rate = P 28.00/US$
Previous Exchange Rate = 23.00
Total Water Sales = P904,920.00
Total Cu.M. Billed = 172,890.00 cu.m.

Computation/adjustment:

FEA = (OER) ER - ER

FEA = P28.00 P904,902
------- x (P904,902/172,890) - ---------
P23.00 172,890 cu.m.

= P1.21 (5.23) - 5.23

= P1.09/cu.m

Application to Water Billing:

Example A: Residential Connection using 25 cu.m.

LCA = 25 cu.m. x P1.09

= P27.25

Example B : Commercial Connection using 150 cu.m.

LCA = 150 cu.m. x P1.09

= P163.50

Residential Connection Billing (25 cu.m.)

Minimum Charge P44.80
Commodity Charge:

11-20 cu.m. 24.50
21-25 cu.m. 12.75

Total Water Bill P82.05
Add: LCA 27.25

Total Bill P109.30

Commercial Connection Billing (150 cu.m.)

Minimum Charge P 89.60
Commodity Charge:

11-20 cu.m. 49.00
21-30 cu.m. 51.00
31-150 cu.m. 708.00

Total Water Bill P897.60
Add: LCA 163.50

Total Bill P1,061.10
=======

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Chapter 8

Public Hearing for Water Rate Increase

1. LEGAL BASIS

Sec. 63 of PD 198, as amended. "The rates or charges established by such local district, after hearing shall have been conducted for the purpose, shall be subject to review by the Administration to establish compliance with the above-stated provisions."

Sec. 5 of LOI 700. "The water district concerned shall conduct public hearings prior to any proposed increase in water rates."

Sec. 3 of LOI 744. "The Local Water Utilities Administration and each water district shall prepare a public education program which shall concentrate on the need and methods for water conservation, water rates, water facilities requirements and need for financing, and other related aspects of water district operations. They shall, in addition, prepare a comprehensive program and system of public consultation, both formally in hearings and informally through an education program, when considering increases in water rates, particularly at the time when water districts initiate operation."

2. INTRODUCTION

A public hearing in the context of this subject means a forum or a medium of public discussion or consultation between the water district and its constituency, the primary purpose of which is to inform the latter about a proposed water-rate increase and the justifications appertaining thereto. For the concessionaires and the general public, this undertaking serves as a venue for airing their opinions, criticisms and counter suggestions to the issues at hand.

A public hearing for any proposed water-rate increase may be conducted in the following instances:

a. Presentation of initial metered rates, with or without project.

b. Presentation of subsequent rate increase in connection with proposed project implementation, and/or for reason of increase in operational costs.

c. Presentation of a series of committed rate increases brought about by loan restructuring agreements with LWUA.

d. For special cases, which includes the presentation of cost-adjustment rate formulas.

The activities required in the conduct of public hearings are grouped into three stages, namely: pre-public hearing stage, public hearing stage, and post-public hearing stage.

3. PRE-PUBLIC HEARING STAGE

All proposals for rate increase shall be first submitted to LWUA for advice and consultation. The proposal shall be limited to water rate increases within the next five (5) years but not more than three (3) step increases per public hearing. The rest of the projected water rate increases shall be formally presented in later public hearings.

All projected series of water rate increases as presented during a Project Presentation are covered by the aforesaid provision.

If the said proposal is found to be in conformance with existing guidelines and legal requirements (Sec. 37 of PD 198 as amended and LOI 700), the District shall proceed with the necessary preparations.

Prior to the public hearing, the district must undertake an intensive public information program in the areas directly affected. Broadcast media may be harnessed to ensure wide dissemination of the district's programs and to enlist public support for the rate increase. The print media may likewise be harnessed in cities or urbanized towns where there are local newspapers. The appropriate dialogues with local leaders, through barangayan or community assembly, may also be undertaken.

Public information programs. It is recommended that public information projects proceed on the basis of four steps:

a. Research, to determine attitudes and opinions, can include mail questionnaires, personal and telephone interviews, focus groups, and other methods.

b. Planning, to identify target audiences as well as decide the messages to be conveyed, and the media through which to deliver them. The target audiences include customers and other governmental units. The messages include:

(1) The reasons for the project.
(2) Description of how the improvements would benefit customers.
(3) Comparison with water rates in other communities.
(4) Comparison with other commodities.
(5) Comparison with other utilities.
(6) What the increase will mean to the average customer.

The media include:

(1) News-print and electronic.
(2) Direct mail.
(3) Presentations.
(4) Public meetings.

c. Implementation, carrying out the plan.

d. Evaluation, throughout the program so that adjustments can be made. The public also provide the ultimate evaluation of the district's efforts.

The issuance of notices for public hearing must conform with the following requirements:

a. Notices are to be disseminated to the existing and prospective concessionaires, opinion leaders, and local officials at least 15 days prior to the schedule thereof. Each notice contains the following informations:

(1) Purpose of the hearing;
(2) Schedule of proposed rates increase as adopted by the WD Board;
(3) Place, date and time.

b. Notices are to be posted in conspicuous public places, at least seven (7) days before the hearing if the district covers one municipality/city and at least 15 days when the district covers two or more municipalities/cities.

4. PUBLIC HEARING STAGE

The district is responsible for the conduct of the public hearing program. The time and the venue may be such to ensure the best attendance of concessionaires. The program must allocate sufficient time for the presentation of justifications of the rate increase and accommodate comments and counter proposals, if any.

In all public hearings, at least a LWUA representative must be present to provide factual information, closely observe the proceedings, and assess whether the public generally accepted the water rates proposal. The members of the district Board may also be present to answer possible questions appertaining to their functions.

Where the district comprises just one city/municipality but covering several barangays; where the service are covers a wide territorial jurisdiction; or when the magnitude of increase is significant, the district may resort to multiple presentation through different barangays.

Where the district service area covers more than one city/municipality, public hearings must be conducted in each city/ municipality covered.

5. POST PUBLIC-HEARING STAGE

After the conduct of the public hearing, all documents necessary to support approval of the water-rate increase are to be submitted as soon as possible to facilitate the processing thereof within a reasonable time.

The following documents are to be submitted by the water district to LWUA together with the water-rate increase:

a. Copy of the Notice of public hearing duly circulated and received;
b. Minutes of public hearing;
c. Attendance sheet;
d. Pictures taken during hearing (optional);
e. Details of community dialogues conducted (barangayan).

The LWUA representative must submit to the Administrator, a report containing the following informations:

a. The date, time and place of the public hearing.
b. Summary of attendance, i.e., officials, district and LWUA representatives, concessionaires, media representatives, etc.
c. An assessment of the public acceptance of the water-rate increase.

6. OPPOSITION TO NEW RATES

In some cases, advocates against water-rate increase resort to court action, seeking court injunctions to stop the enforcement of new rates. In such event, the district is well advised to be knowledgeable of administrative requirements for rates implementation which consist of the following:

a. Public hearing for the purpose.
b. Board Resolution adopting the rates.
c. Review, approval and confirmation of the rates by LWUA.
d. Observance of the effectivity period of implementation.

After LWUA's confirmation, the new rates are deemed effective and enforceable seven days after public posting in the district. Should any complaint against these rates arise, such complaint should be filed within three (3) days after posting with the National Water Resources Board (NWRB). Said office is given 30 days within which to take action, which action if unacceptable to complainants may be elevated to the Office of the President.

In case, therefore, of any court proceeding, the district must consider the following aspects:

a. Exhaustion of all administrative remedies.

b. Other consideration besides the legal aspects.

The chances of the district in winning court cases are greater provided it has taken all the proper steps in the formulation and adoption of its water rates.

7. VALIDITY OF PUBLIC HEARING

Public hearing remains valid if the level of rates as presented in such hearing is the same as that being submitted to LWUA for review and approval. Otherwise, another public hearing must be conducted if the level of rates is higher than what was originally presented in said hearin

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Chapter 9

Review of Water Rates

1. LEGAL BASIS

It has often been the misconception that once water rates are presented and accepted in a public hearing, the process is already enough to warrant implementation thereof. Such is not the case, because Sec. 63 of PD 198, as amended, provides that the rates and charges established by the local water utility, after hearing is conducted for the purpose, are subject to review by the Administration to establish compliance with the above-stated provisions.

It should be understood that the review of rates includes approval by the Administration, or disapproval if found to be inadequate or in excess of the parameters set by law in fixing such increase, and subsequent confirmation by the LWUA Board of Trustees.

2. DOCUMENTARY REQUIREMENTS

In order for the rates to be reviewed, the following documents are needed to be submitted by the water district:

a. District Board Resolution, adopting the water rates. The resolution must indicate the rate schedule/s and the expected date/s of implementation.

b. Minutes of Public Hearing, integrating the proceedings involved in the conduct of the hearing and indicating the rate schedule/s and the expected date/s of implementation. A copy of the attendance and where applicable, photographs taken during the conduct of the hearing may, likewise, be included.

c. Cashflow Projection, covering the period within which the rate schedule/s are to be effective. This is prepared in a prescribed format.

d. Consumption Pattern, covering the preceding six-month period separately for the residential and commercial usage. These are presented in prescribed charts.

e. Water District Profile, serves as a window to the water district operations. This is prepared in a prescribed format.

3. EFFECTIVITY

Water rates, once confirmed, are executory and enforceable after the lapse of seven calendar days from posting in a public place

in the locality of the water district, without prejudice to an appeal being undertaken by a water concessionaire to the National Water Resources Board (NWRB) whose decision is appealable to the Office of the President. An appeal to the NWRB must be perfected within thirty days after the expiration of the seven-day period of posting. The Board will decide on the appeal within thirty days from perfection.

For practical intents and purposes, the start of implementation is deemed as the consumption month following the seven-day posting period.

4. PROVISIONAL IMPLEMENTATION

In instances where there is inconceivable urgency for the district to implement the established water rates and when such could not wait for the final review by the Administration, a district may be granted provisional implementation of the rates, subject to the following conditions:

a. The rate increase is in conformity with the provisions of Section 63 of PD 198 (as amended), LOI 700 and other applicable policies and guidelines.

b. A majority of the consumers and the local government officials do not object to the new rates as certified by the hearing officer.

c. There is urgency to implement the increase within 30 days immediately following the month of public hearing under the following conditions:

(1) The district has an existing negative cashflow.

(2)The provisional implementation of the rates is necessary to avert an imminent negative cashflow.

d. The provisional implementation of the rates is executory and enforceable after the lapse of seven (7) calendar days from posting and will remain effective for a period of ninety (90) calendar days from the date of approval of the provisional implementation.

e. The provisional implementation is without prejudice to an exception being taken by water concessionaires to LWUA within thirty (30) calendar days from said implementation. LWUA must make decision within thirty (30) calendar days from the time of receipt of the exception to the provisional implementation.

f. The rates must be elevated to the LWUA Board for confirmation within sixty (60) calendar days from the date of approval of the provisional implementation.

Notwithstanding the above-stated conditions, provisional implementation may only be granted by the Administration when all the documentary requirements for the review of the rates are submitted.

GLOSSARY

annual operating revenue requirement. The total revenues required on an annual basis adequate to meet all expenses and capital requirements of the utility.

capacity. The ability of available water utility resources to meet the quantity, quality, peak loads, and other service needs of the various customers or classes of customers served by the utility.

capital expenditures. Expenditures that result in the acquisition of or addition of fixed assets.

cash-needs approach. The method of determining annual operating revenue requirements based on all cash needs, including but not limited to, operation and maintenance expense, debt service, and capital expenditures from current revenues.

commodity costs. Costs that tend to vary with the quantity of water produced, including the cost of chemicals, a large part of power costs, and other elements that follow, or change almost directly with, the amount of water produced.

commodity-demand. The method of cost allocation in which the cost of service is allocated to the functional cost components of commodity, demand, and customer cost. Variable costs are allocated to the commodity component, with the balance of costs being allocated to the demand and customer components.

connection charge. The charge made by the utility to recover the cost of connecting the customer's service line to the utility's facilities. This charge is often considered as a contribution of capital by the customer or other agency receiving the service.

cost allocation. The procedure for classifying or assigning the costs of service to functional cost components for subsequent distribution to respective customer classes.

costs of service. The operating and capital costs incurred in meeting various aspects of providing water service, such as customer billing costs, demand related costs, and variable costs.

customer classification. The grouping of customers into homogeneous classes. Typically, water utility customers may be classified as residential, commercial, and industrial for rate-making and other purposes. For specific utilities, there may be a breakdown of these general classes into more specific groups. For example, the commercial class may be sub-divided into commercial-A, commercial-B, and commercial-C.
customer costs. Costs directly associated with serving customers, irrespective of the amount of water use. Such costs generally, include meter reading, billing, accounting, and collecting expense, and maintenance and capital costs related to meters and associated services.

debt. An obligation resulting from the borrowing of money or from the purchase of goods and services.

debt service. Expenditures for interest and principal repayment on debt instruments.

debt-service requirement. The amounts of money necessary to pay interest and principal requirements for a given series of years.

demand costs. Costs associated with providing facilities to meet demands placed on the system by customers. They include capital - related costs associated with those facilities plus related operation and maintenance expenses.

economies of scale. Exists when the unit or average cost of general water service decreases with the expansion of water system

capacity. Economies of scale (or size) can be defined either in the context of changes in total system capacity or changes in a single component of the water system (such as treatment).

expenditures. Amounts paid or incurred for all purposes, including expenses, provision for retirement of debt, and capital outlays.

flat rate. A fixed charge for unmetered service, often simply based on the number of fixtures and water-using devices of the customer.

functional cost components. The distinct operational components of a water utility to which separate cost groupings are typically assigned. In the commodity-demand method, they are the components of commodity, demand, and customer costs.

inverted block rates. A schedule of rates applicable to blocks of increasing usage in which the usage in each succeeding block is charged at a higher unit rate than in the previous blocks. Generally, each successive
block rate may be applicable to a greater volume of water delivery than the preceding block(s).

low-income group. That sector of residential consumers having the lowest capability to pay for water service.

maintenance expenses. Part of operating expenses, including labor, materials, and other expenses, incurred for preserving the operating efficiency and/or physical condition of utility plant.
minimum charge. A minimum bill to a customer that includes a fixed volume of water delivered to the customer during the applicable period of time.

operating expenses. Expenses related to maintaining day-to-day utility functions, including operation and maintenance expenses, taxes and depreciation and amortization costs, but not interest payments or dividends.

rate blocks. Elements of a schedule of charges for specific usages within a certain defined volume and/or demand boundaries.

rate-making process. The process of developing and establishing rates and charges. The process is comprised of four phases: (1) determination of revenue requirements; (2) allocation of costs to the functional components of the cost of service; (3) distribution of the function costs of service to customer classes; and (4) development and design of a schedule of rates and charges to recover the revenue requirements.

rate schedule. Schedule of the rates and charges to the various classes and customers.

rate structure. The design and organization of billing charges by customer class to distribute the revenue requirement among customer classes and rating periods.

rate design. A process of matching the costs of service to be recovered to the unique economic, political, and social environments in which the water utility provides service.

revenue requirements. The sum total of the revenues required to pay all operating and capital costs of providing service.

service charge. A fixed charge usually designed to recover customer costs.

service connection. That portion of the service line from the utility's water main to and including the curb stop at or adjacent to the streetline or the customer's property line. It includes other valves, fittings, etc., that the utility may require at or between the main and the curb stop, but does not include the curb box.

service line. The pipe and all appurtenances that run between the utility's water main and the customer's place of use and includes fires lines.

system water losses. Water from all losses such as theft, illegal connections, unauthorized users, malfunctioning controls, differences in use quantities caused by meter error and any other losses which is not a result of a leak or a break.

tariff. The authorized list of charges for a utility's services.

test year. The annualized period for which costs are to be analyzed and rates established.

unit cost. The cost of producing a unit of a product or service. An example would be the cost of treating a thousand cu.m. of potable water for use by the water utility's customers.

unit service. An element of service for which a cost can be ascertained, such as thousand cu.m., hundred cu. ft., million gallons per day, monthly bill, etc.

water audit. A thorough accounting of all water into and out of a utility as well as an in-depth record and field examination of the distribution system that carries the water, with the intent to determine the operational efficiency of the system and identify sources of water loss and revenue loss.

water-rate strategy. The general scheme on how the district should go about determining a rate structure that is fair and acceptable to the majority of water users and when to apply it.

wholesale service customers. Service in which water is sold to a customer at one or more major points of delivery for its use or for resale within the wholesale customer's service area.

BIBLIOGRAPHY

American Water Works Association. "Guide to Setting Water Rates." Denver, CO: American Water Works Association, Back to Basic Series, 1992.

_____. "Managing Water Rates and Finances." Denver, CO: American Water Works Association, Resource Book, 1979.

_____. "Revenue Requirements." Denver, CO: American Water Works Association, Manual M35, 1990.

_____. "Water Rates." Denver, CO: American Water Works Association, Manual M1, 1983.

_____. "Water Rates and Related Charges." Denver, CO: American Water Works Association, Manual M26, 1986.

Beecher, Janice A., Patrick Man, and James Lander. "Cost Allocation and Rate Design for Water Utilities" Columbus, OH: The National Regulatory Research Institute, Report, 1991.

Ferrarese, Vincent, Paul Preston, and Patsy Clark. "Gaining Public Acceptance of Rate Increase." New York, NY: American Water Works Association, Annual Conference Report, 1994.

Lebel, O., C. Varszegi, and B. Duckworth. "The Relationship Between Water Saving and Water Price." Budapest, Hungary: International Water Supply Association, Annual Conference Report, 1993.

Letter of Instructions No. 700. "Providing Measures to Control and Regulate Increase in Water Rates." Malacanang, Manila, June 1978.

_____. No. 744. "Relative to Reliable Water Supply at Reasonable Rates in Countryside. " Malacanang, Manila, September 1978.

LWUA Board Resolution No. 67, s-88. "Water Rate Setting."

_____. No. 171, s-89. "Sanctions to WDs Re: Implementation of Water Rates."

_____. No. 142, s-90. "Classification of Commercial Class."

_____. No. 164, s-90. "Computing Flat Rates."

_____. No. 17, s-91. "Standard Formulas for Adjustment of Water Rates."

_____. No. 65, s-91. "Optional Method of Computing Water Rates."

_____. No. 85, s-93. "Public Hearings for Water Rate Increase."

_____. No. 119, s-93. "Provisional Implementation of Water Rates."

_____. No. 20, s-94 Amending BR No. 119, s-93

_____. No 23, s-94 "Implementing Guidelines Covering the 60 Percent (60%)

Limitation on the Increase in Water Rates"
_____. No 190, s-97 "Policy on Evaluation of Loan Proposals and Water Rate Increases"
_____. No. 105, s-98 "Guidelines in the Preparation of 8-Year Cash Flow Projections"
_____. No. 99, s-99 Amendments to BR 85, s-93
Presidential Decree No. 198, as amended. "Provincial Water Utilities Act of 1973." Malacanang, Manila, May 1973.

Wiederkehr, W., et al. "Policies of Tariff." Budapest, Hungary: International Water Supply Association, annual Conference Report, 1993.
