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April 1, 1970

FILED by order
of the Board of Directors of
The Metropolitan Water District
of Southern California
at its meeting held APR 14 1970
Executive Secretary

Board of Directors
The Metropolitan Water District
of Southern California
B u i l d i n g

Gentlemen:

Summary of Water Pricing Policy Study

Transmitted herewith is a summary of the Water Pricing Policy Study which was submitted to your Board in June 1969 by Brown and Caldwell - Robert A. Skinner, Consulting Engineers. A synopsis of the report which was prepared by Mr. Skinner was submitted to your Board on December 4, 1969. The attached summary covers material in the synopsis, which in turn covers material in the complete study, and was prepared in response to the request made by the Water Problems Committee at the meeting on January 12, 1970.

Because of its brevity, the attached summary does not present the arguments either for or against the various points covered and the recommendations made in the study and in the synopsis. Instead, the summary has been arranged to indicate the general nature of the problems analyzed in the study, and to show the logical relationship between the various portions of the study. For further information on any point, reference should be made to the complete report.

Very truly yours,

Henry J. Mills

Henry J. Mills
General Manager

DCB/mi

Encl.

Summary of
Water Pricing Policy Study by
Brown and Caldwell - Robert A. Skinner, Consulting Engineers
June 1969

In making an analysis for optimizing the rate structure of the District, the consultants' study found that there are three principal criteria to be considered:

1. The adequacy of the rates for providing necessary revenues;

2. The equitableness of the rates for apportioning costs to beneficiaries; and

3. The effectiveness of the rates in achieving economic allocation of resources.

In connection with Point 1, the study was based on establishing rates necessary to recover all costs expected to be incurred by the District from 1968 to 1990, utilizing the estimate of such costs developed by the District's staff as published in the bond brochure for the sale of Series B bonds in June 1968, which was the latest complete estimate available at the time the study was commenced. This estimate included all capital and operating costs associated with the Colorado River Aqueduct Project, all costs allocated to the District for the State Water Project, the District's capital and

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Summary prepared by MWD staff, March 1970.

operating costs of expanding its system to provide for the distribution of State project water, and the District's share of the costs of the first phase of the proposed Bolsa Island desalting plant. The study did not include the costs of projects which might be required to provide additional amounts of water needed by the District after 1990. With respect to the District's construction program, the study was based on the use of $850 million in 1966 bond proceeds and $63 million in 1956 bond proceeds to help finance such construction, with the remainder being financed by the use of current income on a pay-as-you-go basis. The formulation of a rate proposal taking account of a subsequent bond issue was not considered within the scope of the assignment, as it was not included in the financial analysis in the Series B bond brochure. However, the benefits of such an additional bond issue in reducing immediate tax and water rates were acknowledged.

In connection with Point 2, the initial problem was to apportion costs to taxpayers and to water users, respectively, while at the same time observing the legal requirements of the MWD Act that the Board is required, so far as practicable, to fix rates for water which will result in revenue which will pay all expenses of the District. The policy adopted by the Board in 1960 for this

purpose is presented in Resolution 5821, and the consultants' study endorsed this policy as being in the best interests of the entire MWD community, as being in conformity with the MWD Act, and as not being discriminatory or inequitable among the District's member agencies. This policy requires that water revenues cover all operating costs and at least one-half of the capital costs not covered by annexation charges. Taxation is permitted to cover the remaining capital costs, but it is expected that the use of taxation will decline in future years as the aqueducts approach operation at full capacity. The study found that for large-scale capital investment projects such as those required to provide a major source of water supply for Southern California, it is impossible for a project to achieve a self-liquidating water sales revenue status at the beginning of operation, and the need for property taxation is unavoidable. Under conditions approaching full operation, three economic criteria justifying the District's general tax levy were identified in the study:

1. Tax revenues should be used as reinforcement of the District's income so as to stabilize water rates from year to year and prevent wide variations from year to year;

2. Tax revenues should yield a fair compensation for readiness to serve; and

3. Tax revenues provide a means of obtaining a return for the enhancement of land value induced by the availability of a regional water supply.

Rates for water for domestic and municipal uses and for groundwater replenishment by spreading were developed in the study based on a cost-of-service study. Rates for water for injection to repel sea water intrusion were proposed to be the same as for spreading, although it was recognized that the interruptibility of service applicable for spreading would be impractical in the case of injection. The recommended preferential pricing for water used for agricultural purposes was based on presumed ability to pay, giving consideration also to the surplus and interruptible characteristics of such service.

In connection with Point 3, economic allocation of resources, it was found that the District is unique in that water pricing guidelines developed elsewhere are generally inapplicable to the District. However, a number of pertinent principles have emerged over the years, and the best means of formulating a rate proposal which would encourage the optimal use of all water resources

is by the use of a cost-of-service study. The cost-of-service study is a device for segregating costs incurred in rendering service, so that each class of service may be assigned an appropriate portion of total costs. Three classes of service were considered in the study:

1. Domestic and municipal;
2. Groundwater replenishment; and
3. Agricultural.

The cost-of-service study utilizes the following steps:

1. Develop the net annual revenue requirements;
2. Apportion the net annual revenue requirements among water sales revenue, general tax revenue, and transfers to and from reserves;
3. Divide the required annual revenue from water sales among the functions of (a) supply, (b) distribution, (c) treatment, and (d) administrative and general expense; segregate such costs into fixed and variable components; and determine the percentage of total water sales revenue allocated to each component of each function;
4. Assign the percentages of total water sales revenues to the three rate components of (a) demand, (b) commodity, and (c) treatment;

5. Convert the percentages of total water sales revenue to required annual revenue applicable to each class of service; and

6. Convert the annual revenues for each class of service to unit revenues in dollars per acre-foot.

In addition to the cost-of-service study, other investigations and studies were made of factors such as:

1. The costs of water produced from underground sources;

2. The costs of management of groundwater basins;

3. The effects of different methods of managing groundwater basins;

4. The costs of reclaiming waste water;

5. The possibility and consequences of utilizing surface reservoirs for seasonal and cyclical storage; and

6. The costs to the District of providing seasonal peaking service.

Based upon review of all of the above, it was considered that optimal use of all water resources could be encouraged by establishing a rate structure with rates for all sales other than agricultural sales varying monthly, based on monthly demand. Such rates would afford a price preference for water delivered into surface

reservoirs during the off-peak season and stored for use during ensuing periods of peak demands. Finally, under the District's long-established policy, all costs attributable to water treatment are to be reimbursed by means of appropriate surcharge rates. A water and tax rate schedule extending to 1990 was presented to illustrate the application of the procedures recommended in the study.

In the water industry, seasonally varying rates such as those recommended currently are rare, although the concept is attracting increasing attention. Uniform monthly rates tend to cause full reliance on the District for seasonal peaking service because this is cheaper for the local water purveyor than it is to provide surface reservoirs or other facilities to meet seasonal peaks. Uniform rates discourage optimal conjunctive use of available water resources, resulting in overall diseconomy in the District's service area.

The proposed varying monthly rate schedule was tested to determine its effect over a period of years on selected water purveyors within the District's member agencies. A very substantial part of the effort of the study was devoted to this analysis as cost data were obtained and analyzed for each of the 476 water purveyors

identified as providing water service within the District's service area in 1966-67. Of this total, 124 purveyors were selected for determination of the total unit cost of water received by nine typical groups of ultimate consumers. The effects on the unit cost of water to these consumers were computed for four alternative water pricing proposals which had been advanced previously, as well as for the proposal developed in the current study. The results of this analysis are shown graphically in the study for each District member city and for one purveyor service area in each of the other District member agencies. In each case, the recommended rate schedule produced results intermediate among those of the other four alternatives in most years. The major contention centers around the contribution to be made in taxes by owners of property not immediately involved in the use of water.

The information summarized in the previous pages is presented in the consultants' study in a somewhat different order. The various chapters of the report are organized in a topical sequence. For further information on specific topics, reference should be made to individual chapters of the report as indicated below:

Chapter 1 presents the authorization for the water pricing policy study and portrays the events leading to the study.

Chapter 2 contains a brief resumé of portions of the District's historical background particularly relevant to the study.

Chapter 3 presents information regarding each of the member agencies of the District.

Chapter 4 includes information regarding the District's Colorado River water supply, and its participation in the State Water Project.

Chapter 5 furnishes information on surface and groundwater supplies available in the areas of the District's member agencies.

Chapter 6 includes a recapitulation of important financial aspects of the District's operation.

Chapter 7 includes a summary of the data collected on the costs of water in the District's service area for the reference year 1966-67.

Chapter 8 contains a discussion of water pricing practices and principles, and a brief history of the District's pricing policies.

In Chapter 9, the concepts and principles explored in the study are applied.

In Chapter 10, the projections of unit revenues developed in Chapter 9 are converted into rate proposals for the sale of untreated water.

Chapter 11 contains a summary and the conclusions of the study.

Five appendices contain detailed information supporting various phases of the study.