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The Metropolitan Water District of Southern California

August 8, 1988

(Water Problems Committee--Action)
To: Board of Directors (Finance and Insurance Committee--Information)

From: General Manager

Subject: Financial Incentives for Water Conservation

Summary

Metropolitan's Board has established a firm policy of supporting water conservation. It is estimated that Metropolitan's service area is currently saving 200,000 acre-feet per year (AFY) of water through conservation, and our facility planning includes a long-term goal of saving 450,000 AFY by 2010. To help reach this goal and to assist the drought effort, this letter proposes a "Conservation Credits" incentive program similar to the incentives contained in Metropolitan's Local Projects Program. The program would be implemented in coordination with the member agencies, reviewed from time to time as experience is gained, and reports made to your Board on its effectiveness.

In brief, Metropolitan would pay up to one-half of the direct cost of a new water conservation project, provided Metropolitan's contribution is justified by the value of the water savings to Metropolitan and by the local need for our participation. The value to Metropolitan of the water saved would be based on our avoided energy cost, as in the Local Projects Program. Each project agreement over $75,000 would be submitted to your Board for approval and funding. The program includes flexibility for assisting new and emerging technology, demonstration projects, and other projects where special circumstances, opportunities, and benefits apply. California Environmental Quality Act requirements will be complied with before entering into any agreement.

Recommendation

1. That the Board of Directors approve, in concept, the water conservation credits program set forth in this letter.

2. That the General Manager be authorized to request proposals from the member agencies for water conservation projects which would be considered for participation on an individual basis, substantially as set forth in this letter. Funding for each qualifying project over $75,000 will be requested upon project approval by the Board.

Detailed Report

Background

Your Board, through its Administrative Code and the Regional Urban Water Management Plan, has established firm policies supporting water conservation. Financial incentives are an effective means of carrying out these policies.

In July 1985, your Board adopted a Water Management Plan which identified several water conservation measures to be evaluated and implemented. These measures included plumbing retrofit, California Irrigation Management Information System (CIMIS), Xeriscape, leak detection, industrial, and promotional programs. Financial incentives were identified as a measure to be evaluated.

In August 1987, your Board placed its formal policy on water conservation in the Administration Code. The policy states:

> "It shall be the policy of the District to undertake and support water conservation programs. To that end, the District may develop and implement such programs and enter into agreements with member public agencies and other organizations to make more efficient use of water resources through water conservation programs so long as such agreements serve a beneficial purpose of the District." (Administrative Code, Section 4209)

Metropolitan's Water Conservation Goals

Southern California has a tradition of water conservation. Our region is now saving an estimated 200,000 acre-feet of water each year through water conservation measures, and our facility planning includes a long-term goal of saving 450,000 AFY by 2010.

The proposed program for assisting water conservation is analogous to our Local Projects Program

which provides financial incentives for water reuse and other local projects. Although serving no retail customers, Metropolitan can act in conjunction with the member agencies to offer financial incentives to retail agencies to implement conservation measures which release Metropolitan water for other uses.

Proposed Incentive Program

Water conservation has both local and regional benefits. The local benefits include reduced sewer loadings, reduced use of electricity and natural gas for heating water, and reduced water distribution costs. Regional water supply benefits include reduced cost of aqueduct pumping and potential savings in treatment and distribution costs.

In many cases, however, the local benefits of conservation are not sufficient to offset total project costs, which would include direct program costs such as new staffing and hardware, as well as administrative overhead, loss of rate revenue by retail water purveyors, and other factors.

In such cases, a sharing of costs between local entities and Metropolitan is proposed. Under the proposed program, Metropolitan would pay up to one-half of the direct costs of new water conservation measures that reduce demands on Metropolitan, provided that Metropolitan's contribution is justified by the value of the water saved and by the local need for Metropolitan's assistance. As with the Local Projects Program, the value of the water saved would be based on Metropolitan's avoided cost of pumping State project water, and the conservation credit would be deducted from the participating member agencies' water bill. The avoided cost of pumping would be the Department of Water Resources' (DWR) average sale price for surplus energy on the State project, multiplied by a net lift of 3,000 kWh/AF through the East Branch Aqueduct, and subject to a minimum or floor value of $75/AF, like the Local Projects Program.

Whether a project needs Metropolitan's assistance to be financially feasible would depend on total project cost, loss of retail rate revenue, local benefits, and possibly other factors. Projects undertaken essentially for purposes other than to conserve water would normally not be funded.

For measures with known technology and savings, the proposed program would utilize a standard review and

qualification process. A more detailed review process will be needed for new and emerging technology, or for measures whose savings depend on local circumstances. Each project agreement would be negotiated on an individual basis, and those agreements over $75,000 would be submitted to the Board for approval and funding. Table 1 is a representative listing of measures whose savings are well documented, while Table 2 shows examples of how the conservation credits would be calculated under the standard process. The standard process will facilitate the implementation of most measures, provide for prompt action during droughts, and ensure equal treatment of all member agencies. Special case projects would include such measures as leak detection and repair, CIMIS, Xeriscape or "Water Wise" landscaping, industrial process recycling, and others.

The program will be reviewed from time to time as experience is gained, and reports made to your Board on its effectiveness. Examples of a standard program and a "Special Case" are attached.

Need for Flexibility

A particular project may have special benefits for Metropolitan other than the energy savings. Such benefits could include technology development, important research results, protection of a vital resource, or permanent loss of an opportunity if the project is not implemented. In recommending approval and funding of specific projects, the General Manager would consider such benefits.

Estimated Program Cost

The cost of the conservation credit program will depend on the number of projects qualifying for Metropolitan's assistance each year. As a preliminary estimate, it is assumed that 20 projects may qualify in the first year. Using typical costs which are representative of a variety of projects, the first year's outlay by Metropolitan might be on the order of $1,500,000. Using reasonable estimates, these 20 projects would save about 10,000 acre-feet of water each year over a minimum period of five years. The unit cost to Metropolitan would be about $35 to $40 per acre-foot of water saved. As experience is gained, we will update your Board on project costs, savings, and overall effectiveness.

Terms and Conditions for Agreements

The participants in a conservation credits agreement would be Metropolitan, the appropriate member agency, and a local sponsor(s), if different from the member. In order to qualify for the conservation credits program, a water conservation project must be a new project which reduces demands on Metropolitan, and it must have demonstrable water savings. The project must also be technically sound and have local support by water agencies and municipalities. Finally, Metropolitan's participation must be necessary to make the program financially and economically feasible. Where practical and appropriate, efforts will be made to obtain participation from benefiting wastewater agencies or other beneficiaries.

California Environmental Quality Act requirements will be complied with before entering into any agreement.

Carl Boronkay

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Attachments

TABLE 1

STANDARD WATER CONSERVATION MEASURES
AND ASSIGNED SAVINGS

Measure	Water Savings Per Capita	Gallons-Day Per Household
Low-Flow Showerhead Retrofit, 2.75 gpm @ 80 psi	7.2	21.6
Ultra Low-Flow Showerhead, 1.5 gpm or less @ 80 psi	10.5	31.5
Low-Flush Toilet Retrofit, 3.5 gallon per flush	8.0	24.0
Ultra Low-Flush Toilet, 1.5 gallons per flush	16.0	48.0
Low-Cost Retrofit Kit,		
installed by agency	6.5	19.5
Mass mailed	1.7	5.1
Higher-Cost Retrofit,		
Installed by agency	11.2	33.6
Door Hang/Follow up	8.0	24.0

TABLE 2

TYPICAL EXAMPLES OF METROPOLITAN'S
CONSERVATION CREDITS
(per 10,000 installations)

Measure	Term of Agreement	Estimated Water Savings	Program Cost	Conservation Credit ***
Ultra-Low-Flush Toilet (1.5 gal)	10 yrs.	16 gpcd, or 48 gpd/hh, or 17,520 gal/yr/hh, or 538 AFY x 10 yrs = 5,380 AF	$5,000,000	$403,500
Ultra-Low-Flow showerhead, 1.1 gpm model	5 yrs.	10.5 gpcd, or 31.5 gpd/hh, or 11,498 gal/yr/hh, or 353 AFY x 5 yrs = 1,765 AF	$ 130,000	$ 65,000
Retrofit hardware package*	5 yrs.	11.2 gpcd, or 33.6 gpd/hh, or 12,264 gal/yr/hh, or 376 AFY x 5 yrs = 1,880 AF	$ 150,000	$ 75,000
Retrofit kit**	2 yrs.	6.5 gpcd, or 19.5 gpd/hh, or 7,118 gal/yr/hh or 218 AFY x 2 yrs = 436 AF	$ 10,000	$ 5,000

* Contains two 2-gpm showerheads, 2 toilet dam inserts, leak detection tablets; savings based on installation by agency.

** Contains toilet bag insert, showerhead flow restrictor, dye tablets; savings based on installation by agency.

*** $75.00/AF for each AF of estimated savings, or one-half of program cost, whichever is less.

Example 1: The Standard Program

Program and Cost

A member agency, City "A", proposes to install 10,000 retrofit plumbing kits in an area served by Metropolitan. Each kit contains two showerheads (chrome on brass), two toilet dams (steel), dye tables to check for toilet leaks, and water conservation brochures. The hardware package costs $7.50; house-by-house distribution costs an additional $7.50 per package. The installed cost is $15 per package, or $150,000 total.

Water Savings

Each installed package is estimated to save 11.2 gallons per capita per day, for an average household savings of 33.6 gallons per day, at 3 people per dwelling unit. These savings have been documented in several well-controlled studies during the last few years, as described in the AWWA Water Conservation Guidebook.

City A documents 10,000 installations, which would save 336,000 gallons per day, or 376 acre-feet per year (AF/yr). City A also documents that the total water savings is from water furnished by Metropolitan and not from local sources.

Value to Metropolitan

Metropolitan would pay one-half the project cost, or $75,000, if the water savings to Metropolitan justify the expenditure. Each installation is considered secure for at least five years. Therefore, the minimum savings are 5 yr X 376 AF/yr = 1,880 AF.

At the minimum avoided energy cost of $75/AF, the value of savings would be $75/AF X 1,880 AF = $141,000. This value of savings justifies Metropolitan paying one-half the project cost, or $75,000, with City A paying the other half. Since the savings and cost for this type of measure are well documented, other than proof of installation, no additional review would be necessary. In this case, because the savings are considered firm, and most of City A's cost would be in the first year, the full conservation credit of $75,000 would be deducted from the water bill after year one.

Example 2: A Special Case

Program Definition and Cost

Municipal Water District "B," a member agency, proposes a leak detection and repair program covering its entire service area. There are 100,000 miles of water mains to be checked and repaired as necessary. The program would involve purchasing a specially equipped van for $60,000, providing a trained staff of two technicians whose salaries and benefits total $200,000 each year, and retaining consulting/training services in the amount of $50,000 to get the program started. Allowing a life cycle of ten years for the program, and charging vehicle operating and maintenance costs at $0.50 per mile and assuming 10,000 miles per year, the start-up cost of the leak detection program would be approximately $310,000, making no allowance for the cost of repairing the leaks.

Start-Up Costs

Crew salaries, benefits	$200,000
Consultant/training	50,000
Specially equipped van	60,000
	$310,000

Annual costs thereafter would be on the order of $255,000 per year for crew costs and vehicle operation and maintenance, and actual repair of leaks.

Annual Costs

Crew salaries, benefits	$200,000/yr
Vehicle O&M	5,000/yr
Actual repair of leaks	50,000/yr
	$255,000/yr

Water Savings

Based on previous experience, water main leak detection may save on the order of 1 to 3 percent of total

annual deliveries through a large system. Assuming total retail sales in Member B's area of 200,000 AF/yr, a possible estimate of savings might be 2,000 to 6,000 AF/yr, once the entire system is surveyed and repairs made. At the minimum avoided energy cost of $75/AF, and assuming that 80 percent of the total savings would be from water supplied by Metropolitan, we would expect that Metropolitan's avoided costs would eventually amount to $120,000 per year, or more (2,000 AF/yr X $75/AF X 80%).

Cost Sharing

Metropolitan would agree to pay one-half the start up cost of $310,000, or $155,000, in view of the high probability of our savings exceeding that amount. Based on water audit data, Member B believes that the program will save at least 1 percent of total deliveries (2,000 AF/yr) after three years and 2 percent of total deliveries (4,000 AF/yr) after six years. This would avoid $460,000 per year in rate payments to Metropolitan after three years, and $920,000 per year after six years, at our treated water rate of $230/AF. Member B pays the annual costs of $255,000, and, even considering overhead costs, expects to have positive cash flow by year three and full cost recovery by year five or six.