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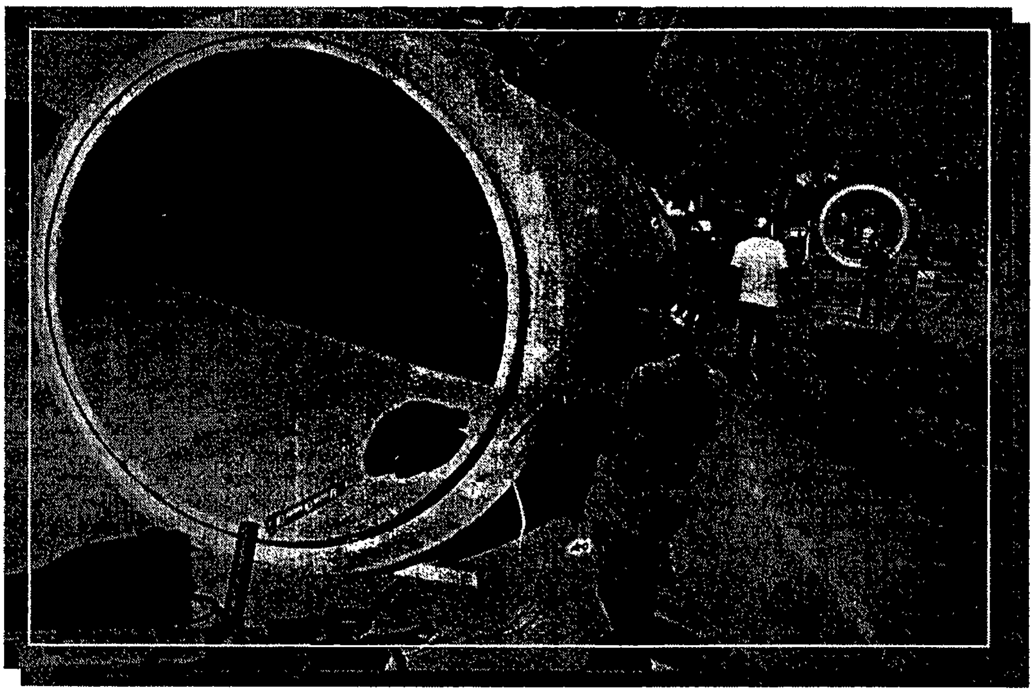
NEXUS STUDY IN SUPPORT OF METROPOLITAN'S NEW DEMAND CHARGES

SEPTEMBER 1994



SECOND DRAFT

MWD

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Contents

Section 1
Introduction

1.1 Purpose of Study

Metropolitan has developed a new water rate structure that provides for more stable water rates while securing revenues, retaining operating flexibility and resource management incentives, and distributing costs in an equitable manner. This new rate structure consists of the following components:

- *Water Rate* using the current basic commodity charge (noninterruptible water rate structure with seasonal storage service and interim agricultural water);

- *Readiness-to-Serve Charge* to recover the debt service not paid from taxes necessary to meet reliability and quality needs of existing demands;

- *New Demand Charge* to recover the capital costs associated with accommodating new demands on Metropolitan's system;

- *Treated Water Peaking Charge* to encourage agencies that meet their peak summer demands with Metropolitan's treatment facilities to change their behavior or more equitably share in the cost of facilities to meet their needs; and a

- *Connection Maintenance Charge* to recover a portion of the costs associated with maintaining Metropolitan service connections.

These rates provide most of the revenue of Metropolitan. However, Metropolitan also receives revenue from the following sources:

- *Ad valorem taxes,* which Metropolitan collects on property within the district for the purposes of carrying on the operations and paying the obligations of the district; and

- *Hydropower sales,* which Metropolitan generates during the operation of the water distribution system.

This study addresses only the New Demand Charge. By recovering the costs associated with accommodating new demands on Metropolitan, the New Demand Charge in effect requires each agency responsible for increased demands to help pay the cost of facilities necessary to serve anticipated new demands. Member Agencies and their Subagencies may, at their option, establish mechanisms such as connection fees to collect the New Demand Charges outside of their water rates.

This study is furnished to establish the nexus (connection) between the New Demand Charge and the costs for new facilities to service new demands on Metropolitan's system. In doing so, this study documents the allocation of a portion of Metropolitan's Capital Improvement Program costs to projections of new demands.

Under California law (§66001), a local agency may impose a fee targeted at new development only if it first establishes the connection between the development and the facilities to be provided. The agency must also show that the amount of the fee does not exceed the cost of the proportionate amount of the facilities necessary to serve the new development. This connection usually is established through preparation of a nexus study.

Metropolitan does not propose to directly levy a connection fee or other charge on new development. The purpose of this study is to provide the documentation about the New Demand Charge that Member Agencies and Subagencies may need in preparation of their nexus studies.

This study will be reviewed annually and updated as required whenever there are significant changes in the facility programs and demand projections.

1.2 Organization of Study

Section 1 of this study introduces the concept of the New Demand Charge and its purpose, and provides background information on Metropolitan, its Member Agencies, and availability of water supplies. Section 2 describes historic water use and methodology for forecasting future water use. Section 3 describes the Capital Improvement Program and lists costs allocated to the New Demand Charge. Section 4 describes how the New Demand Charge is calculated.

1.3 Overview of the New Demand Charge

The New Demand Charge will be imposed as a per acre-foot charge on increased water demand on Metropolitan's distribution system. The charge is intended to recover the corresponding capital costs of the projects or portions of projects needed to service new demands. Fundamentally, the charge is equal to Metropolitan's costs of meeting new demands divided by the projected regional increase in demand.

The basic steps in determining the New Demand Charge are as follows:

- Determine the base water demands from which future increases in demands will be measured;

- Estimate the increase in regional water demands, based on projections of long-term demographics from adopted regional growth management plans;
- Determine which projects or portions of projects in Metropolitan's Capital Improvement Program are needed to serve the projected increases in water demand;
- Estimate the capital costs for the new facilities needed to serve the new demands; and
- Calculate the New Demand Charge as presented in Section 4 of this study.

The New Demand Charge will be implemented in fiscal year 1995-96. This study evaluates the New Demand Charge over a 25-year period, from fiscal year 1995-1996 through 2019-2020.

1.4 Background

The Metropolitan Water District of Southern California

Metropolitan was created in 1928 to provide supplemental water to the cities and communities of Southern California. Metropolitan's 5,153 square-mile service area includes most urbanized portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. Nearly 16 million people—half the population of California—live in Metropolitan's service area. Metropolitan provides about 60 percent of the water used in Southern California.

Since its formation, Metropolitan has provided ~~low-cost~~ imported water to supplement the local supplies available to the people and economy of Southern California. Metropolitan relies on two sources of water supply: the State Water Project, which carries water from the Sacramento-San Joaquin Delta; and Metropolitan's Colorado River Aqueduct.

~~Metropolitan's mission is to continue to provide reliable water needs of the region at the lowest possible cost and in an environmentally responsible way.~~ In recent years, constraints on the amount of imported water available to Metropolitan combined with increasing costs of water resources development, more stringent water and wastewater quality requirements, and growing environmental concerns have led Metropolitan to assume a broader responsibility for sound water management across Southern California.

Metropolitan and its Member Agencies have assumed a leadership role in developing innovative approaches to the efficient management of water resources. An Integrated Resource Planning (IRP) effort has been developed to promote a cost-effective and responsible balance of local supply development, regional water supply projects, and facility improvements. As part of this resource planning effort, Metropolitan is increasing the available supply of imported water through large-scale expansions of its transmission, storage, and treatment facilities.

Member Agencies of Metropolitan

Metropolitan is composed of 27 Member Agencies—14 cities, 12 municipal water districts, and one county water authority. Metropolitan supplies its Member Agencies with treated and untreated water. The Member Agencies and Subagencies in turn combine it with local water resources for delivery to their customers. Member Agencies vary in their reliance on Metropolitan; some depend on Metropolitan for virtually all their water, while others use Metropolitan's water only during peak periods (periods of high demand), for groundwater replenishment, and/or as a backup supply.

Availability of Water Supplies

Southern California has a wide array of water supply resources available to meet the water needs of the region. These resources consist of both local and imported supplies. Local supplies include groundwater and surface water runoff, wastewater reclamation, groundwater and ocean desalination, groundwater conjunctive use programs, and water conservation. Imported supplies include deliveries from the State Water Project, Colorado River Aqueduct, and water transfers.

Virtually all of these resources appear worthwhile when considered individually. However, their full implementation would result in duplicated efforts, unnecessary costs, and unacceptable water rate increases. To prevent this, Metropolitan's IRP process has evaluated the feasible combinations of resources in terms of water supply reliability, costs, risk, environmental and institutional concerns, and financing. Metropolitan's proposed Capital Improvement Program reflects the facilities necessary to serve the schedule and magnitude of required imported water deliveries as determined through the IRP process.

Metropolitan's Mission Statement and Goals

In 1992, Metropolitan's Board of Directors adopted the following mission statement:

> *The mission of the Metropolitan Water District of Southern California is to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way.*

The Board of Directors subsequently adopted goals that define methods of accomplishing Metropolitan's mission and achieving a reliable supply of high-quality water.

The Board of Directors expressed Metropolitan's commitment to maintain a balance of fixed and variable revenue sources; adequately consider the environmental effects and appropriate mitigation of its activities; operate in a cost-effective manner; recruit and retain a qualified staff that reflects the diversity of the service area; maintain a safe and healthful working environment; vigorously protect Metropolitan's legal interests; and maintain adequate systems of internal controls, including an independent audit function.

Reliability Goal

To accomplish its mission statement with regard to water supply reliability, Metropolitan's Board of Directors adopted the following goal:

> *Metropolitan will provide 100 percent of full service wholesale demands to its Member Agencies 90 percent of the time. During adverse hydrologic conditions, such as a repeat of the 1991 drought, Metropolitan will never provide less than 80 percent of full service demands to its Member Agencies.*

This reliability goal expresses Metropolitan's objective of achieving a measurable overall performance standard. Although specified as a standard for wholesale water supply, it fully accounts for local resource management alternatives that directly reduce the demands for Metropolitan's imported water supplies. The reliability goal has guided the subsequent IRP and Capital Improvement Program activities at Metropolitan and has defined the minimum level of service upon which Member Agencies can rely in their own planning process.

Metropolitan has pledged to develop, construct, and operate the facilities necessary to achieve its reliability goal in a cost-effective manner. The costs associated with achieving this reliability goal for new demands on Metropolitan's system will be recovered through the New Demand Charge.

Metropolitan is simultaneously confronted with the challenges of operating and maintaining an aging physical system. The current distribution system cannot reliably deliver the supplies required to serve existing demands under adverse hydrologic conditions. Therefore, a significant part of the proposed Capital Improvement Program is designed to increase the supply reliability of the system to service existing demands. It is intended that these costs be recovered through the Readiness-to-Serve Charge. The separation of these two costs is documented in this report.

Section 2
Water Use

2.1 Historic Water Use

Regional Water Use

Metropolitan tracks total regional water use through its water sales records and through water use reports prepared by the Member Agencies at the end of each fiscal year. These combined data show that total regional water use in Metropolitan's service area increased 32 percent during the 1980s—from 3.0 million acre-feet in 1980 to 4.0 million acre-feet in 1990. Most of this increase was due to growing urban demands, which increased 37 percent, while agricultural water use increased only 1 percent.

With the onset of the economic recession in late 1990 and the implementation of mandatory drought rationing ~~in~~ on February 19, 1991, total regional demands rapidly declined. By 1992, total regional demands had decreased ~~18~~ 20 percent from their 1990 level, to 3.2 million acre-feet. Slightly less than half of this reduction can be attributed to the recession, with the remainder attributable to extreme wet weather and continued drought conservation. In 1993, regional demands increased slightly as lingering drought conservation behavior began to diminish.

Metropolitan Water Use

Demand on Metropolitan is the total regional demand less local water produced from groundwater, surface water, reclaimed water, and water imported through the Los Angeles Aqueduct by the City of Los Angeles.

As indicated by Metropolitan's water sales records, demands on Metropolitan increased significantly during the 1980s. In 1980, Metropolitan supplied approximately 1.3 million acre-feet of the region's total water demand. In 1990, Metropolitan's deliveries had grown to a record high of 2.5 million acre-feet. In 1991, the sixth year of a severe drought, Metropolitan fell short of meeting demand by about 0.8 million acre-feet.

As with the total regional demands, the demands on Metropolitan have decreased in recent years from the 1990 level. Demands in fiscal year 1992 of about 1.8 million acre-feet are considered below normal due to below-average temperatures, above-average rainfall, and the continued effects of the economic recession and drought-related conservation. Demands on Metropolitan in 1993 rose slightly to about 1.9 million acre-feet.

Base Average Metropolitan Water Use

The New Demand Charge is based on calculated using the increase in water purchases above a base average amount. To minimize year-to-year variations due to drought conservation, water shortages, and economic conditions, water purchases will be determined by averaging the most current four years of water sales.

The base average amount reflects the expected normal demands for each Member Agency, and excludes water taken under the one-time drought storage agreements because such sales to not reflect normal demands. It is based on the higher of either (1) the four-year water sales average from 1989 through 1992, or (2) the three-year water sales average from 1989 through 1991. These years capture both high and low water sale years for Metropolitan. With the exception of two Member Agencies, the three-year water sales averages are greater than the four-year averages because they exclude the below-normal water sales that occurred during fiscal year 1992. Metropolitan considers water sales in fiscal year 1992 an aberration and believes optionally eliminating them more fairly represents the Member Agencies's average use of Metropolitan water.

Table 2-1 compares the four-year water sales average and the three-year average by Member Agency. The last column in Table 2-1 shows the higher of the two that will be used as the base amount in the New Demand Charge. The base average amount of 2.17 million acre-feet closely matches the expected demands on Metropolitan's system, as predicted through statistical water demand forecasting for normal weather and economic conditions. This is the level of deliveries through Metropolitan's distribution system that would occur if the existing system were fully capable of reliably meeting current normal demands.

Metropolitan's system can deliver higher peak demands than the current calculated demand. However, those higher peak deliveries are at a reliability less than desired. Even the current base demand requires reliability improvements to be sustainable. In fact, the demand which can be met with the desired reliability is much lower than the proposed average base. Thus, the proposed based demand, which is close to the current demand, with nominal improvements, can attain the reliability set forth in the Integrated Resources Process.

2.2 Projected Water Demands

Methodology

Planning for water supply reliability requires detailed knowledge of the region and the factors that influence its water use characteristics. Metropolitan projects water demands for the region by incorporating forecasts of population,

Table 2-1

New Demand Charge Base (acre-feet)

Member Agency	Base Four-Year Sales[1]	Base Three-Year Sales[2]	New Demand Charge Base
City of Anaheim	23,066	24,928	24,928
City of Beverly Hills	13,350	13,614	13,614
City of Burbank	20,256	20,446	20,446
Calleguas MWD	96,821	99,025	99,025
Central Basin MWD	108,834	115,869	115,869
Chino Basin MWD	76,396	76,950	76,950
Coastal MWD	41,646	43,091	43,091
City of Compton	4,849	4,591	4,849
Eastern MWD	56,867	57,696	57,696
Foothill MWD	9,361	9,610	9,610
City of Fullerton	11,121	12,261	12,261
City of Glendale	25,683	25,599	25,683
Las Virgenes MWD	18,223	18,525	18,525
City of Long Beach	42,135	42,576	42,576
City of Los Angeles	334,558	358,449	358,449
MWD of Orange County	228,684	242,429	242,429
City of Pasadena	19,277	21,363	21,363
San Diego County Water Authority	522,863	553,543	553,543
City of San Fernando	753	903	903
City of San Marino	1,219	1,287	1,287
City of Santa Ana	14,632	15,840	15,840
City of Santa Monica	7,991	8,889	8,889
Three Valleys MWD	68,020	69,637	69,637
City of Torrance	20,072	20,140	20,140
Upper San Gabriel Valley MWD	71,598	71,899	71,899
West Basin MWD	165,792	167,187	167,187
Western MWD of Riverside County	72,972	77,260	77,260
Total	2,077,040	2,173,606	**2,173,947**

(1) Average of Fiscal Years 1989-90 through 1992-93.
(2) Average of Fiscal Years 1989-90 through 1991-92.
(3) Water taken under Metropolitan's one-time drought storage agreements has been subtracted from these water sales.

housing, jobs, and income from the adopted regional growth management plans provided by the Southern California Association of Governments (SCAG) and the San Diego Association of Governments (SANDAG). Currently, Metropolitan references the Draft 1993 Regional Comprehensive Plan developed by SCAG and the Preliminary Series 8 forecasts issued by SANDAG.

The demographic factors affecting water use include the following:

- *Family Size.* Increases in family size increases household water use. However, because a significant amount of household water use is fixed (such as landscaping), water use per capita actually decreases as family size expands, and vice versa.

- *Housing Mix.* Single-family households typically use more water than multi-family households because of additional water using appliances and more outdoor water use per capita.

- *Income.* Increases in income tend to translate into additional water using appliances and greater outdoor water use, both of which increase per capita water use.

- *Industry Mix.* Increases in water-intensive industries (e.g., manufacturing that require washing or cooling) can increase per capita water use. Increases in industries such as finance decrease per capita water use.

- *Inland Growth.* Metropolitan's service area spans coastal, inland, and desert climate zones. Much of the growth in housing and development is projected to be in the inland and desert zones (e.g., Riverside and San Bernardino counties), which increases overall per capita water use.

Other factors that influence water use include the following:

- *Water Conservation.* Long-term water conservation efforts decrease per capita water use.

- *Price.* Increases in water prices tend to decrease per capita water use.

Metropolitan projects water demands for the entire region by incorporating these demographic factors into an econometric demand model known as *MWD-MAIN* (Municipal and Industrial Needs). This model was developed by the U.S. Army Corps of Engineers, Institute for Water Resources, in the early 1970s for use throughout the United States. Consultants for Metropolitan calibrated it to match Southern California conditions.

In addition, Metropolitan uses an *Integrated Resource Planning Simulation Model* (IRPSIM) to simulate the effects of different hydrologic and climatic conditions on future supply and demand. IRPSIM uses 70 years of climatic data to estimate the impact on projected agricultural, municipal, and industrial demands for the entire region, and impacts on local and imported water supplies. IRPSIM then determines the resultant water demands on Metropolitan.

Demographic Trends

Population

Between 1980 and 1990 the population in Metropolitan's service area increased 25 percent from 12.1 million to 15.1 million. During this period Metropolitan's service area accounted for over 50 percent of the state's population. The recent economic recession and an expected decrease in birth rates has slowed the annual average rate of population increase in the region from 2.4 percent during the 1980s to an expected rate of 1.5 percent between 1990 and 2010. Although the rate of population increase is expected to slow, over 233,000 people per year will be added to the region's population between 1990 and 2010. At this rate, regional population will reach 17.6 million by year 2000, and 19.7 million by year 2010. Metropolitan's planning horizon currently extends to year 2020 when population is expected to reach 21.7 million (Figure 2-1).

In addition to slowing the rate of population increase, the recession has also had an impact on the components of population increase. The poor job market is the primary reason that net migration, which was the largest component of annual increase during the 1980s, has dropped off. Figure 2-2 illustrates historic and estimated annual rates of population increase between 1990 and 2020.

Housing

In Metropolitan's service area, occupied households increased at an average annual rate of 80,000—from 4.3 million in 1980 to 5.1 million in 1990. During this same period the average family size increased from 2.79 persons per household to 2.96 persons per household. Multi-family housing grew at a faster rate than single-family housing in the 1980s, resulting in an increasing share of total households being made up of multi-family households. In 1980, multi-family households accounted for 42 percent of total households, increasing to 44 percent by 1990.

In the short term, the recent recession has had a major impact on the housing market. Residential building permits in Southern California, a leading indicator of housing starts, have fallen 78 percent from an annual peak of 162,000 in 1988 to an estimated low of 35,000 in 1993. However, both the Construction Industry Research Board and the University of California Los Angeles Business Forecasting Project have forecast a modest recovery in residential building permits for 1994.

In general, the trends in housing that were witnessed during the 1980s are projected to carry out through year 2010 as total households in Metropolitan's

Figure 2-1
POPULATION IN METROPOLITAN'S SERVICE AREA

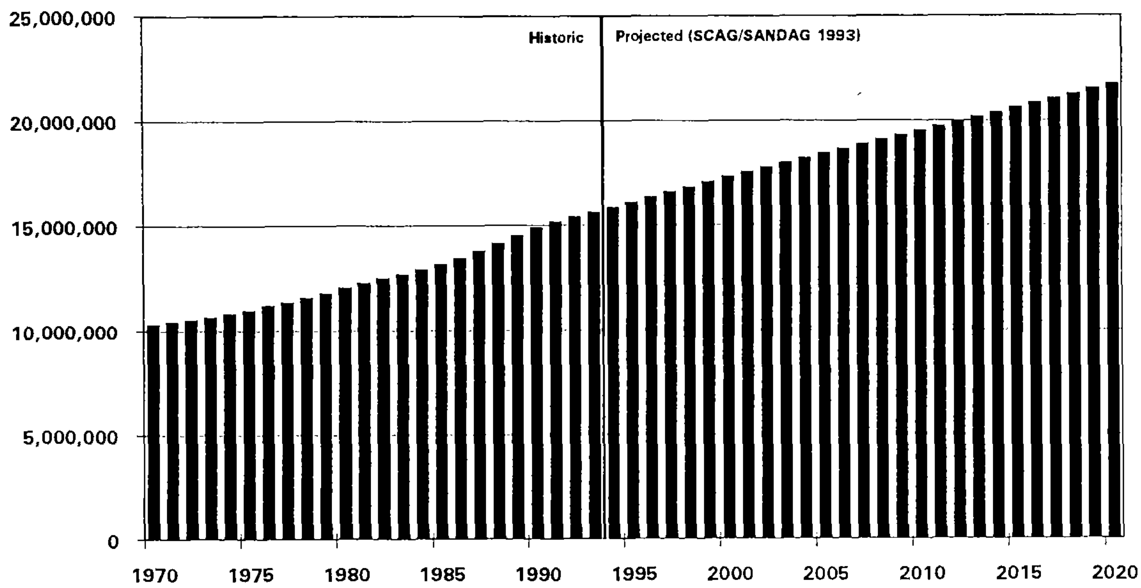
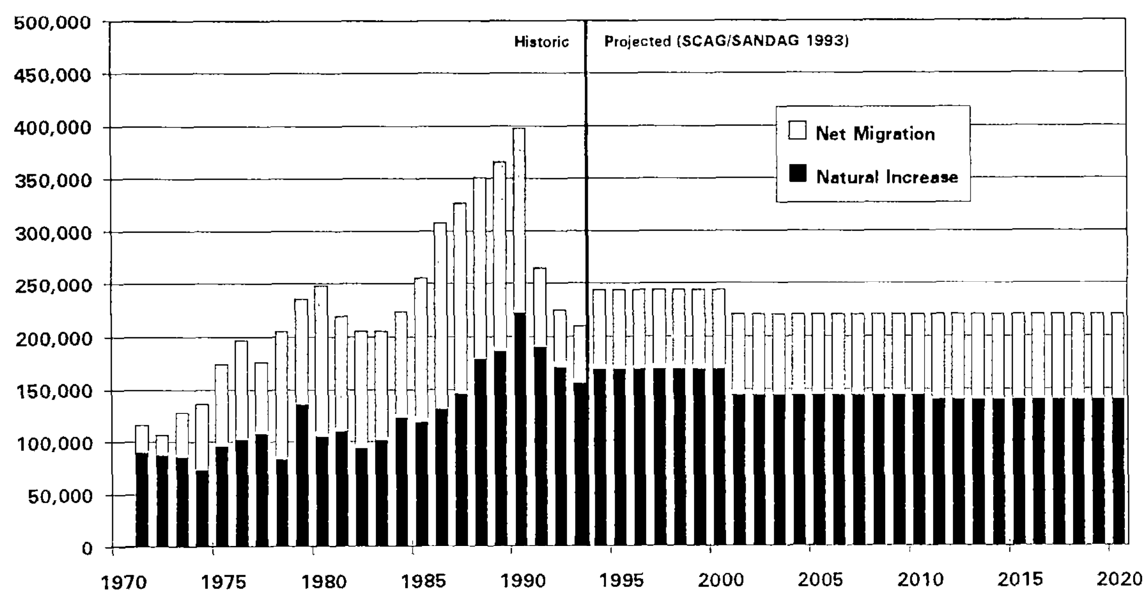


Figure 2-2
ANNUAL POPULATION GROWTH IN METROPOLITAN'S SERVICE AREA



service area increase 30 percent—from 5.1 million in 1990 to 6.6 million in year 2010. By 2010, multi-family households will make up 46 percent of total housing. Family size is projected to peak in year 2000 at 3.01 persons per household and then gradually decline to 2.98 persons per household by year 2010. Even though the demographic trends of increasing multi-family share and increasing household size are working to slow the rate of increase in residential water use, forecasts of water demand reveal that residential water use will remain the largest component of urban water use in Metropolitan's service area and will likely increase its share from current levels. Table 2-2 summarizes trends in housing in Metropolitan's service area.

Table 2-2
Regional Housing Trends

	1980	1990	2000	2010	2020
Single-Family Households (millions)	2.52	2.85	3.18	3.55	3.93
Multi-Family Households (millions)	1.82	2.25	2.65	3.07	3.41
Total Households (millions)	4.34	5.1	5.83	6.62	7.34
Family Size (persons per household)	2.79	2.96	3.01	2.98	2.96

Jobs

Total jobs in Metropolitan's service area increased at an average annual rate of 2.7 percent—from 6.0 million in 1980 (56 percent of total jobs in the state) to 7.6 million by 1990 (55 percent of total jobs in the state). The fastest growing sectors of the economy during this period were services (7.9 percent annually) and construction (3.9 percent annually). Manufacturing jobs were one of the slowest growing sectors during the 1980's, increasing an average of 0.1 percent a year.

The severity and duration of the recent recession has had a tremendous impact on job base in both the state~~'s job base~~ and ~~the job base~~ in Metropolitan's service area. Southern California has experienced job losses because of its traditionally volatile construction industry and the added impact of defense cutbacks on the large share of defense contractors and aerospace firms that are located in Southern California. These two unique factors, coupled with the recessionary pressures of down-sizing and increased competition, have reduced the job base in Metropolitan's service area by an estimated 640,000 jobs since 1990. Job losses and the slow growth in housing caused by the recession have significantly reduced regional water use since 1990.

Jobs are expected to begin to increase by 1995. By year 2010, total jobs are expected to increase 30 percent—from 7.6 million in 1990 to 9.8 million. This growth reflects an average annual increase of 1.5 percent. Future job growth will be slower than that experienced during the 1980s, with the fastest growing sectors being services (2.5 percent annually) and retail trade (2.0 percent annually). The manufacturing industry's share of the job base is expected to continue to decline gradually after the recession through year 2010, decreasing 0.1 percent a year. Table 2-3 shows commercial and industrial jobs in Metropolitan's service area.

Table 2-3
Regional Jobs Data

	1980	1990	2010
Commercial Jobs	4.58	6.17	8.45
Industrial Jobs	1.31	1.32	1.29
Total Non-Farm Jobs	5.89	7.49	9.74

Demand Forecasts

Based on the demographic trends and estimates of local water supplies provided by the Member Agencies, total regional water demands and demands on Metropolitan were projected through the year 2020. The total water use in Metropolitan's service area is projected to increase from 4.0 million acre-feet in 1990 to 5.0 million acre-feet in 2020, assuming normal weather and full implementation of conservation practices. Under drier year conditions, which occur 10 percent of the time, regional demands are projected to be 6.5 million acre-feet in the year 2020.

Local water supplies, including groundwater, reclamation, and groundwater recovery projects, are expected to increase from 1.50 million acre-feet in 1990 to about 2.20 million acre-feet by year 2020. Resulting demands for Metropolitan's imported water are expected to increase ~~from 2.50 million acre-feet in 1990~~ to 2.87 million acre-feet ~~by year 2020~~ by year 2020, assuming normal weather and hydrology. ~~However, because 1990 represented an above normal weather demand, a normalized base demand was used to estimate the growth in demand.~~ The ~~normalized~~ base average demand for Metropolitan is 2.17 million acre-feet. Therefore, the growth in demand for Metropolitan from current conditions to the future represents an increase of 695,000 acre-feet. Table 2-4 compares the ~~normalized~~ base average demand to the projected normal demand in year 2020 for each Member Agency.

Table 2-4

Projected New Demands on Metropolitan (acre-feet)

Member Agency	New Demand Charge Base	Projected Year 2020 Demand[1]	Projected New Demands
City of Anaheim	24,928	45,302	20,373
City of Beverly Hills	13,614	15,407	1,793
City of Burbank	20,446	24,473	4,027
Calleguas MWD	99,025	148,215	49,190
Central Basin MWD	115,869	80,563	0
Chino Basin MWD	76,950	120,471	43,521
Coastal MWD	43,091	63,693	23,602
City of Compton	4,849	6,111	1,262
Eastern MWD	57,696	125,549	67,853
Foothill MWD	9,610	19,280	9,670
City of Fullerton	12,261	13,083	822
City of Glendale	25,683	24,903	0
Las Virgenes MWD	18,525	28,576	10,051
City of Long Beach	42,576	44,671	2,095
City of Los Angeles	358,449	380,607	22,158
MWD of Orange County	242,429	325,349	82,920
City of Pasadena	21,363	32,564	11,201
San Diego County Water Authority	553,543	812,139	258,596
City of San Fernando	903	1,549	646
City of San Marino	1,287	1,377	90
City of Santa Ana	15,840	23,239	7,399
City of Santa Monica	8,889	11,161	2,272
Three Valleys MWD	69,637	106,958	37,321
City of Torrance	20,140	24,014	3,874
Upper San Gabriel Valley MWD	71,899	67,681	0
West Basin MWD	167,187	109,483	0
Western MWD of Riverside County	77,260	212,624	135,364
Total	2,173,947	2,869,039	695,092

(1) Normal-year conditions.

Although normal year conditions were used in the calculation of the New Demand Charge, many of the facility improvements of Metropolitan's proposed Capital Improvement Program are sized and timed to meet above-normal demand conditions. Projections at a drier year condition indicate demands on Metropolitan could reach 3.36 million acre-feet in the year 2020, ~~a~~ 17 percent ~~increase~~ more than normal year demands.

Section 3
Capital Improvement Program

3.1 Purpose of Capital Improvement Program

Metropolitan periodically updates a Capital Improvement Program (CIP) to guide its planning of new facility construction and rehabilitation of existing facilities.

This plan has two objectives:

- To improve reliability and to maintain existing delivery and support facilities; and
- To increase the ability to provide water.

Part of Metropolitan's CIP is to maintain and improve the system and supply reliability for existing demands in conjunction with other water management programs. In a dry year, it is estimated Metropolitan can depend on approximately 1.5 million acre-feet of imported water supply (about 600,000 acre-feet from the Colorado River Aqueduct, 700,000 acre-feet from the State Water Project, and 200,000 acre-feet from existing storage). This supply is less than the current normal demand of 2.17 million acre-feet, indicating an immediate need to increase reliable supplies for existing demands on the system.

The other part of the CIP is to increase the supply reliability for future demands in conjunction with other water management programs. As described in Section 2, normal water demands on Metropolitan are expected to increase to 2.87 million acre-feet in a dry year.

Some of the projects contained in Metropolitan's fiscal year 1994/95 CIP are listed in Table 3-1. Projects intended to improve existing system reliability and rehabilitate facilities are grouped at the heading "Total Reliability/Rehabilitation/ Administrative Services" and are not shown individually. Only projects expected to be completed in fiscal year 1995/96 or later are included. Table 3-1 also shows the escalated, estimated annual expenditures for the CIP from fiscal year 1995/96 to fiscal year 2019/20. Cost estimates were prepared by Metropolitan using standard construction cost estimating procedures.

3.2 Allocation to New Demand Charge

Each project in the CIP was evaluated to determine whether it replaces or rehabilitates a facility, constructs new facilities to service new demands, or some combination of both. Costs of replacing or rehabilitating existing facilities were excluded from the New Demand Charge.

As noted above, some projects that rehabilitate existing facilities also increase the ability to service new demands. For example, due to more stringent water quality regulations, the amount of water flow that can be processed by the Jensen Filtration Plant decreased to 540 cubic feet per second (cfs). However, existing peak demands are 850 cfs. Expansion No. 1 will add 620 cfs of capacity, with half of that expansion (310 cfs) allowing the plant to meet existing demands and half for future demands.

The allocation between existing demand and new demand is shown in Table 3-2. That portion of the project costs found to service new demands is allocated to the New Demand Charge. Table 3-3 shows these costs by year for each project.

3.3 Project Descriptions

Each project in the CIP was evaluated to determine whether it serves existing demands or serves new demands. Projects intended to rehabilitate existing facilities or provide administrative services for the Metropolitan system were excluded from the New Demand Charge, because they are required whether or not any additional demands are met from the Metropolitan system. Other major projects in the CIP are described below.

Treated Water Distribution Projects

The following project extends the treated water distribution system.

Allen-McColloch Pipeline Purchase

The Allen-McColloch Pipeline is a treated water line constructed by Municipal Water District of Orange County that is being purchased by Metropolitan as an extension of regional water delivery capacity to consumers in Orange County. Allocation of this project is 100 percent for existing demand because the line currently conveys Metropolitan water to existing demand.

~~*South Orange County Pipeline - Joint Participation*~~

~~The South Orange County Pipeline is a treated water line constructed by Municipal Water District of Orange County that is being purchased by Metropolitan as an extension of regional water delivery capacity to consumers in Orange County. Allocation of this project is 100 percent for existing demand because the line currently conveys Metropolitan water to existing demand.~~

Water Quality and Treatment Projects

Table 3-3

Based on: Interm. (8/94) - w/o Contingency

New Demand Dollars
(Based on Intermediate Investment Mix - 9/94)
($ Thousands - Escalated)

Contingency Included (Yes = Y No = N) N DISTRIBUTION AND STORAGE PROJECTS	New Capacity	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	Total Demand Dollars 94/95 - 19/20
Total Reliability/Rehab./Admin. Service	0.0%																											
Allen-McColloch Pipeline Purchase	0.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Treated Water Distribution	0.0%	-																										
Total Domenigoni Reservoir	38.0%	64,307.9	103,360.2	132,293.0	98,245.1	67,029.1	7,100.2																					499,335.5
Total Inland Feeder	61.0%	23,441.0	67,698.6	117,343.8	130,717.7	66,353.2																						405,554.3
Total San Diego Pipeline No.6	81.0%	8,862.5	13,894.7	41,912.6	82,782.7	38,031.3	12,667.1																					198,151.1
West Valley Area Study	73.0%	247.1	86.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	333.2
West Valley Project	73.0%	-	-	-	-	-	-	16,532.8	23,729.8	42,809.3	47,583.5	30,604.5	9,485.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	170,745.4
Total West Valley	73.0%	247.1	86.1					16,532.6	23,729.8	42,809.3	47,583.5	30,604.5	9,485.5															171,078.6
Central Pool Augmentation Tunnel & Pipeline	83.0%	-	-	-	3,020.0	3,107.3	7,856.6	7,895.7	10,560.9	93,319.2	94,375.7	106,050.3	107,351.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	433,534.3
Total Central Pool Augmentation	83.0%				3,020.0	3,107.3	7,856.6	7,895.7	10,560.9	93,316.2	94,375.7	106,050.3	107,351.7															433,534.3
Chino Basin Groundwater Storage Program	33.0%	220.3	2,046.4	2,056.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,325.1
Main San Gabriel Basin Groundwater Storage Program	33.0%	332.7	10,425.4	3,666.6	551.1	492.5	517.1	13,380.6	65,495.9	69,485.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	164,346.7
Total Conjunctive Use / GW Storage	33.0%	553.0	12,473.7	5,723.0	551.1	492.5	517.1	13,380.6	65,495.9	69,485.0																		168,671.8
Desalination Demonstration Project	100.0%	4,563.3	5,446.1	15,521.4	692.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26,223.2
Total Desalination	100.0%	4,563.3	5,446.1	15,521.4	692.3																							26,223.2
SUBTOTAL FOR DISTRIBUTION AND STORAGE PROJECTS	34.8%	101,974.8	202,959.5	319,794.1	316,008.9	195,013.4	28,141.0	37,809.0	99,786.6	205,610.4	141,959.2	136,554.7	116,837.2															1,902,548.8

FILTRATION PROJECTS	New Capacity	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	Total Demand Dollars 94/95 - 19/20
All Facilities - Discharge Elimination	25.0%	42.6	1,372.0	36.2	9.6	8.8	5.9	5.6	5.8	3.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,489.7
All Filtration Plants & Distribution System - Chemical Spill Containment	25.0%	2,324.0	2,136.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,460.7
All Filtration Plants - Oxidation Retrofit Program	25.0%	1,471.8	2,025.0	16,975.2	25,423.6	23,668.0	19,610.1	14,020.2	10,222.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114,515.9
Diemer & Weymouth Filtration Plants - Install Emergency Generators	7.0%	58.4	64.5	152.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	275.1
Diemer Filtration Plant - Miscellaneous Site Improvements	0.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diemer, Weymouth & Jensen Filtration Plants - Sludge Handling Study	15.0%	27.5	18.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46.4
Filt. Plnts. Distr. System, & Colorado River Aqueduct - Backflow Prevention Assemblies	0.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jensen Filtration Plant - Expansion No. 1	50.0%	9,905.1	1,792.2	950.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12,647.5
Jensen Filtration Plant - Replace Filter Media	0.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lake Perris Pumpback Expansion No. 3	100.0%	1,970.2	3,730.4	961.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,661.6
Mills Filtration Plant - Exansion No. 1	80.0%	37,402.2	21,854.0	7,274.5	1,776.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68,306.8
Mills Filtration Plant - Landfill	67.0%	231.6	2,168.5	218.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,618.1
San Joaquin Reservoir - Improvement	0.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skinner F.P. - Miscellaneous Site Improvements	25.0%	-	-	50.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50.5
Skinner Filtration Plant - Emergency Power Generating System	25.0%	342.1	169.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	511.6
Skinner Filtration Plant - Install Effluent Adjustable Weir Slide Gates	25.0%	-	-	123.1	32.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	155.3
Skinner Filtration Plant - Landfill	25.0%	157.3	98.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	255.3
Skinner Filtration Plant - Module 1-3, Electrical Conduit & Wireways Replacement	25.0%	57.2	23.2	24.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	105.3
Skinner Filtration Plant - Modules 4,5, & 6 Sedimentation Basins	25.0%	405.8	2,512.7	5,026.8	880.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8,825.3
Warehouse & Storage Building at Mills Filtration Plant	25.0%	59.5	261.5	471.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	791.9
Water Quality - Demonstration - Scale Testing	25.0%	590.7	1,039.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,630.6
Water Quality Laboratory Expansion	25.0%	142.0	753.4	2,447.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,343.0
Weymouth Filtration Plant - Miscellaneous Site Improvements	14.0%	-	-	19.8	114.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	133.9
Weymouth, Diemer, & Skinner Filtration Plants - Ferric Chloride Retrofit	13.0%	137.6	327.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	465.2
Total Water Quality/Treatment (Existing Plants)	31.6%	55,325.7	41,248.0	34,730.0	28,235.7	23,076.8	19,616.0	14,025.7	10,228.1	3.1																		227,289.4
Central Pool Augmentation Filtration Plant - Site Acquisition	100.0%	13,038.8	20,591.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33,629.9
Central Pool Augmentation Filtration Plant	100.0%	-	-	-	-	-	14,507.2	23,448.8	17,669.9	64,806.4	94,804.6	99,540.8	102,856.1	20,747.8	-	-	-	-	-	-	-	-	-	-	-	-	-	438,389.5
Central Pool Augmentation Filtration Plant Expansion 1	100.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,331.4	9,095.9	9,550.7	75,211.5	78,972.0	82,920.6	-	-	-	-	-	260,082.0
Total Central Pool Augmentation (Filtration Projects)	100.0%	13,038.8	20,591.1				14,507.2	23,448.8	17,669.9	64,806.4	94,804.6	99,540.8	102,856.1	20,747.8			4,331.4	9,095.9	9,550.7	75,211.5	78,972.0	82,920.6						732,101.3
Perris/SanJacinto Area Study	100.0%	-	303.2	165.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	468.7
Perris Filtration Plant - Site Acquisition	100.0%	19,894.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19,894.9
Perris Filtration Plant	100.0%	-	-	-	-	-	-	-	1,776.9	1,865.7	7,836.1	8,227.9	64,794.6	68,034.4	71,436.1	-	-	-	-	-	-	-	-	-	-	-	-	223,971.7
Total Perris Filtration Plant	100.0%	19,894.9	303.2	165.5					1,776.9	1,865.7	7,836.1	8,227.9	64,794.6	68,034.4	71,436.1													244,335.3
Foothill Area Study	100.0%	748.1	642.1	569.0	746.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,705.1
Weymouth/Lake Mathews Area Study	100.0%	625.5	1,440.2	232.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,298.1
Total Foothill and Weymouth	100.0%	1,373.6	2,082.3	801.4	746.0																							5,003.3
SUBTOTAL FOR FILTRATION PROJECTS	100.0%	89,632.9	64,224.5	35,697.0	29,981.7	23,076.8	34,323.2	37,474.5	29,674.8	65,675.2	102,640.7	107,776.7	167,650.7	88,782.2	71,436.1		4,331.4	9,095.9	9,550.7	75,211.5	78,972.0	82,920.6						1,206,729.8
TOTAL CIP (FOR NEXUS STUDY)	0.0%	191,607.7	267,184.0	355,491.9	344,920.6	218,690.2	62,464.2	75,283.5	129,461.4	272,285.6	244,599.9	244,431.5	284,487.9	88,782.2	71,436.1		4,331.4	9,095.9	9,550.7	75,211.5	78,972.0	82,920.6						3,111,278.5

Table 3-2

Planning Division

Cost Allocation Summary

(Based on Intermediate Investment Mix - 8/94)

Without Contingencies

DISTRIBUTION AND STORAGE PROJECTS	Existing Demand	New Demand
Total Reliability/Rehab./Admin. Service	**100%**	**0%**
Allen-McColloch Pipeline Purchase	100%	0%
Treated Water Distribution	**100%**	**0%**
Total Domenigoni Reservoir	**62%**	**38%**
Total Inland Feeder	**49%**	**51%**
Total San Diego Pipeline No.6	**19%**	**81%**
West Valley Area Study	27%	73%
West Valley Project	27%	73%
Total West Valley	**27%**	**73%**
Central Pool Augmentation Tunnel & Pipeline	17%	83%
Total Central Pool Augmentation (Distribution and Storage Projects)	**17%**	**83%**
Chino Basin Groundwater Storage Program	67%	33%
Main San Gabriel Basin Groundwater Storage Program	67%	33%
Total Conjunctive Use / GW Storage	**67%**	**33%**
Desalination Demonstration Project	0%	100%
Total Desalination	**0%**	**100%**
SUBTOTAL FOR DISTRIBUTION AND STORAGE PROJECTS	**65%**	**35%**

FILTRATION PROJECTS	Existing Demand	New Demand
All Facilities - Discharge Elimination	75%	25%
All Filtration Plants & Distribution System - Chemical Spill Containment	75%	25%
All Filtration Plants - Oxidation Retrofit Program	75%	25%
Diemer & Weymouth Filtration Plants - Install Emergency Generators	93%	7%
Diemer Filtration Plant - Miscellaneous Site Improvements	100%	0%
Diemer, Weymouth & Jensen Filtration Plants - Sludge Handling Study	85%	15%
Filt. Plnts. Distr. System, & Colorado River Aqueduct - Backflow Prevention Assemblies	100%	0%
Jensen Filtration Plant - Expansion No. 1	50%	50%
Jensen Filtration Plant - Replace Filter Media	100%	0%
Lake Perris Pumpback Expansion No. 3	0%	100%
Mills Filtration Plant - Exansion No. 1	20%	80%
Mills Filtration Plant - Landfill	33%	67%
San Joaquin Reservoir - Improvement	100%	0%
Skinner F.P. - Miscellaneous Site Improvements	75%	25%
Skinner Filtration Plant - Emergency Power Generating System	75%	25%
Skinner Filtration Plant - Install Effluent Adjustable Weir Slide Gates	75%	25%
Skinner Filtration Plant - Landfill	75%	25%
Skinner Filtration Plant - Module 1-3, Electrical Conduit & Wireways Replacement	75%	25%
Skinner Filtration Plant - Modules 4,5, & 6 Sedimentation Basins	75%	25%
Warehouse & Storage Building at Mills Filtration Plant	75%	25%
Water Quality - Demonstration - Scale Testing	75%	25%
Water Quality Laboratory Expansion	75%	25%
Weymouth Filtration Plant - Miscellaneous Site Improvements	86%	14%
Weymouth, Diemer, & Skinner Filtration Plants - Ferric Chloride Retrofit	87%	13%
Total Water Quality/Treatment (Existing Plants)	**68%**	**32%**
Central Pool Augmentation Filtration Plant - Site Acquisition	0%	100%
Central Pool Augmentation Filtration Plant	0%	100%
Central Pool Augmentation Filtration Plant Expansion 1	0%	100%
Total Central Pool Augmentation (Filtration Projects)	**0%**	**100%**
Perris/SanJacinto Area Study	0%	100%
Perris Filtration Plant - Site Acquisition	0%	100%
Perris Filtration Plant	0%	100%
Total Perris Filtration Plant	**0%**	**100%**
Foothill Area Study	0%	100%
Weymouth/Lake Mathews Area Study	0%	100%
Total Foothill and Weymouth	**0%**	**100%**
SUBTOTAL FOR FILTRATION PROJECTS	**29%**	**71%**
TOTAL CIP (FOR NEXUS STUDY)	57%	43%

Table 3-1

Based On: Intermediate (8/94) - w/o Contingency

Capital Improvement Program
94/95 - 19/20
($ Thousands - Escalated)

Contingency Included (Yes = Y No = N) N — DISTRIBUTION AND STORAGE PROJECTS	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	Total Program 94/95 - 19/20
Total Reliability/Rehab/Admin. Service	58,393.2	48,532.2	47,470.9	50,890.8	48,540.6	40,202.9	42,213.0	44,323.7	46,539.8	48,856.8	51,310.2	53,875.7	56,569.5	59,397.9	62,367.8	65,486.2	68,760.5	72,198.6	75,808.5	79,598.9	83,578.9	87,757.8	92,145.7	96,753.0	101,590.6	106,670.2	1,687,844.5
Allen-McColloch Pipeline Purchase	13,662.5	2,498.0	2,498.0	2,406.3	2,498.0	2,498.0	11,643.0	11,643.0	11,643.0	11,643.0	11,643.0	11,643.0	11,643.0	2,498.0	2,498.0	2,498.0	2,498.0	2,498.0	2,498.0	2,498.0	-	-	-	-	-	-	125,067.8
Treated Water Distribution	13,662.5	2,498.0	2,498.0	2,406.3	2,498.0	2,498.0	11,643.0	11,643.0	11,643.0	11,643.0	11,643.0	11,643.0	11,643.0	2,498.0	2,498.0	2,498.0	2,498.0	2,498.0	2,498.0	2,498.0							125,067.8
Total Domenigoni Reservoir	169,231.3	272,000.5	366,560.6	258,539.7	229,023.9	18,684.7	-																				1,314,040.7
Total Inland Feeder	45,962.7	132,742.4	230,086.0	256,309.2	130,104.3																						795,204.5
Total San Diego Pipeline No.6	10,941.4	17,153.9	51,744.2	102,200.9	46,952.3	15,638.4																					244,631.0
West Valley Area Study	338.5	116.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	454.5
West Valley Project	-	-	-	-	-	-	22,647.6	32,506.6	58,642.8	65,182.9	41,923.9	12,993.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	233,897.8
Total West Valley	338.5	118.0					22,647.6	32,506.6	58,642.8	65,182.9	41,923.9	12,933.9															234,354.3
Central Pool Augmentation Tunnel & Pipeline	-	-	-	3,638.6	3,743.7	9,465.8	9,512.8	12,724.0	112,429.1	113,705.5	127,771.4	129,339.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	522,330.5
Total Central Pool Augmentation (Distribution and Storage Projects)				3,638.6	3,743.7	9,465.8	9,512.8	12,724.0	112,429.1	113,705.5	127,771.4	129,339.4															522,330.5
Chino Basin Groundwater Storage Program	667.5	6,207.2	6,231.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13,106.4
Main San Gabriel Basin Groundwater Storage Program	1,008.2	31,592.0	11,110.8	1,670.0	1,492.4	1,567.0	40,547.2	198,472.3	210,560.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	498,020.4
Total Conjunctive Use / GW Storage	1,675.7	37,799.2	17,342.5	1,670.0	1,492.4	1,567.0	40,547.2	198,472.3	210,560.5	-																	511,125.7
Desalination Demonstration Project	4,563.3	5,446.1	15,521.4	692.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26,223.2
Total Desalination	4,563.3	5,446.1	15,521.4	692.3																							26,223.2
SUBTOTAL FOR DISTRIBUTION AND STORAGE PROJECTS	304,788.5	514,290.3	731,223.5	675,347.8	462,355.1	88,056.7	126,563.7	299,669.6	439,815.3	239,398.4	232,648.5	207,852.0	68,212.5	61,895.9	64,865.8	67,984.2	71,258.5	74,696.6	78,306.5	82,096.9	83,578.9	87,757.8	92,145.7	96,753.0	101,590.6	106,670.2	5,460,822.4

FILTRATION PROJECTS	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	Total Program 94/95 - 19/20
All Facilities - Discharge Elimination	170.4	5,487.8	144.8	38.5	35.3	23.8	22.2	23.3	12.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,953.5
All Filtration Plants & Distribution System - Chemical Spill Containment	9,296.0	8,546.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17,842.8
All Filtration Plants - Ozonation Retrofit Program	5,887.0	11,699.8	67,900.7	101,694.3	94,671.9	79,240.3	56,080.7	40,888.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	458,063.6
Diemer & Weymouth Filtration Plants - Install Emergency Generators	834.6	921.4	2,173.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,929.3
Diemer Filtration Plant - Miscellaneous Site Improvements	7,181.2	2,427.5	379.7	501.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10,490.2
Diemer, Weymouth & Jensen Filtration Plants - Sludge Handling Study	183.6	125.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	309.5
Filt. Plnts. Distr. System, & Colorado River Aqueduct - Backflow Prevention Assemblies	1,230.0	2,173.9	645.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,049.4
Jensen Filtration Plant - Expansion No. 1	19,810.2	3,584.3	1,900.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25,294.9
Jensen Filtration Plant - Replace Filter Media	-	-	120.5	3,697.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,817.5
Lake Perris Pumpback Expansion No. 3	1,970.2	3,730.4	961.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,661.6
Mills Filtration Plant - Expansion No. 1	46,752.8	27,317.5	9,093.1	2,220.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	85,383.5
Mills Filtration Plant - Landfill	345.7	3,236.6	325.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,907.7
San Joaquin Reservoir - Improvement	3,688.4	13,551.1	3,572.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20,812.0
Skinner F.P. - Miscellaneous Site Improvements	-	-	202.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	202.1
Skinner Filtration Plant - Emergency Power Generating System	1,368.3	678.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,046.5
Skinner Filtration Plant - Install Effluent Adjustable Weir Slide Gates	-	-	492.4	128.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	621.3
Skinner Filtration Plant - Landfill	629.3	392.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,021.4
Skinner Filtration Plant - Module 1-3, Electrical Conduit & Wireways Replacement	228.9	92.8	99.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	421.1
Skinner Filtration Plant - Modules 4,5, & 6 Sedimentation Basins	1,623.3	10,050.8	20,107.0	3,520.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35,301.3
Warehouse & Storage Building at Mills Filtration Plant	237.9	1,045.8	1,883.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,167.5
Water Quality - Demonstration - Scale Testing	2,362.7	4,159.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,522.4
Water Quality Laboratory Expansion	567.9	3,013.6	9,790.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13,371.9
Weymouth Filtration Plant - Miscellaneous Site Improvements	-	-	141.3	815.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	956.7
Weymouth, Diemer, & Skinner Filtration Plants - Ferric Chloride Retrofit	1,058.4	2,520.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,578.6
Total Water Quality/Treatment (Existing Plants)	105,425.9	101,758.3	119,933.9	112,616.1	94,707.2	79,264.0	56,102.0	40,912.2	12.4	-																	710,731.7
Central Pool Augmentation Filtration Plant - Site Acquisition	13,038.8	20,591.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33,629.9
Central Pool Augmentation Filtration Plant	-	-	-	-	-	14,507.2	23,448.8	17,669.9	64,806.4	94,804.6	99,548.8	102,856.1	20,747.8	-	-	-	-	-	-	-	-	-	-	-	-	-	438,389.5
Central Pool Augmentation Filtration Plant Expansion 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,331.4	9,095.9	9,550.7	75,211.5	78,972.0	82,920.6	-	-	-	-	-	260,082.0
Total Central Pool Augmentation (Filtration Projects)	13,038.8	20,591.1	-			14,507.2	23,448.8	17,669.9	64,806.4	94,804.6	99,548.8	102,856.1	20,747.8			4,331.4	9,095.9	9,550.7	75,211.5	78,972.0	82,920.6						732,101.3
Perris/SanJacinto Area Study	-	303.2	165.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	468.7
Perris Filtration Plant - Site Acquisition	19,894.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19,894.9
Perris Filtration Plant	-	-	-	-	-	-	-	1,776.9	1,865.7	7,836.1	8,227.9	61,794.6	68,034.4	71,436.1	-	-	-	-	-	-	-	-	-	-	-	-	223,971.7
Total Perris Filtration Plant	19,894.9	303.2	165.5					1,776.9	1,865.7	7,836.1	8,227.9	61,794.6	68,034.4	71,436.1													244,335.3
Foothill Area Study	748.1	642.1	569.0	746.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,705.1
Weymouth/Lake Mathews Area Study	625.5	1,440.2	232.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,298.2
Total Foothill and Weymouth	1,373.6	2,082.3	801.4	746.0																							5,003.3
SUBTOTAL FOR FILTRATION PROJECTS	130,734.2	127,732.9	120,900.5	113,362.1	94,707.2	93,771.2	79,551.7	60,359.0	66,684.5	102,640.7	107,776.7	167,650.7	88,782.2	71,436.1		4,331.4	9,095.9	9,550.7	75,211.5	78,972.0	82,920.6						1,695,171.7
TOTAL CIP (FOR NEXUS STUDY)	444,522.7	642,023.2	852,124.0	789,709.9	557,062.3	181,827.9	206,115.4	360,028.5	506,499.9	342,039.1	340,425.2	375,502.7	156,994.7	133,332.0	64,865.8	72,315.6	80,354.4	84,247.2	153,518.0	161,069.0	166,499.5	87,757.8	92,145.7	96,753.0	101,590.6	106,670.2	7,155,994.4

The following projects rehabilitate existing filtration plants, meet the requirements of various treatment regulations, and/or increase the ability to service new demands.

Metropolitan operates five regional filtration plants. Water demands on these treatment plants will generally be higher in the summer and in dry years. Seasonal and dry year peak demands are used for allocating water quality and treatment projects because those projects are sized to meet these peak demands.

Some of the filtration plants cannot purify as much water as they have in the past because of more stringent water quality regulations. These regulations and new demands have required Metropolitan to rehabilitate and expand some of the existing filtration plants. In the following water quality and treatment projects, those projects or portions of projects required to bring the plants back up to its historic peak capacity (before the more stringent water quality regulations became effective) are allocated to existing demands. Projects associated with filtration capacity beyond historic peak demands are allocated to future demands. Historic peak demands on existing plants are utilized rather than plant design capacity because at times historic peak flows have exceeded the designed plant capacity. Using historic peak demands instead of historic average demands results in a smaller percentage of the project's cost being allocated to the New Demand Charge.

All Facilities - Discharge Elimination

This project identifies ~~and implements~~ discharges ~~systems to comply with regulations.~~ from facilities and where economically feasible, eliminates that discharge or where not, obtains permits for that discharge. ~~All filtration plants are affected by these new rules.~~

To allocate this filtration plant project, Metropolitan first determined the current demand on the filtration plants. This demand was then compared to filtration plant capacity. Dividing existing demands (in cfs of filtration capacity) by filtration plant capacity shows the percentage portion of the project to be utilized for current requirements. The remaining portion of the project is the portion allocated to serve anticipated new demand.

In equation form, the allocation is as follows:

Jensen Plant:
- Existing Peak Demand = 850 cfs
- Capacity with Expansion #1 = 1,160 cfs

Weymouth Plant:
- Existing Peak Demand = 690 cfs
- Capacity = 800 cfs

Diemer Plant:
- Existing Peak Demand = 800 cfs

Capacity = 800 cfs
Mills Plant:
Existing Peak Demand = 160 cfs
Capacity with Expansion #2 = 500 cfs
Skinner Plant:
Existing Peak Demand = 600 cfs
Capacity with Expansion #3 = 800 cfs

A. Allocation to Existing Demand:
= (Sum of Existing Peak Demands) ÷ (Sum of Capacities)
= (850 + 690 + 800 + 160 + 600) cfs ÷
(1,160 + 800 + 800 + 500 + 800) cfs
= 75 percent

B. Allocation to New Demand = 25 percent

All Filtration Plants & Distribution System - Chemical Spill Containment

This project minimizes the chance of contamination in the event of a chemical spill.

Allocation of this project, as all projects common to all filtration plants, is 75 percent to existing demand and 25 percent to new demand.

All Filtration Plants - Oxidation Retrofit Program

This project evaluates the use of ozone as a disinfectant to reduce disinfection byproducts in Metropolitan's system.

Allocation of this project, as all projects common to all filtration plants, is 75 percent to existing demand and 25 percent to new demand.

Diemer and Weymouth Filtration Plants - Install Emergency Generators

This project ensures that the plants continue to operate during extended power outages.

To allocate this filtration plant project, Metropolitan first determined the current demand on the filtration plants. This demand was then compared to filtration plant capacity. Dividing existing demands (in cfs of filtration capacity) by filtration plant capacity shows the percentage portion of the project to be utilized for current requirements. The remaining portion of the project is the portion allocated to serve anticipated new demand.

In equation form, the allocation is as follows:

Diemer Plant:
Existing Peak Demand = 800 cfs
Capacity = 800 cfs
Weymouth Plant:
Existing Peak Demand = 690 cfs
Capacity = 800 cfs

A. Allocation to Existing Demand:
= (Sum of Existing Peak Demands) ÷ (Sum of Capacities)
= (800 + 690) cfs ÷ (800 + 800) cfs
= 93 percent

B. Allocation to New Demand = 7 percent

Diemer Filtration Plant - Miscellaneous Site Improvements

Several Capital Improvement Projects to maintain and modify existing equipment are planned for the Diemer plant.

To allocate this filtration plant project, Metropolitan first determined the current demand on the filtration plant. This demand was then compared to filtration plant capacity. Because the Diemer plant is already fully utilized by existing demands, allocation of these projects is 100 percent to existing demand.

Diemer, Weymouth & Jensen Filtration Plants - Sludge Handling Study

This project investigates mechanical sludge dewatering procedures for the Diemer, Weymouth & Jensen Plants.

To allocate this filtration plant project, Metropolitan first determined the current demand on the filtration plants. This demand was then compared to filtration plant capacity. Dividing existing demands (in cfs of filtration capacity) by filtration plant capacity shows the percentage portion of the project to be utilized for current requirements. The remaining portion of the project is the portion allocated to serve anticipated new demand.

In equation form, the allocation is as follows:

Diemer Plant:
Existing Peak Demand = 800 cfs
Capacity = 800 cfs
Weymouth Plant:
Existing Peak Demand = 690 cfs
Capacity = 800 cfs
Jensen Plant:
Existing Peak Demand = 850 cfs
Capacity with Expansion #1 = 1,160 cfs

A. Allocation to Existing Demand:
   = (Sum of Existing Peak Demands) ÷ (Sum of Capacities)
   = (800 + 690 + 850) cfs ÷ (800 + 800 + 1,160) cfs
   = 85 percent

B. Allocation to New Demand = 15 percent

Filter Plants, Distribution System, and Colorado River Aqueduct - Backflow Prevention Assemblies

This project minimizes the opportunity for cross-connections with contaminants that may be present in the plant. It is required to comply with water quality regulations. Allocation of this project is 100 percent to existing demand.

Jensen Filtration Plant Expansion No. 1

This project expands the capacity of the Jensen plant to compensate for the loss of filtration capacity resulting from implementation of more stringent water quality regulations.

To allocate this filtration plant project, Metropolitan first determined the filtration capacity that was lost due to the regulations. This loss was then compared to the capacity of the filtration plant expansion project. Dividing the loss of plant capacity by the capacity of the expansion project shows the percentage portion of the project to be utilized for current requirements. The remaining portion of the project is the portion allocated to serve anticipated new demand.

In equation form, the allocation is as follows:

Historic Capacity = 850 cfs
Current Capacity = 540 cfs
Lost Capacity due to regulations
   = (Historic Capacity) - (Current Capacity)
   = 850 cfs - 540 cfs
   = 310 cfs
Total Capacity of Jensen Filtration Plant with Expansion #1 = 1,160
Capacity of the Jensen Filtration Plant Expansion #1
   = (Capacity with Expansion) - (Current Capacity)
   = 1,160 cfs - 540 cfs
   = 620 cfs

A. Allocation to Existing Demand
   = (Lost Capacity) ÷ (Capacity of Expansion #1)
   = 310 cfs ÷ 620 cfs
   = 50 percent

B. Allocation to New Demand = 50 percent

Jensen Filtration Plant - Replace Filter Media

This project replaces the filter media.

To allocate this filtration plant project, Metropolitan first determined the current demand on the filtration plant. This demand was then compared to filtration plant capacity. Since the plant has operated at its capacity, allocation of this project is 100 percent to existing demand.

Lake Perris Pumpback Expansion No. 3

This project would expand the existing pump station that pumps Colorado River Aqueduct water to Lake Perris. The expansion would be entirely for future demand. Allocation of this project to future demand is 100 percent.

Mills Filtration Plant - Expansion ~~No. 2~~ No. 1

This project expands the capacity of the Mills plant to compensate for the loss of filtration capacity resulting from implementation of more stringent water quality regulations.

To allocate this filtration plant project, Metropolitan first determined the filtration capacity that was lost due to the regulations. This loss was then compared to the capacity of the filtration plant expansion project. Dividing the loss of plant capacity by the capacity of the expansion project shows the percentage portion of the project to be utilized for current requirements. The remaining portion of the project is the portion allocated to serve anticipated new demand.

In equation form, the allocation is as follows:

Historic Capacity = 240 cfs
Current Capacity = 170 cfs
Lost Capacity due to Regulations
= (Historic Capacity) - (Current Capacity)
= 240 cfs - 170 cfs
= 70 cfs
Total Capacity of Mills Filtration Plant with Expansion #2 = 500
Capacity of the Mills Filtration Plant Expansion #2
= (Capacity with Expansion) - (Current Capacity)
= 500 cfs - 170 cfs
= 330 cfs

A. Allocation to Existing Demand
= (Lost Capacity) ÷ (Capacity of Expansion #2)
= 70 cfs ÷ 330 cfs
= 20 percent

B. Allocation to New Demand = 80 percent

Mills Filtration Plant - Landfill

This project evaluates sizes, sites, and constructs a landfill for sludge from the Mills Plant.

To allocate this filtration plant project, Metropolitan first determined the current demand on the filtration plant. This demand was then compared to filtration plant capacity. Dividing existing demands (in cfs of filtration capacity) by filtration plant capacity shows the percentage portion of the project to be utilized for current requirements. The remaining portion of the project is the portion allocated to serve anticipated new demand.

In equation form, the allocation is as follows:

Existing Peak Demand = 160 cfs
Capacity with Expansion #2 = 500 cfs

A. Allocation to Existing Demand
   = (Existing Peak Demand) ÷ (Capacity with Expansion #2)
   = 160 cfs ÷ 500 cfs
   = 33 percent

B. Allocation to New Demand = 67 percent

San Joaquin Reservoir Improvement Project

This project covers the existing reservoir as required to meet the Safe Drinking Water Act. Allocation of this project is 100 percent to existing demand.

Skinner Filtration Plant - Miscellaneous Site Improvements

Several Capital Improvement Projects to maintain and modify existing equipment are planned for the Skinner plant.

To allocate this filtration plant project, Metropolitan first determined the current demand on the filtration plant. This demand was then compared to filtration plant capacity. Dividing existing demands (in cfs of filtration capacity) by filtration plant capacity shows the percentage portion of the project to be utilized for current requirements. The remaining portion of the project is the portion allocated to serve anticipated new demand.

In equation form, the allocation is as follows:

Existing Peak Demand = 600 cfs
Capacity = 800 cfs

A. Allocation to Existing Demand
   = Existing Peak Demand ÷ Capacity

= 600 cfs ÷ 800 cfs
= 75 percent

B. Allocation to New Demand = 25 percent

Skinner Filtration Plant - Emergency Power Generating System

This project installs an emergency power generating system at the Skinner plant.

Allocations are the same as those described under the previous Skinner Filtration Plant project.

Skinner Filtration Plant - Install Effluent Adjustable Weir Slide Gates

This project installs adjustable effluent weir slide gates to improve filter cleaning.

Allocations are the same as those described under the previous Skinner Filtration Plant project.

Skinner Filtration Plant - Landfill

This project designs and constructs a landfill for sludge from the Skinner Filtration Plant.

Allocations are the same as described under the previous Skinner Filtration Plant project.

Skinner Filtration Plant - Module 1-3, Electrical Conduit and Wireways Replacement

The project replaces the electrical conduit and wireways in 54 filters on Modules 1-3 at the Skinner Plant.

Allocations are the same as described under the previous Skinner Filtration Plant project.

Skinner Filtration Plant - Modules 4, 5, & 6 Sedimentation Basins

The project designs and constructs sedimentation basins at the Skinner plant to comply with anticipated water quality regulations.

Allocations are the same as described under the previous Skinner Filtration Plant project.

Warehouse & Storage Building at Mills Filtration Plant

This project designs and constructs a warehouse and storage building at the Mills plant to accommodate the increase number of personnel resulting from consolidation of facilities.

Allocations are the same as described under the previous Mills Filtration Plant project.

Water Quality - Demonstration Scale Testing

This study evaluates the use of ozone as a disinfectant to reduce disinfection byproducts in Metropolitan's system.

Allocation of this project, as all projects common to all filtration plants, is 75 percent to existing demand and 25 percent to new demand.

Water Quality - Laboratory Expansion

This project enlarges the water quality laboratory.

Allocation of this project, as all projects common to all filtration plants, is 75 percent to existing demand and 25 percent to new demand.

Weymouth Filtration Plant - Miscellaneous Site Improvements

Several Capital Improvement Projects to maintain and modify existing equipment are planned for the Weymouth plant.

To allocate this filtration plant project, Metropolitan first determined the current demand on the filtration plant. This demand was then compared to filtration plant capacity. Dividing existing demands (in cfs of filtration capacity) by filtration plant capacity shows the percentage portion of the project to be utilized for current requirements. The remaining portion of the project is the portion allocated to serve anticipated new demand.

In equation form, the allocation is as follows:

Existing Peak Demand = 690 cfs
Capacity = 800 cfs

A. Allocation to Existing Demand
= (Existing Peak Demand) ÷ (Capacity)
= 690 cfs ÷ 800 cfs
= 86 percent

B. Allocation to New Demand = 14 percent

Weymouth, Diemer, Skinner Filtration Plants - Ferric Chloride Retrofit

This project installs ferric chloride chemical feed systems at the Weymouth, Diemer, and Skinner plants. The new chemical feed systems will allow for more efficient coagulation of different water qualities.

To allocate this filtration plant project, Metropolitan first determined the current demand on the filtration plants. This demand was then compared to filtration plant capacity. Dividing existing demands (in cfs of filtration capacity) by filtration plant capacity shows the percentage portion of the project to be utilized for current requirements. The remaining portion of the project is the portion allocated to serve anticipated new demand.

In equation form, the allocation is as follows:

Weymouth Plant:
Existing Peak Demand= 690 cfs
Capacity = 800 cfs
Diemer Plant:
Existing Peak Demand = 800 cfs
Capacity = 800 cfs
Skinner Plant:
Existing Peak Demand = 600 cfs
Capacity with Expansion #3 = 800 cfs

A. Allocation to Existing Demand:
= (Sum of Existing Peak Demands) ÷ (Sum of Capacities)
= (690 + 800 + 600) ÷ (800 + 800 + 800)
= 87 percent

B. Allocation to New Demand = 13 percent

Domenigoni Valley Reservoir

This water supply storage project provides seasonal, drought carryover, and emergency storage. It meets a portion of the water storage needs for Metropolitan. Emergency storage requirements assume imported water systems would be unable to deliver water for six months, but local supplies would continue at full production. Emergency storage is sized to supplement local supplies for six months assuming that water demands are 75 percent of normal water demands.

Carryover storage allows Metropolitan to meet its reliability goal during drought or other periods of water shortage. It was calculated using statistical analysis of 70 years of hydrologic data. Withdrawals from storage for those hydrologic scenarios was used to determine carryover storage requirements.

Seasonal shift storage allows Metropolitan to meet peak summertime water demands with water from storage~~, reducing the need for filtration plant and distribution capacity~~. It was calculated as the difference between monthly supply and monthly demand.

To allocate this reservoir project between new and existing demands, Metropolitan first calculated current requirements for emergency, drought carryover, and seasonal storage in the reservoir. This total was then compared to projected storage requirements (including emergency, drought carryover, and seasonal storage) in the year 2020. Dividing current storage requirements (in acre-feet of storage capacity) by year 2020 storage requirements shows the percentage portion of the portion allocated to serve new demands.

In equation form, the allocation is as follows:

Current storage requirements = Emergency + Drought Carryover + Seasonal
= 293,000 + 200,000 + 0
Year 2020 storage requirements
= 430,000 + 275,000 + 95,000

A. Allocation to Existing Demand
= (Current Storage Requirements) ÷ (Year 2020 Storage Requirements)
= 493,000 ÷ 800,000
= 62 percent

B. Allocation to New Demand = 38 percent

Inland Feeder

This water supply ~~conveyance~~ project delivers water from the east branch of the State Water Project to the Colorado River Aqueduct or Domenigoni Valley Reservoir.

To allocate this feeder project between new and existing demands, Metropolitan first calculated expected annual ~~delivery~~ supply requirements. ~~This requirement was then compared to actual delivery capacity. The amount of delivery capacity available beyond the delivery needs is available to convey surplus State Water Project water. Dividing the reliability capacity (in acre-feet per year) by the delivery capacity shows the percentage portion of the portion allocated to serve existing demands.~~ The current supply needs were compared to the future supply needs.

In equation form, the allocation is as follows:

~~Maximum annual delivery capacity = 725,000 acre-feet~~
~~Expected average annual deliveries = 550,000 acre-feet~~
~~Available annual reliability capacity for existing demand~~

~~= Delivery Capacity - Expected Deliveries~~
~~= (725,000 - 550,000) = 175,000 acre-feet~~

Existing supply requirements = 670,000 acre-feet
Year 2020 supply requirements = 1,365,000 acre-feet

A. Allocation to Existing Demand
~~= (Reliability Capacity) ÷ (Delivery Capacity)~~
~~= (175,000) ÷ (725,000)~~
~~= 24 percent~~

= (Existing requirements) ÷ (Year 2020 requirements)
= 670,000 ÷ 1,365,000
= 49 percent

B. Allocation to New Demand = ~~76 percent~~ 51 percent

San Diego Pipeline No. 6

This pipeline constructs a new pipeline to increase flows from Metropolitan to San Diego County.

To allocate this feeder project between new and existing demands, Metropolitan first calculated expected annual delivery requirements. This requirement was then compared to actual delivery capacity. The amount of delivery capacity available beyond the delivery needs is available to improve the service reliability. Dividing the reliability capacity (in acre-feet per year) by the delivery capacity shows the percentage portion of the portion allocated to serve existing demands.

In equation form, the allocation is as follows:

Maximum annual delivery capacity = 360,000 acre-feet
Expected average annual deliveries = 290,000 acre-feet
Available annual reliability capacity for existing demand
= Delivery Capacity - Expected Deliveries
= (360,000 - 290,000) = 70,000 acre-feet

A. Allocation to Existing Demand
= (Reliability Capacity) ÷ (Delivery Capacity)
= (70,000) ÷ (360,000)
= 19 percent

B. Allocation to New Demand = 81 percent

West Valley Project

This project installs a new pipeline to increase flows from Metropolitan to western Los Angeles and southern Ventura counties.

To allocate this feeder project between new and existing demands, Metropolitan first calculated expected annual delivery requirements. This requirement was then compared to actual delivery capacity. The amount of delivery capacity available beyond the delivery needs is available to improve the service reliability. Dividing the reliability capacity (in acre-feet per year) by the delivery capacity shows the percentage portion of the portion allocated to serve existing demands.

In equation form, the allocation is as follows:

Maximum annual delivery capacity = 220,000 acre-feet
Expected average annual deliveries = 160,000 acre-feet per year
Available reliability capacity for existing demand
= Delivery Capacity - Expected Deliveries
= (220,000 - 160,000) = 60,000 acre-feet per year

A. Allocation to Existing Demand
= (Reliability Capacity) ÷ (Delivery Capacity)
= (60,000) ÷ (220,000)
= 27 percent

B. Allocation to New Demand = 73 percent

Central Pool Augmentation

These projects install a new pipeline, tunnels, and water filtration plant to increase the flows from Metropolitan to the eastern portion of Metropolitan's Central Pool service area in Orange and western Riverside counties.

Central Pool Augmentation Filtration Plant - Site Acquisition

This project identifies and acquires critically needed lands for the Central Pool Augmentation Filtration Plant.

Allocation of this project to new demand is 100 percent.

Central Pool Augmentation Filtration Plant

The Central Pool Augmentation Study has currently identified the need for additional treated water capacity and is evaluating alternative sites for the Central Pool Augmentation Filtration Plant.

Allocation of this project to new demand is 100 percent.

Central Pool Augmentation Plant Expansion

The Integrated Resources Planning Study has identified the future need for enlarging the Central Pool Augmentation Filtration Plant.

Allocation of this project to new demand is 100 percent.

Central Pool Augmentation Tunnel and Pipeline

This project installs a new pipeline and tunnel ~~which, in conjunction with~~ to convey water from the Central Pool Augmentation Filtration Plant~~, will increase flows from Metropolitan to Orange County~~.

To allocate this feeder project between new and existing demands, Metropolitan first calculated expected annual delivery requirements. This requirement was then compared to actual delivery capacity. The amount of delivery capacity available beyond the delivery needs is available to improve the service reliability. Dividing the reliability capacity (in acre-feet per year) by the delivery capacity shows the percentage portion of the portion allocated to serve existing demands.

In equation form, the allocation is as follows:

Annual delivery capacity = 580,000 acre-feet
Expected annual deliveries = 480,000 acre-feet
Available annual reliability capacity for existing demand
= Delivery Capacity - Expected Deliveries
= (580,000 - 480,000) = 100,000 acre-feet

A. Allocation to Existing Demand
= (Reliability Capacity) ÷ (Delivery Capacity)
= (100,000) ÷ (580,000)
= 17 percent

B. Allocation to New Demand = 83 percent

Groundwater Storage

The following projects provide groundwater storage to help meet the water delivery reliability goals of Metropolitan during droughts or other periods of water supply shortage.

Chino Basin Groundwater Storage Program

This groundwater storage project is located in San Bernardino County.

To allocate this conjunctive use project between new and existing demands, Metropolitan first calculated its current requirements for drought carryover storage. This total was then compared to projected drought carryover storage requirements in the year 2020. Dividing current storage requirements (in acre-feet of storage capacity) by year 2020 storage requirements shows the percentage portion of the portion allocated to serve new demands.

In equation form, the allocation is as follows:

Existing carryover storage requirements = 200,000 acre-feet
Year 2020 carryover storage requirements = 300,000 acre-feet

A. Allocation to Existing Demand
= (Existing Carryover Storage Requirements) ÷ (Year 2020 Carryover Storage Requirements)
= 200,000 ÷ 300,000
= 67 percent

B. Allocation to New Demand = 33 percent

Main San Gabriel Basin Groundwater Storage Program

This groundwater storage project is located in Los Angeles County.

To allocate this conjunctive use project between new and existing demands, Metropolitan first calculated its current requirements for drought carryover storage. This total was then compared to projected drought carryover storage requirements in the year 2020. Dividing current storage requirements (in acre-feet of storage capacity) by year 2020 storage requirements shows the percentage portion of the portion allocated to serve new demands.

In equation form, the allocation is as follows:

Current carryover storage requirements = 200,000 acre-feet
Year 2020 carryover storage requirements = 300,000 acre-feet

A. Allocation to Existing Demand
= Current carryover storage requirements ÷ Year 2020 carryover storage requirements
= 200,000 ÷ 300,000
= 67 percent

B. Allocation to New Demand = 33 percent

Perris Filtration Plant

This project installs a new filtration plant to increase the flows from Metropolitan to Riverside County.

Perris/San Jacinto Area Study

This project evaluates alternative sites for the Perris Filtration Plant, which would be constructed to meet new demand. Allocation of this project is 100 percent to new demand.

Perris Filtration Plant—Site Acquisition

This project identifies and acquires critically needed lands for the Perris Filtration Plant.

Perris Filtration Plant

The Perris and San Jacinto Area Study has currently identified the need for additional treated water capacity and is evaluating alternative sites for the Perris Filtration Plant. Allocation of this project to new demand is 100 percent.

Desalination Demonstration Project

This project designs and constructs a state-of-the-art 5 million gallon per day seawater desalination demonstration plant to provide a proven design and operating history to undertake a full-scale 50/100 million gallon per day seawater desalination project.

Allocation of this project is 100 percent to new demand.

Section 4
New Demand Charge

The New Demand Charge is ~~based on~~ calculated using water sales above a historic base. As explained in Section 2, the ~~new demand charge base is based on~~ base amount is the three- or four-year average sales to each Member Agency. ~~in recent fiscal years, averaged to even out high and low demands. The three- or four-year average listed as the New Demand Charge Base for each Member Agency on Table 2-1 has been adjusted to subtract from the base water use water taken under the one time drought storage agreements (OTDS) because such sales do not reflect normal demands.~~

Each fiscal year the average of each Member Agency's most recent four years of water purchases from Metropolitan will be compared to ~~the~~ their base. ~~to determine whether a New Demand Charge has been incurred.~~ Only when an agency's annual average water sales exceeds its base will a new demand charge be incurred. This ~~rolling~~ four-year average will roll each year (in which a new year's sales are added and the oldest year's ~~information~~ sales ~~is dropped~~ are subtracted when the annual charge is calculated) has ~~also~~ been selected to even out highs and lows resulting from climatic, hydrologic, economic, and other factors in each year and to be consistent between measuring the base demand and new, permanent demand. To reflect normal demands on Metropolitan, this average will ~~also~~ be adjusted ~~to factor out~~ for sales for long-term storage purposes ~~to more accurately reflect normal demands on Metropolitan. The historic rolling four-year average would be adjusted~~ as follows:

(1) Water taken under the Cooperative Storage Program (COOP) will be subtracted through April 12, 1994.

(2) Water taken under long-term seasonal storage service (LTSSS), cyclic storage, and the 1993 Demonstration Storage Program (DEMO) will be subtracted from the water sales calculations through fiscal year 1993-94.

(3) Contractual LTSSS and COOP (starting April 13, 1994) deliveries will be subtracted from the New Demand Charge calculation during the year of delivery but will be added in the year of use.

The adjusted rolling four-year average will be compared to the base amount and the volume of water above the base amount will result in an one-time New Demand Charge. When a Member Agency exceeds its base amount, the new rolling four-year average will become its base amount, allowing water use to vary within that new rolling average without any additional charges. ~~For example, if a Member Agency's New Demand Charge Base is 100,000 acre feet (AF) and its rolling four year average of historic water sales (adjusted as described above) is 90,000 AF, it will incur no New Demand Charge. If its rolling four year average of historic water purchases is~~

~~105,000 AF, it will incur a New Demand Charge in an amount equal to the amount of new demand (5,000 AF) multiplied by the per acre foot amount of the New Demand Charge for that fiscal year (discussed below). At that point, its New Demand Charge base will be reset at 105,000 AF and no further New Demand Charge will be incurred until the rolling four-year average of historic water purchases exceeds 105,000 AF.~~

As an example, the water sales of two hypothetical Member Agencies are shown in Figures 4-1 and 4-2. Although both agencies purchase water beyond their base amount in several years, the New Demand Charge is incurred only when the rolling average exceeds the base amount. In the growing agency example, Figure 4-1, the water sales exceeds the base amount by 1,800 acre-feet in year 1, but the rolling average demand exceeds the base amount by only 450 acre-feet. As a result, the base amount increases from 100,000 acre-feet to 100,450 acre-feet and a New Demand Charge of 450 acre-feet is incurred.

In the non-growing agency example, Figure 4-2, the water sales exceeds the base amount by 3,950 acre-feet in year 2, but the rolling average demand remains less than the base amount. As a result, the base amount remains at 100,000 acre-feet and no New Demand Charge is incurred.

The calculation of New Demand in equation form is as follows:

	FY 1991-92 Sales - OTDS
+	FY 1992-93 Sales - (LTSSS allocated to May and June 1993) - OTDS - COOP - DEMO
+	FY 1993-94 Sales - (LTSSS allocated to July, August, and September 1993) - OTDS - COOP - DEMO
+	FY 1994-95 Sales - contractual LTSSS
=	Subtotal of Adjusted Water Sales
÷	4 (for four-year average)
=	Four-year average adjusted water sales
-	New Demand Charge Base
=	New Demand

The amount of the unit New Demand Charge (per acre-foot of new demand) will be determined annually by Metropolitan's Board of Directors, up to a maximum amount equal to the present value of the projected costs of facilities to meet future demands (Columns 1, 2, and 3 on Table 4-1) divided by the projected quantity (~~per~~ in acre ~~foot~~ feet) of new demands. Column 1 on Table 4-1 repeats the projected annual expenditures in each year through 2020 for capital facilities for new demands listed on Table 3-3. The present value of these amounts is calculated using the most recent five-year average of the 30-year treasury bond rate as a discount factor. The present value of these annual payments totals ~~$2.11~~ $1.97 billion and represents the amount of money Metropolitan estimates it would have to invest in 1994 to pay for the facilities required to meet the new demand.

Through purchases of water supplied by Metropolitan, new users will pay a portion of the costs of financing Metropolitan's capital facilities (including facilities to serve new demand) because some debt service costs are included in the basic water rate. To avoid double payment by these users of the same capital costs, the present value

Figure 4-1
Demand Charge Analysis
Growing Agency Example

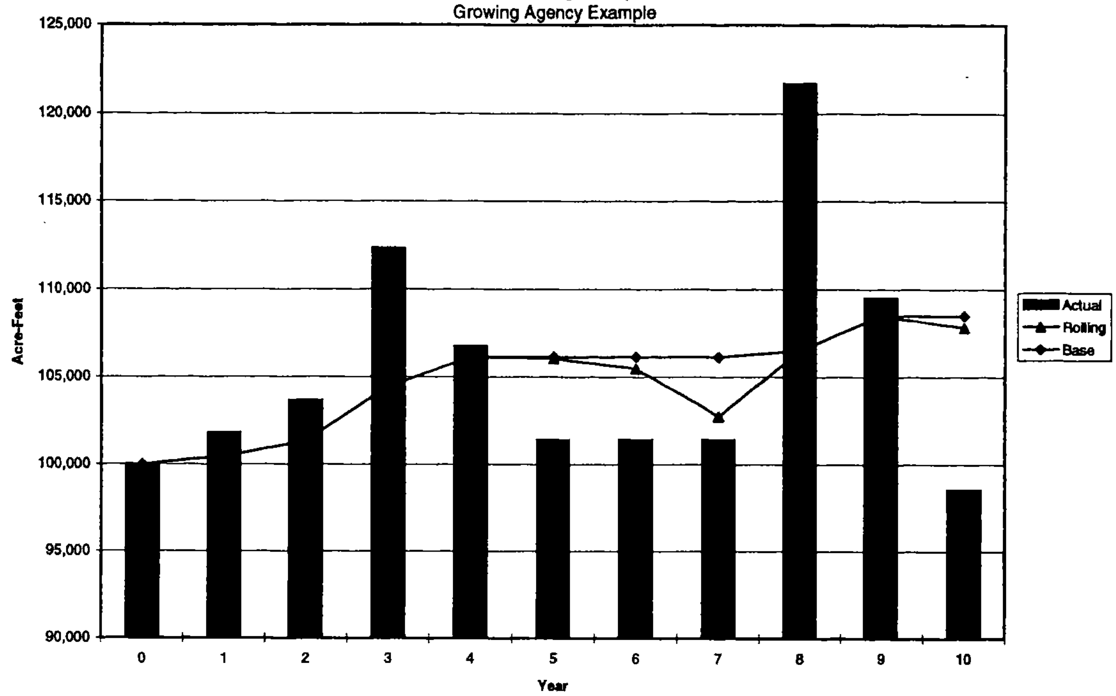


Figure 4-2
Demand Charge Analysis
Non-Growing Agency Example

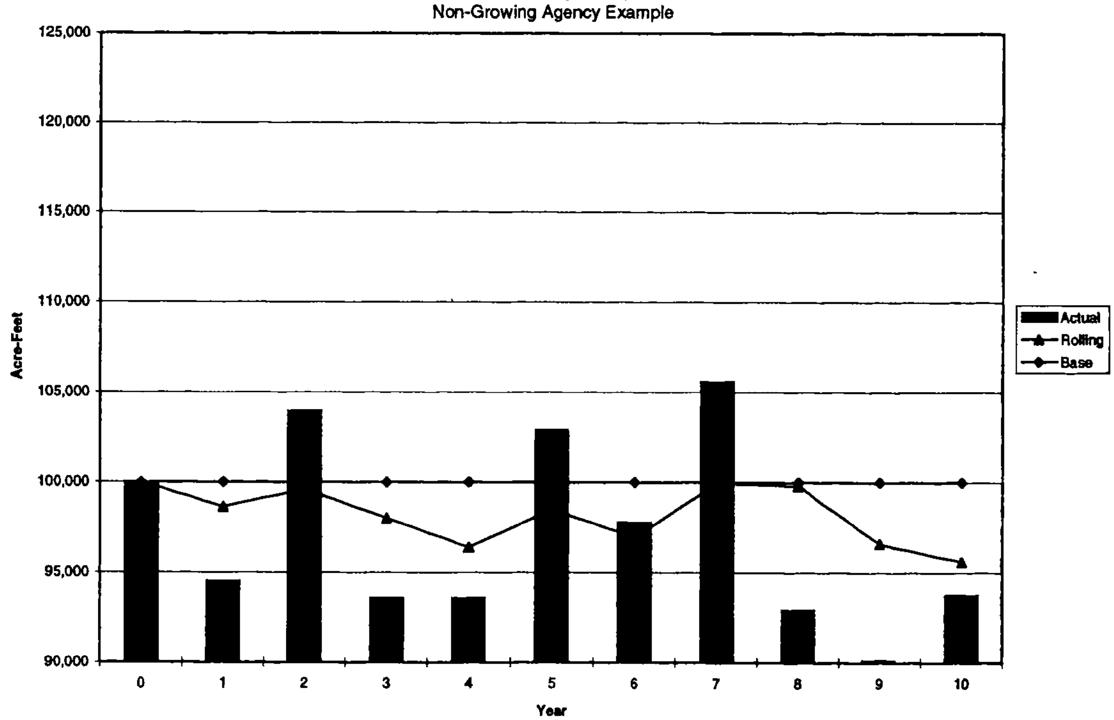


Table 4-1

New Demand Charge
Unit Rate Calculation

FY Ending	(1) Net CIP Costs For Future Users ($1,000's)	(2) PV Factor 7.97%	(3) PV ($1,000's)	(4) Avg. Water Rate ($/af)	(5) New Demand Capital Portion ($/af)	(6) New Demand (AF)	(7) New Demand Capital Contribution ($1,000's)	(8) PV ($1,000's)	(9) AF Subject To NDC	(10) $/AF NDC
1995	$191,608	1.0000	$191,608	$340	$19	4,213	$80	$80	0	$0
1996	$267,184	0.9262	247,466	347	$25	17,192	$430	398	461	$1,000
1997	$355,492	0.8578	304,941	356	$34	36,670	$1,247	1,069	8,732	$1,244
1998	$344,991	0.7945	274,095	365	$41	88,917	$3,646	2,896	17,024	$1,489
1999	$218,690	0.7358	160,912	379	$54	154,361	$8,335	6,133	40,190	$1,733
2000	$62,464	0.6815	42,569	363	$65	219,852	$14,290	9,739	66,805	$1,978
2001	$75,284	0.6312	47,519	385	$70	242,287	$16,960	10,705	56,062	$2,395
2002	$129,461	0.5846	75,683	406	$75	262,282	$19,671	11,500	44,464	$2,467
2003	$272,286	0.5415	147,443	421	$80	274,179	$21,934	11,877	32,889	$2,541
2004	$244,600	0.5015	122,667	438	$83	295,542	$24,530	12,302	21,778	$2,617
2005	$244,432	0.4645	113,538	418	$86	322,006	$27,693	12,863	22,036	$2,695
2006	$284,488	0.4302	122,387	432	$90	347,584	$31,283	13,458	21,852	$2,776
2007	$88,782	0.3984	35,371	443	$92	373,148	$34,330	13,677	25,947	$2,859
2008	$71,436	0.3690	26,360	466	$95	398,742	$37,880	13,978	23,188	$2,945
2009	$0	0.3418	0	472	$99	424,341	$42,010	14,359	20,458	$3,034
2010	$4,331	0.3166	1,371	491	$102	449,932	$45,893	14,530	20,467	$3,125
2011	$9,096	0.2932	2,667	510	$106	477,611	$50,627	14,844	21,257	$3,218
2012	$9,551	0.2715	2,593	531	$111	505,292	$56,087	15,228	22,724	$3,315
2013	$75,212	0.2515	18,916	552	$115	532,992	$61,294	15,415	24,099	$3,414
2014	$78,972	0.2329	18,393	574	$120	560,768	$67,292	15,672	25,325	$3,517
2015	$82,921	0.2157	17,886	597	$124	588,545	$72,980	15,742	25,244	$3,622
2016	$0	0.1998	0	621	$129	621,782	$80,210	16,026	26,575	$3,731
2017	$0	0.1851	0	646	$134	655,094	$87,783	16,249	28,301	$3,843
2018	$0	0.1714	0	672	$140	695,550	$97,377	16,690	29,769	$3,958
2019	$0	0.1588	0	699	$145	738,801	$107,126	17,012	31,411	$4,077
2020	$0	0.1470	0	727	$151	782,299	$118,127	17,365	33,105	$4,199
			$1,974,384				$1,129,114	$309,807		

PV Net CIP Costs For Future Users ($1,000's)		Less PV New Demand Capital Contribution ($1,000's)				New Capacity for Future Demands		New Demand Charge
$1,974,384	-	$309,807	=	$1,664,577	/	695,092	=	$2,395 /af

of annual expenditures for facilities for new demand ~~$2.11~~ $1.97 billion, must be offset by a credit equal to the present value of the new users's share of capital costs included in the water rate. To determine this amount, Metropolitan's projected average water rates (Column 4) are calculated for the planning period. The average water rate, and hence the unit New Demand Charge, is sensitive to assumptions about CIP financing and timing, which are being revised. The new demand capital portion included in the water rate (Column 5) is then determined, based on the proportion of the new demand debt service to the total water revenue requirement each year.

The new demand capital portion of the water rate is multiplied by the projected annual acre-feet of new demand water sales (Column 6) to determine the annual new demand capital contribution (Column 7). Column 8 shows the present value of Column 7, determined using the ~~same~~ discount factor shown in Column 2. The present value of the total capital credit to the new demand charges totals ~~$310~~ $309 million.

The present value of the projected facilities cost is reduced by the present value of the credit for future capital contributions, for a revised present value cost of ~~$1.8~~ $1.7 billion. This new cost is divided by the amount of projected new system capacity to be provided to serve new demands by the future facilities, measured in acre-feet per year (see Table 2-4). New capacity in the year 2020 is estimated to be 695,092 acre-feet per year. As a result, the present value cost of providing new facilities necessary for projected new demands is projected to equal ~~$2,550~~ $2,395 per acre-foot. This is the amount determined to represent the reasonable cost (per acre-foot of projected new demands) of facilities necessary to serve new demands.

The New Demand Charge will be implemented in fiscal year 1995-96. ~~The initial New Demand Charge is expected to be $1,000 per acre-foot of new demand.~~ For the first four years, this charge is projected to be set lower than the total present value cost of new facilities to service new demands to minimize the financial impact and allow the Member Agencies time to adjust to the new charge, and to allow for changes in the Capital Improvement Program and the demand projections. The initial New Demand Charge is expected to be $1,000 per acre-foot of new demand. Since this charge is less than the New Demand Charge attributable to raw water sales, both raw and treated water sales will be charge the same initially. The actual New Demand Charge is expected to increase over five years ~~to~~ toward the then-current unit New Demand Charge calculated as shown on Table 4-1 and explained above. ~~This is the amount determined to represent the reasonable cost (per acre-foot of projected new demands) of facilities necessary to serve new demands.~~

The actual unit New Demand Charge will be calculated and reviewed annually to reflect any changes in the capital projects and programs designed to accommodate new demands, and will be established each year by the Board, based on these calculations. Once incurred by a Member Agency, the New Demand Charge may be collected over a 15-year period, which corresponds to the average weighted life of Metropolitan's outstanding long-term debt. The amount collected each year will be adjusted to include carrying costs calculated at Metropolitan's weighted average cost of capital.