

SECTION 4 - METROPOLITAN'S ROLE IN THE INTEGRATED RESOURCES PLAN

TRADE-OFF BETWEEN REGIONAL COSTS AND LOCAL COSTS

Much of the IRP focused on trade-offs -- costs vs. risk, local supplies vs. imported supplies, source water quality vs. additional treatment, etc. One of the significant trade-offs analyzed in the IRP was the expenditure of resource development funds at the local level vs. expenditures by Metropolitan. The relative costs of local and imported resource development vary considerably in several respects. In order to compare the overall costs of local resource development vs. imported supply development, it is necessary to look beyond the isolated development costs associated with an individual option or project. Additional imported supplies, which frequently have relatively low development costs, create large "downstream" needs for regional infrastructure such as storage, treatment, and transmission. On the other hand, local projects like those designed to increase groundwater production, may have higher development costs but require little or no additional infrastructure to distribute water supplies to customers.

This trade-off between relatively low-cost imported supplies requiring large regional infrastructure investments and relatively high-cost local supplies requiring little additional local infrastructure was analyzed in detail in arriving at the least-cost resource plan for the region. The implications of this trade-off are also important when considering Metropolitan's water management programs, designed to encourage cost-effective local resource development.

The regional savings and increased reliability resulting from the development of local resources, rather than exclusive dependence on Metropolitan for additional supplies, is the foundation supporting Metropolitan's historical willingness to provide financial incentives for local water resources development. The IRP process improved the quantification of the regional benefits resulting from local resources and provided additional information and analysis that serves as the basis of proposed program modifications and improvements to these programs.

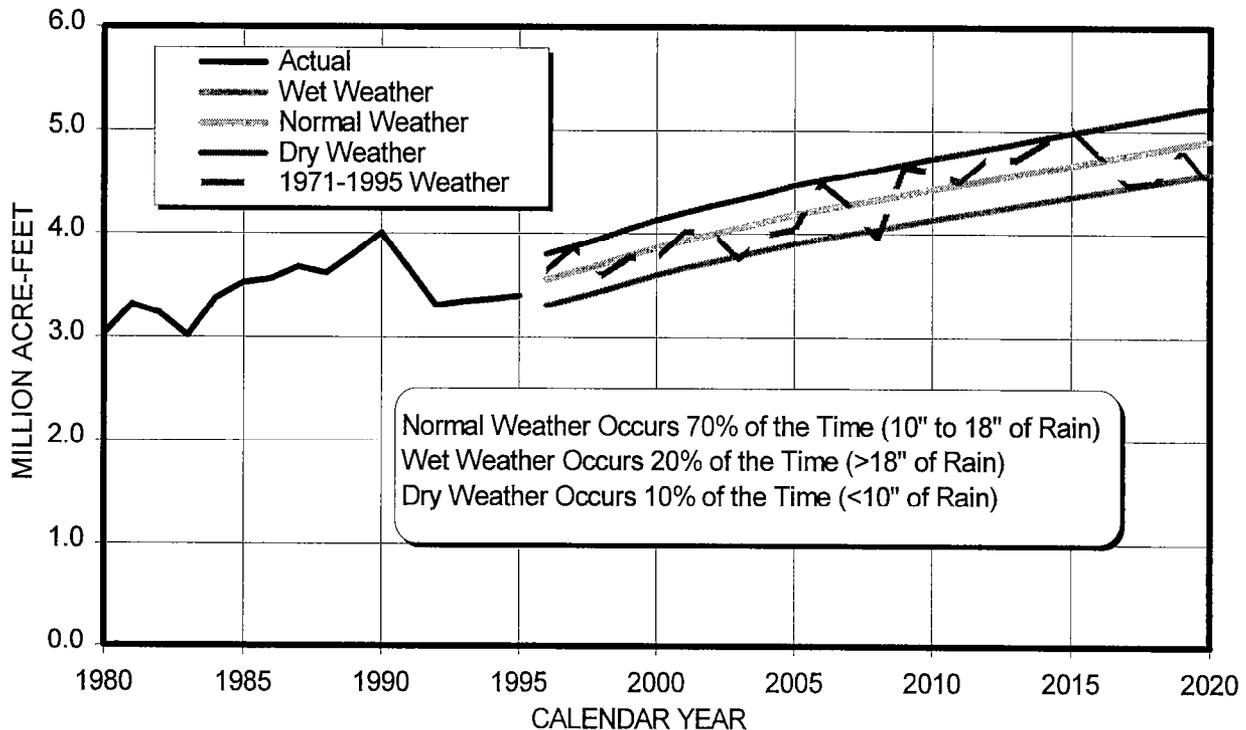
DETERMINING DEMANDS ON METROPOLITAN

Metropolitan's future resource and capital investments are based on projections of water demands for Metropolitan's system from the implementation of the Preferred Resource Mix. Demands on Metropolitan were determined based on: (1) projections of retail water demands for Metropolitan's service area; (2) projections of local supplies, including groundwater and surface reservoir production, Los Angeles Aqueduct deliveries, recycled water production; and (3) statistical variations of both retail demands and local supplies, based on 70 years of historical weather and hydrology data. See section 2 for a more detailed discussion of the methodology used to develop retail demand projections for the region.

In simple terms, forecast of water demands on Metropolitan are generated by taking projections of retail water demands and subtracting projections of local supplies. This approach is complicated because demands and supplies can vary substantially from year to year due to weather and hydrology. For example, retail demands can vary ± 7 percent from "normal" in any given year due to local weather conditions. But, because Metropolitan's supplies are the swing supply for the region as a whole, this variation in demand alone translates into a ± 14 percent change in Metropolitan's water sales.

Figure 4-1 presents the range in retail demands due to weather and demonstrates the possible variation in retail demands using 1971 through 1995 weather.

**Figure 4-1
Projected Retail Demands**



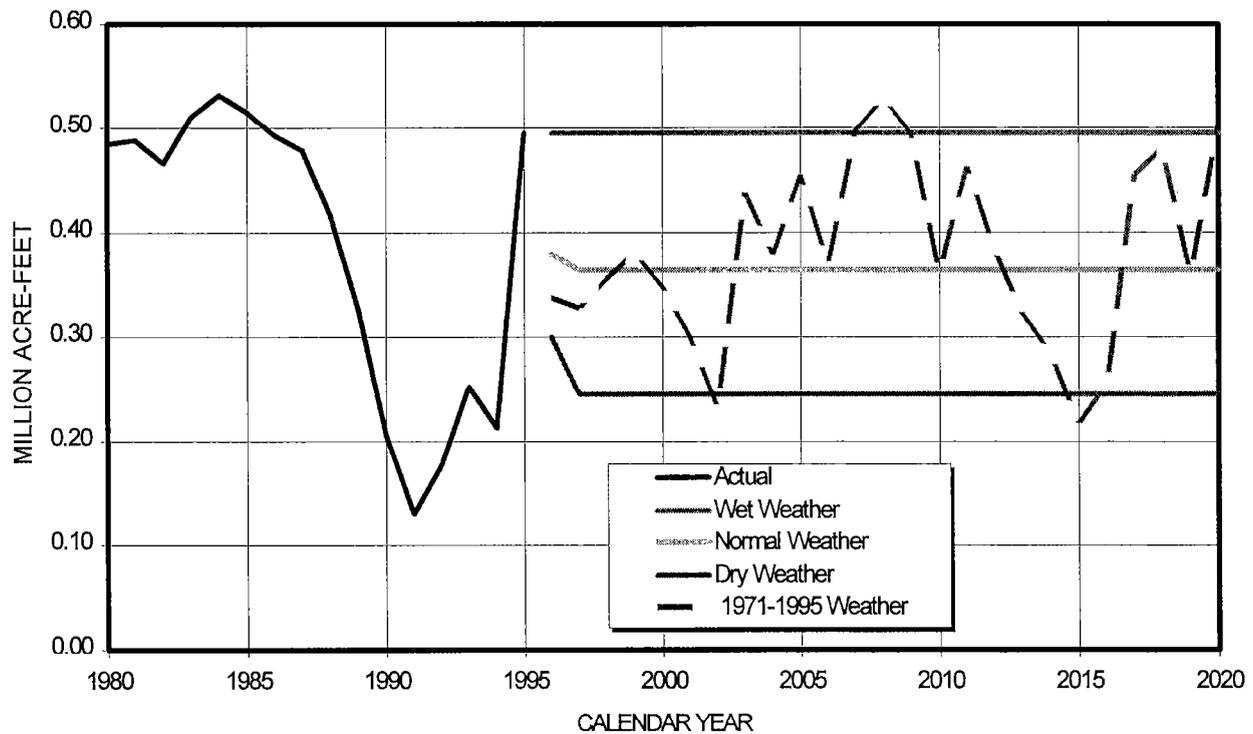
Local supplies can also vary substantially due to hydrologic conditions. The Los Angeles Aqueduct deliveries, for example, have varied from 200,000 acre-feet per year to about 500,000 acre-feet per year due to runoff conditions in the Owens Valley. When runoff conditions in the Owens Valley are above-normal, LAA deliveries increase, reducing the City of Los Angeles's reliance on Metropolitan's system. Conversely, below-normal runoff in the Owens Valley

increases the need for Metropolitan's deliveries. Likewise, local surface reservoir and groundwater basin production can be significantly affected by local runoff conditions.

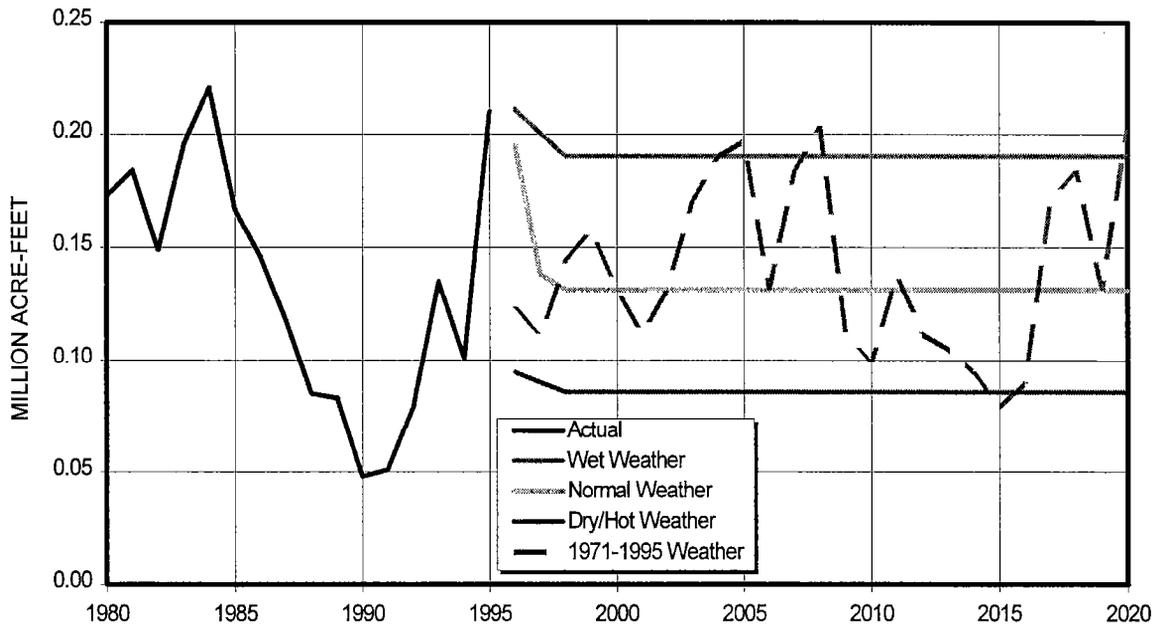
Figures 4-2, 4-3 and 4-4 illustrate the range and variation in Los Angeles Aqueduct, surface reservoir and groundwater production respectively.

Together, variations in retail demands and local supplies can cause demands on Metropolitan to increase or decrease by as much as ± 20 percent from normal in any given year. This is a possible range of about 800,000 acre-feet per year. Table 4-1 presents the forecast and range of demands on Metropolitan under three broad weather conditions: (1) wet conditions (over 18 inches of local rainfall), are expected to occur 20 percent of the time; (2) normal conditions (10 to 18 inches of local rainfall), are expected to occur 70 percent of the time; and (3) dry conditions (less than 10 inches of rainfall), are expected to occur 10 percent of the time.

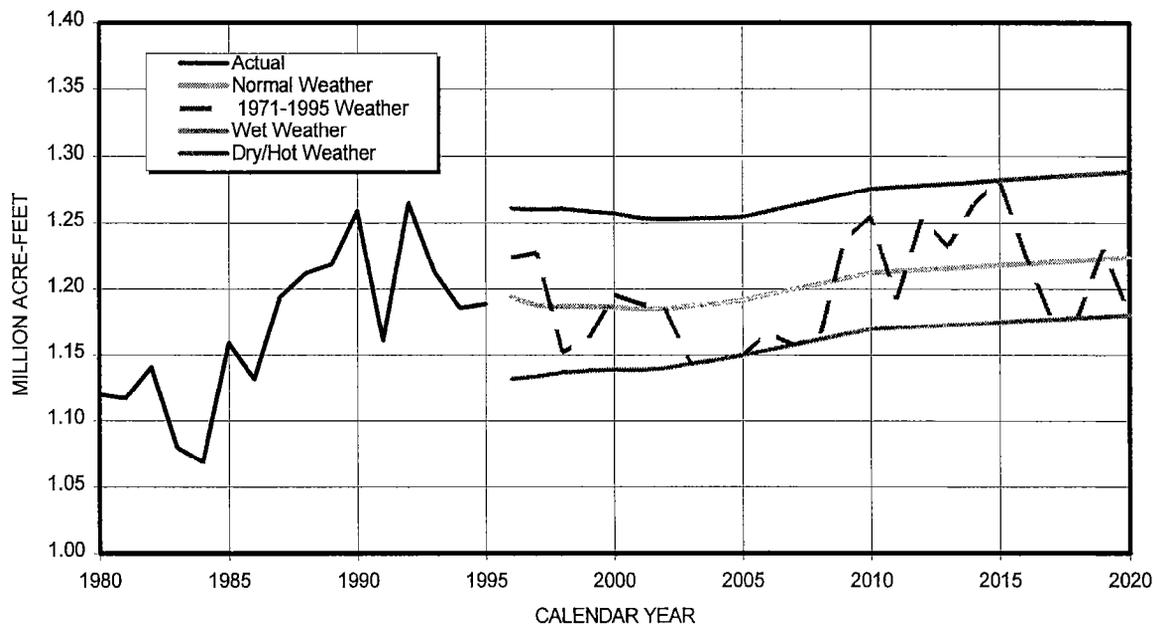
**Figure 4-2
Los Angeles Aqueduct Deliveries**



**Figure 4-3
Local Surface Water Production**



**Figure 4-4
Local Groundwater Production**

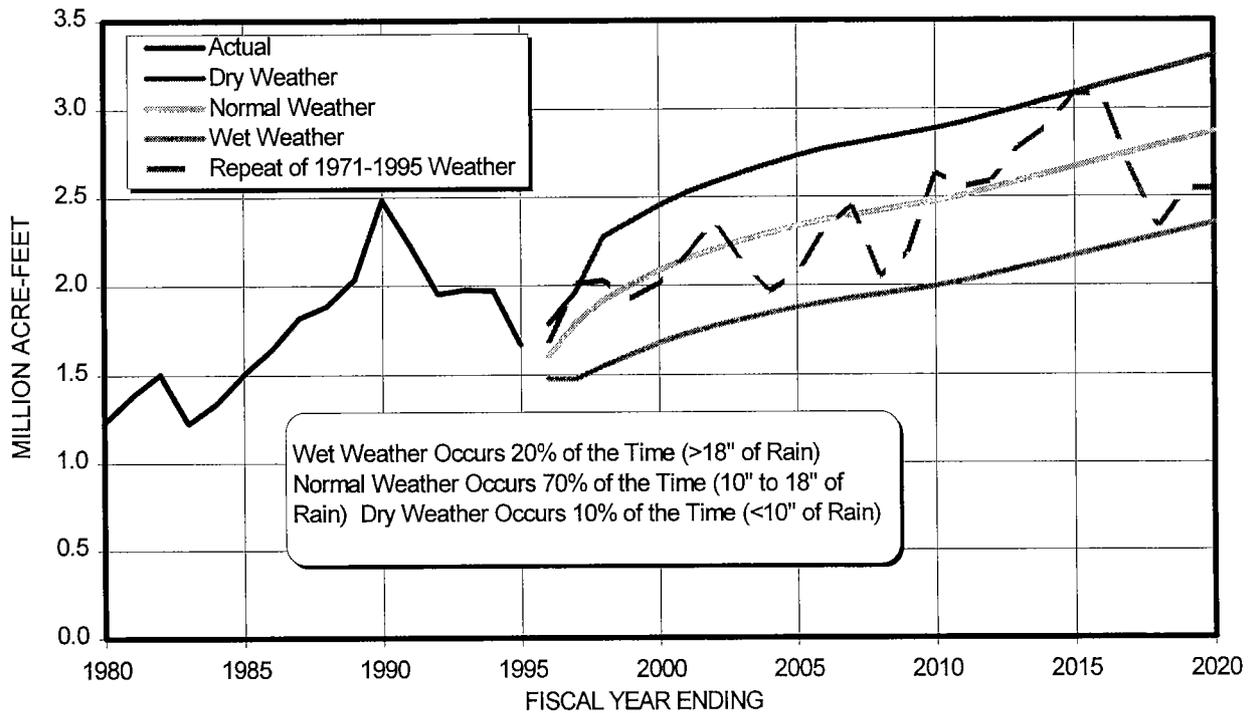


**Table 4-1
Total Demands on Metropolitan (Million Acre-Feet)**

Fiscal Year	Wet Weather (20% of the Time)	Normal Weather (70% of the Time)	Dry/Hot Weather (10% of the Time)
1995-96	1.48	1.60	1.78
1999-00	1.68	2.08	2.45
2004-05	1.88	2.34	2.73
2009-10	2.00	2.48	2.89
2019-20	2.35	2.87	3.30

Figure 4-5 presents the demand forecast for Metropolitan's system and the range in demands under different weather conditions. The wet and dry weather condition bounds were generated using 70 different weather/hydrologic traces. To demonstrate the variability in Metropolitan's demands, a weather trace using 1971 to 1995 weather and hydrology is also shown in Figure 4-5.

**Figure 4-5
Total Demands on Metropolitan**



METROPOLITAN'S RESOURCES DEVELOPMENT AND INFRASTRUCTURE

The Preferred Resource Mix identified by the IRP process is an investment strategy that balances the risks and costs of securing a high quality, dependable water supply for the region between investments in imported supply resources and its associated regional infrastructure and, local supply resources. The following section briefly describes Metropolitan's estimated cost for each of the resource options within the Preferred Resource Mix . A detailed discussion of these resource options and the development of the Preferred Resource Mix is discussed in Section 3.

Colorado River Aqueduct Supplies and Costs

The CRA deliveries represent the least-cost source of imported water for the region. Power is the primary component of CRA costs. Current cost projections are based on existing Hoover Power Plant and Parker Power Plant arrangements. CRA power costs are expected to increase from approximately \$30 million in 1996 to \$50 million in 2005. As cost impacts associated with the potential sale of all or part of the Hoover and Parker generating facilities become more certain they will be incorporated into the long-term financial forecast.

In order to operate the CRA at full capacity, several programs that are either in place or under negotiation are accounted for in the projected costs. These programs include:

- Water Conservation Program with Imperial Irrigation District
- Storing Unused Colorado River Water Underground in Central Arizona
- Test Land Fallowing in the Palo Verde Irrigation District
- All-American Canal Lining
- Storage of Colorado River Water in Vacant Capacity of Lake Mead
- Use of Unused and/or Surplus Colorado River Water

Metropolitan expects to invest an additional \$200 million to ensure a reliable, low cost water supply for the next 30 years. The average unit cost for these improvements is estimated to range from \$75 to \$150 per acre-foot.

State Water Project Supplies and Costs

Over the next 25 years, Metropolitan will on average take delivery of over 1.0 million acre-feet per year from the State Water Project (SWP) accounting for 24 percent of the retail demand in Southern California. To ensure that the SWP is a reliable supply resource in the future, the IRP assumed the need for interim Delta improvements (including south Delta channel enlargements and barriers, and acoustic fish barriers on the Sacramento River) followed by a long-term Delta solution. The annual cost to Metropolitan for interim Delta improvements is approximately \$3

million. In the long-term, the single largest increase in total SWP costs is based on the estimate of Metropolitan's share of the additional debt service costs for a Delta transfer facility. By 2005, Metropolitan's share of the additional SWP debt service costs for a Delta facility are estimated to be \$60 million, increasing to \$105 million by 2020. However, existing capital costs will decrease over time as outstanding debt matures. Total SWP costs are expected to increase from \$265 million in 1996 to \$365 million by 2005.

Central Valley Water Transfers

Water transfers from the Central Valley are another critical component of the Preferred Resource Mix identified by the IRP. It is possible that even with improvements in the reliability of the SWP and development of local supplies, transfers may be needed as often as 25 percent of the time in order to meet the regional reliability goal. By 2005, in order to avoid a shortage in a drought situation, Metropolitan may have to expend as much as \$105 million in a single year to purchase up to 400,000 acre-feet of water transfers.

To avoid large one-time rate increases needed to purchase transfers, the *Long-Range Finance Plan* recommended the establishment of a Transfer Fund. The Transfer Fund spreads the costs of transfers over several years and reduces the likelihood of a large rate increase in a single year. Long-term cost projections assume a maximum annual deposit to the Transfer Fund of \$24 million with a maximum fund balance of \$72 million. It is assumed that if the annual cost of transfers is greater than the Transfer Fund balance, any remaining costs will be funded from the Rate Stabilization Fund. The Transfer Fund will also be used to finance the initial filling of the Eastside Reservoir.

Water Management Programs

Reliance upon additional water recycling and groundwater recovery, groundwater storage, and conservation as part of the least-cost resources plan reinforces the importance of Metropolitan's programs to assist local agencies fund cost-effective local projects. As discussed previously, the development of local resources reduces the demand on Metropolitan's system and, therefore, reduces the need for additional investment in regional infrastructure. Total water management program costs are expected to increase from \$29 million in 1996 to over \$86 million in 2005, as yields from currently approved local projects increase, additional local projects are added to meet IRP resource targets, and the implementation of conservation Best Management Practices (BMP's) continues.

Conservation

Metropolitan's Conservation Credits Program (CCP), which pays local agencies up to \$154 per acre-foot for conserved water, is used to help local agencies invest in water conservation projects. Through the CCP, over 890,000 low flow toilets and over 1.6 million low flow shower heads have been installed to date, saving approximately 44,000 acre-feet per year. In addition, the CCP is also developing commercial, industrial, and landscape programs. The total cost for the CCP is assumed to increase by 5 percent annually from the 1995-96 budget level of \$18 million to \$29 million by 2005. Detailed program budgets and implementation plans are being refined and developed as more becomes known about the effectiveness of conservation measures.

Local Resources Program

Water recycling and groundwater recovery are two important local resource components of the Preferred Resource Mix. The IRP identified the need for an additional 230,000 acre-feet per year of supply from water recycling by year 2020. The existing water recycling projects are providing about 160,000 acre-feet per year. To help local agencies develop water recycling and groundwater recovery projects, Metropolitan currently operates a Groundwater Recovery Program (GRP), which pays local agencies up to \$250 per acre-foot for the recovery of contaminated groundwater; and a Local Projects Program (LPP), which pays local agencies \$154 per acre-foot for recycled water. The LPP currently helps fund 40 local projects with an ultimate annual yield of 179,000 acre-feet. The GRP currently helps fund 9 local projects with an ultimate annual net yield of 30,000 acre-feet.

As part of the implementation of the IRP, it was proposed that the GRP and LPP be merged together into the Local Resources Program (LRP) and that the incentive payment for water recycling projects be increased to \$250 per acre-foot. Under this proposed program structure all approved local recycling and groundwater recovery projects with costs greater than Metropolitan's treated basic rate (plus amortized New Demand Charge where applicable) will be paid on a sliding scale receiving up to \$250 per acre-foot of production. The future costs for the LRP program are estimated to increase at an annual average rate of 43 percent from \$10.3 million in Fiscal Year 1995-96 to \$54.3 million by Fiscal Year 2004-05. However, Metropolitan's LRP costs are highly dependent upon local recycling production and therefore may increase at a slower rate due to slower development of local recycling production. In addition, some of the additional recycling needed to achieve the IRP goal may be produced by projects that do not require an incentive. The current estimate of future LRP costs assumes:

- Increasing yields of currently approved projects
- 14 of the 40 LPP projects convert to the LRP program
- 9 approved GRP projects continue to receive funding under their existing contracts

- 100 percent of the additional local project yield required to meet the IRP goal receives funding at the average incentive level

Local Storage Programs

To encourage local agencies to manage the groundwater resources in a manner that is beneficial to the region, Metropolitan created the Seasonal Storage Service program (SSS). The SSS provides imported water at an average discount of \$125 per acre-foot during the winter season. This discount allows local agencies to pump more groundwater during the summer season (reducing peaks on Metropolitan's system) and during dry years when imported supplies are more scarce.

Metropolitan is also beginning to develop contractual conjunctive-use storage agreements with its member agencies. Over the next ten years it is expected that Metropolitan will spend \$175 million helping member agencies construct additional extraction and recharge facilities. Capital costs for contractual groundwater storage projects are assumed to be debt financed with revenue bonds and are included as part of Metropolitan's debt service costs. The annual variable operating costs for conjunctive-use programs will vary with demand and the availability of supply. The average annual O&M cost for conjunctive use programs is estimated to be \$3.3 million.

Regional Infrastructure Needs

In order to provide for the treatment, distribution and storage of imported supplies, Metropolitan is implementing a major 10-year Capital Improvement Program (CIP). This CIP is expected to invest more than \$4.1 billion in regional infrastructure over the next 10 years. As part of this effort, significant investments have already been made in feasibility and planning studies, design work and construction. Volume 2, entitled *Metropolitan's System Overview*, provides a detailed report on the proposed timing, sizing and location of each of Metropolitan's regional infrastructure investments. The major components of the CIP are summarized below:

Eastside Reservoir Project

With a total design capacity of 800,000 acre-feet the Eastside Reservoir will provide 400,000 acre-feet of emergency storage and 400,000 acre-feet of carryover storage for the region. The Eastside Reservoir Project is expected to be completed in 1999 at a total project cost of \$2.0 billion, of which \$500 million has already been spent on property acquisition, environmental mitigation, and design. Also included in the total cost is about \$300 million for project contingencies.

Inland Feeder Project

The Inland Feeder will increase the conveyance capacity from the East Branch of the California Aqueduct by 1,000 cfs, moving water from DWR's Devil Canyon facility 43 miles south to the San Diego Canal and the Eastside Reservoir. Together with the Eastside Reservoir Project, the Inland Feeder will improve the region's storage and water quality by bring down more State Water Project into the service area. The Inland Feeder is expected to be completed by 2002 at a total project cost of \$1.03 billion, of which about \$135 million is for project contingencies.

Water Quality, Treatment, Conveyance and Groundwater Storage

The IRP identified the need for significant investments in regional water treatment facilities to upgrade existing facilities from conventional treatment processes to ozone treatment and to increase the total system treatment capacity and conveyance. Approximately \$1.1 billion will be invested over the next ten years to: (1) retrofit the Jensen, Weymouth, Diemer and Skinner filtration plants for ozone treatment, (2) construct additional conveyance capacity for San Diego County, and (3) construct the Perris Filtration Plant. The IRP also identified the need for groundwater storage, and as such, through conjunctive use storage agreements about \$175 million is expected to be invested in pumping and related storage facilities over the next 10 years.

Reliability, Rehabilitation and Administrative Facilities

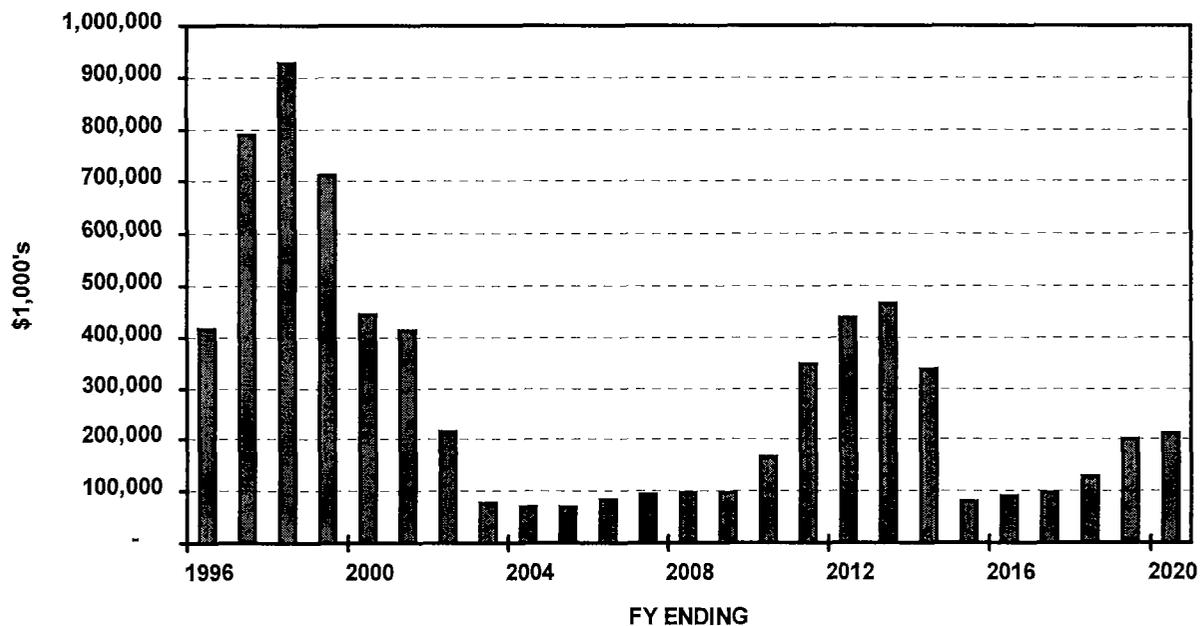
Investments needed to maintain the existing regional infrastructure and ensure its ability to reliably meet future demands are expected to total \$700 million by year 2005. Included in this amount is \$150 million for a permanent administrative facility centrally located at Union Station in The City of Los Angeles.

Table 4-3 summarizes the total construction outlays for the proposed 10-year CIP as well as total anticipated expenditures over the 25-year period studied for the IRP. Figure 4-6 shows the projected total construction outlays over time.

**Table 4-3
Metropolitan's Anticipated Capital Expenditures
(Escalated Dollars)**

Project Description	10-Year CIP Costs (Millions)	25 Year CIP Costs (Millions)
Supply, Distribution, and Storage Projects		
Regional Water Management Facilities	2,345.2	2,453.3
Distribution Facilities	275.2	1,126.8
Other Projects	710.8	1,818.0
Water Treatment Projects		
New Major Water Treatment Facilities	42.4	907.2
Water Quality & Treatment (Existing)	760.3	762.1
Total	4,133.9	7,067.4

**Figure 4-6
Projected Annual Construction Outlays**



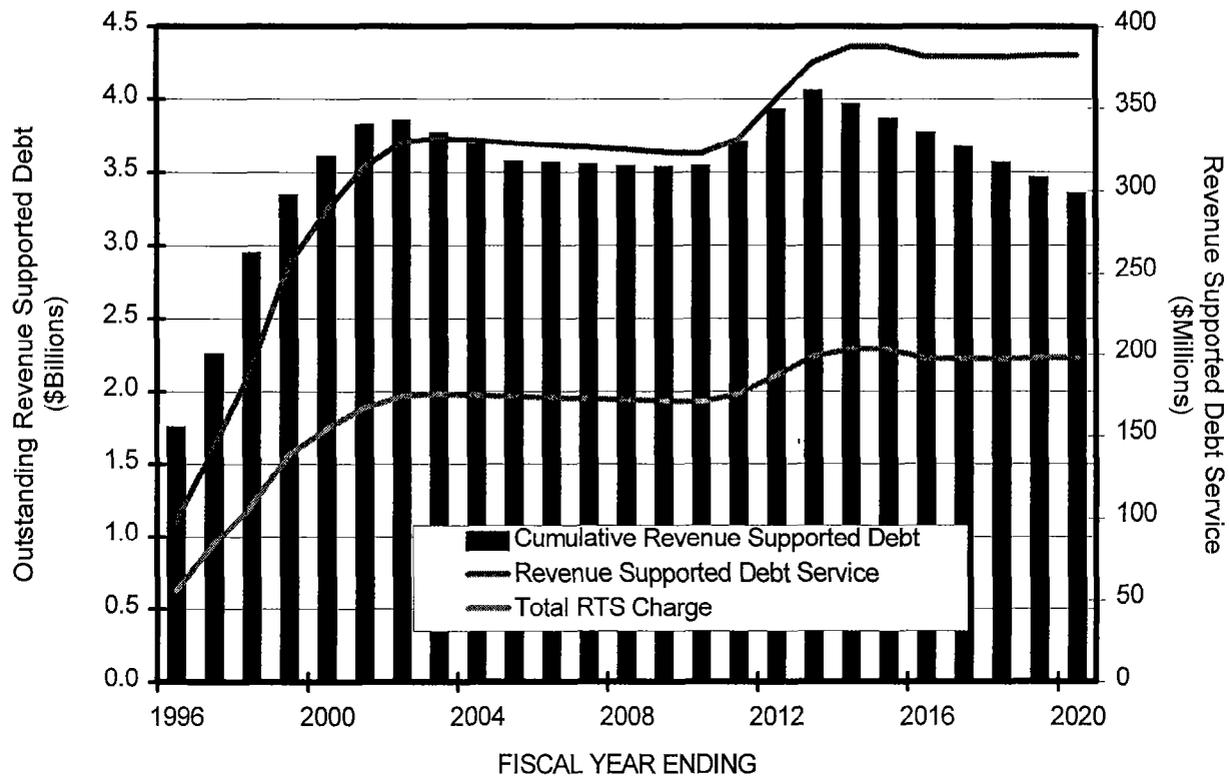
Financing Metropolitan's Capital Expenditures

In the long-term, 80 percent of Metropolitan's anticipated capital expenditures will be debt financed. The remaining 20 percent will be funded directly from water sales revenues. A detailed discussion of the alternative debt financing methods is provided in Metropolitan's *Long-Range Finance Plan*.

Debt Financing

As recommended in the *Long Range Finance Plan*, fixed rate revenue bonds are expected to remain the primary means of financing Metropolitan's capital expenditures. Depending upon capital market conditions and the need for debt financing, a combination of fixed and variable rate revenue bonds along with commercial paper will be used to maintain low debt service costs without exposing Metropolitan to undue interest rate risk. To reduce Metropolitan's exposure to increases in interest rates, variable rate debt will not be allowed to exceed 15 percent of total outstanding debt. Current projections of debt service costs assume that interest rates increase by 25 basis points per year from their current levels of 6 percent (fixed) and 4 percent (variable) to 7.5 percent (fixed) and 5.5 percent (variable). Metropolitan's most recent debt sale of \$175 million (1995 Series A Water Revenue Bonds) sold at a true interest cost of 5.91 percent. Total revenue bond debt service costs are expected to increase at an average annual rate of 25 percent from \$93 million in 1996 to \$329 million in 2005 as Metropolitan adds an additional \$3.2 billion in revenue supported debt to the currently outstanding debt of \$1.7 billion. Figure 4-7 illustrates Metropolitan's total outstanding revenue supported debt, the estimated debt service costs through 2020, along with the amount of the debt service costs supported by the RTS charge.

**Figure 4-7
Outstanding Revenue Supported Debt**



PAYGO Financing

Estimates of future financing costs assume that over the next ten years, 20 percent of the expenditures will be funded from the Pay As You Go Fund (PAYGO). Currently, \$90 million per year in water sales revenues is used for PAYGO financing. In addition to the \$90 million annual funding, The Long Range Finance Plan recommended that Rate Stabilization Fund balances over \$200 million be transferred to the PAYGO fund. Use of the Rate Stabilization Fund reduces the need to increase the amount of PAYGO money raised by water rates, limits Metropolitan's exposure to external entities seeking supplemental revenue sources, and reduces Metropolitan's need for additional debt.

Metropolitan's Operating Costs

Metropolitan's 1996 budgeted general operating and maintenance costs, including operating equipment and lease obligations, total \$199.7 million. Consistent with Metropolitan's cost containment goals it is assumed that annual increases in existing operating costs are held to 3 percent per year. At this rate, existing operating costs are expected to increase to \$247 million by 2005. As new facilities come on line, future operating costs will increase to \$36 million by 2005 bringing total operating costs to \$283 million or 22 percent of total costs.

FINANCIAL IMPACTS

Projected Revenue Requirements

Table 4-2 summarizes Metropolitan's projected revenue requirements for each major cost category previously discussed. The implementation of the IRP is expected to increase Metropolitan's total expenditures by an average annual rate of 5.0 percent over the next 25 years.

**Table 4-2
Metropolitan's Projected Expenditures
(\$millions)**

Fiscal Year Ending	1995	2000	2005	2010	2020
State Water Project	216.6	328.7	364.5	425.7	510.6
Colorado River Supplies ¹	46.2	42.8	54.0	68.2	109.3
Water Management Programs	22.1	65.3	82.9	105.1	109.6
Capital Costs ²	228.5	436.8	477.0	491.5	473.2
Existing Operating Costs	206.0	223.5	247.2	286.4	386.2
Future Operating Costs ³	0.0	9.0	38.3	46.4	71.3
Required Reserves	28.9	32.5	11.4	10.9	23.0
Total	748.3	1,138.6	1,275.3	1,434.2	1,683.2

¹ Does not include the capital costs for the All-American Canal lining, which are included in the capital costs.

² Includes debt service and PAYGO.

³ O&M costs related to new facilities only.

Projected Rates and Charges

Projections of Metropolitan's rates and charges are estimated based upon expected demand levels, costs, and revenues generated from other sources. Metropolitan's funds are generated from diverse sources of revenues which are described below:

Property Taxes

Property tax revenue is used to service Metropolitan's outstanding general obligation debt and to pay for a portion of the State Water Project capital costs. Currently, property taxes generate approximately \$80 million per year and are assessed at a rate of .0089 percent of assessed property values. Estimated increases in assessed values will increase property tax revenues to \$91 million by 2005. After 2005, property tax revenue decreases as general obligation debt matures and the tax rate declines. By year 2023, Metropolitan's property tax authority will expire unless additional authority is approved by the voters.

Interest Income

Through the investment of unencumbered reserve funds and cash balances Metropolitan currently generates approximately \$40 million per year in interest income that can be used to cover expenditures.

Hydro Power Sales Revenue

There are fifteen Hydro-electric plants within Metropolitan's distribution system that currently generate approximately \$14 million per year in revenue through long-term contract power sales to the Department of Water Resources and Southern California Edison.

Readiness to Serve Charge

A Readiness to Serve Charge (RTS) was implemented as part of the new revenue structure adopted in 1995 to provide a firm revenue source and reduce Metropolitan's dependence on highly variable water sales revenues. The RTS supports the portion of the total revenue bond debt service that is allocated to existing users of Metropolitan's system. The rate of increase in the RTS charge is driven by the timing and sizing of the debt sales required to finance Metropolitan's anticipated capital expenditures and Metropolitan's cost of capital. Metropolitan's anticipated capital expenditures are currently expected to increase the total Readiness to Serve Charge at an average annual rate of 22 percent from \$56 million in 1996 to \$178 million in 2005. Because the majority of the construction outlays are expected to occur within the next ten years, the RTS charge will increase at a much slower rate after 2005 to approximately \$200 million by 2020.

Although the RTS charge is projected to increase significantly over the next ten years, it is only one component of the overall increase in the average cost of water provided by Metropolitan. In the current forecast, the average cost of water imported by Metropolitan increases at an average annual rate of 3.3 percent over the next 25 years. Without the fixed revenues provided by the RTS Charge, the increase in the average cost of water would remain the same, however, the commodity rates would be higher, and higher Rate Stabilization Fund and Working Capital balances would be required to insure against reductions in water sales revenues due to wet weather.

Connection Maintenance Charge

A connection maintenance charge generates about \$3 million per year in revenues. The connection maintenance charge is based on a rate of \$50/cfs of connected capacity.

New Demand Charge

As part of the new revenue structure a New Demand Charge (NDC) was also implemented. The NDC is calculated as the present value unit cost for capital facilities needed to meet new demands and is assessed on every unit in excess of an initial base demand. The NDC is currently calculated to be \$1621/acre-foot but was set in Fiscal Year 1995-96 at \$1,000/acre-foot. Member agencies have the option of amortizing the NDC over 15 years at an interest rate equivalent to Metropolitan's weighted cost of capital. Revenue from the New Demand Charge will vary with the rate of demand growth among the member agencies and the level of the unit charge itself as it is set by the board. It is currently estimated that Metropolitan will be collecting \$27 million in New Demand Charges by Fiscal Year 2004-05 as Member Agencies exceed their base demand. As demands continue to grow, New Demand Charge revenues are estimated to reach \$103 million per year in Fiscal Year 2019-20. The projections of NDC revenues assume that all member agencies that incur a New Demand Charge elect to amortize the charge. A detailed discussion of the justification for and calculation of the New Demand Charge is provided in Report No. 1069 *Nexus Study in Support of Metropolitan's New Demand Charge*.

Treatment Surcharge

The revenue requirement used to determine the treatment surcharge is calculated as the sum of all costs associated with providing treated water service. These costs include operations, overhead, power, chemicals, and the debt service costs for existing and planned treatment facilities. The treatment surcharge is currently set at \$82/acre-foot and is expected to increase to \$97/acre-foot by Fiscal Year 2004-05. Most of the expected increase in the treatment surcharge revenue requirement is being driven by the debt service costs for ozone retrofit projects and the future O&M cost for ozone treatment. It is expected that growth in treated water sales will help minimize increases in the Treatment Surcharge.

Commodity Rates

Metropolitan's water sales revenue requirement is estimated as the difference between Metropolitan's total revenue requirement and the sum of all fixed or other revenues. The commodity rates that Metropolitan charges for basic, seasonal and agricultural deliveries are set based on the water sales revenue requirement and the expected level of demand for imported water assuming normal weather conditions. Table 4-3 summarizes Metropolitan's projected treated and untreated commodity rates for basic service through Fiscal Year 2019-20. Table 4-4 summarizes Metropolitan's projected revenue sources.

**Table 4-3
Projected Commodity Rates for Basic Service
(Dollars Per Acre-Foot)**

Fiscal Year	Treated	Untreated
1995-96	426	344
1999-00	457	375
2004-05	493	396
2009-10	500	398
2019-20	527	415

**Table 4-4
Sources of Metropolitan's Revenue
(\$millions)**

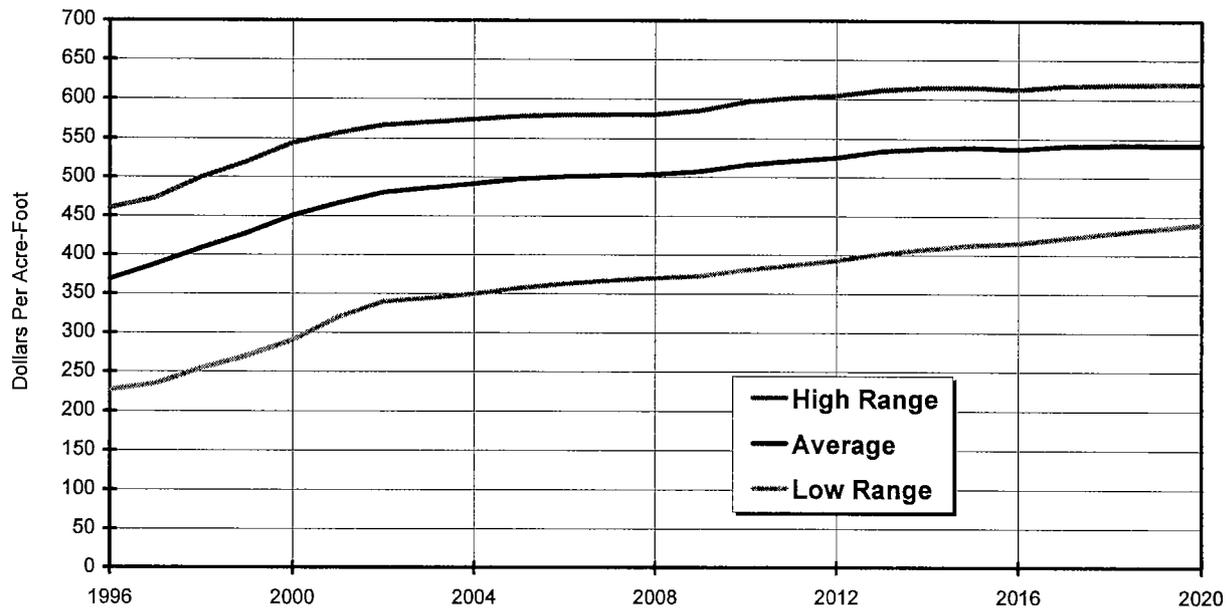
Fiscal Year	1995-96	1999-00	2004-05	2009-10	2019-20

Taxes	81.3	88.0	91.0	90.2	25.7
Interest	37.0	41.0	46.0	44.0	54.0
Hydro-Power	12.0	14.1	15.7	19.9	20.7
Readiness to Serve Charge	56.0	155.9	177.6	174.5	191.7
Connection Maintenance Charge	3.0	3.0	3.0	3.0	3.0
New Demand Charge	0.0	2.1	26.9	56.9	103.6
Treatment Surcharge	85.1	106.7	138.1	153.6	194.3
Water Sales Revenue	488.8	713.6	861.7	922.6	1,125.6
Rate Stabilization Fund	29.1	17.9	0.0	0.0	0.0
Total	792.3	1,142.3	1,360.0	1,464.7	1,718.6

Metropolitan's Effective Water Rate

Metropolitan's effective water rate is estimated by adding the rates and charges paid directly by the member agencies and dividing by the total expected water sales. Figure 4-8 presents the projected range in Metropolitan's effective rate among the member agencies. The average rate represents the average for the region. However, the effective water rates will vary among Metropolitan's member agencies depending upon the type of service provided (i.e. treated, untreated, basic, seasonal, agricultural) and the relative use of Metropolitan's distribution system. For example, member agencies that purchase primarily treated basic water to meet demands or member agencies that are growing and incurring a New Demand Charge will have higher effective rates than agencies that purchase untreated or seasonal water.

**Figure 4-8
Range in Metropolitan's Effective Water Rate**



Metropolitan's Financial Condition

Rate Stabilization Fund

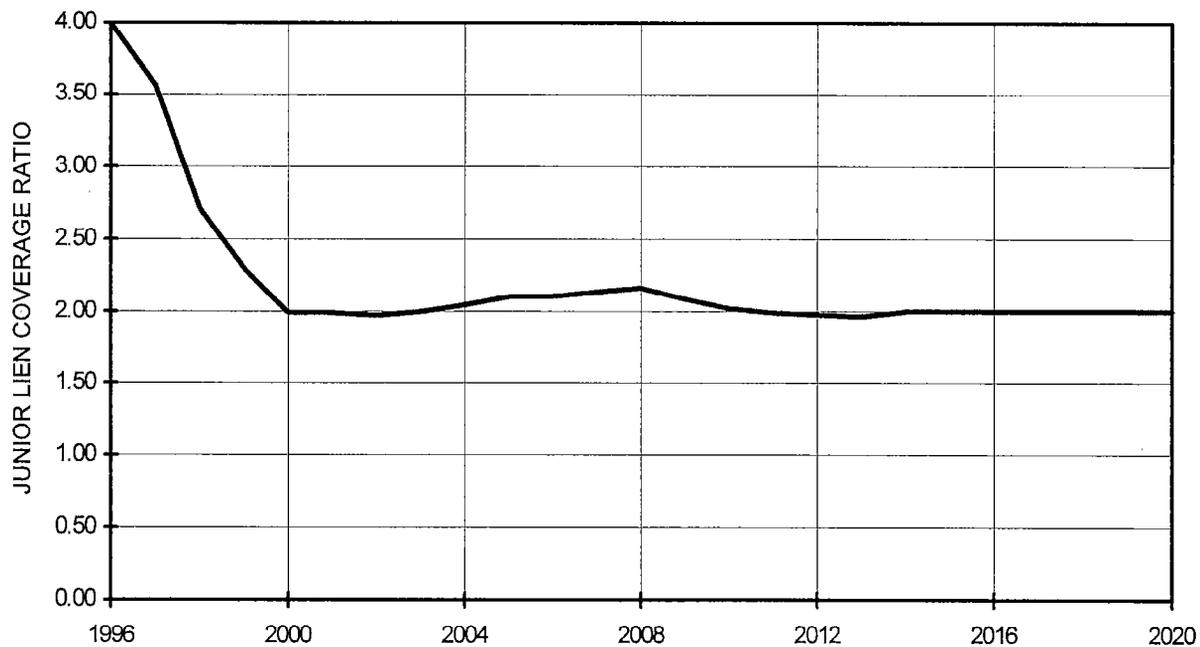
Because of the variability in Metropolitan's water sales, Metropolitan maintains reserves in a Water Rate Stabilization Fund (Stabilization Fund). When sales are above-normal (dry periods), excess water sales revenue is generated and deposited into the Stabilization Fund. When sales are below normal due to wet weather, the Stabilization Fund serves as Metropolitan's first source of reserves and is used to cover revenue requirements that would otherwise require a rate increase. Over the next few years, the combination of increasing costs, low sales due to the recent wet period, and a desire to hold annual effective rate increases to less than 6 percent, are expected to result in a decrease in the Stabilization Fund balance. *The Long Range Finance Plan* recommended that the Rate Stabilization Fund be capped at \$200 million and that any balances in excess of that amount be transferred to the PAYGO fund to reduce Metropolitan's future outstanding debt.

Debt Service Coverage

Metropolitan's bond covenants require that rates are set to generate revenues sufficient enough to maintain a minimum of 1.2 times debt service coverage at all times. Due to the variability in

water sales revenue caused by weather and uncertainty in future costs, the projected Junior Lien Revenue Bond debt service coverage ratio is not allowed to fall below 2.0 under normal weather conditions. Increasing debt service and operating costs are expected to decrease the coverage ratio from its estimated 1995-96 level of 4.0 to 2.0 by Fiscal Year 1999-00. Figure 4-9 shows the projected coverage ratio.

**Figure 4-9
Junior Lien Revenue Bond Coverage Ratio**



The previous discussion of Metropolitan's role in the IRP outlines a future path for achieving a high quality, reliable and affordable water supply for the region. However, the only thing certain about the future is that it will be different from than what was projected. Therefore, the Preferred Resource Mix and Metropolitan's investment strategy must be flexible and allow for adjustments should conditions change. To help identify possible changes and adjustment strategies, sensitivity analysis is regularly conducted. Two sensitivity analyses are provided as examples.

SENSITIVITY ANALYSIS

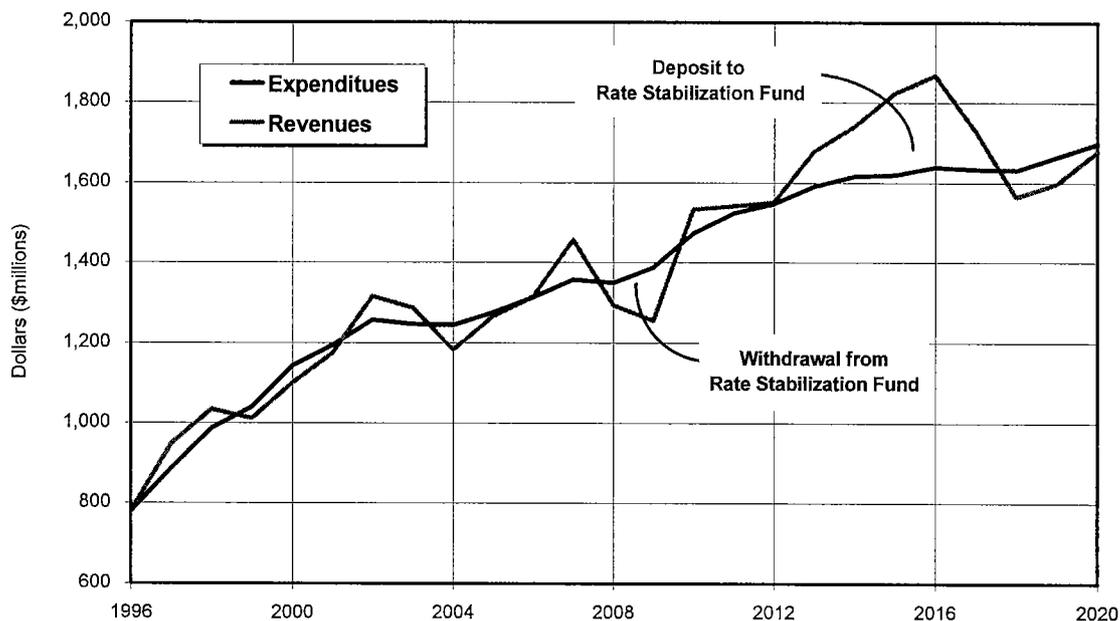
The following scenarios were constructed to demonstrate the financial impacts to Metropolitan if circumstances change. Metropolitan's rates are very sensitive to the level of demand on

Metropolitan's system. Changes in water demands on Metropolitan's system can be attributed to either weather or structural changes in retail demands or local supply development.

Impacts of Weather

To evaluate the financial impacts associated with future variations in water sales, the effects of historical hydrologic and weather conditions are estimated and their impacts on future water sales revenues are evaluated. Figure 4-10 shows the difference between Metropolitan's projected total annual costs for the Preferred Resource Mix and the revenues that would be generated from the commodity rates shown in Table 4-5 if the weather conditions from 1971 to 1995 occurred in the future.

**Figure 4-10
Metropolitan's Total Costs and Revenues Assuming 1971-1995 Weather**



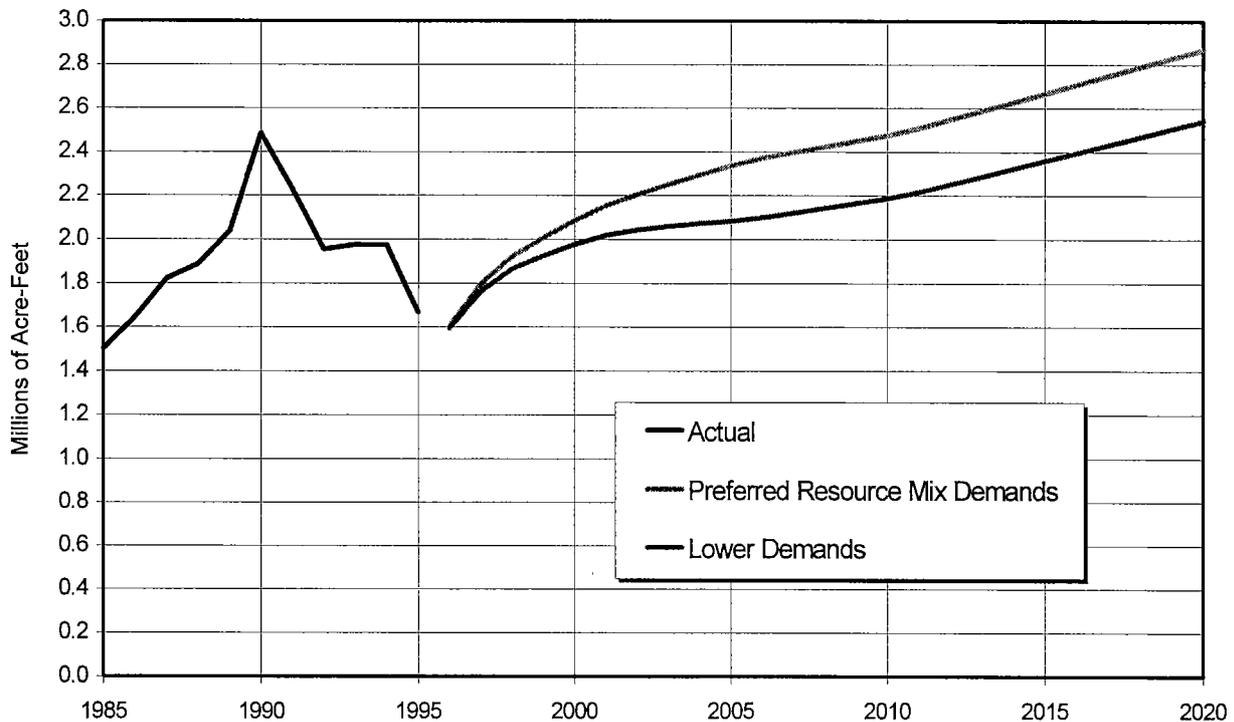
In the years where total revenues are less than total costs funds are withdrawn from the Rate Stabilization Fund in order to avoid rate increases due to wet weather. This is most evident in Fiscal Year 2007-08 where the effects of the extremely wet weather experienced during 1983 can be seen. Deposits are made to the fund in years where revenues exceed total costs. The higher demands that are driven by the hot and dry conditions of 1990 add to the Rate Stabilization Fund in Fiscal Year 2015-16 and will be carried forward for use in future wet periods.

Impacts of Structural Changes

The demands on Metropolitan's system shown in Figure 4-5 reflect the expected range in demands under the Preferred Resource Mix investment strategy given the current SCAG and SANDAG projections of population and economic growth and expected local supply development. However, slower population and economic growth or greater than expected local supply development could decrease the expected demands on Metropolitan's system.

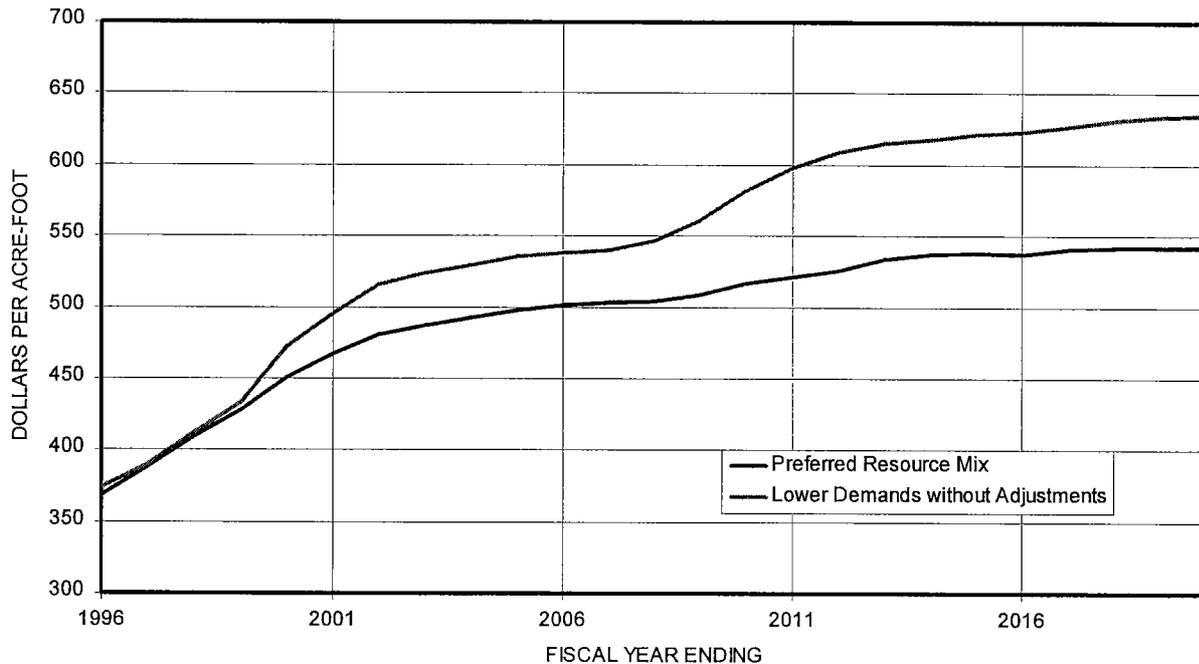
Figure 4-11 illustrates one scenario of lower demands on Metropolitan's system that could result from slower population and economic growth. In this scenario, demands on Metropolitan's system are 280,000 acre-feet lower in year 2005 than what is currently projected.

Figure 4-11
Total Demands on Metropolitan's System



If demands on Metropolitan are lower than expected and no adjustments are made to hold down operating costs and defer investments in capital facilities and water management programs, Metropolitan's effective rate would be greater than what was shown under the Preferred Resource Mix (see Figure 4-12). To compensate for the reduced revenues that result from lower demands and avoid greater rate increases, several adjustment strategies can be implemented to reduce or defer the cost increases associated with the implementation of the Preferred Resource Mix if conditions should change.

**Figure 4-12
Impacts on Metropolitan's Effective Water Rate Under Lower Demands**



ADJUSTMENT STRATEGIES

To help mitigate against rate impacts if future demands are not as expected, several adjustment strategies have been identified. These adjustment strategies will help minimize stranded investments and the financial risk that they can cause. However, it is important to note that stranded investments will never completely be eliminated. Investments to secure a reliable and high quality water supply are made with the best information and projections at the time. The best a prudent water manager can do is keep costs down and develop strategies to minimize the financial impacts should future conditions change.

Cost Cutting and Capital Planning

Metropolitan's opportunities for cost cutting adjustment strategies are: (1) deferring and/or downsizing planned capital projects; (2) reducing future commitments for water management programs; and (3) continue to improve efficiency in annual operating costs.

Deferment of Capital Infrastructure

If future conditions change significantly, it may be necessary to defer planned capital infrastructure projects in order to reduce the financial risk to Metropolitan and its member

agencies. During the IRP, Metropolitan's capital improvement program was analyzed to determine project timing and sensitivity to changes in demands. Projects that were mainly supply driven were the Eastside Reservoir Project and Inland Feeder. These projects provide water quality and emergency benefits that are not very sensitive to changes in demand. However, projects such as the Central Pool Augmentation Project and the San Diego Pipeline No. 6 were more sensitive to demands. Projects that are mainly driven by demand and that are not needed within the next several years represent opportunities for reassessment if demand conditions change. Projects that are supply driven can also be adjusted, however, the impact to reliability must also be addressed. For example, what are the impacts to water quality and the region's emergency storage if the Inland Feeder or Eastside Reservoir were deferred a number of years? In addition, Metropolitan's capital improvement program includes projects designed to meet regulatory requirements (such as water quality). The impacts to not meeting these regulations must be carefully analyzed if these types of projects are deferred.

Adjustments to Water Management Programs

Metropolitan is committed to the financial contributions of existing agreements for its water management projects. Over the next 15 years, Metropolitan is estimating that its water management program budget could increase from its current \$22 million to over \$100 million (a 370 percent increase). If future demand is significantly less than projected, the strategy of scaling-back on these water management programs can be significant in reducing the rate impact. Possible adjustments might be lowering the overall target for local resource development and/or reducing the level of financial contribution. Again, Metropolitan would not change the level of financial commitments for existing agreements.

Cost Reduction in O&M Expenses

Currently, Metropolitan's operating expenses are escalated at 3 percent per year. If inflation in the future was 3 percent than this would imply that Metropolitan is holding the line on O&M costs. As technology improves, it may be possible to operate at lower costs in the future. Another area for cost containment is the operating costs associated with the State Water Project. Currently, the Department of Water Resources uses a 5 percent annual escalation factor for operating costs. In the future it may be possible to reduce these costs, reducing Metropolitan's overall expenses. The magnitude of savings that are possible under these types of adjustments could be as high as about \$150 million by 2020.

More analysis is being done on these cost cutting adjustment strategies and will be incorporated as the Preferred Resource Mix is implemented.

Financing and Pricing Techniques

Metropolitan will utilize both long-term and short-term debt instruments, investment of working capital, and fixed and variable rate debt to minimize the carrying costs of capital facilities. In addition, pricing strategies (along with fixed sources of revenue) will help mitigate the impact of member or sub-agencies leaving the system. While Metropolitan's pricing should reflect its marginal cost of supply, its goal is to remain the least-cost regional supplier.

Legal and Institutional Relationships

The historical relationship since the Laguna declaration has implied a contract for service between Metropolitan and its member agencies. Very simply, the implication of this relationship has been that Metropolitan would meet all supplemental needs of its member agencies so that duplicate imported water supply facilities are avoided. Over time, as regional demands have grown and the reliability of imported supplies and the adequacy of regional infrastructure have come into question, Metropolitan has been put in the position of having to provide standby service for the region without a firm commitment of revenue. Alternative service arrangements between Metropolitan and its members or sub agencies, including wheeling, storage service, and firm reliability contracts, are all options which can be used to mitigate the uncertainty surrounding supplies and demands and their associated cost and revenue streams. In the future, with increasing competitive pressures and alternative opportunities for member agencies to leave Metropolitan's system, Metropolitan must be prepared to change the current institutional relationships.