II. PLANNING FOR THE FUTURE

In its role as supplemental supplier to the Southern California water community, Metropolitan faces ongoing challenges in meeting the region's needs for water supply reliability and quality. Increased environmental regulations and competition for water from outside the region have resulted in projected decreases in reliability of imported water supplies. At the same time, the Colorado River basin has experienced a five-year drought that is unprecedented in recorded history, while demand continues to rise within the region because of population and economic growth.

As described in the previous chapter, the water used in Southern California comes from a number of sources. About one-third comes from local sources, and the remainder is imported from three sources: the Colorado River, the Sacramento-San Joaquin River Delta (via the State Water Project), and the Owens Valley and Mono Basin (through the Los Angeles Aqueducts).[1]

Because of competing needs and uses associated with these resources, and because of concerns related to regional water operations, Metropolitan has undertaken a number of planning initiatives over the past ten years. This Regional Urban Water Management Plan summarizes these efforts, which include the Integrated Resources Plan (IRP), the IRP Update, the Water Surplus and Drought Management Plan, Strategic Plan and Rate Restructure. Together, they provide a policy framework, guidelines and resource targets for Metropolitan to follow into the future.

While Metropolitan coordinates regional water supply planning for the region through its inclusive integrated planning processes, Metropolitan's member agencies also conduct their own planning analyses – including their own urban water management plans - and may develop projects independently of Metropolitan. Appendix 6 provides a summary of these potential future local projects to the extent Metropolitan has been able to identify them.

[1] Although the water from the Los Angeles Aqueduct is imported, Metropolitan considers it a local source because it is managed by the Los Angeles Department of Water and Power and not by Metropolitan.

II.1 Integrated Resource Planning

The 1996 IRP Process

In the 1990s, drought and regulatory requirements were affecting the reliability of Metropolitan's water supplies, while the region's population continued to grow. To address this challenge, Metropolitan and its member agencies conducted an Integrated Resource Planning (IRP) process to determine the appropriate level of supply reliability and to establish cost-effective approaches to achieving that goal. This process was conducted in two phases. The first phase consisted of gathering and analyzing data that would help forecast future demands, the long-term status of existing supplies, and new supply alternatives that could be harnessed to meet future water needs. The second phase consisted of evaluating the supply alternatives to develop a Preferred Resource Mix. Metropolitan kept the process open and participatory by directly involving the staff of Metropolitan and its member agencies, and by inviting other water resource agencies, environmental groups and the general public to contribute via workgroup meetings, regional assemblies, public forums and member agency workshops.

The Preferred Resource Mix developed through this process relied on a diverse mix of resources. The adopted plan established a goal of 100 percent reliability for full-service demands through 2020 through the attainment of regional targets set for conservation, local supplies, State Water Project supplies, Colorado River supplies, groundwater banking, and water transfers. By adopting this diverse portfolio of supply resources, Metropolitan and its member agencies explicitly recognized the benefits of avoiding over-reliance on any single water resource.

By design, the 1996 IRP process remained dynamic, open to revisions as they became necessary in light of changing conditions. This approach has defined the policy and strategic approach of regional water supply planning.

The IRP Update

In 2001, Metropolitan completed its Strategic Plan, Rate Restructure and IRP Review, all of which provided essential input to the IRP Update. In November 2001 Metropolitan's Board approved an action plan to conduct the first update of the 1996 IRP. The goals of this task were:

- To review the achievements to date, and measure them against the goals adopted in 1996;
- To identify changed conditions that might require adjustments to the adopted plan; and
- To extend the planning period from 2020 through 2025.

During 2002 and the first half of 2003, Metropolitan staff presented reports to its Water Planning, Quality and Resources Board Committee. In August of 2003, Metropolitan circulated a draft Update Report to the member agencies for review and comment. A copy of the report can be found at http://usmet11.mwd.dst.ca.us/idmweb/cache%5C003677571-1.pdf

Results of the IRP Update

The first step of the IRP Update entailed identifying and quantifying the conditions that had changed since the 1996 IRP that could lead to a change in the outlook for supply/demand balance. The most significant change involved increased participation of local agencies in developing local supplies and promoting savings from conservation. The analysis also identified local infrastructure needs, as well as the need to maintain contingency planning that would allow the region the flexibility needed to manage and overcome supply risks.

Metropolitan then used these changed conditions to evaluate the reliability outlook for the region's water supplies and to update the resource plan to provide for 100 percent reliability, assuming a repeat of the historic hydrology through the year 2025. The resulting changes in the IRP resource targets are shown in Table II-1 and serve as the foundation for the planning assumptions used in the RUWMP.

In adopting the IRP update, Metropolitan's Board directed staff to develop a process for annually reporting on the implementation progress in meeting the IRP Update goals.

Table II-1
Comparison of Resource Targets
(Thousand Acre-feet)

Resource	1996 IRP 2020	IRP Update 2020	Change	IRP Update 2025
Local Resources				
Conservation	882	1,028	+146	1,107
Recycling/ Groundwater Recovery/ Desalination	500	750	+250	750
Colorado River Aqueduct*	1,200	1,250	+50	1,250
State Water Project	593	650	+57	650
Conjunctive Use	300	300	0	300
CV Storage and Transfer	300	550	+250	550
MWD Surface Storage**	620	620	0	620

*The 1,250,000 acre-feet supply from the Colorado River Aqueduct is a target for specific year types when needed. Metropolitan is not depending upon a full aqueduct in every year.
**Target for Surface Storage represents the total amount of water that can be extracted from storage.

IRP Update Outreach

In keeping with the practice adopted in the first IRP, the Update process included extensive cooperation among Metropolitan, its member agencies, and other organizations. Table II-2 contains the schedule of meetings and names of the involved stakeholder groups, and Table II-3 contains the schedule of outreach programs that member agencies conducted for the purpose of informing the public and inviting comment.

Table II-2
Stakeholder Participation in IRP Update

Year	Month	Meeting
2001	November December	*SAWPA*[1] *Meeting:* Review and discuss IRP Update process *Northern Caucus*[2] *Meeting*: Review and discuss IRP Update process
2002	January	*Member Agency Managers Meeting*: Review and discuss Jan. Board Report. Sent out *IRP Report Card #1* *SAWPA* Meeting: Review and discuss IRP Update progress
	February	*Member Agency Managers Meeting:* Review and discuss Feb. Board Report Request member agency input/verification on Local Supply Information *SAWPA Meeting:* Review and discuss IRP Update progress
	March	*Member Agency Managers Meeting:* Review and discuss March Board Report *SAWPA Meeting:* Review and discuss IRP Update progress.
	April	*Member Agency Meeting:* Review initial conclusions of IRP *SAWPA Meeting:* Review and discuss IRP Update progress *Central /West Basin Caucus Meeting*[3]*:* Review and discuss IRP Update progress *Southern California Water Dialogue*[4]*:* Review and discuss IRP Update progress
	May	*Member Agency Managers Meeting:* Review and discuss May Board Report *SAWPA Meeting:* Review and discuss IRP Update progress
	September	*Member Agency Technical Review Meeting*: Review Resource Assumptions Sent out *IRP Report Card #2*
	October	*Member Agency Managers Meeting*: Review and discuss local data and buffer scenario[5]
	November	*Member Agency Managers Meeting:* Review and discuss Nov. Board Report *Member Agency Advisory Meeting:* Consensus on buffer
2003	January	*Member Agency Managers Meeting:* Review Final IRP Recommendation with policy question
	August	Sent out draft IRP Update Report for member agency review/comment
	September	*Member Agency Managers Meeting:* Review Draft IRP Update Report *Member Agency Workshop:* Review Draft IRP Update Report

[1] The Santa Ana Watershed Project Authority (SAWPA) includes representation from Inland Empire Utilities Agency, Eastern Municipal Water District, San Bernardino Valley Municipal Water District, Western Municipal Water District, and Orange County Water District

[2] The Northern Caucus consists of managers from member agencies in the north of Metropolitan's service area.

[3] The Central/West Basin Caucus consists of board members and staff from the Central/West Basin sub-agencies.

[4] The Southern California Water Dialogue is a voluntary public group that meets most months to consider issues related to Southern California's future water supply.

[5] A "buffer" of additional recycled water projects were identified that would be considered if proposed recycled water projects failed to be successful.

Source: Metropolitan's Integrated Water Resources Plan Update, July, 2004.

Table II-3
IRP Update Public Outreach 2004

Date	Member Agency	Organization/Audience
Apr. 1	MWDOC (Event #1)	Water Policy Forum
Apr. 7	Western MWD Cal Fed Outreach	Board, public
Apr. 7	Eastern MWD	Board, public, local officials, constituents
Apr. 8	City of Long Beach – IRP Forum	Water Commissioners
Apr. 19	Central Basin MWD/West Basin MWD	Local constituents, elected officials, public
Apr. 20	LADWP – Southern California Water Dialogue	Elected officials, environmental interests, public, LADWP staff, DWR staff
Apr. 22	MWDOC – IRP Forum (Event #2)	Member agencies, public, local officials, staff
Apr. 22	City of Beverly Hills	Commissioners, staff
Apr. 27	San Diego County Water Authority	Board, local agencies, general public
Apr. 28	Three Valleys/IEUA	Board, local agencies, staff, local officials
May 14	MWDOC - Event # 3 Water Advisory Committee of Orange County	Board members, elected officials, city staff, community members
May 19	Foothill MWD	Board, local agencies, general public
May 19	West Basin Water Association	Local boards, elected officials, staff, community leaders
May 24	Calleguas and Las Virgenes	Board, local agencies, general public
June 24	City of Pasadena	Board, general public

Source: Metropolitan's Integrated Water Resources Plan Update, July, 2004.

II.2 Evaluating Supply Reliability

The Act requires that three primary types of planning be performed to evaluate supply reliability as part of the development of an urban water management plan. The first type is a water supply reliability assessment, which requires urban water suppliers to develop a detailed evaluation of the supplies necessary to meet demands over at least a 20-year period in average, single year and multi-year drought conditions. The second type is a water shortage contingency plan that requires agencies to document the stages of actions it would undertake to address up to 50% reduction in its water supplies. Finally, the Act requires that urban water suppliers develop a catastrophic supply interruption plan that documents the actions to be undertaken in the event of a catastrophic interruption in water supplies.

To complete these analyses, estimates of future demands on Metropolitan and projected Metropolitan and local supplies needed to be developed. For the purposes of this report, the supply and demand analyses for the single and multiple year droughts were based on the single driest year and the three-year dry historical periods on the SWP (1977 and 1990-1992 respectively). The SWP was used because it is Metropolitan's largest and most variable supply. For the average year, the analysis used 83 years of historic hydrology (1922 to 2004) to develop estimates of supply and demands.

Estimating Demands on Metropolitan

Estimates of demands on Metropolitan were derived by first estimating total retail demands for the region and then factoring in the impacts of conservation. Next, projections of local supplies were derived using data on current and expected local supply programs and the IRP Local Resource Program Target. The difference between the resulting total demands, including conservation, and local supplies is the expected regional demand on Metropolitan supplies. This estimation of demands on Metropolitan was done for single dry year, multiple dry years and average years. The resulting estimates are shown in Tables II-4 through II-6. The underlying supply assumptions were shared with Metropolitan's member agencies.

Retail Demands

Retail M&I demands represent the full spectrum of water use within the region, including residential, commercial, industrial, institutional and un-metered uses. To forecast urban water demands, Metropolitan used the MWD-MAIN Water Use Forecasting System (MWD-Main) that is a combination of statistical and end-use methods that has been adapted to conditions in Southern California. Population estimates were based on projections developed for the SCAG 2004 Regional Transportation Plan and SANDAG 2030 Forecast. Output from MWD-Main was then adjusted for expected conservation.

Conservation

The forecast of future conservation included a detailed accounting of water conservation that distinguished between:

- *Code-based Conservation* – Water saved as a result of changes in water efficiency requirements for plumbing fixtures in plumbing codes.

- *Active Conservation* – Water saved directly as a result of conservation programs by water agencies (includes implementation of Best Management Practices.)
- *Price-effect Conservation* – Water saved by retail customers attributable to the effect of changes in the real (inflation-adjusted) price of water.

Once the effects of conservation were included in the retail demands, forecasts of local supplies were calculated.

Local Supplies

These forecasts of local supplies was based on information gathered from various sources including past urban water management plans, Metropolitan's annual local supply surveys, and coordination between Metropolitan and member agency staff. For the 2005 RUWMP only existing projects and projects with firm contracts for LRP funding were included. The resulting gap between projected local supplies and IRP targets were assigned to the region as a whole as the remaining IRP Local Resource Program target and not be allocated to particular agencies.

Firm Demands

After the expected regional demands on Metropolitan supplies were calculated, projected firm demands were calculated based on Metropolitan's established reliability goal. For the purposes of reliability planning, the 1996 IRP established a reliability goal that states that full service demands at the retail level would be satisfied under all "foreseeable hydrologic" conditions through 2020. This goal allows for intermittent interruptions to non-firm, discounted rate supplies sold under the Seasonal Storage Program and the Interim Agricultural Water Program. Thus firm demand on Metropolitan equals Full Service demands (Tier I and Tier II) plus 70% of the Interim Agricultural Water Program. For the purpose of analysis, "foreseeable hydrologic conditions" is understood to mean under "historical hydrology" which presently covers the range of historical hydrology spanned from 1922 through 2004. Estimates of firm demands on Metropolitan for single dry year, multiple dry years and average years are shown in Tables II-4 through II-6. For a detailed discussion of the demand forecast see Appendix A-1

Table II-4
Metropolitan Regional Water Demands
Single Dry Year

Total Demands [1]	2010	2015	2020	2025	2030
A. Total Demands	**5,537,000**	**5,742,000**	**5,983,000**	**6,203,000**	**6,412,000**
Retail Agricultural	329,000	294,000	258,000	220,000	199,000
Retail Municipal and Industrial	4,951,000	5,186,000	5,457,000	5,715,000	5,947,000
Groundwater Replenishment	182,000	192,000	198,000	198,000	196,000
Seawater Barrier	75,000	70,000	70,000	70,000	70,000
Conservation	**2010**	**2015**	**2020**	**2025**	**2030**
B. Total Conservation [2]	**865,000**	**955,000**	**1,028,000**	**1,107,000**	**1,188,000**
Existing Active (through 2004) [3]	94,000	92,000	92,000	91,000	91,000
Code-based, Price-Effect, and Remaining IRP Target	521,000	613,000	686,000	766,000	847,000
Pre-1990 Conservation	250,000	250,000	250,000	250,000	250,000
Local Supplies	**2010**	**2015**	**2020**	**2025**	**2030**
C. Total Local Supplies	**2,207,000**	**2,306,000**	**2,536,000**	**2,557,000**	**2,575,000**
Groundwater	1,375,000	1,394,000	1,399,000	1,412,000	1,430,000
Surface Water	93,000	93,000	93,000	93,000	93,000
Los Angeles Aqueduct	96,000	95,000	95,000	95,000	95,000
IRP Local Resource Program Target	13,000	33,000	38,000	37,000	37,000
Groundwater Recovery	82,000	82,000	85,000	85,000	85,000
Total Recycling	329,000	351,000	376,000	377,000	377,000
Desalination	33,000	42,000	142,000	142,000	142,000
Other Imported Supplies	186,000	216,000	308,000	316,000	316,000
Demands on Metropolitan	**2010**	**2015**	**2020**	**2025**	**2030**
D. Total Metropolitan Demands (D=A-B-C)	**2,467,000**	**2,479,000**	**2,414,000**	**2,536,000**	**2,645,000**
Full Service (Tier I and Tier II)	2,224,000	2,242,000	2,186,000	2,329,000	2,462,000
Replenishment Water Rate [4]	144,000	153,000	159,000	159,000	145,000
Interim Agricultural Water Program	99,000	84,000	69,000	48,000	38,000
Firm Demands on Metropolitan [5]	**2,293,000**	**2,301,000**	**2,234,000**	**2,363,000**	**2,489,000**

Notes:
All units are acre-feet unless specified, rounded to the nearest hundred
Totals may not sum due to rounding
(1) Growth Projections: SCAG 2004 Regional Transportation Plan; SANDAG 2030 Forecast
(2) The 2030 savings target is derived from the 2003 IRP Update forecast projections for 2030; it is not an official target for 2030.
(3) Includes code-based savings originated through an active implementation program
(4) Replenishment Water Rate demands include: seasonal shift, groundwater spreading, and groundwater in-lieu
(5) Firm demand on Metropolitan equals Full Service demands plus 70% of the Interim Agricultural Water Program demands

Table II-5
Metropolitan Regional Water Demands
Multiple Dry Year

Total Demands [1]	2010	2015	2020	2025	2030
A. Total Demands	**5,569,000**	**5,812,000**	**6,049,000**	**6,285,000**	**6,502,000**
Retail Agricultural	331,000	297,000	262,000	226,000	202,000
Retail Municipal and Industrial	4,984,000	5,256,000	5,521,000	5,792,000	6,033,000
Groundwater Replenishment	180,000	189,000	196,000	197,000	197,000
Seawater Barrier	74,000	70,000	70,000	70,000	70,000
Conservation	**2010**	**2015**	**2020**	**2025**	**2030**
B. Total Conservation [2]	**865,000**	**955,000**	**1,028,000**	**1,107,000**	**1,188,000**
Existing Active (through 2004) [3]	94,000	92,000	92,000	91,000	91,000
Code-based, Price-Effect, and Remaining IRP Target	521,000	613,000	686,000	766,000	847,000
Pre-1990 Conservation	250,000	250,000	250,000	250,000	250,000
Local Supplies	**2010**	**2015**	**2020**	**2025**	**2030**
C. Total Local Supplies	**2,178,000**	**2,312,000**	**2,545,000**	**2,571,000**	**2,577,000**
Groundwater	1,378,000	1,409,000	1,412,000	1,425,000	1,431,000
Surface Water	78,000	79,000	79,000	79,000	79,000
Los Angeles Aqueduct	97,000	104,000	104,000	108,000	108,000
IRP Local Resource Program Target	13,000	33,000	38,000	37,000	37,000
Groundwater Recovery	80,000	82,000	85,000	85,000	85,000
Total Recycling	323,000	347,000	375,000	377,000	377,000
Desalination	33,000	42,000	142,000	142,000	142,000
Other Imported Supplies	176,000	216,000	310,000	318,000	318,000
Demands on Metropolitan	**2010**	**2015**	**2020**	**2025**	**2030**
D. Total Metropolitan Demands (D=A-B-C)	**2,525,000**	**2,544,000**	**2,474,000**	**2,607,000**	**2,736,000**
Full Service (Tier I and Tier II)	2,306,000	2,329,000	2,267,000	2,418,000	2,559,000
Replenishment Water Rate [4]	119,000	130,000	136,000	137,000	137,000
Interim Agricultural Water Program	100,000	85,000	71,000	52,000	40,000
Firm Demands on Metropolitan [5]	**2,376,000**	**2,389,000**	**2,317,000**	**2,454,000**	**2,587,000**

Notes:
All units are acre-feet unless specified, rounded to the nearest hundred
Totals may not sum due to rounding
(1) Growth Projections: SCAG 2004 Regional Transportation Plan; SANDAG 2030 Forecast
(2) The 2030 savings target is derived from the 2003 IRP Update forecast projections for 2030; it is not an official target for 2030.
(3) Includes code-based savings originated through an active implementation program
(4) Replenishment Water Rate demands include: seasonal shift, groundwater spreading, and groundwater in-lieu
(5) Firm demand on Metropolitan equals Full Service demands plus 70% of the Interim Agricultural Water Program demands

Table II-6
Metropolitan Regional Water Demands
Average Dry Year

Total Demands [1]	2010	2015	2020	2025	2030
A. Total Demands	**5,512,000**	**5,720,000**	**5,956,000**	**6,175,000**	**6,379,000**
Retail Agricultural	319,000	285,000	251,000	215,000	195,000
Retail Municipal and Industrial	4,918,000	5,152,000	5,420,000	5,676,000	5,907,000
Groundwater Replenishment	200,000	213,000	215,000	214,000	207,000
Seawater Barrier	75,000	70,000	70,000	70,000	70,000
Conservation	**2010**	**2015**	**2020**	**2025**	**2030**
B. Total Conservation [2]	**865,000**	**955,000**	**1,028,000**	**1,107,000**	**1,188,000**
Existing Active (through 2004) [3]	94,000	92,000	92,000	91,000	91,000
Code-based, Price-Effect, and Remaining IRP Target	521,000	613,000	686,000	766,000	847,000
Pre-1990 Conservation	250,000	250,000	250,000	250,000	250,000
Local Supplies	**2010**	**2015**	**2020**	**2025**	**2030**
C. Total Local Supplies	**2,411,000**	**2,508,000**	**2,734,000**	**2,755,000**	**2,754,000**
Groundwater	1,416,000	1,430,000	1,431,000	1,444,000	1,442,000
Surface Water	100,000	99,000	99,000	99,000	99,000
Los Angeles Aqueduct	252,000	253,000	253,000	253,000	254,000
IRP Local Resource Program Target	13,000	33,000	38,000	37,000	37,000
Groundwater Recovery	82,000	82,000	85,000	85,000	85,000
Total Recycling	329,000	351,000	376,000	377,000	377,000
Desalination	33,000	42,000	142,000	142,000	142,000
Other Imported Supplies	186,000	218,000	310,000	318,000	318,000
Demands on Metropolitan	**2010**	**2015**	**2020**	**2025**	**2030**
D. Total Metropolitan Demands (D=A-B-C)	**2,237,000**	**2,257,000**	**2,192,000**	**2,312,000**	**2,437,000**
Full Service (Tier I and Tier II)	1,974,000	1,997,000	1,943,000	2,083,000	2,223,000
Replenishment Water Rate [4]	169,000	180,000	183,000	183,000	177,000
Interim Agricultural Water Program	94,000	80,000	66,000	46,000	37,000
Firm Demands on Metropolitan [5]	**2,040,000**	**2,053,000**	**1,989,000**	**2,115,000**	**2,249,000**

Notes:
All units are acre-feet unless specified, rounded to the nearest hundred
Totals may not sum due to rounding
(1) Growth Projections: SCAG 2004 Regional Transportation Plan; SANDAG 2030 Forecast
(2) The 2030 savings target is derived from the 2003 IRP Update forecast projections for 2030; it is not an official target for 2030.
(3) Includes code-based savings originated through an active implementation program
(4) Replenishment Water Rate demands include: seasonal shift, groundwater spreading, and groundwater in-lieu
(5) Firm demand on Metropolitan equals Full Service demands plus 70% of the Interim Agricultural Water Program demands

II.3 Water Supply Reliability

After estimating demands for single dry year, multiple dry years and average years the water reliability analysis requires that urban water suppliers to identify projected supplies to meet these demands. Table II-7 summarizes the sources of supply for the single dry year (1977 hydrology), while Table II-8 shows the region's ability to respond in future years under a repeat of the 1990-92 hydrology. Table II-8 provides results for the average of the three dry years rather than a year-by-year detail, because most of Metropolitan's dry-year supplies are designed to provide equal amounts of water over each year of a three-year period. These tables show that the region can provide reliable water supplies under both the single driest year and the multiple dry year hydrologies. Table II-9 reports the expected situation on average over all of the historic hydrologies. Detailed justifications for the sources of supply used for this analysis are found in Appendix A-3.

The reliability analyses in the IRP Update report showed that Metropolitan can maintain reliable supplies under the conditions that have existed in past dry periods throughout the period 2010 through 2025. As the tables provided below show, that level of reliability extends through 2030. Metropolitan has also identified buffer supplies, including additional SWP groundwater storage and transfers that could serve to supply the additional water needed.

Table II-7
Single Dry-Year
Supply Capability[1] & Potential Reserve or Replenishment
(Repeat of 1977 Hydrology)
(acre-feet per year)

	2010	2015	2020	2025	2030
Current Supplies					
Colorado River Aqueduct [2]	722,000	699,000	699,000	699,000	699,000
California Aqueduct [3]	777,000	777,000	777,000	777,000	777,000
In-Basin Storage	840,000	838,000	808,000	784,000	784,000
Supplies Under Development					
Colorado River Aqueduct	95,000	460,000	400,000	400,000	400,000
California Aqueduct	330,000	259,000	350,000	350,000	350,000
In-Basin Storage	78,000	103,000	103,000	103,000	103,000
Transfers to Other Agencies	0	(35,000)	(35,000)	(35,000)	(35,000)
Metropolitan Supply Capability	***2,842,000***	***3,101,000***	***3,102,000***	***3,078,000***	***3,078,000***
Metropolitan Supply Capability w/CRA Maximum of 1.25 MAF [4]	***2,842,000***	***3,033,000***	***3,002,000***	***2,970,000***	***2,970,000***
Firm Demands on Metropolitan [5,6]	***2,293,000***	***2,301,000***	***2,234,000***	***2,363,000***	***2,489,000***
Potential Reserve & Replenishment Supplies	**549,000**	**732,000**	**768,000**	**607,000**	**481,000**

[1] Represents supply capability for resource programs under listed year type..

[2] Colorado River Aqueduct includes water management program supplies conveyed by the aqueduct

[3] California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct

[4] Maximum CRA deliveries limited to 1.25 MAF including SDCWA/IID Transfer supplies and Coachella and All-American Canals lining supplies.

[5] Based on SCAG 2004 RTP, SANDAG 2030 forecasts, projections of member agency existing and contracted active conservation and local supplies, remaining regional targets for active conservation and local supplies, SDCWA/IID Transfer supplies and Coachella and All-American Canals lining supplies.

[6] Includes projected firm sales plus 70% of projected IAWP agricultural sales

Table II-8
Multiple Dry-Year
Supply Capability[1] & Potential Reserve or Replenishment
(Repeat of 1990-92 Hydrology)
(acre-feet per year)

	2010	2015	2020	2025	2030
Current Supplies					
Colorado River Aqueduct [2]	722,000	699,000	699,000	699,000	699,000
California Aqueduct [3]	912,000	912,000	912,000	912,000	912,000
In-Basin Storage	482,000	480,000	463,000	449,000	449,000
Supplies Under Development					
Colorado River Aqueduct	95,000	460,000	400,000	400,000	400,000
California Aqueduct	330,000	215,000	299,000	299,000	299,000
In-Basin Storage	78,000	103,000	103,000	103,000	103,000
Transfers to Other Agencies	0	(35,000)	(35,000)	(35,000)	(35,000)
Metropolitan Supply Capability	***2,619,000***	***2,834,000***	***2,841,000***	***2,827,000***	***2,827,000***
Metropolitan Supply Capability w/CRA Maximum of 1.25 MAF [4]	***2,619,000***	***2,776,600***	***2,741,000***	***2,719,000***	***2,719,000***
Firm Demands on Metropolitan [5,6]	***2,376,000***	***2,389,000***	***2,317,000***	***2,454,000***	***2,587,000***
Potential Reserve & Replenishment Supplies	**243,000**	**377,000**	**424,000**	**265,000**	**132,000**

[1] Represents supply capability for resource programs under listed year type.
[2] Colorado River Aqueduct includes water management program supplies conveyed by the aqueduct
[3] California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct
[4] Maximum CRA deliveries limited to 1.25 MAF including SDCWA/IID Transfer supplies and Coachella and All-American Canals lining supplies.
[5] Based on SCAG 2004 RTP, SANDAG 2030 forecasts, projections of member agency existing and contracted active conservation and local supplies, remaining regional targets for active conservation and local supplies, SDCWA/IID Transfer supplies and Coachella and All-American Canals lining supplies.
[6] Includes projected firm sales plus 70% of projected IAWP agricultural sales

Table II-9
Average Year
Supply Capability[1] & Potential Reserve or Replenishment
(Average of 1922 – 2004 Hydrologies)
(acre-feet per year)

	2010	2015	2020	2025	2030
Current Supplies					
Colorado River Aqueduct [2]	711,000	678,000	677,000	677,000	677,000
California Aqueduct [3]	1,772,000	1,772,000	1,772,000	1,772,000	1,772,000
In-Basin Storage	0	0	0	0	0
Supplies Under Development					
Colorado River Aqueduct	0	0	0	0	0
California Aqueduct	185,000	185,000	240,000	240,000	240,000
In-Basin Storage	0	0	0	0	0
Transfers to Other Agencies	0	(35,000)	(35,000)	(35,000)	(35,000)
Metropolitan Supply Capability	***2,668,000***	***2,600,000***	***2,654,000***	***2,654,000***	***2,654,000***
Metropolitan Supply Capability w/CRA Maximum of 1.25 MAF [4]	***2,668,000***	***2,600,000***	***2,654,000***	***2,654,000***	***2,654,000***
Firm Demands on Metropolitan [5,6]	***2,040,000***	***2,053,000***	***1,989,000***	***2,115,000***	***2,249,000***
Potential Reserve & Replenishment Supplies	**628,000**	**547,000**	**665,000**	**539,000**	**405,000**

[1] Represents supply capability for resource programs under listed year type.

[2] Colorado River Aqueduct includes water management program supplies conveyed by the aqueduct

[3] California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct

[4] Maximum CRA deliveries limited to 1.25 MAF including SDCWA/IID Transfer supplies and Coachella and All-American Canals lining supplies.

[5] Based on SCAG 2004 RTP, SANDAG 2030 forecasts, projections of member agency existing and contracted active conservation and local supplies, remaining regional targets for active conservation and local supplies, SDCWA/IID Transfer supplies and Coachella and All-American Canals lining supplies.

[6] Includes projected firm sales plus 70% of projected IAWP agricultural sales

II.4 Water Shortage Contingency Analysis

In addition to the Water Supply Reliability analysis addressing average year and drought conditions, the Act requires agencies to document the stages of actions that it would undertake in response to water supply shortages, including up to a 50% reduction in its water supplies. For Metropolitan this planning is captured in its Water Surplus and Drought Management Plan (WSDM Plan) which guides Metropolitan's planning and operations during both shortage and surplus conditions.

Water Surplus and Drought Management Plan

In April of 1999, Metropolitan's Board of Directors adopted the Water Surplus and Drought Management Plan (WSDM Plan). This plan provides policy guidance for management of regional water supplies to achieve the reliability goals of Southern California's Integrated Resources Plan (IRP). It identifies the expected sequence of resource management actions that Metropolitan will execute during surpluses and shortages to minimize the probability of severe shortages and eliminate the possibility of extreme shortages and shortage allocations. Unlike Metropolitan's previous shortage management plans, the WSDM Plan recognizes the link between surpluses and shortages, and it integrates planned operational actions with respect to both conditions.

Through effective management of its water supply, Metropolitan fully expects to be 100 percent reliable in meeting all non-discounted non-interruptible demands throughout the next twenty five years. The benefits of Metropolitan's contingency planning approach have been evident in recent years. Of particular note are the region's successes in dealing with operational constraints such as the rehabilitation of the Colorado River Aqueduct in 2003, the disruption to Delta diversions caused by the Jones Tract flooding in 2004, and the strong position of local storage despite five years of dry conditions.

WSDM Plan Development

Metropolitan and its member agencies jointly developed the WSDM Plan during 1998 and 1999. This planning effort included more than a dozen half-day and full-day workshops and more than three dozen meetings of Metropolitan and member agency staff. The result of the planning effort is a consensus plan addressing a broad range of regional water management actions and strategies.

WSDM Plan Principles and Goals

The guiding principle of the WSDM plan is to manage Metropolitan's water resources and management programs to maximize management of wet year supplies and minimize adverse impacts of water shortages to retail customers. From this guiding principle come the following supporting principles:

- Encourage efficient water use and economical local resource programs.
- Coordinate operations with member agencies to make as much surplus water as possible available for use in dry years.

- Pursue innovative transfer and banking programs to secure more imported water for use in dry years.
- Increase public awareness about water supply issues.

The WSDM plan also declared that if mandatory import water allocations be necessary, they would be calculated on the basis of need, as opposed to any type of historical purchases. The WSDM plan contains the following considerations that would go into an equitable allocation of imported water:

- Impact on retail consumers and regional economy
- Investments in local resources, including recycling and conservation
- Population growth
- Changes and/or losses in local supplies
- Participation in Metropolitan's Non-firm (interruptible) programs
- Investment in Metropolitan's facilities.

Surplus and Shortage Stages

The WSDM Plan distinguishes between *Surpluses*, *Shortages*, *Severe Shortages*, and *Extreme Shortages*. Within the WSDM Plan, these terms have specific meanings relating to Metropolitan's ability to deliver water to its customers.

Surplus: Metropolitan can meet full-service and interruptible program demands, and it can deliver water to local, regional and out-of-region storage.

Shortage: Metropolitan can meet full-service demands and partially meet or fully meet interruptible demands, using stored water or water transfers as necessary.

Severe Shortage: Metropolitan can meet full-service demands only by using stored water, transfers, and possibly calling for extraordinary conservation. In a Severe Shortage, Metropolitan may have to curtail Interim Agricultural Water Program deliveries.

Extreme Shortage: Metropolitan must allocate available supply to full-service customers.

The WSDM Plan also defines five surplus management stages and seven shortage management stages to guide resource management activities. These stages are not defined merely by shortfalls in imported water supply, but also by the water balances in Metropolitan's storage programs. Thus, a ten percent shortfall in imported supplies could be a stage one shortage if storage levels are high. If storage levels are already depleted, the same shortfall in imported supplies could potentially be defined as a more severe shortage. Each year, Metropolitan evaluates the level of supplies available and existing levels of water in storage to determine the appropriate management stage for that year. Each stage is associated with specific resource management actions designed to (1) avoid an Extreme Shortage to the maximum extent possible and (2) minimize adverse impacts to retail customers if an Extreme Shortage occurs. The current sequencing outlined in the WSDM Plan reflects anticipated responses based on detailed modeling of Metropolitan's existing and expected resource mix.

Surplus Stages

Metropolitan's supply situation is considered to be in surplus as long as net annual deliveries can be made to water storage programs. Deliveries for storage in the Diamond Valley Lake and in the SWP terminal reservoirs continue through each surplus stage, provided that there is available storage capacity. Withdrawals from Diamond Valley Lake for regulatory purposes or to meet seasonal demands may occur in any stage. Deliveries to other storage facilities may be interrupted, depending on the amount of the surplus.

Shortage Actions

When Metropolitan must make net withdrawals from storage to meet demands, it is considered to be in a shortage condition. Under most of these stages, it is still able to meet all end-use demands for water. For shortage stages 1 through 4, Metropolitan will meet demands by withdrawing water from storage. At shortage stages 5 through 7, Metropolitan may undertake additional shortage management steps, including issuing public calls for extraordinary conservation, considering curtailment of Interim Agricultural Water Program deliveries in accordance with their discounted rates, exercise water transfer options, purchase water on the open market.

At shortage stage 7 Metropolitan will develop a plan to allocate available supply fairly and efficiently to full-service customers. The allocation plan will be based on the Board-adopted principles for allocation**.** Metropolitan intends to enforce these allocations using rate surcharges. Under the current WSDM Plan, the surcharges will be set at a minimum of $175 per af for any deliveries exceeding a member agency's allotment. *Any deliveries exceeding 102% of the allotment will be assessed a surcharge equal to three times Metropolitan's full-service rate.*

Figure II-1 shows the actions under each surplus and shortage stage, as well as the transitions to each supply declaration. Metropolitan will declare a shortage whenever water supply conditions require resource management activities included in Shortage Stages 1-4. Metropolitan will declare a Severe Shortage if supply conditions require undertaking actions in Shortage Stages 5-6. Finally, Metropolitan will declare an Extreme Shortage if Shortage Stage 7 actions are required. The overriding goal of the WSDM Plan is to never reach Shortage Stage 7, an Extreme Shortage. Given present resources, Metropolitan fully expects to achieve this goal over the next twenty five years.

Annual Reporting Schedule on Supply/Demand Conditions

Managing Metropolitan's water supply resources to minimize the risk of shortages requires timely and accurate information on changing supply and demand conditions throughout the year. To facilitate effective resource management decisions, the WSDM Plan includes a monthly schedule for providing supply/demand information to Metropolitan's senior management and Board of Directors, and for making resource allocation decisions. This schedule is shown in Table II-10.

Figure II-1
Resource Stages, Anticipated Actions, And Supply Declarations

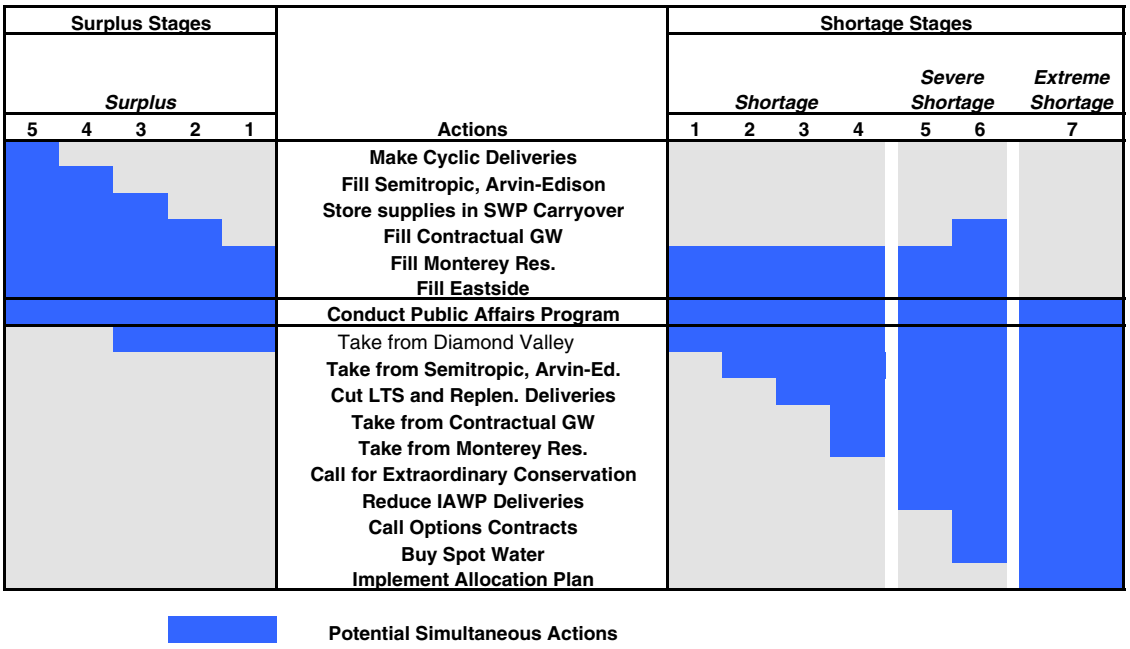

Table II-10
Schedule of Reporting and Resource Allocation Decision-Making

Month	Informational Report/Management Decision
Jan.	Initial supply/demand forecasts for year
Feb.-Mar.	Update supply/demand forecasts for year
Apr.-May	Finalize supply/demand forecasts Management decisions re: Contractual Groundwater and Option Transfer Programs Board decisions re: Need for Extraordinary Conservation
Oct.	Report on Supply and Carryover Storage
Nov.	Management decisions re: Long-Term Seasonal and Replenishment Groundwater Programs, Interruptible Agricultural Water Program

II.5 Catastrophic Supply Interruption Planning

The third type of planning be performed to evaluate supply reliability is a catastrophic supply interruption plan that document the actions to be undertaken to prepare for and implemented during a catastrophic interruption in water supplies. For Metropolitan this planning is captured in the analysis to develop its Emergency Storage Requirements.

Emergency Storage Requirements

Metropolitan's criteria for determining emergency storage requirements were established in the October 1991 Final Environmental Impact Report for the Eastside Reservoir, which is now named Diamond Valley Lake. They were again discussed in Southern California's 1996 Integrated Resources Plan. Metropolitan's Board has approved both of these documents. These emergency storage requirements are based on the potential of a major earthquake damaging the aqueducts that transport Southern California's imported water supplies (SWP, CRA, and Los Angeles Aqueduct). The adopted criteria assume that damage from such an event could render the aqueducts out of service for six months. Metropolitan's planning, therefore, is based on 100 percent reduction in its supplies for a period of six months. Metropolitan's emergency planning is based on a greater shortage than required by the Act.

To safeguard the region from catastrophic loss of water supply, Metropolitan has made substantial investments in emergency storage. The emergency plan outlines that under such a catastrophe, interruptible service deliveries would be suspended, and firm supplies to member agencies would be restricted by a mandatory cutback of 25 percent from normal-year demand levels. At the same time, water stored in surface reservoirs and groundwater basins under Metropolitan's interruptible program would be made available, and Metropolitan would draw on its emergency storage, as well as other available storage. Metropolitan has reserved approximately half of Diamond Valley Lake storage to meet such an emergency, while the remainder is available for dry-year and seasonal supplies. In addition, Metropolitan has access to emergency storage at its other reservoirs, at the SWP terminal reservoirs, and in its groundwater conjunctive use storage accounts. With few exceptions, Metropolitan can deliver this emergency supply throughout its service area via gravity, thereby eliminating dependence on power sources that could also be disrupted by a major earthquake. The WSDM Plan shortage stages will guide Metropolitan's management of available supplies and resources during the emergency to minimize the impacts of the catastrophe. For further discussion see Appendix A.3-3.

In addition to the criteria used to develop the emergency storage requirements, in 2005, Metropolitan cooperated with DWR and others on a preliminary study of the potential effects of extensive levee failures in the Delta.(1) This study was limited in scope, and investigated only two of a potential range of scenarios. Metropolitan's analysis showed that its investment in local storage and water banking programs south of the Delta would provide it with the resources necessary to continue to operate under the scenarios investigated. In particular, Metropolitan's analysis showed that it would be able to supply all firm requirements to its member agencies under both scenarios, but that it would need to interrupt replenishment deliveries to the area's groundwater basins and curtail water supplies to one third of the interruptible agriculture within its service territory. Metropolitan's analysis further suggested that the scenarios investigated

were not the worst-case situation. Under more extreme hydrologies, Metropolitan might have to reduce firm deliveries to Metropolitan's member agencies by as much as 10 percent.

Electrical Outages

Metropolitan has also developed contingency plans that enable it to deal with both planned and unplanned electrical outages. These plans include the following key points:

- In event of power outages, water supply can be maintained by gravity feed from Diamond Valley Lake.
- Maintaining water treatment operations is a key concern. As a result, all Metropolitan treatment plants have backup generation sufficient to continue operating in event of supply failure on the main electrical grid.
- Valves at Lake Skinner can be operated by the backup generation at the Lake Skinner treatment plant.
- Metropolitan owns mobile generators that can be transported quickly to key locations if necessary.

II.6 Other Supply Reliability Risk*s*

In its IRP Update, Metropolitan identified two risks to its future supply reliability:

1. Implementation Risk. For local programs, Metropolitan has taken a region-wide, competitive approach to securing new supplies. This approach encourages innovation, and as a result some projects could either fail to meet their expected contribution to the IRP goals, or they could fail to do so in the expected timeframe. In addition, programs related to imported water supplies may not perform as expected.

2. Water Quality Issues. Concerns relating to water quality could pose an increasing challenge for water supply reliability. Water quality issues might threaten existing supplies through contamination, or water quality standards may become more stringent because of changing water quality regulation or the discovery of a previously unknown risk. These events may lead to the loss of a water supply source or a reduction in a source's usefulness because of a need to blend supplies to meet water quality standards.

The amount of water at risk because of these concerns cannot be quantified with current knowledge. To reduce the likelihood of such shortfalls, the IRP Update instituted a planning buffer of up to ten percent of regional demands. This buffer calls for the identification of an additional 500 taf of contingency supplies above that needed to meet demands in 2025. The buffer supplies would include an equal proportion of local and imported supplies. Projects that are identified as buffer supplies may not be implemented, or may be implemented in part or in whole depending on future conditions and future Board actions. However, identifying these supplies will allow more speedy response to events that might otherwise compromise regional reliability.

Climate Change

Another potential risk to future water supply reliability is posed by climate change. In recent years, as the science of climate change has become more broadly accepted and potential widespread implications to water resources have been identified, the issue has been brought to the forefront. As a major steward of the region's water supply resources, Metropolitan is committed to performing its due diligence with respect to climate change.

Current scientific research suggests that increasing concentrations of atmospheric greenhouse gases are already producing global-scale temperature and precipitation changes. Global climate models predict that by the end of the century, average winter temperatures could increase by more than 7º Fahrenheit, and summer temperatures by as much as 18º Fahrenheit. The results of precipitation studies have been less definitive and vary widely between models and scenarios, predictions range from slight increases in precipitation to decreases of up to 30 percent.

Potential Impacts

While uncertainties remain regarding the exact timing, magnitude, and regional impacts of these temperature and precipitation changes, researchers have identified several areas of concern for California water planners. These include:

- reduction of Sierra Nevada snowpack
- increased intensity and frequency of extreme weather events, and
- rising sea levels resulting in
  - increased risk of damage from storms, high-tide events, and the erosion of levees, and
  - potential pumping cutbacks on the State Water Project (SWP) and Central Valley Project (CVP).

Other important issues of concern due to global climate change include:

- effects on local supplies such as groundwater
- changes in urban and agricultural demand levels and patterns
- impacts to human health from water-borne pathogens and water quality degradation
- declines in ecosystem health and function
- alterations to power generation and pumping regimes.

Metropolitan's Activities

An extended Colorado River drought put climate change on Metropolitan's radar screen in the mid-1990s. Metropolitan's board was briefed on the potential impacts of climate change on water supply by leading experts in the field in 2000. Metropolitan then hosted a California Water Plan meeting on climate change and a held Drought Preparedness Workshop on similar issues. In March 2002, the Board adopted policy principles on global climate change as related to water resource planning. The Principles stated in part that 'Metropolitan supports further research into the potential water resource and quality effects of global climate change, and supports flexible "no regret" solutions that provide water supply and quality benefits while increasing the ability to manage future climate change impacts.'

In support of the policy principles, Metropolitan has participated in or attended numerous regional, state and national climate change studies and workshops. These workshops include those held by Universities, State Agencies such as the California Energy Commission (CEC) and DWR, and national workshops such as those held by the American Water Works Association Research Foundation (AWWARF) and the National Center for Atmospheric Research. Most recently, Metropolitan helped sponsor and participated in a large international conference held in Orange County by GEWEX (the Global Energy and Water Experiment). Metropolitan's Chairman of the Board was the Keynote speaker, discussing the kinds of climate change information most helpful to water agencies.

Metropolitan's Integrated Resources Planning was recently featured as a regional utility case study for adapting to climate change. The case study, in AWWARF's *Climate Change and Water Resources: A Primer for Municipal Water Providers*, highlights several examples of how Metropolitan, in conjunction with its member agencies, is expanding its supply portfolio to maintain reliability and flexibility. This portfolio includes conservation and recycling, groundwater conjunctive use, transfer programs, and storage and conveyance facilities such as Diamond Valley Lake and the nearly completed Inland Feeder.

Looking Ahead

As the water industry begins to address the potential impacts of climate change, several challenges and uncertainties must be overcome. Among these challenges is understanding the impact of climate change on precipitation. While many climate models show precipitation decreasing in response to climate change, others show precipitation increasing. This discrepancy has major implications in terms of water supply impacts. Another challenge is translating the global climate impacts to regional impacts, a process called "downscaling". More research is needed to generate reliable watershed-level climate and hydrological information useful to water agencies. A major challenge for Metropolitan in assessing potential impacts is that our region's water supplies are derived from four geographically unique watersheds, managed by numerous federal, state and regional agencies.

Moving forward, a number of State and Federal agencies, stakeholders, universities, and other entities are beginning to perform and fund the kind of research needed to better understand the potential impacts of climate change on the State's water supply resources. Several of Metropolitan's member agencies are also beginning to address climate change impacts. Metropolitan realizes the importance of planning for future uncertainties, but is also bound by the need to be prudent and fiscally responsible to its customers. We hope to see improvements in climate change science and modeling techniques and/or technology that will enable us to make sound policy and practical decisions in the future.

II.7 Pricing and Rate Structures

General Overview of MWD Rate Structure

This section provides an overview of Metropolitan's rate structure. The rate structure is designed to accomplish the following:

- Accountability - Define the linkage among costs, charges, and benefits through a cost of service approach consistent with industry guidelines and practices;
- Regional Provider - Ensure that regional services meet the existing and future needs of member agencies;
- Equity - Ensure that users, including member agencies and other entities, pay the same rates and charges for like classes of services and provide fair allocation of costs through rates and charges;
- Environmental Responsibility - Encourage wise environmental stewardship and effective demand management by funding conservation and recycling projects and programs, and use pricing to encourage investments in conservation, recycling and other economical local supplies;
- Choice and Competition - Offer choices for services to member agencies and accommodate the development of a water transfer market;
- Water Quality - Support source quality improvements and water treatment systems that are required to ensure safe drinking water and are required to make of water recycling and groundwater management programs feasible; and
- Financial Integrity - Establish a financial commitment from the member agencies that provides financial security for Metropolitan and does not transfer undue risk to member agencies.

The rate structure includes the following benefits to how Metropolitan recovers the cost of providing services:

- The water rate used in the previous rate structure is unbundled into separate rates for supply, conveyance and distribution, water stewardship and power;
- A tiered pricing structure encourages the development of cost-effective local water resources, including conservation, water recycling, groundwater recycling and desalination. In addition, member agencies with increasing demands for Metropolitan system supplies will pay a larger proportion of the cost of developing supply;
- A Capacity Charge allocates a greater share of the cost of peak distribution capacity to member agencies that cause the greatest peak demands on the system; and

- A water stewardship rate provides a dedicated source of funding for the continuation of regional investments in conservation and recycling and other economical local resources.

Revenue Management

A high proportion of Metropolitan's revenues comes from volumetric water rates. As a result, Metropolitan's revenues can vary according to regional weather and the availability of statewide water supplies. In dry years, local demands increase and Metropolitan may receive revenues in excess of its cost of service. In contrast, in wet years demands will decrease, and revenues may be below the cost of service. In addition, statewide supply shortages such as those in 1991 could cause a decrease in Metropolitan's revenues. Such revenue surpluses and shortages could cause instability in water rates and in Metropolitan's financial condition. To mitigate this risk, Metropolitan maintains reserves, with a minimum and maximum balance, to stabilize water rates during times of reduced water sales. The reserves hold revenues collected during times of high demand and are used to offset the need for revenues during times of low sales.

Rate Structure Components

The different elements of the rate structure are discussed below and summarized in Table II-11.

System Access Rate (SAR)
The SAR recovers the cost of the conveyance and distribution system that is used on an average annual basis through a uniform volumetric rate. All users pay the SAR for access to conveyance and distribution capacity in the Metropolitan system.

The SAR is charged for each acre-foot of water conveyed and distributed by Metropolitan. All users (member agencies and third parties) using the Metropolitan system to convey water pay the same SAR for the use of the system conveyance and distribution capacity used to meet average annual demands.

Water Stewardship Rate (WSR)
The WSR provides a dedicated source of funding for conservation and local resources development. The WSR supports Metropolitan's funding of future conservation and local supply projects. Because of the uniform benefits (e.g. greater available system capacity through reduced use by others) conferred on all system users by investments in conservation and local resources, all users of Metropolitan's conveyance and distribution system pay the water stewardship rate.

Table II-11
Rate Structure Components

Rate Design Elements	Service Provided/ Costs Recovered	Type of Charge
System Access Rate	Conveyance/Distribution (Average Capacity)	Volumetric ($/af)
Water Stewardship Rate	Conservation/Local Resources	Volumetric ($/af)
System Power Rate	Power	Volumetric ($/af)
Treatment Surcharge	Treatment	Volumetric ($/af)
Capacity Charge	Peak Distribution Capacity	Fixed/Volumetric ($/cfs)
Readiness-To-Serve Charge	Conv./Distr./Emergency Storage(Standby Capacity)	Fixed ($Million)
Tier 1 Supply Rate	Supply	Volumetric/Fixed ($/af)
Tier 2 Supply Rate	Supply	Volumetric ($/af)
Surplus Water Rates	Replenishment/Agriculture	Volumetric ($/af)

System Power Rate (SPR)
The SPR recovers the costs of energy required to pump water to Southern California through the State Water Project and Colorado River Aqueduct. The cost of power is recovered through a uniform volumetric rate. The SPR is applied to all deliveries to member agencies. Wheeling parties will pay for the actual cost (not system average) of power needed to move the water. For example, water wheeled through the California Aqueduct would pay the actual variable power cost incurred by DWR to move the water.

Treatment Surcharge
The treatment surcharge recovers the costs of providing treated water service through a uniform, volumetric rate.

Capacity Charge
The capacity charge is levied on the maximum summer day demand placed on the system between May 1 and September 30 for the three previous calendar-years. Demands measured for the purposes of billing the capacity charge include all firm demand and agricultural demands as well as wheeling service. Because it is interruptible with 24 hours notice, replenishment service is not included in the measurement of peak day demand for purposes of billing the capacity

charge. A member agency can reduce its capacity charge payments by reducing peak day demands on the system.

Readiness-To-Serve Charge (RTS)
The RTS is a fixed charge (currently totaling $80 million) that recovers the cost of the portion of system conveyance, and storage capacity that is on standby to provide emergency service and operational flexibility.

The total RTS charge is allocated among the member agencies based on a ten-calendar-year rolling average of firm demands. Replenishment and agricultural deliveries are excluded, while water transfers and exchanges are included for purposes of calculating the ten-year rolling average used to allocate the RTS. At the option of the member agencies, a per-parcel standing charge is collected to offset a portion of the RTS obligation.

Tier 1 Supply Rate
The costs of maintaining existing supplies and developing additional supplies are recovered through a two-tiered pricing approach. The Tier 1 Supply Rate recovers the majority of the supply revenue requirement and reflects the cost of existing supplies. The amount of water an agency can purchase under the lower Tier 1 rate is determined by its base demand and whether or not the agency has chosen to sign a Purchase Order with Metropolitan. An agency's base demand is determined by the maximum annual amount of firm delivery purchased from Metropolitan in the 13 years ending June 30, 2002. Member agencies can choose to execute a Purchase Order that commits the agency to purchase a minimum average level of 60 percent of their base demand over the ten year period ending 2012. Thus, if an agency's base demand was 20 taf, an executed Purchase Order would commit the agency to purchasing a total of 120 taf over the period 2003-2012 (20 taf base demand x 60 percent x 10 years). Member agencies with a Purchase Order can purchase up to 90 percent of their base demand at the Tier 1 rate, and any remaining needs would be purchased at the higher Tier 2 rate. Member agencies without a Purchase Order can pay the Tier 1 Supply Rate for firm demands up to 60 percent of their base demand, and pay the higher Tier 2 rates for the remainder of their purchases.

Tier 2 Supply Rate
The Tier 2 Supply Rate is set at Metropolitan's cost of developing new supply which has the effect of encouraging the member agencies and their customers to protect existing local supplies and develop cost-effective local supply resources and conservation. The Tier 2 Supply Rate also recovers a greater proportion of the cost of developing additional supplies from member agencies that have increasing demands on the Metropolitan system. Therefore, the Tier 2 Supply Rate partially addresses customer equity between member agencies that are not increasing their demands on the system and member agencies that continue to need additional imported water supplies.

As described above, the Tier 2 Supply Rate will be charged to all firm water sales above 60 percent of a member agency's base demand, unless the member agency elected to execute a Purchase Order. If a member agency submits a Purchase Order, it will pay the Tier 2 Supply Rate for all firm demands that exceed 90 percent of its base demand.

Replenishment Program and Agricultural Water Program

Metropolitan currently administers two pricing programs that make surplus system supplies (system supplies in excess of what is needed to meet consumptive municipal and industrial demands) available to the member agencies at a discounted water rate. The replenishment program provides surplus system supplies, when available, for the purpose of replenishing local storage. The interim agricultural water program also makes surplus system water available for agricultural purposes.

The following tables provide further information regarding Metropolitan's rates. Table II-12 summarizes the rates and charges to be effective January 1, 2005. Average costs by member agency will vary depending upon an agency's RTS allocation, capacity charge and relative proportions of treated and untreated Tier 1, Tier 2, Long-term Seasonal Storage, and agricultural water purchases. Table II-13provides a snapshot of the Capacity Charge, calculated for Calendar Year 2005. Table II-14 provides the details of the Readiness-to-Serve charge calculation broken down by member agency. Table II-15 provides the current Purchase Order commitment quantities by member agency.

Table II-12
Rates and Charges Summary

Rate Categories **Volumetric ($/af) unless otherwise noted)**	**Effective 1/1/2005**	**Effective 1/1/2006**
Water Supply Rate		
Tier 1	$73	$73
Tier 2	$154	$169
System Access Rate	$152	$152
Water Stewardship Rate	$25	$25
System Power Rate	$81	$81
Full Service Untreated Volumetric Cost		
Tier 1	$331	$331
Tier 2	$412	$427
Treatment Surcharge	$112	$122
Full Service Treated Volumetric Cost		
Tier 1	$443	$453
Tier 2	$524	$549
Other Volumetric		
Replenishment Water Rate: untreated	$238	$238
Interim Agricultural Water Program: untreated	$241	$241
Treated Replenishment Water Rate	$325	$335
Treated Interim Agricultural Water Program	$329	$339
Other Charges (non-volumetric)		
Readiness-to-Serve Charge (Total charge in $millions, allocated to members by share of 10 year demands)	$80	$80
Capacity Charge Three-year average of peak day demands($/cfs)	$6,800	$6,800

Table II-13
Capacity Charge Detail

	Peak Day Demand (cfs) (May 1 through September 30) Calendar Year				
AGENCY	2001	2002	2003	3-Year Peak	Calendar Year 2005 Capacity Charge ($6,800/cfs)
Anaheim	56.5	54.3	43.7	56.5	$ 384,200
Beverly Hills	32.3	30.1	29.6	32.3	219,640
Burbank	36.6	38.2	41.1	41.1	279,480
Calleguas	240.9	258.5	262.6	262.6	1,785,680
Central Basin	122.1	119.2	133.4	133.4	907,120
Compton	7.6	9.6	11.7	11.7	79,560
Eastern	186.6	204.3	219.0	219.0	1,489,200
Foothill	23.8	21.7	26.0	26.0	176,800
Fullerton	24.2	27.6	24.8	27.6	187,680
Glendale	58.6	56.3	60.0	60.0	408,000
Inland Empire	171.8	155.3	182.9	182.9	1,243,720
Las Virgenes	35.8	43.5	36.9	43.5	295,800
Long Beach	60.6	51.7	86.6	86.6	588,880
Los Angeles	404.9	645.0	671.1	671.1	4,563,480
MWDOC	452.7	479.2	520.0	520.0	3,536,000
Pasadena	43.2	75.5	57.1	75.5	513,400
San Diego [1]	1084.6	1241.4	1240.6	1296.0	8,812,800
San Fernando	0.1	0.0	0.0	0.1	680
San Marino	2.7	6.8	6.5	6.8	46,240
Santa Ana	24.8	39.6	28.8	39.6	269,280
Santa Monica	23.9	28.5	36.9	36.9	250,920
Three Valleys	188.3	203.8	211.0	211.0	1,434,800
Torrance	44.4	38.8	43.4	44.4	301,920
Upper San Gabriel	32.5	45.3	70.9	70.9	482,120
West Basin	248.3	256.0	260.5	260.5	1,771,400
Western	246.1	262.6	251.5	262.6	1,785,680
Total	**3,854**	**4,393**	**4,557**	**4,679**	**$ 31,814,480**

(1) San Diego capacity set at 1,296 cfs per surface storage operating agreement terms

Table II-14
Readiness-to-Serve Charge (by Member Agency)

Member Agency	Rolling Ten-Year Average Firm Deliveries (Acre-Feet) FY1992/93 - FY2001/02	RTS Share	6 months @ $80 million per year (7/04-12/04)	Rolling Ten-Year Average Firm Deliveries (Acre-Feet) FY1993/94 - FY2002/03	RTS Share	6 months @ $80 million per year (1/05-6/05)	Total RTS Charge
Anaheim	17,356	1.12%	$ 446,116	17,464	1.09%	$ 435,120	$ 881,236
Beverly Hills	13,301	0.85%	341,899	13,363	0.83%	332,960	674,859
Burbank	14,120	0.91%	362,930	13,514	0.84%	336,719	699,650
Calleguas MWD	95,365	6.13%	2,451,255	97,828	6.09%	2,437,467	4,888,722
Central Basin MWD	63,983	4.11%	1,644,617	64,476	4.02%	1,606,477	3,251,094
Compton	4,006	0.26%	102,968	3,733	0.23%	93,014	195,981
Eastern MWD	58,751	3.78%	1,510,133	62,106	3.87%	1,547,431	3,057,565
Foothill MWD	9,358	0.60%	240,530	9,675	0.60%	241,057	481,587
Fullerton	7,427	0.48%	190,904	7,738	0.48%	192,802	383,706
Glendale	27,151	1.74%	697,879	26,752	1.67%	666,552	1,364,431
Inland Empire Utilities Agency	44,473	2.86%	1,143,137	47,034	2.93%	1,171,888	2,315,024
Las Virgenes MWD	19,801	1.27%	508,957	20,184	1.26%	502,896	1,011,854
Long Beach	37,953	2.44%	975,531	37,670	2.35%	938,575	1,914,106
Los Angeles	190,217	12.22%	4,889,336	202,968	12.64%	5,057,144	9,946,480
Municipal Water District of Orange County	213,813	13.74%	5,495,840	216,197	13.47%	5,386,753	10,882,593
Pasadena	16,274	1.05%	418,304	17,963	1.12%	447,563	865,867
San Diego County Water Authority	414,479	26.63%	10,653,763	432,316	26.93%	10,771,569	21,425,332
San Fernando	76	0.00%	1,961	61	0.00%	1,520	3,481
San Marino	1,168	0.08%	30,025	1,111	0.07%	27,674	57,699
Santa Ana	11,670	0.75%	299,971	11,784	0.73%	293,600	593,571
Santa Monica	9,134	0.59%	234,791	9,907	0.62%	246,847	481,638
Three Valleys MWD	63,146	4.06%	1,623,095	65,362	4.07%	1,628,560	3,251,655
Torrance	21,416	1.38%	550,464	21,527	1.34%	536,359	1,086,823
Upper San Gabriel Valley MWD	9,172	0.59%	235,760	10,220	0.64%	254,646	490,406
West Basin MWD	147,247	9.46%	3,784,845	146,263	9.11%	3,644,289	7,429,135
Western MWD	45,323	2.91%	1,164,988	48,183	3.00%	1,200,519	2,365,506
MWD Total	1,556,178	100.00%	$ 40,000,000	1,605,396	100.00%	$ 40,000,000	$ 80,000,000

Table II-15
Purchase Order Commitments and Tier 1 Limits
(by Member Agency)

	Tier 1 Annual Limit	Purchase Order Commitment (acre-feet)
Anaheim	22,240	148,268
Beverly Hills	13,380	89,202
Burbank	16,336	108,910
Calleguas	103,801	692,003
Central Basin	72,360	482,400
Compton	5,058	33,721
Eastern	75,700	504,664
Foothill	10,997	73,312
Fullerton	11,298	75,322
Glendale	26,221	174,809
Inland Empire	59,752	398,348
Las Virgenes	20,565	137,103
Long Beach	39,471	263,143
Los Angeles	304,970	2,033,132
MWDOC	222,924	1,486,161
Pasadena	21,180	141,197
San Diego	500,705	3,338,035
San Fernando	630	-
San Marino	1,199	-
Santa Ana	12,129	80,858
Santa Monica	11,109	74,062
Three Valleys	70,400	469,331
Torrance	20,967	139,780
Upper San Gabriel	16,511	110,077
West Basin	156,874	1,045,825
Western	58,769	391,791
Total	**1,875,546**	**12,491,453**

II.8 Public Participation

Because of the diverse needs, interests, and institutional entities within the region, the IRP goals will only be achieved through an open and participatory process that involves the major stakeholders. The IRP process reached out to water managers, policy decision-makers, interest groups, and individuals. They provided valuable input and guidance regarding the preferred water resource strategy and carefully reviewed the technical analyses supporting the decision-making process. The 1996 IRP and the IRP Update contain details of the public participation.

Public involvement in Metropolitan's planning process continues and has been an integral part of the development of this UWMP report. In September 2004, Metropolitan kicked off the update of its Regional Urban Water Management Plan with a meeting at Metropolitan's headquarters. At that meeting an initial draft data set of demographics, total demands after conservation, local supplies, and demands on Metropolitan at the member agency and regional levels was distributed. In addition, Metropolitan staff held over 20 meetings with 14 different member agencies to review the initial draft data set. Based on these meetings a final draft data set was distributed to the member agencies in August 2005.

Additionally, a draft copy of the RUWMP was distributed to the member agencies in May 2005. Following the distribution, a series of six workshops, hosted by the member agencies, were held to review and take comment on the draft report from member agencies and their subagencies. The number of workshops was increased from the last update to keep the number of participants at each meeting low to better encourage an interactive review process. After incorporating member and sub-agency input, the staff presented the revised report at a public meeting and solicited public comment. Table II-16 lists the meetings held and the member agencies that attended.

Table II-16
Regional Urban Water Management Plan
Workshop Schedule

Date of Meeting	Member Agencies Attending
May 23	San Diego County Water Authority
May 25	Western MWD, Eastern MWD
June 6	Municipal Water District of Orange County, Santa Ana, Anaheim, Fullerton
June 7	Los Angeles Department of Water and Power, Beverly Hills, Burbank, Glendale, Pasadena, Santa Monica, San Fernando, Long Beach, Compton, Torrance
June 9	Three Valleys Municipal Water District, Inland Empire Utilities Agency, San Marino, Upper San Gabriel MWD, Foothill MWD
June 13	Las Virgenes MWD
June 2	West Basin and Central Basin

Staff also made a presentation on the draft to the Southern California Water Dialogue. Members were invited to comment on the soon to be released draft document and were encouraged to attend and make comments at the public meeting.

In summary, a number of agencies and groups were involved in the preparation of this Urban Water Management Plan:

Water Agencies were contacted for assistance, assisted in plan development, received a copy of draft documents, commented on those documents, were invited to and attended the public meeting, and were sent notice of the intention to adopt.

Relevant Public Agencies such as cities and counties received a copy of the final draft document, were invited to comment on those documents, were invited to attend the public meeting, and were sent notice of the intention to adopt.

Other Groups such as the Southern California Water Dialog, received a presentation on the draft, were invited to comment on those documents, were invited to attend the public meeting, and were sent notice of the intention to adopt.