2006 REVISED
POWER INTEGRATED RESOURCE PLAN
for
METROPOLITAN'S COLORADO RIVER AQUEDUCT
POWER OPERATIONS

MWD

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

October 2006

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Executive Summary

EXECUTIVE SUMMARY

Section 114 of the Energy Policy Act of 1992 requires the Metropolitan Water District of Southern California (Metropolitan), a customer of the Western Area Power Administration, to develop and carry out an Integrated Resource Plan. Western published the Integrated Resource Plan (IRP) regulations as part of its Energy Planning and Management Program (EPAMP) on November 20, 1995. Western's IRP regulations were subsequently revised on March 30, 2000. Metropolitan must meet the requirements as defined by the revised ruling which are summarized in Attachment 1, and submit its Power Integrated Resource Plan (PIRP) to Western on October 11, 2006.

Metropolitan is revising its original 1996 PIRP which was developed based on the power requirements of the Colorado River Aqueduct (CRA). Metropolitan is also providing a summary of its existing renewable energy resources located along its water distribution system as well as other potential renewable resources proposed along its water delivery system. Additionally, Metropolitan identifies water conservation efforts and programs in place which result in water savings as well as energy savings within its water service territory. Therefore, the PIRP provides a coordinated approach to develop an appropriate mix of supply and demand resources to enable an adequate and reliable power supply to meet the pumping energy requirements of the CRA. In addition, efficiencies in water system operations were identified to ensure cost-effective and environmentally responsible performance.

Through Metropolitan's PIRP process, alternate conventional and renewable technologies were screened and evaluated in comparing the cost of new energy supply resources with existing resources. Based on the analyses and considerations presented in this PIRP and the expected CRA delivery level for the next ten years, Metropolitan's preferred resource plan is the continued reliance on existing long-term firm contract supplies and interchange agreements, in addition to economy energy purchases whenever CRA deliveries exceed 915,000 acre-feet. Metropolitan has also established efficiency measures in the action plan which can be used to validate the benefits of the PIRP implementation. Each of the efficiency measures considered will be implemented under the preferred plan. This plan is expected to be the least cost strategy for meeting CRA pumping energy requirements, while considering the impacts of risk and uncertainty as well as possible environmental externalities.

The electric utility industry continues to undergo changes as Metropolitan prepares this PIRP. Although the EPAMP ruling does not address impacts from a restructured electric industry, this PIRP discusses the risks and uncertainties of industry restructuring, and summarizes the action plan Metropolitan has established to monitor these proceedings, and participate where necessary to protect Metropolitan's interests.

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PURPOSE

The Metropolitan Water District of Southern California (Metropolitan) provides supplemental water supplies within portions of a six-county area covering nearly 5,200 square miles, populated by over 18 million people. Metropolitan's mission is to provide its service area with adequate and reliable supplies of high quality water to meet present and future needs in an environmentally and economically responsible way.

Colorado River water is a primary source of water supply to Metropolitan and its member agencies, and is conveyed through the Colorado River Aqueduct (CRA). Metropolitan is responsible for meeting the pumping energy requirements of the CRA. This Power Integrated Resource Plan (PIRP) documents the planning framework which Metropolitan has in place to assure a cost-effective, balanced and reliable power supply for the operation of the CRA. This report is also intended to meet the requirements for development of a PIRP by each long-term firm customer of the Western Area Power Administration (Western), as required by the National Energy Policy Act of 1992 (Act) and established by the final ruling for Western's Energy Planning and Management Program (EPAMP) as revised in 2000. Annual PIRP progress reports are to be submitted describing accomplishments achieved pursuant to the action plans, and an updated PIRP is to be submitted to Western every five years or as necessary to comply with Western's regulations implementing the Act.

The following describes the scope and focus of this PIRP, and the role of Metropolitan's Colorado River water supplies in Metropolitan's system. The EPAMP ruling, as revised, identifies specific requirements to include in a PIRP to satisfy Section 114 of the Act. This PIRP documents the EPAMP requirements in a planning process which Metropolitan has established to assure that the basis for forecasting pumping energy loads on the CRA is fully explained, and that all reasonable energy efficiency and energy supply options are identified and considered in minimizing the cost of CRA pumping. Current and forecasted pumping energy loads are presented, and Metropolitan's existing power resources and forecasted power resource requirements are described. Resource options are identified, criteria for resource screening are defined, and Metropolitan's public involvement process is discussed. Based on this integrated resource planning process, a least-cost power resource plan for CRA pumping is selected. Finally, a five-year action plan is provided to continue the implementation of Metropolitan's PIRP.

UNCERTAINTY FROM ELECTRIC INDUSTRY RESTRUCTURING

Since the mid 1990's, reducing the cost of electricity through competition and customer choice was the principal objective of several initiatives to restructure the electric utility industry. Key initiatives issued by

the Federal Energy Regulatory Commission (FERC)[1] included final rule Order No. 888 on wholesale transmission access and stranded costs, and final rule Order No. 889 on the information network required to assure open access. In 1997, California Public Utilities Commission (CPUC) and the California Legislature[2] significantly restructured California's electric services industry. In late 2000, the California power market entered a crisis situation, with the resulting bankruptcy and closure of the California Power Exchange, bankruptcy of the Pacific Gas and Electric Company, and near bankruptcy of the Southern California Edison Company, and direct intervention by the State in power purchases. Years of litigation and FERC proceedings ensued to try and obtain refunds for excessive power charges due to alleged market manipulation. Recent State legislation has been passed and CPUC decisions have been made to encourage resource adequacy and increased renewable energy supplies. After 6 years of efforts by the California Independent System Operator (CAISO) and its stakeholders to correct flaws in California's restructured electricity markets, the FERC issued its order on September 21, 2006 for implementing CAISO market redesigns by the end of 2007.

Metropolitan is not explicitly under the jurisdiction of either FERC or the CPUC. Nevertheless, the industry restructuring changes and the California power crisis resulted in quadrupling Metropolitan's cost of supplemental power purchased in the open market between 2000 and 2001 and increasing its future power costs. Consequently, Metropolitan is closely monitoring issues in proceedings before FERC and CPUC and participating where necessary to protect its interests.

METROPOLITAN'S WATER SUPPLIES

Under the Seven Party Agreement (1931), apportionments to use of Colorado River water were agreed to by the seven California parties with interest in diverting Colorado River water. Table 1 shows the priorities. Metropolitan entered into contracts with the U.S. Secretary of the Interior for an annual entitlement of 1.1 million acre-feet (AF) of Colorado River water in the 1930s. Roughly half of this amount is 4th priority water. The City of San Diego's annual contract entitlement of 112,000 AF of 5th priority water was merged with Metropolitan's entitlement in 1946, which was further augmented by a surplus water contract for 180,000 AF per year in 1987. The CRA, initially completed in 1941, was eventually expanded to its current capacity to transport approximately 1.3 million AF annually, and Metropolitan had consistently been able to maintain annual deliveries through the CRA of 1.2 to 1.3 million AF through 2002 as needed.

[1] FERC Docket Nos. RM95-8-000 and RM94-7-001, Order No. 888, Final Rule; Docket No. RM95-9-000, Order No. 889, Final Rule; and Docket No. RM96-11-000, Notice of Proposed Rulemaking, Washington, D.C., issued April 24, 1996.

[2] California Assembly Bill 1890 (Brulte, Chapter 854, Statutes of 1996)

TABLE 1 SEVEN PARTY AGREEMENT PRIORITIES TO USE OF COLORADO RIVER WATER (ACRE-FEET PER YEAR)		
1.	Palo Verde Irrigation District (For use on 104,500 acres of valley land)	
2.	Yuma Project, Reservation Division (For use on 25,000 acres of land)	
3a.	Imperial Irrigation District, and Coachella Valley Water District (for use within designated service areas)	
3b.	Palo Verde Irrigation District (for use on 16,000 acres of land)	
	Subtotal	3,850,000
4.	Metropolitan	550,000
	Subtotal	4,400,000
5.	Metropolitan	662,000
	Subtotal	5,062,000
6a.	Imperial Irrigation District, and Coachella Valley Water District (for use within designated service areas)	
6b.	Palo Verde Irrigation District (for use on 16,000 acres of mesa land)	
	Subtotal	300,000
	Total	**5,362,000**

However, as a result of the 1964 U.S. Supreme Court decree in Arizona v. California, Metropolitan's dependable supply of Colorado River water was reduced to less than 550,000 AF per year when the Central Arizona Project began operating in 1985, accounting for the availability of only 4.4 million AF per year to California entities in a normal or shortage condition and the use of water by holders of present perfected rights not party to the Seven Party Agreement. The annual amount of Colorado River water available to Metropolitan since then has been determined by the Bureau of Reclamation (Reclamation) and is ultimately limited to the pumping and conveyance capacity of the CRA. Reclamation considers several factors in determining the amount of water made available to Metropolitan and other parties, including hydrologic conditions, water in storage in the Colorado River system reservoirs, the regulation of those reservoirs, agreements among the parties, and the demands for river water by parties with priority rights senior to those of Metropolitan.

Metropolitan can obtain water from:

- its priority 4 right,
- water unused by the California holders of priorities 1 through 3,
- water conserved by its water conservation program with Imperial Irrigation District (minimum of 80,000 AF per year),
- water saved by its Palo Verde land fallowing and forbearance program (up to 111,000 AF per year) implemented in cooperation with Palo Verde Irrigation District, and
- when the U.S. Secretary of the Interior determines that either one or both of the following are available:
  – surplus water, and
  – water apportioned to, but unused by, Arizona and/or Nevada.

The San Diego County Water Authority (Authority) has begun two projects in cooperation with Imperial Irrigation District and Coachella Valley Water District--the water transfer from Imperial Irrigation District and the Coachella Canal Lining Project, respectively. These two projects are projected to result in the availability of 76,000 AF of Colorado River water to Metropolitan in 2007. By exchange, the Authority is projected to receive 71,500 AF of water from Metropolitan in San Diego County, with the remainder

projected to be used by Metropolitan in accordance with an agreement with the United States and the San Luis Rey Indian Water Rights Settlement Parties. A third project, the All American Canal Lining Project is the subject of litigation in federal court. The Ninth Circuit Court of Appeals has granted an injunction against all work on that Project pending the court's decision in the case.

Metropolitan is participating in the "Intentionally Created Surplus" (ICS) demonstration program with Reclamation. Metropolitan plans to create 50,000 AF of ICS in both 2006 and 2007. This water will remain in Lake Mead rather than being diverted by Metropolitan. Implementation of a long-term ICS program would permit Metropolitan to store water in Lake Mead for withdrawal during subsequent years of need. Establishment of such a program is subject to completion of an Environmental Impact Statement currently being prepared by the Bureau of Reclamation.

In January 2001, the Secretary of the Interior signed a Record of Decision approving the adoption of Colorado River Interim Surplus Guidelines for use beginning in 2002. The guidelines are being used in conjunction with considerations required by the Colorado River Basin Project Act of 1968, the long-range operating criteria for the Colorado River reservoirs, and the U.S. Supreme Court's decree in Arizona v. California in determining the availability of surplus water through 2016.

Surplus water when available continues to be distributed, 50 percent to California, 46 percent to Arizona, and 4 percent to Nevada in accordance to the U.S. Supreme Court decree. The guidelines provide for the following four levels of surplus: flood control; quantified; full domestic and partial domestic.

In 2003, MWD reduced its use of Colorado River water to permit California to limit its use to 4.4 million AF, the state's apportionment during a normal condition. Metropolitan did not divert surplus water that was available from October to December 2003 or in 2004. No surplus water was available in 2005.

While the Secretary of the Interior has determined that surplus water is available in 2006 under the partial domestic surplus condition, MWD has no plans at this time to use surplus water in 2006. Because the last seven years are estimated to be the driest seven-year period in the Colorado River watershed in 100 years of recordkeeping, the amount of surplus water available to Metropolitan has been substantially reduced from earlier projections. However, surplus water is expected to be available in the future from time to time.

Metropolitan has generally sought to maximize delivery of water through the CRA. Metropolitan's second major source of water supply is the State Water Project (SWP) managed by the California Department of Water Resources (DWR). On average, approximately 3,000 kWh is necessary for pumping one AF of SWP water to Metropolitan's system, while only 2,000 kWh is required to pump one AF of water through the CRA. However, since 2003 CRA deliveries and pumping load have been reduced. Therefore, an adjustment to the range of annual water deliveries from the CRA is necessary for long-term CRA power resource planning as compared to that shown in the original 1996 PIRP.

Recognizing the uncertainty in water to be delivered through the CRA, a range of forecasted annual water deliveries has been established for planning purposes, and is identified in Table 2. The Minimum Delivery Case represents the dependable supply of Colorado River water available to Metropolitan less an amount of ICS water to be created. The Expected Delivery Case is based on an average of Metropolitan's forecasted deliveries FY2007-2017 developed in the Metropolitan Board Approved FY07 annual budget. The Maximum Delivery Case is based on the water that could be delivered at full CRA capacity if available.

TABLE 2
FORECASTED WATER DELIVERIES
THOUGH THE COLORADO RIVER AQUEDUCT
(ACRE-FEET)

Minimum Delivery Case	Expected Delivery Case	Maximum Delivery Case
550,000	850,000	1,300,000

This range provides a reasonable estimate of the boundaries within which CRA deliveries are likely to fall in each year of the study period. Although a range of water deliveries is used for power resource planning since the 1996 PIRP, a number of Metropolitan's planning activities are focused on pursuing economic options to maximize Colorado River supplies and permit the CRA to return to be operated at full capacity as needed.

COLORADO RIVER AQUEDUCT LOADS

The CRA spans 242 miles from the intake at Lake Havasu to its terminal reservoir at Lake Mathews, near Riverside. Five pumping plants are used to lift Colorado River water a total of 1,617 feet. A map of the CRA system, including the location of pumping plant and transmission facilities, is provided in Figure 1. A schematic of the pumping loads and lifts at each pump station is provided in Figure 2.

Each pumping plant has nine pumps, each designed for a maximum flow of 225 cubic feet per second (cfs). The CRA is sized to operate at full capacity with eight pumps in operation at each plant (1800 cfs). The ninth pump operates as a spare, facilitating maintenance, emergency operations, and repairs.[3] Table 3 illustrates the relationship between the number of operating pumps, and the corresponding annual pumping energy requirements. Prior to the Pump Rehabilitation Program described below, the average pumping

[3] Among Metropolitan's power supply arrangements to be discussed is a provision for limited load shedding by Southern California Edison under which the Intake and Gene Pumping Plants can be shut down for certain limited periods of time during periods of peak electrical demands. Subsequent to such load shedding up to 110 MW, Metropolitan occasionally operates all nine pumps at each of the Intake and Gene pumping plants to refill the Gene Wash and Copper Basin Reservoirs.

energy requirement was approximately 2,100 kWh per AF. The average energy requirement was reduced to about 2,000 kWh per AF through the increase in unit efficiencies provided by this program. The energy required to pump each AF of water through the CRA is essentially constant, regardless of the total annual volume of water to be pumped. This is due to the 8-pump design at each pumping plant. The average pumping energy efficiency does not vary with the number of pumps operated, and the same 2,000 kWh per AF estimate is appropriate for the Maximum, Expected, and Minimum Delivery Cases.

Based on the relatively steep grade of the CRA, limited active water storage, and transit times between plants, the system does not generally lend itself to shifting pumping loads from on-peak to off-peak. Under the Minimum Delivery Case, the reduced annual water deliveries would not necessarily bring a reduction in annual peak load, since an 8-pump flow may still need to be maintained in certain months. Table 3 provides a range of average loads for various number of pumps in operation.

TABLE 3
COLORADO RIVER AQUEDUCT LOADS

Average Number of Pumps	Annual Water Pumped (Acre-Feet)	Average[4] Pumping Load (MW)	Annual PumpingEnergy (GWh)
8	1,300,000	297	2,600
7	1,137,500	260	2,275
6	975,000	223	1,950
5	812,500	186	1,625
4	650,000	148	1,300
3	487,500	111	975
2	325,000	74	650
1	162,500	37	325

[4] Including line and transformer losses. If all other plants are operating with 8 pumps, while Gene & Intake are at nine pumps, the total CRA peak load would be 311 MW.

Based on the range of forecasted water deliveries shown in Table 2, the estimated annual energy and peak capacity requirements are listed in Table 4, below.

TABLE 4
FORECASTED POWER REQUIREMENTS
FOR THE COLORADO RIVER AQUEDUCT

Minimum Delivery (550,000 AF/Year)			Expected Delivery (ave 2007-2017) (850,000 AF/Year)			Maximum Delivery (1,300,000 AF/Year)		
Energy GWh	Peak MW	Average Number of Pumps	Energy GWh	Peak MW	Average Number of Pumps	Energy GWh	Peak MW	Average Number of Pumps
1,100	311	3.4	1,700	311	5.2	2,600	311	8.0

EXISTING CRA POWER SUPPLIES

Metropolitan's power supplies available to meet CRA pumping loads include an entitlement to contingent capacity and firm energy from the Boulder Canyon Project (Hoover Power Plant), a share in the Parker Power Plant, power exchanges with Edison and DWR, and purchase or sale arrangements with members of the Western Systems Power Pool (WSPP).

Metropolitan owns a transmission system consisting of 305 miles of 230-kV power lines, and 6 miles of 69-kV power lines. This transmission system has four 230-kV interconnections with other utility systems, including: Edison at the Eagle Mountain and Hinds substations; Western, Edison, the Los Angeles Department of Water and Power (LADWP) and others at the Mead substation; and Western at the Gene substation. These facilities are used to deliver Metropolitan's power supplies to the pumping plants.

Colorado River Hydroelectric Resources

Metropolitan is entitled to 50 percent of the Parker Power Plant capacity and energy in perpetuity, with the balance of the Power Plant available to Western's customers under the Parker-Davis Project. Up to 60 MW of peak capacity and estimated average annual energy of 225 GWh per year, representing a capacity factor of almost 50 percent, is available to Metropolitan. Parker Power Plant energy and capacity is contingent on the availability of water and Metropolitan is entitled to 50 percent of any energy generated.

Metropolitan is entitled by contract to 248 MW of contingent capacity from Hoover Power Plant, and 1,292 GWh of firm energy per year, representing a capacity factor of almost 60 percent. In the event that there is a deficiency in firm energy, Metropolitan may request that Western purchase replacement energy. Metropolitan also has a right to a portion of excess energy from Hoover Power Plant, equal to 36 percent of California's share of such excess. Metropolitan is also entitled to approximately 13 percent of any excess capacity at the Hoover Power Plant. Unfortunately, the capacity at Hoover Power Plant is currently derated due to the lower Lake Mead elevation and periods of unit outages. During conditions such as these and if needed, Metropolitan is able to receive replacement capacity through an agreement with Edison described below. The term of the Electric Service Contract under which Hoover Power Plant capacity and energy is purchased expires on September 30, 2017.

Other Power Supply Arrangements

The Parker and Hoover Power Plants' power supplies are the primary resources used to meet the pumping loads of the CRA. These resources are supplemented by key agreements with Edison and DWR, and by purchases of economy energy during primarily off-peak periods.

Service and Interchange Agreement The Service and Interchange Agreement with Edison provides for the interchange and banking of energy, joint use of transmission facilities, load shedding, and an additional energy entitlement to Metropolitan which balances the benefits. The Service and Interchange Agreement expires in 2017, unless terminated earlier by either party with five years' advance written notice.

Subordinate to Metropolitan's use for reliable and efficient water supply operations, Metropolitan has integrated the operation of its electric system with the operation of Edison's electric system. Edison schedules Metropolitan's share of Hoover and Parker resources to meet the combined loads of the Edison and Metropolitan systems. A banking arrangement is provided in which Metropolitan is allowed to use Hoover and Parker Power Plants energy in the months it is most needed for water supply purposes. Although Metropolitan expects that Hoover's contingent capacity will be available to meet pumping loads under most conditions, Edison will supply replacement capacity as necessary to meet a combined total load of 320 MW.

Metropolitan provides Edison with a limited opportunity to shed certain CRA pumping loads. At Edison's request during system emergencies, Metropolitan will interrupt its electrical pumping load at its Intake and Gene Pumping Plants, to the extent such interruption can be made without reducing or restricting Metropolitan's water deliveries as measured at its Hinds Pumping Plant. This opportunity is derived from the availability of a limited amount of active storage in the Gene Wash and Copper Basin Reservoirs, providing the flexibility to shed up to 110 MW of load for approximately 4 hours per occurrence. Interruptions are limited to twenty events per year to minimize wear on Metropolitan's pumping facilities.

Edison provides firm transmission service between the Hinds Pumping Plant and Edison's Vincent Substation for transmitting power between the SWP and the CRA electric systems. Edison has rights to the unused capacity of Metropolitan's transmission system.

To balance benefits between Metropolitan and Edison, the agreement also provides for Metropolitan to receive extra or "benefit" energy from Edison at no additional cost. The benefit energy is approximately 191 GWh per year, increasing by approximately 315 kWh for every AF of decline in CRA deliveries from the maximum capability of 1,300,000 AF. Edison provides benefit energy from various sources on its system, including renewable energy such as Metropolitan's small-conduit hydroelectric plants as described below in the section on resource options.

DWR Coordination Agreement - A Power Coordination Agreement with DWR provides mutual benefits, including conservation of resources, efficient operations and deferral of future resource additions by DWR, and options to purchase or sell lower cost energy. The agreement, which also expires in 2017, allows Metropolitan to take advantage of the resource availability and load diversity between the two systems.

As discussed, prior to 2003, Metropolitan maximized deliveries in the CRA, resulting in reduced SWP deliveries and pumping requirements in certain years. Conversely, when Metropolitan is restricted in its

Colorado River diversions, SWP pumping requirements increase. If the power resources for the projects were operated independently, then DWR would need to plan an additional energy supply of approximately 670 GWh, representing a base load resource of approximately 100 MW. By providing surplus CRA energy to DWR, Metropolitan helps DWR defer the cost of such a resource.

The Coordination Agreement also provides for DWR's sale of firm energy to Metropolitan when in excess of SWP requirements. Such purchases can be made based on market conditions as necessary to meet CRA pumping loads. DWR will also bank energy that is surplus to Metropolitan's needs, and will return that energy to Metropolitan in another month during the same year in which Metropolitan is deficient.

Other Arrangements - In addition to the energy purchases or exchanges available from Edison and DWR, Metropolitan is a member of the WSPP. The WSPP is a "pool" of over 300 public and investor-owned utilities, power marketers and energy users in North America. Entities from numerous states and Canada, from the Pacific Ocean to east of the Mississippi River, participate in the WSPP. The objective of the WSPP is to increase efficiency in the bulk power market by providing for market-based pricing for certain energy services. Available transactions from the pool include economy energy service, unit commitment service, firm system capacity/energy sale or exchange, and transmission service.

Through the WSPP, Metropolitan has access to economy energy supplies which are used to supplement energy from the Hoover and Parker Power Plants, exchange energy and benefit energy from Edison.

RESOURCE REQUIREMENTS

Table 5, with an accompanying graph, presents the resources used by Metropolitan since 1996. As shown, Metropolitan has relied heavily on economy purchases to meet the remaining power needs until CRA deliveries were reduced in 2003.

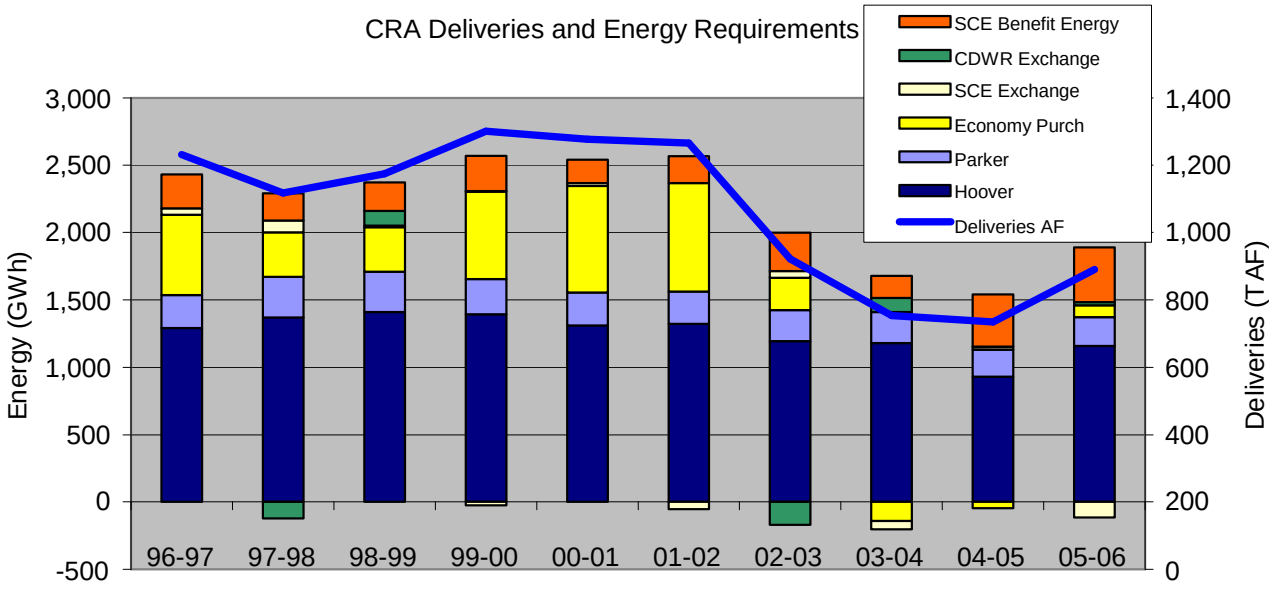


Table 5
Energy Resources Used to Meet CRA Pumping Load
(GWH)

Fiscal Year (7/1-6/30)	Hoover	Parker	Economy & Edison Supplemental Purchases	CDWR Exchange Energy	Southern California Edison		Total
					Exchange Energy	Benefit	
96-97	1,292	244	595	0	47	253	2,431
97-98	1,370	302	328	(123)	90	200	2,167
98-99	1,411	297	330	108	13.5	212	2,373
99-00	1,393	262	647	4	(26.4)	263	2,543
00-01	1,311	244	789	0	21.6	174	2,539
01-02	1,322	241	804	0	(-54.9)	199.21	2,511
02-03	1,194	231	239	(170)	50.37	284.09	1,828
03-04	1,179	230	(142)	105	(61.82)	164.72	1,475
04-05	932	199	(46)	5	18.02	387.98	1,495
05-06	1,159	213	88	23	(116.27)	405.61	1,772
Ave 96-06	1,226	236	562	(3)	(8)	237	2,249
% 96-06	55%	10%	25%	(0.11)%	(0.36)%	11%	100%
Ave 02-06	1,116	218	35	(9)	(27)	311	1,643
% 02-06	68%	13%	2%	(1%)	(2%)	19%	100%

Under the Minimum Delivery Case, Metropolitan's energy resources are sufficient to meet the pumping requirements associated with Metropolitan's dependable supply of Colorado River water. Table 6 shows the energy resources required to meet the pumping loads under the Minimum Delivery Case from Table 4. In the three delivery cases below, Hoover energy is limited to 1178 GWH, rather than contractual base amount of 1292 GWH to be consistent with Metropolitan's FY07 Budget, Final Hoover Master Schedule and 24 month study. Under the Minimum Delivery Case in Table 6, Metropolitan is projected to have surplus energy totaling 730 GWh. Metropolitan may make this energy available to DWR, thereby reducing the cost of pumping Metropolitan's SWP water.

TABLE 6 ENERGY RESOURCES FOR MINIMUM DELIVERY CASE (550,000 AF)						
		Energy Required				
Resource	Energy Available (GWh)	Off-Peak GWh (5,310 Hours)	Mid-Peak GWh (2,940 Hours)	On-Peak GWh (510 Hours)	Total GWh (8,760 Hours)	Surplus Firm Energy (GWh)
Hoover/ Parker	1,403	667	369	64	1,100	303
Edison Benefit Energy	427	0	0	0	0	427
Total	1,830	667	369	64	1,100	730

Under the Expected Delivery Case in Table 6A, Metropolitan is projected to have surplus energy totaling 35 GWh. Metropolitan may make this energy available to DWR, thereby reducing the cost of pumping Metropolitan's SWP water.

TABLE 6A ENERGY RESOURCES FOR EXPECTED DELIVERY CASE (850,000 AF)						
		Energy Required				
Resource	Energy Available (GWh)	Off-Peak GWh (5,310 Hours)	Mid-Peak GWh (2,940 Hours)	On-Peak GWh (510 Hours)	Total GWh (8,760 Hours)	Surplus Firm Energy (GWh)
Hoover/ Parker	1,403	733	571	99	1,403	0
Edison Benefit Energy	332	297	0	0	297	35
Total	1,735	1,031	571	99	1,700	35

Under the Maximum Delivery Case, Metropolitan's energy resources, supplemented by economy energy purchases, are forecast to be sufficient to meet the pumping load of the CRA. When contingent capacity from Hoover is insufficient, Edison will provide Metropolitan with replacement capacity under the Service and Interchange Agreement. In contrast to the Minimum Delivery Case, in which a substantial surplus of energy is forecast, Table 7 shows that additional economy energy purchases, totaling approximately 1006 GWh, are required under the Maximum Delivery Case.

TABLE 7
ENERGY RESOURCES
FOR MAXIMUM DELIVERY CASE
(1,300,000 AF)

Resource	Available Energy (GWh)	Additional Purchases (GWh)	Energy Required			
			Off-Peak GWh (5,310 Hours)	Mid-Peak GWh (2,940 Hours)	On-Peak GWh (510 Hours)	Total GWh (8,760 Hours)
Hoover/Parker	1,403	0	379	873	151	1,403
Edison Benefit Energy	191	0	191	0	0	191
Economy Purchases	--	1,006	1,006	0	0	1,006
Total	1,594	1,006	1576	873	151	2,600

Table 8 presents the net CRA energy requirements for various levels of pumping and firm supplies from Hoover and Parker Power Plants and the Edison benefit energy.

As discussed, the volume of water delivered through the CRA and the average number of operating pumps will determine Metropolitan's energy requirements. As shown in Table 8, Metropolitan's annual energy requirements will vary from an energy surplus, to an energy requirement generally in the off-peak period of almost 915 GWh or even up to 1006 GWh if contractual energy is reduced. Between 2007 and 2017 the expected CRA deliveries in Metropolitan's FY07 CRA power budget model average 850,000 AF.

Metropolitan's net CRA capacity requirements are provided in Table 9. Since all of Metropolitan's peak requirements are met by contract through 2017, no new capacity resources are required during this five year PIRP study period.

TABLE 8
NET CRA ENERGY REQUIREMENTS
AFTER HOOVER, PARKER AND EDISON BENEFIT ENERGY
AT FULL CONTRACTUAL ENTITLEMENTS
THROUGH SEPTEMBER 30, 2017

Average Number of Pumps	Annual Water Pumped (Acre-Feet)	Remaining Off-Peak Energy Reqt. (GWh)	Surplus Energy* (GWh)
8	1,300,000	892	0
7	1,137,500	516	0
6	975,000	140	0
5	812,500	0	236
4	650,000	0	612
3	487,500	0	989
2	325,000	0	1,365
1	162,500	0	1,741

* Available for reducing the cost of pumping Metropolitan's SWP water.

TABLE 9
NET CRA CAPACITY REQUIREMENTS
AFTER HOOVER, PARKER AND EDISON SUPPLEMENTAL CAPACITY
AT FULL CONTRACTUAL ENTITLEMENTS
THROUGH SEPTEMBER 30, 2017

Capacity Requirements and Supplies	Megawatts
Peak Demand	311
Hoover	248
Parker	60
Supplemental	3*
Total Resources	311
Net Requirements	0

* Under the Service and Interchange Agreement, Edison will provide supplemental capacity as required for Metropolitan to meet a 320 MW pumping load.

RESOURCE OPTIONS

Metropolitan's consideration of resource options to supply CRA pumping requirements focuses on renewable and conventional resources. As electric industry restructuring continues, Metropolitan may consider other options, as they become available.

Historically, Metropolitan has been able to meet its CRA pumping energy needs using economy energy purchases whenever necessary. This has been facilitated by WSPP membership which began in December 1990. Metropolitan does not expect that economy energy will be required to supplement Metropolitan's existing resources over the period from 2007-2017. However, alternate sources of energy have been considered for analysis after 2017 or in case greater than the Expected CRA Delivery levels should occur in the future. Metropolitan's consideration of alternative pumping energy resources and efficiency measures must: 1) Be consistent with the schedule of Metropolitan's resource requirements; and 2) Reduce the expected cost of meeting pumping loads on the CRA or provide other benefits, such as increased system reliability.

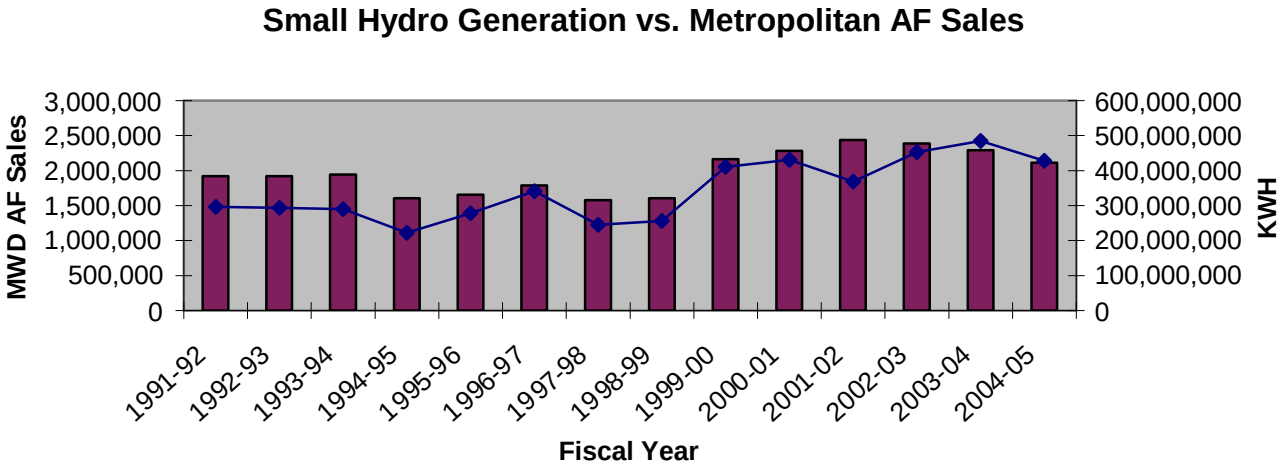
In addition to alternative sources of energy, Metropolitan has identified and continues to evaluate energy efficiency and operating measures which may reduce energy requirements, or improve the reliability of CRA operations.

Existing Renewable Generation on Metropolitan's System:

Metropolitan owns and operates approximately 122 MW of eligible renewable generation, as further described below, and strongly supports efforts to promulgate the development of additional generation from renewable resources in California. Some of these renewable resources currently help serve the CRA pump load through the Edison exchange arrangement as previously discussed. As these existing contracts terminate under their own terms, Metropolitan is re-evaluating their use as future options for CRA supplies, which may be described in the annual action plans.

15 small hydro generating plants have been integrated into Metropolitan's water distribution system since the early 1990s. Generation from these plants is sold under existing contractual agreements with Pacific Gas and Electric Company, Edison, and DWR. During the first half of 2001, the State of California was concerned of a potential power shortage during the summer of 2001. Metropolitan responded to an emergency generation program offered by the California Energy Commission (CEC) to have new generation on line by June 1, 2001 by adding generation capability at its 800,000 AF reservoir, Diamond Valley Lake (DVL). The DVL reservoir, completed in 2002, was originally installed with 12 vertical turbine pumps. With control system changes, these pumps were converted to turbine generating units and currently have a total dependable capacity of 21 MW. Energy from DVL is sold in the spot energy market.

All 16 plants have been registered with the CEC as renewable resources. Ten plants are certified to meet Renewable Portfolio Standard goals for Edison and PG&E. The chart below summarizes the inter-relationship between energy production from these 16 existing plants, with a total Capacity of 122 MW, and water delivery requirements.



Potential Renewable Resources:

Metropolitan is investigating the feasibility of adding at least two new renewable hydro plants: (1) a third unit at the Foothill power plant which currently has two 4.5 MW units; and (2) a pressure control facility along the planned Inland Feeder Project near Diamond Valley Lake. This planned Inland Feeder Project, expected to be in service by 2011 should result in minimizing if not eliminating the need to pump water into Diamond Valley Lake after constructed.

Four wind measurement instruments were installed at the Julian Hinds Pumping Plant along the CRA in 2005. The data provided by these instruments will be used to evaluate the Hinds site as a future location for wind turbines. Other CRA sites that will also be evaluated for wind energy include the Gene and Iron pumping plants.

Resource Evaluation Criteria

Metropolitan's energy resource requirements may vary significantly from one year to another. Since Metropolitan's year-to-year energy requirements are difficult to forecast in more detail than presented herein, no resource options have been screened from consideration solely due to the expected schedule of energy availability. The primary criterion then becomes the estimated cost of the energy resource, and its relationship to the forecasted range of Metropolitan's marginal cost of energy supplies.

Metropolitan's marginal cost of energy depends on the volume of water to be delivered through the CRA[5]. Therefore, for up to annual deliveries of about 915,000 AF, Metropolitan's marginal cost of energy is defined by the cost of the Hoover Power Plant and Parker Power Plant resources, as suggested by Table 8. Metropolitan expects that in future years should deliveries exceed 915,000 AF, off-peak economy energy purchases would represent Metropolitan's marginal energy cost. A forecasted range of the estimated cost of these potential marginal energy supplies has been developed, and is shown in Table 10 and detailed in Appendix 1.

[5] The cost of the power needed to move water under the San Luis Rey Indian Water Rights Settlement is not included in this analysis as it is to be provided at no cost to Metropolitan.

TABLE 10
FORECAST COST OF METROPOLITAN'S
MARGINAL ENERGY RESOURCES
(Mills/kWh)

Years	Low Case			High Case		
	Min Delivery 550,000 AF	Expected Delivery 850,000 AF	Max Delivery 1,300,000 AF	Min Delivery 550,000 AF	Expected Delivery 850,000 AF	Max Delivery 1,300,000 AF
2007	0	0	39	0	0	39
2010	0	0	40	0	0	41
2015	0	0	42	0	0	46
2020	0	0	44	0	0	50
30 Yr Levelized	0	0	45	0	0	53

Metropolitan considered a range in natural gas price escalation, and the uncertainty introduced by industry restructuring, in developing the escalators used for economy energy in Table 10. The primary difference between the Low Case and High Case is the future cost of natural gas, which is based on the Energy Information Administration Energy Outlook 2006. In the Low Case rapid technological progress in production and end-use efficiencies is assumed, with increased ultimate reserves and lower well-head gas costs. The High Case assumes less success in production and reserve replacement, and that the increased use of natural gas to reduce emissions from power plants, industrial boilers, and vehicles will lead to higher prices.

A 30-year study period is used for cost comparisons. Based on the history of the last several years, and an informal assessment of industry projections, a general inflation rate of 3.5 percent per year is assumed. A discount rate of 5 percent, reflecting a margin of 1.5 percent over the assumed inflation rate, was also applied. Metropolitan's actual cost of financing is currently less than 5 percent, and this rate is assumed to provide a reasonable adjustment to acknowledge forecast uncertainty and risk.

Energy costs from the Hoover and Parker Power Plants are assumed to escalate at the general inflation rate of 3.5 percent under both the High and Low Cases. Economy energy costs are assumed to escalate at 0.994 percent for the Low Case and 2 percent for the High Case.

Table 10 provides a forecasted range for Metropolitan's marginal cost of energy for CRA pumping. Which resource is at the margin will depend on the amount of Colorado River water available to Metropolitan for delivery through the CRA, the energy available from Parker and Hoover Power Plants, and the relative economics of economy energy purchases or sales. For CRA deliveries less than 915,000 AF, Metropolitan has sufficient or even surplus energy and no purchases are typically necessary. However, Metropolitan is planning to maximize delivery of water through the CRA as allowed, and expects the marginal cost of energy to be based on the prices to be paid for energy beyond the Hoover and Parker resources while the contracts exist through 2017.

Table 11 provides the average cost of supplies and marginal cost of supplies for each delivery case. The only case that requires marginal energy supplies is the 1,300,000 AF Maximum Delivery Case since there is surplus energy for sales or use on the SWP for the other two delivery cases.

TABLE 11 PERCENTAGES OF METROPOLITAN'S ENERGY SUPPLIES UNDER EACH DELIVERY CASE						
	Average Cost of Supplies			Marginal Cost of Supplies		
Energy Supplies	550,000 AF	850,000 AF	1,300,000 AF	550,000 AF	850,000 AF	1,300,000 AF
Hoover	107%	69%	45%	0%	0%	0%
Parker	20%	13%	9%	0%	0%	0%
Benefit	39%	20%	7%	0%	0%	0%
Economy Purchases	0%	0%	39%	0%	0%	100%
Sales	66%	2%	0%	surplus energy	surplus energy	0%

Table 12 provides an estimated range of forecasted levelized marginal costs based on the energy supply percentages presented in Table 11.

TABLE 12 WEIGHTED FORECAST OF METROPOLITAN'S MARGINAL COST (30-Year Levelized Mills/kWh)					
Low Case			High Case		
Min Delivery 550,000 AF	Expected Delivery 850,000 AF	Max Delivery 1,300,000 AF	Min Delivery 550,000 AF	Expected Delivery 850,000 AF	Max Delivery 1,300,000 AF
0	0	45	0	0	53

Power Resource Options

Metropolitan has considered a range of conventional and renewable supply options to replace or supplement the supplies presently available to Metropolitan. That review considered the cost and characteristics of a range of technologies. Western's Resource Planning Guide Reference Data Volume 5 was used, and official energy statistics from the U.S. Government[6] the Energy Information Administration website published by the Department of Energy were evaluated.

Renewable technologies which were investigated include:

- Wind
- Geothermal
- Solar Thermal
- Photovoltaic

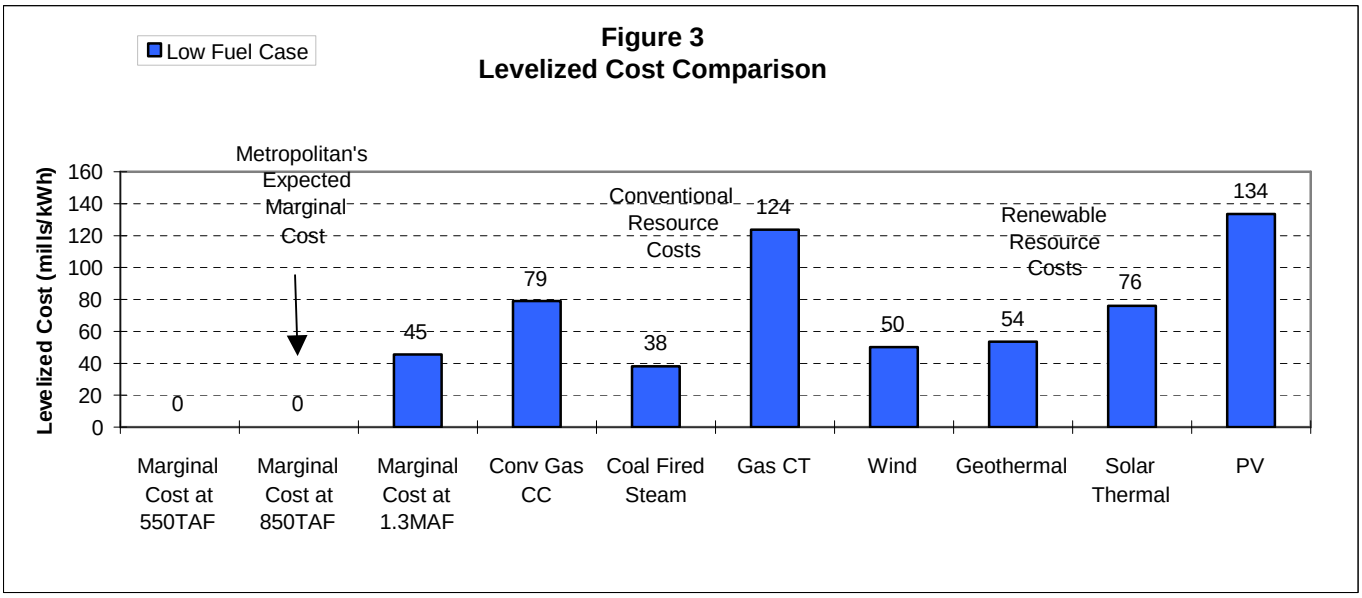
Conventional and non-renewable technologies which were considered include:

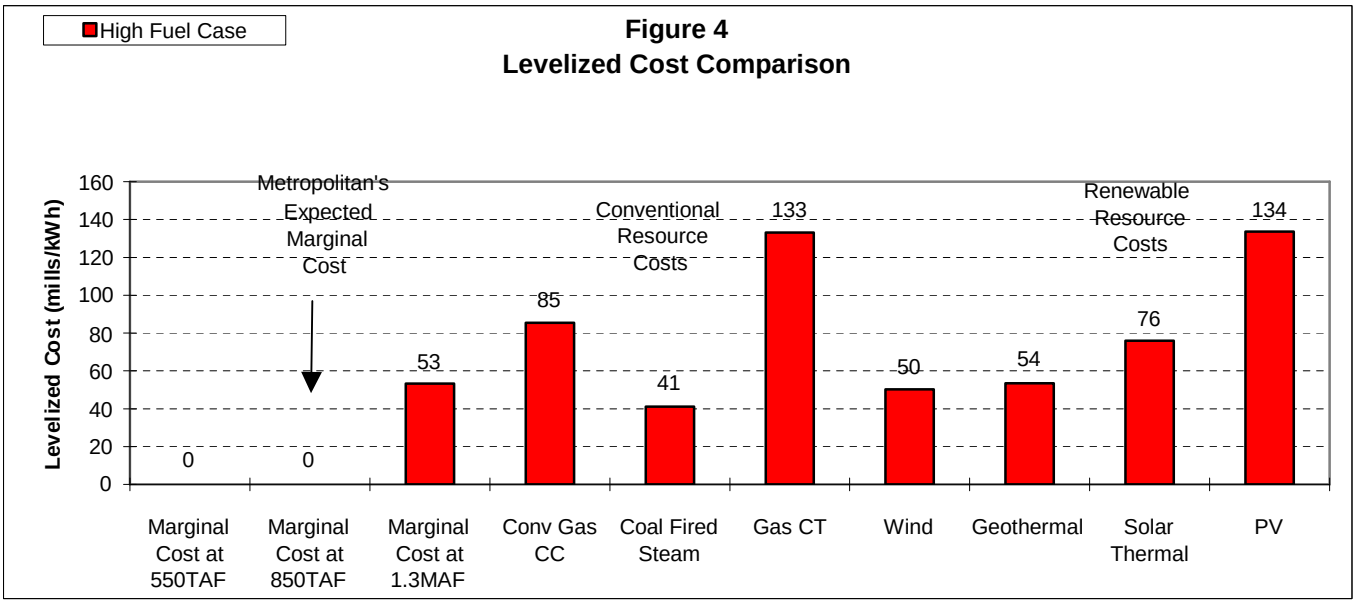
- Conventional Combined cycle (CC)
- Combustion turbine (CT)
- Coal-fired steam

[6] Department of Energy's EIA or Energy Information Administration website at www.eia.doe.gov/oiaf/aeo/gas.html

Figure 3 and Appendix 2 provide a comparison of resource costs under the Low Case. Under this scenario, the cost of each alternative conventional and renewable resource option is higher than Metropolitan's weighted forecast of marginal cost of energy except for the Maximum Delivery Case which is not expected to occur in the next five years.

Figure 4 and Appendix 2 present a comparison of levelized energy costs under the High Case. As in the Low Case, Metropolitan's weighted forecast of marginal cost of energy is lower than the cost of each alternative supply-side resource except for the Maximum Delivery Case which is not expected to occur in the next five years.





Efficiency and Load Management Options

As discussed, Metropolitan will generally schedule as much water as is available and allowed for delivery through the CRA. The nature of Metropolitan's load on the CRA limits the number of demand-side management options that are applicable, and also simplifies the analysis that must be completed to determine cost-effectiveness. In contrast, a retail electric utility must consider multiple factors including customer load characteristics, appliance saturations, participation rates, free ridership, differential costs to participants and non-participants, measure screening criteria, program design, marketing and evaluation. These requirements are substantially simplified for Metropolitan.

Each of Metropolitan's member agencies will be similarly affected by Metropolitan's decisions regarding demand-side management options on the CRA. All member agencies will implicitly participate. All costs will be directly incurred by Metropolitan, making the analysis a simple comparison of the cost of energy saved by efficiency measures under consideration, as compared to the cost of energy that would be purchased in the alternative. Metropolitan has established a schedule in the action plan to monitor and report on the performance of the efficiency measures planned and implemented.

Pumping Plant Rehabilitation - The objective of Metropolitan's pumping plant rehabilitation program was to improve pumping efficiency and system reliability by restoring pumps, transformers, motors and other systems. The cost of the five-year program was $33.3 million, with savings of as much as 100 GWh per year at full CRA operation. The program was completed in 1993.

Improvement in System Efficiency - In addition to increasing pump efficiency and reducing transformer losses, the pumping plant rehabilitation program provided better data regarding flow rates and net-head so that system efficiency can be monitored on a continuous basis. The rehabilitated pumps were balanced to a uniform pumping capacity to minimize the need for throttling head gates at the pumping plants, thereby improving efficiency. Metropolitan has conducted system flow tests at the five pumping plants using different unit combinations for multiple CRA flow rates. Information from these tests was used to assist in identifying a balanced CRA flow condition, and the most cost-effective mode of operation of the CRA.

SCADA System - The CRA operation is coordinated from the Gene Dispatch Control Center (GDCC) located near the intake to the CRA (Refer to Figure 1). Metropolitan owns and operates a microwave communication system which provides communications for the CRA operations.

Under the existing operating guidelines, the GDCC which is staffed 10 hours per day, seven days per week by Metropolitan personnel, has the responsibility of monitoring and coordinating the flow control of the CRA pumping operation. During the unstaffed 14 hours per day, the CRA operation is monitored by the individual pumping plant's and GDCC's standby personnel via a paging system. The transmission and distribution switching are coordinated from the GDCC. The real-time scheduling and accounting is performed at the Operations Control Center located at Eagle Rock, California which is staffed 24 hours per day and receives the pumping schedule changes from the GDCC. All changes and control operations are done at the GDCC. After hours requests go to a GDCC standby operator via a paging system which is sent to the related plant(s) standby operators.

Metropolitan has a Supervisory Control and Data Acquisition (SCADA) system. There are several benefits from the SCADA system including the ability to more flexibly schedule energy from alternate sources on a real-time basis. Improved emergency response, better control of water deliveries, reduced purchased power costs, and a better database for future forecasting are also provided.

Other benefits of the SCADA system include a better indication of real-time load requirements to make decisions on economy energy purchases. Reduced operation and maintenance expense also result from control of pumping plants during unstaffed hours. The SCADA system helps assure that downtime for electrical or hydraulic emergencies on the CRA would be minimized, thereby reducing costs to Metropolitan.

Demand-Side Management Techniques

The design of the CRA and the continuous supply requirements for water in Southern California limits the number of demand-side management options that are applicable. However, certain pumps on Metropolitan's CRA system have the ability to shed load for a limited period of time during peak load hours which has been an effective means to ensure reliability and limit the amount of rotating blackouts in Edison's system during power crisis situations during this last year.

Other Efficiency Measures - Metropolitan continues to identify and evaluate potential measures to improve the efficiency of CRA pumping.

Water Conservation Efforts -
Metropolitan has increased efforts to conserve water which in many ways results in conserving energy. Although these efforts may not directly impact or reduce the power requirements of the CRA, Metropolitan describes below good stewardship actions in managing the use of scarce resources. A description of Metropolitan's water conservation efforts is described in the following news release dated Dec. 13, 2005:

METROPOLITAN BOARD TAKES WATER SAVINGS TO THE NEXT LEVEL IN SOUTHERN CALIFORNIA
Board increases local conservation incentives by more than 25 percent

Saving water in Southern California became even more affordable today as Metropolitan Water District's Board of Directors increased financial incentives by more than 25 percent for local conservation investments and expanded the inventory of devices eligible for rebates to include the latest high-efficiency models.

Under a revised core conservation program, Metropolitan will transition from providing rebates for ultra-low-flush toilets to high-efficiency models that use 20 percent less water, and the agency will increase the agency's annual financial commitment to conservation by as much as $5 million over the next five years.

"With this commitment, we're sending a strong message that Southern California plans to stay at the forefront of water conservation and is truly serious about encouraging everyone to use water as efficiently as possible," said Metropolitan board Chairman Wes Bannister.

"These upgrades to our conservation program provide a real link between water savings, environment benefits and fiscal responsibility," Bannister said. "We're creating a conservation climate that has the potential for even greater water savings without having to make sacrifices."

As part of a new five-year conservation strategy developed in coordination with its 26 member public agencies, Metropolitan will increase incentives to local agencies for new high efficiency programs and devices from $154 for every acre-foot of conserved water to $195 per acre-foot up to 100 percent of the cost of a device. An acre-foot of water is nearly 326,000 gallons, about the amount used by two typical Southern California families in and around their homes in a year.

Metropolitan currently offers rebate packages for a variety of devices, including ultra low-flush toilets and urinals, high-efficiency clothes washers, weather-sensitive irrigation controllers, waterbrooms, and cooling tower conductivity controllers. Customized incentive programs also are available to homeowners' associations for large landscapes and for industries that use water in processing or manufacturing. During 2005, Metropolitan issued approximately 300,000 rebates for devices that are now saving 9,000 acre-feet a year in Southern California.

Through today's action, Metropolitan will expand the rebate list to include high efficiency toilets that save up to 14,000 gallons of water a year; high-efficiency urinals (20,000 gallons in annual savings); waterless urinals (40,000 gallons annually); cooling tower controllers that conserve up to 844,000 gallons annually; and connectionless food steamers that save more than 80,000 gallons a year.

"These are truly the next generation of water-saving devices," said Debra C. Man, Metropolitan interim chief executive officer and general manager. "When it comes to saving water, we have led the way in developing and promoting new technologies that will ultimately help us save more than 1.1 million acre-feet of drinking water a year by 2025."

While maintaining Metropolitan's innovative conservation program, which provides $250,000 in competitive grants every two years for research into new water-saving devices, technologies and systems, the board also created an enhanced conservation program. The enhanced conservation pilot program will award $4 million in competitive grants every other year to pilot and develop programs and improvements that maximize innovative water-saving devices and technologies.

Detailed information on Metropolitan's conservation and rebate programs can be found on the district's Web site, and under the Rebates section of http://www.bewaterwise.com/.

Also, refer to the attached Board Letter describing Metropolitan's water conservation efforts and achievements between January and June 2006.

ENVIRONMENTAL EXTERNALITIES

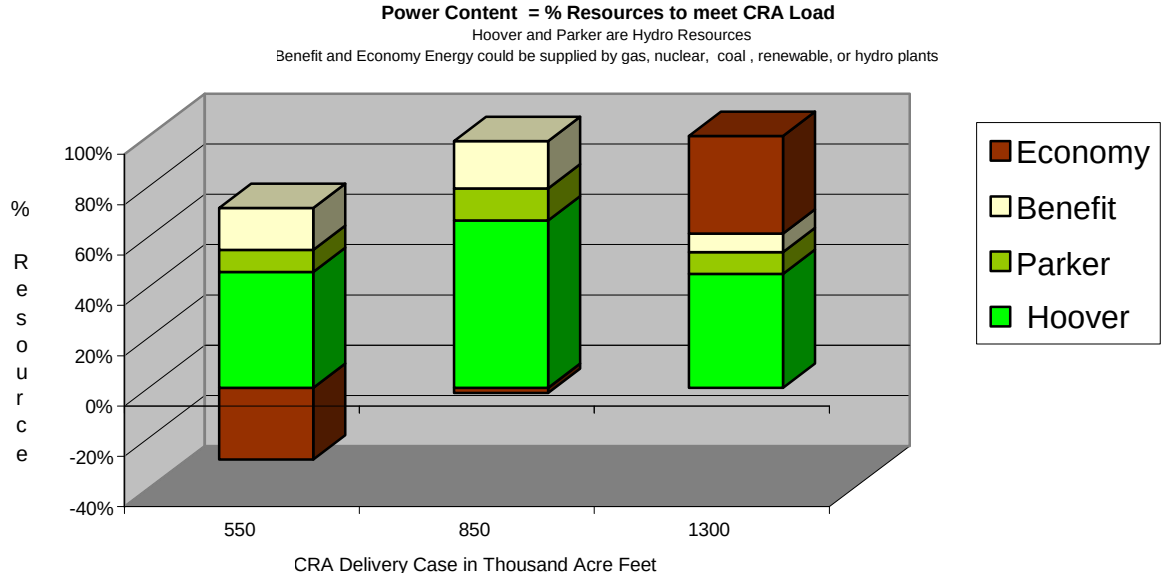
Part of Metropolitan's mission is to assure that its service is provided in an environmentally responsible way. Although Metropolitan complies with all federal, state and local standards for environmental protection in its CRA operations, there are potential "external" costs associated with the generation and delivery of power which are not incurred by Metropolitan. These societal costs or externalities have been considered in the development of this PIRP.

Externalities include a range of potential impacts associated with the development and operation of resources for which no cost is incurred by the utility, but which impose some uncertain cost on society. To date, the primary focus of regulatory review of externalities has been on the residual air emissions which

fossil fuel-fired power plants emit. Other potential externalities exist, including recreation impacts, socioeconomic impacts, and impacts associated with exploration, production and delivery of a fuel supply.

General trends have been established in valuation mechanisms for residual air emissions, although there is no consensus on what pollutants should be measured, precisely how they should be valued, or how resource planning decisions should be influenced by their consideration. For the purpose of this discussion, only the relative magnitude of residual air emissions is considered.

Metropolitan relies heavily on existing hydroelectric generation, which involves essentially no residual air emissions. For the 550,000AF Minimum Delivery Case, the Hoover and Parker hydro resources supply 127% of the energy needed to meet the CRA pump load requirements, so 27% of hydro resources and all the Benefit energy is surplus to CRA pump needs. For the 850,000 AF Expected Delivery Case, 83% of the energy is from Hoover and Parker hydro resources and of the remaining amount of Benefit energy, 2% or 36 GWH is surplus energy. For the 1,300,000 AF Maximum Delivery Case, Hoover and Parker supply 54% of the CRA pump load requirements, the remaining is provided as 7% Benefit energy and 39% economy energy which could be provided from the market from a variety of market resources.



Therefore, at least 83% of Metropolitan's CRA load is supplied by clean energy (hydro) during the next ten years when CRA deliveries are not expected to exceed 850,000 AF.

Percent of Resources that Meet CRA Pump Load Requirements	
CRA Delivery Case	% Hydro Resources
550,000 AF (Min)	127%
850,000 AF (Expected)	83%
1,300,000 AF (Max)	54%

Under circumstances when CRA deliveries exceed 915,000AF, Metropolitan displaces the need to construct new generating facilities by purchasing off-peak economy energy from existing facilities, which reduces the site-specific environmental impacts of Metropolitan's pumping energy requirements.

Although the externalities associated with economy energy purchases are relatively small, it is still likely that some level of residual air emissions will be associated with generation of such energy. It is possible that renewable energy supplies, which would result in lower residual emissions, could be developed by Metropolitan at a greater cost than economy energy, although increased local aesthetic or other impacts may be associated with their development.

RESOURCE SCREENING AND INTEGRATION

Figures 3 and 4 compare the cost of energy resource options to Metropolitan's marginal cost under both High Case and Low Case natural gas prices. No energy resource option is comparable in cost-effectiveness to Metropolitan's marginal cost. As a result, no new energy supply resources should be included in Metropolitan's preferred resource plan.

No change in Metropolitan's marginal cost is projected to result from the inclusion of the planned efficiency measures. Since CRA deliveries are not expected to be greater than 915,000AF for the next ten years, no new energy supply resources are planned other than the small renewable energy resources mentioned above. Therefore, the resource integration phase is relatively simple, leading to a conclusion regarding Metropolitan's preferred resource plan.

PREFERRED RESOURCE PLAN

Based on the analyses and considerations presented herein, Metropolitan's preferred resource plan is the continued reliance on Hoover and Parker Power Plants' energy supplies, Edison benefit energy, exchange energy, and if necessary economy energy purchases facilitated by the WSPP. Efficiency measures will continue to be considered and implemented as appropriate. While this plan is expected to be the least cost strategy for meeting CRA pumping energy requirements under the assumptions noted above, the impact of risk and uncertainty is considered below.

RISK AND UNCERTAINTY

The forecast range of CRA pumping loads rests on a broad range of possible CRA water deliveries. That range is judged to provide adequate consideration of uncertainty related to the actual water deliveries available to Metropolitan. A potential risk associated with CRA water deliveries is any determination of adverse effects on federally threatened or endangered species and designated critical habitat within the Colorado River, which could result in reduced deliveries. To overcome this uncertainty, Metropolitan has supported and is participating in a multi-species habitat conservation plan for the Lower Colorado River.

One of the principal benefits of Metropolitan's reliance on economy energy purchases in its preferred resource plan is the flexibility such purchases provide in meeting Metropolitan's highly variable and uncertain year-to-year energy requirements. Reliance on other energy resource options would subject Metropolitan's customers to greater risk of increased costs in years where such energy is surplus.

Metropolitan's transmission facilities are operated in accordance with Western Electricity Coordinating Council standards. Metropolitan believes that the risk to its CRA load of a transmission service interruption is limited, and within industry standards.

The continued availability, subject to contract limitations, of Metropolitan's resources from Hoover and Parker Power Plants, does pose some uncertainty, threatened either by the risk of a catastrophic accident at one of the facilities, critical habitat restrictions, or by activity in Congress. Metropolitan's objective is to protect the entitlement to the Hoover and Parker Power Plants, continue supporting the multi-species habitat conservation plan, and to provide a long-term power supply at the most cost-effective price.

Contract purchase rates for the energy resources from Hoover and Parker Power Plants are based on the cost of repaying the original investment, necessary replacements, and the annual expense associated with operation and maintenance. It is expected that other potential sources of supply will be less economic than the Hoover and Parker Power Plant resources over the balance of the Hoover contract term.

The ongoing changes in the electricity market is certainly not without significant risks and uncertainties, with vulnerabilities and opportunities among the expanding set of options. Because Metropolitan is a net buyer of resources when the CRA deliveries exceed 915,000 AF, the ongoing electric restructuring efforts may provide opportunities advantageous to procuring competitive spot market prices. However at the same time, restructuring may also result in cost increases in power provided under existing contracts and tariff schedules. Although EPAMP does not address the electric restructuring issues directly, there are risks and uncertainties which are difficult to assess as market structure and rules continue to evolve.

The Service and Interchange Agreement may be terminated by Metropolitan or Edison on five years advance notice. Metropolitan will continue to monitor proceedings before both the CPUC and FERC in considering its options and opportunities, and will participate as necessary to protect its rights under existing contracts. The Coordination Agreement with DWR is also subject to a five-year notice provision. Metropolitan continually seeks to cooperate with both Edison and DWR to review the status of industry restructuring and to explore opportunities to work together.

The comparison of Metropolitan's expected marginal energy cost to the cost of alternative resources was based on a range of possible CRA delivery levels for each of the alternative marginal sources of energy in Metropolitan's preferred plan. For CRA deliveries less than approximately 915,000 AF, Metropolitan has no need for additional energy. However, for CRA deliveries greater than 915,000 AF, Metropolitan's expected marginal cost would remain near or below the forecasted cost of each alternative energy resource identified except coal. Metropolitan concludes that the risk associated with the estimated future composition of marginal energy supplies in its preferred plan is insignificant.

The cost and availability of economy energy supplies is subject to some uncertainty, as reflected by the range of costs considered in developing the forecast of Metropolitan's marginal cost. Although the cost of these supplies may increase, Metropolitan does not believe that an alternative energy resource portfolio could be defined that would reduce this risk, and, as noted, Metropolitan's preferred plan would not change even with a significant increase in reliance on its highest cost alternative energy resource. Again, a competitive energy market certainly has the potential to decrease off-peak economy energy prices and thereby benefits Metropolitan to acquire low cost energy in the preferred resource plan.

In summary, Metropolitan has identified certain risks and uncertainties, however none would change Metropolitan's conclusion regarding its preferred resource plan.

PUBLIC INVOLVEMENT

Metropolitan is governed by a 37-member Board of Directors (Board) representing 26 member agencies. The Board meetings are held monthly in Metropolitan's headquarters located in downtown Los Angeles and are open to the public.

The Board is informed of issues and alternatives related to power supply contracting, and improvements in the efficiency, reliability and safety related to CRA power operations. Also, the Board is aware of ongoing efforts to minimize the cost of resources used to meet the pumping requirements for the CRA, water conservation programs, and efforts to study the potential to increase renewable energy resources on Metropolitan's system.

FIVE-YEAR ACTION PLAN

The following activities to be completed by Metropolitan in the next five years:

1) Reexamine the forecasted CRA pumping loads, existing power resources, and alternative sources of power supply; and provide annual PIRP status reports. Then update the PIRP in five years or as in accordance with Western's regulations in compliance with the National Energy Policy Act.

2) Monitor actions, plans, and administrative issues relative to the long term firm contracts outlined in two Hoover documents; the Boulder Canyon Project Ten Year Plan and Boulder Canyon Project Implementation Agreement.

3) Report on the status of Metropolitan's efforts to expand its renewable energy resources on or near its water delivery system.

4) Report on Metropolitan's water conservation efforts and performance.

5) Report on Metropolitan's demand side management (load shedding) efforts.

6) Monitor and report annual CRA pump performance and kWh per AF energy requirements.

7) Continue optimization of Metropolitan's energy requirements for the CRA pumping operations.

8) Continue attendance and participation at the Hoover and Parker committees and work groups; various Western customer group meetings and workshops; and obtain technical assistance from Western if necessary, as provided in the EPAMP ruling.

9) Continue to monitor, participate in, and protect Metropolitan's interests in proceedings before the California Energy Commission, the CPUC, Legislature, the FERC, and other state and federal agencies as they may influence regulatory policies affecting Metropolitan's risks and resource options.

10) Monitor the EPAMP Power Marketing Initiative (PMI) and continue to encourage Western to conduct workshops and hearings to establish the plans for Hoover post-2017.

Attachment 1

INTEGRATED RESOURCE PLAN
for
METROPOLITAN'S COLORADO RIVER AQUEDUCT
POWER OPERATIONS

IRP Criteria Checklist

a.) An IRP should support customer-developed goals and schedules. Evaluate a full range of practicable alternatives for energy resources, and include:

1) An assessment of resources on an equitable basis, where supply side, demand-side, and renewable resources are compared on a fair and accurate basis to determine an appropriate low-cost resource portfolio, and
2) An integration of all options in a comprehensive manner

b.) IRP Criteria are listed below per the Revised IRP Regulations effective May 1, 2000:

√	Identify and compare all practicable energy efficiency and energy supply resource options.
√	Include an action plan with timing set by customer.
√	Describe efforts to minimize adverse effects of new resource acquisitions.
√	Provide ample opportunity for full public participation
√	Conduct load forecasting.
√	Provide methods of validating predicted performance to determine whether objectives in the IRP are being met.

Figure 1

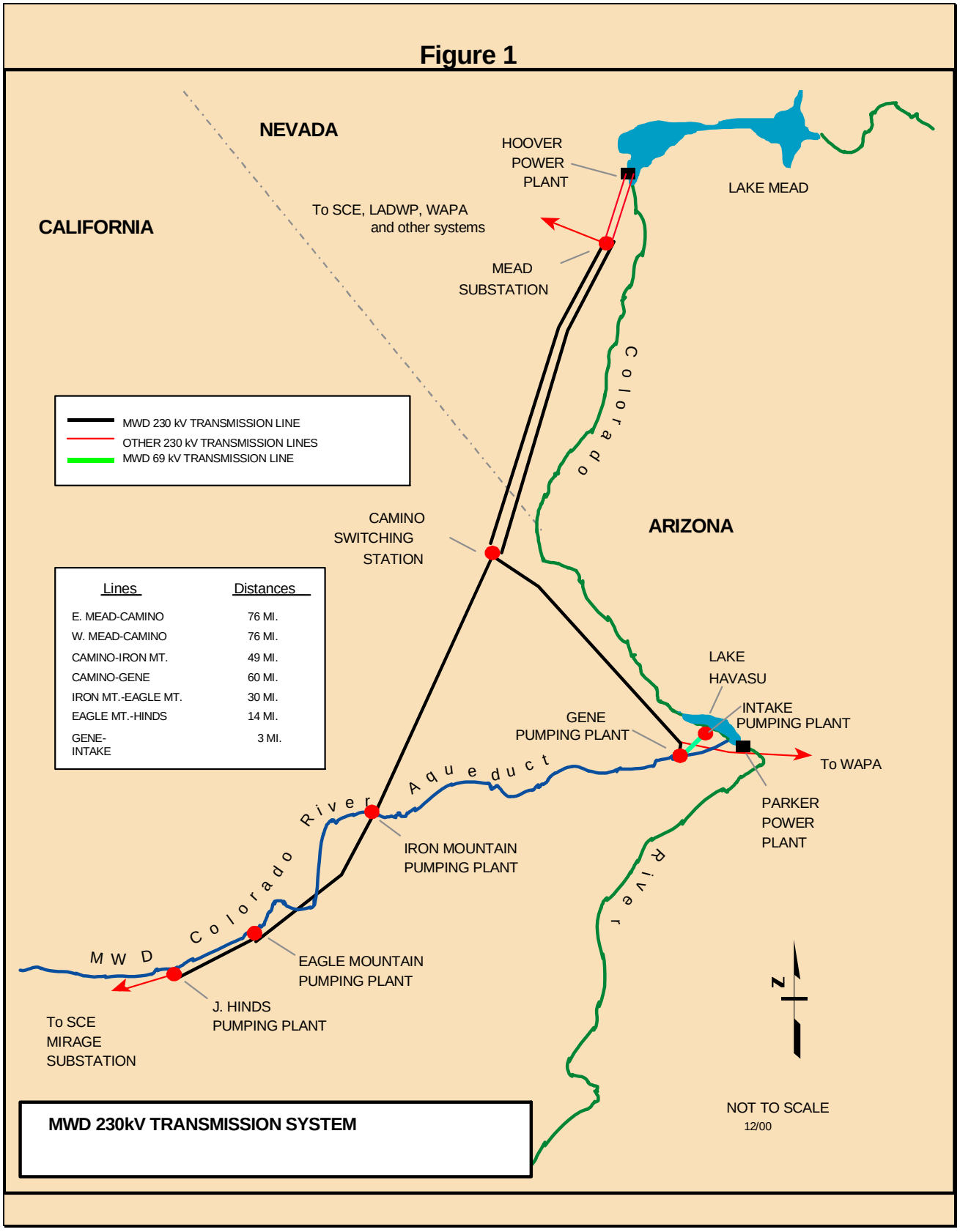
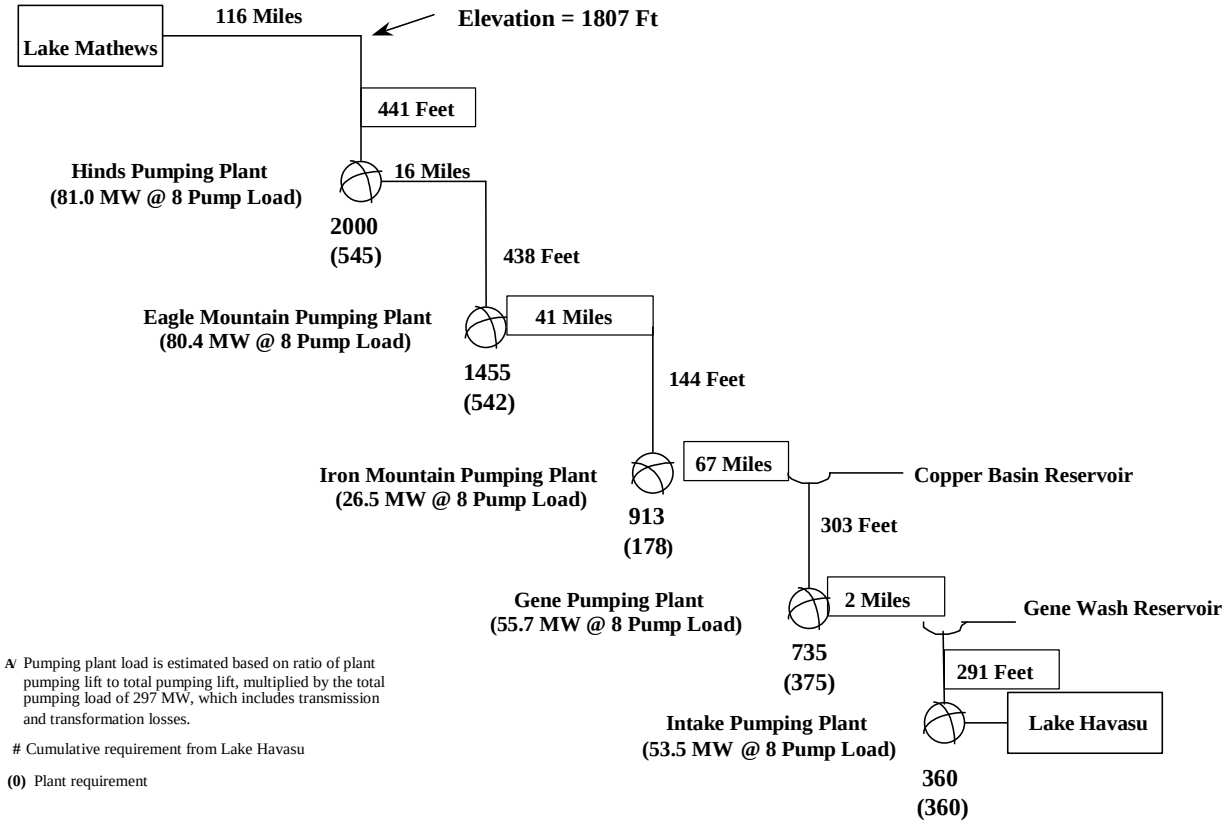

NEVADA
CALIFORNIA
ARIZONA
HOOVER POWER PLANT
LAKE MEAD
To SCE, LADWP, WAPA and other systems
MEAD SUBSTATION
Colorado
MWD 230 kV TRANSMISSION LINE
OTHER 230 kV TRANSMISSION LINES
MWD 69 kV TRANSMISSION LINE
CAMINO SWITCHING STATION
Lines
Distances
E. MEAD-CAMINO 76 MI.
W. MEAD-CAMINO 76 MI.
CAMINO-IRON MT. 49 MI.
CAMINO-GENE 60 MI.
IRON MT.-EAGLE MT. 30 MI.
EAGLE MT.-HINDS 14 MI.
GENE-INTAKE 3 MI.
LAKE HAVASU
INTAKE PUMPING PLANT
GENE PUMPING PLANT
To WAPA
PARKER POWER PLANT
Colorado River Aqueduct
IRON MOUNTAIN PUMPING PLANT
River
MWD
EAGLE MOUNTAIN PUMPING PLANT
J. HINDS PUMPING PLANT
To SCE MIRAGE SUBSTATION
N
NOT TO SCALE
12/00
MWD 230kV TRANSMISSION SYSTEM

Figure 2
Metropolitan's Colorado River Aqueduct Pumping Loads, Lifts and Distances A/



A/ Pumping plant load is estimated based on ratio of plant pumping lift to total pumping lift, multiplied by the total pumping load of 297 MW, which includes transmission and transformation losses.

Cumulative requirement from Lake Havasu

(0) Plant requirement

Appendix 1

INTEGRATED RESOURCE PLAN
for
METROPOLITAN'S COLORADO RIVER AQUEDUCT
POWER OPERATIONS

Cost Analysis
Metropolitan's Marginal Resource Summary

Appendix 1

Annual Power Costs in mills/kWh									MARGINAL RESOURCE SUMMARY IN MILLS/kWh					
									Resource		550,000 AF		850,000 AF	1,300,000 AF
									Hoover/Parker/Benefit		0%		0%	0%
									Purchases		0%		0%	100%
	Low				High				Marginal Cost					
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	Low Case (550,000 AF)		Expected Case (850,000 AF)		High Case (1,300,000 AF)	
Assumption/Year	Parker	Hoover	Econ.Purch	Econ. Sales	Parker	Hoover	Econ. Purch	Econ. Sales	Low	High	Low	High	Low	High
FY 2007 Mills/kWh	16.7	14.0	39	48.75	16.7	14.0	39	48.75						
Esc. Rate	3.5%	3.5%	0.994%	0.994%	3.5%	3.5%	2.0%	2.0%						
Discount Rate	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%						
2007	16.7	14.0	39.0	48.8	16.7	14.0	39.0	48.8	0	0	0	0	39	39
2008	17.3	14.5	39.4	49.2	17.3	14.5	39.8	49.7	0	0	0	0	39	40
2009	17.9	15.0	39.8	49.7	17.9	15.0	40.6	50.7	0	0	0	0	40	41
2010	18.5	15.6	40.2	50.2	18.5	15.6	41.4	51.7	0	0	0	0	40	41
2011	19.2	16.1	40.6	50.7	19.2	16.1	42.2	52.8	0	0	0	0	41	42
2012	19.8	16.7	41.0	51.2	19.8	16.7	43.1	53.8	0	0	0	0	41	43
2013	20.5	17.2	41.4	51.7	20.5	17.2	43.9	54.9	0	0	0	0	41	44
2014	21.2	17.9	41.8	52.2	21.2	17.9	44.8	56.0	0	0	0	0	42	45
2015	22.0	18.5	42.2	52.8	22.0	18.5	45.7	57.1	0	0	0	0	42	46
2016	22.8	19.1	42.6	53.3	22.8	19.1	46.6	58.3	0	0	0	0	43	47
2017	23.6	19.8	43.1	53.8	23.6	19.8	47.5	59.4	0	0	0	0	43	48
2018	24.4	20.5	43.5	54.4	24.4	20.5	48.5	60.6	0	0	0	0	43	48
2019	25.2	21.2	43.9	54.9	25.2	21.2	49.5	61.8	0	0	0	0	44	49
2020	26.1	21.9	44.4	55.4	26.1	21.9	50.5	63.1	0	0	0	0	44	50
2021	27.0	22.7	44.8	56.0	27.0	22.7	51.5	64.3	0	0	0	0	45	51
2022	28.0	23.5	45.2	56.5	28.0	23.5	52.5	65.6	0	0	0	0	45	52
2023	29.0	24.3	45.7	57.1	29.0	24.3	53.5	66.9	0	0	0	0	46	54
2024	30.0	25.2	46.1	57.7	30.0	25.2	54.6	68.3	0	0	0	0	46	55
2025	31.0	26.1	46.6	58.2	31.0	26.1	55.7	69.6	0	0	0	0	47	56
2026	32.1	27.0	47.1	58.8	32.1	27.0	56.8	71.0	0	0	0	0	47	57
2027	33.2	27.9	47.5	59.4	33.2	27.9	58.0	72.4	0	0	0	0	48	58
2028	34.4	28.9	48.0	60.0	34.4	28.9	59.1	73.9	0	0	0	0	48	59
2029	35.6	29.9	48.5	60.6	35.6	29.9	60.3	75.4	0	0	0	0	48	60
2030	36.8	31.0	49.0	61.2	36.8	31.0	61.5	76.9	0	0	0	0	49	61
2031	38.1	32.0	49.4	61.8	38.1	32.0	62.7	78.4	0	0	0	0	49	63
2032	39.5	33.2	49.9	62.4	39.5	33.2	64.0	80.0	0	0	0	0	50	64
2033	40.8	34.3	50.4	63.0	40.8	34.3	65.3	81.6	0	0	0	0	50	65
2034	42.3	35.5	50.9	63.7	42.3	35.5	66.6	83.2	0	0	0	0	51	67
2035	43.8	36.8	51.4	64.3	43.8	36.8	67.9	84.9	0	0	0	0	51	68
2036	45.3	38.0	52.0	64.9	45.3	38.0	69.3	86.6	0	0	0	0	52	69
2037	46.9	39.4	52.5	65.6	46.9	39.4	70.6	88.3	0	0	0	0	52	71
Levelized Rate	26.1	21.6	43.7	54.7	26.1	21.6	49.4	61.8	0	0	0	0	45	53

(1) & (2) General inflation rate assumed.
(3) & (4) From Metropolitan's FY07 Budget estimation, Economy Purchases occur during off-peak hours.
(3) & (4) Escalation rates: Determined as average 2007-2037 from EIA Energy Outlook 2006, Figure 76, low price scenario as 0.994% and high price scenario as 2%.

Appendix 2

INTEGRATED RESOURCE PLAN
for
METROPOLITAN'S COLORADO RIVER AQUEDUCT
POWER OPERATIONS

Cost Analysis
Conventional and Renewable Resource
Evaluations

UNIT: Conventional Gas Combined Cycle, Low Price Escalation

Utility Discount Rate:	5.00%
Estimated Life (years):	20
Capital Recovery Factor:	8.02
Size[1] (MW):	160
Heat Rate[1] (Btu/kWh):	7,196
Capital Cost[1] ($/kW):	584
Capacity Factor (%):	60%
Fixed O&M[1] ($/kW/year):	11.37
Variable O&M[1] (mills/kWh):	1.88
Fuel Cost ($/MMBtu):	8.20
Fuel Cost Escalation Rate (%):	0.994%
O&M Escalation Rate (%):	3.50%
Energy Generation (kWh/year):	840,960,000

Year	Capital Charges	Fixed O&M	Fuel	Variable O&M	Total Cost	Present Worth Of Cost
2007	7,497,867	1,819,200	49,622,695	1,581,005	60,520,767	60,520,767
2008	7,497,867	1,882,872	50,115,944	1,636,340	61,133,024	58,221,927
2009	7,497,867	1,948,773	50,614,097	1,693,612	61,754,349	56,013,015
2010	7,497,867	2,016,980	51,117,201	1,752,888	62,384,936	53,890,454
2011	7,497,867	2,087,574	51,625,306	1,814,239	63,024,987	51,850,812
2012	7,497,867	2,160,639	52,138,462	1,877,738	63,674,706	49,890,798
2013	7,497,867	2,236,261	52,656,718	1,943,459	64,334,305	48,007,249
2014	7,497,867	2,314,530	53,180,126	2,011,480	65,004,003	46,197,131
2015	7,497,867	2,395,539	53,708,736	2,081,881	65,684,024	44,457,533
2016	7,497,867	2,479,383	54,242,601	2,154,747	66,374,598	42,785,658
2017	7,497,867	2,566,161	54,781,772	2,230,163	67,075,964	41,178,824
2018	7,497,867	2,655,977	55,326,303	2,308,219	67,788,367	39,634,454
2019	7,497,867	2,748,936	55,876,247	2,389,007	68,512,057	38,150,077
2020	7,497,867	2,845,149	56,431,657	2,472,622	69,247,295	36,723,319
2021	7,497,867	2,944,729	56,992,587	2,559,164	69,994,348	35,351,902
2022	7,497,867	3,047,795	57,559,094	2,648,735	70,753,490	34,033,638
2023	7,497,867	3,154,467	58,131,231	2,741,440	71,525,006	32,766,429
2024	7,497,867	3,264,874	58,709,055	2,837,391	72,309,187	31,548,259
2025	7,497,867	3,379,144	59,292,623	2,936,699	73,106,334	30,377,192
2026	7,497,867	3,497,414	59,881,992	3,039,484	73,916,758	29,251,371
2027	7,497,867	3,619,824	60,477,219	3,145,866	74,740,776	28,169,012

Cumulative Present Worth:	828,499,055
Levelized Annual Cost (2001$):	66,480,908
Levelized Cost (mills/kWh):	79.05

1. Department of Energy, "Assumptions to the Annual Energy Outlook 2006", December 2005, Table 38, pg =73.

UNIT: Conventional Gas Combined Cycle, High Price Escalation

Utility Discount Rate:	5.00%
Estimated Life (years):	20
Capital Recovery Factor:	8.02
Size[1] (MW):	160
Heat Rate[1] (Btu/kWh):	7,196
Capital Cost[1] ($/kW):	584
Capacity Factor (%):	60%
Fixed O&M[1] ($/kW/year):	11.37
Variable O&M[1] (mills/kWh):	1.88
Fuel Cost ($/MMBtu):	8.20
Fuel Cost Escalation Rate (%):	2.0%
O&M Escalation Rate (%):	3.50%
Energy Generation (kWh/year):	840,960,000

Year	Capital Charges	Fixed O&M	Fuel	Variable O&M	Total Cost	Present Worth Of Cost
2007	7,497,867	1,819,200	49,622,695	1,581,005	60,520,767	60,520,767
2008	7,497,867	1,882,872	50,615,149	1,636,340	61,632,228	58,697,360
2009	7,497,867	1,948,773	51,627,452	1,693,612	62,767,704	56,932,157
2010	7,497,867	2,016,980	52,660,001	1,752,888	63,927,736	55,223,182
2011	7,497,867	2,087,574	53,713,201	1,814,239	65,112,881	53,568,529
2012	7,497,867	2,160,639	54,787,465	1,877,738	66,323,709	51,966,361
2013	7,497,867	2,236,261	55,883,214	1,943,459	67,560,801	50,414,910
2014	7,497,867	2,314,530	57,000,878	2,011,480	68,824,756	48,912,469
2015	7,497,867	2,395,539	58,140,896	2,081,881	70,116,184	47,457,393
2016	7,497,867	2,479,383	59,303,714	2,154,747	71,435,711	46,048,097
2017	7,497,867	2,566,161	60,489,788	2,230,163	72,783,980	44,683,050
2018	7,497,867	2,655,977	61,699,584	2,308,219	74,161,647	43,360,779
2019	7,497,867	2,748,936	62,933,576	2,389,007	75,569,386	42,079,862
2020	7,497,867	2,845,149	64,192,247	2,472,622	77,007,885	40,838,926
2021	7,497,867	2,944,729	65,476,092	2,559,164	78,477,852	39,636,648
2022	7,497,867	3,047,795	66,785,614	2,648,735	79,980,010	38,471,753
2023	7,497,867	3,154,467	68,121,326	2,741,440	81,515,101	37,343,007
2024	7,497,867	3,264,874	69,483,753	2,837,391	83,083,885	36,249,224
2025	7,497,867	3,379,144	70,873,428	2,936,699	84,687,139	35,189,255
2026	7,497,867	3,497,414	72,290,896	3,039,484	86,325,662	34,161,996
2027	7,497,867	3,619,824	73,736,714	3,145,866	88,000,271	33,166,377

Cumulative Present Worth:	894,401,335
Levelized Annual Cost (2001$):	71,769,077
Levelized Cost (mills/kWh):	85.34

1. Department of Energy, "Assumptions to the Annual Energy Outlook 2006", December 2005, Table 38, pg =73.

UNIT: Coal-Fired Steam Cycle, Low Price Escalation

Utility Discount Rate:	5.00%
Estimated Life (years):	30
Capital Recovery Factor:	6.51
Size[1] (MW):	600
Heat Rate[1] (Btu/kWh):	8,844
Capital Cost[1] ($/kW):	1,249
Capacity Factor (%):	70%
Fixed O&M[1] ($/kW/year):	25.07
Variable O&M[1] (mills/kWh):	4.18
Fuel Cost ($/MMBtu):	1.07
Fuel Cost Escalation Rate (%):	1.78%
O&M Escalation Rate (%):	3.50%
Energy Generation (kWh/year):	3,679,200,000

Year	Capital Charges	Fixed O&M	Fuel	Variable O&M	Total Cost	Present Worth Of Cost
2007	48,749,545	15,042,000	34,816,564	15,379,056	113,987,165	113,987,165
2008	48,749,545	15,568,470	35,436,299	15,917,323	115,671,637	110,163,464
2009	48,749,545	16,113,366	36,067,065	16,474,429	117,404,406	106,489,257
2010	48,749,545	16,677,334	36,709,059	17,051,034	119,186,973	102,958,188
2011	48,749,545	17,261,041	37,362,480	17,647,820	121,020,887	99,564,183
2012	48,749,545	17,865,177	38,027,532	18,265,494	122,907,749	96,301,437
2013	48,749,545	18,490,459	38,704,422	18,904,787	124,849,213	93,164,405
2014	48,749,545	19,137,625	39,393,361	19,566,454	126,846,985	90,147,784
2015	48,749,545	19,807,442	40,094,563	20,251,280	128,902,830	87,246,509
2016	48,749,545	20,500,702	40,808,246	20,960,075	131,018,568	84,455,737
2017	48,749,545	21,218,227	41,534,633	21,693,677	133,196,082	81,770,840
2018	48,749,545	21,960,864	42,273,949	22,452,956	135,437,315	79,187,393
2019	48,749,545	22,729,495	43,026,425	23,238,810	137,744,275	76,701,167
2020	48,749,545	23,525,027	43,792,296	24,052,168	140,119,036	74,308,116
2021	48,749,545	24,348,403	44,571,799	24,893,994	142,563,741	72,004,377
2022	48,749,545	25,200,597	45,365,177	25,765,283	145,080,603	69,786,250
2023	48,749,545	26,082,618	46,172,677	26,667,068	147,671,909	67,650,203
2024	48,749,545	26,995,510	46,994,550	27,600,416	150,340,021	65,592,853
2025	48,749,545	27,940,352	47,831,053	28,566,430	153,087,382	63,610,969
2026	48,749,545	28,918,265	48,682,446	29,566,255	155,916,512	61,701,458
2027	48,749,545	29,930,404	49,548,994	30,601,074	158,830,018	59,861,363
2028	48,749,545	30,977,968	50,430,966	31,672,112	161,830,591	58,087,855
2029	48,749,545	32,062,197	51,328,637	32,780,636	164,921,015	56,378,228
2030	48,749,545	33,184,374	52,242,287	33,927,958	168,104,164	54,729,892
2031	48,749,545	34,345,827	53,172,199	35,115,437	171,383,009	53,140,371
2032	48,749,545	35,547,931	54,118,665	36,344,477	174,760,618	51,607,295
2033	48,749,545	36,792,109	55,081,977	37,616,534	178,240,165	50,128,395
2034	48,749,545	38,079,832	56,062,436	38,933,112	181,824,926	48,701,501
2035	48,749,545	39,412,627	57,060,347	40,295,771	185,518,291	47,324,536
2036	48,749,545	40,792,069	58,076,022	41,706,123	189,323,759	45,995,511
2037	48,749,545	42,219,791	59,109,775	43,165,838	193,244,949	44,712,523

Cumulative Present Worth:	2,153,472,061
Levelized Annual Cost (2001$):	140,086,448
Levelized Cost (mills/kWh):	38.08

1. Department of Energy, "Assumptions to the Annual Energy Outlook 2006", December 2005, Table 38, pg =73.

UNIT: Coal-Fired Steam Cycle, High Price Escalation

Utility Discount Rate:	5.00%
Estimated Life (years):	30
Capital Recovery Factor:	6.51
Size[1] (MW):	600
Heat Rate[1] (Btu/kWh):	8,844
Capital Cost[1] ($/kW):	1,249
Capacity Factor (%):	70%
Fixed O&M[1] ($/kW/year):	25.07
Variable O&M[1] (mills/kWh):	4.18
Fuel Cost ($/MMBtu):	1.07
Fuel Cost Escalation Rate (%):	3.50%
O&M Escalation Rate (%):	3.50%
Energy Generation (kWh/year):	3,679,200,000

Year	Capital Charges	Fixed O&M	Fuel	Variable O&M	Total Cost	Present Worth Of Cost
2007	48,749,545	15,042,000	34,816,564	15,379,056	113,987,165	113,987,165
2008	48,749,545	15,568,470	36,035,144	15,917,323	116,270,482	110,733,792
2009	48,749,545	16,113,366	37,296,374	16,474,429	118,633,715	107,604,277
2010	48,749,545	16,677,334	38,601,747	17,051,034	121,079,661	104,593,163
2011	48,749,545	17,261,041	39,952,808	17,647,820	123,611,215	101,695,252
2012	48,749,545	17,865,177	41,351,156	18,265,494	126,231,373	98,905,584
2013	48,749,545	18,490,459	42,798,447	18,904,787	128,943,237	96,219,429
2014	48,749,545	19,137,625	44,296,392	19,566,454	131,750,016	93,632,277
2015	48,749,545	19,807,442	45,846,766	20,251,280	134,655,033	91,139,827
2016	48,749,545	20,500,702	47,451,403	20,960,075	137,661,725	88,737,975
2017	48,749,545	21,218,227	49,112,202	21,693,677	140,773,651	86,422,810
2018	48,749,545	21,960,864	50,831,129	22,452,956	143,994,495	84,190,599
2019	48,749,545	22,729,495	52,610,219	23,238,810	147,328,068	82,037,781
2020	48,749,545	23,525,027	54,451,576	24,052,168	150,778,317	79,960,960
2021	48,749,545	24,348,403	56,357,381	24,893,994	154,349,323	77,956,897
2022	48,749,545	25,200,597	58,329,890	25,765,283	158,045,316	76,022,499
2023	48,749,545	26,082,618	60,371,436	26,667,068	161,870,668	74,154,818
2024	48,749,545	26,995,510	62,484,436	27,600,416	165,829,907	72,351,039
2025	48,749,545	27,940,352	64,671,391	28,566,430	169,927,720	70,608,477
2026	48,749,545	28,918,265	66,934,890	29,566,255	174,168,956	68,924,570
2027	48,749,545	29,930,404	69,277,611	30,601,074	178,558,635	67,296,872
2028	48,749,545	30,977,968	71,702,328	31,672,112	183,101,953	65,723,048
2029	48,749,545	32,062,197	74,211,909	32,780,636	187,804,287	64,200,871
2030	48,749,545	33,184,374	76,809,326	33,927,958	192,671,203	62,728,215
2031	48,749,545	34,345,827	79,497,652	35,115,437	197,708,461	61,303,049
2032	48,749,545	35,547,931	82,280,070	36,344,477	202,922,024	59,923,436
2033	48,749,545	36,792,109	85,159,873	37,616,534	208,318,060	58,587,524
2034	48,749,545	38,079,832	88,140,468	38,933,112	213,902,958	57,293,548
2035	48,749,545	39,412,627	91,225,384	40,295,771	219,683,328	56,039,819
2036	48,749,545	40,792,069	94,418,273	41,706,123	225,666,010	54,824,727
2037	48,749,545	42,219,791	97,722,912	43,165,838	231,858,086	53,646,732

Cumulative Present Worth:	2,327,459,870
Levelized Annual Cost (2001$):	151,404,605
Levelized Cost (mills/kWh):	41.15

1. Department of Energy, "Assumptions to the Annual Energy Outlook 2006", December 2005, Table 38, pg =73.

UNIT: Combustion Turbine, Low Gas Price

Utility Discount Rate:	5.00%	
Estimated Life (years):	20	
Capital Recovery Factor:	8.02	
Size[1] (MW):	160	
Heat Rate[1] (Btu/kWh):	10,842	
Capital Cost[1] ($/kW):	407	
Capacity Factor (%):	25%	
Fixed O&M[1] ($/kW/year):	11.03	
Variable O&M[1] (mills/kWh):	3.25	
Fuel Cost ($/MMBtu):	6.20	Nymex 10/10/06
Fuel Cost Escalation Rate (%):	0.994%	
O&M Escalation Rate (%):	3.50%	
Energy Generation (kWh/year):	350,400,000	

Year	Capital Charges	Fixed O&M	Fuel	Variable O&M	Total Cost	Present Worth Of Cost
2007	5,225,397	1,764,800	31,152,102	1,138,800	39,281,099	39,281,099
2008	5,225,397	1,826,568	31,461,754	1,178,658	39,692,377	37,802,264
2009	5,225,397	1,890,498	31,774,483	1,219,911	40,110,290	36,381,215
2010	5,225,397	1,956,665	32,090,322	1,262,608	40,534,992	35,015,650
2011	5,225,397	2,025,149	32,409,300	1,306,799	40,966,645	33,703,360
2012	5,225,397	2,096,029	32,731,448	1,352,537	41,405,411	32,442,223
2013	5,225,397	2,169,390	33,056,799	1,399,876	41,851,462	31,230,205
2014	5,225,397	2,245,318	33,385,383	1,448,872	42,304,971	30,065,353
2015	5,225,397	2,323,905	33,717,234	1,499,582	42,766,118	28,945,792
2016	5,225,397	2,405,241	34,052,383	1,552,068	43,235,089	27,869,724
2017	5,225,397	2,489,425	34,390,864	1,606,390	43,712,076	26,835,423
2018	5,225,397	2,576,555	34,732,709	1,662,614	44,197,275	25,841,231
2019	5,225,397	2,666,734	35,077,952	1,720,805	44,690,889	24,885,559
2020	5,225,397	2,760,070	35,426,627	1,781,033	45,193,127	23,966,880
2021	5,225,397	2,856,672	35,778,768	1,843,369	45,704,206	23,083,730
2022	5,225,397	2,956,656	36,134,409	1,907,887	46,224,349	22,234,702
2023	5,225,397	3,060,139	36,493,585	1,974,663	46,753,784	21,418,447
2024	5,225,397	3,167,243	36,856,331	2,043,777	47,292,748	20,633,669
2025	5,225,397	3,278,097	37,222,683	2,115,309	47,841,486	19,879,126
2026	5,225,397	3,392,830	37,592,676	2,189,345	48,400,249	19,153,622
2027	5,225,397	3,511,579	37,966,348	2,265,972	48,969,296	18,456,013

Cumulative Present Worth:	539,844,188
Levelized Annual Cost (2001$):	43,318,494
Levelized Cost (mills/kWh):	123.63

1. Department of Energy, "Assumptions to the Annual Energy Outlook 2006", December 2005, Table 38, pg =73.

UNIT: Combustion Turbine, High Gas Price

Utility Discount Rate:	5.00%	
Estimated Life (years):	20	
Capital Recovery Factor:	8.02	
Size[1] (MW):	160	
Heat Rate[1] (Btu/kWh):	10,842	
Capital Cost[1] ($/kW):	407	
Capacity Factor (%):	25%	
Fixed O&M[1] ($/kW/year):	11.03	
Variable O&M[1] (mills/kWh):	3.25	
Fuel Cost ($/MMBtu):	8.20	Nymex 10/10/06
Fuel Cost Escalation Rate (%):	2.00%	
O&M Escalation Rate (%):	3.50%	
Energy Generation (kWh/year):	350,400,000	

Year	Capital Charges	Fixed O&M	Fuel	Variable O&M	Total Cost	Present Worth Of Cost
2007	5,225,397	1,764,800	31,152,102	1,138,800	39,281,099	39,281,099
2008	5,225,397	1,826,568	31,775,144	1,178,658	40,005,767	38,100,731
2009	5,225,397	1,890,498	32,410,647	1,219,911	40,746,453	36,958,234
2010	5,225,397	1,956,665	33,058,860	1,262,608	41,503,530	35,852,310
2011	5,225,397	2,025,149	33,720,037	1,306,799	42,277,382	34,781,707
2012	5,225,397	2,096,029	34,394,438	1,352,537	43,068,401	33,745,219
2013	5,225,397	2,169,390	35,082,326	1,399,876	43,876,989	32,741,685
2014	5,225,397	2,245,318	35,783,973	1,448,872	44,703,560	31,769,986
2015	5,225,397	2,323,905	36,499,652	1,499,582	45,548,536	30,829,042
2016	5,225,397	2,405,241	37,229,645	1,552,068	46,412,351	29,917,815
2017	5,225,397	2,489,425	37,974,238	1,606,390	47,295,450	29,035,304
2018	5,225,397	2,576,555	38,733,723	1,662,614	48,198,288	28,180,541
2019	5,225,397	2,666,734	39,508,397	1,720,805	49,121,334	27,352,597
2020	5,225,397	2,760,070	40,298,565	1,781,033	50,065,065	26,550,573
2021	5,225,397	2,856,672	41,104,537	1,843,369	51,029,975	25,773,605
2022	5,225,397	2,956,656	41,926,627	1,907,887	52,016,568	25,020,858
2023	5,225,397	3,060,139	42,765,160	1,974,663	53,025,359	24,291,528
2024	5,225,397	3,167,243	43,620,463	2,043,777	54,056,880	23,584,838
2025	5,225,397	3,278,097	44,492,872	2,115,309	55,111,675	22,900,039
2026	5,225,397	3,392,830	45,382,730	2,189,345	56,190,302	22,236,411
2027	5,225,397	3,511,579	46,290,384	2,265,972	57,293,333	21,593,255

Cumulative Present Worth:	581,216,276
Levelized Annual Cost (2001$):	46,638,298
Levelized Cost (mills/kWh):	133.10

1. Department of Energy, "Assumptions to the Annual Energy Outlook 2006", December 2005, Table 38, pg =73.

UNIT: Wind

Utility Discount Rate:	5.00%
Estimated Life (years):	20
Capital Recovery Factor:	8.02
Size[1] (MW):	50
Heat Rate[1] (Btu/kWh):	10,280
Capital Cost[1] ($/kW):	1,167
Capacity Factor[2] (%):	30%
Fixed O&M[1] ($/kW/year):	27.59
Variable O&M[1] (mills/kWh):	0.00
Fuel Cost ($/MMBtu):	0.00
Fuel Cost Escalation Rate (%):	0.00%
O&M Escalation Rate (%):	3.50%
Energy Generation (kWh/year):	131,400,000

Year	Capital Charges	Fixed O&M	Fuel	Variable O&M	Total Cost	Present Worth Of Cost
2007	4,682,155	1,379,500	0	0	6,061,655	6,061,655
2008	4,682,155	1,427,783	0	0	6,109,937	5,818,988
2009	4,682,155	1,477,755	0	0	6,159,910	5,587,220
2010	4,682,155	1,529,476	0	0	6,211,631	5,365,841
2011	4,682,155	1,583,008	0	0	6,265,163	5,154,365
2012	4,682,155	1,638,413	0	0	6,320,568	4,952,331
2013	4,682,155	1,695,758	0	0	6,377,913	4,759,297
2014	4,682,155	1,755,109	0	0	6,437,264	4,574,843
2015	4,682,155	1,816,538	0	0	6,498,693	4,398,571
2016	4,682,155	1,880,117	0	0	6,562,272	4,230,099
2017	4,682,155	1,945,921	0	0	6,628,076	4,069,064
2018	4,682,155	2,014,028	0	0	6,696,183	3,915,120
2019	4,682,155	2,084,519	0	0	6,766,674	3,767,937
2020	4,682,155	2,157,477	0	0	6,839,632	3,627,203
2021	4,682,155	2,232,989	0	0	6,915,144	3,492,618
2022	4,682,155	2,311,144	0	0	6,993,299	3,363,896
2023	4,682,155	2,392,034	0	0	7,074,189	3,240,767
2024	4,682,155	2,475,755	0	0	7,157,910	3,122,972
2025	4,682,155	2,562,406	0	0	7,244,561	3,010,265
2026	4,682,155	2,652,091	0	0	7,334,246	2,902,410
2027	4,682,155	2,744,914	0	0	7,427,069	2,799,184

Cumulative Present Worth:	82,152,991
Levelized Annual Cost (2001$):	6,592,169
Levelized Cost (mills/kWh):	50.17

1. Department of Energy, "Assumptions to the Annual Energy Outlook 2006", December 2005, Table 38, pg =73.

UNIT: Geothermal

Utility Discount Rate:	5.00%
Estimated Life (years):	15
Capital Recovery Factor:	9.63
Size[1] (MW):	50
Heat Rate[1] (Btu/kWh):	32,173
Capital Cost[1] ($/kW):	2,205
Capacity Factor (%):	75%
Fixed O&M[1] ($/kW/year):	75.00
Variable O&M[1] (mills/kWh):	5.00
Fuel Cost ($/MMBtu):	0.00
Fuel Cost Escalation Rate (%):	0.00%
O&M Escalation Rate (%):	3.50%
Energy Generation (kWh/year):	328,500,000

Year	Capital Charges	Fixed O&M	Fuel	Variable O&M	Total Cost	Present Worth Of Cost
2007	10,621,737	3,750,000	0	1,642,500	16,014,237	16,014,237
2008	10,621,737	3,881,250	0	1,699,988	16,202,975	15,431,404
2009	10,621,737	4,017,094	0	1,759,487	16,398,318	14,873,758
2010	10,621,737	4,157,692	0	1,821,069	16,600,498	14,340,135
2011	10,621,737	4,303,211	0	1,884,807	16,809,755	13,829,427
2012	10,621,737	4,453,824	0	1,950,775	17,026,336	13,340,579
2013	10,621,737	4,609,707	0	2,019,052	17,250,497	12,872,586
2014	10,621,737	4,771,047	0	2,089,719	17,482,503	12,424,489
2015	10,621,737	4,938,034	0	2,162,859	17,722,630	11,995,374
2016	10,621,737	5,110,865	0	2,238,559	17,971,161	11,584,371
2017	10,621,737	5,289,745	0	2,316,908	18,228,391	11,190,651
2018	10,621,737	5,474,886	0	2,398,000	18,494,624	10,813,424
2019	10,621,737	5,666,507	0	2,481,930	18,770,175	10,451,936
2020	10,621,737	5,864,835	0	2,568,798	19,055,370	10,105,470
2021	10,621,737	6,070,104	0	2,658,706	19,350,547	9,773,341
2022	10,621,737	6,282,558	0	2,751,760	19,656,056	9,454,899

Cumulative Present Worth:	182,481,843
Levelized Annual Cost (2007$):	17,580,718
Levelized Cost (mills/kWh):	53.52

1. Department of Energy, "Assumptions to the Annual Energy Outlook 2006", December 2005, Table 38, pg =73.

UNIT: Solar Thermal Electric

Utility Discount Rate:	5.00%
Estimated Life (years):	30
Capital Recovery Factor:	6.51
Size[1] (MW):	100
Heat Rate[1] (Btu/kWh):	10,280
Capital Cost[1] ($/kW):	3,047
Capacity Factor[2] (%):	42%
Fixed O&M[1] ($/kW/year):	51.70
Variable O&M[1] (mills/kWh):	0.00
Fuel Cost ($/MMBtu):	0.00
Fuel Cost Escalation Rate (%):	0.00%
O&M Escalation Rate (%):	3.50%
Energy Generation (kWh/year):	367,920,000

Year	Capital Charges	Fixed O&M	Fuel	Variable O&M	Total Cost	Present Worth Of Cost
2007	19,821,172	5,170,000	0	0	24,991,172	24,991,172
2008	19,821,172	5,350,950	0	0	25,172,122	23,973,450
2009	19,821,172	5,538,233	0	0	25,359,406	23,001,728
2010	19,821,172	5,732,071	0	0	25,553,244	22,073,853
2011	19,821,172	5,932,694	0	0	25,753,866	21,187,769
2012	19,821,172	6,140,338	0	0	25,961,510	20,341,523
2013	19,821,172	6,355,250	0	0	26,176,422	19,533,249
2014	19,821,172	6,577,684	0	0	26,398,856	18,761,174
2015	19,821,172	6,807,903	0	0	26,629,075	18,023,606
2016	19,821,172	7,046,179	0	0	26,867,352	17,318,934
2017	19,821,172	7,292,796	0	0	27,113,968	16,645,624
2018	19,821,172	7,548,043	0	0	27,369,216	16,002,214
2019	19,821,172	7,812,225	0	0	27,633,397	15,387,310
2020	19,821,172	8,085,653	0	0	27,906,825	14,799,585
2021	19,821,172	8,368,651	0	0	28,189,823	14,237,776
2022	19,821,172	8,661,553	0	0	28,482,726	13,700,678
2023	19,821,172	8,964,708	0	0	28,785,880	13,187,143
2024	19,821,172	9,278,473	0	0	29,099,645	12,696,079
2025	19,821,172	9,603,219	0	0	29,424,391	12,226,442
2026	19,821,172	9,939,332	0	0	29,760,504	11,777,242
2027	19,821,172	10,287,208	0	0	30,108,381	11,347,532
2028	19,821,172	10,647,261	0	0	30,468,433	10,936,411
2029	19,821,172	11,019,915	0	0	30,841,087	10,543,022
2030	19,821,172	11,405,612	0	0	31,226,784	10,166,545
2031	19,821,172	11,804,808	0	0	31,625,981	9,806,202
2032	19,821,172	12,217,977	0	0	32,039,149	9,461,249
2033	19,821,172	12,645,606	0	0	32,466,778	9,130,981
2034	19,821,172	13,088,202	0	0	32,909,374	8,814,721
2035	19,821,172	13,546,289	0	0	33,367,461	8,511,827
2036	19,821,172	14,020,409	0	0	33,841,581	8,221,688
2037	19,821,172	14,511,123	0	0	34,332,296	7,943,719

Cumulative Present Worth:	429,759,276
Levelized Annual Cost (2007$):	27,956,458
Levelized Cost (mills/kWh):	75.99

1. Department of Energy, "Assumptions to the Annual Energy Outlook 2006", December 2005, Table 38, pg =73.

UNIT: Photovoltaics

Utility Discount Rate:	5.00%
Estimated Life (years):	30
Capital Recovery Factor:	6.51
Size[1] (MW):	5
Heat Rate[1] (Btu/kWh):	0
Capital Cost[1] ($/kW):	4,598
Capacity Factor[2] (%):	27%
Fixed O&M[1] ($/kW/year):	10.64
Variable O&M[1] (mills/kWh):	0.00
Fuel Cost ($/MMBtu):	0.00
Fuel Cost Escalation Rate (%):	0.00%
O&M Escalation Rate (%):	3.50%
Energy Generation (kWh/year):	11,826,000

Year	Capital Charges	Fixed O&M	Fuel	Variable O&M	Total Cost	Present Worth Of Cost
2007	1,495,532	53,200	0	0	1,548,732	1,548,732
2008	1,495,532	55,062	0	0	1,550,594	1,476,757
2009	1,495,532	56,989	0	0	1,552,522	1,408,183
2010	1,495,532	58,984	0	0	1,554,516	1,342,850
2011	1,495,532	61,048	0	0	1,556,581	1,280,603
2012	1,495,532	63,185	0	0	1,558,717	1,221,296
2013	1,495,532	65,396	0	0	1,560,929	1,164,789
2014	1,495,532	67,685	0	0	1,563,218	1,110,950
2015	1,495,532	70,054	0	0	1,565,587	1,059,651
2016	1,495,532	72,506	0	0	1,568,039	1,010,772
2017	1,495,532	75,044	0	0	1,570,576	964,198
2018	1,495,532	77,670	0	0	1,573,203	919,819
2019	1,495,532	80,389	0	0	1,575,921	877,532
2020	1,495,532	83,202	0	0	1,578,735	837,237
2021	1,495,532	86,115	0	0	1,581,647	798,839
2022	1,495,532	89,129	0	0	1,584,661	762,249
2023	1,495,532	92,248	0	0	1,587,781	727,381
2024	1,495,532	95,477	0	0	1,591,009	694,152
2025	1,495,532	98,818	0	0	1,594,351	662,486
2026	1,495,532	102,277	0	0	1,597,810	632,308
2027	1,495,532	105,857	0	0	1,601,389	603,547
2028	1,495,532	109,562	0	0	1,605,094	576,136
2029	1,495,532	113,396	0	0	1,608,929	550,012
2030	1,495,532	117,365	0	0	1,612,898	525,113
2031	1,495,532	121,473	0	0	1,617,006	501,382
2032	1,495,532	125,725	0	0	1,621,257	478,762
2033	1,495,532	130,125	0	0	1,625,657	457,201
2034	1,495,532	134,679	0	0	1,630,212	436,650
2035	1,495,532	139,393	0	0	1,634,926	417,059
2036	1,495,532	144,272	0	0	1,639,804	398,384
2037	1,495,532	149,321	0	0	1,644,854	380,582

Cumulative Present Worth:	24,276,877
Levelized Annual Cost (2007$):	1,579,246
Levelized Cost (mills/kWh):	133.54

1. Department of Energy, "Assumptions to the Annual Energy Outlook 2006", December 2005, Table 38, pg =73.