

**CITY OF GLENDALE *WATER &  
POWER* DEPARTMENT  
INTEGRATED ELECTRIC RESOURCE  
PLAN FOR SUBMISSION TO THE  
WESTERN AREA POWER  
ADMINISTRATION**

*Prepared by:*  
**City of Glendale *Water & Power* Department**  
*Date Submitted:*  
**March 5, 2007**

**CITY OF GLENDALE WATER & POWER DEPARTMENT  
2007 INTEGRATED ELECTRIC RESOURCE PLAN**

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## **EXECUTIVE SUMMARY**

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The City of Glendale Water & Power Department (GWP) prepared this 2007 Integrated Electric Resource Plan (Plan) to meet the specific requirements for Integrated Resource Plans (IRPs) established by the Western Area Power Administration (Western) in 10 Code of Federal Regulations (CFR) Part 905. Further, it is believed that this Plan provides GWP with an electric system planning document that gives general guidance on near-term electric system planning issues.

To prepare this Plan, GWP first considered the general industry standards for IRPs and reviewed Western's specific IRP requirements as promulgated in 10 CFR Part 905. GWP then compiled and analyzed information regarding its planning criteria and projected loads and resources. This review provided information to prepare a revised forecast of peak electric loads for the City of Glendale. Finally, GWP used the above information and applied its own knowledge of the electric utility industry, and the implications of restructuring in particular, to prepare the attached Plan.

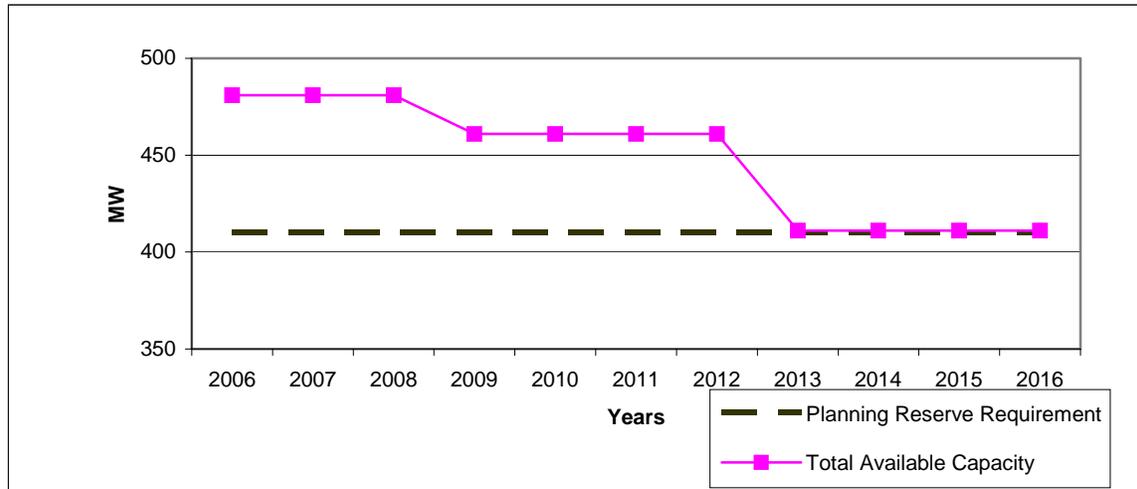
Based on an analysis of the planning data, GWP reached the following major conclusions regarding its resource planning needs:

- **GWP Has Sufficient Resources to Meet Expected Peak Loads Through the Period Covered by this IRP:** GWP's existing resources will be sufficient to meet expected peak loads adjusted for GWP's planning reserve requirement through the period covered by this IRP, even with the expiration of the Bonneville Power Administration (BPA) and Portland General Electric (PGE) power purchase contracts in 2008 and 2012, respectively. Realizing that the existing Grayson units are old and fast reaching their economic life, it behooves GWP to plan for the potential replacement of these units with highly efficient new machines for it to remain an economically competitive and reliable provider of electricity to its constituents. The relative balance between GWP's resources and its resource needs is shown in Figure ES-1.
- **Resources Should be Readily Available to Meet Unanticipated New Loads:** Presently, the active Western Electricity Coordinating Council (WECC) wholesale spot energy markets will enable GWP a ready means for meeting any unexpected new loads at market prices. However, WECC is concerned with the reliability of the grid due to dwindling capacity reserve margins in the West. This strain could also drive energy prices in these markets to exorbitant levels as experienced in the recent past. Again, GWP should continue its vigilance in assessing the market and adopt measures including consideration to replenish its older units through the planning horizon of 2016.

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**Figure ES- 1  
GWP's Load/Resource Balance**



These findings counsel GWP to carefully evaluate any long-term resource commitments in the near future. However, GWP should continue to analyze the potential of re-powering of Grayson Power Plant associated with meeting SCAQMD emissions restrictions; short-term opportunities in the power markets; opportunities to implement cost-effective, renewable resources; and electric and water conservation programs. GWP will also continue to monitor the evolution of industry restructuring on its general business strategy and its specific electric resource strategy. GWP will report on such actions to Western in the required annual Progress Reports.

GWP has prepared this Plan based largely on electric system information. GWP has compared this information to similar information available from other public sources, and found that they are generally consistent.

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## **1 INTRODUCTION**

---

The City of Glendale Water & Power Department (GWP) prepared this 2007 Integrated Electric Resource Plan to meet the specific requirements for Integrated Resource Plans (IRPs) established by the Western Area Power Administration (Western) in 10 Code of Federal Regulations (CFR) Part 905. Further, GWP believes this Plan provides an electric system planning document that gives general guidance on near-term electric system planning issues.

In the following sections, this Plan discusses GWP's resource planning criteria, presents a peak load forecast, describes GWP's existing resources, and concludes that GWP has no immediate need for new resources beyond those described herein. However, towards the end of the 10-year period covered by this IRP (2013-2016), projected peak loads adjusted for GWP's planning reserve requirement will approach the limits of what the existing resources are able to supply. This Plan then addresses the implications of industry restructuring to GWP's electric system, and finds that the resulting risks to GWP's competitive position counsels continued evaluation of any long-term resources, especially those that are considered renewable. Finally, this Plan presents an Action Plan required by Western.

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## **2 CITY DEMOGRAPHICS**

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The City of Glendale (City) is a municipal corporation existing under the laws of the State of California, owning and operating an electric public utility for its citizens, and providing electric service to virtually all of the electric customers within its limits. The City, which encompasses approximately thirty-one square miles, is the third largest city in Los Angeles County. It is located in the greater metropolitan Los Angeles area, approximately seven miles north of the Los Angeles Civic Center complex.

In recent years, the City has developed into a major financial center for the region due to the implementation of the Glendale Redevelopment Agency's Central Glendale Redevelopment Project, as well as a favorable business environment that includes the absence of a business license tax. The economy represents a diverse blend of industrial, commercial, and residential development.

The City experienced modest population growth during recent years. It is anticipated that further population increases will be dependent upon replacement of older single family residential units by higher density multiple unit housing developments. Table 2-1 presents the average number of customers, during each of the 5 most recent Fiscal Years (FY).

**Table 2-1  
Average Number of Customers by Class**

<b>Class</b>	<b>FY 2002</b>	<b>FY 2003</b>	<b>FY 2004</b>	<b>FY 2005</b>	<b>FY 2006</b>
Residential	70,344	70,612	70,662	70,798	70,810
Commercial	12,265	12,296	12,329	12,331	12,385
Industrial	218	221	223	220	220
Other	18	18	18	18	18
All Classes	82,845	83,147	83,232	83,367	83,433

### **3 PLANNING CRITERIA**

---

The primary goal of the GWP's resource planning process is to ensure reliable electric service for its customers at the lowest possible cost. Achieving this reliability standard requires maintaining adequate reserves of electric generating capacity to prepare for reasonable contingencies should some fraction of GWP's electric resources become unavailable.

GWP's current planning reserve requirement is based on its largest single contingency, that is, the single event that would cause the largest reduction in GWP's generating capacity. GWP's largest single resource contingency is the loss of the Grayson Power Plant's Unit 8 B/C, equal to 74 MW. This resource is described in Section 5. GWP thus maintains electric resources equal to its forecasted peak load plus 74 MW.

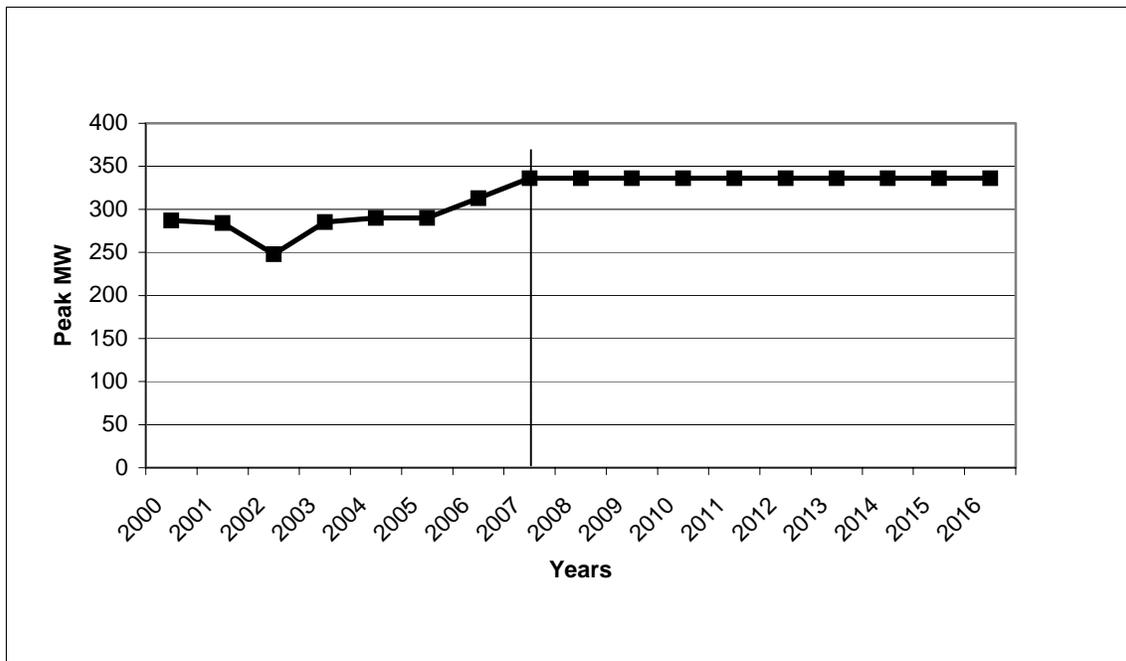
## **4 LOAD FORECAST**

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### **4.1 Peak Load**

Figure 4-1 presents a comparison of GWP’s historic fiscal year peak loads with fiscal year peak loads as forecasted. Forecasted peak loads through 2016 follow recorded system peak loads from 2000 through 2006. Based on historical experience and the prediction of minimal load growth for GWP, the fiscal year peak loads from 2007 to 2016 were then determined.

**Figure 4-1  
GWP’s System Peak Loads**



Consistent with experience in the past, GWP expects that peak demand and energy requirements will continue to grow very slowly. The limited amount of developable land in Glendale means that nearly all new customer growth results from redevelopment, i.e., removing existing buildings and replacing them with newer, larger but more energy efficient facilities and the trend for the addition of new electronic products. Additionally, GWP believes that this minimal growth will be offset by Demand-Side Management (DSM) programs, which will have a noteworthy impact on reducing GWP’s load.

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It should be noted that GWP previous all-time peak demand of 315 MW occurred in FY 1998. Eight years later, on July 22, 2006, a peak demand of 318 MW was reached. Two days later, on July 24, 2006, GWP's current all-time peak of 336 MW occurred. At that time, the weather conditions involved extremely high temperatures over a continuous period of about a week. These conditions had never been experienced in southern California over the previous decade. Hence, GWP considers this new all-time peak of 336 MW to be an anomaly. For these reasons, GWP is forecasting that its peak demand will not exceed 336 MW over the period covered by this Plan.

As discussed in Section 5.1.3, GWP received approval for rate increases effective July 1, 2006 and July 1, 2007. These electric rate changes will serve as conservation inducements on the part of all customers, and thus, help stabilize GWP's peak demand and energy requirements.

GWP is also implementing energy efficiency and DSM measures, as outlined in Section 5.1.2. These programs are expected to impact both fiscal year peak demand and energy usage going forward. It is anticipated that these measures will contribute to peak load shaving and energy savings. GWP is in the process of inventorying the amount of cost-effective DSM resources available in the City. This inventory is expected to be completed in the summer of 2007.

Although GWP recognizes that electric rate changes, as well as, energy efficiency and DSM measures will impact GWP's load growth, no attempt has been made to explicitly quantify such impacts in GWP's load as represented above. Therefore, when analyzing demand trends for GWP, it should be noted that demand reductions; as a result of technical, behavioral, and temporary reactions to rate changes and DSM measures; may materially impact GWP's expected load growth.

## **4.2 Firm Wholesale Sales/Purchases**

In years past, GWP has made firm wholesale power sales to obtain some benefits from its near-term capacity surplus. These contracts provided GWP with additional revenues that helped reduce retail customer rates. Currently, GWP has no firm wholesale power sales in place. Going forward, to the extent that GWP's power supply resources are not sold to retail customers, GWP may elect to market such resources directly to other utilities, marketers, or exchanges.

Likewise, active wholesale markets also provide purchase opportunities for GWP in the event that resources are not sufficient to meet unanticipated new loads at market prices through the planning horizon of 2016.

### **4.3 Short-Term Wholesale Opportunities**

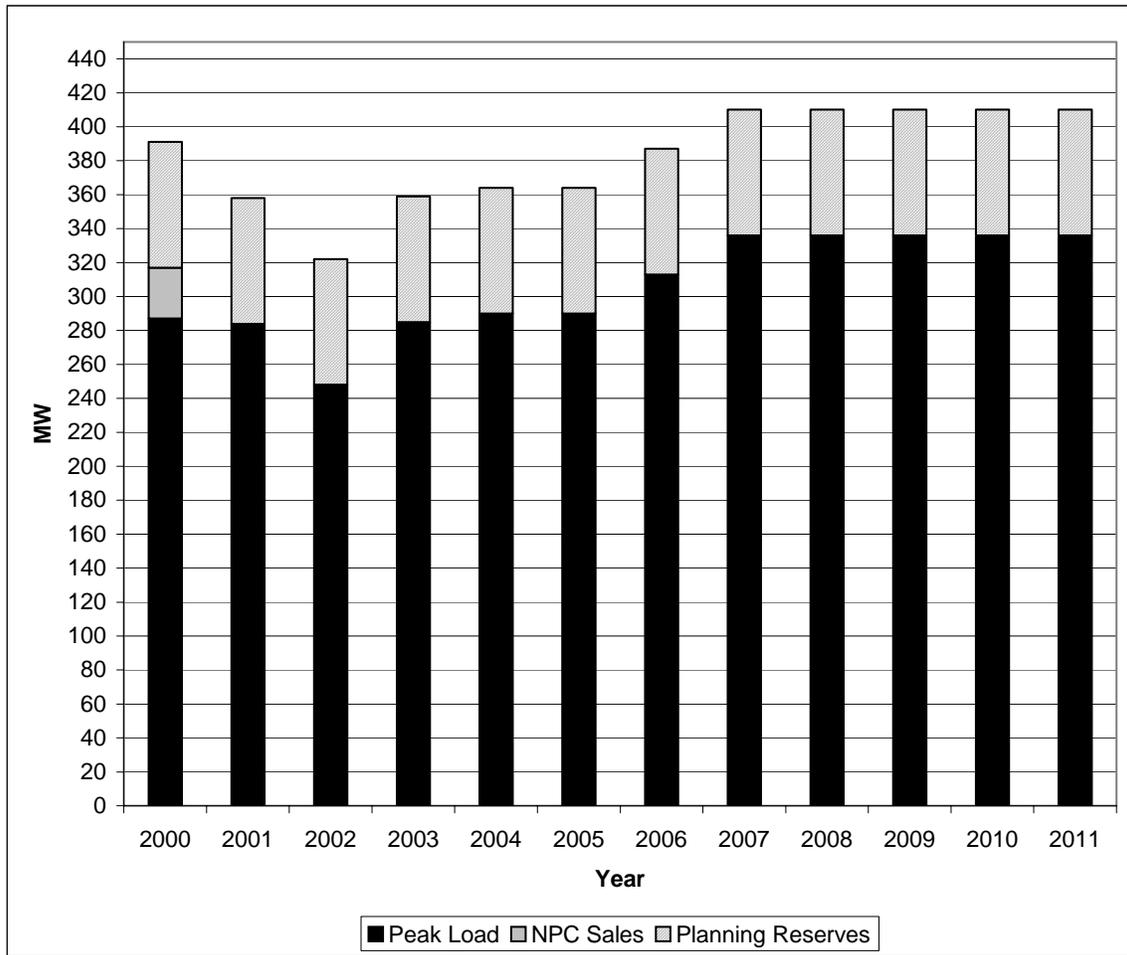
Originally, GWP's local resource operated around the clock to provide base-load system requirements. Today, this resource generates electricity in a cycling mode for load following, spinning reserve, and other reliability requirements. The plant also serves as a valuable back-up resource in the event that lower cost purchases from the outside are unavailable or curtailed. When the cycling mode produces excess power, GWP is able to sell the surplus on the wholesale energy market on a real-time, day-ahead, or term basis.

### **4.4 PEAK PLANNING REQUIREMENTS**

Figure 4-2 presents GWP's peak planning requirements through 2011. Figure 4-2 incorporates the fiscal peak load forecast for GWP from Figure 4-1 and GWP's planning reserve requirements of 74 MW discussed in Section 3.

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Figure 4-2  
GWP's Peak Planning Requirements



## **5 EXISTING RESOURCES AND FUTURE NEEDS**

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This section summarizes GWP's existing resources and analyzes its sufficiency to meet the expected future needs of its customers.

### **5.1 Existing Resources**

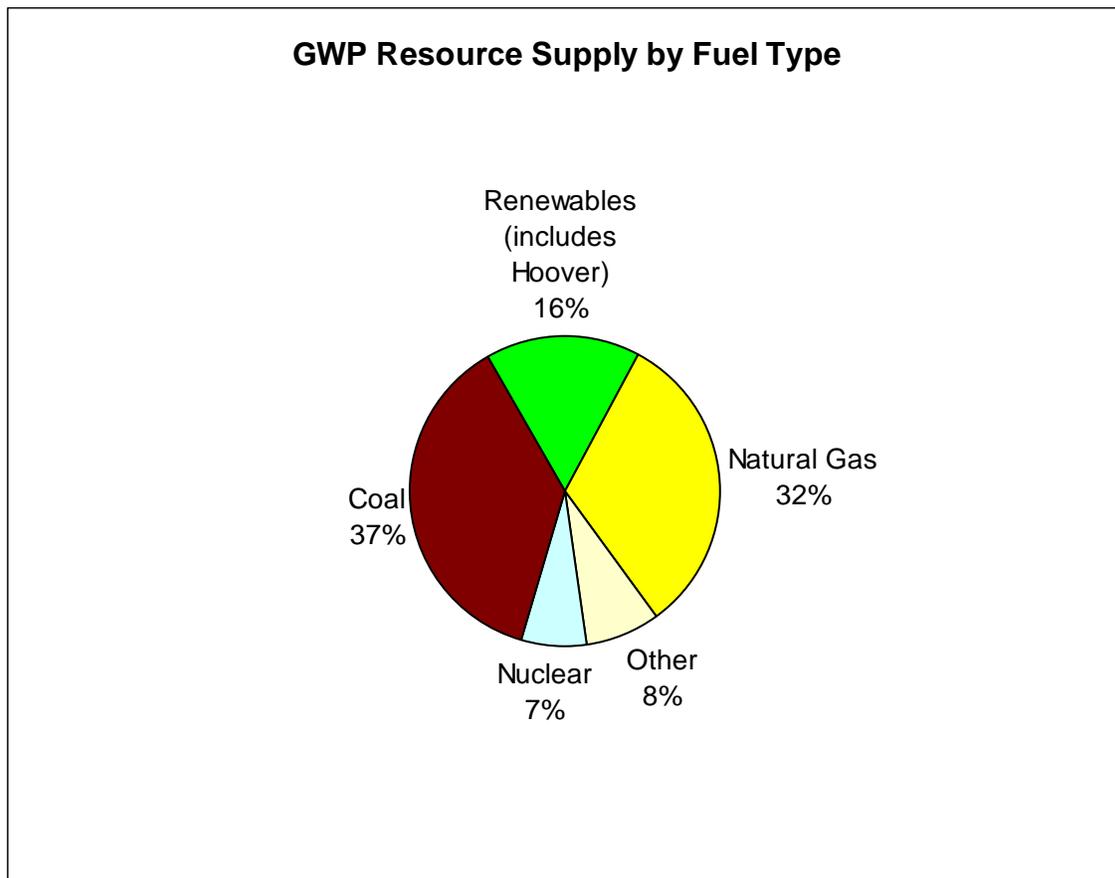
GWP's existing resources include a mixture of conventional supply resources with a diverse fuel mix and renewable resources, totaling 482 MW. GWP also maintains Demand Side Management (DSM) programs to reduce the need for new resources.

#### **5.1.1 Supply Resources**

##### **5.1.1.1 Conventional**

GWP's current resources include 440 MW of conventional supply resources. Figure 5-1 provides a percentage breakdown of these resources, which are discussed in detail below.

**Figure 5-1**  
**GWP's Existing Resources**  
**Based on Energy**



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**5.1.1.2 Local Generation**

GWP’s largest resource is the city-owned Grayson Power Plant, which consists of several generating units at a single site located within the City of Glendale. As shown in Table 5-1, the gas-fired generating units are of various types with an aggregate net capacity of 258 MW.

**Table 5-1  
Grayson Power Plant Net Generating Capacity**

Unit #	Type	Net Capacity (MW)	Unit Average Plant Use Factor (2004-2006)
3	Steam Turbine	18	10%
4	Steam Turbine	42	29%
5	Steam Turbine	44	18%
8A with units 1 or 2	Combined Cycle	32	13%
8B/C with units 1 or 2	Combined Cycle	74	9%
9	Gas Turbine	48	2%

The first steam turbine-generator unit (Unit 1) was installed in 1941, with new steam units (Units 2 through 5) added about every six years, culminating with Unit 5 in 1964. Thereafter, new simple cycle gas turbines (Units 6 and 7) were installed in 1972 and 1974 (since mothballed in 2002 and demolished in 2006). Combined cycle gas turbine units (Units 8A and 8B/C) were installed in 1977 with the re-powering of the first two steam turbine-generators (Units 1 and 2). The new Unit 9 simple cycle gas turbine, General Electric LM6000, was installed in 2003 with a capacity equivalent to the retired simple cycle gas turbines (Units 6 and 7).

All of the existing units at the site, except for Unit 9, are operating beyond their initial design life. The life of these units has been extended through major overhauls and good care and maintenance programs. As a result, maintenance costs on these units are higher, when compared to units operating within their expected design life. Furthermore, because of their age, the units have higher net plant heat rates that result in higher operating costs. Units 3, 4, and 5 can operate on either natural gas or landfill gas, both of which have a high price and high price volatility.

The Grayson Power Plant is also subject to stringent emissions regulations, primarily for nitrogen oxides (NO<sub>x</sub>). GWP has installed the best available retrofit emissions control technology on its units, significantly enhancing their operational viability, albeit with some reduction in the generating capacity of the steam boiler units. These emissions control retrofits allowed GWP the opportunity of not having to join the South Coast Air Quality Management District’s (SCAQMD) Regional Clean Air Incentive Market (RECLAIM) program. RECLAIM allows trading of emissions credits in the open

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market. However, the allocations for GWP were prohibitively low, and emissions credit costs were inordinately high.

The maintenance of an aging facility, attendant air quality compliance costs, and penalties of higher heat rates, when factored in meeting GWP's load demand, relegate the dispatch of these local generating units primarily for regulation, spinning and non-spinning reserve, and peaking support. Notwithstanding these diminished operational functions, Grayson Power Plant plays a vital role in GWP's power needs. Grayson Power Plant provides the security of an independent and reliable power resource in the event of a regional electrical grid failure. It also provides GWP with a financial hedge to negotiate better terms for purchased power.

GWP will continue to evaluate its power supply needs from other resources consistent with federal and state initiatives for renewable resources and greenhouse gas target levels, along with a mandate to secure the viability of retaining the Grayson Power Plant for the future.

### **5.1.1.3 Purchased Power**

Other than the Grayson Power Plant, the remainder of GWP's supply resources is a variety of firm power supply purchase contracts. Although the Grayson Power Plant is GWP's largest source of capacity, the bulk of the utility's energy requirements are met by firm power supply purchase contracts and short-term or spot purchases. GWP finds these alternative power sources attractive because in most cases spot purchases are more economical than its local generation while firm power supply purchase contracts have low incremental costs. Table 5-2 summarizes these contracts. A brief description of each follows.

**Table 5-2  
Firm Power Supply Purchase Contracts**

<b>Resource</b>	<b>Type</b>	<b>Capacity (MW)</b>	<b>Maximum Energy (MWh/year)</b>
Magnolia	Natural Gas	52	250,000
Palo Verde	Nuclear	10	57,000
IPP	Coal	38	241,000
San Juan #3	Coal	20	110,000
BPA	Primarily Hydro	20	73,000
PGE	Hydro/Coal/ Natural Gas	50	295,000

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Magnolia: The Magnolia combined cycle power project is a 242 MW base-load natural gas fired power plant, which commenced commercial operation in September, 2005. This project is sited at Burbank Water and Power's (BWP) existing generating station complex and provides reliable, low-cost energy to members of the Southern California Public Power Authority (SCPPA). GWP has signed a 30-year contract with SCPPA for the purchase of 16.53% of the power generated from the project, amounting to 40 MW of baseload generation. An additional 12 MW can be gained by operating the unit in a duct-firing mode. Under this scenario, GWP's entitlement in the project becomes 52 MW. The project is estimated to provide GWP's customers with approximately 20% of its annual energy requirements.

Palo Verde: The Palo Verde Nuclear Generating Station is comprised of three 1,270 MW units and is managed and operated by the Arizona Public Service Company (now Pinnacle West). GWP has rights to 4.4 percent of SCPPA's 216.5 MW interest in this plant, which amounts to approximately 10 MW. The contract terminates on October 31, 2030.

Intermountain Power Project: The Intermountain Power Project (IPP) is a two-unit, coal-fired plant located near Delta, Utah. It is operated under the supervision of the Los Angeles Department of Water and Power (LADWP). Based upon a plant rating of 1,660 MW, GWP's present entitlement in this plant is 38 MW. GWP, together with LADWP and the electric utilities of the Cities of Anaheim, Burbank, Pasadena, and Riverside, is a party to a "take or pay" power sales contract with the Intermountain Power Agency (IPA). This contract was executed in 1980 and is for a term extending through June 15, 2027. Approximately 6 MW of this purchase is from excess capacity sold by other IPP owners. This excess capacity may be recalled in the future, but is included in this Plan as a firm resource.

San Juan Unit No. 3: The San Juan Generating Station, a coal-fired electric generating plant, consists of four units located in San Juan County in northwestern New Mexico (near Four Corners). San Juan Unit 3, rated at 488 MW, was constructed during the late 1970's and began commercial operation on December 31, 1979. In 1993, SCPPA purchased a 204 MW share of Unit 3. GWP purchased 9.805 percent of SCPPA's share, or approximately 20 MW of capacity. Projected annual energy from San Juan Unit 3 is approximately 110,000 MWh, based on the unit's historic performance. This contract terminates on October 31, 2030.

Bonneville Power Administration: In 1988, GWP executed a 20-year agreement with the Bonneville Power Administration (BPA) for the purchase or exchange of power. The agreement has two (2) modes of operation; sale or exchange. The sale mode occurs when the Pacific Northwest (PNW) is experiencing energy surplus conditions, and the

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exchange mode occurs when the PNW is experiencing energy deficits.<sup>1</sup> In the sale mode, GWP is entitled to 10 MW of annual peaking capacity (at 60 percent load factor), and an additional 10 MW of seasonal peaking capacity (at 55 percent load factor) from mid-May through mid-October for a total of 20 MW. In this mode, GWP is obligated to take 73,000 MWh of energy annually. If BPA elects to operate in the exchange mode, GWP is relieved of monthly demand charges. However, instead of paying demand charges, GWP must return a prescribed amount of energy each day during off-peak hours. Power under this contract is delivered over the Pacific Northwest DC Intertie. This contract terminates on April 15, 2008.

Portland General Electric Company: In 1988, GWP entered into a 25-year power purchase and exchange agreement with Portland General Electric Company (PGE). The purchase portion of the agreement provides 20 MW of capacity and associated energy at GWP's discretion. For the additional exchange portion, GWP has the right to a maximum of 30 MW of capacity during the summer months of June through September, and PGE has the right to call on a like amount during the winter months of November through February. Energy associated with the exchange cannot exceed 1,800 MWh per week. Power under this contract is delivered over the Pacific Northwest DC Intertie. This contract terminates on September 30, 2012.

#### **5.1.1.4 Transmission Resources**

GWP has access to energy markets in the western United States via a number of high voltage transmission lines. Figure 5-2 gives a visual representation of this access, showing GWP's specific entitlements over the various lines and how they connect to its generating resources.

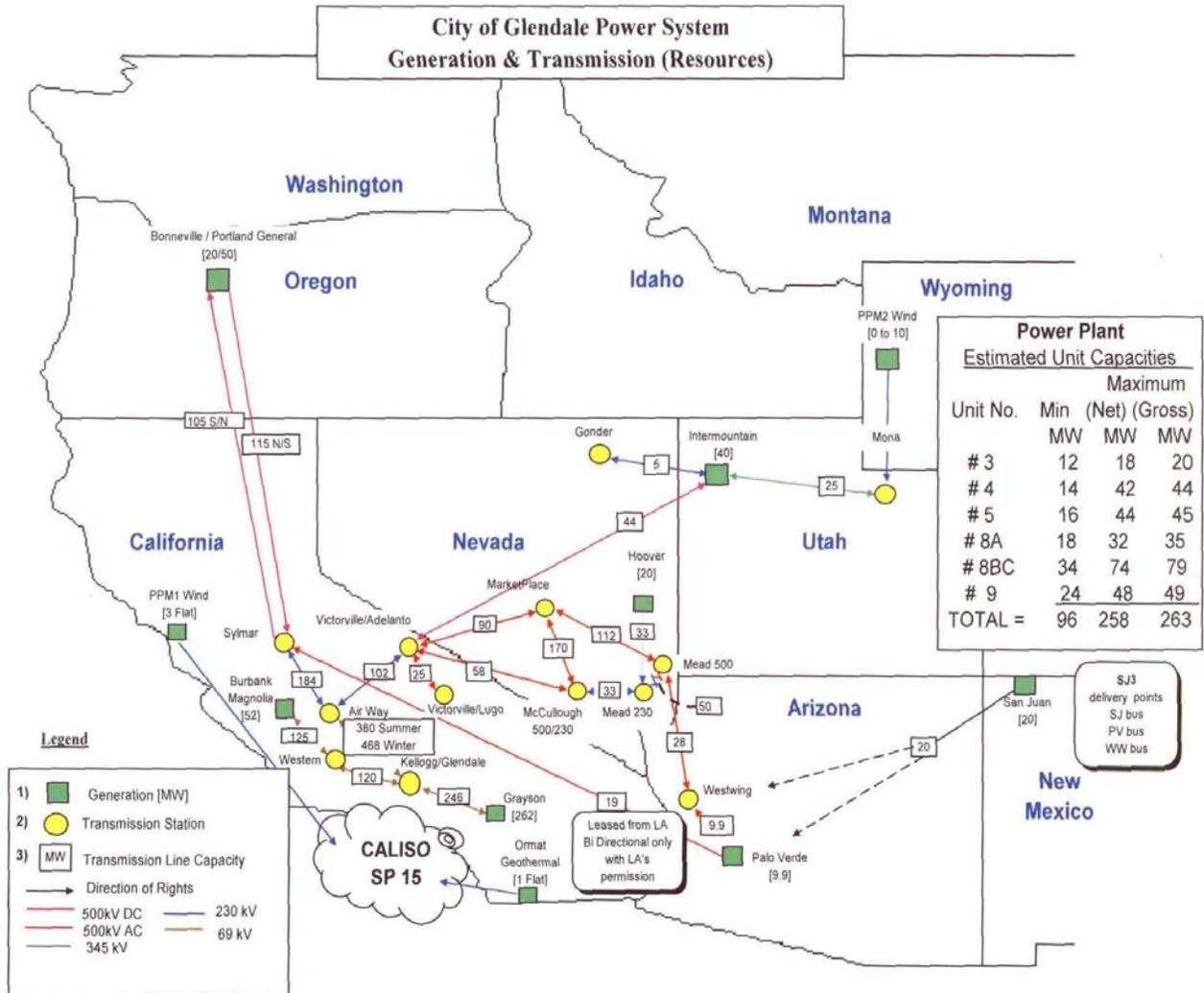
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<sup>1</sup> More than sixty (60) percent of the Pacific Northwest resources are hydro. The precipitation in that region during any given year dictates whether or not Bonneville will request the exchange mode from the City.

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**Figure 5-2  
GWP's High-Voltage Transmission Resources**



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GWP's interconnection with other utilities is through the Air Way Receiving Station (Air Way). The interconnection is used to receive power from IPP, Palo Verde, San Juan, Hoover, and purchases from the Pacific Northwest and the Desert Southwest via a number of other major transmission links. A description of these transmission resources follows.

Pacific Northwest DC Intertie: The DC Intertie is a direct current transmission line that extends 846 miles from The Dalles, Oregon, to Sylmar, California. The 500 kilovolt (kV), High-Voltage Direct Current (HVDC) line can transmit up to 3,100 MW of power from the PNW to participants in California (and has a 2,730 MW rating from California to the PNW). GWP owns 3.846 percent of the line or approximately 115 MW of the capacity in the north to south direction and 105 MW of the capacity in the south to north direction.

The Southern Transmission System (STS): The STS is a direct current transmission line between IPP near Delta, Utah, and Adelanto, California. This 500 kV HVDC line is 490 miles long and transmits the California participants' entitlements from IPP. Up to 1,920 MW of power can be transmitted over the STS to participating members in Southern California. GWP's share of the line is 2.274 percent, or approximately 44 MW.

The Northern Transmission System (NTS): The NTS is an alternating current system between IPP and the Mona Switching Station in Utah, and IPP and the Gonder Switching Station in Nevada. GWP's entitlements in the NTS are 24 MW to Mona and 5 MW to Gonder.

The Devers-Palo Verde Transmission Line #1 (DPV1): DPV1 is a 500 kV transmission line connecting the Devers Substation located in Southern California, with the Palo Verde Switchyard located in Arizona. GWP's transmission service agreement with LADWP for a 19 MW share of DPV1 is used to transfer its contract entitlement share of the San Juan Generating Station. Additional agreements with LADWP are used to transmit this power from the Devers Substation to Air Way.

Mead-Phoenix & Mead-Adelanto Transmission Line Projects: These two SCPPA projects commenced commercial operation on April 15, 1996. The Mead-Phoenix line can transfer approximately 1,300 MW of power and extends from the Westwing Switching Station near Phoenix, Arizona, to the Mead Substation near Boulder City, Nevada. The Mead-Adelanto line can transfer approximately 1,800 MW of power and extends from the Mead Substation through the Marketplace Substation to the Adelanto Switching Station near Adelanto, California. The Marketplace Substation was constructed to facilitate the interconnection between these two projects. GWP's entitlement on the Mead-Phoenix transmission line is 28 MW. Additionally, GWP's entitlements on the Mead-Adelanto transmission line are 112 MW on the Mead-Marketplace segment and 90 MW on the Marketplace-Adelanto segment. These lines

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provide an alternative path for GWP's purchases from the Palo Verde Nuclear Generating Station, the San Juan Generating Station, and the Hoover Dam Power Project.<sup>2</sup>

Various LADWP Transmission Service Contracts: Other firm transmission service contracts with LADWP provide GWP with the ability to transmit the power associated with the aforementioned transmission projects to the Air Way Receiving Station in Glendale.

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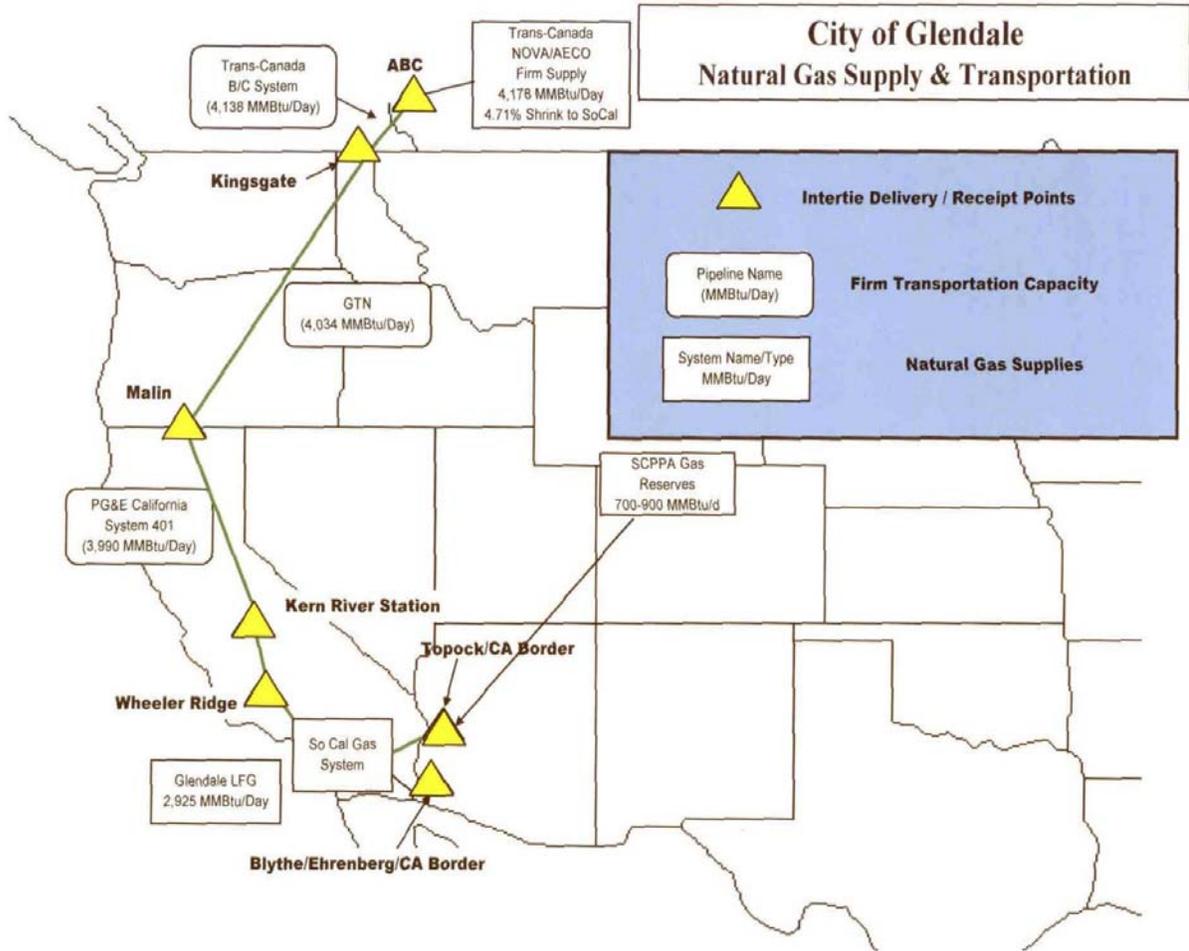
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<sup>2</sup> Surplus capacity on these lines is used to make economic transactions with utilities in the Desert Southwest. The City has been active in making short-term sales of these transmission services over the last several years. These sales have been made on a daily, weekly, or monthly basis.

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**5.1.1.5 Gas Supply Resources**

**Figure 5-2  
 GWP's Natural Gas Sources**



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Natural gas is the primary fuel for GWP's Grayson Power Plant and the Magnolia Power Project. To mitigate fuel-supply risks, GWP receives its natural gas from several sources. These sources are shown in Figure 5-3 and GWP's various gas supply contracts are described as follows.<sup>3</sup>

TransCanada (NOVA): GWP has contracted for firm transportation service of natural gas over the pipeline facilities of TransCanada NOVA Corporation of Alberta (NOVA). This contract commenced on November 1, 2000, and terminates on October 31, 2008. GWP's service rights extend throughout the NOVA pipeline system to a point of interconnection with TransCanada B.C. System near Coleman, Alberta, Canada. GWP is capable of transporting 4,191 MMbtu/day of natural gas over the NOVA system.

TransCanada B.C. System: GWP has contracted for firm transportation service of natural gas over the expansion of TransCanada B.C. System pipeline facilities. The contract commenced on November 1, 1993, and terminates on October 31, 2023. GWP's service rights extend from a point of interconnection with the pipeline facilities of TransCanada NOVA Corporation of Alberta at the Alberta-British Columbia border near Coleman, Alberta, Canada through southeast British Columbia, Canada to a point of interconnection with the pipeline facilities of Pacific Gas & Electric Northwest (PGT), currently Gas Transportation Northwest (GTN), near the international border at Kingsgate, British Columbia, Canada. GWP is capable of transporting 4,138 MMbtu/day of natural gas over the expansion facilities.

Pacific Gas & Electric Northwest (PGT), Currently Gas Transportation Northwest (GTN), and Pacific Gas & Electric California (CGT) Pipelines: On November 1, 1993, PGT and CGT commenced operation of the expansion of their existing natural gas pipeline systems for an additional 755 MMcf/day. These expansion projects provide firm transportation service for Canadian sourced natural gas from Kingsgate, British Columbia, Canada (U.S./Canadian border) to Kern River Station, California (interconnection with the Southern California Gas Company). GWP has executed firm transportation service agreements with both PGT (currently GTN) and CGT for the delivery of natural gas at Kern River Station. GWP's capacity rights are for 4,034 MMbtu/day over PGT (currently GTN) and 3,990 MMbtu/day over CGT. The natural gas is then transported over the SoCalGas' pipeline system for delivery to GWP's Grayson Power Plant and/or the Magnolia Power Project for electric generation. To account for fuel lost in transport, it should be noted that the 4,191 MMbtu/day of Canadian natural gas that first enters the pipeline system at NOVA is the same 3,990 MMbtu/day (less shrinkage) that arrives at the Southern California Gas Company's

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<sup>3</sup> The City has also been active in making short-term sales of natural gas pipeline transportation service over the last several years. Depending on the relationship between the power and gas markets, City will often hold surplus gas transportation capacity, which is then sold to other wholesale gas providers. These sales have been made on a daily, weekly, or monthly basis.

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(SoCalGas) system at Kern River Station. These contracts will terminate on October 31, 2023.

El Paso Natural Gas Pipeline: On August 1, 1993, GWP commenced service under a contract with Meridian Oil Marketing, Inc. (MOMI) for the release to GWP of firm capacity held by MOMI over the El Paso pipeline system. This contract gives GWP the firm right to deliver 4,003 MMBtu/day of natural gas over the El Paso pipeline system to Topock, California (interconnection with SoCalGas) and provides access to natural gas sources located in Texas and New Mexico. This contract will terminate on March 31, 2007. Currently, GWP has no plans to renew this contract.

Scholl Canyon Landfill Gas: In July 1994, methane gas delivered through a 5-mile pipeline system from the Scholl Canyon Landfill commenced burning to generate electricity at GWP's Grayson Power Plant. With this fuel and the accompanying environmental benefit of reduced NO<sub>x</sub> emissions from the steam boilers, it is expected that the steam units will operate as long as there is gas produced at the landfill, currently projected to last a minimum of twenty years. Therefore, GWP has a 20-year "take or pay" contract for the landfill gas, which commenced in July, 1994. The price of the landfill gas is based on a rolling three-month average of first of the month indices for natural gas from basins in the southwestern U.S. The contract terminates on June 30, 2014, after which ownership and operation of the entire landfill gas delivery facility will be turned over to GWP at no cost.

Southern California Gas Company (SoCalGas): Currently, GWP has a Master Services Contract with SoCalGas for various services, including imbalance trading and interruptible intrastate transportation of natural gas from the interconnection points with interstate pipelines to GWP's burner tips. The current contract commenced on August 1, 2005 and is renewed every two years.

Natural Gas Reserve Project: GWP has signed a contract with SCPPA for natural gas reserves (up to 2,000 MMBtu/day). The contract calls for the acquisition and development of gas resources, reserves, fields, wells, and related facilities to provide a long-term supply of natural gas for its participants. The first acquisition, located in Wyoming, commenced in July, 2005 and has an expected life of 20-25 years. Currently, GWP's allocation from this contract ranges from 700 to 900 MMBtu/day. Additionally, SCPPA has arrangements in place with Sempra Energy Trading, Inc. for the delivery of this natural gas into the Southern California Gas Company's system.

#### **5.1.1.6 Renewable Resources**

California Senate Bill 1078 became law on January 1, 2003 and requires local publicly owned utilities to establish and implement a Renewable Portfolio Standard (RPS) that

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recognizes the intent of the Legislature to encourage renewable resources, while taking into consideration the effect on rates, reliability, financial resources, and the goal of environmental improvement. The law also requires that each local publicly owned utility to report to its customers, on an annual basis, the fuel mix used to serve its customers and the expenditure of public goods funds for renewable resources. To date, GWP's RPS provides approximately 16% (includes Hoover) of its energy requirements on an annual basis. It is GWP's goal to have a RPS of 20% of its annual energy requirements by 2017, with the additional goal of 23% if it can be reached at reasonable cost. GWP's current portfolio interest in renewable resources, as reflected in its resource mix, totals 42 MW. It is depicted in Table 5-3, and discussed as follows.

**Table 5-3  
GWP's Renewable Resources**

<b>Resource</b>	<b>Type</b>	<b>Capacity (MW)</b>	<b>Maximum Energy (MWh/year)</b>
Hoover	Hydro	20	68,000
PPM Wind 1	Wind	3	26,208
PPM Wind 2	Wind	10	29,000
Ormat	Geothermal	1	8,400
Scholl Landfill	Landfill Gas	8	70,080

Hoover & Other Hydro: Hydro resources are often considered conventional and are therefore generally listed as so. However, the fuel source for these plants, falling water, is certainly considered renewable. As previously noted, GWP considers Hoover as a renewable resource in its RPS. GWP's entitlement in the Hoover Dam Power Project totals 20 MW. This resource is formally purchased from Western, and consists of an up-rated portion of the plant of 2 MW and a renewal portion of 18 MW, with annual associated energy of approximately 2,000 MWh and 66,000 MWh, respectively. This contract remains in effect until October 1, 2017.

Additionally, GWP's Verdugo Metropolitan Hydroelectric Plant is a small hydroelectric generating plant designed to operate in conjunction with the Verdugo Metropolitan Pump Station. The plant is rated at 400 kW and initially had an average yearly production of 1,015,690 kWh. However, due to reduced flow caused by water conservation efforts, the average yearly production has decreased to approximately 600,000 kWh. This lower energy production is sufficient to sustain the electrical energy needs of the pump station. Any excess energy is integrated into GWP's electrical distribution system.

Scholl Canyon Landfill (See Also Section 5.1.1.5 – Gas Supply Resources): In July, 1994, GWP completed a 5-mile pipeline that transports methane gas produced at Scholl Canyon landfill to the steam boilers at the Grayson Power Plant. Starting in July, 1994, Grayson Units 3, 4, or 5 have generated power using this methane at a minimum loading of approximately 8 MW. Any additional output from Units 3, 4, and 5 is fueled by

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natural gas. In the event that one unit is not available, one of the other units is brought on-line to generate using the Scholl Canyon methane. During fiscal year 2006, the Grayson Power Plant generated approximately 70,080 MWh from Scholl Canyon landfill gas. The U.S. Department of Energy awards a Renewable Energy Production Incentive payment for energy produced from Scholl Canyon landfill gas.

Because landfill gas provides environmental benefits by reducing NO<sub>x</sub> emissions from the boilers (as compared to the use of natural gas), it is expected that the Grayson steam units will continue to utilize the landfill gas as long as it is available. Original estimates forecast the landfill to produce sufficient methayears.

High Winds Generation Facility (PPM1 Wind Project): GWP has signed a 25-year power purchase contract with PacifiCorp Power Marketing, Inc. (PPM) for the purchase of wind powered electrical energy associated with a 9 MW share of the 145.8 MW High Winds wind generation facility located in Solano County, California. The contract allows GWP to have power delivered at a flat 3 MW based on a 33% capacity factor. Therefore, this resource will provide 26,208 MWh of renewable energy on an annual basis to GWP customers. This contract commenced on September 1, 2003.

Ormat Geothermal Power Project: GWP has signed a 25-year contract with SCPPA for the purchase of up to 3 MW of geothermal power. The project is located in the geothermal areas of Imperial Valley, California. This contract commenced in February, 2006 at the current level of 1 MW. A potential of an additional 2 MW is provided for in the contract. Currently, GWP receives approximately 8,400 MWh of renewable energy on an annual basis from this project.

Southwest Wyoming Wind Generation Facility (PPM2 Wind Project): GWP has signed a 16-year power purchase contract with PPM. This 2<sup>nd</sup> wind power contract with PPM will provide up to 10 MW of capacity at a 33% capacity factor from a generation facility located in Southwest Wyoming. The contract commenced in July, 2006, and currently provides approximately 29,000 MWh of renewable energy on an annual basis to GWP's customers.

Grid-Connected Photovoltaic Power Generation: GWP is committed to exploring new renewable energy options for its customers. GWP currently offers rebates for customers to install grid-connected photovoltaic power generation systems. These systems require an interconnection agreement that allows GWP to buy any excess power from the customer. To date, in cooperation with various residential and commercial customers, approximately 120 kW of grid-connected photovoltaic generation has been installed on various structures within the City.

#### **5.1.1.6.1 Supply Side Renewable Energy Development Plans (FY 2006-07)**

- Review and evaluate proposals received by SCPPA for renewable energy to obtain an additional 3 to 10 MW of renewable generation.
- Participate in studies for the development of the Green Path North transmission line emanating from the Imperial Valley in California, to provide a route to receive geothermal power into Southern California.
- Participate in the upgrade of the STS transmission line to provide a route to receive additional renewable power from the Wyoming-Utah area into Southern California.
- GWP is working with the local community college to install a 262 kW grid-connected photovoltaic system on the new college parking structure. This system will be owned and operated by GWP, and has an expected completion date of summer 2007.

#### **5.1.2 Demand-Side Management (DSM)**

GWP has a strong commitment to meet the needs of its customers by helping them reduce electricity consumption through DSM programs. GWP has implemented a wide array of programs for all customer classes, and has won awards for some of its innovative programs. DSM activities are aimed directly at electricity, but it also involves water management. Water conservation, in addition to its obvious environmental benefits, also helps lower electricity consumption by reducing the electric energy demanded for pumping and water heating costs. These programs are developed and administered by GWP's Public Benefit/Marketing Group. Many of the Public Benefit Program functions relate to both water and energy conservation.

##### **5.1.2.1 Demand-Side Management Highlights**

- GWP ranked 4<sup>th</sup> in total energy efficiency savings among 39 California publicly-owned utilities in FY 2005-06.
- \$2,903,160 invested in FY 2005-06.
- Over \$20,000,000 invested since January, 2000.
- Incremental demand reductions of 2,282 kW in FY 2005-06.
- Incremental coincident peak demand reductions of 1,500 kW in FY 2005-06.
- Incremental energy savings of 8,463 MWh in FY 2005-06.
- Incremental energy savings as a percent of GWP's retail sales was 0.77% in FY 2005-06.

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- Estimated cumulative demand reductions since January, 2000 of over 12,000 kW.
- Estimated cumulative energy savings since January, 2000 of over 48,000 MWh.

#### **5.1.2.2 Summary of Active DSM Programs (FY 2005-06)**

- **Low-Income Customer DSM Programs**

**Cool Care** provides long-term electric bill discounts for low-income customers by encouraging the replacement and recycling of old, energy inefficient refrigerators. This program was on hold during FY 2005-06. The program has replaced and recycled 1,911 refrigerators with new Energy Star models since July, 2003. Cumulative annual demand and energy savings for replacements to date are estimated at 103 kW and 1,322 MWh, respectively

**Smart Home Peak Hogs** is GWP's California Municipal Utility Association (CMUA) award winning program that reduces peak demand while providing bill relief for primarily low-income customers by encouraging the replacement of energy inefficient HVAC units in apartments. Since July, 2003, this program has replaced 1,297 tons of energy inefficient Peak Hogs in Glendale apartments. Cumulative annual demand and energy savings for these replacements are estimated at 366 kW and 808 MWh, respectively

- **General Residential DSM Programs**

**Smart Home Energy and Water Saving Surveys** reduces customer energy consumption through comprehensive in-home energy and water saving surveys, education, and direct measures installations. Installed energy saving measures include compact fluorescent lights, hot water heater wraps, and blower door tests. Since July, 2001, this program has provided over 6,415 audits and energy education sessions, installed over 14,667 compact fluorescent lights, 2,571 water heater blankets, and conducted 2,461 blower door tests. These installations are producing estimated cumulative annual demand and energy savings of 1,397 kW and 4,517 MWh, respectively.

**Smart Home Energy and Water Savings Rebates** provides rebates to promote the early retirement of approved energy and water saving appliances and devices. Over 19,100 rebates have been processed since July, 2001. This program is producing estimated cumulative demand and energy savings of 2,331 kW and 4,375 MWh, respectively

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**Smart Home Solar Solutions** provides a \$4.00 per watt incentive, up to 50% of the installed cost, to promote grid-connected solar photovoltaic systems, plus 100% of the customer cost for city permits. Systems are limited to a maximum 10 kW. This program has helped install 74 kW since September, 2000. These installations are generating an estimated 208 MWh annually in clean, green power.

**Smart Home AC Tune-Ups and Duct Sealing Services**, provided by Proctor Engineering, helps residential customers save energy by ensuring that their air conditioning and duct systems are functioning at their optimal level. Over 6,800 tons of HVAC have been tuned since February, 2000. These services are producing estimated cumulative annual demand and energy savings of 861 kW and 997 MWh, respectively.

**LivingWise®** provides funding to support participation in the LivingWise® energy and water conservation program at Glendale's public and private schools. LivingWise® provides ten hours of intensive energy education, as well as installation of energy saving devices, including compact florescent light bulbs. Over 7,500 students have participated in this program since July, 2001. This program is producing cumulative annual demand and energy savings reaching 393 kW and 2,221 MWh, respectively.

**Tree Power** provides up to three free trees and arborist services to ensure that the trees are planted correctly. When properly sited and cared for, a healthy, mature shade tree helps provide shade that cools the home and helps reduce air conditioning use. Approximately 700 trees have been planted since July, 2004. These trees are expected to produce cumulative annual demand and energy savings of 40 kW and 291 MWh, respectively.

**Torchiere Exchange Program** saves energy and reduces the danger of fire by allowing GWP customers to exchange up to two 300-watt or more halogen torchiere lamps for state-of-the-art 55-watt compact fluorescent models at exchange events. Since July, 2003, 3,357 lamps have been exchanged at five local events at a total PBC investment of \$132,550. These new lamps are expected to produce cumulative annual demand and energy savings of 158 kW and 685 MWh, respectively.

- **Small Business DSM Programs**

**Smart Business Energy Saving Upgrades** is GWP's CMUA award winning program that provides small business customers with comprehensive no-cost

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energy surveys, customized written reports, energy education, and directly installs as much as \$1,000 worth of cost-effective energy conservation measures. Over 1,800 energy audits and over 1,360 retrofits have been completed since July, 2001. Cumulative annual demand and energy savings from the installed measures are expected to reach 687 kW and 3,251 MWh, respectively

**Smart Business Lighting Rebates** targets small and medium sized businesses for energy efficient lighting upgrades by providing cash rebates for installed measures. Installed measures are producing estimated cumulative demand and energy savings of 109 kW and 312 MWh, respectively

**Smart Business AC Tune-Ups and Duct Sealing Services** is provided by Proctor Engineering. This program helps small business customers save energy by ensuring that their air conditioning and duct systems are functioning at their optimal level. Almost 1,100 tons of HVAC have been tuned since February, 2000. These tune-ups are producing estimated cumulative annual demand and energy savings of 689 kW and 782 MWh, respectively.

- **Large Business DSM Programs**

**Business Energy Solutions (BES)** provides incentives to complete pre-approved project costs for retrofit projects, 100% of the above Title 24 remodeling and/or new construction investments, or \$0.06 per kWh saved over the life of the installed measures. Audit incentives are limited to ten cents a square foot. Cumulative demand and energy savings of 3,244 kW and 18,197 MWh, respectively, have been realized.

### **5.1.2.3 Proposed DSM Goals (FY 2006-07)**

- Energy savings equal to 1.0% of 5-year moving average retail sales.
- Expenditures at or above 2.85% of retail revenues.
- Maximize energy efficiency program results through continued use of the NCPA/SCPPA E3/Kema evaluation model.
- Complete inventory of cost-effective DSM resources in GWP service territory.

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### **5.1.3 Electric Rate Restructuring**

There are two components in GWP's electric rate structure, a base rate component and a fuel adjustment component.

The base rate is designed to recover the direct and indirect costs of providing the infrastructure to serve local customers. Such costs include, but are not limited to, costs associated with transmission and distribution, customer service, and administration. The base rate also includes a reasonable rate of return on investment to effectuate a transfer to the City's General Fund, and to establish sufficient reserves for on-going Capital Improvement Projects (CIP). These CIPs ensure the reliability and integrity of the system infrastructure, and provide upgrades for the generation assets to improve the cost structure and competitiveness of these energy resources. The base rate structure is designed through a cost of service study that equitably associates the rates to the costs of providing electric services to various customer classes.

The second component of the GWP rate structure is the fuel adjustment component. Glendale Municipal Code, 1995, Section 13.44.420 establishes that each electric rate is subject to a fuel adjustment charge (FAC) to recover the costs of fuel and purchased power, which applies to each kilowatt-hour (kWh) of sales. The FAC is calculated twice yearly and becomes effective the first day of January and July each year. Section 13.44.420 also establishes that a FAC account be maintained to record the over-collection or under-collection status of the FAC.

During the most recent budget planning process for the 2-year budget cycle of FY 2006-07 and FY 2007-08, GWP staff prepared a 10-year financial projection of its electric operations. The projections showed that the revenues collected from the current electric base rates were not sufficient to fully recover the cost of service provided to the customers by the electric operations. The primary cause for the projected revenue deficits was the increasing cost of service, including inflationary factors, since the base electric rates were previously increased in January, 2003.

Additionally, the actual year-to-date financial information showed an above average under-collection in the FAC account through the end of April, 2006. This undesirable condition was caused by prolonged high energy and natural gas prices. Therefore, it was apparent that an increase in the FAC was also necessary to reduce and stabilize the FAC account to a position of neutrality.

Furthermore, it was determined that the Public Benefits Charge (PBC) required a modest increase to ensure that sufficient revenues were available to fund the Public Benefits Program as mandated by California AB 1890, enacted in 1996.

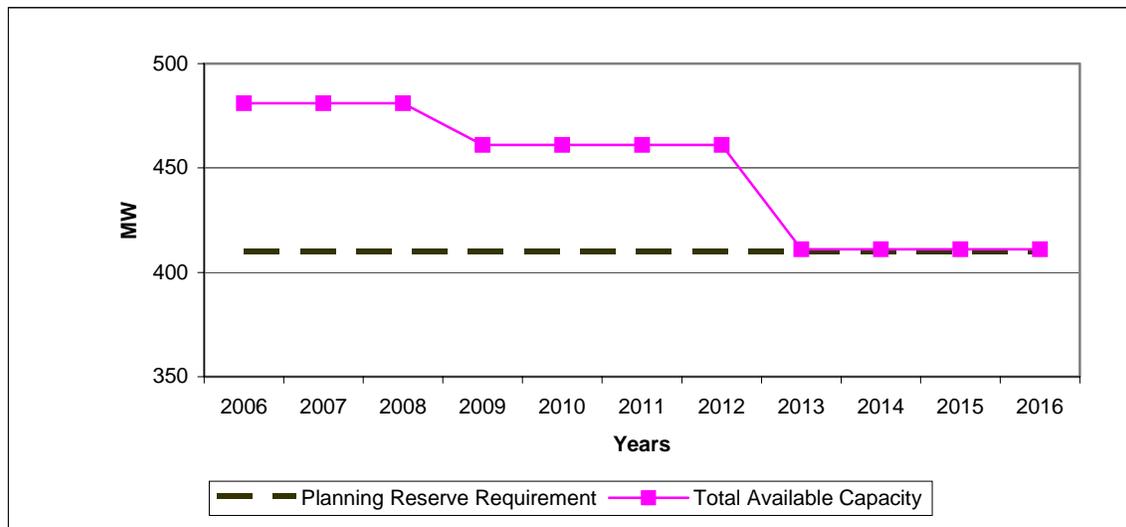
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To meet the short-term financial objective of break-even by the end of FY 2007-08, and to smooth out the impact of the increases on all retail customers, GWP staff recommended that increases in the electric base rates, as well as the FAC and PBC, be implemented in two phases as follows; (1) an overall average increase of 11.7% effective July 1, 2006 and (2) an overall average increase of 5.1% effective July 1, 2007. On May 23, 2006, the City Council of Glendale approved the aforementioned recommendation by GWP staff.

As a result of these rate increases, it is expected that GWP will maintain high bond ratings, and that GWP retail electric rates will remain competitive for the foreseeable future.

**5.2 Future Requirements**

**Figure 5-3  
GWP's Load/Resource Balance<sup>4</sup>**



Based on its forecasted peak demand, GWP is a fully resourced utility over the period covered by this IRP. It is GWP's belief that adequate resources are available to cover peak demand requirements, plus the planning reserve requirement of 74 MW to meet its reliability criterion, over the next ten years. This conclusion is illustrated in Figure 5-4, which plots GWP's existing generating capacity against its fiscal year peak planning reserve requirement for 2006 through 2016. The development of this information is shown in detail in Table 5-4.

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<sup>4</sup> The decrease in the Total Available Capacity in fiscal year 2009 and 2013 represents the expiration of the power supply contracts with BPA and PGE, respectively.

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From an energy perspective, GWP has the ability to run its local generation facilities (Grayson Power Plant) longer to meet any anticipated load growth. This means that the existing resources will likely meet any energy growth. However, the goal of GWP's Renewable Portfolio Standard (RPS) is to procure additional quantities of renewable energy in the years ahead. Therefore, a challenge GWP faces is to economically add renewable energy to its portfolio.

As GWP's Grayson Power Plant reaches the end of its economic life, GWP will need to take action to replacement of these units with highly efficient new machines for it to remain an economically competitive and reliable provider of electricity to its constituents. Likewise, GWP will need to take advantage of the active WECC wholesale spot energy markets, which will enable GWP a ready means for meeting any unexpected new loads at market prices.

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**Table 5-4 - GWP's Loads & Resources Forecast**

<b>FISCAL YEAR</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>SYSTEM LOAD (MW)</b>	<b>313</b>	<b>336</b>									
<b>LOCAL GENERATION</b>											
Grayson Unit 8A Combined Cycle (Natural Gas)	32	32	32	32	32	32	32	32	32	32	32
Grayson 8B/C Combined Cycle (Natural Gas)	74	74	74	74	74	74	74	74	74	74	74
Grayson Unit 3 Steam (Natural or Landfill Gas)	18	18	18	18	18	18	18	18	18	18	18
Grayson Unit 4 Steam (Natural or Landfill Gas)	42	42	42	42	42	42	42	42	42	42	42
Grayson Unit 5 Steam (Natural or Landfill Gas)	44	44	44	44	44	44	44	44	44	44	44
Grayson Unit 9 Gas Turbine (Natural Gas)	48	48	48	48	48	48	48	48	48	48	48
<b>TOTAL LOCAL GENERATION</b>	<b>258</b>										
<b>EXTERNAL GENERATION</b>											
Hoover (Hydro)	20	20	20	20	20	20	20	20	20	20	20
San Juan Unit 3 (Coal)	20	20	20	20	20	20	20	20	20	20	20
Intermountain Units 1&2 (Coal)	38	38	38	38	38	38	38	38	38	38	38
Palo Verde Units 1,2,&3 (Nuclear)	10	10	10	10	10	10	10	10	10	10	10
Magnolia Power Project (Natural Gas)	52	52	52	52	52	52	52	52	52	52	52
Ormat Geothermal Project (Geothermal)	1	1	1	1	1	1	1	1	1	1	1
<b>TOTAL EXTERNAL GENERATION</b>	<b>141</b>										
<b>FIRM PURCHASES</b>											
Bonneville Power Administration (System)	20	20	20	0	0	0	0	0	0	0	0
Portland General Electric (System)	50	50	50	50	50	50	50	0	0	0	0
PPM1 Wind Power (Wind)	3	3	3	3	3	3	3	3	3	3	3
PPM2 Wind Power (Wind)	10	10	10	10	10	10	10	10	10	10	10
<b>TOTAL FIRM PURCHASE</b>	<b>83</b>	<b>83</b>	<b>83</b>	<b>63</b>	<b>63</b>	<b>63</b>	<b>63</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>
<b>TOTAL CAPACITY (MW)</b>	<b>482</b>	<b>482</b>	<b>482</b>	<b>462</b>	<b>462</b>	<b>462</b>	<b>462</b>	<b>412</b>	<b>412</b>	<b>412</b>	<b>412</b>
<b>RESERVE MARGIN</b>											
Gross Surplus Capacity (MW)	169	146	146	126	126	126	126	76	76	76	76
As a Percentage of System Load	54%	43%	43%	38%	38%	38%	38%	23%	23%	23%	23%
Net Surplus Capacity (MW)	95	72	72	52	52	52	52	2	2	2	2
As a Percentage of System Load	31%	21%	21%	15%	15%	15%	15%	1%	1%	1%	1%

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As displayed in Table 5-4, GWP had 72 MW of generating capacity in excess of its planning reserve requirements, based on the year-to-date recorded peak demand for fiscal year 2006-07. However, towards the end of the 10-year period (2013-2016) covered by this IRP, projected peak load adjusted for GWP's planning reserve requirement will approach the limits of what the existing resources are able to supply.

If the loads grow faster than those forecasted above, GWP will need to acquire new resources more quickly to maintain its planning reserve requirements. However, there will likely be ample opportunity to obtain resources to meet any such needs. Flexible markets for capacity purchases have developed over the last several years that would satisfy any short-term or longer-term capacity needs that may emerge. Further, as described in Section 4.2, active WECC wholesale power markets should provide GWP with a convenient means for meeting additional loads with daily purchases at market prices.

Notwithstanding the current availability of outside resources, it is prudent for GWP to continue evaluating the viability of new high efficiency generating units to replenish its current stock of aging units (and expiring power sales contracts) to remain competitive in the open deregulated market.

## **6 IMPLICATIONS OF INDUSTRY RESTRUCTURING AND OTHER REGULATORY ISSUES**

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Federal and state policy affects the objectives in resource planning and influences the structure of resources. Federal and state legislation, regulations, and policy initiatives for energy resources should be reflected in electric resource planning processes.

Western's regulations specifically mention that a utility's "competitive situation" is a factor in assessing the viability of GWP's IRP. This section discusses the implications of restructuring on GWP's competitive situation and its electric resource plan. Federal legislation has focused on implementation of competition in wholesale electricity markets. Decisions about retail direct access have been left to the State.

### **6.1 Direct Access (Competition)**

At the California State level, legislation (AB 1890) was passed on March 31, 1998 to implement direct access (competition) for retail customers of the Investor Owned Utilities (IOUs). Publicly Owned Utilities (POUs), such as GWP, are allowed to make their own decisions about invoking direct access for retail customers. There seems to be no momentum within GWP to invoke direct access for retail customers at this time.

As a result of the California energy crisis in 2000-01, a re-examination of the state plan for retail restructuring for the IOUs was undertaken. Effective September 20, 2001, the California Public Utility Commission (CPUC), in accordance with Assembly Bill No. 1 (ABX1-1) terminated the right of retail customers of the state's IOUs to switch providers of electricity. This action makes it even more unlikely that California State POUs, such as GWP, will actively pursue direct access in the foreseeable future, particularly if GWP continues to provide its consumer owners with reasonably priced and reliable power.

In this IRP, it is assumed that retail load in GWP's service territory will be met with resources provided by GWP. If the action plan is followed, it appears that GWP will be providing a reasonably priced and reliable power supply to its consumer owners and will therefore not expose its ratepayers with significant levels of stranded costs.

### **6.2 Regional Transmission Organizations (RTO)**

California AB 1890 also stated its intent that all municipal systems join the California Independent System Operator (CAISO), even though there is no legal requirement for GWP to do so. Similarly, in an effort to continue the evolution of competitive wholesale power markets, Federal Energy Regulatory Commission (FERC) Order 2000, released in December 1999, requested the voluntary formation of regional transmission organizations

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(RTOs). FERC's review of power markets had shown evidence that traditional management of the transmission grid by vertically integrated electric utilities was inadequate to support the efficient and reliable operation necessary for the evolution of competitive markets. FERC concluded that RTOs, organizations designed to operate and control regional transmission systems, would be the best way in which to proceed to protect the public interest and ensure consumers pay the lowest possible price for reliable service.

FERC's voluntary plan is for all transmission-owning entities in the U.S. to place their transmission facilities under the control of RTOs, which would manage the operational and reliability issues and eliminate residual discrimination in transmission service. The fundamental goals are:

- Improve efficiencies in transmission grid management.
- Improve grid reliability.
- Remove remaining opportunities for discriminatory practices.
- Improve market performance.
- Facilitate lighter handed regulation.

Federal Legislation may grant FERC more power to require entities to form/join an RTO. GWP will want to participate in and/or monitor these RTO activities in order to protect its interest. If any RTO is formed under which GWP voluntarily (or otherwise) joins, it will likely result in GWP having to offer any of its unused transmission rights to third parties. GWP would receive revenues from third parties that choose to use these rights.

For the purposes of this IRP, it is assumed that GWP will not join any RTO, including the CAISO, in the near term. However, GWP will continue to work with the CAISO, and will investigate future opportunities.

### **6.3 Air & Water Quality Issues**

Currently, GWP's generation units must comply with the federal Clean Air Act (CAA). The CAA is implemented by the state, subject to the U.S. Environmental Protection Agency (EPA). The CAA directs EPA to establish air quality standards to protect public health and the environment. GWP's generation units must comply with air permit requirements designed to ensure attainment standards.

Within the current federal political environment, there exists a debate over revising the CAA in order to reduce overall emissions from the combustion of fossil fuels. The debate focuses on the emission standards and compliance measures for sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), mercury (Hg), particulate matter (PM), and the regulation

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of carbon dioxide (CO<sub>2</sub>) emissions. Additionally, the environmental community continues to pressure regulators and legislators to more stringently regulate toxic air pollutants.

The EPA has tentatively set the following timeframes to revisit various regulations: (1) Clean Air Act – more stringent ozone and particulate matter standards in 2008, and (2) Clean Water Act – more stringent water effluent guidelines for the utility sector in 2009.

Overall, regulatory trends in the near term will likely mean more stringent environmental standards and protection for air and water. Since California leads the nation in air quality regulations, changes initiated by the EPA are not as likely to significantly impact our resource plans. However, if Congress re-opens the CAA, then it could mean major adjustments in resource planning for the nation as a whole.

#### **6.4 Climate Change Issues**

Climate change is an issue that requires the attention of the energy sector. As an emitter of greenhouse gases (GHG), GWP needs to consider the potential for government environmental costs associated with climate change policy, as well as, voluntary measures to reduce GHG.

Carbon and GHG reduction is likely to be another important state and national issue over the next few years. At the national level, the President has a program for addressing climate change, including a goal to reduce emissions intensity of the U.S. by 18% by 2012.

The Governor of California announced his goal for the state to meet certain GHG reduction targets in 2010 and 2020. Towards that goal, a number of California EPA interagency task forces are evaluating different sectors of the economy. The utility sector is considered a large producer of GHG. Currently, reduction efforts of GHG are voluntary, but that is likely to change.

In 2004, GWP voluntarily joined the California Climate Action Registry. The Registry requires the reporting of CO<sub>2</sub> emissions for the first three years of participation, although participants are encouraged to report the remaining five GHG covered in the Kyoto protocol (methane, nitrous oxide, sulfur hexafluoride, haloalkanes, and perfluorocarbons). The reporting of all six gases covered by the protocol is required after three years of Registry participation. GWP recognizes the need to consider the financial risks of GHG in resource and business planning decisions.

Currently, it is unclear what the actual effect will be to electric generators, as a wide range of new technologies are being evaluated. However, it is reasonable to assume that

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additional costs will emerge as federal mandates to reduce GHG are established. These costs will likely be in the form of a carbon tax that each generator will have to pay.

GWP's technical staff has evaluated CO<sub>2</sub> emissions from our local generators. This research showed a declining trend in CO<sub>2</sub> emissions between CY 2004 and CY 2005 by approximately 11.5%. GWP has already made great strides in reducing CO<sub>2</sub>, and we feel confident of being able to comply with any federal and/or state reduction measures that are adopted.

### **6.5 Resource Adequacy**

In 2005, California Assembly Bill 380 became law. It established resource adequacy requirements for all load-serving entities in the state. Municipal utilities are required to maintain physical generating capacity adequate to meet their peak demand requirements consistent with the most recent minimum planning reserve and reliability criteria approved by the Board of Trustees of the Western Electricity Coordinating Council (WECC). This IRP is consistent with the WECC criteria, which is discussed in detail in Section 3 of this document titled "Planning Criteria".

### **6.6 Energy Policy Act Of 2005**

In 2005, the comprehensive Energy Policy Act was signed into law. It sets the stage for the nation's energy policy. Over the next year, the FERC will implement some of the most important requirements of the Act.

The energy bill includes provisions addressing price transparency in electric and natural gas markets, and significantly revises the FERC's enforcement and civil penalties authority. Conceivably, this increased authority should be a significant deterrent to any repeat of the sort of unscrupulous behavior experienced during the Western energy crises of 2000 and 2001. The new statute also affirms the FERC's exclusive authority under the Natural Gas Act to authorize new import terminals for liquefied natural gas (LNG). Bringing new LNG sources of supply and competition to the marketplace should drive fuel and energy prices down.

## **7 ACTION PLAN**

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### **7.1 Progress Reports**

In accordance with Western's requirements, GWP will file annual Progress Reports. These reports will discuss any significant changes to the planning criteria, projected loads, and existing and future resources summarized in this Plan, as well as any changes to GWP's pursuit of the Actions described below in Section 7.2.

### **7.2 Actions**

As discussed above, GWP has no immediate need to make any commitments beyond those described in Section 5 to acquire new supply or DSM resources within Western's forecast horizon. However, beyond the planning horizon covered by this IRP, there appears to be a need for new resources to meet any anticipated load growth, given GWP's load resource balance. GWP will need to pursue the following actions to optimize the use of its existing system and encourage electric conservation.

- Assess Short-Term Resource Sales and Purchase Opportunities – To minimize its customers' electric rates, GWP will continue to assess short-term sales and purchase opportunities that emerge within power markets. GWP will also continue to analyze short-term purchase opportunities, such as hourly, weekly, and monthly purchases. Such purchases have similar beneficial effects on individual utilities and the regional electric system.
- Assess Conservation and Renewable Resource Opportunities – GWP will also continue to consider cost-effective conservation and renewable resource opportunities.
- Monitor Industry Restructuring to Assess Impact on Resource Strategy – GWP will also actively monitor the impact restructuring has on its general business strategy, including its electric resource strategy. GWP anticipates that such impacts will only become known over time.
- Assess new resource options, including improvements at the Grayson Power Plant, to meet dwindling capacity reserve margins toward the end of this planning horizon.