

PUBLIC FACILITIES

INTRODUCTION

Our region requires reliable supplies of water and energy, opportunities to reuse and recycle materials, and sufficient disposal options for waste. The region also needs to make more efficient use of its resources. We can do this by locating public facilities where they will most effectively provide access and availability of needed services and protect public health and safety.

To address the importance of public facilities to the San Diego region, this chapter focuses on water supply, energy, and waste management. Key issues include meeting our water demand, energy, and waste management infrastructure needs, and providing public facilities that meet our current and future needs in a timely, efficient, and sustainable manner.

The indicator data included in this chapter establish a baseline for tracking progress toward the following policy objectives included in the RCP:

WATER SUPPLY

- Ensure a safe, sufficient, reliable, and cost-efficient water supply for the San Diego region

ENERGY

- Meet the region's energy needs in a fiscally and environmentally sound manner

WASTE MANAGEMENT

- Minimize the need for additional landfills and provide economically and environmentally sound resource recovery, management, and disposal facilities
- Exceed the state-mandated 50 percent waste stream diversion rate and work toward a 75 percent diversion rate.

The indicators designated for tracking progress toward the above public facilities policy objectives are as follow:

WATER SUPPLY

1. Water Consumption
2. Diversity of Water Supply
3. Recycled Water Use

ENERGY

4. Per Capita Electricity Consumption and Peak Demand

5. Share of Energy Produced In the Region vs. Imported
6. Share of Energy Produced from Renewable Resources

WASTE MANAGEMENT

7. Percent of Waste that is Recycled
8. Landfill Space Available

1. Water Consumption

Significance

A goal of the RCP is to ensure a safe, sufficient, reliable, and cost efficient water supply for the San Diego region. The San Diego County Water Authority (Water Authority) and local water districts are mandated to supply sufficient water resources to meet the needs of the region. Water Authority demand projections are based on SANDAG population, demographic, housing, and economic forecast numbers. These SANDAG estimates are in turn derived from local land use agencies' general plans.

With current SANDAG forecasts projecting one million more people in the region by 2030, how the region grows will have a significant impact on future water demand. The types and design of development as well as the locations where development occurs have a direct impact on water consumption and necessary water system infrastructure.

Findings

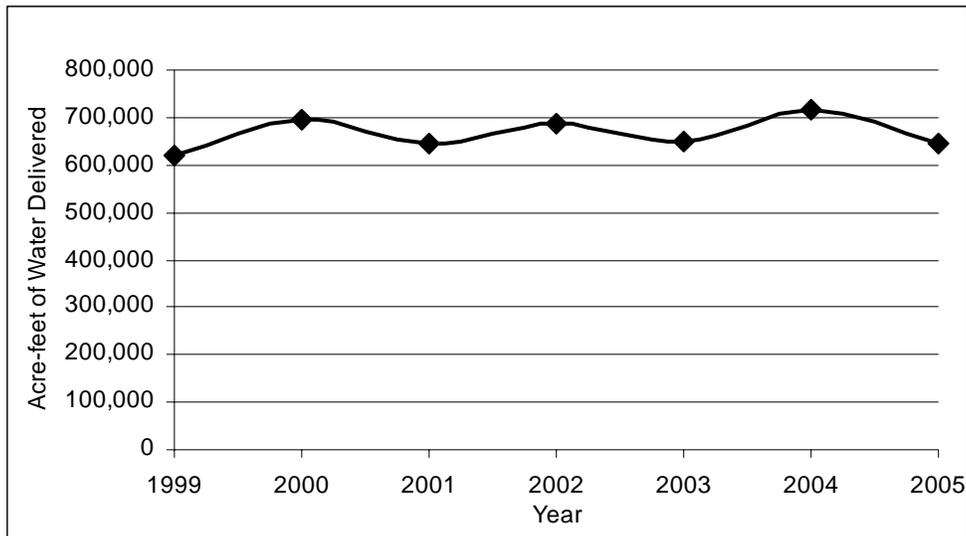
The Water Authority is the wholesale water agency serving 23 retail water agencies in the San Diego region. It is important to note that short-term fluctuation in water demand is primarily due to weather variability. Long-term changes in water demand are typically due to population growth.

Since 1999, total annual water demand within the Water Authority's service area has fluctuated, as seen in Figure 23. Variations in historic yearly demands are primarily attributable to weather. Changes in annual rainfall and seasonal temperatures can have a significant impact on water use. For example, above normal rainfall in 2005 resulted in a ten percent drop in total water use over the previous year.

As shown in Figure 24, the Water Authority's long-term regional demand forecast projects a steady increase in total water consumption. These projections are based on normal-year weather conditions. According to the 2005 Water Authority Urban Water Management Plan, total water demand is forecast to increase by over 113,000 acre-feet (1 acre-foot ~ 325,900 gallons) between 2010 and 2030. This increase in consumptive use is driven by projected growth in the region's population and economy.

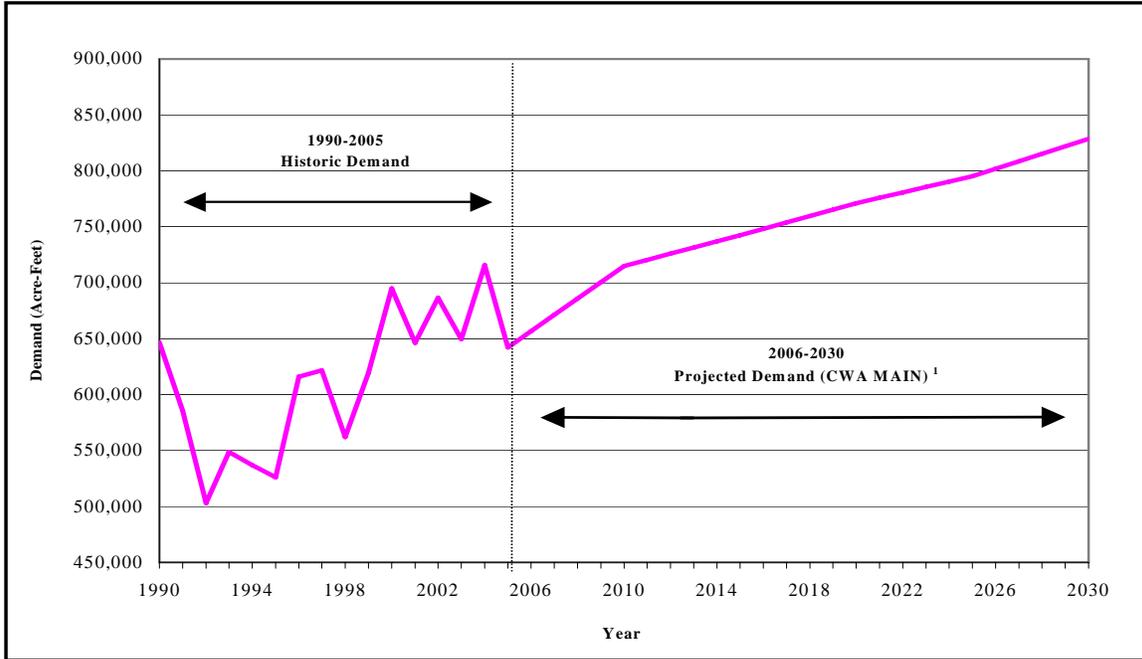
Water conservation measures play a substantial role in mitigating water demand increases. On average, from 2000 to 2005, water conservation savings offset over five percent of the region's total demands, as seen in Figure 25. Local governments can directly affect future water demand by promoting conservation programs within their jurisdictions and implementing water efficiency standards throughout the planning process. Promotion of water saving measures, such as planting native, drought resistant plants and encouraging efficient irrigation through weather-based irrigation controllers can substantially reduce outdoor water use. In addition, implementation of programs such as the ultra-low-flush toilet and high efficiency clothes washer incentives to help reduce water consumption. The 2005 Water Authority Urban Water Management Plan shows about 108,000 acre-feet of conservation savings by 2030, a 62,350 acre-foot increase from 2005 levels.

Figure 23
HISTORIC WATER DEMAND WITHIN
WATER AUTHORITY SERVICE AREA (1999-2005)



Source: San Diego County Water Authority Annual Reports.

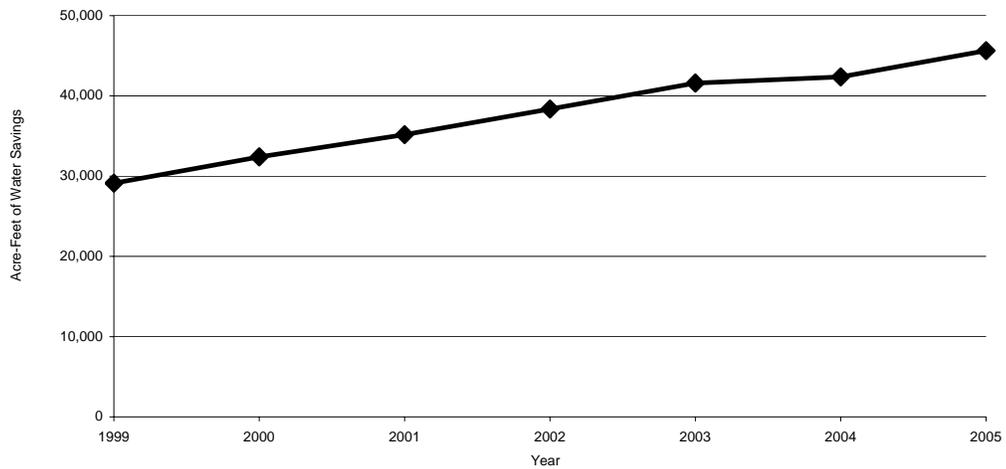
Figure 24
REGIONAL HISTORIC AND PROJECTED NORMAL WATER DEMAND (1990- 2030)



Forecast includes Camp Pendleton area projected water demands.

Source: San Diego County Water Authority: 2005 Urban Water Management Plan.

Figure 25
REGIONAL WATER CONSERVATION SAVINGS ESTIMATES (1999- 2005)



Source: San Diego County Water Authority.

2. Diversity of Water Supply

Significance

Currently, about 22 percent of the water used within the San Diego County Water Authority service area comes from local sources. Imported water deliveries from the Metropolitan Water District of Southern California (MWD) represent a majority of the region's water supply. MWD secures its imported supply from two main sources, the Colorado River and the State Water Project. The reliability of these two supplies has a direct impact on our region's water supply availability to meet current needs and future growth.

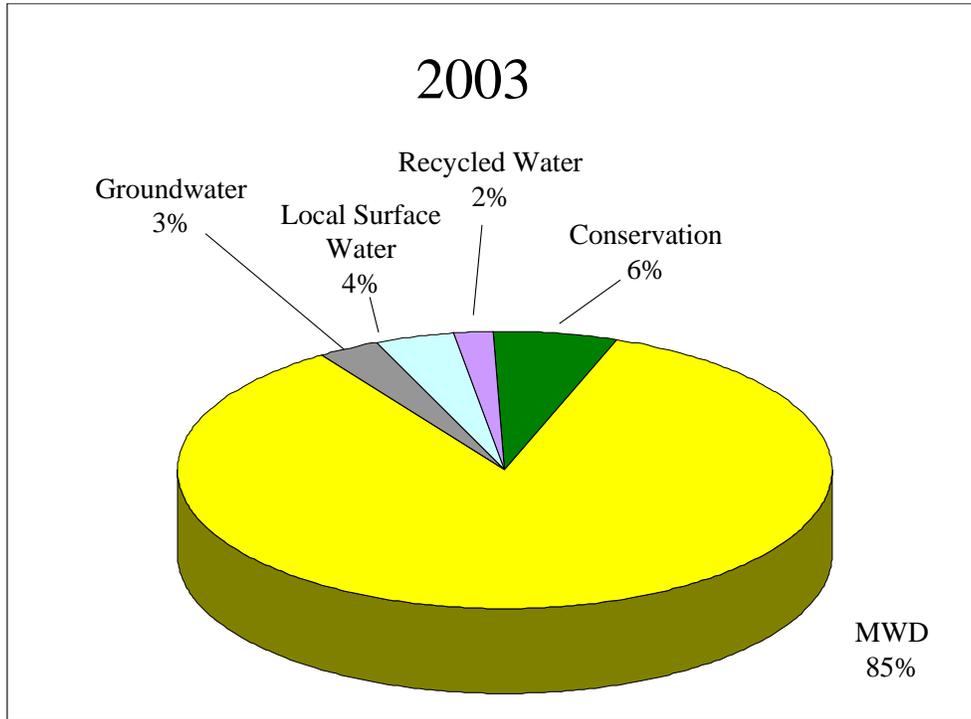
To lessen demands on a single supply source, the Water Authority has implemented plans and policies to diversify the region's water supply portfolio. Water Authority diversification efforts include: the Water Authority-Imperial Irrigation District water conservation and transfer agreement, acquiring conserved water through the All American and Coachella Canal Lining Projects, and development of local recycling, groundwater, and seawater desalination projects. This diverse supply mix enhances our water supply reliability to meet the needs of the San Diego region.

Findings

As seen in Figures 26 and 27, the Water Authority has made progress toward its diversification strategy. Between 2003 and 2005 the proportional amount of imported water use declined from 85 percent to 79 percent. This reduction is primarily attributed to the Water Authority-Imperial Irrigation District water conservation and transfer agreement, which was finalized through the Colorado River Quantification Settlement Agreement in 2003. By 2021, the transfer will provide 200,000 acre-feet of water or approximately 22 percent of the region's supply.

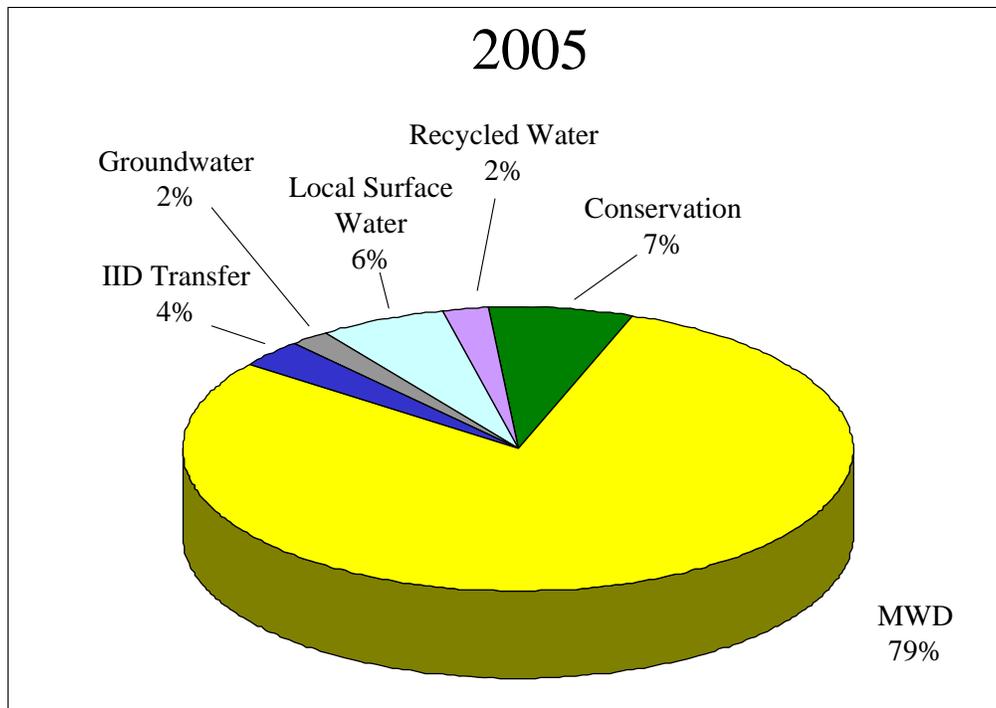
Additionally, the Water Authority anticipates development of an in-region seawater desalination facility capable of delivering 50 million gallons of desalinated seawater per day. The seawater desalination facility will help to achieve the target of providing 40 percent of the region's water through local sources (seawater desalination, conservation, surface water, recycling, and groundwater). Figure 28 shows the diversification goal for the Water Authority for the year 2020.

Figure 26
SAN DIEGO WATER SUPPLY BY SOURCE (2003)



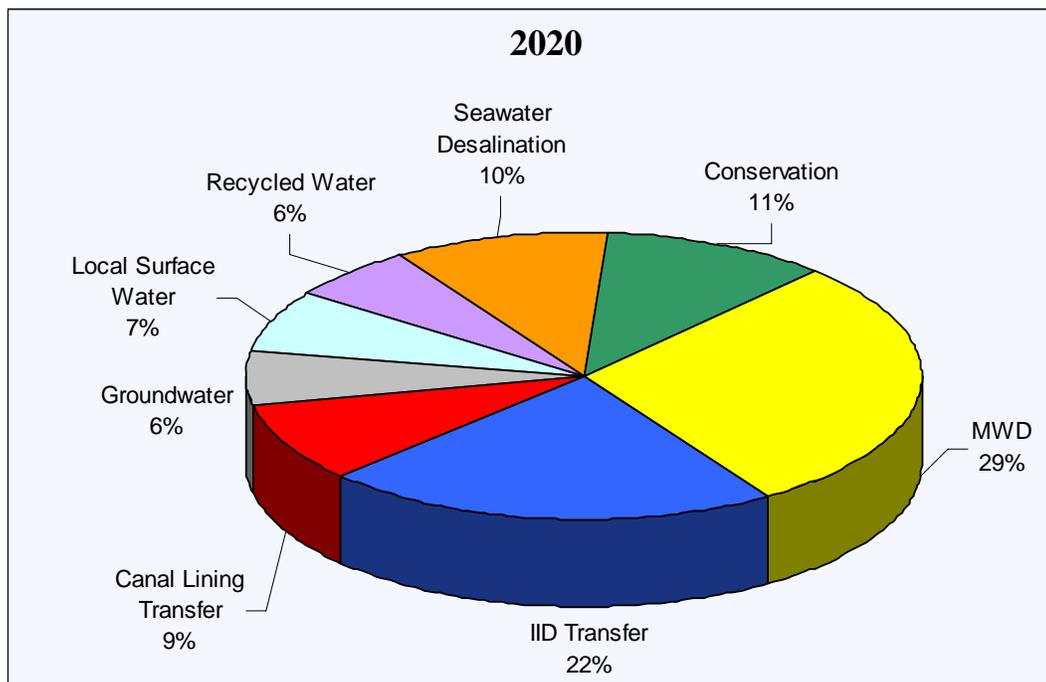
Source: San Diego County Water Authority Annual Reports (Fiscal Year Water Supply by Source).

Figure 27
SAN DIEGO WATER SUPPLY BY SOURCE (2005)



Source: San Diego County Water Authority Annual Reports (Fiscal Year Water Supply by Source).

Figure 28
WATER AUTHORITY DIVERSIFICATION TARGETS FOR 2020



Source: San Diego County Water Authority Annual Reports (Fiscal Year Water Supply by Source).

3. Recycled Water Use

Significance

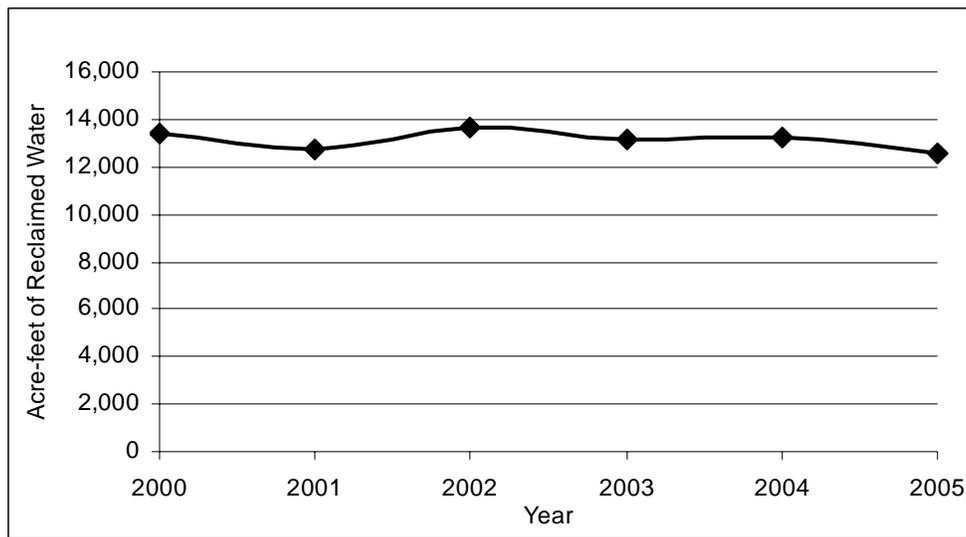
A fundamental element to developing a diverse supply mix for the region and to using existing water supplies more efficiently is through implementation of water recycling projects. The Water Authority, in conjunction with its member agencies, is promoting recycled water use through funding programs, policies and training.

Several agencies within the San Diego region continue to implement and expand their water recycling projects. Currently, about 13,000 acre-feet per year of recycled water is reused within the Water Authority service area. Nearly 69 percent of the recycled water is used for landscape irrigation and other municipal and industrial uses; the remaining 31 percent is recharged into groundwater basins.

Findings

Over the last several years local recycled water use has exceeded 12,000 acre-feet annually, as seen in Figure 29. The Water Authority will continue to assist local agencies in expanding the use of recycled water through financial assistance programs and policies in support of beneficial reuse. By 2030, Water Authority projections estimate total recycled use at about 47,600 acre-feet. This effort would represent a significant increase in recycled supplies from current levels.

Figure 29
AMOUNT OF RECYCLED WATER USED (2000-2005)



Source: San Diego County Water Authority Annual Reports (Fiscal Year Water Supply by Source).

4. Per Capita Electricity Consumption and Peak Demand

Significance

Electricity consumption is the total amount of electricity used in a given day, month, or year, measured in kilowatt-hours (kWh). Peak demand is the highest amount of electricity demand on the electrical system in any given day, measured in kilowatts (kW) or megawatts (MW=1000kW). The highest peak demand is usually during hot summer days in late-August when air-conditioning loads are at their highest.

Population is a key driver for residential consumption, commercial growth, demand for water pumping, and other services. Another key driver of California's energy demand is personal income. If quality of life factors remain constant, maintaining or reducing the amount of electricity used on a per capita basis is an important indicator to assess how well the region is implementing energy conservation and efficiency measures. To accomplish this, the RCP recommends assessing electricity peak demand (kW) and electricity consumption (kWh) by San Diegans on a per capita basis.

Target

The *Regional Energy Strategy 2030* (RES) was approved by SANDAG in 2003. The RES developed policies and provided measurable targets to achieve the region's sustainable energy vision. The RES called for a reduction in both per capita electricity peak demand and overall per capita electricity consumption back to 1990 levels (5,151 kWh per capita) by 2010.

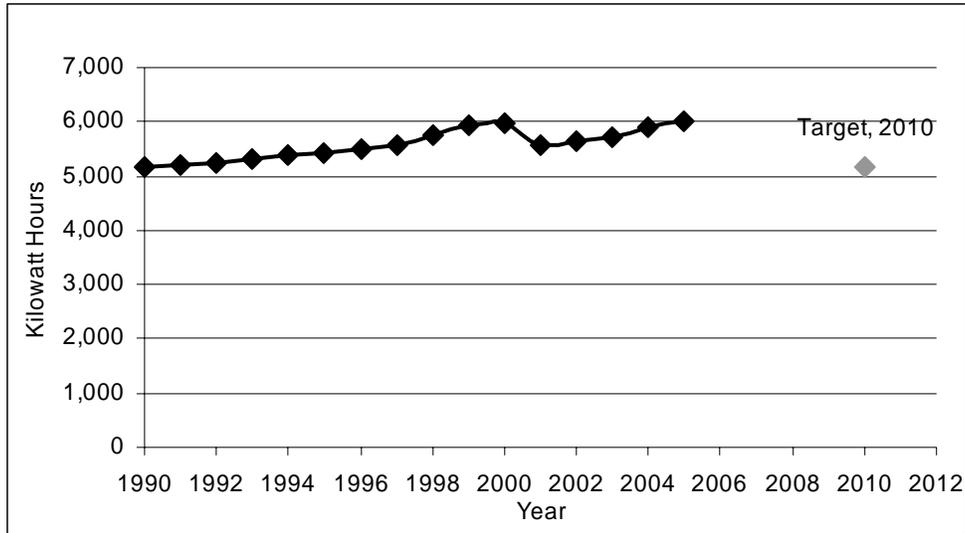
Findings

Since RES adoption in 2003, per capita electricity consumption has increased an average of two percent per year, and it is approximately 16 percent higher than 1990 levels.

Between 1990 and 2005, per capita electricity consumption has increased by an average of one percent each year, as seen in Figure 30. A significant reduction of seven percent occurred in 2001 during the energy crisis, but consumption regained momentum since. Between 2004 and 2005, per capita consumption increased by 1.3 percent, which was an improvement over a 3.4 percent increase of the year before. If the region is to meet per capita reduction targets, we must do more to implement energy efficiency, conservation, and distributed generation. Technological advancements and behavioral changes also will further this goal. Higher density residential smart growth development also can reduce per capita energy consumption.

Although the region is not on track to meet the significant reductions called for in the RES, San Diego is performing better than national and state averages. California has the lowest per capita electricity consumption of any state and consumes almost 50 percent less electricity per capita than the national average. San Diego's per capita consumption was 23 percent lower than the state level in 2000 and 15 percent lower in 2003. This is in part due to aggressive statewide energy efficiency and demand reduction goals and due to the milder climate of the San Diego region, as seen in Figure 31.

**Figure 30
SAN DIEGO ANNUAL PER CAPITA ELECTRICITY CONSUMPTION
(1990-2005)**



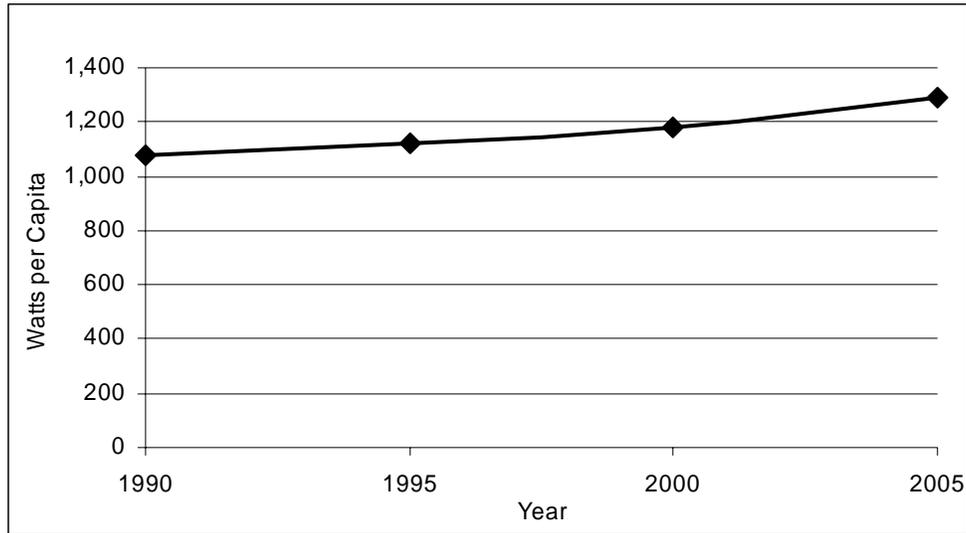
Source: San Diego Gas and Electric.

**Table 13
ANNUAL PER CAPITA ELECTRICITY CONSUMPTION* (kWh) AND DEMAND* (W)
(1990-2005)**

	San Diego Consumption Use-Per-Capita (kWh)	San Diego Peak Demand Use-Per-Capita (Watts)
1990	5,151	1,080
1991	5,203	1,085
1992	5,238	1,106
1993	5,322	1,116
1994	5,401	1,106
1995	5,441	1,122
1996	5,486	1,181
1997	5,581	1,212
1998	5,763	1,241
1999	5,933	1,281
2000	5,989	1,181
2001	5,555	1,099
2002	5,639	1,148
2003	5,723	1,194
2004	5,918	1,266
2005	5,996	1,292

Source: San Diego Gas and Electric. *Data normalized for weather variations.

Figure 31
PER CAPITA ELECTRICITY PEAK DEMAND (1990-2005)



Source: San Diego Gas and Electric.

5. Share of Energy Produced in the Region vs. Imported

Significance

A recommended action of the RCP is to promote the local production of cost-effective, environmentally sensitive energy to reduce our dependence on imported energy. The proportion of local energy that is supplied from in-region sources directly reflects progress toward this goal. As older, less efficient plants are replaced in the region with more energy-efficient resources; these more environmentally friendly resources are able to operate at higher capacities.

Target

One goal of the *Regional Energy Strategy 2030* (RES) is to achieve and maintain the capacity to generate 65 percent of summer peak demand with in-county generation by 2010 and 75 percent by 2020.

Findings

In-region assets currently provide approximately 60 percent of total capacity needs, though their operation is at less than capacity due to the potential environmental impacts and other factors.

The share of energy produced within the region has decreased to roughly 25 percent in 2005. In 1990 and 1995, energy produced in the region remained steady at roughly 34 percent. In 2000, the share peaked at approximately 40 percent as a result of the energy crisis because local large-scale

power plants and smaller generators ran at their maximum capacity. Generally, San Diego's older in-region resources run at partial capacity for air quality, high fuel cost, and other reasons. Since the crisis subsided, smaller, more distributed generators dependent on natural gas have shut down as fuel prices steeply increased in the 2000s. One measure to increase the share of energy produced in the region would be to replace older, less efficient resources.

6. Share of Energy Produced from Renewable Resources

Significance

The development of renewable energy resources such as wind, solar, and geothermal is specifically encouraged in the RCP and targets have been established in the *Regional Energy Strategy* and by state law.

Target

The RES, adopted by the SANDAG Board in 2003, includes a goal of increasing the total electricity supply from renewable resources to 15 percent by 2010, 25 percent by 2020, and 40 percent by 2030. Subsequent to the RES, more stringent state law has been adopted requiring 20 percent renewables by 2010.⁶ The Governor has also proposed an additional goal of 33 percent by 2020.

In addition to general renewable energy targets, the Regional Energy Strategy 2030 called for an emphasis on in-region renewable installations. For 2010, the RES called for 740 MW of renewables, of which 340 MW (46 percent) are to be in the region. For 2010, the SDG&E 2004 Long Term Resource Plan identified 777 MW of renewables, of which 342 MW (44 percent) are to be in the region.

⁶ Senate Bill 107 was signed into law by Governor Schwarzenegger on September 26, 2006. This bill accelerates the Renewable Portfolio Standard (RPS) requirement from 2017 to 2010. The RPS is a program that requires investor-owned utilities like SDG&E to, among other things, achieve a 20 percent renewable electricity portfolio by December 31, 2010.

Findings

By 2005, the share of energy produced from renewable resources reached 5.3 percent after ten years at only one percent or less.

Table 16 demonstrates that the share of the region's energy produced from renewable resources increased significantly in recent years. In 2005, SDG&E acquired approximately 5.3 percent of its resource mix from renewable resources. Other investor-owned utilities in the state have achieved higher saturation. In 2006, Pacific Gas & Electric's baseline of renewable power is at 13 percent, while Southern California Edison has 18 percent of eligible renewable power in its portfolio. SDG&E has stated that it will reach the state-required 20 percent RPS in 2010, a target which is five percent higher than the original RES target for that year.

Table 14
SDG&E SHARE OF ENERGY PRODUCED FROM RENEWABLE RESOURCES⁷ (1990-2030)

	% of Energy Produced from Renewable Resources
1990	0.5%
1995	0.5%
2000	1.0%
2005	5.3%
2010 State Target	20.0%
2020 RES Target	25.0%
2030 RES Target	40.0%

Source: San Diego Gas and Electric.

7. Percent of Waste that is Recycled

Significance

The waste management goals of the RCP are to minimize the need for additional landfills and provide economically and environmentally sound resource recovery, management, and disposal facilities. A second goal is to exceed the state-mandated 50 percent waste stream diversion rate by the year 2005 and work toward a 75 percent diversion rate.

Both goals can be tracked by reviewing the percentage of waste that is diverted from landfills and is instead recycled or put to another use.

⁷ These values are based on the California Public Utility Commission's Renewable Portfolio Standard Rules and thus do not include Customer Owned Photovoltaic.

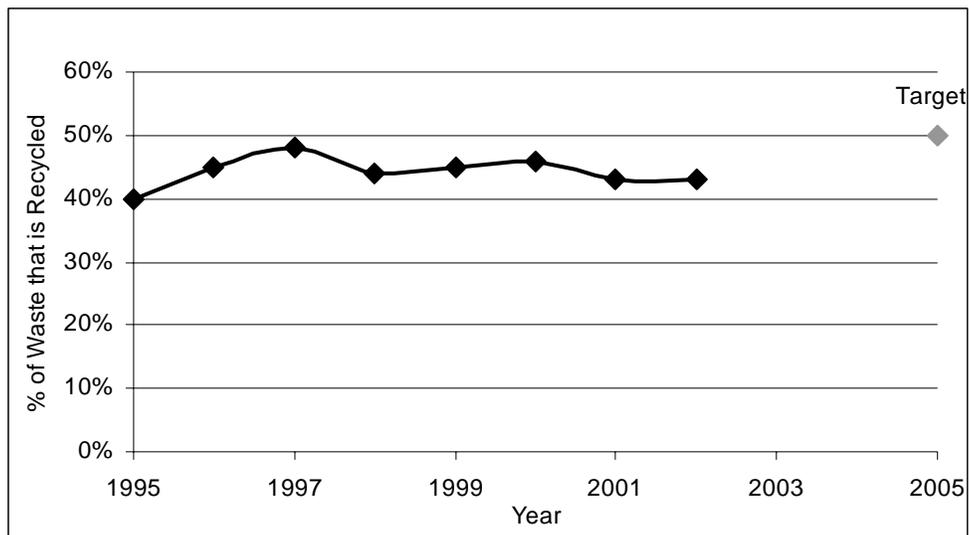
Target

Assembly Bill 939 sets forth a target for solid waste diversion. It mandates that 50 percent of solid waste must be diverted from landfills by 2005. As of 2002, the most recent year for which data is available, the region had not yet met the target.

Findings

The waste diversion rate has fluctuated since 1995, but the region has not yet reached the 50 percent diversion rate mandated by the State of California, although there has been a slight upward trend over the last ten years, as seen in Figure 32.

Figure 32
PERCENT OF SOLID WASTE DIVERTED FROM LANDFILLS (1995-2002)



Source: California Integrated Waste Management Board.

8. Landfill Space Available

Significance

The waste management goals of the RCP include minimizing the need for additional landfills and providing economically and environmentally sound resource recovery, management, and disposal facilities. The RCP also aims to exceed the state-mandated 50 percent waste stream diversion rate by the year 2005 and work toward a 75 percent diversion rate.

Findings

Trend data is currently unavailable; the data source for this indicator, the Countywide Siting Element is completed every five years and only 2002 data are available at this time. The current remaining landfill capacity is represented here in cubic yards. This estimate is based upon existing permitted in-county capacity, excluding the San Onofre and Las Pulgas landfills. This estimate also does not include any landfills planned but not permitted. Therefore, the Gregory Canyon landfill and the expansion of the Sycamore Canyon landfill are not included in the capacity figures.

The estimated number of years of remaining capacity is based on assumptions such as reaching a regionwide diversion rate of 50 percent by 2005, and slight increases in total disposal and exported solid waste. Again, this does not take into account any landfills that are planned but not permitted. The actual year when the county is projected to run out of capacity under this scenario is also listed in parentheses.

Table 15
REMAINING LANDFILL SPACE AVAILABLE

	Current Remaining Capacity (cubic yards)	Estimated Years of Capacity
2002	89,044,519	11 (to 2016)

Source: San Diego County Department of Public Works, Integrated Waste Management Plan Countywide Siting Element.

PUBLIC FACILITIES SUMMARY

Conclusions

Water consumption has remained fairly steady since 2000, but declined slightly between 2004 and 2005. The amount of recycled water used in the region each year has declined. Between 1990 and 2005, electricity consumption per capita has increased by less than 1 percent per year. The share of the region's energy produced from renewable resources increased significantly in recent years from 0.5 percent in 1990 to 5.3 percent in 2005; and the share of energy produced within the region generally remains at roughly one-third. The waste diversion rate has fluctuated since 1995, but the region has not yet reached the 50 percent diversion rate mandated by the State of California, although there has been a slight upward trend over the last ten years.

Future Target Setting

Three of the eight indicators in this section already have targets. While not impossible, setting targets for indicators such as landfill space will be challenging. The targets will be set by stakeholders and SANDAG staff.

SANDAG Role

Regional Energy Strategy

SANDAG, with other partners, produced the Regional Energy Strategy (RES), which used the technical information of the Regional Energy Infrastructure Study to develop a vision for how energy will be produced and consumed in the region. The RES proposes eight goals and the implementation steps necessary to achieve them.

Integrated Regional Infrastructure Strategy

The Integrated Regional Infrastructure Strategy (IRIS) was prepared as part of the RCP to provide an investment and financing strategy to help the region meet its combined infrastructure needs. IRIS addresses transportation, water, wastewater, stormwater management, solid waste, energy, education, and parks and open space. The RCP Strategic Initiatives call for further developing guidelines to link annual expenditures of capital improvement programs to the long term goals of facility master plans that incorporate RCP goals.