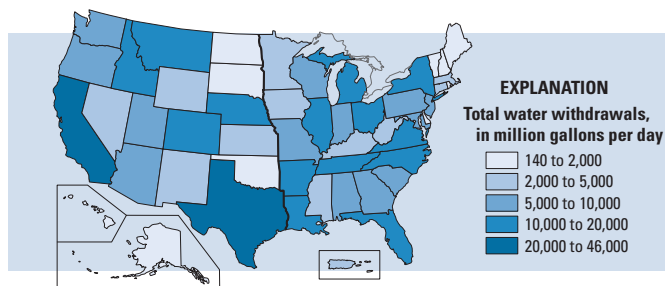


Summary of Estimated Water Use in the United States in 2005



- Total withdrawals were 410,000 million gallons per day
- Freshwater withdrawals were 85 percent of the total
- Surface water supplied 80 percent of all withdrawals
- Thermoelectric-power withdrawals were 201,000 million gallons per day

About 410,000 million gallons per day (Mgal/d) of water was withdrawn for use in the United States during 2005. About 80 percent of the total (328,000 Mgal/d) withdrawal was from surface water, and about 82 percent of the surface water withdrawn was freshwater. The remaining 20 percent (82,600 Mgal/d) was withdrawn from groundwater, of which about 96 percent was freshwater. If withdrawals for thermoelectric power in 2005 are excluded, withdrawals were 210,000 Mgal/d, of which 129,000 Mgal/d (62 percent) was supplied by surface water and 80,700 Mgal/d (38 percent) was supplied by groundwater.

Water withdrawals in four States—California, Texas, Idaho, and Florida—accounted for more than one-fourth of all fresh and saline water withdrawn in the United States in 2005. More than half (53 percent) of the total withdrawals of 45,700 Mgal/d in California were for irrigation, and 28 percent were for thermoelectric power. Most of the withdrawals in Texas (26,700 Mgal/d) were for thermoelectric power (43 percent) and irrigation (29 percent). Irrigation accounted for 85 percent of the 19,500 Mgal/d of water withdrawn in Idaho, and thermoelectric power accounted for 66 percent of the 18,300 Mgal/d withdrawn in Florida.

Water Use by Category

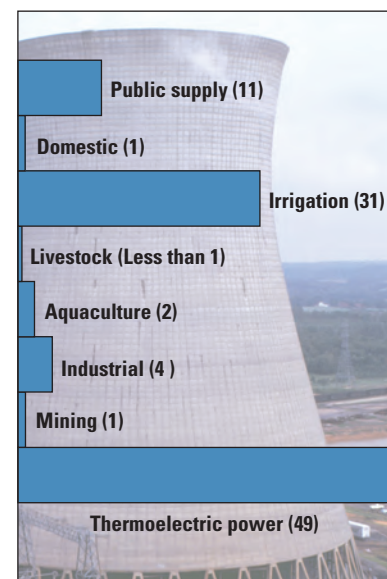
During 2005, about 44,200 Mgal/d of freshwater was withdrawn for **public supply**, which accounted for about 11 percent of the total water withdrawn. About 67 percent of the freshwater withdrawals were from surface-water sources. Public suppliers deliver water to users

for domestic, industrial, commercial, and other purposes. **Domestic** use includes indoor and outdoor residential uses, such as drinking water, sanitation, and lawn watering. About 58 percent of public-supply withdrawals, or 25,600 Mgal/d, was for domestic use. Some residences, especially in rural areas, are not connected to public-supply systems, and water for domestic use is self-supplied from wells or other private sources. Self-supplied domestic withdrawals were 3,830 Mgal/d during 2005, which provided water for about 42.9 million people, or 14 percent of the U.S. population. Nearly all of the water withdrawals for self-supplied domestic use were from groundwater.

Withdrawals for **irrigation** totaled 128,000 Mgal/d, second only to total withdrawals for thermoelectric power, and represented 31 percent of total withdrawals and 37 percent of freshwater withdrawals. Irrigation includes water applied by irrigation systems used in agricultural and horticultural practices. Sprinkler systems were used on about half of the irrigated acreage nationwide in 2005, and surface water supplied about 58 percent of the total irrigation withdrawals. Of the total irrigation in the United States, 85 percent of the withdrawals and 74 percent of the acres irrigated were in 17 conterminous Western States.

Combined withdrawals for livestock and aquaculture were less than 3 percent of the total water withdrawals in 2005. **Livestock** withdrawals include water for livestock, feedlots, and dairy operations, and accounted for 2,140 Mgal/d, most of which (60 percent) was supplied by groundwater. **Aquaculture** includes fish

farms and fish hatcheries and accounted for 8,780 Mgal/d of freshwater withdrawals, about 78 percent of which were supplied by surface water.



2005 withdrawals by category, in percent.

Self-supplied **industrial** withdrawals were an estimated 18,200 Mgal/d, about 4 percent of total withdrawals. Industrial water use includes water used in manufacturing and producing commodities, such as food, paper, chemicals, refined petroleum, wood products, and primary metals. Although some water for industrial uses was delivered by public suppliers, this amount was not estimated for 2005. Surface water was the source for 83 percent of self-supplied industrial withdrawals. Less than 7 percent of total industrial withdrawals were saline water, and 97 percent of the saline water used was surface water.

Mining water use includes water used for extracting solid minerals, such as copper; liquids, such as petroleum; and gases, such as natural gas. Withdrawals for mining were estimated to be 4,020 Mgal/d for 2005, or about 1 percent of total withdrawals. Groundwater supplied 63 percent of water withdrawn for mining purposes, and about 58 percent of mining withdrawals were freshwater.

Water for **thermoelectric power** is used in the process of generating electricity using steam-driven generators. Thermoelectric power accounted for 49 percent of total withdrawals, or 201,000 Mgal/d. Surface water was the source for 99 percent of thermoelectric-power withdrawals, and 28 percent of the surface water was saline. Thermoelectric power plants that use once-through cooling systems accounted for 92 percent of thermoelectric power withdrawals; recirculating cooling systems made up the remainder. Very large volumes of water are needed for cooling in thermoelectric power plants, which is why they generally are located near the coasts, the Great Lakes, and large rivers. Most (84 percent) of thermoelectric-power withdrawals in 2005 were in the Eastern States; many Western States rely on hydroelectric-power generation for much of their power needs. Hydroelectric power is an instream use and is not included in the 2005 estimates of water use.

A bar graph of water withdrawals by major category and State, arranged from west to east, shows the general geographical pattern of water use. Irrigation dominated withdrawals in many Western States, especially those with only minor thermoelectric-power withdrawals. Generally, thermoelectric power was the largest category of water withdrawal in the Eastern States.

Water-Use Trends, 1950–2005

Total withdrawals for 2005 were less than 1 percent lower than the revised estimate of withdrawals for 2000 (413,000 Mgal/d). Water-withdrawal estimates made by the U.S. Geological Survey (USGS) at 5-year intervals since 1950 peaked in 1975 and 1980, when major categories of thermoelectric-power generation and irrigation were largest. Irrigation withdrawals generally have declined since 1980 even though the amount of irrigated acreage has increased. Conversely, thermoelectric power withdrawals declined sharply in 1985 but have been increasing since and regained the same level of withdrawal as in 1975 again in 2005. Withdrawals for public supply have increased steadily since 1950 along with the percentage of the population that is served by public-supply systems. Domestic withdrawals also have increased generally since 1950 as increases in per capita use balance or outweigh declines in the self-supplied population. Self-supplied industrial water use is the only category that has declined consistently since 1985 when the category was first compiled separately from the commercial, mining, and aquaculture categories. Industrial withdrawals in 2005 were almost 8 percent lower than in 2000.

Importance of Water-Use Data for the United States

Every 5 years, the USGS compiles and estimates water-use information in cooperation with State, Federal, and local agencies to document how the Nation’s water resources are used. The most recent publication in the series that began in 1950 and on which this summary is based is USGS Circular 1344, “Estimated use of water in the United States in 2005.”

Federal, State, and local agencies have a key role in the collection and dissemination of water-use data. By compiling and publishing water-use estimates for the Nation, the USGS provides water-resource planners with the information needed to address issues related to water-resource allocation and environmental impacts at national, regional, and State levels. Access to these data provides engineers, scientists, and policy makers the information they need to assess current and future water-use needs.

Reference

Kenny, J.F., Barber, N.L., Hutson, S.S., Linsey, K.S., Lovelace, J.K., and Maupin, M.A., 2009, Estimated use of water in the United States in 2005: U.S. Geological Survey Circular 1344, 52 p.

By Nancy L. Barber

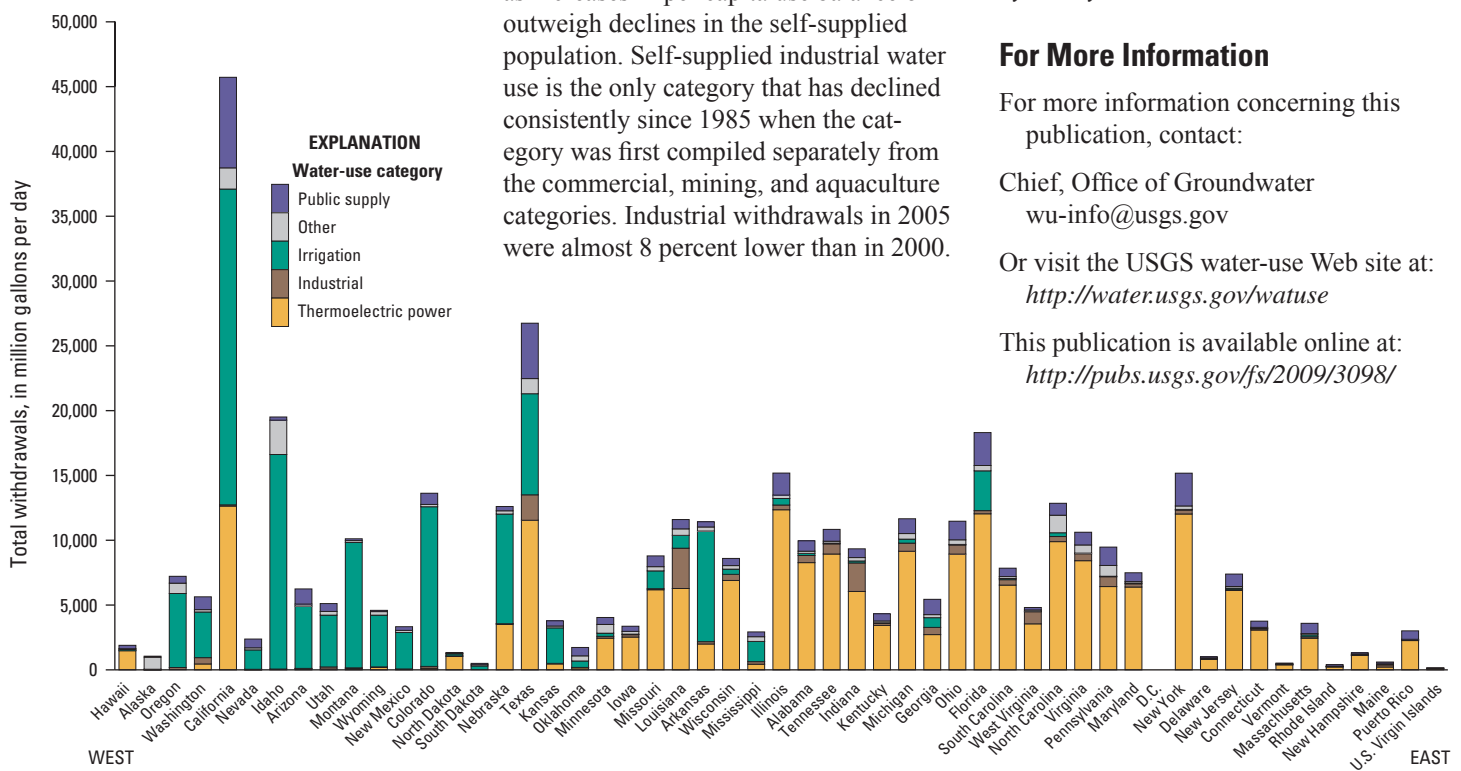
For More Information

For more information concerning this publication, contact:

Chief, Office of Groundwater
wu-info@usgs.gov

Or visit the USGS water-use Web site at:
<http://water.usgs.gov/watuse>

This publication is available online at:
<http://pubs.usgs.gov/fs/2009/3098/>



2005 withdrawals by category, in million gallons per day. States are arranged geographically.