

Freshwater Use by U.S. Power Plants: Electricity's Thirst for a Precious Resource

Glossary and Acronyms

Acre-foot	A volume equal to 325,851 gallons.
Air cooling	See <i>dry cooling</i> .
Basin	An area where elevation changes allow rainwater and surface water to gather into streams that flow to a common outlet point. See also <i>sub-basin</i> .
Carbon intensity	The amount of carbon dioxide emitted per unit of electricity generated.
Consumption	The amount of water lost to evaporation at a power plant during the cooling process.
Cooling pond	An onsite reservoir where a power plant stores water for cooling.
Cooling tower	A structure that uses cools water heated during the thermoelectric steam cooling process to allow the water to be reused for cooling.
Dry cooling	A cooling system that blows air across steam-carrying pipes to cool them, rather than using water.
East of the Mississippi	For purposes of this analysis, includes Alabama, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Kentucky, Massachusetts, Maryland, Maine, Michigan, Mississippi, North Carolina, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Virginia, Vermont, Wisconsin, and West Virginia.
Entrainment	The act of pulling larval fish or eggs through a power plant cooling system.
Freshwater	In this analysis, all non-ocean sources of water.
Generator	A turbine that turns physical energy into electrical energy. A single power plant may have several generators.
Hybrid cooling	A cooling system that uses dry cooling most of the time, but that can draw on water for cooling during hot periods.
Hydrologic unit code (HUC)	Numbers used by the U.S. Geological Survey (USGS) to identify all the basins in the United States (see <i>basin</i>). A 2-digit HUC is used to identify the 21 largest basins. An 8-digit HUC is used to identify the smallest sub-basins (see <i>sub-basin</i>), which are within the 2-digit HUCs. The first two numbers in each 8-digit HUC indicate the larger 2-digit HUC basin.
Impingement	The trapping of fish against a screen during a power plant's intake of cooling water. This injures or kills the fish.
Natural gas combined-cycle	A power plant that burns natural gas to generate hot gases, which are used to turn a turbine to generate electricity. The plant then uses the hot gases to make steam to drive another electricity-generating turbine.
Once-through cooling	A cooling system that withdraws water from nearby sources and passes it through pipes to absorb heat from steam, before releasing the water back to the source.
Organic fuels	Coal, oil, natural gas, and biomass, as specified in the definition of organic fuels on EIA forms 860 and 923.
Recirculating cooling	A cooling system that withdraws water and uses it several times for cooling steam before releasing the water back to the source or evaporating it completely.
Renewable energy	In this analysis, includes biomass, geothermal, hydroelectric, solar, and wind.
Southeast	In this analysis, states that are part of the South Atlantic Basin: Alabama,

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	Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia.
Southwest	In this analysis, states that are part of the Upper or Lower Colorado Basin: Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming.
Sub-basin	Part of a basin, where rain and surface water into streams, often flowing to a common outlet point where they join a larger flow.
Thermoelectric	Power plants that boil water to create steam, which drives turbines to produce electricity. This process is also called steam generation. Thermoelectric power plants include all coal, nuclear, oil, biomass, geothermal, and steam-producing concentrating solar plants, and most natural gas plants. Wind turbines, solar photovoltaic generators, non-steam concentrating solar power technologies, and natural gas combustion turbines are not thermoelectric plants.
Water intensity	The amount of water power plants use—that is, withdraw and consume—per unit of electricity generated.
West of the Mississippi	In this analysis, includes Alaska, Arizona, Arkansas, California, Colorado, Hawaii, Idaho, Iowa, Kansas, Louisiana, Minnesota, Missouri, Montana, Nebraska, New Mexico, Nevada, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming.
Withdrawal	The total amount of water a power plant takes in from a source such as a river, lake, or aquifer, some of which it returns.

Acronyms and Abbreviations

CO2	Carbon dioxide
EIA	Energy Information Administration
EW3	Energy and Water in a Warming World initiative
HUC	Hydrologic unit code (see Glossary)
kWh	Kilowatt-hour
MGD	Million gallons per day
MWh	Megawatt-hour
NREL	National Renewable Energy Laboratory
UCS	Union of Concerned Scientist
USGS	U.S. Geological Survey
WaSSI	Water Supply Stress Index (see Appendix A)