

Water Market Insider



Q2 2017

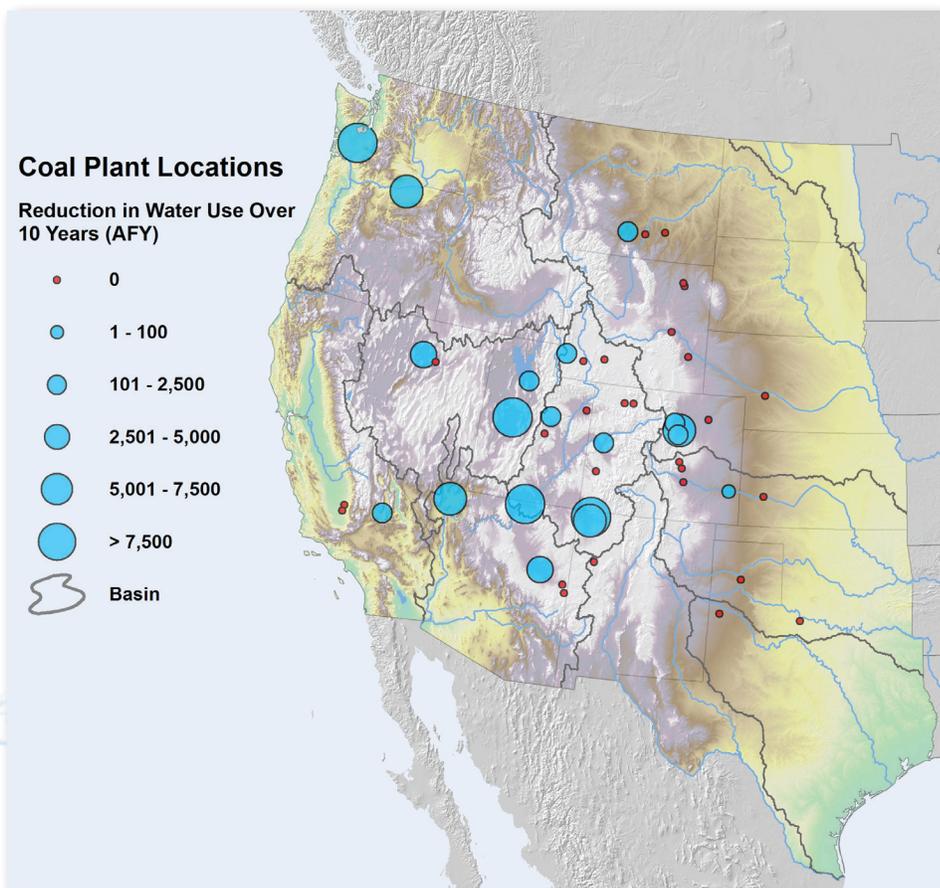
New Water from Old Power

The energy-water nexus has received a substantial amount of press in recent years, much of it related to water shortage concerns in the Western U.S. and impacts on power production. Some interesting aspects of this ongoing conversation are: reduced hydropower generation from smaller and re-timed river flows, the smaller water demands of wind and solar energy alternatives, and the availability of water to continue power production from conventional fuel sources. Related to this, there have been recent publications describing the energy-water nexus from a water valuation perspective. As a result of more stringent air quality regulations, the U.S. has seen several coal power plant closures in recent years with many more on the way in the next 10 years. Coal power generation is considered to be relatively inexpensive, but it does demand a large amount of water compared to natural gas plants and renewable energy sources such as wind and PV solar. The closure or conversion of many coal plants in the Western U.S. means that a new source of water could be on the market in the next decade, as the energy companies reduce their need for water.

Coal Power Trends in the West

The water associated with coal power plant changes is of interest in the Western states. Data were evaluated for an area that is roughly west of the 100th meridian bisecting the Great Plains states from the Dakotas down to Texas. The Energy Information Administration predicts that these Western states will see a higher degree of reduced

Figure 1: Coal Plant Locations in the Western U.S.



coal production in the coming decades as a result of Federal clean power policies and environmental regulations. A total of 47 coal power plants were identified in this Western US area.

Coal power generation really exploded in the Western states over a 20 year period from 1970 to 1990. This period saw total coal generation capacity increase from about 5,000 to nearly 35,000 Megawatts (MW).

Small increments of additional capacity, totaling about 2,000 MW, were added over the next 20 years until 2010. Since then, we have started to see a reduction in coal generating capacity. This has been small over the past five years, but the planned coal plant retirements and conversions to natural gas will result in roughly 10,000 MW of reduced coal power generation in the next 10 years.

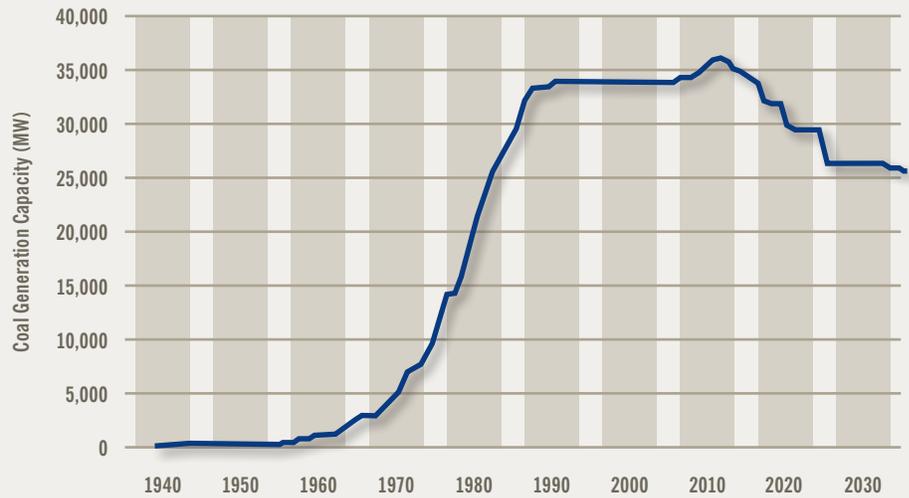
Reduced Water Demands

Conventional coal power generation demands a large amount of water, which can carry a relatively high value in the Western states. Water demands for power production vary by fuel source, as well as geographically. Water demand estimates were simply estimated as 550 gallons per MW-hour of generation for coal plants, and 300 gallons per MW-hour for combined-cycle natural gas plants. These values illustrate that a national movement to convert fuel sources from coal to natural gas has the potential to reduce water demands by about 45% for an equivalent amount of power generation.

New Water Sources

Power plants often operate under their own utility-owned water rights portfolio separate from municipal water providers. These water rights have been beneficially used to produce power. However, a reduction in plant water demand may mean that these utility water rights will need to find a new beneficial use moving into the future. The total water use associated with the 47 coal power plants was estimated at 390,000 acre-feet per year. From 2010 until 2025, significant reductions in coal generation are planned at 20 of the 47 plants identified. These changes include plant closures and conversions to natural gas fuel sources. These changes in coal plants are estimated to result in about 84,000 acre-feet per year of reduced water demands. Importantly, 50,000 acre-feet per year is located within the Colorado River Basin which has a “structural deficit” when comparing demands against water supplies.

Figure 2: Coal Generation Capacity



Market Value of New Water

Energy utilities have an opportunity to create value from planned power plant closures and conversions by considering the markets available for the sale of water that is no longer needed for plant operations. Market values for water vary considerably for those 20 plants with planned changes, from about \$500 per acre-foot up to over \$10,000 per acre-foot. In total, the market value for the

water created from the identified plant changes was estimated as roughly \$300 million. The market value of conserved water does not itself advocate for coal plant closures and conversions to natural gas, but it does represent an important value to be gained and considered by changes that are taking place.



ABOUT WESTWATER RESEARCH

WestWater Research (“WestWater”) is the leading economic and financial consulting firm specializing in water rights and water resource development in the United States. With a national practice and offices in four western states, WestWater provides market intelligence, valuation, transaction advisory, economic and strategic planning, and asset management services relating to water resources. The firm has a reputation for rigorous analysis, and information-driven water rights investment strategy formulation and execution. This reputation has been earned over 15 years through advising private, public, and non-profit sector clients on over \$700 million in water rights transactions. Recent transactions have included public-private partnerships for acquisition and development of reclaimed water in the southwestern United States, two of which have been nominated by Global Water Intelligence for “Water Deal of the Year.”

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