



## H2O ↔ ENERGY

It takes water to generate electricity. It takes energy to move water. It can take up 4 times the water you use daily to produce your home's energy!

### The Water-Energy Nexus in Arizona



A very large amount of the water supply in Arizona's largest population areas comes from the Central Arizona Project. That water is pumped 336 miles from the California-Arizona border at Lake Havasu City through metro-Phoenix, to Pinal County and then on to Tucson. It takes 2,800,000 megawatts of electricity annually to move the water through our state. That's about the same amount of electricity used by 23,333 average Arizona households in one year.

Ninety-five percent of the electricity is supplied by the Navajo Generating Station (NGS) operated by Salt River Project in northern Arizona. NGS is a coal-fired power generating plant situated on the Navajo Indian Reservation. Ground water is pumped to supply the steam for electricity generation and for the SO<sub>2</sub> scrubbers which help reduce emissions that create acid rain.



That is just the beginning of getting water to your house. Energy costs to move water from the canals to your house in Phoenix = \$3,000,000 a year.

It all adds up.

The Palo Verde Nuclear Generating Station is the world's largest nuclear generating plant not on a waterway. That means that a water source has to be brought to the plant for a variety of uses. More than 20,000,000,000 (20 billion) gallons of treated sewage water is evaporated from its cooling towers. At one time, the plant was pumping that amount of groundwater to produce the 1.21 gigawatts of electricity annually— 35 percent of Arizona's electric needs.



The most obvious connection of water and energy is hydropower. The Theodore Roosevelt Dam on the Salt River was completed in 1911. It was the first US Bureau of Reclamation project built in the United States. The purpose was twofold – help control flooding in what was to become the metro-Phoenix area, and to generate electricity for Salt River Project customers. The dam has the capacity to generate 36,000 kilowatts. If you continue along the Salt River there are several more hydroelectric generating stations: Horse Mesa at Apache Lake; Morman Flat Dam at Canyon Lake; and, Stewart Mountain Dam at Saguaro Lake.