

"Arizona's Energy Water Crisis Beginning?"

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In August, the U.S. Environmental Protection Agency ("EPA") announced that it was considering new emissions rules for two coal-fired power plants that serve the desert southwest. Together the plants have 4,340-megawatts of electric generation capacity and provide about 40% of Arizona's energy.

Under the proposed rule, emissions that affect visibility will be targeted and the EPA is considering requiring the plants to add Selective Catalytic Reduction ("SCR") technology to the power plants. SCR, very basically, injects massive amounts of ammonia into smokestacks to crystallize and capture nitrous oxides ("NOx"). By reducing NOx emissions, visibility pollution is decreased.

The improvement comes at a significant cost: \$1.4 billion.

Complexities include the fact that each of the stations is co-owned by California utilities, which are now legally prohibited from investing in coal-fired generation. So Arizona, Nevada and New Mexico owners will have to foot the bill themselves. Further exacerbating the situation is the continued Congressional work on cap and trade for carbon emissions, which would add significant costs to coal-fired electric production.

The final obstacle is the one we are most concerned with – one of the plants, the Navajo Generating Station, provides all of the power for the Central Arizona Project ("CAP"), a 336-mile long canal system that delivers Colorado River water to Phoenix and Tucson.

The Central Arizona Project was built by the U.S. government and the CAP is repaying the federal government at a rate of about \$50 million a year. The CAP requires 2.8 million megawatt-hours of power a year to pump and transport 1.5 million acre-feet of water. Assuming an average household use of 1,500 kilowatt-hours a month that is enough energy to power 155,555 homes.

The CAP also owns an additional 1.5 million megawatt-hours of energy from the Navajo Generating Station and they sell that power into the electric market to generate the revenues needed to operate the CAP canal and to make the \$50 million a year bond payment (the bond repayments run until October 1, 2043).

The owners of the Navajo Generating Station estimate that replacing SCR on that plant would cost \$663 million, adding about five cents per kilowatt hour or \$50 a megawatt-hour, to customer bills. The impact to CAP would be enormous – CAP water costs could increase 200% from \$45 an acre-foot to

\$135; and the ability to market their 1.5 million megawatt-hours would decrease significantly, decreasing their revenues and making bond repayment more difficult.

As the utilities and their regulators struggle with this SCR issue, they are keenly aware that it is merely a precursor to cap and trade costs.

Some are looking to renewable energy as a solution, but water delivery is a 24/7 exercise – the pumps and lift stations have to keep operating to keep the water flowing in the CAP canal, which lifts the water over 1,200 feet. Solar power cannot provide 24/7 energy and Arizona lacks significant wind capacity. But even if there wasn't a problem with the 24/7 requirement the cost differences are prohibitively large: Arizona's largest planned solar facility, Solana Generating Station, would provide 900,000 megawatt-hours of energy, about one-third of CAP's demand, and it would cost more than SCR.

Insight will continue to monitor this issue in the coming months – the EPA is expected to issue its final proposed rule in early 2010, and if they require SCR Arizona will be in the first stages of the energy-water nexus crisis.