Water Law Review

Volume 15 | Issue 2 Article 22

1-1-2012

Water, Give Us Energy!

Jessica Zaegel

and circulated a Finding of No Significant Impact ("FONSI"). Designing a flexible protocol requires more work in the beginning, as the agency is trying to design a program with a spectrum of options to incorporate as issues occur. This requires authorizing a broader spectrum of options.

In conclusion, Castle remarked that her position at the DOI gave her a new perspective. She discussed how water courts give some certainty to water rights holders and interested parties, but a legal solution is still a win-lose, zero sum game. While there may be a resolution of the legal issue, parties might not have a way to move forward. Additionally, the outcome is unpredictable; parties will not always get what they planned on. There are situations where litigation is the right option, as it is sometimes required to bring people to the table. Nevertheless, in Castle's opinion, sustainable solutions are those where parties will cooperate and not go back to the courtroom. Sustainable solutions are those crafted to balance the interests of the parties. We have unique assets in Colorado and we have to sustain those assets. Compromise and balance are necessary to sustain both the beauty and economy of the mountains and plains.

Myra Gottl

WATER, GIVE US ENERGY!

Carolyn Burr and Rebecca Watson, both shareholders at Welbourn Sullivan Meck & Tooley, P.C., presented on the relationship energy production and water law in Colorado. Their presentation focused on the inherent tension between energy production needs and other water demands like agricultural, industrial, municipal, recreational, and in-stream flow protection, caused by the high demand and limited available of water. Historically, the agricultural sector has had the highest demand for water. However, municipal demands have surged due to population growth in Colorado and throughout the western United States. Additionally, climate change and new water uses pose a challenge for Colorado as the State is estimated to need an additional 600,000-1,000,000 acre-feet of water per year by 2050 to meet demands.

Burr and Watson began with an overview of water administration in Colorado, explaining that water is allocated via a priority system that imposes "first in time, first in right" and beneficial use requirements - owners are not entitled to appropriate water and not use it. Water courts, which first came into existence in the 1860s and -70s, play an important role when the owner of a water right that was obtained for one type of use desires to transfer the right to a different use. Thus they are instrumental players in water transfers to energy producers.

In addition to water courts, the Office of State Engineer administers water rights for the State's seven major water districts, which correspond to the seven major river basins in Colorado. The State Engineer maintains a list of water rights and decrees made by the water courts. Virtually all of the major rivers and smaller tributaries in Colorado are over-appropriated. For example, priorities from the 1870s in the Arkansas

River are not always met, which means any water rights with priorities after that time will not get to divert their water.

Burr and Watson next discussed water markets in Colorado. Because water rights are not appurtenant to land in Colorado, they are bought and sold via private transactions with the approval of the water courts. This approach is unique to states that use the prior appropriation system, and requires a localized inquiry into the effects of a water transfer. The terms and conditions of return flows, to avoid injury to downstream water users, are the primary concern of the water courts. Of concern to water users, particularly energy producers, are the transaction costs involved in transferring water from one use to another; money, politics, and time can potentially create barriers to water transfers and deincentivize investments in water-hungry industries. Due to the strain on water supplies in Colorado, Burr and Watson urged that it is necessary for energy industry players to undergo advanced planning for to how to secure water supplies in the State. In determining the water demand for a major project, a company must determine how much water it will consume and reuse, the timing of water demand spikes, how it will store and treat water if necessary, and the duration of water use.

Burr and Watson then discussed innovative solutions to water transfer issues. One example of how entities can avoid the high transaction costs and permanent loss of rights associated with water transfers is the work of the Lower Arkansas Valley Water Conservancy District with its rotational fallowing and water leasing. Rotational fallowing occurs when farmers agree to fallow their land for a specified number of years and in turn lease their irrigation water to cities, without giving up their water rights. Although rotational fallowing is already happening in Colorado, repercussions of the Colorado Supreme Court's decision in *Burlington Ditch Reservoir and Land Company v. City of Thornton* may complicate this practice in the future by limiting the way agricultural water rights may be quantified.

Burr and Watson then discussed the specific water demands of several types of energy production. They indicated that traditional methods of electricity production depend on cooling water; for example, thermoelectric power generation ranks just behind irrigation agriculture in freshwater withdrawals. Although Colorado is not one of the largest electricity-producing states, the State is the eighth-most-vulnerable for water deficits due to power generation because of the scarcity of water within the state. Coal-fired and natural gas-fired power plants use comparable amounts of water, but cooling systems, which greatly affect the amount of water used, vary at each plant. Open cooling systems consume the most water because is only circulated through the cooling system once. Burr and Watson indicated most plants today instead use closed cooling systems that re-circulate water, but also pointed out that closed cooling systems still use substantial amounts of water because as the water is recirculated it gets grittier, which requires dilution with more water. A dry cooling system does not require any water but it is more expensive and less efficient from an energy standpoint.

Common fuel sources in Colorado include coal, petroleum, natural gas, coalbed methane, solar, and hydropower. Coal supplies approximately sixty-five percent of Colorado's electricity, and Colorado is looking at opportunities to export coal to China because air pollution regulations are tightening in the United States. Although coal extraction is not itself a very water-intensive process (the process consumes approximately 150 gallons of water per ton of coal), a good deal of coal is surface mined, which has water quality implications. The Surface Mining Control and Reclamation Act and the Colorado Surface Coal Mining Reclamation Act aim to address these water quality issues.

Improved technology has allowed energy producers increase well yields through well stimulation (fracking). Over ninety percent of fracked wells are hydraulically fractured. Hydraulic fracking uses water, propping agents such as sand, and chemical additives to blast apart tight rock formations to release trapped oil and gas. Compared to other types of energy production, water demands for fracking are limited in amount and temporary in scope. It can take up to five million gallons of water to frack a well, and in 2011, three thousand wells were fracked. Although a mere one percent of Colorado's water is used for fracking, water availability can still be a challenge for energy companies.

Coalbed methane accounts for seven percent of nationwide energy production, most of which is conducted in the Rocky Mountain West. Coalbed methane exists in water-saturated coal formations and is extracted by pumping out the water, which releases the gas. On average, 12,000 gallons of water per well, per day, is pumped out of these deep mineral formations, which inevitably raises the question of what should be done with this saline, often extremely polluted, water. In 2000 case *Vance v. Wolf*, the Colorado Supreme Court held that water produced during coalbed methane extraction constitutes a "beneficial use" of that water, thus subjecting it to the State's water rights administration. This created a panic for oil and gas companies who feared they would need to frequently go to water court to determine their rights and responsibilities over produced water. The State Engineer and Colorado Legislature have stepped in to address the issue and the legal disputes are ongoing.

Photovoltaic solar power production requires little water beyond that used to clean dusty solar panels. Photovoltaic solar power, however, raises other issues such as its high cost of development and how to store the energy produced during daylight hours. On the other hand, concentrated solar power uses energy to generate steam and is more efficient than photovoltaic solar. Despite its use of water to create steam, concentrated solar power does have a very high water demand, relative to other types of energy production. Most solar panels are installed on private land that was previously in agricultural production, and the U.S. Bureau of Land Management ("BLM") has identified the San Luis Valley in California as the "Antonito Southeast Solar Energy Zone." Notably, the BLM has emphasized that obtaining water rights for a solar project requiring more than 1,000 acre feet per year would be difficult because the Rio Grande River Compact places limitations on water in the region and

creates a certain degree of tension between agricultural and solar water demands.

The final energy source Burr and Watson discussed, hydropower, produces 3.7 percent of the electricity in Colorado and seven percent of electricity in the U.S. It is also responsible for seventy percent of energy produced from renewable sources in U.S. Hydropower production employs large turbines, which are turned by running water, and this means water use for hydropower is almost entirely nonconsumptive. The dynamic between state water rights administration and federal regulation of navigable waterways can cause problems for those with long-term hydropower licenses who attempt to renew their permits. Recently, the Federal Energy Regulatory Commission have begun imposing bypass flow conditions, which means certain projects may be forced to give up state law-based instream water rights that are key to operation of a hydropower plant.

The Shoshone Hydropower Plant is the oldest and most senior water right on the Colorado River. Xcel Energy owns the Shoshone water right but is not a party to the ongoing negotiations for a comprehensive Eastern Slope/Western Slope water agreement. Denver Water and the Colorado Water River Conservation District are two critical players in the potential Colorado River Cooperative Agreement. The agreement would address long-term water supplies for both regions through assuring Denver can meet its municipal water needs while guaranteeing Western Slope water users can still meet recreational and agricultural needs.

Burr and Watson concluded by explaining population growth in Colorado will increase agricultural, industrial, municipal, recreational, and energy demands on water and that the greatest challenge for the energy industry will be protecting decreed energy-related water rights from loss or attrition to increased state and federal regulation.

Jessica Zaegel

RAMIFICATIONS OF THE FRICO DECISION

Star Waring, Esq. is an attorney and shareholder at Dietze and Davis, where she is a member of the Natural Resources and Water Law Practice Group. A large part of her practice consists of representing individual farmers and groups of agricultural water users, developers, lenders, municipalities, and ditch companies in matters involving real estate and water issues. Waring attained her J.D. from the University of Colorado, is currently an Adjunct Professor at the University of Denver Sturm College of Law, and represented the Farmers Reservoir and Irrigation Company in the FRICO case.

Steven O. Sims is an attorney and shareholder at Brownstein, Hyatt, Farber and Shreck. Sims represented Aurora Water in the FRICO case at trial and in arguments before the Colorado Supreme Court. Previously he has represented clients in over five hundred water litigations and over twenty Supreme Court appeals. He is the former senior water counsel,