

Tug-of-Water

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After putting his water rights for sale on the online classified site craigslist.org last year, New Mexico landowner Rodney Benson was flooded with interested buyers. “I received over 2,000 e-mails,” Benson says.

Admittedly, his initial asking price of \$50,000 for a 10-acre plot north of Santa Fe with a ditch fed by the Rio Chamas River was too low—especially, he soon realized, for water with transferrable usage rights. These aspects, not to mention the state’s dry terrain, make his water worth top dollar.

Benson has since raised his asking price to \$1 million and is waiting for the right buyer. He’s already turned down a company wanting the land for a trailer park and an investment company wanting just the water rights.

“I have been told the land with river frontage is worth a lot more than the other acres,” Benson says, adding he plans to have the land and water rights appraised.

As droughts parch the region, and urban, agricultural and recreational uses increase demand, the need for efficient water distribution has led to an increase of water markets, or the buying and selling of water rights.

Water markets are a way to efficiently transfer water to its highest economic use. Markets bring producers and consumers together to agree on prices, quantities and other terms. The transfer can be as simple as an individual owner, like Benson, selling water rights he doesn’t need, or coordinated through a large-scale water market, such as the Colorado-Big Thompson Project that provides supplemental water to almost a million people.

Some see transfers as an efficient way to improve water allocation, while others worry about negative long-term effects on rural America, say Jason Henderson, an economist and Branch executive, and Maria Akers, an assistant economist, both at the Federal Reserve Bank of Kansas City’s Omaha Branch. Akers and Henderson recently researched water markets in the Tenth Federal Reserve District, which includes western Missouri, Nebraska, Kansas, Oklahoma, Wyoming, Colorado and northern New Mexico.

“During the past decade, usage in the

District has outpaced resources and, as a result, there has been somewhat of a tug-of-war over water,” Henderson says.

Water markets compensate current water rights holders, often farmers, for the monetary loss from reduced water use. However, the markets struggle to account for the public benefits of water use or the spillover effects reduced water use can have on business and household spending in communities. The uncertain economic effects of water transfers on rural communities have limited the implementation of water markets. Information on the economic effects of water reallocation

in the District) has lost roughly 6 percent of its water—an amount that would cover 200 million acres of land a foot deep.

Recent advances in irrigation technology have heightened conservation while stricter quality standards have slowed rising water withdrawals. But other areas of water use—such as thermoelectric power generation (water is used as a coolant), hydroelectric use (water powers turbines) and recreational activities—are factors in the long list of growing water demands.

- **Agriculture:** In 2000, agriculture accounted for 85 percent of consumed water.

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and improved methods of estimating the economic losses of transferring water outside rural communities are badly needed, Henderson and Akers say.

As for Benson, he says, “I am really lost with this land and water rights and have no idea what to do with them.”

Benson knows one thing for sure: “Every year I see the rivers go lower and lower ... New Mexico is a desert state and any water is extremely valuable.”

Drought and demand

Historically, agriculture has been the largest user of water in the District. By the mid-1900s, industries also were significant water users, and today urban populations are ratcheting up overall water demand to unprecedented levels. Meanwhile, severe drought during the past few years has strained water supplies from streams, reservoirs and underground aquifers, Akers says. For example, at the peak of the drought in 2004, many reservoirs in Wyoming were only half full and some were below 10 percent capacity. The High Plains aquifer (encompassing about 174,000 square miles beneath nearly every state

Irrigators in the District were drawing 37 million acre-feet of water per year, which is nearly double the amount in 1950.

- **Industry:** Withdrawals peaked in the early 1980s. Industrial use is high in the District where manufacturing is concentrated in industries that heavily rely on water, including food, pulp and paper, chemicals, petroleum and coal, metals, and ethanol.

- **Municipalities:** The largest surge in demand is from rising household and commercial use in urban areas. During the past 20 years, water for public services has boosted overall water use in the District by 28 percent. Public service water use increased 40 percent in metro counties and just 11 percent in rural counties.

- **Population growth:** Through 2030, District population levels are predicted to rise about 17 percent, with the largest District gains of 35 percent expected in Colorado. Districtwide per capita use would need to decline 15 percent to accommodate expected growth; Colorado would have to cut its per capita use 25 percent.

“These factors have raised tensions

ALTHOUGH AGRICULTURAL USE HAS NEARLY DOUBLED IN THE PAST 50 YEARS, the largest surge in water demand is from urban users. In Colorado, pictured below, the population is expected to increase 35 percent through 2030. Per capita water use would have to be cut by 25 percent to accommodate this growth.



PHOTOS BY GETTY IMAGES

in reallocating water rights,” Akers says. “Some type of workable solution is clearly needed.”

Water markets

In most of the western states, water use rights are governed by prior appropriation laws, or “first in time, first in right,” which gives senior water rights to the party first using the water in a beneficial way. Others cannot use the water until the most senior water user’s need, as defined by the water rights, is met. In some cases, water rights can be lost by nonuse.

The Colorado-Big Thompson Project allocates water from the Colorado River on the western slope of the Continental Divide to the eastern slope of the Rocky Mountains, providing supplemental water to 30 cities and helping to irrigate about 700,000 acres of farmland. The distribution system is made up of reservoirs, tunnels, canals and transmission lines that span hundreds of miles; water is

released as needed.

Within the boundaries of the project, water is traded through annual leasing programs. Brian Werner, spokesperson for the Northern Colorado Water Conservancy District, the public agency that oversees the Colorado-Big Thompson Project, describes it as “the best example of a free market water system” because of its strategically planned water distribution.

The project’s goal is to provide water to all users without drying up agricultural land. For the past several years, the organization has been working on water storage, with a system expected in 2010 or so.

The project was completed in 1957, when 98 percent of its water went to agriculture and just 2 percent went to industries and municipalities, supplying water to about 150,000 people. Today, about one-third of the water goes to industries and municipalities, serving about 775,000 people, Werner says.

Though water transfers from agriculture are affecting farmland, the land is still in production. However, the water has become more valuable than the land.

“The farmers’ cash crop is the water supply,” says Werner, unless they plan to farm in the long term. Selling water rights is a short-term gain for farmers.

The shift from agricultural



use toward urban use is not unique to northeastern Colorado. During the past decade, the number of water transfers from agriculture to urban use in western states rose steadily, while agricultural to agricultural transfers declined. With this reallocation, of course, comes both benefits and drawbacks.

One benefit of water markets is water rights holders are compensated for their direct economic loss. However, water markets can have a negative impact on rural communities, Henderson says. Many farmers sell water rights because it makes good business sense, not necessarily because they are experiencing financial hardship. This can economically hurt rural communities in the long run. Spillover effects include a drop in farm-related business activity and declines in land values and property tax incomes.

While there is no compensation for the reduced spending by businesses and households, this spillover effect could be offset by subsidies,

water taxes and water-use regulations, among others.

Those in favor of water markets say a free-market approach is a more efficient way to distribute a resource that is often subsidized or outright squandered. Another benefit to water markets is the flexible, transparent way to value water as its supply and demand change.

In Nebraska, there is some reluctance when it comes to transferring water rights, and, for the most part, farmers and ranchers haven't been tempted to sell, says Jay Rempe, vice president of state governmental relations at the Nebraska Farm Bureau, which works in many capacities to improve farm income and quality of life.

"The fear is agriculture wouldn't be able to compete," says Rempe, meaning municipalities and other interests would outbid agricultural users, moving water away from that sector at its detriment.

Currently in Nebraska, agriculture is

BECAUSE DIFFERING INTERESTS ARE COMPETING FOR A LIMITED RESOURCE, the implementation of water markets may be one solution. Markets bring parties together to agree on prices, quantities and other terms of use. The dry terrain in northern New Mexico makes the state's water, including Abiquiu Lake, valuable to all types of users.



the largest user of water. Others include hydroelectric power plants, environmental and recreational interests, and urban users, mostly in the eastern part of the state where Omaha and Lincoln are located.

“For efficiency purposes, there’s a lot of interest” in water transfer, Rempe says. “We don’t have a very efficient system right now. We have been blessed with natural resources. If we need more water, we’re always able to just drill a well.”

But this may not always be the case. Water transfers could be part of a solution, along with a better understanding of water use, he says.

“I think there are efficiency issues, even within agriculture,” Rempe says. “We’ve got to figure out a way to move water around.”

Workable solution

Within states and across their borders, agreements don’t always eliminate water disputes, however. In Nebraska, there is a debate over reducing agricultural use in favor of endangered species in the Platte River Basin. Also in Nebraska, recreational users of the Niobrara River are at odds with agricultural users. And across the state line, Kansas and Nebraska have disagreed over compliance with the water allocations of the Republican River Compact during the past decade.

“The conflict between Kansas and Nebraska over water from the Republican River Basin shows the potential economic impact of water reductions,” Henderson says.

Kansas proposes Nebraska retire 515,000 acres from irrigated production while Nebraska proposes reducing its irrigation water by one-third. Either plan has the same result: an economic loss of about \$60 million, plus spillover, for a total loss of \$75 million. For every dollar of direct loss, there is a 25-cent indirect loss. This means farm incomes would be directly affected, leading to less spending on Main Street.

The overall economic impact of a proposed reallocation is often a hurdle in addressing water

conflicts. Measuring the full economic impact of water transfers is determined by the impact on the farm economy and the links between farm and nonfarm activity in the region.

“Water has shaped the economic fortunes of many rural communities,” Henderson says, adding water reallocation in the Great Plains typically is viewed as a threat to local economies. Effects include the reduction of crop yields and a shift toward lower revenue crops, which in turn means less household revenue and less spending in the community.

“The challenge with implementing any of these is measuring precisely the indirect effects and identifying the appropriate level of payment, tax or regulation that would offset impacts,” Henderson says. “It’s all about striking a balance between water users, water rights owners and public interest.”

For Rodney Benson in New Mexico, selling his water rights is certainly beneficial—he isn’t a farmer and wouldn’t raise crops like the wheat, alfalfa and soybeans his father-in-law once grew there. The land and water could be more useful to someone else, and Benson would be compensated for the transfer.

It’s this type of exchange that may help to better allocate resources.

“Although water markets aren’t perfect,” Henderson says, “their implementation is a step in solving water reallocation conflicts.”



BY BRYE STEEVES, SENIOR WRITER

FURTHER RESOURCES

“CAN MARKETS IMPROVE WATER ALLOCATION IN RURAL AMERICA?”

By Jason Henderson and Maria Akers
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