

**AAE/Econ/Env. St 343 (Environmental Economics)**  
**Readings for Homework #2**  
**Fall 2008**

**Reading #1**

**Dealing for Water: Western states are creating water markets without compromising the prior appropriation doctrine**

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By Clay J. Landry With Clint Peck

For more than a century the prior appropriation doctrine has been the underlying principle for water law in the Western states. Based on the principle of "first in time, first in right," prior appropriation allows the first person who puts water to a beneficial use, a right to continue that use without interference from those with junior rights. Because the doctrine limits water claims to uses that require diversion, those who were quickest to divert water from rivers and streams were rewarded with the most senior rights.

Development of water rights under this concept typically came at the expense of instream uses and it has been difficult for anyone to assert a right that allows water to remain in a stream. Over the years though, people in the West have come to recognize the social, economic and environmental importance of instream flows.

As pressures grow to consider instream flow values in creating water policy, many Western states are changing their laws to authorize voluntary transfers for instream use through water markets.

Montana rancher Bob Hanson, White Sulphur Springs, helped make market transactions a reality in the Treasure State. Hanson, a board member of the Montana Farm Bureau Federation, feels landowners need an alternative to government regulation to protect fish. In an effort to provide that alternative, Hanson co-authored the state's innovative water leasing program, which allows farmers and ranchers to generate income by leasing their water rights to private organizations for fish habitat.

"Leasing water makes it possible for farmers and ranchers to market their water rights for fish," says Hanson.

Hanson saw the leasing program take effect in 1995 while serving as the Farm Bureau's representative in an unlikely partnership of environmental and agricultural groups. The two sides came together to address water right sales for instream flows with the hope the sales would benefit fish habitat.

Until that time, the groups had been opponents in the state legislature over water issues. The Farm Bureau opposed any legislation that would result in water being transferred out of agricultural production. Finally, the water leasing program was something both sides could agree

on.

**The Farm Bureau** had good reason to support the leasing program because it was consistent with its fundamental commitment to protect private property rights. A basic principle for any property right is that it can be bought or sold. The bill solidified the idea that water rights are private property rights by allowing them to be traded.

The state's first private lease agreement was between Montana Trout Unlimited and eight landowners on Rock Creek, a stream in the western part of the state. The landowners agreed to a 10-year deal with Trout Unlimited to let 1.3 cubic feet per second of water flow past a diversion dam for six months of the year. In return, Trout Unlimited paid the removal cost of an old, unwanted diversion dam.

For the landowners, the lease was important because the earthen dam, which created a small pond along the creek, was a liability.

"It was failing and needed \$50,000 worth of repairs," says Ginny Larson, who with her husband Jim Larson, helped organize the eight families who leased their water rights to Trout Unlimited.

For Trout Unlimited, the lease restored flows in Rock Creek and now provides habitat for native cutthroat trout. "Jim and I wanted to see the fish have a healthy environment, and the lease was that opportunity," concludes Larson.

Like the agreement on Rock Creek, the marketplace is successfully drawing together other conservationists and agricultural users into mutually beneficial relationships. These historic adversaries recognize that the main advantage of markets are their voluntary nature. No one is forced to give up his or her water right, the terms of sales are negotiable, and farmers and ranchers are fully compensated for their water rights.

Conservationists are also realizing that they must have a better understanding of what farmers need in order to negotiate beneficial agreements.

**"Some water right owners** need flexibility, others need cash, and some are looking for tax breaks," says Andrew Purkey, director of the Oregon Water Trust (OWT). Markets allow the conservation organization to accommodate these different needs. The OWT, formed in 1993, has pioneered the market-base approach to maintaining instream flows.

"Water leases provide cash and flexibility, purchases offer large cash payments, and donations can provide tax relief," adds Purkey.

Market agreements, bolstered by new understanding and a spirit of cooperation, are working across the West. In 1997, farmers and ranchers throughout the region received more than \$10 million for 490,000 acre-feet of agricultural water that was subsequently used for flow enhancement. In addition, agricultural producers donated more than 28,000 acre-feet of water rights to help protect fish and wildlife.

"It shows that irrigators are interested in fish when given the right incentives and tools and we provide that," says Purkey. Incentives matter, and through water markets farmers and ranchers are realizing benefits from new demands for their water.

Ted Eady, who raises hay and registered horses near Sisters, Ore., is one such rancher. He agreed to sell 196 acre-feet of water of his water right, which was established in 1885, to the OWT for \$42,900. Eady had been using the water to irrigate what he describes as "marginal hay ground."

Squaw Creek, the source for his water right, is habitat for bull trout which are protected under the Endangered Species Act. In addition, the creek flows through the Sisters city park. Even during years with normal rainfall, the creek would run dry, damaging fish habitat and leaving the park without benefit of flowing water. Eady's deal with the OWT has changed all of that.

He still uses the land, but it now serves as a pasture for new horses he purchased with the money from the OWT.

"The water is helping bull trout, keeping the city park green, and the money has allowed me to make improvements on the ranch and, more importantly, in my family's life," he says.

**Water sales to benefit fish** continue to raise some concerns.

This is a good concept but it needs to be approached with caution; that's why we limited it to leases in Montana," says Hanson.

Some farmers and ranchers are particularly wary of permanent water sales, claiming these deals could make it difficult for other irrigators to get the water they need. Water rights contain limitations on how much water can be diverted. But just because a water right allows a landowner to divert a certain amount of water does not mean the landowners will withdraw that much water at all times. In practice, most farmers and ranchers irrigate intermittently, using water only when it is needed for their crops.

When landowners with senior water rights are not irrigating, other right holders are able to divert the remaining water. Some farmers and ranchers fear that their ability to divert unused water will be limited by instream water rights. With these particular water rights, the water must remain in the stream.

That means, when someone sells a water right for instream use, he or she potentially eliminates the opportunity for others to divert unused water when senior right holders are not irrigating.

Eady provides an alternative perspective on permanent sales.

"If there's going to be water permanently removed from the land to improve fish habitat, I feel it should come from land that is not the most productive," he says." When this happens, pressure is taken off other irrigators who ranch or farm more productive land because water needed to restore stream flows won't have to come from their land."

Others fear that given enough time and money, organizations like the OWT could essentially dry up irrigated agriculture. However, that could happen only if large amounts of money were spent leasing and buying water rights. Considering these organizations operate with limited budgets and buy small amounts of water on small streams, this appears to be unlikely scenario, according to Purkey.

Purkey is convinced that by focusing on small streams, water purchases for fish do not have to jeopardize farmers and ranchers. "We're trying to improve flows on small streams where a little bit of water can make a big difference," said Purkey.

**More than half of the agreements** negotiated by the OWT are for less than 500 acre-feet of water. The organization's largest deal was a one-year lease for 1,135 acre-feet. The deals are improving fish habitat and are vital to the recovery of fish species such as steelhead trout and salmon, according to the Oregon Fish and Wildlife Department.

Speculation is yet another concern. Some landowners worry that they will be priced out of the market by speculators who will buy up water rights, keep the water in the stream, only to sell the rights later for large profits. A recent report by PERC (see sidebar) addresses that claim. On average, in the West, water rights for instream use are selling for about \$400 per acre-foot for permanent sales and \$30 per acre-foot for annual leases. These prices are on par with those of water rights traded between irrigators, according to PERC.

Of course the possibility of speculation exists, but states have addressed this concern by placing limitations on instream water rights. None of the prior appropriation states allow instream water rights to be sold and converted to other types of uses such as irrigation.

These limitations create their own problems, however. Such restrictions can remove the incentive for organizations like the OWT to pay attention to market signals. "Under such conditions, we aren't able to respond to changing water needs," says Purkey. For example, the OWT might have a permanent water right on a stream that is no longer in need of protection in the future. If the organization were able to sell the water right, it could then use the money to acquire water rights on a stream that needed more water. Ironically, the transfer restrictions on instream water rights today are quite similar to the restrictions imposed on irrigation rights 10 years ago. At that time, most Western states did not allow farmers and ranchers to sell water rights for instream uses.

Water markets are not likely to solve all of the West's stream flow problems nor will markets fit the needs of every agricultural producer. But they may be a move in the right direction.

"People in agriculture aren't against fish, it's just that you can't do anything in this business without irrigation," explains Hanson. "Water markets can help find a balance between these two uses."

Will the century-old doctrine of prior appropriation survive into the 21st century? Some think it will.

"For the doctrine to stand the test of time, it must continue to evolve to meet instream and other needs," says Purkey. "Using markets to meet these needs is a key part of this evolution."

## Reading #2

# States Aim to Cut Gases by Making Polluters Pay

By **FELICITY BARRINGER** and **KATE GALBRAITH**  
Published: **The New York Times, September 16, 2008**

Ten states from Maryland to Maine are about to undertake the nation's most serious effort yet to tackle [climate change](#), putting limits on carbon dioxide emissions from utilities and making them pay for each ton of pollutants.

The program is due to get off the ground in nine days, but already there are worries that it may fail to reduce pollution substantially in the Northeast, undermining a concept that is being watched carefully by the rest of the country, by Congress and by European regulators.

The Regional Greenhouse Gas Initiative, or RGGI, will cap emissions for 233 plants. By putting a price on the carbon dioxide they emit, it gives plants a financial incentive to clean themselves up, with the proceeds channeled to energy-saving and renewable energy programs in each state.

The states will set their own limits, with each issuing tradable permits, or allowances, for carbon pollution. On Sept. 25, utilities will start bidding at auction for allowances, which they can later sell — mimicking the so-called cap-and-trade programs that effectively reduced acid rain in the 1990s.

The concept has been praised by environmentalists and state officials. But the emissions cap was based on overestimates of carbon dioxide output, which has dropped sharply from 2005 to 2006 and is on a lower trajectory than anticipated.

So auction demand may be weak at the start, with millions of allowances the states planned to sell not immediately needed. And with the cap on emissions most likely to be higher, at least initially, than the plants' actual carbon-dioxide output, it may be many months before utilities have an incentive to cut pollution.

As traders watched the RGGI dynamic evolve, the already low price of carbon futures fell by about 40 percent in the last three months in this country, according to Evolution Markets, a brokerage firm.

“The supply of allowances is more than what the market needs,” said Milo Sjardin, head of the North America division of New Carbon Finance, a research and analysis firm. “Prices are not going to be high, not for the foreseeable future.” He also noted that the market was also “not going to produce a lot of emission reductions” as long as the supply of allowances outstrips utilities’ need.

The trading of carbon dioxide allowances exists in Europe, and in a small way in this country; some companies have taken part in trading on the Chicago Climate Exchange, which opened in 2003. But the market has been voluntary and participation largely experimental.

Because it makes participation in a pollution-capping scheme mandatory, the Regional Greenhouse Gas Initiative (known as RGGI and pronounced “reggie”) is already spurring more trading in anticipation. Both the Chicago exchange and the [New York Mercantile Exchange](#) have recently made it possible to trade future RGGI allowances.

The trading scheme would hold carbon emissions to 188 million tons annually through 2014, and scale them back by 2.5 percent each year through 2018. The cap was set in 2004, based on analysis by energy experts and some pressure from the regulated utilities to keep the ceiling at or above the anticipated emissions. The states planned to issue allowances covering that amount. The cap takes effect Jan. 1, 2009, in New York, New Jersey, Delaware, Maryland and all six New England states — Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.

Phil Giudice, the commissioner of the Massachusetts Department of Energy Resources, said, “The 188 million tons estimate was put together a number of years ago from both an analytical aspect and, not surprisingly, a political one.”

But in the end, emissions from the 10 states went down instead of up. After growing from 176.9 million tons in 2002 to 184.5 million tons in 2005, they dropped in 2006, the most recent year for which there is complete data, to 164.5 million tons. Estimated emissions for 2007 are 172.4 million tons, according to Environment Northeast, a research and policy organization.

State officials attribute the regional drop to lower demand because of mild weather, a slowing economy and utilities shifting from higher-carbon fuels to lower-carbon ones like natural gas.

As long as emissions remain below 188 million tons, however, the number of allowances will exceed the companies' need. The states have set a floor price of \$1.86 per ton; allowances will not sell below that level.

If buyers do not snap everything up, leftover allowances will be rolled over to future auctions, which take place quarterly. The next auction is in December. New York, New Jersey, Delaware and New Hampshire, which will not issue allowances in the auction this month, may participate at that time. In addition to power companies, financial institutions, environmentalists and other groups can also bid.

The auction program is intended to hold pollution steady and eventually reduce it through market mechanisms.

A dirtier plant can buy additional allowances in the secondary market, but it may be expensive — or it can just find a way to cut its pollution. Conversely, a cleaner utility can sell its unneeded allowances.

The carbon market follows a three-year-old European experiment, the first of its kind, that provoked widespread criticism, both because it provided windfall profits for industry and because it did little to control heat-trapping emissions. The question now is whether the Northeastern states can avoid those errors.

“Everyone wants to wait and see what really happens, so there will be far less liquidity right now at the first auction than what you would expect going forward,” said Mr. Sjardin of New Carbon Finance.

Currently, allowances in Europe sell for the United States equivalent of about \$38 a ton, far more than the roughly \$5 a ton that carbon futures sell for here. The heavy reliance on auctions is one thing that distinguishes the RGGI program from its European predecessor. Another is the decision to dedicate the proceeds to programs that will cut carbon emissions. Each state is designating the money to meet the program's energy-efficiency mandate.

Seth L. Kaplan, a vice president of the Conservation Law Foundation, an environmental advocacy group in New England, said that if new investments were put into programs like making existing homes more weatherproof, “the bottom-line effect will be to reduce people's bills.”

“The rates will go up a little bit but their usage will actually go down,” he said.

Peter Iwanowicz, director of the climate change office at the New York State Department of Environmental Conservation, said he expected customers’ electric bills to increase less than \$1 a month as a result of the new program. If consumer costs rise higher than that, it could tarnish the cap-and-trade concept just as a new Congress and a new president are considering national legislation along the same lines.

In terms of actual emissions cuts, “it’s a fairly modest first step,” said Franz Litz, a senior fellow at the World Resources Institute, a Washington-based environmental research group. But, he added, “It is made more unique by the fact that a bunch of states came together” to create a regional market.

The companies involved are uncomfortable with fact that the program is regional, not national. In an e-mail message, Jim Norvelle, a spokesman for Dominion, which is based in Virginia and owns the Brayton Point Power station in Somerset, Mass., a 1,560-megawatt behemoth that gets 72 percent of its power from coal, said, “Dominion would rather see a national greenhouse gas policy than a regional one.” Dominion plans to participate in the coming auction.

David Byford, a spokesman for [Dynergy](#), based in Houston, wrote in an e-mail message that a national program would put “all regions on a competitive playing field.” Dynergy owns five plants in the areas governed by the new initiative. Mr. Byford will not reveal whether it will participate in the auction.

This first carbon cap-and-trade program in the country, proposed by former Gov. [George E. Pataki](#) of New York, has been five years in the making. It is being watched by Californians, who are designing an even more ambitious, economywide program of regulations, and by Congress, which has considered — and this summer rejected — a national cap-and-trade program.

The Bush administration has steadfastly opposed any mandatory economywide cap on carbon emissions, but has no power to block the 10 states from acting.

California, which two years ago passed a law to control greenhouse-gas emissions across the economy, has joined with six other states and four Canadian provinces in a similar effort, the Western Climate Initiative. This group is still devising the details of their cap-and-trade system.

RGGI will break from the pattern of earlier cap-and-trade programs, which auctioned off only a small percentage of allowances, distributing the rest free. State officials estimated that the vast majority of allowances would be auctioned. The Northeastern states are more restrictive than Europe's carbon-trading program in the number of credits companies can buy to offset their emissions. Offsets — like credits bought from programs that plant trees to absorb carbon dioxide, or that farm using methods that reduce emissions from the soil — were often seen as a dubious shortcut to real emissions reductions.

Several state officials said companies had been anxious to get the auction process under way. Mr. Giudice of Massachusetts said: "One of the worst things for industry is uncertainty. With uncertainty, risk factors go up for all kinds of capital decisions."

Even if there are more allowances than emissions at the outset, the gap will not hamper early trading, predicted Ian Bowles, secretary of the Energy and Environment Department in Massachusetts.

Noting that the total amount of allowances can be adjusted in future years if emissions reductions fail to meet the target, he said: "The goal of this program is to curb greenhouse gases. How we set the long-term targets or the number of permits is fundamental to whether we're accomplishing our environmental objections."