

Why the Western United States' Prior Appropriation Water Rights System Should Weather  
Climate Variability, Particularly Through Water Markets

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Abstract

For the past 160 years, the prior appropriation system of the Western United States has adapted to changing water uses and shifting societal priorities. The test of the prior appropriation doctrine will be whether it is rigid enough to provide stability to protect existing systems and expectations, yet flexible enough to deal with changing, likely diminished, water supplies. This paper argues that prior appropriation creates sufficient certainty to allow for economic development and facilitate water markets, yet is flexible enough to adapt to changing priorities and water supplies. Because it possesses both flexibility and certainty, it is as good a system as any to weather the possible effects of climate change on water supply.

Keywords: water rights, climate change, markets

I. Introduction

While one function of law is to give stability to institutions and predictability to the results of action, often the strength of law will lie not in immutability but in capacity for change and flexibility in the face of new forces.

Frank J. Trelease, Climatic Change and Water Law, in *Climate, Climate Change, and Water Supply*, 70 (1977)

Most of the states in the Western United States (“the West”) have a prior appropriation water rights system. This system developed because of the arid nature of the landscape and the need to move water away from water sources to its place of use. This water allocation system has performed well for the past 160 years of development in the Western United States.

“Warming of the climate system is unequivocal, as now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level.” (IPCC, 2007.) In the West, the effects of climate change will be felt especially hard in the water sector. Climate change affects water supply in more ways than one: it will affect the amount of water available for use and the times when water is available. It will affect the reliability of water delivery systems, which have been designed based on current climate models. Climate change will also affect how, when, and where we move water as a society. For example, nineteen percent of California’s energy use is used in water management—extraction, conveyance, treatment, and distribution. How and when climate change will affect the West is not certain, the unavoidable issue is whether and how the area will adapt to the effects of climate change.

In addition to adapting our water supply systems, our water management laws will be

tested, including water rights. Water supplies will be strained and water regulators will be forced to allocate and re-allocate scarce water resources. Many suggest that water may be allocated and re-allocated to the highest use through water markets as a means to addressing changing water supplies. (Hobbs, 2002; Clyde, 2008) There is some debate on whether water markets can or ought to be an allocation option. (Dellapenna, 2010). I believe water markets must be, at least, one tool in adapting to changed climate conditions. To have water markets, there must be “well-defined, enforceable and transferrable” water rights. (Adler, 2008-2009.) “Making rights worth transferring requires recognition of the amount of water than can be delivered reliably.” (Hobbs, 2002; Adler, 2008-2009) Prior appropriation provides sufficiently definable and transferrable rights and functions well in both regulatory and market conditions. (Tarlock, 2001.)

This paper and my presentation will address why the prior appropriation water allocation model developed in the West is a good system for adapting to climate change. In the end, I conclude that, although some improvements are needed, the prior appropriation model is resilient and yet flexible enough to cope with the uncertainties of climate change and function in water markets as a means of doing so.

## II. Prior Appropriation Water Law System

### A. Appropriative Water Rights

The law of prior appropriation was first developed in California to support the early mining needs of the “49ers,” who came to California prior to Statehood to mine for gold. The system borrowed heavily from the mining law concepts that were developed based upon the needs, experiences, customs and usage within the early mining camps. In essence, the law was one of self-initiation with those who first staked out their claim to mineral resources or water having the senior or “prior” right.

The law of prior appropriation – a law of “first in time, first in right” – worked well in the West because it was a satisfactory means to allocate a scarce resource through the granting of relative priorities or rights to all who claimed an interest in water. The first, or most senior, was able to have all of his or her beneficial needs for water met prior to the next in line having any claim to use water, and so forth, until all of the water within the system was exhausted. The right to water was also defined by the right to divert the water away from the stream (and adjacent lands) for use where the water was needed.

Historically, an appropriative right was perfected either by posting a Notice of Intent or by actually diverting water for beneficial use. The date of priority “related back” to the first act taken to initiate the right. The scope of the right was defined by the intended purpose and place of use at the time of initiation and the right existed so long as it was being developed with “due diligence.” The quantity of water obtained was the quantity needed to achieve the purpose(s) intended at the time of initiation.

In California, the law of prior appropriation was recognized shortly after Statehood (1850) as a means to perfect a right to water in California. (Irwin, 1885) The means to perfect the right, noted above, were codified in the Civil Code. Most western states contain a water code that outlines the details of that state’s appropriation system.

In 1913, the basic California law of prior appropriation was modified with the enactment of the Water Commission Act that became effective in 1914. This law replaced the informal process of obtaining water rights with a more formal application and permitting system—every western state has a date at which the state started requiring permits for water rights; Utah is 1904. This system required one who wished to obtain an appropriative right to file an application with the State and proceed through a permitting process. No right to appropriate water is obtained in this system until a permit is issued although the priority of the right obtained “relates back” to the time the application was accepted. The permit issued specifies the purpose and place of use of water,

the amount of water that maybe diverted, and other terms and conditions imposed by the permit. In approving the permit, the state will determine whether water is available for the appropriation and whether the granting the right will harm other lawful users. There will also be a determination whether the appropriation is in the public interest. The State Water Resources Control Board (SWRCB) is the agency within California that currently administers this water right permitting system (many western states use State Engineer offices for this function).

An appropriator must divert water and apply it to beneficial use. The appropriator must exercise control over water by diverting it from the watercourse (Fullerton, 1979; California Trout, 1979.) All water rights must be put to a beneficial use or the right will be lost. The use of water for domestic, municipal, agricultural and industrial uses is deemed to be beneficial. The use of water for recreation, including snowmaking, is beneficial. In California beneficial uses are defined through statute or regulation although uses defined by statute or regulation are not exclusive.

The concept of reasonableness requires that the use of water and the method of diversion be reasonable. Wasting water, or using more than is reasonably necessary, is not beneficial and is, therefore, not permitted under any water right. In other words, one can only obtain a right to use water for a reasonable and beneficial use. What is considered reasonable may change over time and has changed to include many more beneficial uses that reflect society's priorities—i.e. instream fish flows. (Tulare Dist., 1935.) This shift in priorities is allowed under prior appropriation, though it comes with an economic cost. (Clyde, 2008).

The central feature of the doctrine of prior appropriation is priority. (Hobbs, 2002.) The date of appropriation determines the user's priority to use water. The earliest appropriator has the most senior right, and the last appropriator has the most junior right. In times of water shortage, those with the most senior rights may divert their full supply then the next most senior appropriator and so on down the priority line. Junior water rights will be forced to limit or even curtail entirely their diversion of water to satisfy the senior water right holder. This primary system is summarized as "first in time, first in right." Some argue that this rule is not always strictly enforced. For example, regardless of the rule, it would be politically unpalatable to deprive a city of water based on priority. (Tarlock, 2001.) In such a case, parties would likely negotiate a solution around the strict rule of priority. (Id.)

The appropriative right is, in some respects, flexible. The appropriative right can be transferred to a new place of use or purpose of use, or new water user to meet changed conditions. An appropriative right can also be transferred to serve lands that did not benefit from the initial appropriation. In these situations a major consideration in allowing the transfer or modification will be the impact on other users. So long as other appropriators are not harmed, the water right may be modified. Prior to allowing the transfer or modification, notice and an opportunity for a public hearing are required.

Other flexibilities exist for appropriative rights. An appropriative right may be used outside of the watershed of origin. Also, one can obtain an appropriative right to store water for use at times other than when water naturally occurs. In the West, the right to store water is crucial to the entire water rights system. One can obtain a right to appropriate foreign waters, which allows trans-basin transfers. Foreign waters are waters that are not natural to a watercourse but occur there through human efforts.

An appropriator has a right to recapture and reuse water upon lands that were originally intended to be benefited by a diversion. This right extends to the use of water conserved or developed through more efficient methods of diversion, application and use. A major consideration in allowing an appropriator to recapture or reuse water is whether it will harm other appropriators. As long as it will not harm other water users, it should be permitted.

An appropriative right can be lost by abandonment. Abandonment is established through proof of non-use coupled with an intent to abandon the water. An appropriative right may also be forfeited through non-use for a statutorily prescribed time period.

Importantly, all water is owned by the people of the state in which it flows. (Hobbs, 2002). Because of this, water law typically follows and is modified to adapt to societal priorities. (Id.) The water right issued to a water user is a right to the use of water. Nonetheless, once a water right is perfected, it is a protected property interest in the water right holder. The exact nature of the property right is not entirely clear. (Tarlock, 2001; Leshy, 2009) Because it is fluid, it is a less defined property interest than a piece of ground. But it is a sufficient property interest that it can be transferred from one water right holder to another and cannot be taken from its owner without due process.

#### B. Public Trust Doctrine

The public trust doctrine provides that certain natural resources are held in trust by the state for the benefit of the public. The public trust doctrine evolved in English common law to confer upon the sovereign ownership of “all of its navigable waterways and the lands lying beneath them ‘as trustee of a public trust for the benefit of the people.’”(Coldberg Inc., 1967) Upon their admission to the United States, states obtained title to its navigable waters and underlying lands to be held in trust. (National Audubon, 1983; City of Berkeley, 1980.)

In two seminal cases, the California Supreme Court extended the public trust purposes to include environmental preservation and aesthetics. (Marks, 1971.) The California Supreme Court also held that water rights are subject to the public trust doctrine. (National Audubon, 1983.) Moreover, the public trust doctrine implies a duty of continuing supervision and the state is empowered to re-analyze water right allocations. (Id.)

In the past, California courts have applied the public trust doctrine in ways that significantly affected California’s economy and property rights. For instance, it was a public trust doctrine decision of the California Supreme Court in 1884 that helped end the California gold rush. (People v. Gold Run Ditch & Mining Co, 1884.) In *Gold Run*, hydraulic miners were diverting the waters of the American River to create high-powered water cannons used to wash away entire hillsides for gold mining purposes. The tailings from these operations entered the American River and were causing several problems, including increased flooding due to the raised riverbed; impairment of navigation, and impacts to water quality rendering the water unfit for domestic consumption. (Id.) The *Gold Run* court found that these mining operations impaired the public trust values of the American River and, on that basis, banned hydraulic mining. The court’s ruling effectively prohibited large-scale hydraulic gold mining in California.

One century later, the California Supreme Court again invoked the public trust doctrine in the context of water rights for diversions from non-navigable tributaries to Mono Lake. (National Audubon, 1983.) In *National Audubon*, the court held that water rights were subject to ongoing review under the public trust doctrine. The *National Audubon* decision did not determine whether the Los Angeles Department of Water and Power’s (“LADWP”) diversions should be reduced. Instead, subsequent proceedings before the State Water Resources Control Board resulted in amendments to LADWP’s licenses that significantly reduced the amount of water that may be lawfully diverted from the streams tributary to Mono Lake.

#### III. The Effects of Climate Change on California’s Water Supply System

California presents a good example of how climate change may affect the West. Global climate change is predicted to increase the average global temperature by 3.2° to 7.2°F and may increase temperatures by 3.6° to 9°F in the West. (Hall, Stuntz and Abrams, 2008.) An increase in temperature has the potential to greatly affect California’s water supply due to its effects of

snowpack—which stores as much water as all of California’s surface storage reservoirs. Furthermore, warmer temperatures increase the capacity of the atmosphere to hold moisture, leading to the possibility of decreased rainfall. Less rain will obviously adversely affect California’s water supply as approximately 75 percent of California’s water falls in the winter in Northern California and the greatest demand for water is in Southern California in the spring and summer months.

If temperature increases, under some models the Sierra Nevada snowpack could decrease by as much as 90 percent—estimates range from 30 to 90 percent reduction depending on the amount of temperature increase. (Progress on Incorporation Climate Change in Management of California’s Water Resources, 2008.) If temperature increases, more of California’s precipitation will fall as rain instead of snow and the snow that does fall will melt earlier than it does currently. (Id.) This reduced snow pack will cause reservoirs to fill more quickly instead of gradually over the spring and summer months when supplies are needed most. Because the reservoirs will fill sooner, they will either be less able to cope with flood events due to decreased storage space or will have to pass more water through to preserve space for flood events, which will decrease the amount of water available in the summer months when demand is highest. (Jacobs and Canger, 2007.) Reduced spring run-off and storage capabilities translates into less deliveries into the State Water Project and the Central Valley Project and its water users. (Progress on Incorporation Climate Change in Management of California’s Water Resources, 2008.) More than 20 million people rely on these two projects. (Id.) Climate change is also expected to cause fewer cold days and nights and increase the number of hot days and nights. (Ray, 2007.)

Climate change may also affect evapotranspiration rates, which would affect water demand. (Progress on Incorporating Climate Change in Management of California’s Water Resources, 2008.) In California, evapotranspiration is the largest consumer of DWR project water, about 80% in normal years. (Id.) Climate change may also affect the length of the agricultural growing season and land use patterns. (Id.)

Under the driest modeled scenario of one study, it concluded that

overall, the climate scenario reduces average annual water availability by 27%, which results in an average annual reduction in water deliveries of 17%. Statewide, average agricultural areas see water deliveries 24% lower than demand targets and average urban areas see 1% less than their demand targets. There are great regional disparities as well. Urban Southern California sees almost all scarcity in urban water deliveries; urban water scarcity is almost absent north of Southern California. (Medellin, 2006)

#### IV. Prior Appropriation’s Ability to Adapt While Providing A Secure Allocation System

The test of the prior appropriation doctrine, with regard to climate change, will be whether it is resilient enough to provide stability to water allocations, yet flexible enough to deal with changing, likely diminished, water supplies. (Trelease, 1977) As discussed below, prior appropriation does manage this balance and should weather climatic variability in water supply. Some argue that prior appropriation will take on a different role—more a default rule for small conflicts, a background against which parties can negotiate voluntary solutions in complex conflicts, and a risk allocation model—but, that it will remain the West’s allocation system for some time to come. (Tarlock, 2001.)

Prior appropriation is an adequate, but not perfect, system to provide security to preserve water rights, while at the same time providing the flexibility to be able to shift water to where it is needed most. (Tarlock, 2001.) One of the features of an appropriative right that make it able to cope with change is that it may be transferred to serve water users, lands, and uses that did not benefit from the initial appropriation. Furthermore, an appropriative right may be used outside of

the watershed of origin. One can obtain an appropriative right to store water for use at times other than when water naturally occurs. In other words, an appropriative right may be shifted to the most beneficial use without the holder of the right losing title to the water right. This ability to shift water to new users, uses, and places of use is critical to coping with decreased water supplies from climate change.

One of the overarching principles of prior appropriation, as discussed above, is that all water use must be reasonable. What constitutes a reasonable use may change as conditions change. (Tulare Dist., 1935.) *Tulare* and other cases instruct that what is considered a reasonable use at one time, may, with changed conditions, be considered an unreasonable use at a later time. Ignoring for now the process that is involved in discontinuing uses that are deemed unreasonable, because unreasonable uses are prohibited, uses that become unreasonable may be adjusted or phased out. Therefore, if and when global climate change alters water supply conditions, unreasonable uses may be phased out and shifted to the most important reasonable and beneficial uses based on existing priorities.

Prior appropriation allows for water transfers. The ability to transfer water to an area of greater need or more beneficial use without the loss of the transferor's water right is critical to provide the certainty and flexibility needed to adjust to climate variability. (Trelease, 1977.) Though no state has a formal water market, California and other states do have fairly robust voluntary water markets. (Hanak, 2002; Public Policy Institute, 2003.) That is to say, there are many large and small voluntary water transfers between individuals and public agencies. In Utah, for example, most municipalities require developers to bring sufficient water to the water provider to cover the needs of the development. This typically involves the developer either transferring the water from the developing land to the water agency or the developer purchasing water and transferring it to the water supplier. In either case, water is moving from one user to another and oftentimes from one place of use to another. These sorts of water transfers involve millions of dollars a year in transactions. This is a water market made possible by the prior appropriation's defined property rights and allowance of transfers.

A more robust and formal water market would eliminate some of the inefficiencies that exist now in the bureaucratic allocation of water and facilities transferring water from one use and user to another. (Trelease, 1977.) But even without a formal market, an informal market has been occurring for decades.

The public trust doctrine also provides a potent tool to adjusting water users to adapt to decreased water supply from climate change. (Rossman, 2008.) The public trust doctrine includes public goods that should be maintained for the benefit of all the citizens of the state. (National Audubon, 1983.) As discussed above, *National Audubon* determined that the public trust applies to water rights. *National Audubon* did not determine whether LADWP diversions should be reduced, but referred it to the State Water Resources Control Board. The State Water Resources Control Board then amended LADWP's licenses to significantly reduce the amount of water that could be lawfully diverted from the streams tributary to Mono Lake. Though the full reach of the public trust doctrine is not known because it has not been applied extensively, it could possibly be asserted in the context of climate change to curb water diversions and uses that have significant adverse affects to the water supply of the state.

Prior appropriation has demonstrated that it can adapt to changed societal conditions. For example, California and other western states have passed laws that encourage water conservation and reuse of treated wastewater. In California, because a water right is for a specified amount of water, any water right holder that conserves water through more efficient means and does not use their full water right, is able to move the surplus water to any uses s/he wishes, including selling the surplus water. (Tarlock, 2001.) This is not the law throughout the West, but should be to encourage conservation. (Clyde 2008)

A wastewater treatment plant that treats wastewater owns the treated water and is able to move the water into recycled water uses, such as landscaping irrigation, freeing up potable water supplies. States have also passed legislation that allows water right holders to dedicate their water rights to instream uses such as fishery flows or recreation. Each of these laws represents a shift in how in prior appropriation water rights may be used based on changing societal priorities and needs.

I agree with many others that we ought to stick with prior appropriation, and modify it as necessary, because it is what we've got. It is the system we have now, have had for 160 years, and have built our societies on. (Clyde, 2008; Hobbs, 2002; Tarlock 2001.) It has functioned well in "both a regulatory and market environments." (Tarlock, 2001.)

Furthermore, while the existing attributes allow prior appropriation to change yet be robust, John Leshy and Gabriel Eckstein have suggested the following reforms: strengthening the role of states over special districts; amending state water laws to allow for instream flows; adopting "show me the water laws," which require developers to supply water rights sufficient to supply the development; further removing the obstacles to water transfers such as a way to mitigate third party impacts, connecting the national agricultural policy to water policy; managing transboundary waters on a basinwide approach. (Leshy, 2009; Eckstein, 2009.)

#### V. Conclusion

The West has a rich history of prior appropriation water rights law that, over the past 160 years, has adapted changing water use priorities and water availability. Prior appropriation provides defined property rights in water and has remained flexible enough for water to be transferred from one water user to another and from one place of use to another, without a loss of the underlying water right. Prior appropriation's defined property right and ability to move the water has allowed for water markets. In short, prior appropriation's flexibility and certainty should allow it, and in turn its delivery systems and water users, to weather the effects of climate change on the West's water supply.

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