

Water Market Insider



Colorado | Q1 2016



Colorado's South Platte Basin Water Rights Market

Colorado has a long tradition of water rights trading that has grown out of necessity due to both physical water scarcity, and a changing economic base from agriculture to municipal and industrial growth. About 80% of Colorado's water supply is found west of the Continental Divide while roughly 80% of the population and 70% of the irrigated farmland are found east of the Divide. To address this spatial divide between water supply and demand, Front Range agricultural, municipal, and industrial water users have looked to market transactions of water rights to accommodate new and expanding uses. As continued growth exacerbates water scarcity issues in the region, water rights trading will become increasingly important as one solution to the water supply and demand imbalances.

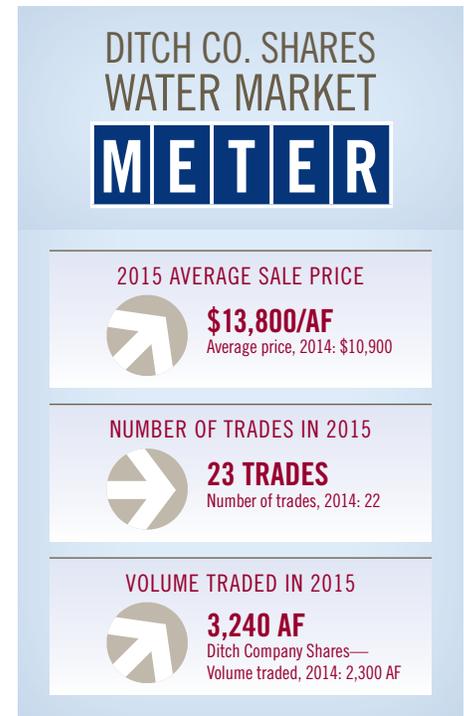
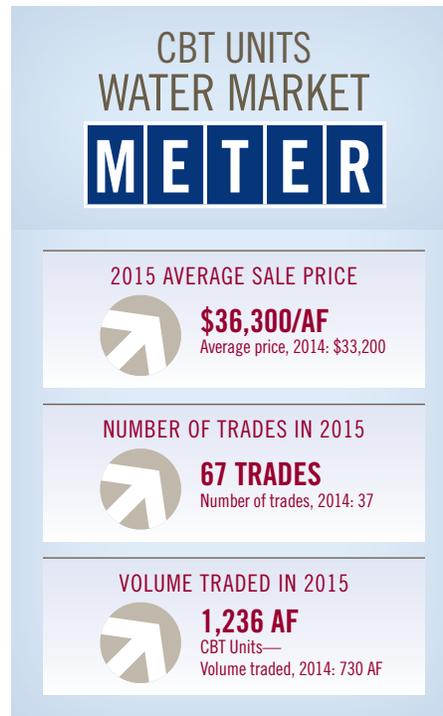
South Platte Basin Market Trends

The water rights market in Colorado's South Platte Basin is one of the most active in the United States. This basin encompasses the northeast quadrant of Colorado. The two primary classes of water rights traded in the South Platte Basin are: (1) shares in mutual ditch companies, and (2) units of the Colorado-Big Thompson (CBT) Project. Since the Northern Colorado real estate market began recovering in 2010, trading activity and prices for CBT units have been on the rise, with prices tripling over the past 5 years. The market for mutual ditch company shares has been less volatile. While highly regionalized, mutual ditch company share prices have been relatively stable, with some modest increases and decreases observed depending on the ditch. Across all South Platte Basin water right

classes, the total value of all water trades peaked in 2003 at \$119M, compared to \$57M worth of trading last year. Despite the decrease in overall market activity, water prices remain highly influenced by CBT unit pricing.

Historically, water right transactions in the South Platte Basin have consisted primarily of sales. However, a leasing market has become more active and established. In recent years, leases have made up around 80% of total volume traded. Expansion of water rights leasing is attributable to the recent proliferation of oil and gas exploration and production (E&P) in the region, and an expanding market for municipal effluent. Leasing activity has been fairly steady from 2014 to 2015.

The South Platte market has been dominated by municipal and real estate buyers who permanently acquire and repurpose agricultural water rights. This remains the largest part of the market—consisting of roughly 80% of all traded water by volume. However, some new market participants are emerging. On the sell side, both municipal and commercial/industrial water rights have been sold and have been a primary source of supply for water leases. On the buy side, acquisitions for both agricultural and environmental uses have increased in recent years. E&P companies entered the water market around 2009, causing some price shifts in the South Platte water lease market. Water demand from the E&P sector is relatively small and highly volatile, but may continue to influence the lease market.



CBT units have an average yield of approximately 0.7 AFY per unit which is not fully consumptive. Mutual ditch company share prices are reported in \$ per AF of consumptive use.

Figure 1: South Platte Market Participants

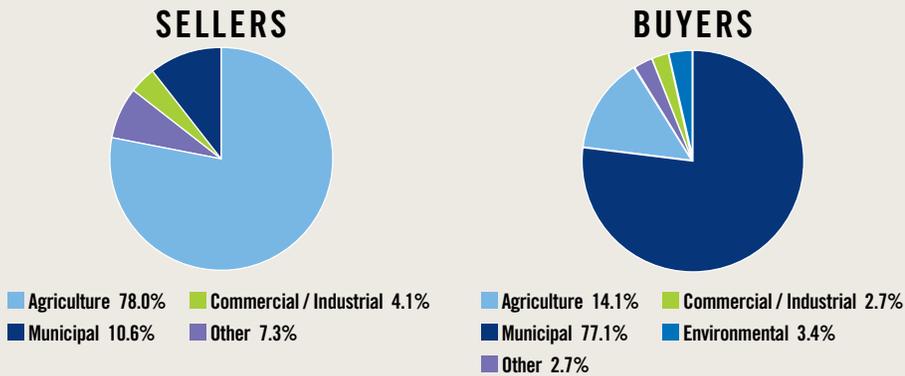


Figure 2: Annual South Platte Basin Trading Volume from 2005-2015

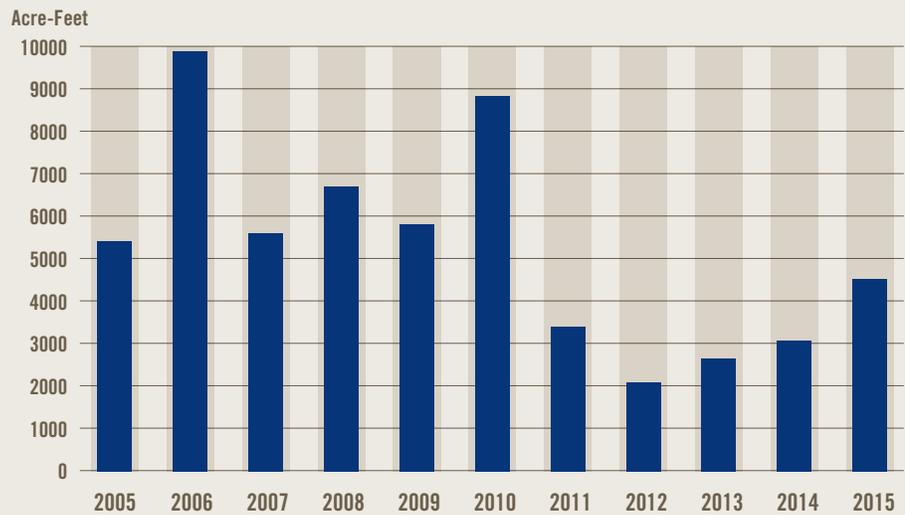
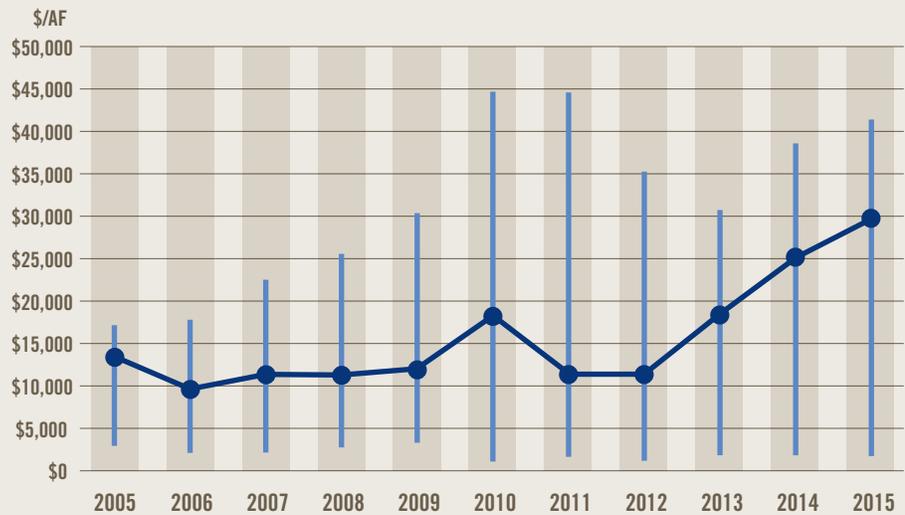


Figure 3: Average South Platte Basin Price and Range of Prices from 2005-2015



Update on Key Asset Classes

Colorado's South Platte Basin water rights market includes distinct markets for several primary types of water entitlements. The following provides an update on recent market activity in these asset classes.

Colorado-Big Thompson Units

As the oldest and most established market in the state, Colorado-Big Thompson (CBT) prices have tripled since 2010, with a current 2015 price of about \$26,000 per unit or \$37,000 per acre-foot. Water rights associated with CBT units are unique because they represent trans-mountain¹ supply sources, and the regulatory transfer process is relatively streamlined. In contrast, mutual ditch company shares are native water rights² for which transfers are subject to a cumbersome and time-consuming water court process. CBT unit prices are driven by new demands from the industrial and land development sectors, a lack of comparable water supply alternatives, and a declining number of remaining units considered available for sale. The CBT Regional Pool Program was made available starting in 2010 to provide an opportunity to lease surplus storage water in the system when available. Average rental prices from 2010-2012 were about \$24 per acre-foot, while 2015 prices were considerably higher, with an average of \$44 per AF.

¹In Colorado, a trans-mountain water supply means that the water is sourced from the west side of the continental divide, from a water feature that naturally drains to the Colorado River. Trans-mountain water projects use infrastructure to convey or lift the water to the east side of the divide to supply water to the Front Range. Trans-mountain water supplies are often fully consumptive, with no return flow obligations, because the water has been extracted from the basin of origin. CBT units are a trans-mountain supply but are not fully consumptive, as users must maintain return flow obligations to downstream entities on the South Platte River.

²Native water rights mean that the water right provides for use of a naturally occurring water source, or use of infrastructure which develops and uses water from within the same river basin as the water source. The unused portion of a water use, or return flow, will accrue back to the original water source, although at different times and at different locations. Thus, native water rights have return flow obligations associated with the water right.

South Platte Ditch Company Shares

A share in a mutual ditch company represents a pro-rata portion of the company's water rights portfolio. Typically, water court approval is required for a ditch company share transfer, resulting in high transaction costs relative to CBT unit trades. The range in prices for individual sales of ditch shares has been very broad, from less than \$1,000 to over \$40,000 per acre-foot. Prices for ditch shares vary widely due to the unique characteristics of the particular ditch such as priority, location, type, and volume among other factors. Prices for shares in most ditches have been flat or modestly increasing in recent years. Storage rights are also becoming a valuable asset, and shares in ditch companies holding storage rights can attract a substantial premium.

Denver Basin Groundwater Rights

The Denver Basin is a large groundwater basin comprised of several stacked aquifers, many of which are non-tributary water sources³. The market for Denver Basin groundwater rights has been lackluster in recent years. Trading of Denver Basin groundwater rights was relatively active from 2001–2005 with over 18,000 acre-feet traded and prices averaging about \$2,000 per acre-foot. Recently however, municipal buyers have been more interested in acquiring renewable water supplies. Both trading volume and prices of Denver Basin groundwater rights have declined with very few reported sales in the last few years.

Effluent Leases

Treated municipal and industrial wastewater, or "effluent," is emerging as an important water source for the Front Range. Some effluent may be legally reused to extinction, and thus is easily transferred to new uses because downstream users have no claim to the water. The primary uses of leased effluent are for groundwater pumping augmentation and industrial uses such as road construction and E&P. Observed prices for effluent leases have averaged about \$300/AFY, with wide variation due to price discrimination by suppliers for different end uses.

Front Range Market Drivers

1 LAND DEVELOPMENT AND GROWTH

Recovery in the real estate market has led to increased trading activity and rise in prices.

2 TRANSITION TO RENEWABLE SUPPLIES

Denver metro area municipalities are acquiring renewable supplies to reduce reliance on non-renewable Denver Basin groundwater.

3 ENERGY DEVELOPMENT

There has been significant growth in water demand since 2010 due to the rise in fracking in Northern Colorado.

4 AGRICULTURE

Several factors have resulted in an increase in agricultural water demand, such as rising hay prices, demand for well augmentation water rights, and expanding dairy herds, which have grown 25% since 2010.

South Platte Market Outlook

The South Platte water right sales market is expected to continue to see price appreciation. However, annual trading activity is likely to continue to remain low due to the limited availability of large water holdings for sale, political hurdles that accompany large water transfers, and because many municipal buyers are also pursuing infrastructure solutions to water shortage. The South Platte lease market is expected to grow in the coming years, with price increases and greater trading volumes.

The increase in leasing activity will be driven by various factors including state policies and new regulatory requirements intended to mitigate the impacts of water transfers on agricultural economies; new types of water demands such as E&P; and lessons learned from other western states with successful lease markets.

Market Influence of the Colorado Water Plan

Colorado has embarked on a water planning effort that is unprecedented in the state. The State Water Plan, finalized in 2015, explicitly acknowledges the role that markets have had in supplying water to the growing sectors of the state's economy. However, it also looks at new and alternative market approaches that minimize the impact of water transfers on agricultural economies. One strategy that has gained significant support is Alternative Transfer Methods or ATMs that use innovative solutions to supply water to growing urban uses as an alternative to water right sales. The success of ATM programs will primarily rest on the development of more flexible water transfer laws and policies. These ATM initiatives may produce changes in the types of water rights transactions that occur in future years.

Alternative Transfer Methods

The Colorado Water Conservation Board is funding projects to explore alternatives to the purchase and permanent transfer of agricultural water rights to M&I uses. The types of activities being evaluated include:

- Interruptible supply agreements
- Long-term rotational fallowing
- Water banks
- Deficit/partial irrigation practices
- Alternate cropping types

³ Non-tributary groundwater aquifers are not hydrologically connected to the surface water hydrology that produces streamflow. As a result, use of non-tributary aquifers does not require any mitigation but the aquifer water supply represents a fixed volume that is not recharged. A groundwater right provides the ability to divert (pump) a specific volume of water from each of the underlying aquifers. For non-tributary aquifers, a water right provides an annual supply equal to 1% of the estimated groundwater storage volume underlying the land surface associated with the water right, or a 100-year annual supply.

Rest of the State Roundup

Arkansas Basin Market

The Arkansas River Basin contains a variety of water uses and markets. The sale market continues to be dominated by local municipalities, such as the Pueblo Board of Water Works, acquiring irrigation water rights. Trading activity has been low in the Arkansas Basin relative to the South Platte Basin in recent years. One notable exception is Pure Cycle Corporation selling off its holdings in the Fort Lyon Canal Company earlier this year, signaling an abandonment of its prior efforts to create a source of municipal water supplies from these agricultural water rights. Pure Cycle's sale was significant, transferring roughly 51,600 acre-feet per year at a sale price of nearly \$53 million. Several proposed, completed, and unsuccessful water transfers from the Arkansas Basin emerged following the 2002 drought that continue to influence market perspectives. Perhaps the most well-known is the formation of The Super Ditch Company in 2008 as a group of six mutual ditch companies planning to rotationally fallow irrigated land and lease the conserved water to Front Range water providers. The Company's first water leases were signed in 2011 for \$500 per acre-foot, and the state recently approved the first transfer of water under a pilot program in 2015.

Colorado River Water Bank

Water rights markets may be taking shape on the Western Slope through the formation of a proposed water bank. A working group has been assembled to evaluate the concept of a Colorado River Water Bank to allow trans-basin diversions to the Front Range to continue even under a water rights curtailment scenario. The Bank would act as an exchange, with Western Slope farmers who hold senior-priority Colorado River Basin water rights providing water to the Bank, and Front Range water users providing money to the Bank to fulfill junior-priority trans-basin diversions. A Colorado River Water Bank may take some time to develop, but this interest may generate an increase in water leasing and sales activity on the Western Slope.

San Luis Valley Groundwater Replacement

Groundwater overdraft in the northern San Luis Valley has caused depletions to surface waters of the Rio Grande Basin and a risk of curtailment of groundwater pumping in the Valley. The local Rio Grande Water Conservation District is required to prepare an Annual Replacement Plan, which includes leasing surface water rights both within and outside of the Rio Grande Basin. The District has leased over 20,000 acre-feet over the past three years at a price of \$250 per acre-foot. This lease market is likely to continue for many years due to regulatory requirements.

Environmental Flow Leases

The Colorado Water Trust has been active in leasing water rights and negotiating water management agreements to provide environmental flows, particularly on the Western Slope. The Water Trust operated a Request for Water program in 2012 and 2013, which solicited water rights lease proposals for instream flow purposes on a short-term basis. The Water Trust has completed six leases on the Western Slope for over 8,000 acre-feet of water. New activities of the Water Trust include execution of split-season leases and fallowing agreements, such as the McKinley Ditch agreement on the Little Cimarron River.



ABOUT WESTWATER RESEARCH

WestWater Research is the leading firm in the water rights industry. WestWater specializes in transaction advisory services, water right valuations and appraisals, marketing services, water resource economics, and investment services. Since its inception in 2001, WWR has advised clients in every Western state on various water rights projects. We are forging new markets and developing innovative solutions to western water issues. Our team excels at finding creative solutions to complex water marketing issues.

The data regarding sale and lease prices and trading volumes summarized in this document are drawn from the *Waterlitix* database maintained by WestWater Research, which contains comprehensive and verified information on Colorado water market.

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