

**Determinants and Trends in
Water Right Market Prices**

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Determinants and Trends in Water Right Market Prices

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Situation

As the demand for existing water supplies continues to grow, increasing attention is being placed on transferring water rights through markets for urban uses. Transfers are proposed as an alternative to or component of traditional structural projects. Critical to the transfer process and evaluation of alternatives is knowledge about water right prices. Knowledge about water right prices is necessary to evaluate the economic benefits and costs of water transfers and to analyze other water management and development alternatives. However, little is known about the trends or determinants of water right prices. An understanding of water right market prices and factors that influence prices will benefit analysts and decision makers by providing them with information that can be used to evaluate the economic impacts and desirability of water right transfers and water marketing.

Variation in Water Right Prices

Prices of water rights vary widely throughout the west, from a few hundred dollars or less to several thousand dollars per acre foot. Variations in the prices of different water rights are often attributed to differences in supply reliability (legal priority and hydrologic conditions), supply location and type of use. However, large variations have also been observed over time for water rights that have the same supply location, supply reliability and similar use conditions.

For example, Northeast Colorado supports one of the most well-established water rights markets in the world. Water imported from the Colorado River, across the continental divide to the Big Thompson River (CBT), is among the most actively

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marketed in this area. Prices for CBT and other water rights in northeastern Colorado have varied dramatically over time (Figure 1). A market for CBT water rights developed in the early 1960's and prices continued to rise steadily through the mid 1970's. Suddenly, between 1975 and 1980 prices rose very sharply, peaking at close to \$6,000 per acre foot (\$1990), and then fell just as sharply between 1980 and 1985, bottoming out around \$1,000 per acre foot, lower than the pre-peak prices of 1975. Prices have increased over the last eight years to around \$2,000-2,500 per acre foot. What has caused these changes in CBT water right prices?

Colorado-Big Thompson and North Poudre Irrigation Company Water Right Prices

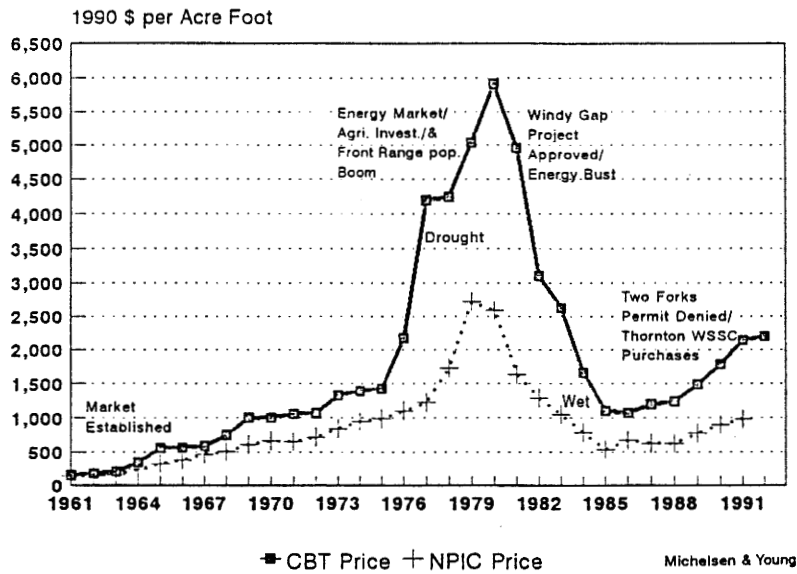


Figure 1 - CBT and NPIC Water Right Prices

Price Determinants Suggested

Many different factors or determinants have been suggested in an attempt to understand the historical and possible future changes in water right prices. Suggested determinants can usually be classified into three general categories: demand (market) factors, supply factors, and institutional factors. Demand factors include the purchaser use value of water, the type of water right buyers, economic conditions, population growth, transaction costs, and price speculation. Supply factors include current water right ownership, the cost of alternative supplies, the development of supplemental water supplies, changes in hydrologic conditions and drought expectations. Institutional factors include transfer restrictions and changes in the delivery/service area. Some of the major events hypothesized to have influenced CBT water right prices are indicated on Figure 1.

The energy development boom, increase in farm returns and investment, and rapid population growth of the Colorado front range are some possible explanations for the sharp increase in CBT water right prices in the 1970's. These factors

contributed to increases in the demand for water in the area and to speculation that water right prices would continue to increase.

The collapse of the energy boom and associated economic activity and approval of supplemental water supplies (Windy Gap Project) for the region are suggested as possible reasons for the precipitous decline in water right prices in the early 1980's.

After CBT prices had dropped to their lowest point in over 10 years, the denial of Two Forks, Thornton's purchase of Water Supply and Storage water and subsequent increase in CBT prices suggest that purchasers expected further increases in the demand and prices for water rights.

Speculation in water rights for profit is often assumed to have been discouraged through laws, institutions, (transfer restrictions) and economic disincentives (transaction costs). Nonetheless, there is anecdotal evidence of market price speculation. Figure 2 shows CBT prices and domestic crude oil prices over the same period of time. Although there are striking similarities in the trends of these two prices, it remains to be confirmed whether CBT water rights can or should be considered in the same light as other speculative commodities or investments.

CBT Water Right and Domestic Crude Oil Prices
(1990 dollars)

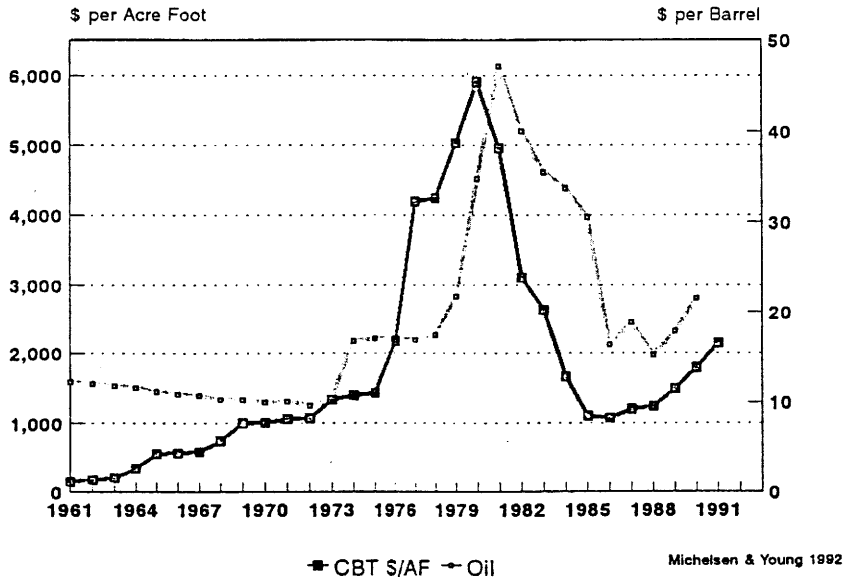


Figure 2 - CBT Water Right and Crude Oil Prices

CBT Transfers, Buyers and Price

Market activity, as reflected by the number of water right transfers, has been suggested as an indicator of demand and price. Figure 3 illustrates the number of CBT units transferred and prices from 1970 through 1993. This view of market activity helps to explain the peak in prices, but, the possible relationship is not as clear when looking at market activity and prices over the last ten years.

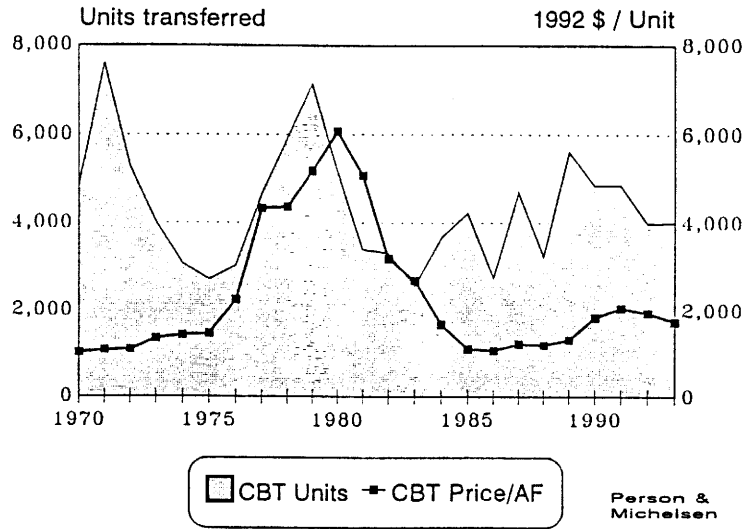


Figure 3 - Market Activity: CBT Transfers and Price

Domestic and industrial water use values are typically much higher than the value of water used in agriculture. Because of this relationship, it has been suggested that the type of water right buyer might also help explain the determination of water right prices (Figure 4). Note in particular, the number of units acquired for domestic purposes. Perhaps counter to intuition, agricultural users have remained significant purchasers of water rights, even at peak prices.

Research is continuing in an effort to empirically identify and quantify the determinants of CBT and other water right prices.

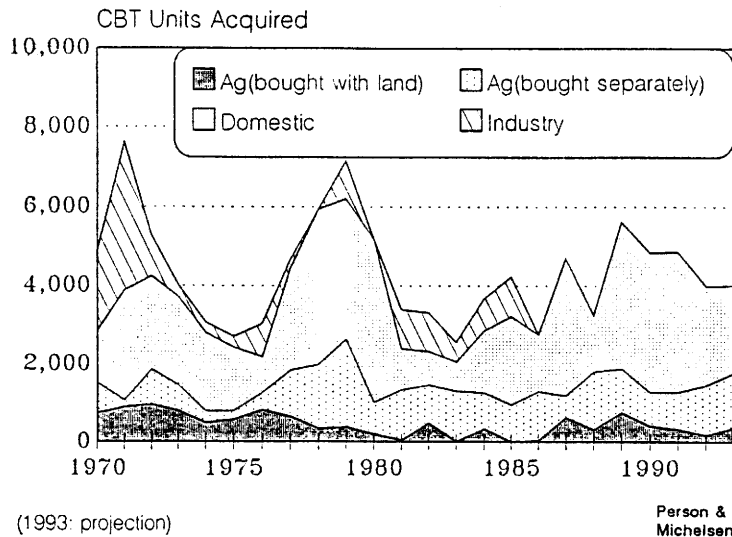


Figure 4 - Purchasers of CBT Water Rights Categorized by User Type