

Water Market Insider

WestWater Research is the leading economic and financial consulting firm in the water industry.

Change at What Cost?

Understanding Transaction Costs for Water Transfers in Colorado

Regulatory oversight and approvals are an important part of Western water management, providing water right holders with security and stability. In fact, well-functioning markets depend upon a transparent and predictable regulatory process. However, there are costs associated with the regulatory process that impact market efficiency and activity. Those costs can vary significantly for a range of reasons. In addition, the total expected cost is uncertain at the onset of the regulatory process, which can seem daunting to many market participants.

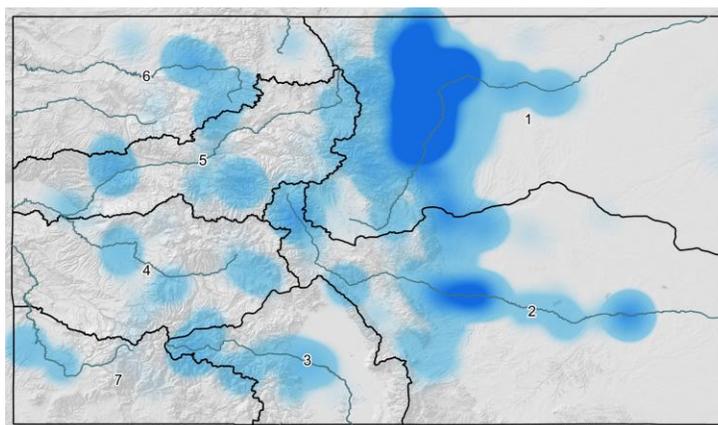


Figure 1: Water transaction activity across Colorado's seven major river basins shows concentrated activity along the Front Range.

Recent research by Philip Womble of Stanford University and Michael Hanemann of Arizona State University published in the journal *Water Resources Research* examines transaction costs in Colorado's water market in an effort to quantify factors that affect the total cost of securing regulatory approval. The research team conducted a survey of 100 water attorneys and engineers whose fees make up the bulk of transaction costs. They asked these water professionals to provide estimates of their fees for various hypothetical (but realistic) water transfers. The hypothetical water transfers and corresponding survey responses varied by the following characteristics: (1) transfer volume, (2) water right seniority or reliability, (3) river basin location of the water transfer, and (4) degree of conflict and opposition in the regulatory process.

The graphic below (Figure 2) summarizes some of the research findings on transaction costs in the Colorado water market. Each colored line represents expected transaction costs for various deal sizes (transaction volumes) ranging from 1 acre-foot up to 1,000 acre-feet. The graphs represent transaction costs in a specific geographic region of the state, with the left two graphs representing the urbanizing Front Range and the right three graphs representing the rural Western Slope.

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The line colors represent successive layers of regulatory review, similar to a court appeals process, starting with a minimal water court referee ruling (light green line) and extending up to an appeal to the Colorado Supreme Court (red line). For example, an expected transaction cost for a 100 acre-feet water transfer that is settled prior to court trial is approximately \$200,000 on the Front Range and \$100,000 on the Western Slope. These transaction costs could potentially represent up to one-quarter of the water right purchase costs for this size of water transfer.

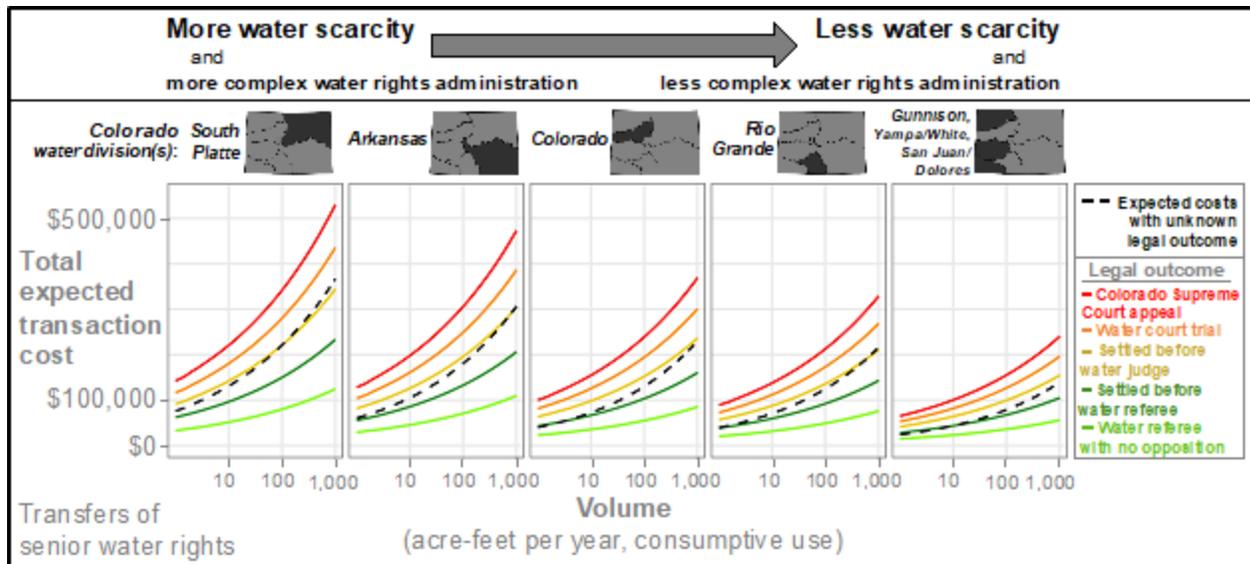


Figure 2: Transaction costs in Colorado vary depending on location, volume, and other legal factors. Graphic adapted from Womble and Hanemann 2020a

The following points summarize key takeaways from the research effort on Colorado water market transaction costs:

1. Competition and Complexity Increase Deal Costs: Transaction costs are roughly twice as expensive in the fast growing and more urbanized Front Range region where water competition is high and demands are diverse compared to the more rural parts of the state. The Front Range has greater water supply deficits and more complex water rights administration which influences the cost of gaining regulatory approval.

2. Small Deals Are Disadvantaged: Small volume water transfers face greater impediments because transaction costs exhibit substantial economies of scale, with higher unit costs for smaller transfers. Transaction costs were found to exceed the market price of the water rights for small transfer volumes of approximately 20 to 30 acre-feet. This explains why many municipal water utilities pool multiple water acquisitions (of the same asset) together before applying for regulatory approval, and why few observed water transfers are for small volumes of water.

3. An Established Regulatory Path

Motivates Market Activity: Most water transactions in Colorado involve assets that have a well-worn regulatory path. Historical (approved) changes provide precedence that reduces regulatory uncertainty and risk, and low regulatory risk keeps buyers interested. For example, the only water assets that are accepted by municipal utilities for new water service typically have at least two, and often have four or more, previous regulatory approvals. The flip side of this also holds true. Uncertainty in transaction costs can be an impediment to water market activity. Buyers are known to be cautious when evaluating water assets that do not have a track record of previous regulatory approvals.

4. Deal Costs are on the Rise: Nearly all survey participants said that transaction costs have increased more than the rate of inflation during their careers. The most common reason given for this cost increase was growing competition for scarce water resources. Other reasons for observed cost increase included more strident legal opposition, more complex hydrologic analyses, and disputes over relatively small amounts of water - so small that the arguments are often well beyond the precision of available measurement devices and the underlying hydrologic analyses.

Transaction costs are a necessary pill to swallow for most trades in the Colorado water market, with long term benefits to the health of Colorado's water market and water management. These transaction costs can be daunting for market participants, in part because of their uncertainty and the feel of an open checkbook. The research by Womble and Hanemann shaves away some of this uncertainty by providing some useful benchmark cost estimates for changing water rights and realizing the benefits of water trades.

Please refer to the peer-reviewed journal articles below for an expanded discussion of the research findings:

Womble, P. and W.M. Hanemann (2020a). Water markets, water courts, and transaction costs in Colorado. *Water Resources Research*, 56, e2019WR025507.

Womble, P. and W.M. Hanemann (2020b), Legal change and water transaction costs in Colorado, *Water Resources Research*, 56, e2019WR025508.