

## **Water: Allocation and valuation strategies under increasing scarcity**

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**Abstract.** As global climate change and growing populations continue to stress water resources throughout the Southwest, competition for available water will increase between sectors. These impacts will not be felt equally across industrial, environmental, agricultural and residential users. Yet, there are relatively few studies that examine how changing supplies will impact the use values associated with each Sector. As shortages grow the need for efficient allocations becomes paramount, and it is critical to understand the distributional effects and value losses associated with allocations and the institutions that create them. This paper contextualized water markets in the Southwest, identifies methods for estimating value losses caused by water shortfalls, and provides a methodology and metric to help decision makers identify high risk basins. Physical shortfalls only tell half the story; some basins have the ability to mitigate costs through trade or conservation while others may have very limited opportunities to prevent such losses. This paper compares two types of basins, highly industrialized and agrarian, using projected demand curves to illustrate the extreme value loss felt by industrial basins, even with relatively small shortfalls. With increased understanding of freshwater allocative efficiency, it becomes possible to identify public work projects that are likely to have the highest net benefit.