

# Using economic and other performance measures to evaluate a municipal drought plan

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Published August 2013, 15 (4) 648-668; DOI: [10.2166/wp.2013.204](https://doi.org/10.2166/wp.2013.204)

## **Abstract**

This paper explores the welfare costs associated with drought plan transactions between a public municipal water agency, the El Dorado Irrigation District (EID) in California in the USA and its customers. The EID imposes a tiered pricing plan for municipal customers, which was analyzed as a discrete continuous choice (DCC) model by water users within a climate driven water evaluation and planning (WEAP) model of the EID water system. The DCC is subsequently used to estimate the compensating variation (CV) measure of the loss of consumer welfare in the case where a customer does not receive water that matches a preferred level of demand. In addition to monetized welfare loss, we look at other metrics of performance such as reservoir storage and hydropower generation. For the drought-of-record under full build-out, results show that the welfare loss to EID customers from the imposed drought plan is far less than if no drought plan were in place. This suggests that current consumption is well beyond essential needs and, without a drought plan, water shortages in the later period of a drought would generate a much greater welfare loss. Most of the cost associated with the drought plan is born by EID in the form of reduced revenues.

- Received December 28, 2011.