

Balancing Human and Environmental Costs of Water Recycling

Water Reuse Involves Tradeoffs

California is in an unprecedented water crisis. Extended drought, climate change, and excessive demands have led to overallocation of our water resources and strain on water supply infrastructure. Recycling and reusing treated wastewater and captured stormwater will be a critical part of the solution to our water crisis and could provide hundreds of millions of gallons of new water supply every day.

In recognition of this need, the State Water Resources Control Board has developed a “Recycled Water Policy” that encourages the safe use of recycled water from wastewater sources, while protecting existing water rights and beneficial uses. The policy also calls for maximizing the use of recycled water in areas where groundwater supplies are in a state of overdraft.

SCCWRP’s current research focuses on ecological effects of water reuse on streams (and ultimately estuaries). Working with a team of statewide partners, we developed the California Environmental Flows Framework (CEFF) to help agencies and stakeholder determine appropriate environmental flows, assess impacts associated with changing flow conditions, and explore tradeoffs associated with various flow management actions. We are currently expanding models and other tools and piloting CEFF in several watersheds statewide. However, to date, CEFF applications have focused primarily on ecological tradeoffs with significantly less effort being dedicated to the economic and social tradeoffs of allocating flows for different uses.

Need for New Tools and Approaches to Assess Economic and Social Tradeoffs

A critical gap to be filled is understanding the benefits and costs associated with reusing water for municipal or agricultural uses versus the effects on streams in terms of environmental, recreational, and cultural benefits. Relative “costs” are somewhat easier to assess in terms of increased reliance on imported water or impacts to the environment. However, it is more difficult to quantify the relative benefits of municipal/agricultural reuse vs. recreation and cultural opportunities vs. sustaining natural and ecological communities. Technical tools and approaches need to be developed to fully assess the tradeoffs of water reuse, to fully inform water resource strategies and decisions.

Desired Outcome and How it Relates to Management Decisions

We aim to develop an approach and management toolkit that considers ecological and socio-economic costs and benefits of water reuse and to illustrate the use of the toolkit within CEFF in a real-world example. This collaboration could shed light on how to address the challenging issue of balancing water for human uses and the environment in a water stressed world and serve as an example that can be replicated in other parts of the state.