

✓ FINDINGS & RECOMMENDATIONS

The South Coast of Santa Barbara County is in a unique position in that it has a diverse portfolio of water supply options. Below are some of the major takeaways from the project:

South Coast water agencies should explore the feasibility, costs, and benefits of potential future water sources outlined in this study.

Fixed costs should be transparent and factored into decision-making processes.

The most expensive water sources on the South Coast are particularly vulnerable to fluctuations in energy prices.

Identifying externalized environmental impacts of water decisions will enable water agencies to make more informed decisions.

Individual agencies and the public can reap considerable benefits from regional knowledge-sharing and data management. Such practices can help to:

Highlight best practices

Identify opportunities for regional market transfers

Serve an important role in public transparency

We recommend the following two actions for knowledge-sharing and collaboration among South Coast water decision-makers:

- Regularly maintain a South Coast Regional Water Database.
- Create common reporting standards across the South Coast.

CONCLUSIONS

With access to local surface water, groundwater, State Water, and recycled water, the South Coast already has a diverse supply portfolio. Examining the financial, energy, and environmental costs of each supply source allows for a holistic view of the complexities involved in balancing all costs in water supply planning. Reliability of local supplies can be increased by exploring implementation of additional sources, such as stormwater capture and greywater. Incorporating all costs involved in water production, collaboration between districts, and sharing data and best management practices will further increase water supply reliability and mitigate uncertainties in supply planning during times of water scarcity now and in the future.

ACKNOWLEDGMENTS

Faculty Advisor: Bob Wilkinson | Client: Santa Barbara Channelkeeper | Funding: James S. Bower Foundation

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Local Agencies: Goleta Water District, City of Santa Barbara, La Cumbre Mutual Water Company, Montecito Water District, Carpinteria Valley Water District, Carpinteria Sanitary District, Goleta Sanitary District, El Estero Treatment Plant, Montecito Sanitary District, and Central Coast Water Authority

Support and Guidance: Lauren Barnum, Andy Bilich, Norm Brown, Andrea Dransfield, Roland Geyer, Christopher Heckman, Allison Horst, Art Ludwig, Tim Robinson, and Karl Seckel



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NOT A DROP TO SPARE

Sustainable Water Management for the South Coast of Santa Barbara County

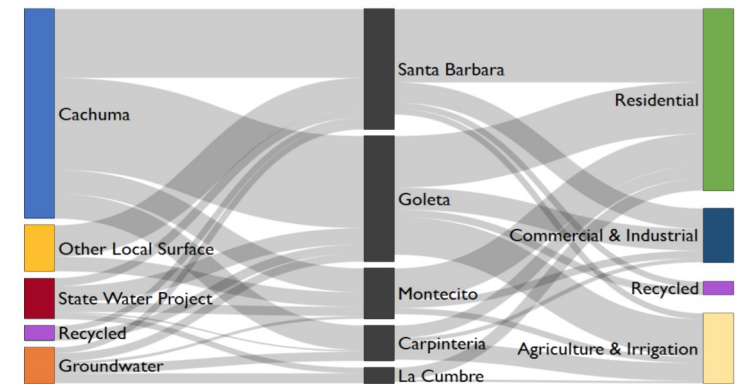
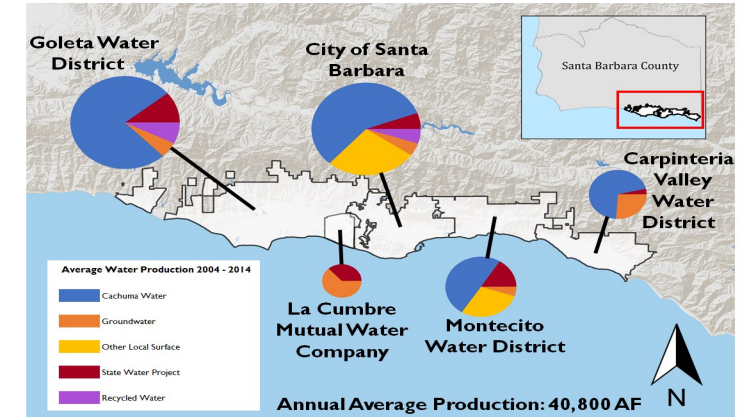
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OVERVIEW OF SOUTH COAST WATER

The South Coast of Santa Barbara County has a diverse water supply portfolio. The region's five water providers draw on Lake Cachuma, other local surface water supplies, the State Water Project, groundwater, and recycled water. In Fall 2016, Santa Barbara's ocean desalination plant will re-open to add another water source to the current supply portfolio.

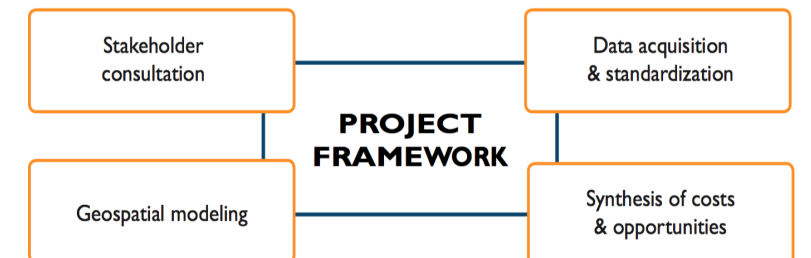
Lake Cachuma has historically been the primary water source for the region. However, local water supply portfolios are evolving due to changes in water sources. Circumstances including droughts, regulatory obstacles, and new technologies may make some sources more affordable while others are depleted. South Coast water managers regularly adjust their water supply portfolios to reflect changing trends in local sources.

Water demand on the South Coast includes residential, commercial & industrial, recycled, and agricultural & irrigation customers. While each district serves a unique mix of customers, residential accounts make up nearly 2/3 of overall demand in the region.



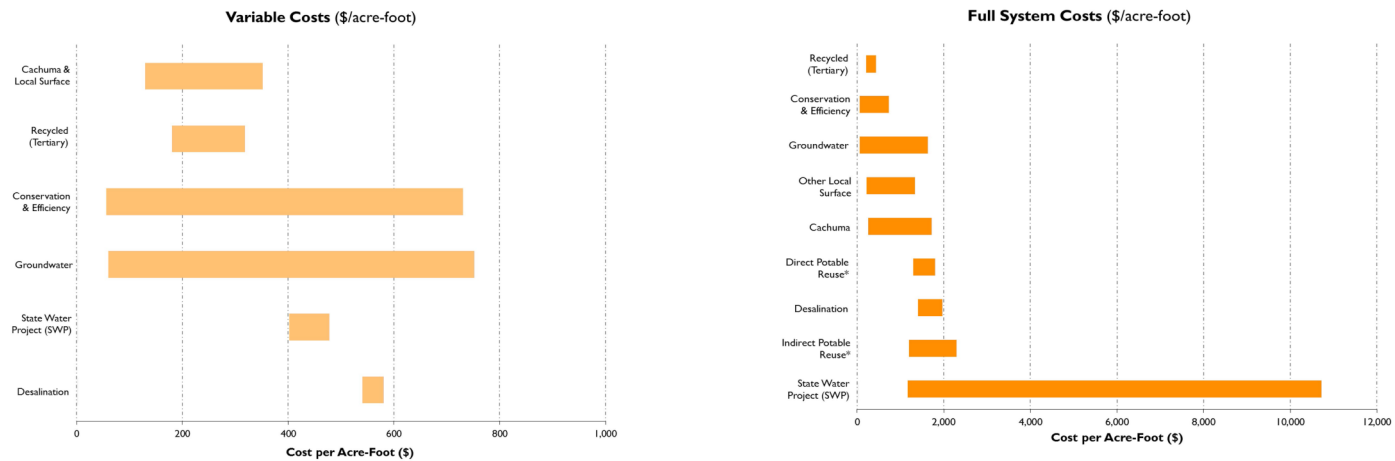
OBJECTIVES

- 1 Map historical water production and demand across the South Coast to bridge the gap between district level management plans and statewide studies and to lay out the existing water resources and needs of the region as a whole. Compile this information into a South Coast Regional Water Database.
- 2 Model potential water production from untapped sources, such as residential greywater and stormwater capture.
- 3 Analyze and compare the financial costs, energy intensities, and environmental impacts of these existing and potential future water supply options across the South Coast.
- 4 Identify opportunities for regional collaboration and knowledge-sharing.



FINANCIAL COSTS

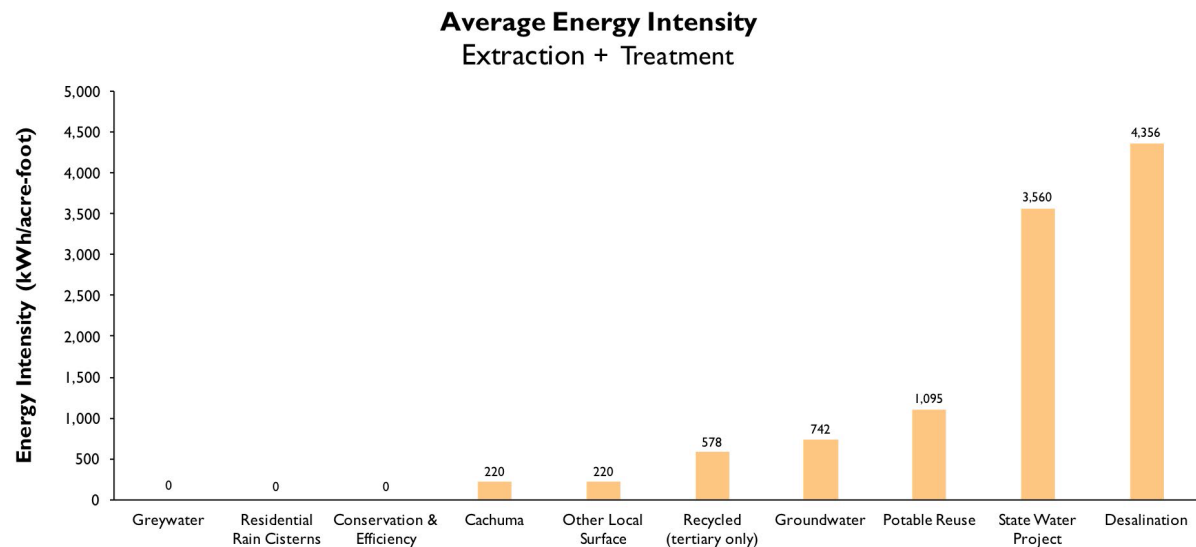
Financial costs for water sources can be categorized in two different ways: variable costs and fixed costs. Variable costs include costs that change depending on how much water is produced from each source in a given year. Fixed costs are paid by districts regardless of how much water they extract from a given source. Together, variable and fixed costs make up full system costs. Variable and full system cost analyses tell **two different stories** for the cost of water on the South Coast.



Variable cost analyses reveal wide and overlapping cost ranges without major cost differences between sources.

Full system cost analyses, which include all of the costs that the districts are paying for each source in a given year (e.g. fixed costs and debt services), yield different results.

ENERGY INTENSITY



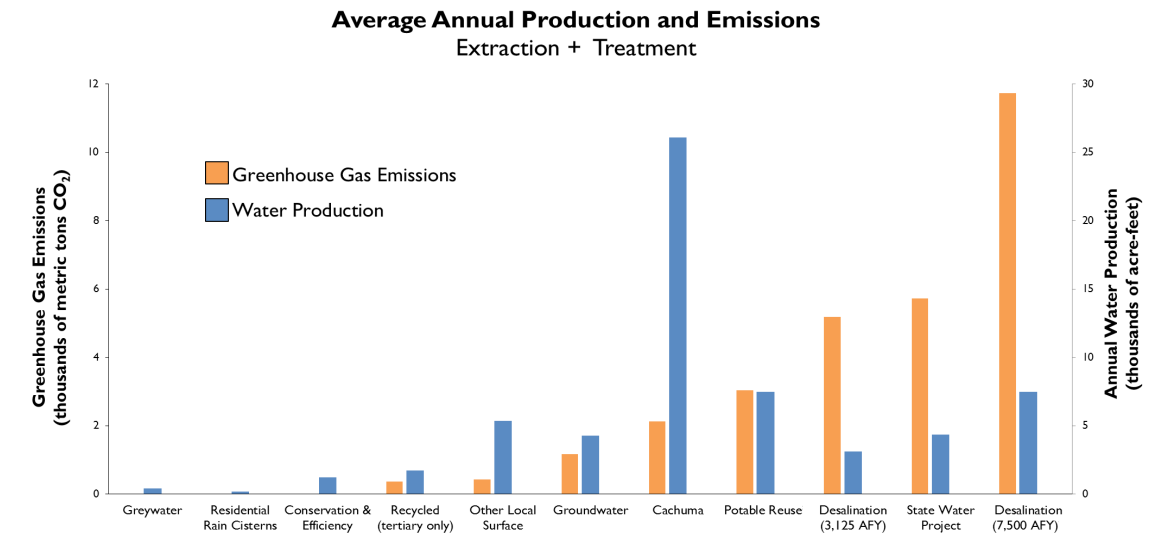
Energy expenses are encompassed in the variable costs of each water source and vary considerably between sources based on the distance water has to travel to reach the South Coast as well as required treatment technology.

Decentralized sources, such as greywater and residential rain cisterns, have the lowest energy requirements on the South Coast. Potable reuse, State Water, and desalination have the highest energy intensities of all sources, meaning that **the most expensive water sources (in terms of full system cost) are also the most energy-intensive**. The most expensive and energy-intensive sources are vulnerable to fluctuation in energy prices, which may impact the variable cost of these water sources.

Therefore, these energy requirements have long-term cost and environmental implications.

ENVIRONMENTAL IMPACTS

The energy intensities of South Coast water sources translate to greenhouse gas emissions. Even when considering total water production volume, **potable reuse, desalination, and State Water remain the highest greenhouse gas emitters**.



Different water sources also have significant

marine and freshwater ecosystem impacts. For example, some sources discharge potable water by-products to the ocean and some withdraw water from freshwater and marine habitats. Disturbances to these habitats affect vulnerable and endangered species.

Ecosystem impacts can also affect the reliability of water supplies. Variability in precipitation, earthquakes, sea level rise, and regulatory and legal obstacles are potential scenarios water managers must address in supply planning. Creating supply portfolios with a diversity of sources helps build resilience to such risks.

POTENTIAL FUTURE SOURCES

Potential future water sources are sources and production methods that could be implemented systematically on the South Coast but are not yet used widely, or at all. We modeled supply from selected options, but this list is by no means exhaustive. Future studies could evaluate additional strategies and their potential implications beyond the residential sector.

Additional water savings could be achieved using a wide range of methods, such as:

- Conservation
- Plumbing retrofits
- Smart meters
- Ordinance changes
- Public outreach
- Leak detection
- Water checkups
- Conservation pricing
- Commercial efficiency
- Recycled water expansion
- Increased agricultural efficiency

