NOT A DROP TO SPARE

Sustainable Water Management for the South Coast of Santa Barbara County

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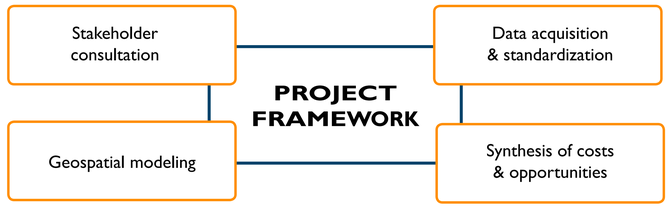
PROJECT OBJECTIVES

1. Map historical water production and demand across the South Coast to bridge the gap between district level management plans and statewide studies, and 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. Estimate potential water production from untapped sources, such as residential greywater and stormwater capture.
3. Develop a comparison between the financial costs, energy intensity, 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.



OVERVIEW OF SOUTH COAST WATER

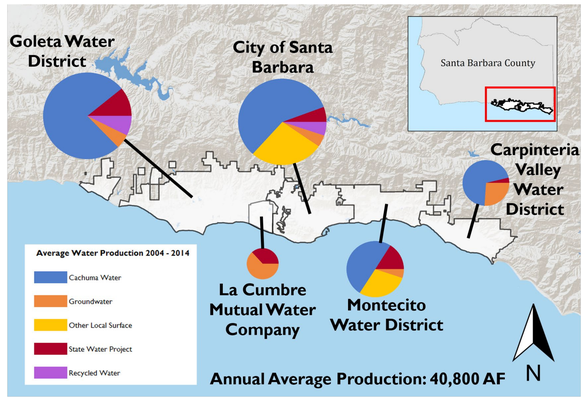
WATER DEMAND

Residential

Irrigation

Commercial & Industrial

Recycled

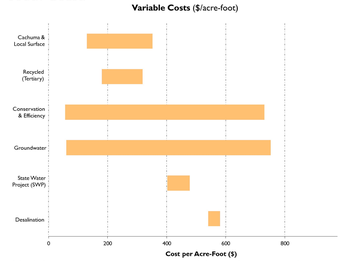


On the South Coast of Santa Barbara County, water supply sources include: Lake Cachuma, other surface water bodies, groundwater, recycled water, and imported water from the State Water Project. In Fall 2016, Santa Barbara's ocean desalination plant will re-open and add another water source to the current supply portfolio. Lake Cachuma has historically been the primary water source, providing approximately 62% of the total annual supply.

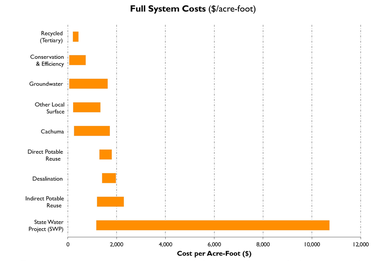
However, local water supply portfolios are evolving due to changes in water sources. Circumstances including droughts, regulatory obstacles, and new technologies may make some sources more affordable while others are depleted. South Coast water managers regularly adjust their water supply portfolios to reflect changing trends in local sources.

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.

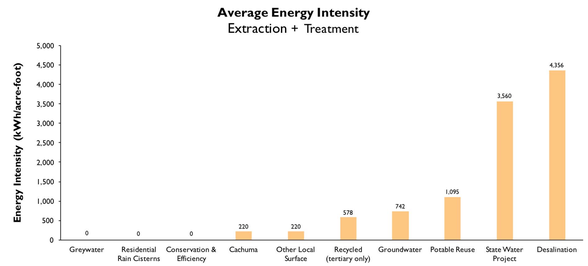


Variable cost analyses reveal wide and overlapping cost ranges without major cost differences between sources.



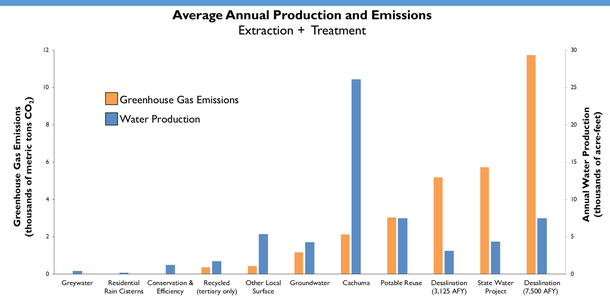
Full system cost analyses, which include all of the costs that the districts are paying for each source in a given year (e.g. fixed costs and debt service), yield different results.

ENERGY INTENSITY



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. These energy requirements have long-term cost and environmental implications.

ENVIRONMENTAL IMPACTS

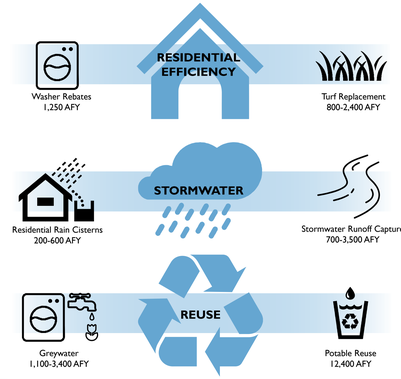


The energy intensities of South Coast water sources also translate to greenhouse gas emissions. Even when considering total water production volume, potable reuse, desalination, and State Water remain the highest greenhouse gas emitters.

Different water sources also have significant marine and freshwater ecosystem impacts. For instance, some sources discharge treatment by-products to the ocean, or withdraw water from freshwater and marine habitats. Disturbances to these habitats can affect vulnerable and endangered species.

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 applications beyond the residential sector.



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

- Conservation
- Other plumbing retrofits
- Smart meters
- Ordinance changes
- Public outreach
- Leak detection
- Water checkups
- Conservation pricing
- Commercial efficiency
- Recycled water expansion
- Landscape and agricultural irrigation efficiency

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.

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