

CREATING AN URBAN INTRA-BASIN WATER MARKET FOR PAPER WATER TRADES IN SOUTHERN CALIFORNIA

PROPOSER:

Mary-Sophia Motlow, Master's Candidate, 2015
Sustainable Water Markets Fellow
Bren School of Environmental Science & Management
University of California, Santa Barbara
Email: motlowm@yahoo.com
Phone: (510) 332-5910

CLIENT:

Kevin L. Wattier, General Manager
Long Beach Water Department
Email: kevin.wattier@lbwater.org
Phone: (562)570-2318

CLIENT ORGANIZATION:

Long Beach Water Department

PROPOSED PROJECT

The Sustainable Water Markets Fellows at the Bren School of Environmental Science & Management in partnership with the Long Beach Water Department propose a Group Project analyzing the costs and benefits of instituting a market to meet water demand in Southern California. The project will investigate if institutional barriers to an intra-basin market exist and create a framework for market implementation. Although project analysis will be based on data from Long Beach Water Department, the project's results will provide insight into the potential establishment of water market strategies throughout Southern California.

OBJECTIVES

This project uses economic and data analyses to evaluate markets as a water management tool. The project will investigate the potential institutional barriers to implementation of a market. Project results can then be used as a basis for policy decisions. The objective of this project is to identify the benefits of and framework necessary for creating an urban intra-basin water market in Southern California. The specific objectives are to:

- Quantify the difference between the amount of water Long Beach receives from its wholesale allocation and the amount it sells to customers. This difference will indicate whether Long Beach has excess wholesale supply or excess demand.
- Use economic analysis to determine whether market forces reallocate excess supply to meet demand. Quantify potential gains from trade. Compare the costs and benefits of a market to traditional water management techniques.
- Investigate whether current institutional barriers to creating a water market exist in Southern California. Develop a framework for paper water transfers to occur.

SIGNIFICANCE

With climate change leading to increased water scarcity throughout the state, California will resolve its water problems only through innovative solutions to maximize current supplies. Water markets provide a way to maximize current supplies through voluntary exchanges between buyers and sellers. Markets also reduce conflict over allocation between water districts, and generate price signals.

There are three clear incentives for Southern California water districts to participate in a market. The first incentive is increasing water scarcity due to drought, climate change, and population growth. Although desalination is a possible solution the technology is still too costly for many districts. The second incentive is the problems associated with water importation from increasingly distant supplies. Creating additional infrastructure to capture distant water supplies is a costly and contentious long-term solution. The third incentive is the occurrence of excess water supplies and shortages within the same basin. Creation of an intra-basin urban water market could address all three of these problems.

Whether or not a water district would benefit from the establishment of a market, information about the role of markets could aid future management decisions. In a market water districts with excess supplies could sell to water districts facing shortages. Instead of trying to secure new water sources, or implement costly technology water districts could purchase intra-basin supplies. These transfers between districts would occur as paper not as physical water transfers. Paper water transfers allow trade between districts without the limitations of the physical water system, such as placement and capacity of pipelines. For paper transfers to occur a market must be established with the wholesale institution acting as broker. The wholesaler would facilitate paper water trades between water districts within the basin.

BACKGROUND

Urban water districts within Southern California get their water from several sources. These sources may include imported water distributed by a wholesaler and extracted ground water. Supplies may be augmented by water recycling, water conservation, and desalination. For example, Long Beach Water Department's supply is ~40% local groundwater, ~25% imported water purchased from a wholesaler, ~7% reclaimed water, and ~28% conserved water. With ongoing drought making external sources increasingly unreliable it becomes even more important to strive for continual improvement in use of this limited resource.

Since its formation in 1911 the Long Beach Water Department has provided an uninterrupted supply of high-quality water to the City's residents and business community. This is accomplished through effective long-term planning, sound strategic investments and other economically efficient and environmentally responsible means. Current management techniques include strict conservation measures, an aggressive recycled water system, and an aquifer storage and recovery system. Based on these practices Long Beach Water Department has become the nation's standard for progressive and innovative water management. Water markets could be an additional tool for management of Long Beach's water supplies. In Australia's Murray-Darling Basin water markets have been extremely successful. If trades could occur between intra-basin water districts in Southern California water security could increase.

AVAILABLE DATA

Kevin Wattier, General Manager of the Long Beach Water Department, is providing data quantifying Long Beach Water Department's historical water supplies and sales. Datasets will be provided in the form of Excel spreadsheets.

Datasets include:

- Long Beach Water Department's local groundwater supplies

- Water gained through conservation programs and recycling
- Sale of water by Long Beach to its customers
- Imported water allocation from the wholesaler to each member agency including Long Beach

Some of these datasets have already been provided to the project proposer. The remaining datasets will be sent to the project proposer by the end of Winter Quarter (March 21st) 2014. Long Beach Water Department has not placed any constraints or publication restrictions on the students' use of these datasets.

POSSIBLE APPROACHES

The first step of this Group Project is to quantify Long Beach Water Department's excess supply or demand based on their wholesale water allocation. Quantification of supply and demand identifies opportunities for trade. The second step is to determine the costs and benefits of instituting an intra-basin water market in Southern California. This analysis will reveal whether markets or traditional management techniques have lower costs and higher benefits. The third step is to investigate the legal and administrative frameworks necessary to allow these water transfers to occur. Before a market framework can be created barriers and solutions to trade must be identified. The final step is to create a market framework which can be a management tool for all intra-basin Southern California water districts.

DELIVERABLES

This Group Project will produce a policy framework for instituting an intra-basin water market. A report on the project's findings including supply quantification and economic analysis will also be produced. These documents will serve as a guideline for Long Beach and other water districts to implement a market.

INTERNSHIPS

At this time, Long Beach Water Department is not offering any summer internships to students. The possibility of offering internships is still under consideration. Mr. Wattier will notify the project proposer by the end of Winter Quarter (March 21st) 2014 whether any internships will be available.

CITATIONS

Lauer, Susan. *A Briefing on California Water Issues*. Water Education Foundation, 2009. *Google Scholar*. Web. 15 Jan. 2014.

"Long Beach Water." N. p., n.d. Web. 24 Jan. 2014.

R.Q. Grafton et al. *A COMPARATIVE ASSESSMENT OF WATER MARKETS: INSIGHTS FROM THE MURRAY-DARLING BASIN OF AUSTRALIA AND THE WESTERN US*. International Center for Economic Research, 2011. Web. 9 Dec. 2013. Working Paper Series.

Sunding, David. "The Price of Water: Market-Based Strategies Are Needed to Cope with Scarcity." *California Agriculture* 54.2 (2000): 56–63. Print.

Zetland, David. "How Markets Can End Persistent Intra-Organizational Conflict." *Economics of Peace and Security Journal* 6.1 (2011): 22–27. Print.

Zetland, David Jason. "Conflict and Cooperation within an Organization: A Case Study of the Metropolitan Water District of Southern California." UNIVERSITY OF CALIFORNIA, 2008. *Google Scholar*. Web. 19 Dec. 2013.

BUDGET

Long Beach Water Department does not intend to contribute any additional funding to this project. At this point neither the proposer nor the client foresees the need for any additional funds. All data needed for project completion should be publicly accessible and provided by Long Beach Water Department. The \$1,300 budget allocated by the Bren School will be sufficient to cover the project's basic operations.

CLIENT LETTER OF SUPPORT

Letter of Support from Kevin Wattier, General Manager of Long Beach Water Department, is attached.



Long Beach Water Department

**The Standard in Water Conservation &
Environmental Stewardship**

January 22, 2014

KEVIN L. WATTIER, General Manager

Bren School of Environmental Science & Management
University of California, Santa Barbara
Bren Hall, University of California,
Santa Barbara, CA 93106-5131

Regarding: Client Letter of Support for Bren 2014-2015 Group Project Proposal:
Creating Urban Intra-Basin Water Markets in Southern California

Dear Group Project Committee:

Since its formation in 1911 the Long Beach Water Department (LBWD) has provided an uninterrupted supply of high-quality water to the City's residents and business community. This is accomplished through effective long-term planning, sound strategic investments and other economically efficient and environmentally responsible means. Long Beach Water Department has become the nation's standard for progressive and innovative water management.

The City of Long Beach currently imports 40 percent of its water supply from external sources. These sources, which are located hundreds of miles away, are becoming increasingly unreliable. In recent years, they have been severely impacted by ongoing drought and restrictive environmental regulations, so that the amount of water that is annually available to southern California has been permanently reduced. With these future concerns in mind it becomes even more important to strive for continual improvement in use of this limited resource. In keeping with its goals of innovative water management, Long Beach Water Department is supporting the Bren School Group Project entitled "Creating Urban Intra-Basin Water Markets in Southern California". I, Kevin Wattier, General Manager of Long Beach Water Department will serve as the primary representative and main point of contact for the duration of this project.

We will provide data quantifying Long Beach's water supplies and sales. Specifically, we will provide historical data on the amount of water allocated by the Metropolitan Water District of Southern California to each of their member agencies, including Long Beach. We will also provide data on Long Beach's local (groundwater) supplies. Lastly, we will provide data on the amount of water Long Beach sells to its customers. Some of these data sets have already been provided to the project proposer. The remaining datasets will be sent to the project proposer by the end of Winter Quarter (March 21, 2014). Long Beach Water Department has not placed any constraints or publication restrictions on the students' use of these datasets.

Long Beach Water Department does not intend to contribute any additional funding to this project. At this point, neither the proposer, nor the client foresees the need for any additional funds. All data needed for project completion should be publicly accessible, and provided by Long Beach Water Department.

At this time, Long Beach Water Department is not offering any summer internships to students. The possibility of offering internships is still under consideration. Mr. Wattier will notify the project proposer by the end of Winter Quarter (March 21, 2014) whether any internships will be available.

Sincerely,



Kevin L. Wattier
General Manager

Email: kevin.wattier@lbwater.org
Phone: (562)570-2318