

Waste Not, Want Not:

The Potential for Urban Water Conservation in California

Lessons and Recommendations (from the Executive Summary)

by Gleick et al, the Pacific Institute of Oakland, California

Full report at http://www.pacinst.org/reports/urban_usage

General Conclusions

California is using water unsustainably.

The pressures of a growing population and economy, combined with traditional approaches to water supply and management, have led to the unsustainable use of California's freshwater resources. The state must change its ways to avoid water shortages, ecological collapse, and economic disaster.

Improved efficiency and increased conservation are the cheapest, easiest, and least destructive ways to meet California's future water needs.

This report strongly indicates that California can save 30% of its current urban water use with cost-effective water-saving solutions. Indeed, fully implementing existing conservation technologies in the urban sector can eliminate the need for new urban water supplies for the next three decades.

Existing technologies for improving urban conservation and water-use efficiency have enormous untapped potential.

Many technologies are available for using water more efficiently, in every urban sector. These include low-flow toilets, faucets, and showerheads; efficient residential and commercial washing machines and dishwashers; drip and precision irrigation sprinklers; commercial and industrial recycling systems; and many more.

Smart water policies to capture conservation savings are available at all levels of government and society.

Examples of the smart water policies that will help capture the conservation and efficiency potential include proper pricing of water to encourage waste reduction, financial incentives for low-flow appliances, proper design of subsidy and rebate programs, new state and national efficiency standards for appliances, education and information outreach, water metering programs, and more aggressive local efforts to promote conservation. These are described in more detail below and in the full report.

There are barriers to capturing all conservation potential, but these barriers can be overcome.

Becoming more efficient requires both easy and difficult actions. But experience has shown that the barriers to more efficient water use are often overestimated and can be overcome by intelligent planning efforts that collect the right information, identify real conservation potential, and then work with stakeholders to implement policies and programs in a fair and transparent fashion.

The Power of Technology

Existing technologies are available to greatly reduce urban water use without reducing the goods and services we desire.

This report focused on existing, commercially tested, and readily available water-efficiency technologies like low-flow toilets and better water use in landscapes. We found a vast number of options that enable us to reduce urban water use without harming our quality of life.

New technologies are constantly evolving.

Between the times we began and finished this report, new technologies and improvements in old technologies have continued to appear on the market. Computer-controlled “smart” sprinklers can greatly reduce overwatering. Dual-flush toilets that improve upon current technology are now available in the United States and are standard in other countries. Waterless urinals are being installed in government and commercial buildings in California. New efficient nozzles for washing dishes in restaurants are being installed more widely. Efficient washing machines are appearing faster and their prices are dropping more rapidly than expected. This trend of continuing improvements in water use efficiency technology is likely to continue and will make saving water even easier and cheaper.

The Power of Proper Economics

The power of proper pricing of water is underestimated.

When water is not properly priced, it is frequently wasted. Inexpensive water only appears inexpensive. It often carries high or hidden costs for water users and the environment. In all urban uses, pricing water at appropriate levels encourages conservation and efficiency actions and investments. All water use and wastewater discharges should be charged at rates (and with rate structures) that encourage efficiency – but governments do have a duty to ensure that basic human needs for water are met regardless of one’s ability to pay.

Economic innovation and financing mechanisms lead to cost-effective water conservation.

Many conservation technologies are cost-effective for customers, but are not perceived as cost-effective. Innovative economic tools and financing mechanisms can help customers make smarter water-use decisions.

The Power of Smart Regulation

Smart regulation is more effective than no regulation.

There is a critical role for federal, state, and local standards and rules in moving toward more efficient water use in all sectors. For example, the federal water-efficiency standards have been enormously effective at helping the nation keep total water use well below the levels that would otherwise have resulted from continued inefficient water use. They have also been economically attractive, saving far more money than they cost.

Appliance standards are powerful conservation tools that also help educate consumers.

Experience has repeatedly shown that appliance efficiency standards are powerful tools for reducing waste. The water-efficiency standards of the National Energy Policy Act have been tremendously successful at cost effectively reducing wasteful use of water in U.S. toilets and showerheads. New standards should be pursued for washing machines, dishwashers, and some

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commercial and industrial water-using fixtures, but such standards should be flexible enough to permit advances in technology to continue to lead to improvements in water productivity.

The Power of Information

Ignorance is not bliss: Data and information are keys to successful conservation.

As highlighted in different sections of the report, lack of information (or failure to disseminate that information) hinders effective action. Although we calculate the most accurate water use and conservation potential we can with the information available, increasing the accuracy of future estimates is necessary. This will depend on water users, suppliers, and managers at all levels taking specific steps to increase the reliability, quality, and quantity of available data on water use and water conservation options.

Some specific data needs should be a top priority.

Collect and report more water-use data in standard formats, consistently and regularly. Data on landscape use and self-supplied water are particularly poor. Details on end uses of water are limited. And experience with conservation efforts to date is poorly documented.

Meter and measure all water uses.

When water use is not metered, it is wasted. With very few exceptions, water uses should be monitored and measured so that actual use can be evaluated and compared to the benefits that water provides. Unfortunately, several sizeable cities in California, including Sacramento, still do not have water meters.

Appliance labeling is a powerful educational tool.

The success of the Energy Star labeling program highlights the power of information. A “Water Star” label for water-using appliances should be implemented, showing total water use per year (or some comparable measure). Such labeling permits consumers to make more informed choices about their actions and purchases.

Standardize water-use terms.

Confusion over terms such as water use, consumption, withdrawal, new water, real water, conservation, productivity, efficiency, and so on can hinder policy and analysis. Some efforts should be made to standardize terms related to water use and conservation.

Educate decision-makers about conservation opportunities.

Homeowners, individuals, and industries sometimes choose less-efficient technologies because they are operating with incomplete information. Many homeowners do not know that the performance of the new ultra-low-flow toilets is as good as, or better than, older, inefficient models and that such toilets will save a considerable amount of money for the homeowner. Discussions with a specific dishwasher manufacturer, for example, revealed that sales of their inefficient dishwasher models far exceed similarly designed efficient models because initial costs of the efficient models are about ten percent higher.

Give agencies and industries an opportunity to share success stories.

Water-conservation programs are already successfully reducing water use. Sharing information on these success stories in industry forums, user groups, or conferences can help promote more widespread efforts.

California’s state and local water agencies should work more closely with industry associations and national agencies on data collection.

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When industry associations and national agencies collect water use and conservation data, they often collect these data in the state of California and then combine them with data from other states to calculate a national estimate. If state agencies could obtain this California-specific data in a consistent format, this information could be used for future research.

Reconcile data reported from individual water agencies, industry associations, and various other agencies.

A significant amount of data reported by one agency may conflict with what other agencies are reporting. State and local agencies need to reconcile these differences and work with national and industry associations.

The Power of Smart and Integrated Water Management

Be aware of the water implications of non-water policies.

Water agencies should also encourage the implementation of new policies and technologies that are not intended to achieve reductions in water use but do so anyway. In hospitals, for example, water-ring vacuum pumps were historically installed because flammable gases were used as anesthetics. Once the flammable gases were discontinued, hospitals slowly shifted to oil-based pumps, incidentally saving water. Similarly, digital x-ray film processors are gaining market share for their superior ability to process, transmit, and manipulate x-ray images, yet these systems also use little or no water.

Promote reclaimed and recycled water as a secure source for water supply.

While this report does not discuss the overall potential for using reclaimed or recycled water as a source of new supply, that potential is real and likely quite significant for California's urban sector. A comprehensive water program will address the availability and potential use of this water source. Examples already exist: The desire for a guaranteed water supply during drought conditions has driven some refineries to switch to reclaimed water for their cooling needs. Even if water is not a major cost component, an interruption of water supply can cause shutdowns in many industries and result in lost income. Promoting reclaimed water as a secure supply may encourage some industries to invest in the necessary infrastructure for using this water.

Smart management practices should be encouraged at water districts or within specific industries.

Often, water districts or specific industries will introduce conservation measures, but differences in management approaches can prevent the full implementation of these measures. In the CII sector, for example, failing to budget worker time for implementing water conservation technologies contributes to poor implementation rates and may even increase water use.

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