Urban Water Conservation and Sourcing:

Recommended Next Steps for Action by the State Water Resources Control Board

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Recommended Focus Areas

- *Encourage new tier pricing* for residential high water users
- *Work* with urban water agencies to measure water use and water loss
- *Focus* on both water conservation by the user and efficient urban water distribution systems
- *Encourage large scale commercialization and deployment of graywater systems* by using new or existing certification systems to assure safety, providing rebates and allow for simple permitting
- Encourage local or state legislation to require *all new development is designed with water saving and water reuse feat*ures as well as LID features required by some regional boards now.

UCLA IoES Study of Residential Water Consumption in Los Angeles by Mini, Hogue and Pincetl, 2013

What are the Drivers? Are Conservation Measures Working?

A Study with done with the cooperation of LADWP: geo-analyzed all billing data and water usage for all single family residences in the City of Los Angeles with demographic, climatic and lot size information.

Findings:

- ***Income*** is the primary driver of water consumption
- ***Outdoor water use*** *accounts for 54% of single-family residential water use* across the city. Greenness studies indicate overwatering.
- *Mandatory restrictions are much more effective than voluntary restrictions*, and have the highest impact on higher income users.
- *When water prices increase, water consumption for all households decreases*, regardless of income, neighborhood, or water use level.
- Single-family residential households across all income and water use groups *respond more to increases in Tier 1 rates than in Tier 2 rates*, indicating that **Tier 2 prices are not triggering their intended savings**
- *The greatest reduction of water use resulted from the combination of mandatory watering restrictions and price increases* (a reduction of 23% use in July/August 2009).

Source: http://sustainablecommunities.environment.ucla.edu/2014/06/new-ccsc-at-ucla-water-policy-brief/ **RESIDENTIAL WATER CONSUMPTION IN LOS ANGELES: WHAT ARE THE DRIVERS AND ARE CONSERVATION MEASURES WORKING?**
A policy summary written by Céline Kuklowsky based on the Ph.D. dissertation of Caroline Mini at UCLA (supervised by Terri Hogue and Stephanie Pincetl).

Recommendations to the City of LA which could be considered more broadly

Revise the two-tiered water pricing system to increase conservation without harming low income consumers.

Possible alternatives:

- An increasing block rate structure with more than two-tiers, in which the unit price for water rises as the volume of water consumption increases.
- Combine an increasing block rate structure with a seasonal rate structure, in which prices increase during summer months (to curb demand in high demand months).

Start investing in a Dual Smart Meter System at each connection so that consumers understand their outdoor water use and reduce it.

Source: http://sustainablecommunities.environment.ucla.edu/2014/06/new-ccscat-ucla-water-policy-brief/

RESIDENTIAL WATER CONSUMPTION IN LOS ANGELES: WHAT ARE THE DRIVERS AND ARE CONSERVATION MEASURES WORKING?
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More Accurate and Verifiable Indicators of Water Conservation and Water Distribution System Loss

Across the Board 20% cuts in water use have been hard to attain—very mixed bag. But some regions and water agencies have cut use for a long time and others have just started.

Should all water agencies in all regions be held to the same standard when they don't start in the same place?

The Board has just required all urban agencies to provide estimates of per capita water use per day for residential users.

But the system to estimate per capita use has just been invented—it did not exist before the Emergency Drought Regulations.

Improve Per Capita Water Use Indicators to explain and evaluate percentage reductions in water use.

- *The Board should make the required reporting of per capita water use permanent and applicable to all urban water agencies.* There are too many water agencies in urban areas with more than 500 but less than 3000 water connections, covering population and water use.
- The Board should work with urban counties (who have sophisticated GIS mapping and populations data) and the Department of Water Resources to *insure that all small and poor water agencies have access to technical support for this reporting.*
- Thus, a water agency with low per capita use and low water usage rate reductions would not be considered as being the same as one with high per capita water use and low water usage rate reductions.

Access to Resources for Reporting for Small and Disadvantaged Community Water Agencies

Access to the technology to develop and update their boundaries as changes occur, for per capital analysis.

Assistance in correlating boundaries to US Census Tract Maps to develop population data. There is a rough tool now. But shouldn't there be FIPS codes or equivalent for water supplier boundaries?

Technology Assistance to *identify large water users to work with.*

Assistance in *identifying local factors* which make water use higher or lower relative to other parts of the state, for instance,

- Land use and private landscape cover
- Population density,
- Average temperatures,
- Other factors that better explain variance in per capita water use

Cope, MA, and Pincetl, S.S. ***Confronting Standards and Nomenclature in Spatial Data Infrastructures: A Case Study of Urban Los Angeles County Geospatial Water Management Data*** International Journal of Spatial Data Infrastructures Research, 2014, Vol.9, 36-58. This paper recommends FIPS codes for water suppliers to easily connect to Census Data as do cities and counties.

Urban Water System Efficiency

- SB 1420 (Wolk) was signed into law this year, requiring that the AWWA method of reporting of leakage and break water loss out as a specific subcategory of water system loss is used by all water suppliers who submit Urban Water Management Plans to DWR.

- *The AWWA method provides a spreadsheet and a formula to use to insert loss but it does not specify how the data on leaks in that column should be measured.* How leakage is calculated and put into the spreadsheet is left to the water supplier.

Water Efficiency Survey of Water Suppliers in Los Angeles County

- We have just finished a survey of 10% of the 100 retail water suppliers in Urban Los Angeles, focusing on
  - Learning how suppliers identify and calculate water loss from leaks and breakage loss, and
  - How that information is used to inform investment in maintenance in the water distribution system
  - We selected a stratified sample of 10 water suppliers to account for the seven different types of retailers, their location in the county and their size.

What we learned

- ***Accessibility and transparency*** of water supplier information varied greatly.
  - 19 water suppliers to obtain 10interviews.
  - Four suppliers never responded,
  - Three suppliers responded positively and then would not respond at all, and
  - two suppliers refused interviews after initial positive response.
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- ***Best Accessibility and Transparency*** : Large city utilities and a municipal water district that retails water were the most accessible and had the best information on water loss from leaks and breaks.

- ***Moderate:*** Most of the mutual water companies and some cities were willing to be interviewed but several had limited information available. Some small cities were not willing to respond to any follow-up questions.

- ***Least:*** Large Independently Owned Utilities (IOUs) and special water districts were the least transparent and accessible. Although we were able interview two IOUs, the smaller one was more responsive and the larger one required much follow-up.

What we learned …..

- Some of the large public water systems had varied opinions about their ability *to accurately measure water loss from leaks and breaks.*

- *Only 50% of responding suppliers knew and used the AWWA spreadsheet for estimating loss from leaks and breaks. Smaller systems have less knowledge of the AWWA* and in general less technical staff to keep track of leaks, breaks and the quantity of water lost. Small cities whose budgets are controlled by city councils have a hard time maintaining their distribution systems

- There are *no independent audits* available or other ways to verify the methods, volumes and percent water loss respondents gave us.

- *Smart meters* at various points in a water system would help, but few systems have them. Only three water systems interviewed had or are installing smart water meters at the individual user connection.

Preliminary Recommendations

- *Make the emergency requirements to report system losses through leaks and breaks permanent*. **But also**
- Work with DWR, California Urban Water Conservation Council, AWWA and urban water suppliers to
  - *Identify the challenges, solutions and technology to allow more accurate and verifiable losses from leaks and breaks*.
  - *Provide technical assistance* to smaller water systems in disadvantaged communities who do not have engineering and technical staff.
  - Also focus on a *best management practices approach* to leak and breakage control through maintenance and annual investments in replacing old leaky pipelines. Financial investments in system replacement is the best way to solve this problem.
- Recognize that in some areas with the right soils and geology, most leaks simply percolate to groundwater to be reused. Perhaps less attention to leakage is required in those areas than in areas where leaks surface and end up lost to users as urban runoff.

Graywater Systems Crucial to Urban Water Conservation

- We now combine graywater with black water to send to treatment plants but do not recycle the water back to homes and businesses that must use drinking water for their landscaping and toilets.

- There are local permitting systems in place to approve individual graywater system installation but it is a complex permitting process. There are no "Statewide Certifications" available for graywater systems which could be safely manufactured on a large scale and sold in California.

- How could we make graywater systems safe to use, easy to install and and widely used?

Graywater System Recommendations

- *Create a state public health certification system for manufactured graywater systems for landscaping and for reuse of water in toilet systems*. The DDW has this kind of certification program for home water treatment devices
- *Independent Certification Organizations are used to give devices a "Stamp of Approval"*. EPA "Water Sense" Program also provides certification of water efficiency equipment
- Once certified, local permitting only required for safe installation and plumbing.
- Encourage regional water systems and publically owned treatment plants to provide *rebates* for installation of certified graywater systems.

Thank You

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