



NRDC Drought Recommendations to the State Water Resources Control Board

February 26, 2014

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NATURAL RESOURCES DEFENSE COUNCIL

Agricultural Water Use Recommendations (1-7)

*Agricultural Water Use
Immediate Recommendation*

1. Increase Participation in the Water Conservation Act of 2009's Agricultural Water Management Planning Requirement

Recommendation The State, including the Department of Water Resources and the State Water Resources Control Board, should refuse to consider grant and loan applications from non-compliant districts.

The Water Conservation Act of 2009 (SB x7-7) requires irrigation districts that service more than 25,000 acres to complete Agricultural Water Management Plans (AWMPs). The first AWMPs were due by December 31, 2012. Districts are required to update their plans in 2015 and every five years thereafter. Districts that fail to complete their required AWMPs are ineligible for state water grants and loans. The Department of Water Resources should also complete timely guidance so that districts may complete their required 2015 plans.

- Background*
- One year past due, only 38% of districts have completed their required AWMPs¹
 - The Department of Water Resources selected four non-compliant districts for state loans, totaling nearly \$5 million²
 - Buena Vista Water Storage District, \$2 million for a pipeline project
 - Cawelo Water District, \$2 million for a canal lining project
 - Semitropic Water Storage District, \$200,000 for a meter calibration facility
 - Western Canal Water District, \$666,883 for replacement and automation of an elevation control structure
 - The State should refuse to consider grant and loan applications from districts who have not completed their AWMPs, rather than checking for compliance at the end of the process
 - This will encourage greater participation in the AWMP process

- Costs to Implement*
- \$0. This proposal may actually save money, as it will more efficiently direct state resources toward eligible districts.

- Potential Benefits*
- Increased planning and assessment of how efficiency measures can be implemented by large irrigation districts
 - Increased transparency about irrigation district practices
 - Peer-to-peer sharing of information about how to improve efficiency and plan for extreme weather

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¹ http://water.ca.gov/wateruseefficiency/sb7/docs/2014/012914_AWMP_AgencyListLocation_Color.pdf

² http://www.water.ca.gov/wateruseefficiency/docs/Notice-Final_Funding_Awards-7-26-13_FINAL.PDF



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*Agricultural Water Use
Immediate Recommendation*

2. Require Electronic Filing of Agricultural Water Management Plans and Create an Online Clearinghouse of Plans

Recommendation Require electronic filing of AWMPs.

Many completed AWMPs were not available to the public for more than a year after plans were due. Although the Department of Water Resources has now put complete AWMPs online,³ requiring electronic filing could speed up the process, allowing greater public access, peer-to-peer information sharing, and agency-to-agency efficiencies. All State agencies should refer to this online database for information, rather than repeatedly asking districts for the same or similar information.

- Background*
- For more than a year after AWMPs were due, many plans were unavailable to the public
 - This not only frustrated interested citizens, but districts were frustrated that agencies other than DWR called to ask them about information that was included in their AWMPs, because the other agencies did not have access to online plans
 - Greater access to plans can help improve peer-to-peer information sharing about techniques to improve water use efficiency

- Costs to Implement*
- Likely \$0. This may even save money from avoided printing.

- Potential Benefits*
- Easier public access and greater transparency
 - Easier peer-to-peer sharing among districts
 - More efficient agency-to-agency sharing

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³ <http://water.ca.gov/wateruseefficiency/sb7/planlist.cfm>



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*Agricultural Water Use
Immediate Recommendation*

3. Increase Participation in the Water Conservation Act of 2009's Agricultural Water Measurement Requirement

Recommendation Examine additional compliance mechanisms under the Water Conservation Act of 2009 (SB x7-7) to encourage water districts to measure the amount of water delivered to their customers such as being subject to a violation of law.

The Water Conservation Act of 2009 (SB x7-7) requires districts to measure the amount of water delivered to their customers. The preferred method of compliance is for irrigation districts to measure the volume of deliveries at the farm gate. Existing volumetric measurement devices must be certified to be accurate within ± 12 percent. New or replacement devices must be certified to be accurate within ± 5 percent by volume in the laboratory if using a laboratory certification, or ± 10 percent by volume in the field if using a non-laboratory certification.

One third of districts reviewed in fall 2013 had no clear plan to measure water deliveries. To improve participation with this Critical Efficient Water Management Practice, the State should examine additional compliance mechanisms that could be used. For example, urban water suppliers are subject to Section 10608.8(a)(2) of SBx7-7, which indicates that after 2021, urban water suppliers may be in violation of the law for failing to meet SBx7-7's water use targets. Additionally, the State Board could examine whether irrigating without implementing a mandatory Critical Efficient Water Management Practice is an unreasonable use of water.

Background

- About 2/3 of plans reviewed in fall 2013 had clear plans to measure water deliveries by 2015

Costs to Implement

- Installing water meters can be expensive, but becoming more informed about water use is a great first step toward water efficiency, which saves money in the long run

Potential Benefits

- Increased data for water managers
- Increased information for farmers
- Basis for volumetric pricing, which rewards good actors

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*Agricultural Water Use
Immediate Recommendation*

4. Increase Participation in the Water Conservation Act of 2009's Volumetric Pricing Requirement

Recommendation Examine additional compliance mechanisms under the Water Conservation Act of 2009 (SB x7-7) to encourage water districts to charge their customers at least in part based on the volume of water delivered such as being subject to a violation of law.

The Water Conservation Act of 2009 (SB x7-7) requires districts to charge their customers at least in part based on the volume of water delivered. Many districts currently use flat per acre or per delivery fees, instead of volumetric rates. In fall 2013, approximately one half of districts reviewed had no concrete plan to meet their obligation to price water volumetrically. To improve participation with this Critical Efficient Water Management Practice, the State should examine additional compliance mechanisms that could be used. For example, urban water suppliers are subject to Section 10608.8(a)(2) of SBx7-7, which indicates that after 2021, urban water suppliers may be in violation of the law for failing to meet SBx7-7's water use targets. Additionally, the State Board could examine whether irrigating without implementing a mandatory Critical Efficient Water Management Practice is an unreasonable use of water.

- Background**
- About 50% of districts reviewed in fall 2013 did not price volumetrically, and did not have a clear plan to price volumetrically
 - Although districts must go through the Prop 218 process to approve new volumetric rates, the districts reviewed in 2012 had very positive feedback on their new volumetric rates
 - Alta Irrigation District passed their volumetric rate a decade ago with 62% support
 - Turlock Irrigation District received just 5 official protests (<1%) when they implemented their new volumetric rate last year
- Costs to Implement**
- There may be some rate design consulting expenses and Prop 218 expenses
 - However, better-designed rates can help reduce expenses. For example, Turlock ID's new rate is helping them reduce a persistent revenue gap
- Potential Benefits**
- Stronger incentive for growers to implement on-farm efficiency practices
 - Fairer prices for good actors
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*Agricultural Water Use
Immediate Recommendation*

5. Encourage Healthy Soil with Cost-Shares, Education and Outreach

Recommendation The State should direct drought relief resources toward cost-share programs, education, and outreach to encourage improved soil health on California farms.

Healthy soil is more resilient to dry weather. Farmers can improve their soil health through the use of practices such as no-till and cover cropping.

Background

- Each 1% increase in Soil Organic Matter can store an additional 20,000 gallons of water
- During the 2012 Midwest drought, farmers who used cover crops had higher yields than farmers who did not⁴
- The yield benefit from cover cropping was most pronounced in the areas that were hit hardest by the 2012 drought⁵
- According to an EWG analysis,⁶ investments in soil health are much less costly than investments in irrigation infrastructure, and can be more effective at some conservation goals

Costs to Implement

- \$0. The state should direct existing drought relief funds toward cost-share, education, and outreach to encourage soil health improvements.

Potential Benefits

- Improved yields and drought resiliency for farmers
- Improved Water Use Efficiency
 - No-till farmers use 30% less irrigation water than their conventional tilling peers, on average⁷
 - Cover cropping can further reduce irrigation water requirements by up to 35%

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⁴ <http://www.northcentralsare.org/Educational-Resources/From-the-Field/2012-Cover-Crops-Survey-Analysis>

⁵ <http://www.northcentralsare.org/Educational-Resources/From-the-Field/2012-Cover-Crops-Survey-Analysis>

⁶ http://static.ewg.org/pdf/2013_California_EQIP_Report.pdf

⁷ http://www.ers.usda.gov/data-products/arms-farm-financial-and-crop-production-practices/tailored-reports.aspx?reportPath=/ARMSr4/CrossTab&survey_abb=CROP&subject_num=1&report_num=3&series=TILLTYP&fips_st=00&series2=FARM&statYear=2010



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*Agricultural Water Use
2015 & Beyond Recommendation*

6. Offer Flexible Water Delivery to Farmers to Enable Irrigation Scheduling Based on Crop Evapotranspiration (ET) Needs

Recommendation To facilitate irrigation scheduling, the State should encourage infrastructure upgrades so that irrigation districts can provide water to farmers when crops most need the water. The State should offer cost-share programs and financing partnerships for irrigation districts to upgrade their infrastructure. By 2025, flexible delivery should be designated a Critical Efficient Water Management Practice and all districts should offer 2-day arranged demand delivery or better.

Crops' water needs vary throughout their growth cycles, yet many California farms cannot tailor their irrigation to match crop water needs due to irrigation districts' inflexible delivery schedules. Instead, more than 4,700 California farms still receive their water on a rotational, not an as-needed, basis. Irrigation scheduling to match crop water needs can save significant amounts of water without impacting crop yields.

Background

- Methods such as ET information and soil moisture sensors can dramatically decrease water applications without impacting yields
- More than 4,700 California farms (more than any other state) irrigate based on when their delivery organization schedules a delivery, not based on when crops actually need the water⁸

Costs to Implement

- Infrastructure upgrades to allow delivery scheduling can be expensive. For example South San Joaquin's Division 9 upgrade cost \$14 million to cover 3,800 acres, making the cost per acre approximately \$3,700⁹
- However, two years later, SSJID estimates it has already made back more than \$1,000 an acre on its investment through increased sales of conserved water¹⁰
- If that pace keeps up, the investment will have paid for itself in less than 10 years

Potential Benefits

- Savings will depend on status quo of the district making the upgrades.
- SSJID estimates "50% reduction" in water use¹¹
- In Nebraska, an irrigation scheduling demonstration network showed approximately 30% (2.19 inches) reduction in water use.¹²
- California berry farmers also experienced a 30% reduction in water use when they began scheduling irrigation based on soil moisture data.¹³

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⁸ http://www.agcensus.usda.gov/Publications/2007/Online_Highlights/Farm_and_Ranch_Irrigation_Survey/fris08_1_3_6.pdf

⁹ http://www.stantec.com/content/stantec/en/our-work/projects/united-states-projects/s/south-san-joaquin-irrigation-district-division-9-irrigation-enhancement.html#_UwPS70JdXkR

¹⁰ <http://www.mantecabulletin.com/section/1/article/97760/>

¹¹ <http://www.mantecabulletin.com/section/1/article/97760/>

¹² http://water.unl.edu/c/document_library/get_file?uuid=7c342db7-0a59-488f-bccf-62120e4c8088&groupId=1882&.pdf

¹³ <http://agwater.wordpress.com/precision-irrigation/>



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*Agricultural Water Use
2015 & Beyond Recommendation*

7. Offer Pressurized Delivery to Encourage Adoption of Efficient Irrigation Techniques (sprinkler/drip)

Recommendation To encourage greater adoption of efficient irrigation methods, the State should designate pressurized delivery systems as a Critical Efficient Water Management Practice, and the State should support infrastructure upgrades through cost-shares and financing. By 2025, all water deliveries should occur through pressurized systems or low-volume compatible delivery systems.

California has twice the percentage of acres on gravity irrigation as other highly irrigated, top ag-producing states. One reason California farmers may be slow to adopt more efficient irrigation technologies is that water districts often have a hard time delivering the low flow, pressurized deliveries that drip and sprinkler systems require.

Background

- In California, 57% of acres still use gravity irrigation
- One reason that so many growers still use gravity irrigation is likely because many districts lack the infrastructure to deliver the low flow, pressurized deliveries sprinkler and drip irrigation requires
- As a result, districts have reported that they risk losing customers to groundwater pumping, because groundwater pumping allows growers the delivery style they need to adopt more efficient technologies
- Upgrading to pressurized systems can help farmers adopt more efficient technologies and help irrigation districts keep their customers

Costs to Implement

- Infrastructure upgrades to allow pressurized deliveries can be expensive. As an example South San Joaquin's Division 9 upgrade cost \$14 million to cover 3,800 acres, making the cost per acre approximately \$3,700¹⁴
- However, two years later, SSJID estimates it has already made back more than \$1,000 an acre on its investment through increased sales of conserved water¹⁵
- If that pace keeps up, the investment will have paid for itself in less than 10 years

Potential Benefits

- Sprinkler/drip irrigation is 22% more efficient in California, on average
- Subirrigation is 79% more efficient in California, on average¹⁶
- Enclosed pressurized systems reduce seepage and evaporation losses

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¹⁴ <http://www.stantec.com/content/stantec/en/our-work/projects/united-states-projects/s/south-san-joaquin-irrigation-district-division-9-irrigation-enhancement.html#.UwPS70JdXkR>

¹⁵ <http://www.mantecabulletin.com/section/1/article/97760/>

¹⁶ http://www.agcensus.usda.gov/Publications/2007/Online_Highlights/Farm_and_Ranch_Irrigation_Survey/fris08_1_0_8.pdf



NATURAL RESOURCES DEFENSE COUNCIL

Urban Water Use and Efficiency Recommendations (8-15)

*Urban Water Use and Efficiency
Immediate Recommendation*

8. Accelerate the Transition to High Efficiency Clothes Washers

Recommendation Suspend the 6.5 % state sales tax on the purchase of new high-efficiency clothes washers for remainder of 2014 or until the suspension of the state drought emergency, whichever comes first.

Modest rebates (\$35 to \$75) are currently being offered by energy utilities throughout the state. In some areas, water utilities offer additional incentives. This proposal would complement these utility incentives that consumers have to apply for with the simple additional incentive of waiving the sales tax at the time of purchase. Water savings would be immediate, and grow throughout the year with the sales of high efficiency washers.

Background

- A legacy-design top-loading washer with a center agitator uses about 3 times the amount of water per load as today's most efficient new washers.
- Washing clothes with a legacy washer consumes about 20% of a household's total indoor water use, or about 10% of total water use (i.e., including outdoor use).
- During the last 8 months of 2010, California used ARRA funds to provide state-issued rebates for the purchase over 88,000 high-efficiency washers.

Costs to Implement

- Costs will depend on the pace of sales and the proportion of sales that qualify for the incentive. Approximately 750,000 new clothes washers are sold in California annually. Not all new washers are high efficiency washers. Utility programs require at least Energy Star performance to qualify, and some programs set eligibility levels even higher. Higher eligibility levels will cover fewer sales.
- Capping the value over which the tax would be suspended at \$500 would also help contain costs. With this approach, \$5 million would cover the sales of about 150,000 washers.

Potential Benefits

With the governor calling for consumers to reduce water use by 20%, a family that retires its old top-loader can realize about a third of the savings the Governor is asking for by taking this one action.

Complementary Actions by Energy and Water Utilities:

- Coordinate promotion and increase visibility of existing energy and water utility rebate programs for the purchase of new high efficiency washers.
- Expand energy utility used appliance pick-up programs to include clothes washers
- Initiate a direct install program for low-income households to replace inefficient clothes washers.

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Urban Water Use and Efficiency

9. Complete Installation of Urban Water Meters

Recommendation Require installation of water meters on all urban water service connections within five years.

State law has long recognized the importance of water meter installation and volumetric billing as essential tools to make efficient use of water and avoid waste. Section 521 of the Water Code states in part:

- a) Water furnished or used without any method of determination of the quantities of water used by the person to whom the water is furnished has caused, and will continue to cause, waste and unreasonable use of water, and that this waste and unreasonable use should be identified, isolated, and eliminated.
- b) Water metering and volumetric pricing are among the most efficient conservation tools, providing information on how much water is being used and pricing to encourage conservation.

We recommend that all urban service connections be fitted with a water meter by December 31, 2019. Any state financial assistance should stipulate this completion date as an enforceable condition.

- Background*
- In 1991, SB 229 (Boatwright) was passed requiring water meters at any new service connections after January 1, 1992. SB 229 is now embodied in §225 of the Water Code.
 - In 2003, AB 514 (Kehoe) was passed requiring all CVP water-service contractors that are urban water suppliers to be fully metered and bill by volume by January 1, 2013. AB 514 is now embodied in §526 of the Water Code.
 - In 2004, AB 2572 (Kehoe) was passed requiring urban water suppliers not covered by AB 514 to be fully metered by January 1, 2025 and to bill by volume using the meters already in the ground by January 1, 2010, with provisions for an optional year of practice billing.
 - While most agencies covered by AB 514 have completed or nearly completed meter installation, several large urban water suppliers not covered by the 2003 law have substantial numbers of unmetered customer connections remaining, including over 160,000 unmetered connections reported by these four water suppliers in their 2010 urban water management plans:

District	Number of Unmetered Connections	Total Connections	Percent Unmetered Connections
City of Sacramento	83,417	136,713	61.0%
Sacramento Suburban Water District	21,351	44,183	48.3%
Modesto Irrigation District	27,728	74,108	37.4%
City of Bakersfield	29,877	66,424	45.0%

- Although Sacramento has reduced the number of unmetered connections since 2010, over half of residential accounts remain unmetered and the pace of installation in its currently approved plan (5,000 to 7,000 meters per year) ensures that the city will “run out the clock” and use close to the maximum amount of time allowed by current law to complete meter installation.



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Costs to Implement Sacramento received approximately \$22 million in federal funds from the American Recovery and Reinvestment Act and with those funds installed more than 20,000 meters.

Potential Benefits The California Urban Water Conservation Council's (CUWCC) best management practices (BMPs) require signatory water utilities to install meters and transition to volumetric water rates. The CUWCC projects that "meter retrofits and volumetric rates combined will result in a 20% reduction in demand for retrofitted accounts."¹⁷

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¹⁷ CUWCC, *Memorandum of Understanding Regarding Urban Water Conservation in California*, BMP 1.3 (available at <http://www.cuwcc.org/mou/bmp1-utility-operations-programs.aspx>).



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Urban Water Use and Efficiency

10. Enforce Plumbing Replacement Deadlines in Current Law

Recommendation Replacement of inefficient plumbing should be required of all rental property as of 2017, with the building owner so stipulating in an enforceable provision of the lease. Water suppliers should adopt policies that will ensure the replacement of inefficient plumbing in remaining owner-occupied property by the deadlines established in state law.

One of California's landmark water efficiency laws, SB 407 (2009), requires all inefficient plumbing fixtures in all residential and commercial buildings in California to be removed and replaced by January 1, 2017, and January 1, 2019, respectively. Enforcement of this requirement falls to building code officials in cases of buildings undergoing major renovations and additions. In the case of all other existing buildings, enforcement responsibility is shared by cities, counties, and local water suppliers. Yet few if any water suppliers or local jurisdictions have set out enforcement strategies to help ensure that the water-saving goals of SB 407 will be met.

- Background**
- California has over 7 million single-family homes and over 3 million multifamily housing units built before 1994 with inefficient plumbing fixtures.
 - California water suppliers have offered rebates for the replacement of inefficient plumbing fixtures for many years, allowing building owners needing financial assistance to replace their inefficient plumbing with many opportunities to participate.
 - A survey of water use in California single-family homes in 2008 concluded that approximately 25% of all single-family homes (or more than 2 million houses) did not have any efficient toilets in use, and that many more had at least one inefficient toilet still in use.¹⁸
 - Even allowing for accelerated replacement rates that may have been influenced by utility rebate programs, we estimate there are more than 6 million inefficient toilets remaining in more than 3 million single-family homes, along with nearly 4 million inefficient showerheads and nearly 10 million inefficient faucets. Inefficient fixtures in multifamily and commercial buildings would be in addition to these numbers.

Costs to Implement Water-efficient toilets and showerheads on the market today meeting the requirements of SB 407 command little or no price premium over less efficient products. The most basic water-efficient toilets retail for \$100 or less.

Potential Benefits Replacing all the inefficient toilets that remain in single-family homes could save roughly 90,000 acre-feet per year. Adding savings from showerhead and faucet replacement, and taking into account multifamily and commercial buildings as well, savings could reach over 150,000 acre-feet per year.

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¹⁸ Aquacraft, Inc., *California Single Family Water Use Efficiency Study*, 2011.

*Urban Water Use and Efficiency***11. Pricing to Promote Urban Water Efficiency**

Recommendation To better ensure that all newly adopted rates encourage the efficient use of water, retail water suppliers should be required to make specific findings in any new rate proceeding. Such conservation-oriented findings should include:

- forecasted sales upon which new rates and charges are based take into account the water supplier's water-saving targets adopted pursuant to state law
- operating and capital costs of service attributable to meeting peak summer demand are adequately reflected in the rates and charges for water service during the peak demand period
- within each customer class, the unit cost of water in the adopted commodity charge schedule does not decline at any higher level of consumption
- the water supplier's estimated level of non-revenue water has been calculated using recognized methodology, and its impact on the proposed rates and charges has been identified
- rate schedules include drought contingency rates that account for the water use reductions in the water supplier's water shortage contingency plan.

It is critical that water suppliers continue to send an effective price signal to consumers regarding the scarcity of water, the additional costs of meeting peak demands for water, and the costly water and wastewater infrastructure that will be needed in the near future if unnecessary water consumption is not restrained.

Background

- Approximately $\frac{3}{4}$ of retail urban water suppliers reporting to the California Urban Water Conservation Council have adopted tiered or budget-based rates – leaving $\frac{1}{4}$ of retail water suppliers with less conservation-oriented rate structures.
- Over 40% of water suppliers reporting to the CUWCC have indicated that revenue from fixed charges rose above 30% of total customer revenue during 2011 and 2012, and thus are at risk of seriously blunting the price signal sent to consumers through water rates and charges.
- The City of Davis has proposed a “consumption-based fixed charge” which, when implemented, could maintain a conservation price signal while improving the revenue stability of the agency.

Costs to Implement

The required findings proposed here could easily be generated during the regular preparation of proposals for revised rates without substantial additional costs. Water suppliers that are CUWCC members already prepare estimates of non-revenue water on an annual basis, and all water suppliers are required to prepare a water shortage contingency analysis, including an analysis of the impact of water shortages on system revenues. Few water suppliers have included drought contingency rates in their currently adopted rate schedules.

Potential Benefits

- An effective price signal through a conservation-oriented rate structure will complement all other utility conservation programs.
- Conservation-oriented rates can be especially effective at restraining excessive outdoor water use, where the customer's price elasticity response to rate changes is seen to be nearly twice as high as the response for indoor use.
- Volumetric pricing for sanitary sewer service for residential customers currently paying flat rates for sewer service could save an estimated 300,000 acre-feet of water per year in California.

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*Urban Water Use and Efficiency***12. Expand Energy Benchmarking of Commercial Buildings to Water Benchmarking**

Recommendation The energy benchmarking of commercial buildings now required under Assembly Bill 1103 (AB 1103) should be expanded to include three key:

- Expand the current requirements for energy benchmarking to include water benchmarking by January 1, 2015.
- Expand the current requirements for commercial buildings to be benchmarked to include large Multi-Family (MF) buildings by January 1, 2016.
 - NRDC suggests a threshold of 25,000 square feet (sqft)
- Require annual reporting and public disclosure of energy and water benchmarking data to a publicly available database managed by the California Energy Commission (CEC) for commercial & multi-family buildings over 25,000 sqft by May 1, 2017.

Lead Agency / Type of Action

Water benchmarking of state-owned buildings: Administrative Action.

Water benchmarking of other buildings: Legislative Action – revise AB1103

Background

In November of 2007, California passed Assembly Bill 1103 (AB 1103), mandating energy benchmarking and energy disclosure for non-residential buildings. AB 1103 requires non-residential business owners to input energy consumption and other building data into the Environmental Protection Agency's ENERGY STAR *Portfolio Manager* software system, which generates an energy efficiency rating for the building.

The original disclosure date was January 1, 2010, but after several delays, implementation of the AB 1103 bill requirements finally began on January 1, 2014 according to the following schedule:

- On and after January 1, 2014, for a building with total gross floor area measuring more than 10,000 square feet.
- On and after July 1, 2014, for a building with a total gross floor area measuring more than 5,000 square feet.

Costs to Implement

Costs would be relatively modest for data storage and access implementation.

Potential Benefits

EPA prepared the DataTrends series to examine energy and water benchmarking trends for the thousands of buildings already using *Portfolio Manager*. The results of this diverse sample of buildings offer insights into the key drivers of energy use and the savings potential of benchmarking. In particular, EPA found:

- Buildings that consistently benchmark energy use save an average of 2.4 percent per year.
- Buildings achieved a total energy savings of 7 percent and an ENERGY STAR score increase of 6 points over the 3-year period of analysis.

EPA has not published an analysis of water savings attributed to benchmarking water use, but transparency of water use information can lead to improvements in water use efficiency, just as with energy efficiency.

- In Los Angeles, commercial, governmental, and multifamily uses comprise about 55 percent of DWP's water sales. Benchmarking buildings in these sectors could yield substantial water savings – perhaps 10 million gallons per day or more, just in LA.

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*Urban Water Use and Efficiency***13. Establish Requirements for Stormwater Retention at New Development and Redevelopment Projects Statewide**

Recommendation The State Board should issue a precedential order establishing that all new development or redevelopment over a specified size threshold (for at minimum, the creation, addition, or replacement of 5,000 square feet of impervious surface), must retain on-site, at minimum, the runoff from the 85th percentile, 24-hour rain event or the 0.75 inch, 24-hour rain event, whichever is greater, with no discharge. Where identified as feasible, particularly in areas of the state with strong groundwater recharge potential, the State Board should require retention of the 90th or 95th percentile, 24-hour rain event.

Stormwater capture and retention practices such as infiltration and onsite capture and reuse have the potential to add hundreds of thousands of acre-feet to local water supplies for communities throughout California. Following the model of multiple Clean Water Act municipal stormwater permits and city and county ordinances adopted throughout the State and in all corners of the country, the State Board should adopt a precedential order establishing requirements that new development and redevelopment projects retain stormwater runoff from at least the 85th percentile, 24 hour storm, and prioritize approaches that increase local water supplies.

- Background**
- Stormwater runoff is the leading source of surface water pollution in California and carries bacteria, metals, and other pollutants at unsafe levels to rivers, lakes and beaches throughout the State. This pollution causes increased rates of human illness, harm to the environment, and an economic loss potentially into the hundreds of millions of dollars every year from public health impacts alone.
 - Practices such as infiltration and on-site capture and reuse exist to capture and put to beneficial use stormwater runoff at both regional and distributed scales. In southern California, even an individual 55-gallon rain barrel used to provide irrigation water could be filled between 8 and 18 times per year, saving 440 to nearly 1,000 gallons of water annually for each barrel installed.
 - Clean Water Act municipal stormwater permits for the Los Angeles, San Diego, and San Francisco Bay Areas, among others, as well as numerous local city or county ordinances already require retention of the 85th percentile storm event for new development and redevelopment, and the Central Coast Region requires stormwater retention of up to the 95th percentile storm event, demonstrating the feasibility of retention practices throughout the state. The City of Los Angeles additionally requires use of green infrastructure practices to retain runoff for developments that create, add, or replace as little as 500 square feet of impervious surface.
- Costs to Implement**
- Using green infrastructure (or low impact development) practices that retain stormwater runoff can actually save money for developments compared with costs for building using traditional systems of gutters, drains, and pipes to convey runoff.
- Potential Benefits**
- Stormwater runoff represents a drastically underutilized potential resource. A one-inch storm in Los Angeles County can result in 10 billion gallons of runoff running through the storm drain system and being discharged into the ocean;
 - Numerous studies have indicated the potential for stormwater capture to increase water supplies on a large scale. A report by NRDC and the Bren School of Environmental Sciences and Management at UCSB demonstrated that capturing



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runoff from new development and redevelopment projects at commercial and residential properties in urbanized Southern California and portions of the San Francisco Bay area could increase local water supplies by more than 400,000 acre-feet per year after 20 years of implementation.¹⁹ The State Board,²⁰ Los Angeles County Economic Development Corporation,²¹ and others have similarly indicated that stormwater capture can increase local water supplies by hundreds of thousands of acre-feet per year.

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¹⁹ <http://www.nrdc.org/water/lid/>

²⁰ http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2013/rs2013_0003_a.pdf

²¹ https://www.c-win.org/webfm_send/326



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*Urban Water Use and Efficiency***14. Set Parameters for Cities and Counties to Use Stormwater Capture on a Watershed-Scale to Meet Water Quality Requirements**

Recommendation The State Board should grant the petition of NRDC, Los Angeles Waterkeeper, and Heal the Bay (SWRCB/OCC File No. A-2236(m)) for Review of the Los Angeles County Municipal Separate Storm Sewer (MS4) Permit (Order No. R4-2012-0175) and adopt a precedential order establishing parameters for pollution control programs consistent with Environmental Group's Proposed Alternative Compliance Mechanism contained within that petition.

Stormwater capture and retention practices such as infiltration and capture and reuse, at both regional and distributed scales, have the potential to add hundreds of thousands of acre-feet to local water supplies for communities throughout California while drastically reducing pollution to our rivers, lakes, and streams. The State Board should adopt a precedential order establishing parameters for pollution control programs under Clean Water Act municipal stormwater permits that, based on water quality monitoring to demonstrate compliance, allow municipalities to use stormwater capture on a watershed scale to both meet water quality-based requirements and achieve water supply goals.

Background

- Stormwater runoff is the leading source of surface water pollution in California and carries bacteria, metals, and other pollutants at unsafe levels to rivers, lakes and beaches throughout the State. This pollution causes increased rates of human illness, harm to the environment, and an economic loss potentially into the hundreds of millions of dollars every year from public health impacts alone.
- Practices exist to capture and put to beneficial use stormwater runoff at both regional and distributed scales, with large opportunities available to augment groundwater supplies through infiltration.
- In addition to increasing local water supplies, practices that capture runoff can reduce stormwater pollution and help cities to meet water quality standards and TMDLs for their rivers, lakes, and beaches, reduce the energy used to convey and supply water to end users and as a result, decrease greenhouse gas emissions, reduce the impacts of flooding, create green space and wildlife habitat, and improve air quality.

Potential Benefits

- Stormwater runoff represents a drastically underutilized potential resource. A one-inch storm in Los Angeles County can result in 10 billion gallons of runoff running through the storm drain system and being discharged into the ocean;
- Numerous studies have indicated the potential for stormwater capture to increase water supplies on a large scale. A report by NRDC and the Bren School of Environmental Sciences and Management at UCSB demonstrated that capturing runoff from new development and redevelopment projects at commercial and residential properties in urbanized Southern California and portions of the Bay area could increase local water supplies by more than 400,000 acre-feet per year after 20 years of implementation.²² The State Board,²³ Los Angeles County Economic Development Corporation,²⁴ and others have similarly indicated that stormwater capture can increase local water supplies by hundreds of thousands of acre-feet per year.

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²² <http://www.nrdc.org/water/lid/>

²³ http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2013/rs2013_0003_a.pdf

²⁴ https://www.c-win.org/webfm_send/326



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*Urban Water Use and Efficiency***15. Failure to Capture and Retain Stormwater Runoff Constitutes Waste and Unreasonable Use**

Recommendation The State Board should set a date certain by which to consider and report on whether, in light of the current drought, longer term impacts of climate change, and both new and continuing pressure on the state's water systems, the non-use of stormwater or failure to capture stormwater runoff for water supply augmentation should be considered waste and unreasonable use of water.

Both the California Constitution and the State Water Code prohibit the waste or unreasonable use of water in the State.²⁵ While historically, investigation into waste or unreasonable use has focused on the extraneous or excessive use of water, increasing attention must be paid to wasteful or unreasonable non-use of water in California—in particular to the failure of urban and suburban areas to capture and retain stormwater runoff, currently diverted to storm drain systems and discarded in our rivers, lakes, and beaches by the billions of gallons, for beneficial use.

- Background**
- The State Board has held that what constitutes unreasonable use is not a static concept and cannot be resolved in a vacuum without considering issues of statewide importance. “Paramount” among these considerations is “the ever increasing need for conservation of water in this State.”²⁶
 - Stormwater runoff represents a drastically underutilized potential resource. A one-inch storm in Los Angeles County can result in 10 billion gallons of runoff flowing through the area's storm drain systems and being discharged into the ocean;
 - Stormwater runoff is the leading source of surface water pollution in California and carries bacteria, metals, and other pollutants at unsafe levels to rivers, lakes and beaches throughout the State. This pollution causes increased rates of human illness, harm to the environment, and economic loss potentially into the hundreds of millions of dollars every year from public health impacts alone;
 - Practices exist to capture and put to beneficial use stormwater runoff at both regional and distributed scales. A number of Clean Water Act municipal stormwater permits in California, as well as city and county ordinances, already require new development and redevelopment projects to capture runoff, but runoff from the existing built environment represents a substantially larger potential source of water supply for the state.
 - Climate change means more weather and water uncertainty for California—this drought is a preview of the “New Normal” that we need to start preparing for today. Increased population and urbanization place increasing strains on our water supply systems and alter hydrology to reduce recharge of groundwater supplies.

- Potential Benefits**
- Numerous studies and reports, including by NRDC,²⁷ the Los Angeles County Economic Development Corporation,²⁸ and the State Board through its Recycled Water Policy,²⁹ have indicated the potential for stormwater capture to increase water supplies on the order of hundreds of thousands of acre-feet per year in California.

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²⁵ See, Cal. Const., Art. X, Sec. 2; Cal. Wat. Code sec. 100.

²⁶ State Water Resources Control Board, Order No. WR 2012-0004, *In the Matter of the Alleged Waste and Unreasonable Use of Water by Hidden Lakes Estates Homeowners Association* (Feb. 7, 2012), at 6.

²⁷ <http://www.nrdc.org/water/lid/>

²⁸ https://www.c-win.org/webfm_send/326

²⁹ http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2013/rs2013_0003_a.pdf



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Water Recycling and Graywater Recommendations (16-17)

Water Recycling and Graywater

16. Accelerate Water Recycling in California by Prohibiting Ocean Discharge of Wastewater After 2030

Recommendation By prohibiting ocean discharges from wastewater treatment plants by 2030, the SWRCB could dramatically accelerate the adoption of water recycling and significantly improve the drought resistance of urban communities.

The State Water Resources Control Board has established goals of recycling 1.5 million acre feet of wastewater by 2020 and recycling 2.5 million acre feet of wastewater by 2030. However, California is not on track to meet the SWRCB's goals, and yet there is great potential to exceed these goals in a cost-effective manner (particularly in conjunction with regulations for indirect potable reuse of recycled water).

Background

- The 2009 Municipal Wastewater Recycling Survey by the SWRCB showed that between 2001 and 2009, the State only added 144,000 acre feet of recycled water per year, for a total of approximately 669,000 acre feet.
- Agriculture was the single largest user of recycled water in the 2009 Municipal Wastewater Recycling Survey, accounting for 37% of recycled water use.
- The 2009 Survey data suggests that only 13% of the nearly 5 million acre feet of treated municipal wastewater was recycled in 2009.
- The State of Florida prohibits ocean discharges from wastewater treatment plants in South Florida after 2025, finding that "the discharge of domestic wastewater through ocean outfalls wastes valuable water supplies that should be reclaimed for beneficial purposes." Fl. Ann. Stat., Title XXIX, §§ 403.086(9), (9)(c)(2).

Costs to Implement

- The 2013 Water Plan Update estimates a total accumulated cost of \$6-9 billion by 2030 to produce 1.8 to 2.3 million acre feet per year of recycled water by 2030.
- The 2013 Water Plan Update estimates that the annual cost per acre foot for recycled water ranges from \$300 to \$1,300 per acre foot. Several water recycling projects produce water at or below the cost of alternative water supplies. For instance, the Orange County Groundwater Replenishment Project produces recycled water at an annual water supply cost (\$887 per acre foot without outside funding or subsidies) that is lower than the cost of imported water.
- Indirect potable reuse (as well as direct potable reuse) of recycled water would likely substantially reduce the cost of recycled water projects, as the cost of installing separate pipelines ("purple pipe") is a very significant factor in the total cost of water recycling projects.

Potential Benefits

- Significantly increase available water supply for both agricultural and urban water users, at costs that are comparable to imported water and alternative supplies.
- Increase the availability of water supplies during dry and drought conditions.
- Improve coastal water quality by reducing ocean discharges, particularly of wastewater that is only treated to secondary levels.
- Potentially reduce greenhouse gas emissions, because recycled water consumes less electricity than many alternative water supply sources, including water imported from the Bay-Delta to Southern California and ocean or brackish water desalination.

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*Water Recycling and Graywater***17. General Permit for Graywater Use**

Recommendation The state should develop a General Permit that would allow for the onsite use of graywater under specific conditions.

The goal of the General Permit would be to:

- Conserve water by facilitating greater reuse of wastewater from clothes washers, showers, baths, and lavatory faucets
- Reduce the number of non-compliant graywater systems in California by making legal compliance easily achievable
- Provide guidance for avoiding potentially unhealthful conditions
- Provide an alternative way to relieve stress on sewage collection systems.

Permit eligibility should be limited by a set maximum daily flow (i.e. 400 gallons per day) and restrictions on usage. The state could look to the requirements under the Arizona Department of Environmental Quality's Reclaimed Water Type 1 General Permit for guidance. The requirements for household use of graywater in Arizona are found in Title 18, Chapter 9, Article 7 (A.A.C. R-18-9-711).

Eligibility for a Graywater Use General Permit could include:

- Private residential use only.
- Drip or subsurface irrigation only.
- Graywater flow must be less than 400 gallons per day.

Key Elements of a Graywater Use General Permit:

- Requires no formal notification, review or design approval, and public notice, reporting or renewal.
- Permittees must abide by a set of best management practices (BMPs) that ensure the safe use of graywater.
- No city, town, or county may limit the use of graywater if the use is allowed by the General Permit.

Background Under the California Plumbing Code (CPC), graywater is defined as untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. Graywater includes, but is not limited to, wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers. Per the plumbing code, all graywater systems require a permit with the exception of a clothes washer system where the graywater is redirected from the clothes washer to an irrigation or disposal field.

Graywater is an untapped resource for many cities seeking a cheaper, more stable, and more local alternative to imported water. In California, graywater has already been approved for irrigation and treated graywater has been approved for non-potable uses such as toilet flushing.

The Arizona Department of Environmental Quality (ADEQ) rules make the approval process easy for home owners to use graywater at their homes. ADEQ based its rules, in part, on the results of a graywater study conducted by the Water Conservation Alliance of



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Southern Arizona³⁰ in Tucson.

Costs to Implement This recommendation will result in no costs to water users and only minimal costs for the General Permit proceeding.

Potential Benefits Graywater sources such as showers, baths, lavatory faucets and clothes washers can account for 45-55% of all indoor water use in a single-family home. The use of graywater under this General Permit could reduce outdoor demand by as much as 50% or more³¹.

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³⁰ www.watercasa.org

³¹ Assuming outdoor water demand is approximately 50% of total household water use.



State Water Management Recommendations (18-19)

State Water Management

18. **Protect Fisheries and Instream Beneficial Uses**

Recommendation State agencies should take the following actions to reduce and mitigate the effects of the drought on the state's fish, wildlife and other public trust resources:

- The SWRCB should ensure that any temporary use changes are made without injuring lawful uses of water, including instream beneficial uses, and do not unreasonably affect fish, wildlife, or other instream beneficial uses.
- Consistent with the Governor's Drought Proclamation, the SWRCB should ensure that any changes to water quality control plans enable water to be conserved upstream to protect cold water pools for salmon and steelhead.
- DFW should ensure that CESA requirements for threatened and endangered fisheries and other species are fully enforced.
- State funds for flood control projects should be directed toward floodplain restoration that helps meet salmon restoration and doubling goals.
- By April, DFW and the SWRCB should publish a plan of rescue, transport, and restoration efforts to be taken over the next year to mitigate the impact of the drought on salmon, steelhead and other native fish.

Background

The environment suffers heavily in a drought, and this one is no exception. In dry years, existing regulations require lower flows (in some cases, allowing rivers to completely dry up) and allow greater levels of water diversions. This stresses many of California's 122 native freshwater fishes, 82 percent of which are found only or primarily in California. Native runs of salmon and steelhead, in particular, are uniquely adapted to California's climate and hydrology. If they disappear, they are irreplaceable. According to preeminent fish biologist Dr. Peter Moyle, more than 80 percent of our native fish are on track to go extinct by 2100, including 32 kinds of native salmon and trout, if we do not take steps now to improve management of riverine habitats.

Costs to Implement

\$0 to enforce existing statutes and regulations. Proposed drought urgency legislation identifies \$77 million in flood control funds and at least \$2.3 million in funds to DFW for fish and river protection and restoration efforts. Distribution of those funds should be prioritized consistent with the above.

Potential Benefits

In 2009, the State estimated direct economic impacts from the salmon fishery closure at nearly 2,700 jobs lost, and lost income of \$279 million, with similar impacts in 2008. The fishing industry estimates much higher impacts when indirect costs and impacts are factored in. Better water and habitat management in the Central Valley can help to reduce or avoid these costs, and retain a vibrant fishing industry in California and Oregon.

Contact

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*State Water Management***19. Reform State Water Project Contracts To Improve Resiliency**

Recommendation DWR should modify State Water Project contracts to ensure that the State's water system promotes the highest levels of water use efficiency, allocates water to the highest priority uses in times of scarcity, and encourages compliance with legal requirements and best management practices.

- Restore the preference for municipal and industrial use over agricultural use that was removed in the Monterey Amendments when all needs cannot be met
- Provide a conservation incentive by increasing delivery priority to those districts practicing the most advanced water conservation and agricultural land stewardship measures
- Require minimum conservation requirements for urban and agricultural users
- By a date certain, prohibit SWP water deliveries to any district that has failed to submit a timely urban, agricultural, and/or groundwater water management plan
- Eliminate take-or-pay structure
- Implement tiered pricing to encourage conservation and incentivize reduced reliance on Delta water supplies

Background The State recently adopted its five-year water action plan proposing to make water conservation a way of life in California. The plan correctly recognizes that improved water conservation has allowed California to significantly improve demand management and that great potential remains to do more. Yet, one of the State's primary mechanisms for delivering water – State Water Project contracts – do not contain pricing or conservation requirements to implement this goal. Because the State Water Project contracts affect delivery of up to 4.2 MAF annually from Delta-based supplies that are highly susceptible to the vagaries of drought and weather, reforming these contracts is a quick, effective and high impact way to improve conservation for a large portion of the State's water supplies.

Costs to Implement \$0 process costs because DWR is currently negotiating modifications to long-term State Water Project contracts.

Potential Benefits DWR has contracts with 29 water agencies to deliver far more water than the State Water Project can sustainably provide. Indeed, DWR has only once met 100% of SWP contract allocations since contractors began demanding full Table A amounts. The problem is not that 100 percent of those demands are not met all the time, but that the demands exceed the available supply. Reforming SWP contracts to implement effective demand reduction and reflect realistic delivery amounts would significantly improve realistic water planning and forecasting, implement State policy to reduce reliance on the Delta, and improve resilience by diversifying supplies.

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