

# Reduce Water Demand

**Reducing California's water demand involves... Insert Project Manger text here**

**Included in this strategy are:**

- 1. Agricultural Water Use Efficiency**
- 2. Urban Water Use Efficiency**

## **1. Agricultural Water Use Efficiency**

The Agricultural Water Use Efficiency Strategy describes the use and application of scientific processes to control agricultural water delivery and achieve a beneficial outcome. It includes, 1) an estimation of net water savings resulting from implementation of efficiency measures as expressed by the ratio of output to input; 2) resulting benefits; and 3) strategies to achieve efficiency and benefits.

The estimation of net water savings is the reduction in the amount of water used that becomes available for other purposes, while maintaining or improving crop yield. Net water savings recognizes 1) uptake and transpiration of water for crop water use, 2) the role, benefits, and quantity of applied water that is recoverable and reusable in the agricultural setting, and 3) the quantity of irrecoverable applied water that flows to salt sinks, such as the ocean and inaccessible or degraded saline aquifers, or evaporates to the atmosphere, and is unavailable for reuse. The benefits, in addition to water savings, may include water quality improvements, environmental benefits, improved flow and timing, and increased energy efficiency.

## **2. Urban Water Use Efficiency**

Water use efficiency is a strategy to reduce water demand and part of the roadmap to sustainable water uses and reliable water supplies. Urban water use efficiency involves technological or behavioral improvements in indoor and outdoor residential, commercial, industrial, and institutional water use that lowers demand and per capita water use and results in benefits to water supply and water quality. This strategy has multiple benefits to citizens, the economy, and the environment.

## **Reduce Water Demand: Recommendations**

### **Funding/Incentives**

#### **Funding: Agricultural Water Use Efficiency**

- The State should cooperate with ~~the~~ a broad section of the agricultural community, including representatives of small farms and disadvantaged farmers and communities, to fund research, development, demonstration, monitoring and evaluation projects that improve cost-effective agricultural water use efficiency and support programs that encourage the development of new cost-effective water savings technologies and practices. In the case of RDI, research is needed to evaluate the level of current practices, extent of implementation of these practices, and quantification of RDI benefits and short and long-term impacts of RDI on plant longevity and productivity.
- State loans and grants should provide ample opportunities for small water suppliers and economically disadvantaged communities, Tribes and not-for-profit community-based

organizations to benefit from technical assistance, planning activities, and incentive programs based on environmental justice policies.

- The State should provide additional funding for long-term evapotranspiration (ET) reduction (regulated deficit irrigation, mulch, alfalfa dry down, etc.) demonstration and research plots and fund other promising programs to reduce ET.
- The State should clarify policy and improve incentives, assurances, and water rights protections to allay fears over the loss of water rights resulting from improved water use efficiency.
- Encourage rate structures for billing by volume of delivered water that improve water use efficiency. AWMC should emphasize the pricing and billing practice as defined in the Ag MOU and provide additional technical assistance to water suppliers in implementing this practice.
- The State should verify and clarify in its programs, especially loans and grant programs, that efforts to conserve water do not alter water rights.

#### **Funding: Urban Water Use Efficiency**

- The State should secure funding to support incentive programs, both implementation and data collection. Identify and establish priorities for future grant programs and other incentives. Provide ample opportunities for small districts, economically disadvantaged communities to benefit from WUE incentive programs.

### **RESEARCH/DATA DEVELOPMENT**

#### **Research/Data Development: Ag. Water Use Efficiency**

- The Department should create a statewide system of water use monitoring data available to all users.
- The State should expand water-efficiency information, evaluation programs, and on-site technical assistance provided through Agricultural Extension Services and other agricultural outreach efforts.
- The State should improve in-line data collection and dissemination networks to provide farmers with immediate meteorological and hydrological information on climate, soil conditions, and crop water needs.
- The State should collect, manage and disseminate statewide data on the cropped area under various irrigation methods, amount of water applied, crop water use, and the benefits and costs of water use efficiency measures. Develop statewide guidance to assist regions and water suppliers to collect the type of data needed in a form usable for future Water Plan Updates. DWR should work with the AWMC to develop a database of information from the Water Management Plans on water use-related data, and information generated from implementation of AB 1404. AB 1404 requires water suppliers to report to the Department aggregate farm-gate delivery data on a monthly or bimonthly basis, for dissemination and use in the Water Plan

Update. DWR should work with CBDA to implement the recommendations of the Independent Panel on the Appropriate Measurement of Agricultural Water Use.

- The State should cooperate with the agricultural community to develop methods to quantify water savings and costs associated with hardware upgrades, water management, and ET reduction projects identified in this strategy.
- The State should incorporate in its definitions of “efficiency measures”, and “cost-effectiveness” ownership and operating costs, including labor, energy, and cost of maintenance.
- The State should develop performance measures for water use efficiency goals and inform the public and stakeholders of accomplishments toward those goals. These performance measures should be updated to reflect new findings and changing conditions.

### **Research/Data Development: Urban Water Use Efficiency**

- Metering - Support accelerated metering of all urban customers and bill by volume of use, submeter new multifamily residential construction. Support “smart” metering of urban customers (meters that automatically collect data, transfer it to a central database for analysis, billing and conservation purposes).
- Examine impact of “retrofit on resale” ordinances and identify other potential opportunities for increased water use efficiency in existing structures.
- Employ scientific methods to research, monitor, and evaluate existing and new water use efficiency technologies and management practices, including the positive and potentially negative effects of these practices and real world challenges to implementation.
- Increase the emphasis on the scientific aspect of projects, especially monitoring and evaluation, in support of CALFED goals.
- Work with State and federal grant recipients and others to obtain more useful and consistent data from funded projects and other activities, including the documentation of the sources of data and the methods of data collection.
- With the leadership of the CUWCC and participation of other stakeholders, standardize utility billing and reporting systems by customer type and units of measure and identify industrial water use customers by North American Industry Classification System (NAICS). Collect end-use data periodically. Coordination of water use reports and the use of a web-based format for reporting could also improve data collection and exchange. Support uniform water use reporting.
- Gain more information through surveys and other methods to better understand how Californians use water and how to persuade them to adopt more efficient practices and behaviors. Establish a goal for per capita water use in California.

- Explore and identify innovative technologies and techniques to improve water use efficiency and develop new BMPs to correspond with new information. Fast track pilot projects, demonstrations, and model programs that explore state-of-the-art, water-saving technologies and procedures and publicize their results widely.
- Recommend that the State should take the lead in establishing reasonable guidelines for the use of graywater systems and cisterns. The goals will be to reduce confusion and permitting difficulties and encourage and enable these practices, not to “consider” them “where appropriate.”

## **GOVERNANCE: POLICY AND LAW**

### **Governance- Policy and Law: Ag. Water Use Efficiency**

- The Department, in cooperation with the Agricultural Water Management Council, should work to develop legislative requirements for a uniform and comprehensive process for all California water suppliers, enabling them to develop Water Management Plans (WMP) and implement all cost-effective Efficient Water Management Practices.

### **Governance- Policy and Law: Urban Water Use Efficiency**

- Adopt 20X2020 Recommendations
- DWR Legislation
  - Renovation on Resale
  - Urban Targets
  - State should prepare guidelines to assist water districts who are interested in implementing the conservation offset.
- Recommend that local and regional water suppliers develop a comprehensive approach to reducing urban water use by developing “water conservation master plans” to fully understand the steps necessary to achieve a target goal of water reduction in a cost-effective manner. The plans will enable suppliers to establish targeted goals based on demographics, actual retail water usage data for commercial and industrial accounts, and saturation levels of existing conservation efforts within their service area, in order to know where the best opportunities are for further water use reductions. The plans should be consistent with DWR’s Integrated Regional Water Management Plan standards and the objectives of the Governor’s 20X2020 target.

## **EDUCATION/OUTREACH**

### **Education/Outreach: Ag. Water Use Efficiency**

- Expand CIMIS (including use of remote sensing technology, satellite imagery, etc.) mobile laboratory services and other training and education programs to improve distribution uniformity, irrigation scheduling, and on-farm irrigation efficiency, as well as improvements in pumping system efficiencies, remote control technologies and telemetry, canal automations, flexible water delivery systems, and irrigation system design.

- Based on long-term ET reduction studies and research, DWR should develop informational guidelines that define the crop water consumption reduction practices, identify how they can be implemented for each crop, and estimate the potential crop benefits and impacts, water savings, and costs for growers and water suppliers.
- Develop community educational and motivational strategies for conservation activities to foster water use efficiency, with the participation of agricultural and water industries and environmental interests. Develop partnerships with State, federal, UC Cooperative Extension Service, farm advisors, irrigation specialists, and State educational and research institutions to provide educational, informational, and training opportunities to growers, water supplier staff, and others on the variety of available water and irrigation management practices, operations, and maintenance techniques.
- State partnership with other entities. The State should explore and identify innovative technologies and techniques to improve water use efficiency and develop new water use efficiency measures based on the new information. Consider fast-track pilot projects, demonstrations, and model programs exploring state-of-the-art water saving technologies and procedures, and publicize the results widely. Foster closer partnership among growers, water suppliers, irrigation professionals, and manufacturers who play an important role in research, development, manufacturing, distribution, and dissemination of new and innovative irrigation technologies and management practices.
- Initiate State collaboration with county governments to offer tax credits for installation of more efficient irrigation systems.
- Incorporate a comprehensive educational, informational, and awareness element regarding sustainability of consumption of local products in the water use efficiency programs for growers, water suppliers, post-harvesting processors, consumers, and others. Encourage reduction of long distance transportation of commodities and importation of commodities and thus, reduce energy use and greenhouse gas emissions
- The Agricultural Water Management Council should continue to encourage more water suppliers to sign the Memorandum of Understanding to broaden its base of support. The Council should seek the support of the State and local agencies, as articulated in the MOU, for full implementation of efficient water management practices by signatories and encourage the addition of new efficient practices as benefits are identified.

### **Education/Outreach: Urban Water Use Efficiency**

- Work with the GreenPlumbers® organization to assist plumbers in changing consumer behavior through the use of energy efficient and water saving technologies.
- Recommend examination of “Pay As You Save®” (PAYS®), a market-based system that eliminates barriers to the purchase and installation of proven, cost effective water and energy efficient measures in multi-family housing.

- Encourage comprehensive planning and implementation of water conservation activities at the local and regional level. Pursue and promote state or local policies, guidelines, ordinances, or regulations to affect positive change.
- Encourage more signatories to the CUWCC MOU and full participation by present signatories.
- Develop community-based social marketing surveys and strategies for conservation activities to foster water use efficiency, with the participation of the water industry, environmental interests, and the business communities. Identify and overcome barriers, communicate the benefits, provide incentives, and gain commitment from all involved.
- Retrofit remaining standard toilets with more efficient models, such as dual-flush toilets or 1.0 gallon-per flush toilets.

## **PLANNING:**

### **Planning: Ag. Water Use Efficiency**

- The Department, in cooperation with the Agricultural Water Management Council, should develop Targeted Benefits specific to different hydrologic regions of California. Targeted Benefits include improvements in water quality, flow and timing, and energy conservation.
- The Agricultural Water Management Council should continue to incorporate Targeted Benefits within the agricultural water management planning and implementation process, where applicable, in addition to quantifying other benefits of improved water efficiency, including water supply, water quality, energy efficiency, and crop yield benefits.
- The Agricultural Water Management Council, in cooperation with the Department, should revise and expand the existing Efficient Water Management Practices listed in the Memorandum of Understanding (1999) Regarding Efficient Water Management Practices by Agricultural Water Suppliers in California.

### **Planning: Urban Water Use Efficiency**

- Recommend measures for efficient climate based or self adjusting landscape irrigation scheduling, urban runoff reduction, improved fire safety, and mitigation of “heat island effects” through landscape design, installation, management and maintenance practices such as grouping plants with similar water use requirements, irrigation scheduling, landscape audits, dedicated irrigation meters, weather driven timers, etc. The State should provide technical assistance to the CUWCC and urban water suppliers to create local and regional “California Friendly Landscapes ©,” for residential, commercial and industrial landscapes which attain maximum water use efficiency by applying the minimum amount of water necessary to sustain them through the design, installation, management, and maintenance of landscape material. Encourage development of incentives for use of submeters in large landscape irrigation, climate based or self adjusting irrigation controllers, multi-stream/multi-trajectory rotating sprinklers, in-line drip, soil assessment and management, sustainable maintenance practices, and climate based water budgets. Encourage use of recycled water in large landscapes.

- The State should consider use of gray water systems where conditions permit and cistern systems to capture storm water where appropriate. The benefits of rainwater harvesting include: conserving water, improving water quality and reducing flood flows and risks.
- Increase levels of urban and agricultural water use efficiency
- Increase recycled municipal water and expand its uses
- Re-operate water facilities to improve their operation and efficiency
- Facilitate environmentally, economically, and socially sound transfers to avoid regional shortages
- Reduce and eliminate groundwater overdraft
- Work with builders, manufacturers and others to establish a “Water Star Homes” program for new and existing homes and performance standards for fixtures and appliances in order to reduce residential water use.
- Work with property owners and landscape managers to increase water use efficiency in large landscapes.
- Support efforts to encourage education training and certification programs for landscape water managers. The most common source of irrigation mismanagement is the period after the installation. It is necessary to identify research and develop sound ideas for programs and services to reach out to the public and professionals alike. The California Landscape Contractors Association’s Water Management Certification Program is an example of a program that was developed in cooperation with California’s urban water agencies. This innovative program certifies landscape water managers who pass a written test and irrigate a project below an assigned water budget for a 12-month period. Information is available at: <http://www.clca.us/water/>.
- Green Buildings - Support the implementation of technologies that exist today to enable new buildings to use far less energy and water than the ones they will replace, if they are designed correctly. The US Green Building Institute has developed LEED design standards for existing building remodels and retrofits that will address this goal. These standards call for measures such as rain water harvesting systems, graywater reuse systems, the reduction of overall irrigation demand and other measures. Executive Order S-20-04 ordered that state agencies, departments, and other entities under the direct executive authority of the Governor design, construct and operate all new and renovated state-owned facilities paid for with state funds as “LEED Silver” or higher certified buildings. The California Green Building Standards Code for all new construction statewide will be voluntary until 2010, when its provisions are expected to become mandatory. The Code sets targets for energy efficiency, water consumption, and dual plumbing systems for potable and recyclable water, the reduction of overall irrigation demand and other measures.

- Use hot-water-on-demand systems in new residential construction
- Pursue best available technology and management practices, including submetering, in the commercial, industrial, and institutional sectors (for example, churches, schools, government, and prisons).
- Retrofit standard urinals with more efficient models.
- Encourage the formation of employee and management “Green Teams” in commercial, industrial, and institutional customers to promote sustainable resource use.
- Encourage dry cooling for power plants.
- Provide comprehensive public information, education, training, and technical assistance programs to foster a strong environmental resource ethic with an emphasis on water use efficiency.
- Coordinate with other resource management programs, such as watershed management, urban runoff management, waste water treatment, and green waste reduction.
- Recommend that local water suppliers, municipalities, building trade associations, and project developers consider water conservation measures that would offset new water demands.

## **DISINCENTIVES:**

### **Disincentives: Ag. Water Use Efficiency**

### **Disincentives: Urban Water Use Efficiency**

## **OTHER:**

### **Other: Ag. Water Use Efficiency**

- The Agricultural Water Management Council, in cooperation with the Department and others, should compile measures currently in use by growers and water suppliers to deal with water shortages and droughts and develop a comprehensive Agricultural Drought Guidebook as a storehouse of information and procedures for drought mitigation, including new and innovative methods.
- Review and adopt standard water use efficiency approaches to meet water needs during dry years. New approaches should be explored such as alfalfa summer dry-down and regulated deficit irrigation to cope with water shortages.
- Drought water management should be fully incorporated in Agricultural Water Management Plans.

### **Other: Urban Water Use Efficiency**

- Work with CUWCC and others to encourage and help local agencies and governments in fully developing, implementing, and sustaining water conservation programs; develop and implement rate structures that encourage water use efficiency; help water customers perform leak detection and repair on a regular basis; employ recycled water whenever feasible for landscape, industrial, and other approved uses; and encourage the plumbing of new construction for the use of non-potable water.