

SUBCOMMITTEE ON WATER AND WILDLIFE  
OF THE  
SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

EPA's Role in Promoting Water Use Efficiency

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Testimony by

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## Introduction

Mr. Chairman, Ranking Member, and members of this Subcommittee on Water and Wildlife, thank you for this opportunity to testify today regarding the EPA's role in promoting water use efficiency. I am the Executive Manager of Policy Development for the Inland Empire Utilities Agency and oversee the Planning and Water Resources Department within the Agency. I also serve as Co-Chair of the California Watershed Advisory Committee, an appointed position by the California Secretary of the Natural Resources Agency.

## Inland Empire Utilities Agency

The Inland Empire Utilities Agency, located in San Bernardino County, was formed as a wholesale water utility in 1950 to become a member agency of the Metropolitan Water District of (MWD) of Southern California and distributes about 70,000 acre-feet of imported water to the cities of Chino, Chino Hills, Fontana (through the Fontana Water Company), Ontario, Upland, Montclair, Rancho Cucamonga (through Cucamonga Valley Water District) and the Monte Vista Water District. The Agency also provides wastewater treatment service through four regional water recycling plants that produce about 60 million gallons per day or 63,000 acre-feet per year. Excess recycled water flows downstream into the Santa Ana River, and the Orange County Water District recharges that water into the Orange County groundwater basin for drinking water. IEUA currently serves a population of about 880,000 residents.

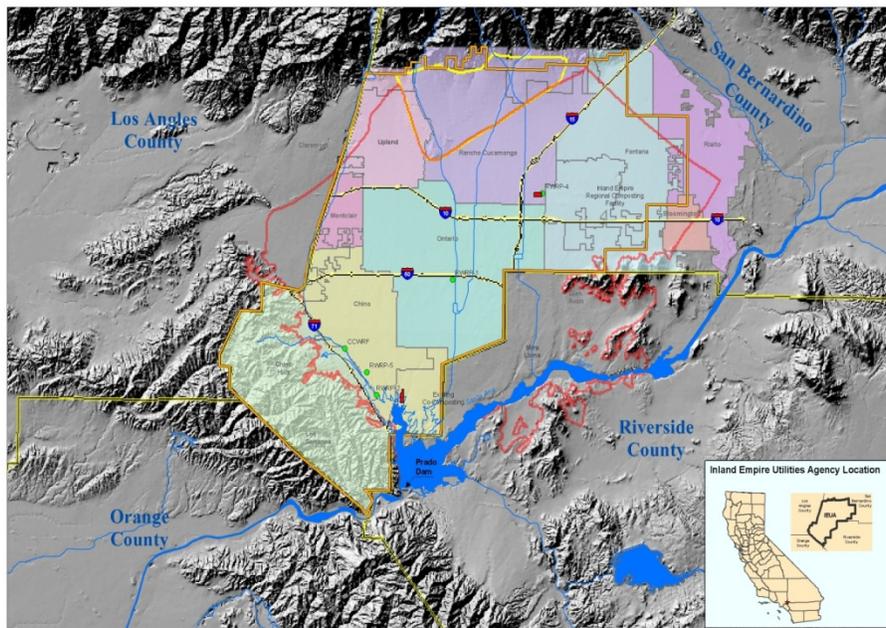


Figure 1 - IEUA's service area located in western San Bernardino County

The Agency has received numerous awards from U.S Environmental Protection Agency, U.S. Department of Agriculture, U.S. Department of Energy and the Department of the Interior as well as twice from the Governor of California, and other state agencies and non-profit organizations for its innovative environmental programs on water use efficiency, reuse and recycling, renewable energy and state of art wastewater treatment technologies.

### **Water Resources Planning within IEUA's Service Area**

Overall water use within the Agency's service area is about 2600,000 acre-feet annually (2009 IEUA Drought Plan and 2009 MWD Water Supply Allocation Plan). About 75 % of these supplies are derived from local groundwater and surface supplies within the Santa Ana Watershed and 25 % is from imported water supplies delivered through the State Water Project by MWD.

IEUA's service area is located over the Chino Groundwater Basin, one of the largest groundwater basins in Southern California. The Chino Basin was adjudicated in 1978 and is governed by the Chino Basin Watermaster, which has adopted an Optimum Basin Management Plan (OBMP) to protect water quality and to manage the local supplies for the maximum benefit of the local ratepayers. The OBMP is consistent with the 2004 Santa Ana Regional Water Quality Control Board "Maximum Benefit" Basin Plan for the Chino Basin.

Until the beginning of the economic recession last year, the IEUA service area was one of the most rapidly growing areas in California. When the nation's economic economy rebounds, this region is expected to become one of the State's primary growth areas again, with the potential to increase by 50% to 1.3 million people within the next 20 years.

Under traditional water resource planning assumptions, demand for imported water supplies from MWD in IEUA's service area could increase from the current level of 70,000 acre-feet per year to 150,000 acre-feet in 2020 to meet this population's water needs. However, current conditions make the assumption that additional imported water supplies will be available in future years uncertain at best. Recent court rulings and regulatory developments have constrained MWD's water deliveries from the State Water Project, the source of the service's area's imported water supplies. In addition, climate change would likely acre-feet water supplies in California and the arid Southwestern portions of the United States in the next decade, as reported by the U.S. Bureau of Reclamation. California is currently experiencing a third year of drought and the State's Governor Schwarzenegger has announced a drought emergency. Within the next month, IEUA anticipates that mandatory rationing will be imposed throughout the State.

## **IEUA Integrated Water Management Strategy**

Five years ago, the Agency's five-member, elected board of directors recognized the need to develop a sustainable long-term water resources management strategy that would "drought" proof the service area's economy and ensure that adequate water supplies would be available to meet future growth. The cornerstone of the program is the development of new local water supplies to offset the need for additional imported water.

IEUA decided to invest in local supplies through a multifaceted watershed-based strategy that would capitalize on increased conservation; recycled water use; and storm water capture in the local groundwater aquifers. Specifically, the Agency has accelerated water conservation and efficiency practices, expanded a water distribution system for irrigation and industrial uses by replacing drinking water with recycled water and developed infrastructure and programs to utilize local groundwater supplies as effectively as possible.

Over \$350 million has been invested by IEUA and seven of its municipal customers in new water infrastructure in the past five years. Key goals for water supply development are:

- Water Conservation –target 10% savings – 25,000 acre-feet per year (2012)
- Water Recycling – target 50,000 acre-feet per year (2012)
- Stormwater – target 12,000 acre-feet of new supplies (annual average)--implemented
- Local Groundwater Storage and Conjunctive Use – target 200,000 – 300,000 acre-feet of new storage (MWD storage program implemented 100,000 AF)
- Chino Brackish Groundwater Desalters- completed 27,000 AF and an additional 12,000 AF expansion under design and completion by 2012

### **Water Conservation (25,000 acre-feet per year, 10% reduction in per capita water usage)**

IEUA and its retail utilities are committed to implementing the Memorandum of Understanding (MOU) regarding Urban Water Conservation in California. IEUA is an active member of the California Urban Water Council (CUWCC) and the Alliance for Water Efficiency. IEUA's goal is to reduce its per capita water use by 20%, consistent with Governor's Schwarzenegger's water conservation mandate, through aggressive implementation of customer conservation programs. The Agency, in partnership with MWD, currently provides rebates for customer investment in water efficient appliances such as low flow toilets, washing machines, water brooms, water efficient x-ray machines and irrigation control devices that are achieving new water savings each year of 500 acre-feet – 1,000 acre-feet (cumulative life time savings to date projected at 60,000 acre-feet).

Because an estimated 60% of residential water in the service area is used for outdoor landscaping, the Agency has initiated a number of new innovative programs targeting this sector, including grants to remove lawns and replace them with water efficient plants and irrigation systems (Water Wise

Landscaping Program, establish water efficient gardens in elementary schools (Garden In Every School Program), provide residential and commercial water audits (Chino Basin Water Conservation District Leadership Landscape Evaluation and Audit Program), and install water efficient /low maintenance landscaping in low income areas through block grant-funded neighborhood improvement programs (Ontario Cares).

IEUA has also led the formation of the Chino Basin Landscape Alliance, a voluntary coalition of elected officials representing all of the service area's cities and water agencies, to promote water efficient landscaping and low impact development (LID) practices that capture rain and storm water. The Alliance recently completed and adopted a model water efficient landscaping ordinance for the Chino Basin (consistent with stringent requirements of AB 1881) which is now proposed to be adopted as the landscape ordinance for San Bernardino County. The Alliance also provides tours and educational workshops for planning commissioners, city staff and elected officials to showcase model examples of water efficient landscapes for residential, commercial and institutional properties.

### **Water Recycling (50,000 acre-feet per year by 2012)**

IEUA owns and operates four water recycling plants that produce high quality water which meets all state and federal requirements for non-potable landscape irrigation, industrial uses and groundwater replenishment. The Agency currently recycles about 25,000 acre-feet annually and, in response to the drought that California is currently experiencing, is implementing a Board-adopted plan to expedite increased usage of recycled water to approximately 50,000 acre-feet within the next 3 years.

The Agency is constructing a new 75-mile "purple" recycled water pipeline (along with pump stations and reservoirs) that will connect and deliver recycled water to existing large customers (schools, golf courses, city parks). In addition, IEUA and the Chino Basin Watermaster have secured court approval to expand the artificial recharge of the Chino Groundwater Basin. Recycled water is being blended with stormwater and imported water in a coordinated fashion with the San Bernardino Flood Control District to ensure that as much local water can be conserved as possible. The Agency's \$200 million capital program in recycled water is funded through low interest loans from the State Revolving Fund, revenue bonds, state and federal grants, as well as by local property taxes, connection fees and user charges.

The increased use of recycled water is a key *conservation* strategy. Recycled water enables water agencies to optimize the delivery of potable and non-potable water supplies to the appropriate use, reserving its best quality drinking water for potable uses. The provision of recycled water in IEUA's service area is one of the primary ways in which Agency expects to reduce the need for more imported drinking water in the future – ultimately reducing costs to customers by 10% to 20% as the population increases.

### **Stormwater (12,000 acre-feet annual average of new stormwater capture and percolation)**

One of the critical issues facing urban areas is the loss of permeable surfaces that allow water to infiltrate into groundwater basins as a result of hardscaping and storm water runoff structures.

IEUA, in coordination with the Chino Basin Watermaster, the San Bernardino County Flood Control District and the Chino Basin Water Conservation District, is developing an integrated recharge master plan that will optimize the capture of stormwater (along with the use of imported water from MWD and local recycled water) to enhance the storage and recovery of water from the Chino Basin. To date, a combination of 19 existing flood control retention basins and new recharge basins have been improved at a cost of \$50 million and recharge capacity has increased to more than 110,000 acre-feet annually. Basin maintenance, including silt removal to maintain recharge capacity, averages \$750,000 annually.

In addition, IEUA is working in coordination with the Inland Empire Landscape Alliance and the Chino Basin Water Conservation District to develop land use policies, practices and programs that will encourage capture of rain and stormwater for infiltration into the Chino Groundwater Basin. IEUA constructed the nation's first Platinum LEED-rated office headquarters by a public agency, which features low impact development strategies such as permeable pavers, porous concrete, and bioswales. The 29-acre site is capable of retaining a 25-year flood event. Currently the Agency is developing an innovative pilot rebate program in partnership with MWD, San Bernardino County and the Southern California Porous Concrete Association in which an incentive will be offered for use of porous concrete (in lieu of traditional hard surfacing) in areas where it can be demonstrated that infiltration will benefit the Chino Groundwater Basin.

### **Local Groundwater Storage and Conjunctive Use - target 200,000 – 300,000 acre-feet of new storage**

The Chino Basin Watermaster is implementing an Optimum Basin Management Plan to enhance the conjunctive use storage of the Chino Basin. The goal is to store 200,000 – 300,000 acre-feet of imported water that can be delivered during wet years (the one time when this source may be plentiful in the future) for dry year withdrawal for local, regional and statewide benefits. In June, 2003, IEUA, the Chino Basin Watermaster, Three Valleys MWD, Western MWD and the Metropolitan Water District executed an agreement for an initial 100,000 acre-feet of storage and recovery projects. Over \$27.5 million from MWD and state grants has been expended on the development of 20 additional wells and wellhead treatment to enable recovery of this water. By last May, MWD had over 88,000 acre-feet in storage and made a call for the first 33,000 acre-feet of this water to supplement supplies that had been impacted by the drought. Planning to expand the MWD program to 150,000 acre-feet of storage is underway, which is expected to increase dry year yield from 33,000 to 50,000 acre-feet – a 50% increase.

### **Chino Desalination Projects (40,000 acre-feet per year by 2012)**

Like many parts of the nation, historic land use practices have caused areas of the Chino Basin to have high salts that make the water unfit for domestic uses. To correct this problem, protect the Santa Ana River and the 7 million downstream water users in Orange County, and recover this poor quality water, the Chino Basin Optimum Management Plan recommends implementation of groundwater cleanup projects to pump and treat poor-quality groundwater to drinking water standards. Since 2000, two Chino Basin desalters have been constructed that are recovering over 26,000 acre-feet of groundwater that is now blended into the region's water supplies. The Omnibus Public Lands Act approved this month provides authorization under the Bureau of Reclamation's Title XVI program to provide funding for a third desalter that, together with brine line improvements, is expected to achieve the 40,000 acre-feet annual production goal by 2012.

### **Benefits of the Integrated Water Management Strategy**

IEUA's strategy is designed to increase water supply reliability while reducing the utility's dependence on imported water supplies. This is an important approach to help drought proof the local economy as well as to anticipate and prepare for the potential impacts of climate change that are expected to significantly intensify drought events in the future. A recent feasibility study commissioned by the a National Science Foundation grant of \$1.5 million and conducted by the RAND Corp. concluded that development of a multifaceted strategy of increasing conservation recycled water stormwater capture and reclaiming of poor quality groundwater supplies was the most cost-effective utility strategy to address the potential impacts of climate change on Southern California.

However, there are significant additional energy and climate-related benefits to the region, state and to the nation from this strategy. Use of water is very energy intensive, with over 19% of all electrical consumption in the state related to pumping, treating and distributing water (18% in the nation). Increased population and related water consumption will only increase energy use. In addition, energy generation, particularly from conventional sources such as coal and natural gas, generate high levels of carbon emissions. As a result, water efficiency and use of water supplies that have lower embedded energy requirements can contribute significantly to the reduction of greenhouse gas emissions in the nation.

For example, importing water to southern California is one of the most energy intensive supplies – second only to ocean desalination, as is shown below in Figure 2. The State Water Project, which is the direct source of IEUA's imported water supplies, uses about six times the energy that an equivalent amount of recycled water requires. Increasing the daily amount of reuse from 15 million gallons per day to 50 million gallons per day, and using this water to replace imported supplies, will be equivalent to saving about 7,500 kWh per 1 million gallons of water. This is equivalent to a 79% reduction in carbon emissions, roughly the same as taking 130 cars off the road for every 1 million gallons of recycled water

that is used within IEUA's service area (the use of 50,000 acre-feet of recycled water as planned by IEUA would be equivalent to removing 6,500 cars from the road).

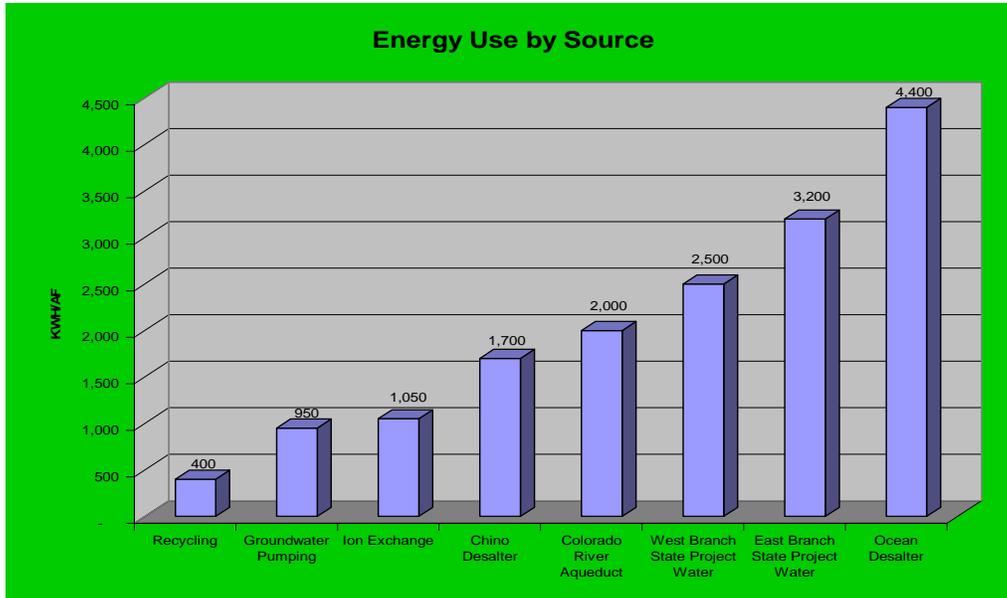


Figure 2 - Energy Use by Source in IEUA's Service Area, Prepared by Professor Robert Wilkinson, U.C. Santa Barbara, 2004

An integrated local water supply strategy can provide important environmental and habitat benefits. Development of wetlands and natural treatment systems, such as those developed in the Prado Basin by Orange County Water District and featured by IEUA at its Chino Creek Wetlands and Educational Park, enhance water quality, improve air quality, and offer opportunities to restore native habitats that have been removed by urban development. Low impact development and restoration of the ability of local landscapes to better process rain water and stormwater improves water quality at the same time as it restores infiltration capacity for groundwater resources and reduces potential for floods. A multi-benefit approach, such as that presented in the Chino Creek Watershed Plan that was prepared by IEUA and regional stakeholders in 2007, underscores the value of development a balanced strategy to local resources management.

Finally, the development of local resource projects is an important vital part of creating green jobs. The American Recovery and Reinvestment Act of 2009 allocates \$6 billion for local clean water and water infrastructure projects (\$4 billion for Clean Water Drinking State Revolving Fund and \$2 billion for Drinking Water State Resolving Fund). The Alliance for Water Efficiency estimates that a \$10 billion investment in water efficiency and conservation projects alone could boost the nation's GDP by \$13 to \$15 billion while employing 150,000 to 200,000 and saving trillions of gallons of water. Similarly

construction projects like IEUA's recycled water project are green infrastructure programs that will bolster local economy.

### **Future Issues and Role of the U.S. Environmental Protection Agency**

The nation today faces significant water challenges. Ensuring that there are sufficient water supplies to reliably meet the country's future water requirements, especially given the predicted impacts of climate change, will be formidable. What is needed is a balanced approach to the development of multiple sources of water supplies, with a clear priority for water efficiency, local water supply management, and an emphasis on less energy intensive uses of water that will also protect water quality and enhance wildlife habitats. Legislation like H.R. 631 underscores the value of a modest investment (proposed at \$20 million annually ) in research and technological transfer on water efficiency, water reuse and other water resource strategies that will result in millions of dollars in energy and water savings, reductions in greenhouse gas emissions as well as more locally and economically secure water supplies.

The U.S. Environmental Protection Agency can play a pivotal role in helping provide water agencies with much needed information on water efficiency and conservation actions, as well as the integrated development of wastewater treatment, reuse, desalination and groundwater recharge and recovery strategies. The development of strategies and encouragement of coordinated regional infrastructure planning for water supply, groundwater management, stormwater, wastewater reused and recycling needs to be integrated at a watershed scale. It is also vital that the U.S. Environmental Protection Agency coordinate with the U.S. Bureau of Reclamation, U.S. Department of Agriculture National Resources and Conservation Service, U.S. Army Corps of Engineers, and the U.S. Department of Energy as each contributes to implementation of water-related research and water efficiency and local water supply development programs.

I would particularly recommend that embedded energy in water and the related potential for reduction in greenhouse gas emissions be incorporated into the proposed U.S. Environmental Protection Agency research and development program. Water and wastewater agencies have the potential to play a pivotal role in reducing greenhouse gas emissions through the development and use of water supplies that have lower energy and carbon footprints. In addition, water efficiency and energy efficiency programs are closely linked and should be reflected in national coordination of such customer end use conservation programs as WaterSense and Energy Star.

In closing, thank you for this opportunity to testify. If I can provide any additional information on the opportunities for development of water resources management programs from a local perspective, please don't hesitate to contact me.