

# University of California Irvine Campus Water Use Efficiency

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Irvine Ranch Water District





# About the University of California Irvine

Irvine Ranch Water District



- Students: 27,189
- Faculty: 1,100
- Staff: 6,145
- Potable water use: 565,672
- Recycled water use: 188,607
- 220 Acres of landscaping 90% on recycled water
- 7 Cooling Towers at a Central Plant
- 6 Student Housing Communities
- 30 Laboratories



# About Irvine Ranch Water District

Irvine Ranch Water District

## Water, Wastewater, Water Recycling, Urban Runoff

California Special District governed by a publicly-elected Board

IRWD customer base:

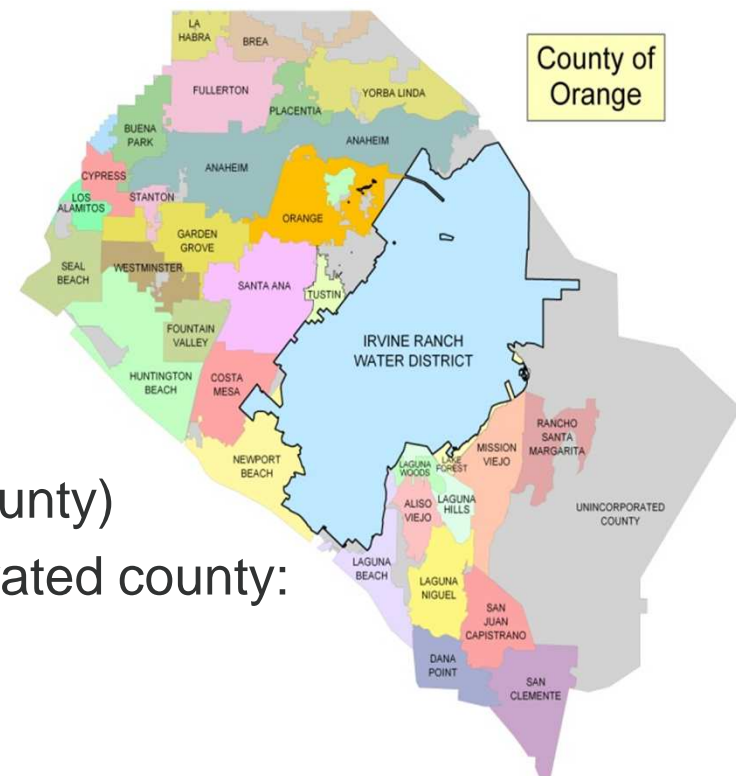
- Residential population: 340,000
- Daytime population: over 500,000
- Service connections: 101,600

IRWD service area:

- 181 square miles (20% of Orange County)
- All or part of **six** cities and unincorporated county:

Irvine  
Tustin  
Orange

Lake Forest  
Newport Beach  
Costa Mesa





# Campus Water Efficiency

Irvine Ranch Water District

- 2008 - 2012 UCI participates in the Statewide Energy Partnership Program
- 2009 Campus faucet aerator retrofit
- 2010 Campus Water use Efficiency survey
- 2010 Campus Central Computer Irrigation Controllers installed
- 2011 Campus plumbing fixture retrofit (Phase 1)
- 2011 Student Housing plumbing retrofit
- 2012 Campus plumbing fixture retrofit (Phase 2)
- 2012 Student Housing “Water Battle”
- 2013 Campus Phase 3 – Labs & Food Service



# 2008 UCI Statewide Energy Partnership Program

Irvine Ranch Water District

- Energy efficiency projects selected based on electrical and natural gas load generated on campus.
- One ton chilled water demand reduction equates to a 20 gallon reduction in potable water use at the central plant.
- Provides a structure for cost effectiveness evaluation of potential projects.
- Projects meeting payback criteria based on utility bill savings are likely to be implemented.

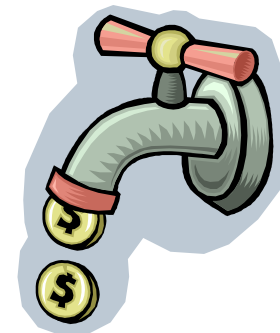




# 2009 Campus Faucet Aerator Retrofit

Irvine Ranch Water District

- Installed 0.5 gallon per minute faucet aerators on all compatible faucets throughout the campus.







# 2010 Campus Water use Efficiency Survey

Irvine Ranch Water District

- IRWD contracted with Water Management Inc. to conduct a water efficiency survey of the campus.
- Identified numerous opportunities on campus and provided detail on:
  - Existing equipment
  - Quantities of equipment
  - Potential for retrofit or upgrade
  - Estimated water savings
- Guiding document for campus projects.





# 2010 Central Computer Irrigation Controllers

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- 220 irrigated acres throughout campus
- Variety of irrigation controllers
- Improved landscape water management







# 2011 Campus Plumbing Fixture Retrofit

Irvine Ranch Water District

- Phase 1: Retrofit 80 toilets and 90 urinals in 1<sup>st</sup> floor high traffic areas.
  - Utilized Metropolitan Water District's "Save Water – Save a Buck" rebate program
  - IRWD provided additional funding to the rebate program
- Phase 2: Retrofit 450 toilets, 160 urinals and 60 faucets
  - Utilized Metropolitan Water District's "Save Water – Save a Buck" rebate program
  - UCI light duty staff conducted inventory of 3.5 gpf toilets and pre-1993 urinals
  - IRWD provided additional funding to the rebate program
  - IRWD provided funding for the faucets; No MWD rebate offered
- Phase 3: Lab sterilizers and food service equipment



# 2011 Student Housing plumbing retrofit

Irvine Ranch Water District

- Three housing communities participated in a Pilot Study to evaluate the water savings potential of the new Niagara Stealth toilet.
- IRWD provided funding for the retrofit of 588 student housing units with the Niagara 0.8 Stealth toilet, 1.5 gpm showerhead and 0.5 faucet aerators.
- Two buildings within each community were metered.
- One building left untouched to provide a control group for the study.
- Apartments had existing 3.5 gpf toilets
- Dorms had existing 1.6 gpf toilets but higher density.
- Phenomenal water savings realized, 40-50% reduction.
- Over \$400,000 saving on annual water bill.



# 2012 Student Housing “Water Battle”

Irvine Ranch Water District

- The \$400,000 saved on water bills provided the capital for the Water Battle start up costs.
- Aquacue Barnacle technology provides real time water usage data.
  - Data is uploaded to shared website where students can compare their dorm’s water use with competing dorms.
- IRWD provided meters and Barnacles for 18 dorms in the **Middle Earth** student housing community.
- Extra Barnacles will be used for experimental purposes throughout campus.
- The Battle will Wage October 8<sup>th</sup>





# 2013 Campus Phase 3 – Labs & Food Service

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## Projects being discussed:

- Laboratories have potential with retrofit of sterilizers with Water Mizers.
- Food services have inefficient food steamers.
- Continue plumbing fixture retrofits throughout campus and student housing.
- Turf replacement with California Friendly plants
- Sprinkler nozzle retrofits
- Weather Based Irrigation Controllers



# Contact Information

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