

Introduction to Water Efficiency

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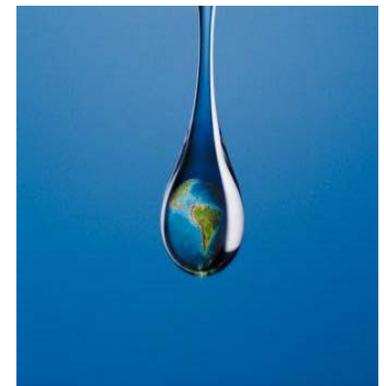


Why Save Water?



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- Rising cost of water and sewer that drive projects ***9% national average increase in water rates between 2002 and 2004***
(source: Raftelis Water and Wastewater Rate Survey)
- Drought and other water supply issues that may force water efficiency improvements
- Legislative impacts that encourage water efficiency

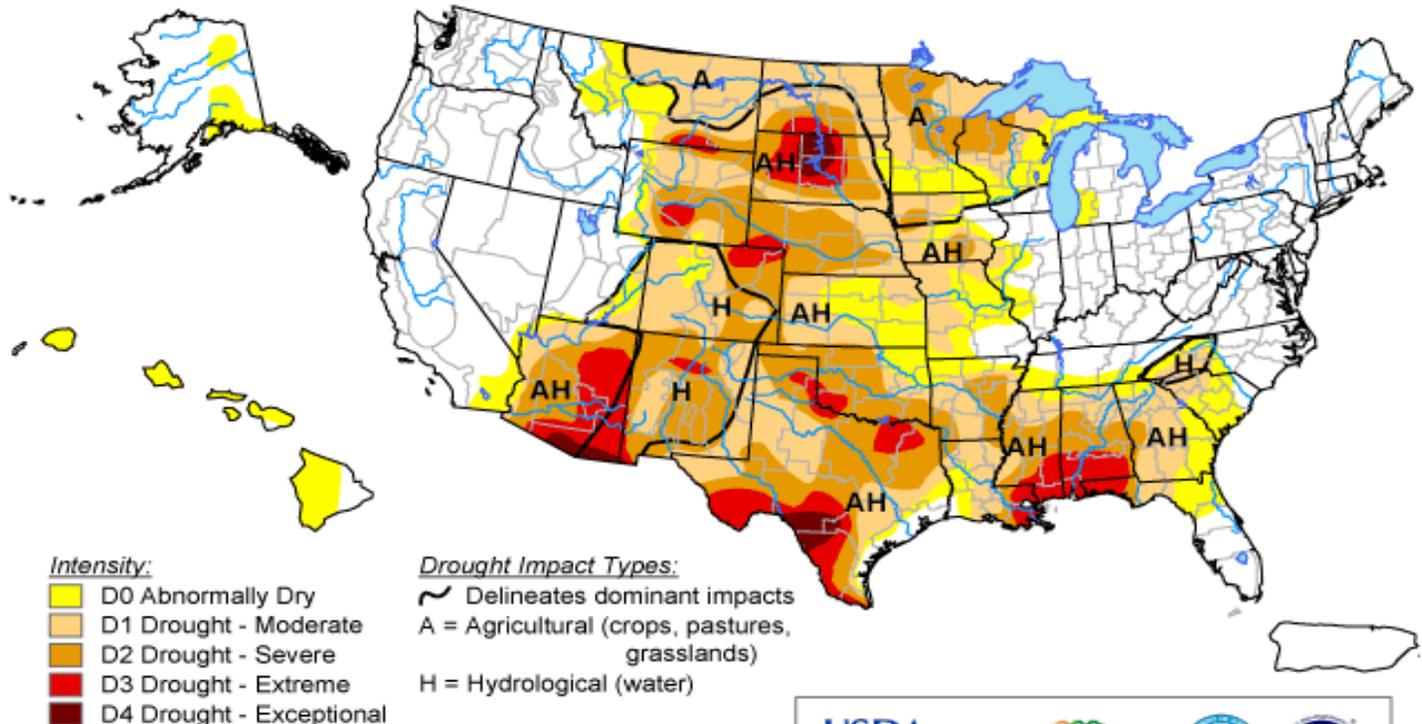




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U.S. Drought Monitor

July 18, 2006
Valid 8 a.m. EDT



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



Released Thursday, July 20, 2006

Author: Richard Heim/Liz Love-Brotak, NOAA/NESDIS/NCDC

<http://drought.unl.edu/dm>

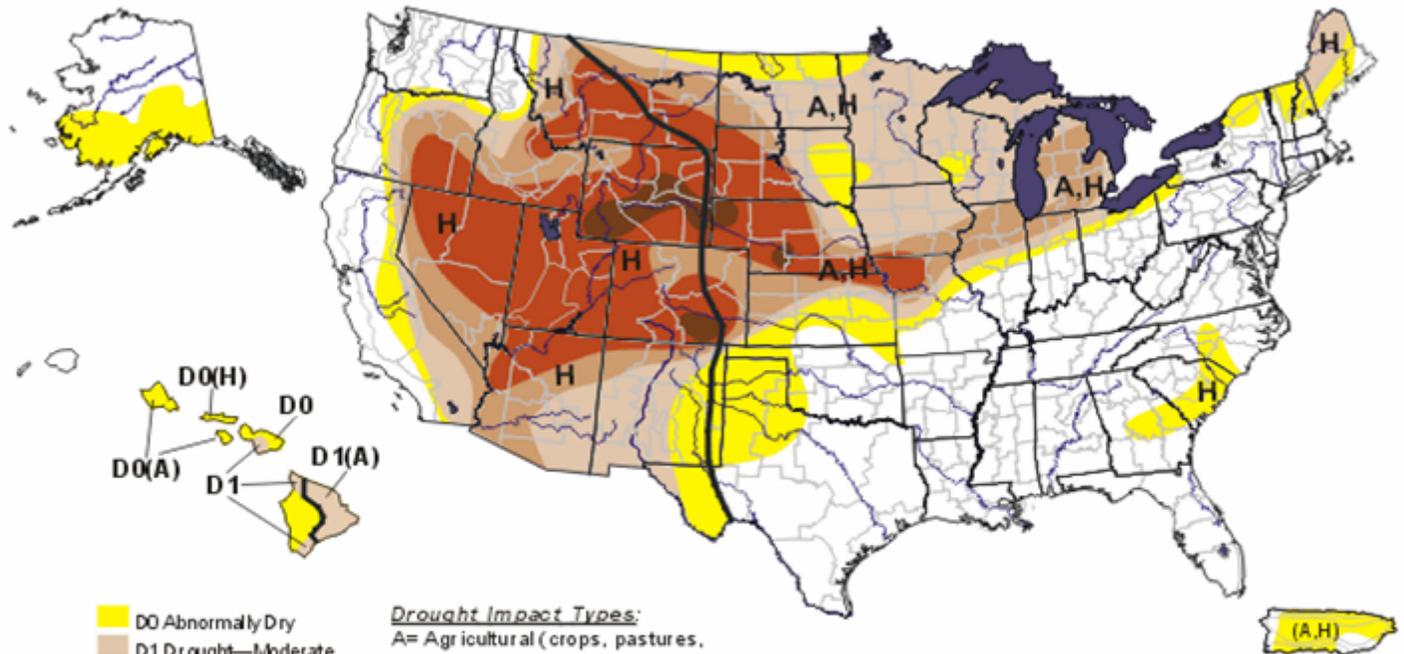
Drought in the U.S. - 2003



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U.S. Drought Monitor

March 18, 2003
Valid 7 a.m. EST



- D0 Abnormally Dry
- D1 Drought—Moderate
- D2 Drought—Severe
- D3 Drought—Extreme
- D4 Drought—Exceptional

Drought Impact Types:

- A= Agricultural (crops, pastures, grasslands)
- H= Hydrological (water)
- Delineates dominant impacts (No type = both impacts)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for for east statements.

<http://drought.unl.edu/dm>



Released Thursday, March 20, 2003

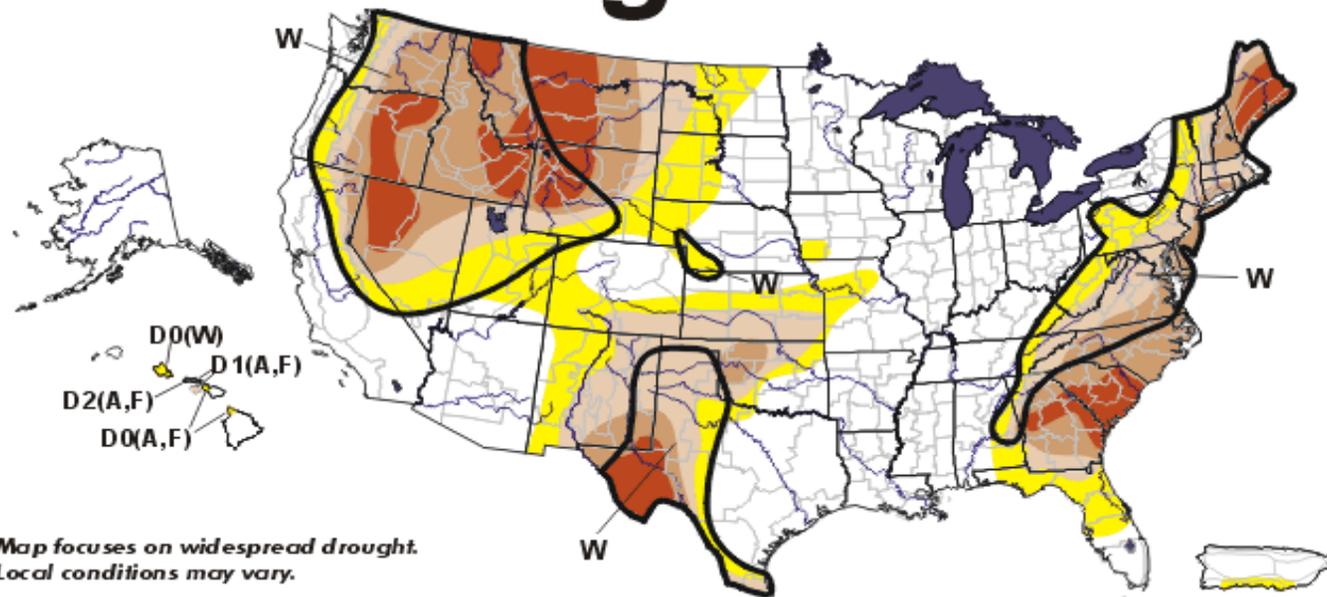
Author: Richard Heim/Canadace Tankersley, NOAA/NESDIS/NCDC



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January 1, 2002 Valid 8 a.m. EST

U.S. Drought Monitor



**Map focuses on widespread drought.
Local conditions may vary.**

- D0 Abnormally Dry
- D1 Drought-Moderate
- D2 Drought-Severe
- D3 Drought-Extreme
- D4 Drought-Exceptional
- Delineates Overlapping Areas

Drought Impact Types:
 A = Agriculture
 W = Water (Hydrological)
 F = Fire danger (Wildfires)
 (No type = All 3 impacts)



See accompanying text summary for forecast statements
<http://j/enso.unl.edu/monitor/monitor.html>

• **Released Thursday, January 3, 2002** •
 Author: Richard Heim, NCDC/NOAA

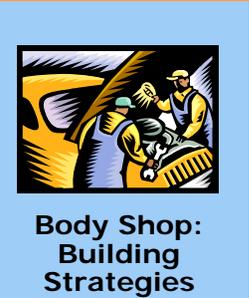


- Energy Policy Act 2005
 - Agencies can retain cost savings from water efficiency projects for future projects
 - Water and wastewater projects can be included in ESPCs
 - LCC water efficiency measures are required
- Executive Order 13123
 - Water managements plans required
 - 4 Best Management Practices must be implemented



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- Best Management Practices (BMP)
 1. Public Information and Education
 2. Distribution System Audits and Leak Detection
 3. Water Efficient Landscape
 4. Toilets and Urinals
 5. Faucets and Showerheads
 6. Boiler and Steam Systems
 7. Single Pass Cooling
 8. Cooling Towers Systems
 9. Miscellaneous High Water Uses
 10. Water Reuse and Recycling



FEMP Water Guidance

- www.eere.energy.gov/femp/technologies/water_efficiency.cfm

FEMP Water Conservation Goals and Best Management Practices

- www.eere.energy.gov/femp/technologies/water_federequire.cfm

Steps of Water Management Planning



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**Where are you
coming from?**

**Find out the stakeholders and rules
and regulations**

**Where are
you now?**

**Assess current conditions and
quantify water consumption**

**Where do you
want to be?**

**Prioritize, set goals, and determine
needs**

**How do you get
there?**

**Identify potential projects and
funding sources**

What to do if...?

**Develop proactive plan
for contingencies**

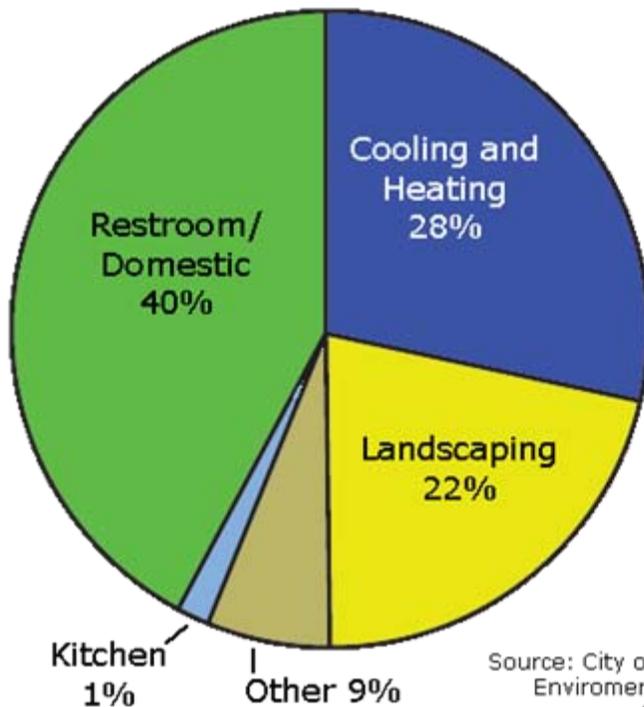
Where are you now?



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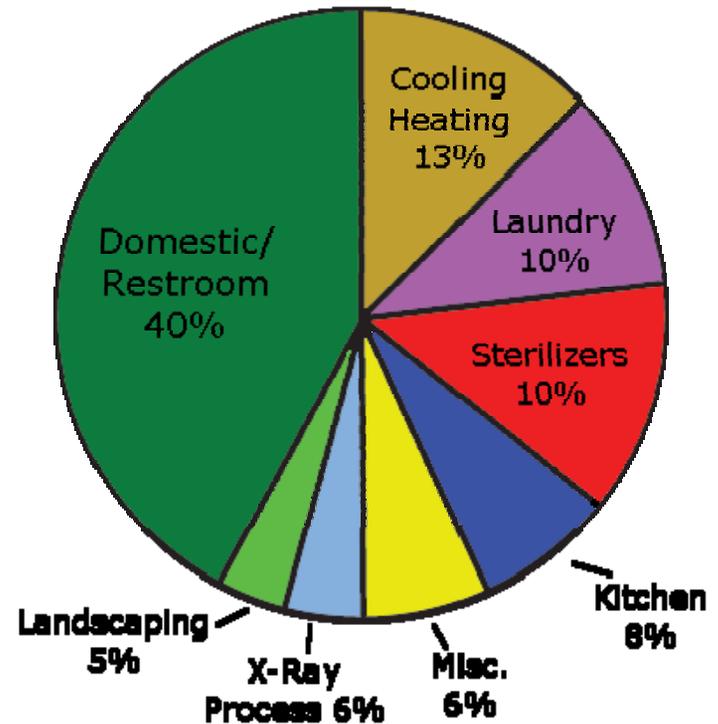
What are your biggest water end-uses?

Office Building



Source: City of San Jose,
Environmental Service
Department

Hospital



Source: City of San Jose,
Environmental Services Department

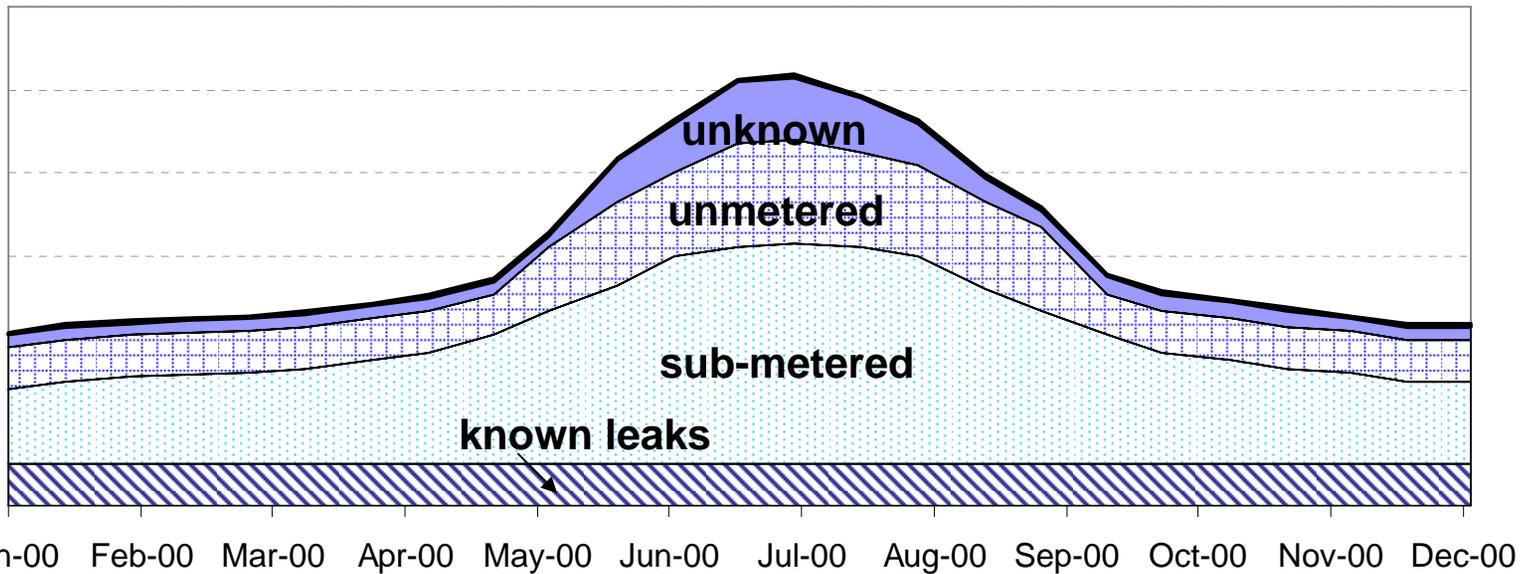
Where are you now?

Gather information from your water utility

- One to two years of monthly water consumption
- Marginal cost for economic analysis
- Services and incentives offered
- Who pays the water bill?



Annual Water Distribution Curve



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Unknown: unaccounted for water; e.g. leaks, processes
Unmetered: e.g. irrigation, fountains, construction sites
Sub-metered: e.g. individual buildings, processes
Known leaks: estimate of distribution leaks

How do you get there?



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- Jim Allen – Sloan Valve Company
 - What to look out for: efficient technologies on the market
- Bill Chvala - Pacific Northwest National Laboratory
 - What to consider: water reuse federal case studies
- Jack Grinnalds - Johns Hopkins University
 - What to also consider: grey water reuse system

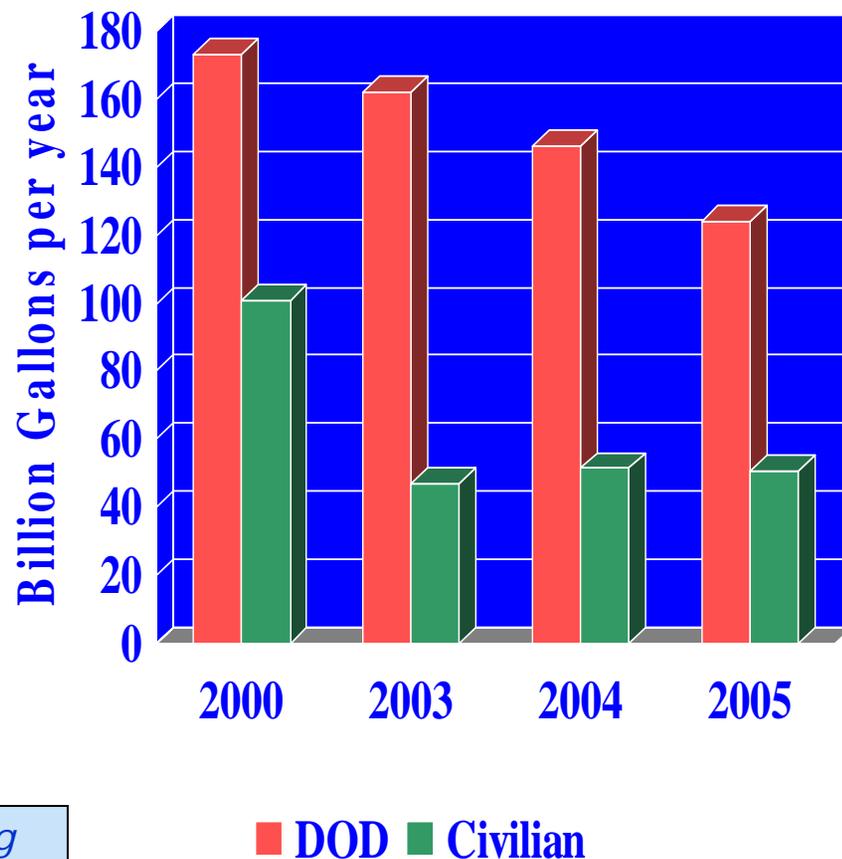
How much can we save?



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- Federal water savings potential: 35 – 50 *billion* gallons annually
- Federal cost savings potential: \$166 - \$236 *million* annually

Federal Water Use



Source: *Federal Market Assessment for Capturing Water Conservation Opportunities*, Pacific Northwest National Laboratory