



How Water Utilities Are Reducing Water and Energy: Best Management Practices

Mary Ann Dickinson
Executive Director

California Urban Water Conservation Council

March 28, 2006

PARTNERS FOR A WATER-EFFICIENT CALIFORNIA

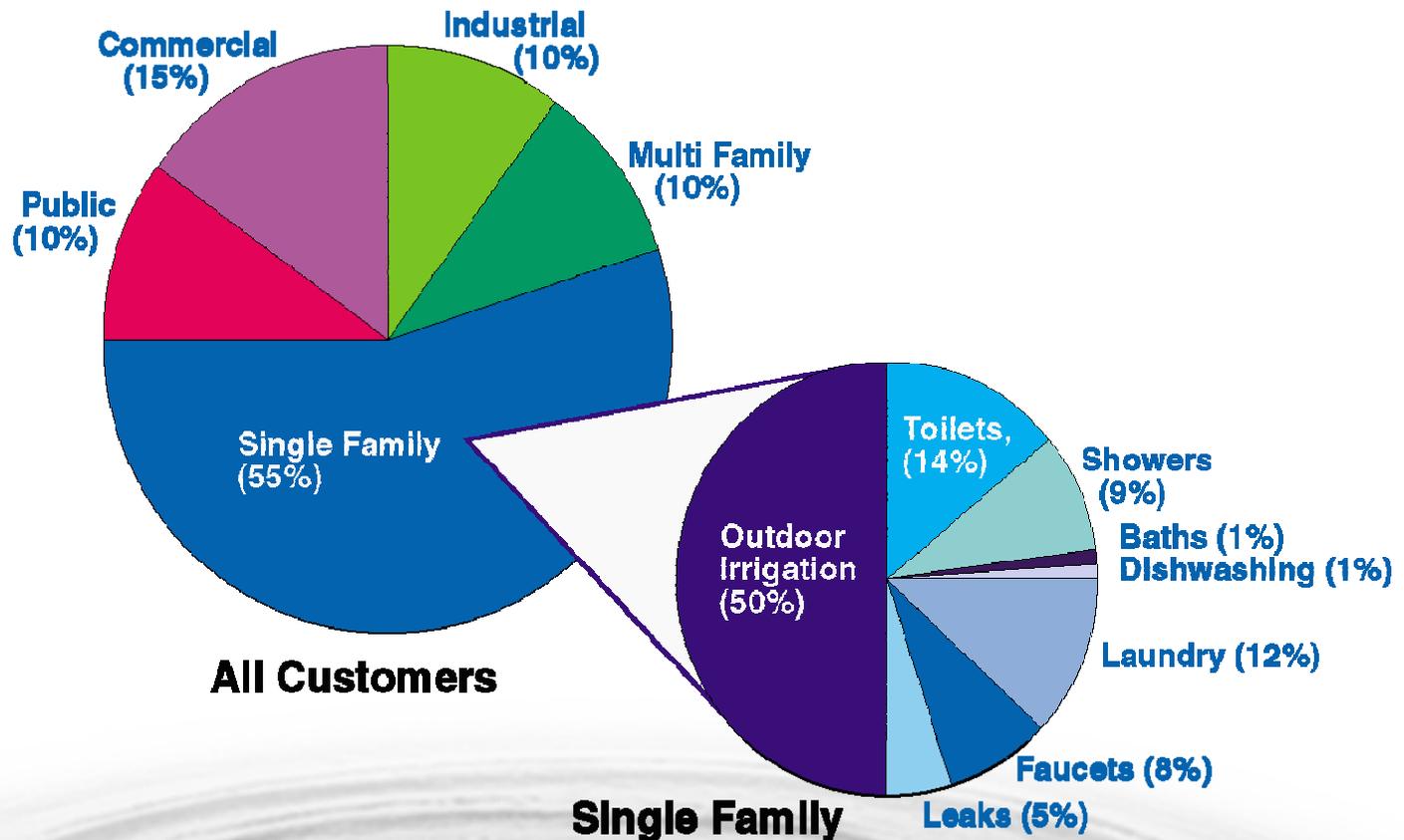


Need for Water Efficiency

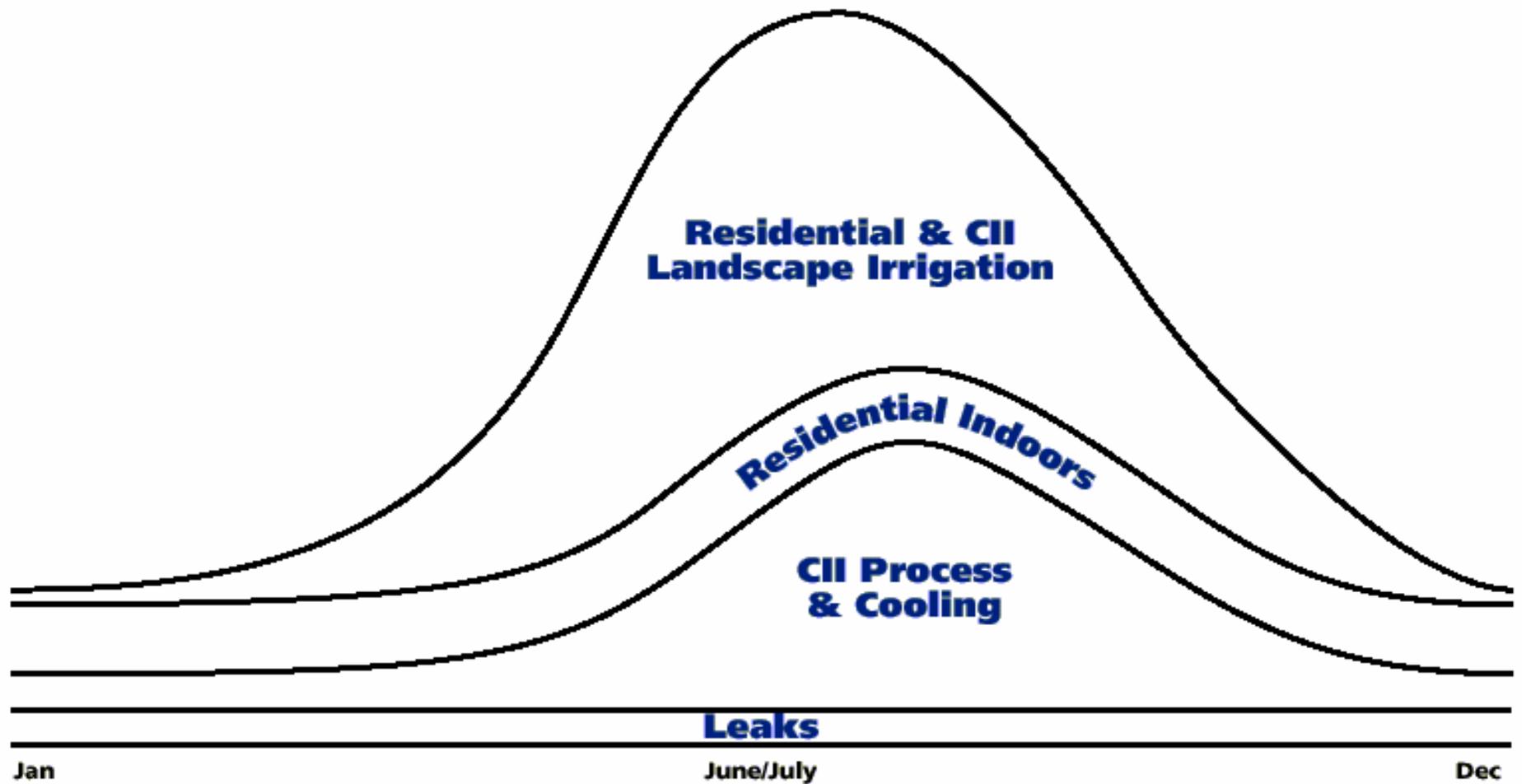
- Both Drought related and growth related
- Shortages are both short term and long term
- California is projecting a need for 1.2 to 2.3 million AF of water conservation over the next twenty years (State Water Plan)
- Pacific Institute study estimates that up to 1/3 of the state's urban water use could be saved with existing technologies



Urban Water Uses



Water Demand Curve





California's Best Management Practices

- State of the art conservation programs defined as “Best Management Practices”
- Original negotiations came up with 16 BMPs, covering residential, commercial, industrial, institutional, and large landscape
- 3 years spent refining language in a true consensus process



Memorandum of Understanding

- Historic MOU signed December 11, 1991
- 100 signatories from water agencies and environmental groups
- Signers pledged “good faith effort” to implement BMPs that are cost-effective
- MOU created Council as governing body



The Council Today

- 350 Signatories
 - 194 Group 1
 - 31 Group 2
 - 125 Group 3
- BMP List Revised to 14 on Sept. 30, 1997 and revised yearly since then
- 4 Plenary meetings, 4 Steering Committee meetings annually



Council Activities

- Technical Assistance (studies & workshops)
- Analysis of BMP costs and water savings
- Guidelines for Cost-Effectiveness
- Database-backed Web Site for BMP Reporting
- Statewide Conservation Programs
- Standards and Code Setting
- Green Building and Energy Research
- Grant Assistance to Water utilities



BMP Reporting Web Site



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BMP 03 1999



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BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit: Greg Retail Water District	BMP Form Status: 71% Complete	Year: 1999
------------------------------------------------------	-----------------------------------------	----------------------

The following required fields have either not been completed or contain invalid data:

- A. 4. Y/N Indicates whether agency completed a full-scale audit during this report year.
- A. 5. Y/N Indicates whether agency maintains in-house records of audit results or the completed AWWA audit worksheets for the completed audit.
- A. 6.a. Description of leak detection program.
- B. 2. Number of miles of distribution system line surveyed. Number of miles surveyed cannot exceed total number of miles.
- C. 1.b. Projected expenditures for next reporting period.

A. Implementation

1. Has your agency completed a pre-screening system audit for this reporting year?	Yes <input checked="" type="radio"/>	No <input type="radio"/>
2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production: Unit Conversion Calculator		



BMP Reporting Web Site

CUWCC

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BMP 03 1999

◀ **BMPs** ▶
DN - UP

◀ **YRs** ▶
DN - UP

Save Session

Submit As Final

Logout

Memorandum of Understanding

BMP 03: System Water Audits, Leak Detection and Repair		
Reporting Unit: Greg Retail Water District	BMP Form Status: 100% Complete	Year: 1999
A. Implementation		
? 1. Has your agency completed a pre-screening system audit for this reporting year?		Yes <input checked="" type="radio"/> No <input type="radio"/>
? 2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production: Unit Conversion Calculator		
a. Determine metered sales (AF)		<input type="text" value="41000"/>
b. Determine other system verifiable uses (AF)		<input type="text" value="1500"/>
c. Determine total supply into the system (AF)		<input type="text" value="43560"/>
d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required. <i>(This number will automatically calculate when you Save the Session)</i>		0.98



Printing Activity Reports



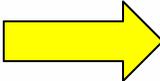
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Memorandum of Understanding

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Current BMPs

1. Residential Water Surveys
 - 576,742 SF, 396,556 MF
2. Residential Plumbing Retrofits
 - 468,855 SF, 210,668 MF
3. System Audits, Leak Detection & Repair
4. Metering with Commodity Rates
 - 7,730 meter retrofits



Current BMPs

5. Large Landscape Conservation

- 68,575 dedicated irrigation accounts
- 19,472 budgets
- 94,321 AF budgeted water use
- 70,687 AF actual water use
- 41,184 surveys completed on 427,878 mixed use accounts (9%)



Current BMPs

6. High-Efficiency Washing Machine Rebates

- 158,434 rebates worth \$17,544,527 paired with energy rebates
- 163,537 rebates worth \$18,257,675 water alone

7. Public Information

- \$64,532,000 spent



Current BMPs

8. School Education

- \$29,612,858 spent

9. Commercial, Industrial & Institutional Conservation

- 21,699 surveys completed
- 45,517 incentives awarded for total of \$8,097,782



Current BMPs

10. Wholesale Agency Assistance

- 27 wholesalers
- \$38,402,063 2004 expenditure

11. Conservation Pricing

- 83% of retail revenue derived from volumetric rates
- 77% of residential revenue from either uniform or increasing block



Current BMPs

12. Conservation Coordinator

- 358 FTE's worth \$15,238,017 retail
- 88 FTE's worth \$4,102,941 wholesale

13. Water Waste Prohibition

- 81% have gutter flooding ordinances
- 35% prohibit single pass car washes

14. Residential ULFT Replacement

- 1,326,777 SF
- 1,011,344 MF



Water Savings (AFY) Detail Report for BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:
Demo Retail Water District

Estimated Water Savings from BMP Annual Report Data

Year	Water Savings (AF)	View Detail
1991	91	
1992	147	
1993	147	
1994	149	
1995	149	
1996	142	
1997	131	
1998	158	
1999	169	
2000	192	
2001	197	
2002	185	
2003	175	
2004	168	
2005	143	
TOTAL:	2,338	



Savings Calculations

- BMP by BMP
- Conservation calculation of BMP Actions
- Adjustments for:
 - Savings decay
 - Natural replacement
 - Freeridership
- 1,333,406 AF since 1991



Water Energy Usage

- California's water systems energy-intensive
- 7-8% energy use for large water systems
- If consumer end use is included:
 - **19%** of electric energy load in California
 - **39%** of natural gas energy load in California
- 33% of city's budget can be for water pumping
- 34% of water facility's O&M budget for energy



Energy Partnership Needed

- Energy efficiency well funded and regulated: \$500 million over next three years
- Water efficiency not well funded or regulated
- CEC Report: **95%** of the energy efficiency goals could be met in water efficiency programs at **50%** of the cost
- Need better utility as well as consumer recognition of benefits



Efficiency Opportunities

- Residential Clothes Washers
- Commercial Clothes Washers
- Commercial Ultra Low Flow Toilets
- Landscape Conservation
- Residential Audits and Retrofits for Energy and Water
- Commercial Dishwashers
- Pre-rinse spray valves



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Pre-Rinse Spray Valves: A Great Example

- Commissioned analysis by Food Service Technology Center in San Ramon, CA
- Prior valves flowed at 3 gpm or more
- Usage typically 4 - 6 hours per day
- Efficient units: 1.2- to 1.6-gpm





Council Installation Program

- Phases 1 and 2: 33,600 valves statewide
- 23,100 valves in Southern CA
- 4,600 AFY of water savings statewide
- 9.3 million therms per year
- 3,200 AFY of water savings in southern CA
- 6.4 million therms per year in southern CA



Standard Set

- CEC set standard in 2004 for same specification as the Council pre-rinse spray valve (1.6 gpm)
- Took effect January 1, 2006
- Most valves have a 5 year life; within 5-8 years all valves will be efficient
- Federal standard set in EPAct 2005 for same flow rate



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Water Factor Standards

- Council provided CEC with data on water and energy savings, rebate experience
- CEC set water factor standard for commercial clothes washers: **9.5** or lower
- Water factor standard for residential clothes washers:
 - **8.5** or lower by 2007
 - **6.0** or lower by 2010
- Federal waiver petition filed with DOE



“Water Star” Labeling

- Market research and trademark by East Bay Municipal Utility District
- Desire close coordination with EPA “market enhancement” program
- CA Startup Funding awarded by grant: \$217,000
- Pending request for additional \$1.3 million
- Target year for planning: 2006-2007



600,000 people and over 200,000 homes per year



Green Building Issues

- LEED (USGBC) only awards 6 points for water efficiency
- LEED Water Efficiency Technical Advisory Group working to make significant improvements (Council participation)
- Other green building initiatives similarly weak on water efficiency
- “California Friendly” and “Smart from the Start” pilot programs in California

The New Irrigation Technology



Et
Weather
Data



For
Irrigation
Scheduling

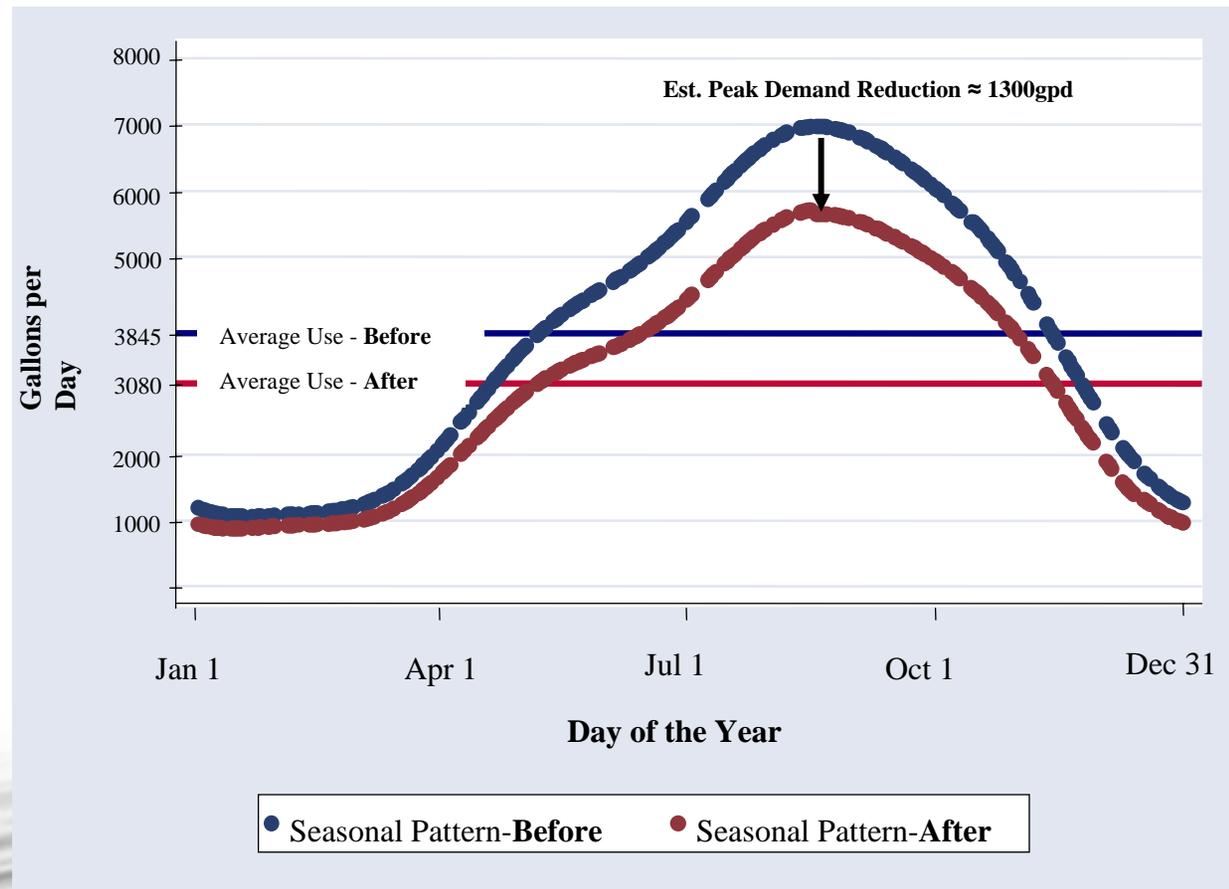




Seasonality of Savings

Summer Peak Savings for Program – 2.95 cfs

Capacity Reservation Charge Savings / Meter / yr. \$14





Hot Water Design Issues

- CEC recognition of energy and water savings opportunity
- Current study efforts need to be expanded
- Research funding applications
- Developing new building standards for hot water systems in residential and commercial as partnership opportunity with LEED, CEC, CUWCC, and developers



Recommendations

- Water Efficiency funding will end with Prop 50 grants
- Approval needed for cold water funding from Public Benefits Goods Charge funds
- Measurement of energy equivalents – model could be developed from CUWCC database
- Who are Primary contacts CEC and CPUC?
- CUWCC willing to help



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