Suggested Conservation Elements from the Working Group on Reducing Peak Water Demand

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Why Reduce Water Demand?

1. Water RELIABILITY

The water we conserve today is saved in Loch Lomond reservoir in case next year is a drought. Pending the implementation of a new water supply project, e.g. aquifer storage, this is our only interim water reliability strategy.

2. Wildlife HABITAT

The water we conserve today allows the City to leave more water in streams for fish habitat.

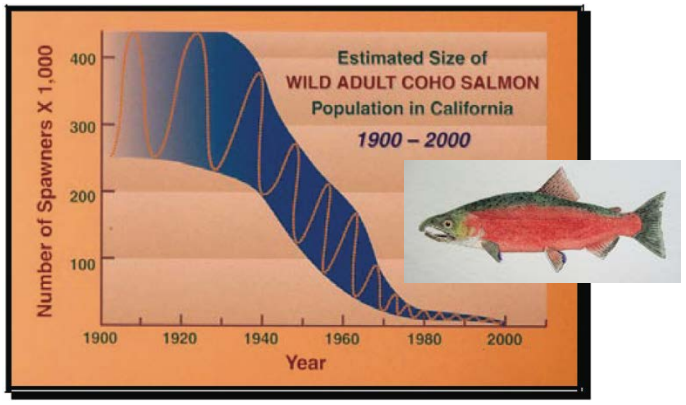
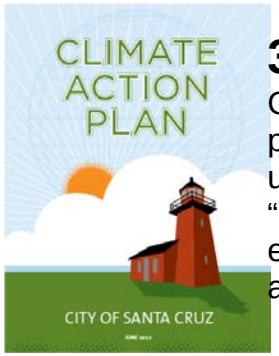


Figure 2: Visual Representation of Extinction Vortex of Coho Salmon (Peter Moyle, pers. comm.)



3. Reduced ENERGY

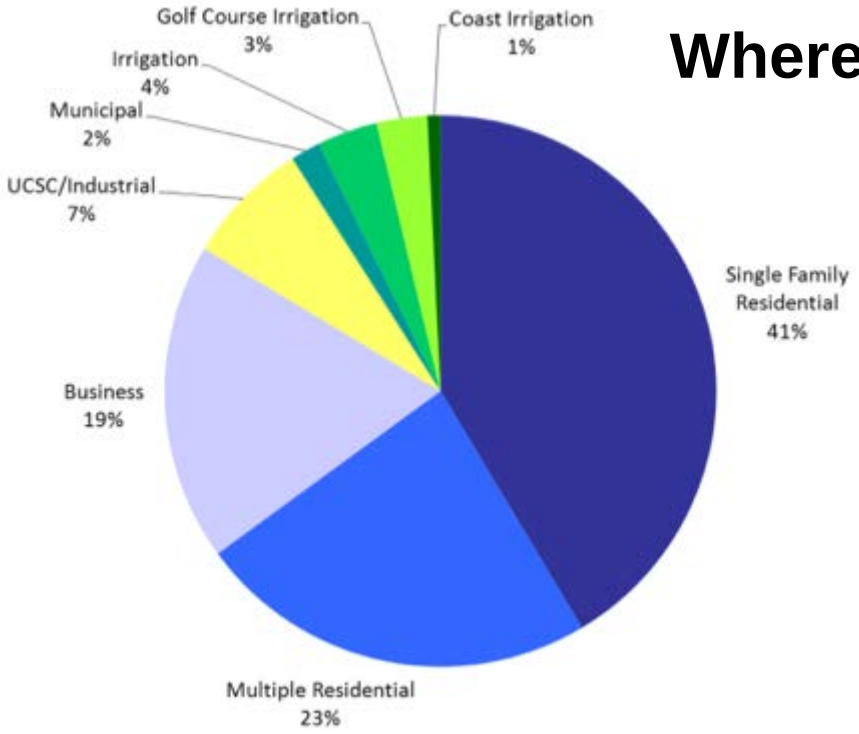
Conserving water reduces the energy used in pumping and treating water---and the energy used in heating water at the consumer end. "Goal: Continue to reduce per capita and total energy use within the Santa Cruz Service area." *-Climate Action Plan*

4. Avoided COSTS

Reducing demand reduces the investment needed for new water supply infrastructure

	Yield	Cost
Water Transfers, including turbid water treatment, GHTP upgrade, interties, Tait diversion upgrade *	558 mil gals	$92 mil
Conservation Program Crec**	205 mil gals	$13 mil

* John Ricker presentation 4/15/15 **Maddaus, Draft Master Cons Plan



Where can we find the savings?

In these recommendations we chose to include indoor and outdoor features (some of which draw from other alternatives) because even though the bulk of peak season demand comes from outdoor use the longer days also lead to increases in indoor use.

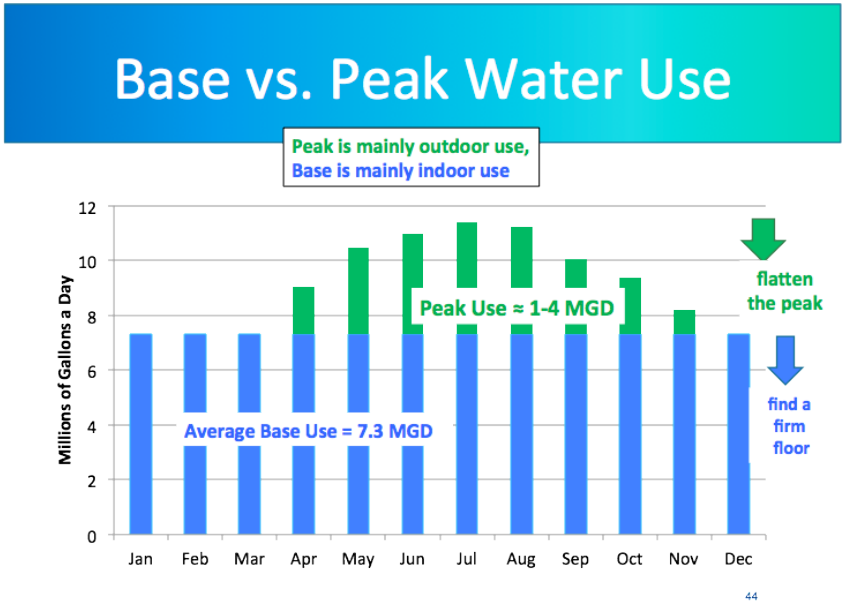
All savings are in MGS=million gallons per season-24 weeks from May-Oct. Customers=96,000; Peak Season Hump=700 MG

A. Reducing Peak Season Use

1. **Residential outdoor use**
2. **Dedicated landscape accounts**

B. Reducing Base (Indoor) Use

1. **Residential washing machines**
2. **Commercial best practices**
3. **Code requirements**



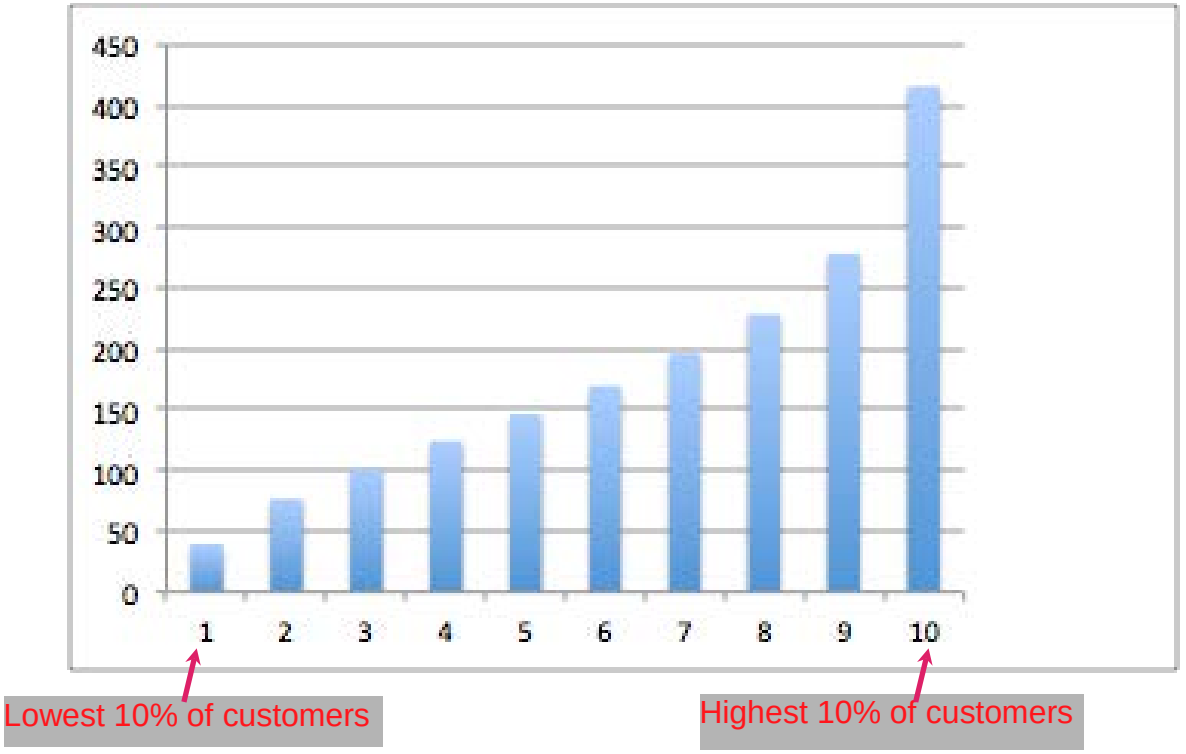
Residential outdoor use:

Recommendations:

- **Promote social norms**
- **Personalized outreach to highest users & generic landscape budgets**
- **Climate-appropriate landscaping & rainwater infiltration**
- **Price incentives for all users**

Average Gallons Per Customer Per Day, 2013

Each bar represents 10% of single family residential customers



Residential outdoor use:

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Sample Home Water Use Report

Climate-appropriate landscaping & rainwater

Drought tolerant plants require little dry season irrigation. Native plants require no irrigation or fertilizer, and provide habitat for native insects and birds.

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Savings: 2-4.5MGS per 1000 lawns and
1 MGS per 1000 spray to drip conversions for shrubs

Formula: 1GPM*20min/week*24*4 sprays*60%

gs: 18 Million Gallons Season (MGS) for 3% and 30 MGS for 5

Formula:3%/(5%)yr=40 (66)MGY/52weeks*24 weeks

Savings: 9MGS potential for tiered sewer

In order to optimize a price reward for conservation, customers need to be able to experience a reduction in their water bill in response to their cutback on water use. This price responsiveness is diminished when the fixed charge for water makes up a high proportion of the monthly bill.

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Recommendation: **Price incentives for all residential**

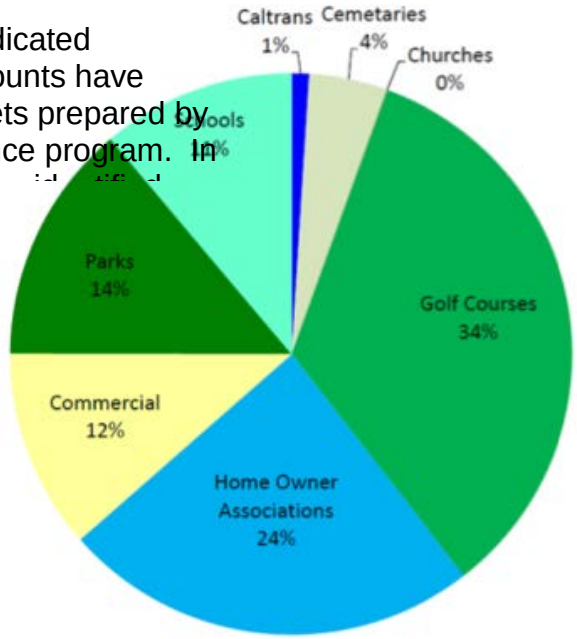
Residential outdoor use:

Water Use by Landscape Accounts

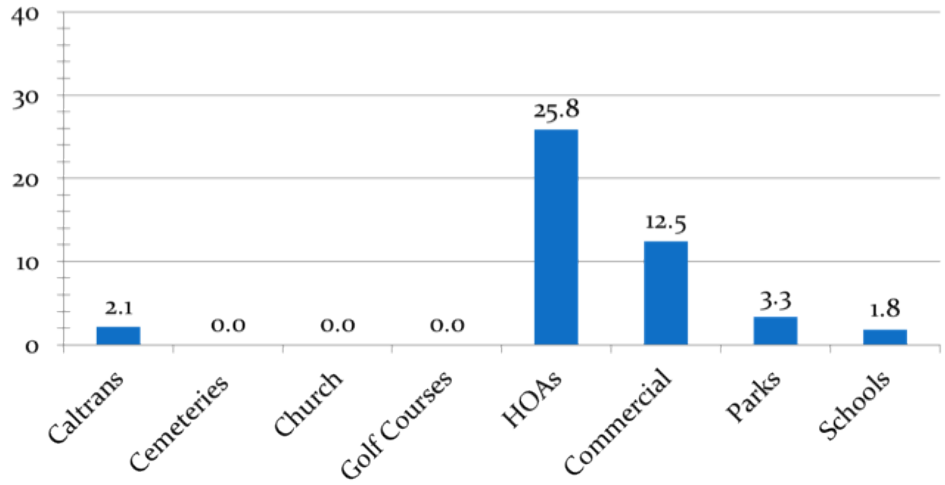
Over-watering by Landscape Accounts* MGS

*as defined by WaterFluence climate-adjusted budget 2012

The largest dedicated landscape accounts have irrigation budgets prepared by the WaterFluence program. In



Does not include drought surcharge



Charges for residences using 6 units/mo = 150 gals/day

Savings: 30MGS from overwatering plus 5-15MGS with 10% conversion

Formula: 1.38 Msqft of turf*2 feet/year*25%(up to 75%)

Dedicated Landscape Accounts

Savings: 9MGS for laundry recycling

For a business, the imposition of rationing during severe drought years hits the bottom line. This proposal suggests that the City's *Water Shortage Contingency Plan* be modified so that businesses who adopt best practices such as efficient plumbing fixtures, hotel laundry recycling, and climate-appropriate landscaping, would incur a lower level of curtailment in a severe drought.

For example, in a Stage 4 drought, with a system-wide goal of 35% curtailment, the current plan is to ration businesses to 87% of their normal year water use. Under our recommendation, businesses adopting best practices would be expected

Reducing Base (Indoor) Use

Recommendation: **Install efficient washing machines and dishwashers in residences and rebate hot water recirculation systems**

Due to state and national standards for efficiency, washing machinesare rapidly becoming more efficient. Just a few years ago a washing machine was considered efficient if it used under 30 gallons per load. Now machines are available for $550 that use 15 gallons or less. https://www.energystar.gov/products/certified-products/detail/clothes-washers

Dishwashers have seen similar technological advances with some machines now offering 2.5 GPL. The old standard of 10-15 GPL has been updated to 5.5 GPL for an Energy Star certified product.

Reducing Base (Indoor) Use

Recommendation: **Offer commercial customers who employ best practices**

Savings: 4MGS for spray nozzles already

The Draft Master Conservation Plan Program Crec includes two mandates that go beyond current California Building Code:

a. Requiring high efficiency washers in new development
b. Require hot water on demand/structured plumbing in new development

Currently there is a spurt of innovation in water efficiency. A working group could evaluate innovative measures for cost effectiveness and recommend them for inclusion in local code. Some possible measures listed by Maddaus:

c) Require .25 gal/flush urinals in new development

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Hotel Laundry Recycling example

EPA study – Grand Hyatt, Seattle, 457 rooms

- $100,000 retrofit cost
- saved $134,000 in first year,
- saved 38 GPD per occupied room
- Laundry uses 80% less water, 50% less heat

Code Requirements