

This presentation premiered at WaterSmart Innovations

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Water-Smart Success!

Implementing an Industrial Process Water Use Reduction Program

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Municipal Water District of Orange County

WHO WE ARE



Municipal Water District of Orange County

- Wholesale supplier and regional planner to 28 client cities and water agencies
- Governed by seven-member elected board of directors
- Member agency of Metropolitan Water District of Southern California
- Service area: 600 square miles
- Water demand: 668,000 AFY
 - Imported supply
 - Local supplies
- Population: 2.3 million

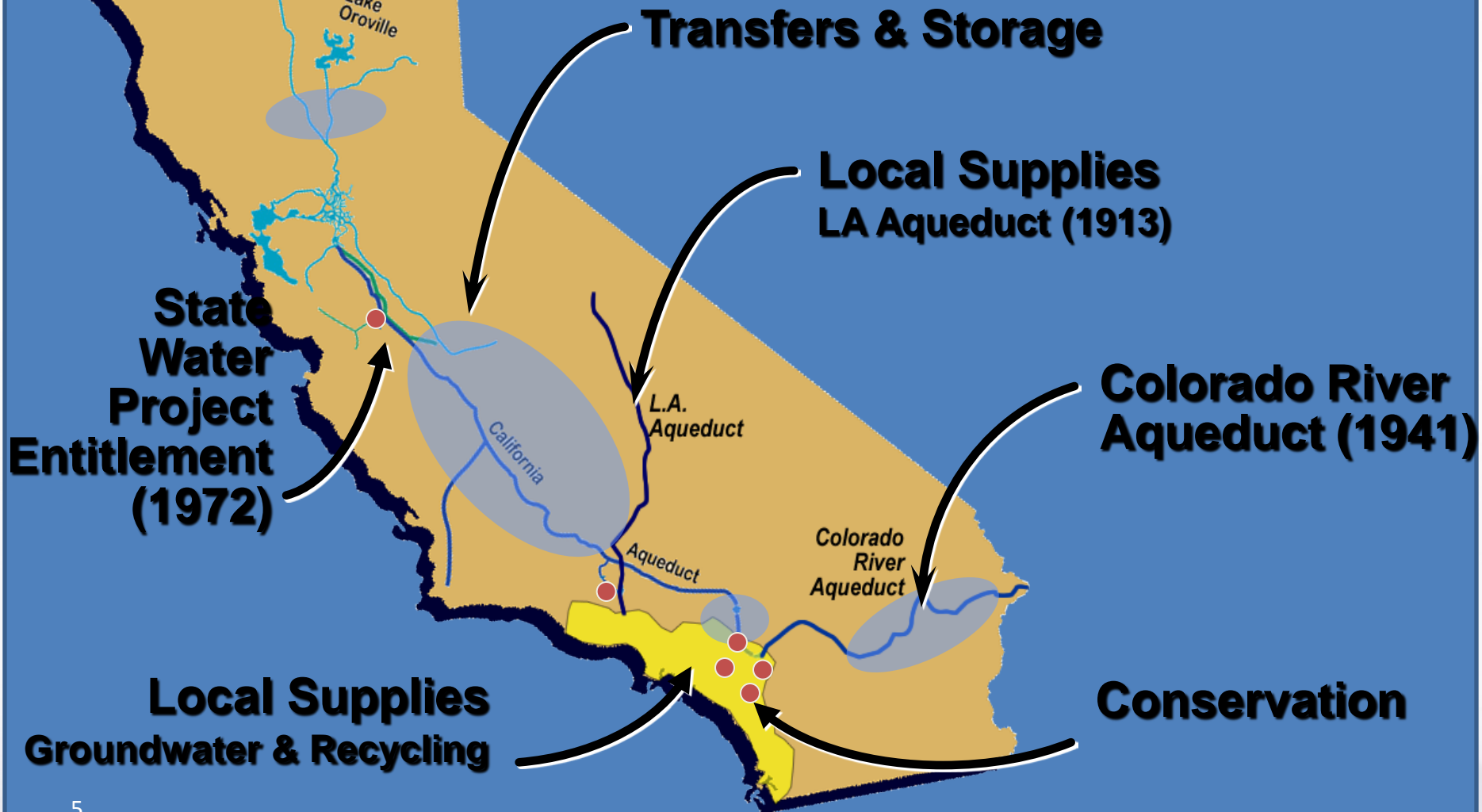


About MWDOC

- **What we do**
 - **Regional reliability planning and facilitation agency**
 - **Provides countywide water conservation programs**
 - **Implements countywide water education school program through partnership with Discovery Science Center**
 - **Facilitates countywide emergency preparedness through the Water Emergency Response Organization of Orange County (WEROC)**
 - **Coordinates with local and regional water providers including OCWD and retail water agencies**



Where Southern California Gets its Water



Where Orange County Gets its Water

Imported Water = 328,000 AF

Colorado River Aqueduct

State Water Project

Transfers/Storage

Local Sources = 290,000 AF

Groundwater

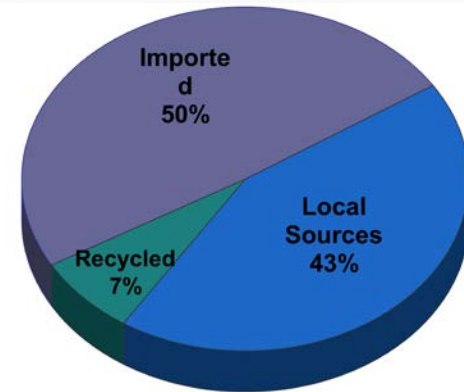
Surface water (lakes, reservoirs)

Recycled water = 50,000 AF

Irrigation

Groundwater Recharge (GWRS)

Total Demand = 668,000 AF



Industrial Program

PROGRAM OVERVIEW



Program Background

- **Targets efficiency improvements in industrial manufacturing processes that are water intensive**
- **Grew out of an Industrial Technical Assistance Program implemented in the mid 1990's**
- **Couples Technical Assistance with performance based financial incentives to implement efficiency recommendations**



Program Overview

- Target Audience
- Marketing
- Survey Process
- Incentive Rate
- Lessons Learned
- Project Status



Target Audience

- Industrial customers utilizing process water
- Identified businesses with help from Orange County Sanitation District and South Orange County Wastewater Authority
 - Industrial wastewater discharge permits
 - Reviewed recorded wastewater flows of permittees in order to identify sectors
- Targeted Sectors
 - Commercial laundry
 - Food Processing
 - Textile Manufacturing
 - Metal Plating
 - Electronics Manufacturing



Marketing

- **Identified top water users**
 - Assumed top dischargers = top users
- **Brochure mailing**
 - Limited response
 - Exposure to Program beneficial
- **Telephone Calls**
 - Majority of surveys scheduled through calls
- **Elected Officials**
 - Highly successful
- **Sanitation and Energy Utilities**
 - Source Control Inspectors
 - Energy (Gas and Electric) Account Representatives



Survey Process

- Program offers two levels of surveys
- Focused Survey
 - Identify major water uses and potential water saving measures
 - Engineer spends a couple of hours on site
 - Screening tool to identify candidates for next survey



Electroless Copper Plating Line

Survey Process continued

- **Comprehensive Survey**
 - Available to customers with significant water savings potential that express strong interest in pursuing improvements
 - Engineer spends up to three days on site
 - Determines equipment costs and diagrams system modifications, including a before and after water balance



Plating Line

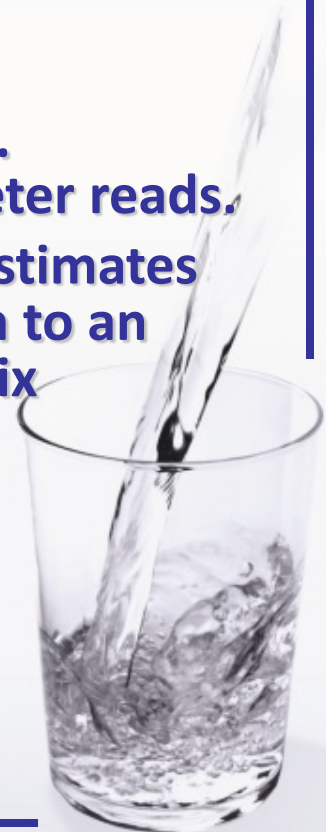
Customized Survey Reports

- Summarize recommended retrofits
- Water balance, equipment design ranges and costs
- Estimated costs, savings (water and sewer) and payback
- Next steps
- Comprehensive reports are delivered in person by technical / engineer team



Incentive Payments

- **\$150-\$195 acre foot saved**
 - **Higher level incentive rate requires 1 year of post implementation monitoring**
- **Half paid after verification of equipment installation**
- **Half paid after one year monitoring period**
- **Final incentive calculation based on actual water savings. Participant responsible for submitting monthly water meter reads.**
- **ROI - For Comprehensive Survey participants, MWDOC estimates that Program incentives bring payback calculations down to an average of two years, with several companies less than six months.**



Lessons Learned

- Time to Complete Surveys
- Time to Install and Fine Tune Equipment
- Engineering Support



Time to Complete Surveys

- **Must get a handle on realist expectations**
 - **During program development, staff envisioned we could complete the following in one year:**
 - **50 Focused Surveys**
 - **12 Comprehensive Surveys**
 - **Up to 12 Process Changes**
- **Time from when a Focused Survey starts to the completion of Comprehensive survey is taking up to 12 months. Average length of time is 7 months.**
- **Since late 2006, 40 companies have participated**



Time to Complete Surveys cont.

- Why is it taking so long?

- Surveys required multiple site visits and telephone calls
- Specialty vendors are needed to provide cost estimates.
 - Took time to identify vendors
 - Hesitant to provide quotes



Laundry - Washer

Time to Install and Fine Tune Equipment

- Business needs time to make investment decision, finalize decision/engineering plans, procure equipment, obtain permits and construct project
- Installation
 - 1st participant – 9 months
 - 2nd and 3rd participants – over 1 year
- Fine tuning equipment can take months
 - Equipment needs to be functioning with maximum savings before the 1 year monitoring can begin



Engineering Support

- Staff recognized a need for the Program to include engineering support
 - Several companies wanted to implement recommendations but lacked in-house engineering resources
 - Other companies were almost ready to implement but had follow up questions that needed to be answered before moving forward
- MWDOC received grant funding from USBR to provide this needed support
 - Funding has been used to research new products, revise savings calculations, additional engineering assistance
 - Will be used to prepare pre-bid documents



PROGRAM SUCCESS



Program Components

- Completed
 - 38 Focused Surveys
 - 17 Comprehensive Surveys
 - Signed 7 Statements of Interest
 - Signed 8 Incentive Agreements
- » over \$351,272 committed



Types of Projects Identified in Comprehensive Surveys

Type of Industry	Process Change	Estimated Annual Water Savings (MG/Y)	Payback after Incentive (yrs)
Electronic	Deionized water recycling system	18.8	8
Metals	Treat plating rinse water and recycle it to rinse baths	8.1	2.3
	Install conductivity meter control on process rinse tanks to reduce continuous flow rinse	6.6	0.5
	Deionized water recycling system	4.4	3
Textile /Laundry	New washers and final rinse water reuse system	3.6	38.3
	Wastewater treatment (nanofiltration) and reuse system	147.0	3.2
Food	New washing equipment	8.8	0.1
	Recycle rinse water, reduce rinse time, recover steam condensate	2.9	1.9
	Recycle rinse water, reduce rinse time	5.7	0.1
Defense	Use treated groundwater in cooling tower	29.4	0.25

Industrial Program Successes

Company Name	Water Savings (MGY)	Project Cost	Incentive
Marcel Electronics	14	\$1,514,535	\$61,314
Prudential Overall Supply	6.6	\$1,849,907	\$15,732
SunOpta Fruit Group	17.7	~\$30,000	\$0
Irvine Company	0.74	\$27,296	\$10,246
Boeing (Phase I)	16.3	\$151,670	Up to \$97,827

*based on 11 months

TOTAL: 55

Percentage of Program Goal: 69%

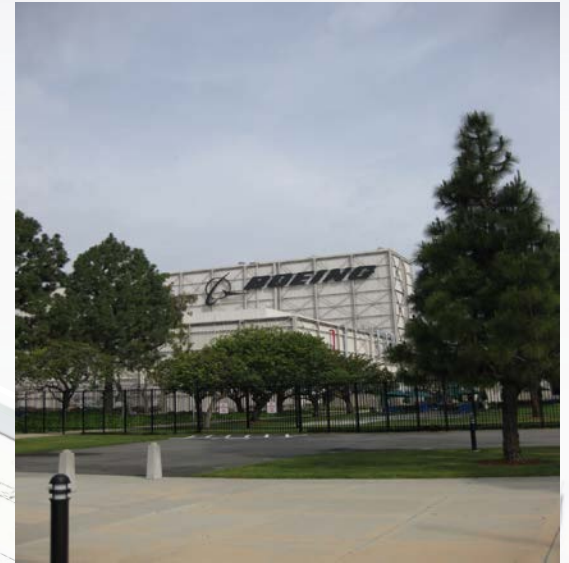


Example Recommendations

Marcel Electronics	SunOpta	Prudential Overall
<u>Process Improvement:</u> Installation of a deionized water recycling system for washing of circuit boards	<u>Process Improvement:</u> Reverse flow strawberry washing system	<u>Process Improvement:</u> Upgrade and laundry washing equipment and reuse of rinse water

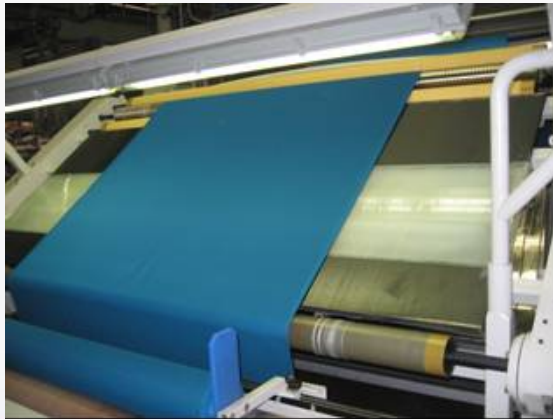


Boeing



Conclusion

- Offering a package of surveys, engineering assistance and incentives has been successful
- Industrial Process changes take time



Industrial Program Next Steps

- Economy Improving
- Surveys Easier to Schedule - Sites Interested
- Expansion of Sector Focus
- Incentives Available
 - USBR
 - DWR
 - Member agencies such as IRWD
 - MET's *new* Water Savings

Incentive Program



Questions?

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