This presentation premiered at WaterSmart Innovations

watersmartinnovations.com



IMPROVING TURF REPLACEMENT EFFICIENCIES

Chris Willig Field Survey Manager, Waterfluence



INFLUENCING EFFICIENT IRRIGATION

- We're helping landscape customers use the "Right" amount of water
- * Agencies and customers in survival mode since DROUGHT intensification
- * Landscape water use analysis for Commercial and Public accounts
- Contact management
- Site water use rankings
- Landscaper rankings
- Field surveys
- Our mission: Social norm the landscape industry

Turf Replacement or Removal (TR)





Santa Monica Landscapes - GvG



Tradscape

Calscape

RELANDSCAPING SUCCESSES



- Water savings
- # Education
- Induced landscape changes in non-target sites
- Landscape maintenance cost savings
- Reduced waste stream
- Chemical application reductions



WATER SAVINGS

- ** AVERAGE SAVINGS CLAIMED: 45 gals/ft2/year or 6 ft applied water - Seapy (2015)
- Water cost savings= 24¢/ft2/year @ \$4.00/CCF or 48¢/ft2 /year @ \$8.00/CCF
- Sarden Vs. Garden (GvG), Santa Monica, CA
 42 gals/ft2/year or 5.6 ft applied water
 ≈ 21¢/ft2/year.
- Solution Soluti Solution Solution Solution Solution Solution Solution S



COST SUMMARY

Rebates range from \$1.00 to \$3.70/ft2 (others?)

TR Costs = \$3.00-\$12.00 to perhaps \$18.00/ft2 (outlier \$33/Ft2) GvG \$10.10/ft2

 ** Highly variable estimated costs/AF: Range: \$354 - \$5,840 (Seapy, 2015) Mean: \$2,011
 LADWP ≈ \$1,100 (est. news reports @ \$1/ft2) MOWDOC ≈ \$1,700 (Berg, 2014)



WATER SAVINGS COST







- Rebates have increased from \$0.25 to \$3.70 or more.
- Durability frequently estimated at 10 years.
- Unquantified administration costs.



PROBLEMS

- Most effective under high ETo (desert) and/or high retail cost water.
- California locales under lower ETo with firm water resources reduces saving potential while increasing costs.
- Is TR a replace and forget conservation tool (Sovocool 2005)? Or is followup required to ensure water savings realized (1,000's sites).
- Misdirected funds Trips to Mexico, etc...
- Drought response?



PROBLEMS (MORE)

- Stablishment water use.
- Increased water use over time -Reversion to past irrigation practices.
- Public Safety Fire vulnerability if drought tolerance thoroughly exploited.
- Increased heat rejection both from drought tolerant landscapes and artificial turf.

Water Use Confounding Factors

Waterfluence



Water use

Time

End Point Applied Water Data from Waterfluence Field Survey Sites



Example: Establishment Water





LONG TERM VIEW

- Will water use return to the mean?
- # How will landscape tastes change?
- Backlash?
- Environmental concerns including: heat rejection, health concerns, and wildlife sustenance.



ALT PROGRAMS

- Budgets Pre and post TR
- Irrigation system improvements (turf systems)
 - Head relocation (limit edge effects)
 High efficiency nozzles (\$100-\$280/AF)
 - ₩BIC's (≈ \$900-\$1,000)
- Water efficient turf (buffalo grass, kikuyu, bermuda)

TURF VS SHRUB UNDER TIGHT BUDGETS

Waterfluence



	2014		2013		Difference (2013-2014)		
	Depth	Depth	Depth	Depth	Depth	Depth	
Туре	Applied Ft	Overwater Ft	Applied Ft	Overwater Ft	Applied Ft	Overwater Ft	
Shrub	1.3	0.3	2.5	0.7	-1.2	-0.5	
Mix	2.5	0.6	3.6	1.0	-1.1	-0.4	
Turf	1.0	0.2	3.4	0.7	-2.5	-0.5	
Total	1.5	0.3	2.9	0.8	-1.4	-0.4	



QUESTIONS NEEDED

What are ...

- TR's long term water savings?
- * ETo & Water Price effects on effectiveness?
- Socioeconomic affects: On savings potential, acceptance and longevity? Economic fairness.
- TR long term viability?
- Faster, better, cheaper ways to get the job done?

Cost Effectiveness Analysis-Existing Programs

Conservation Activities Sorted by Unit Cost

(\$ per acre foot saved) SoCal WaterSmart In-Stem Flow Regulators, Cll \$91 SoCal WaterSmart HE Large Rotary Nozzles (Set of 2), Cll S101 SoCal WaterSmart HET (Tank-Type), Cll \$134 FreeSprinklerNozzle.com Voucher Program \$180 SoCal WaterSmart UL or Zero Water Urinal (Retrofit), CII \$185 SoCal WaterSmart Laminar Flow Restrictors, Cll \$222 SoCal WaterSmart Cooling Tower pH Controller, Cll \$230 SoCal WaterSmart Cooling Tower Conductivity Controller, Cll \$248 Industrial Pay for Performance \$249 \$249 Large Landscape Customized Incentive WaterSmart Industrial Program \$249 SoCal WaterSmart HE Pop Up Spray Heads, CII \$256 SoCal WaterSmart HE Nozzle, Res \$256 SoCal WaterSmart Dry-Vacuum Pumps, CII \$259 SoCal WaterSmart HET (Flushometer), Cli \$268 Smart Timer Home Certification \$271 SoCal WaterSmart WBIC <1 Acre. Res \$271 SoCal WaterSmart WBIC, CII \$272 SoCal WaterSmart Connectionless Food Steamer (per Compartment), Cli \$272 Spray Head Incentive, Pressure Regulating Body for nozzles \$355 Water Loss Control - Low* \$379 SoCal WaterSmart HE Clothes Washer, Res \$406 SoCal WaterSmart WBIC >= 1 Acre. Res \$423 Urinal Valve Retrofit Program \$429 Water Loss Control - High* \$487 Water Smart Hotel Program \$505 Water Budget Calculator Irrigation Schedule Modification \$608 SoCal WaterSmart Air Cooled Ice Machines, CII \$910 Spray to Drip Program \$1.025 So Cal WaterSmart_Turf Removal \$1,679 S-\$200 \$400 \$600 \$800 \$1,000 \$1,200 \$1,400 \$1,600 \$1,800

Thanks to Joe Berg of MWDOC!