

This presentation premiered at WaterSmart Innovations

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IMPROVING TURF REPLACEMENT EFFICIENCIES

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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 SUCCESSSES

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

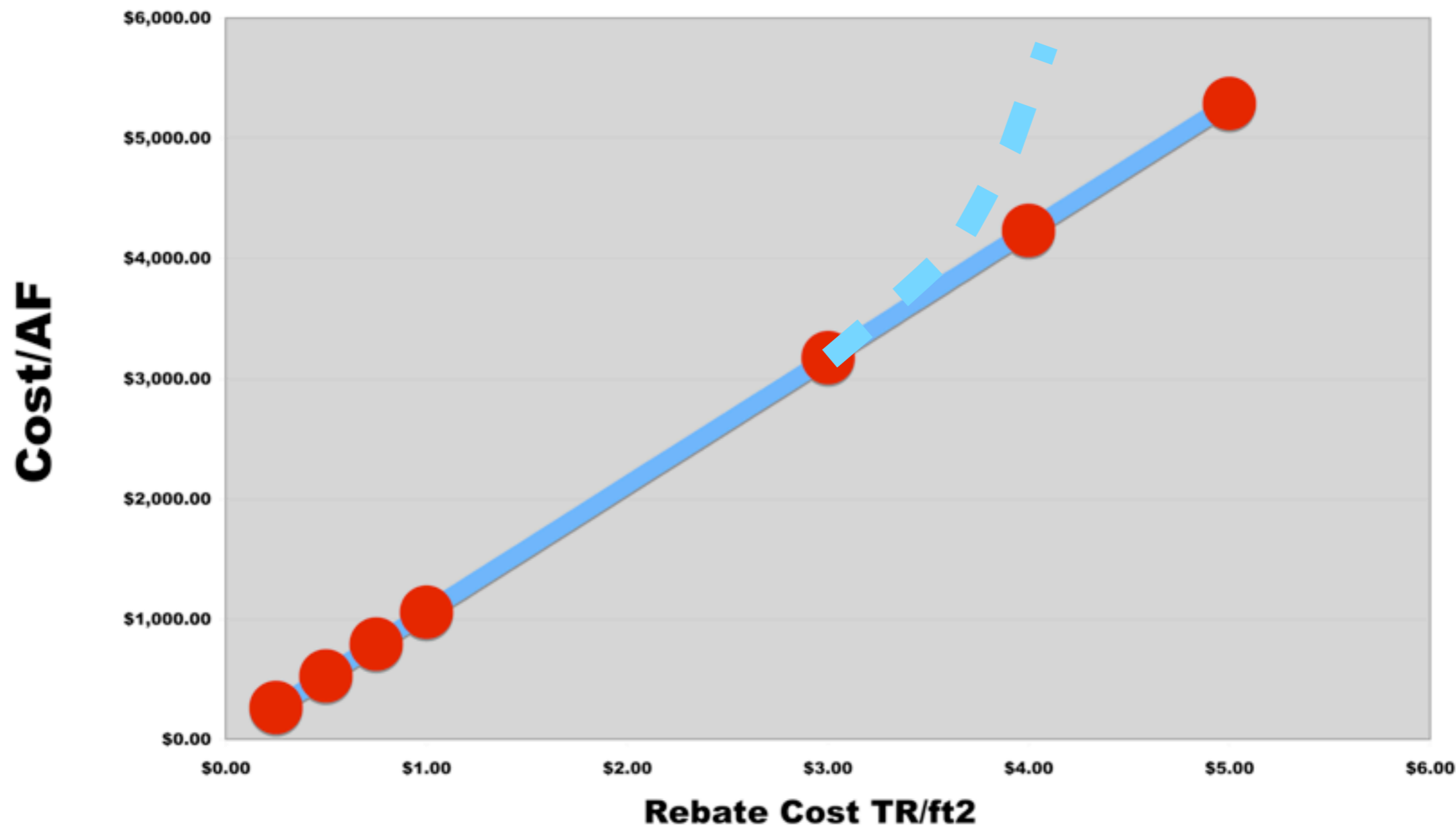
WATER SAVINGS

- ✿ 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
- ✿ Garden Vs. Garden (GvG), Santa Monica, CA
42 gals/ft²/year or 5.6 ft applied water
≈ 21¢/ft²/year.
- ✿ GvG Cost savings
≈ 21¢/ft²/year + other savings 40¢/ft²/year = 61¢/ft²/year

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



COST'S?

- ☼ 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?

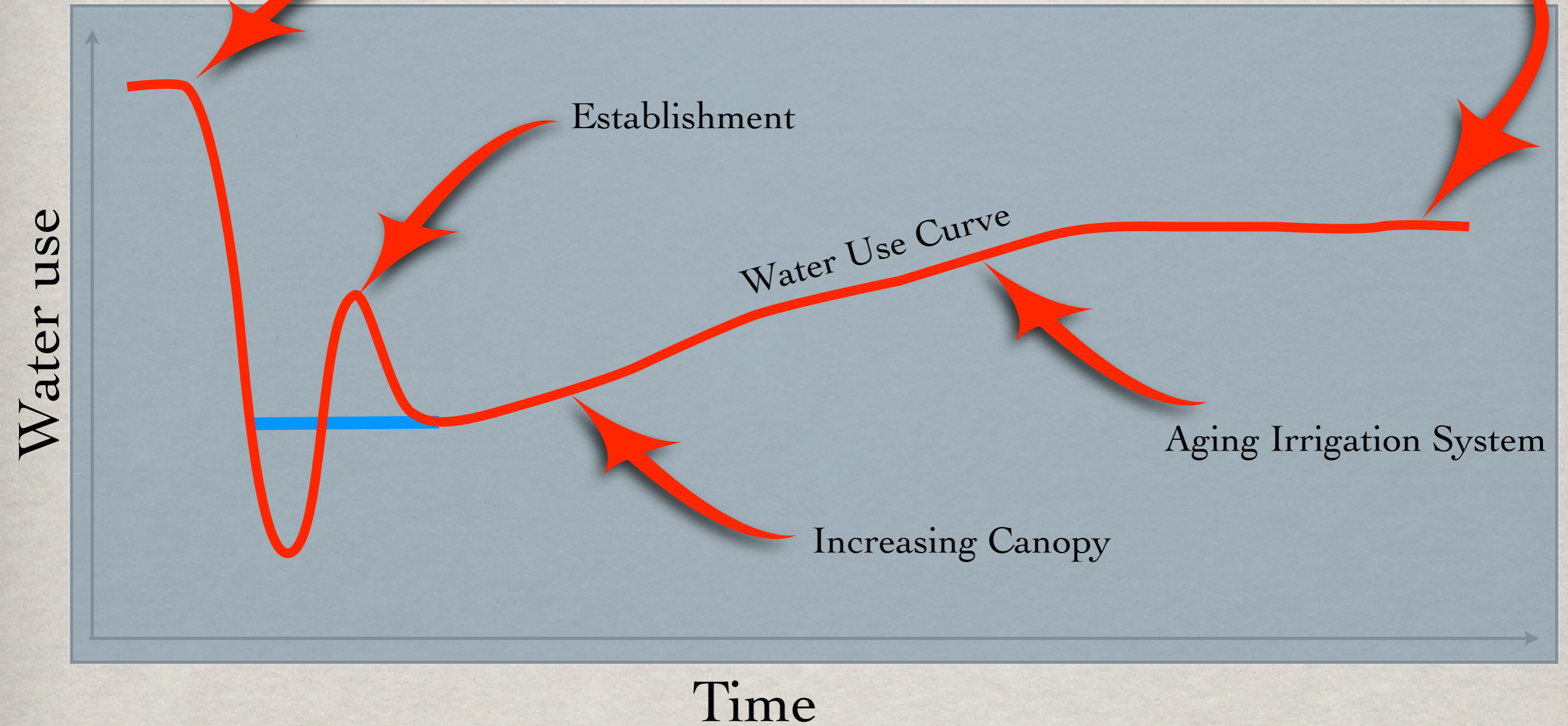
PROBLEMS (MORE)

- ✿ Establishment 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

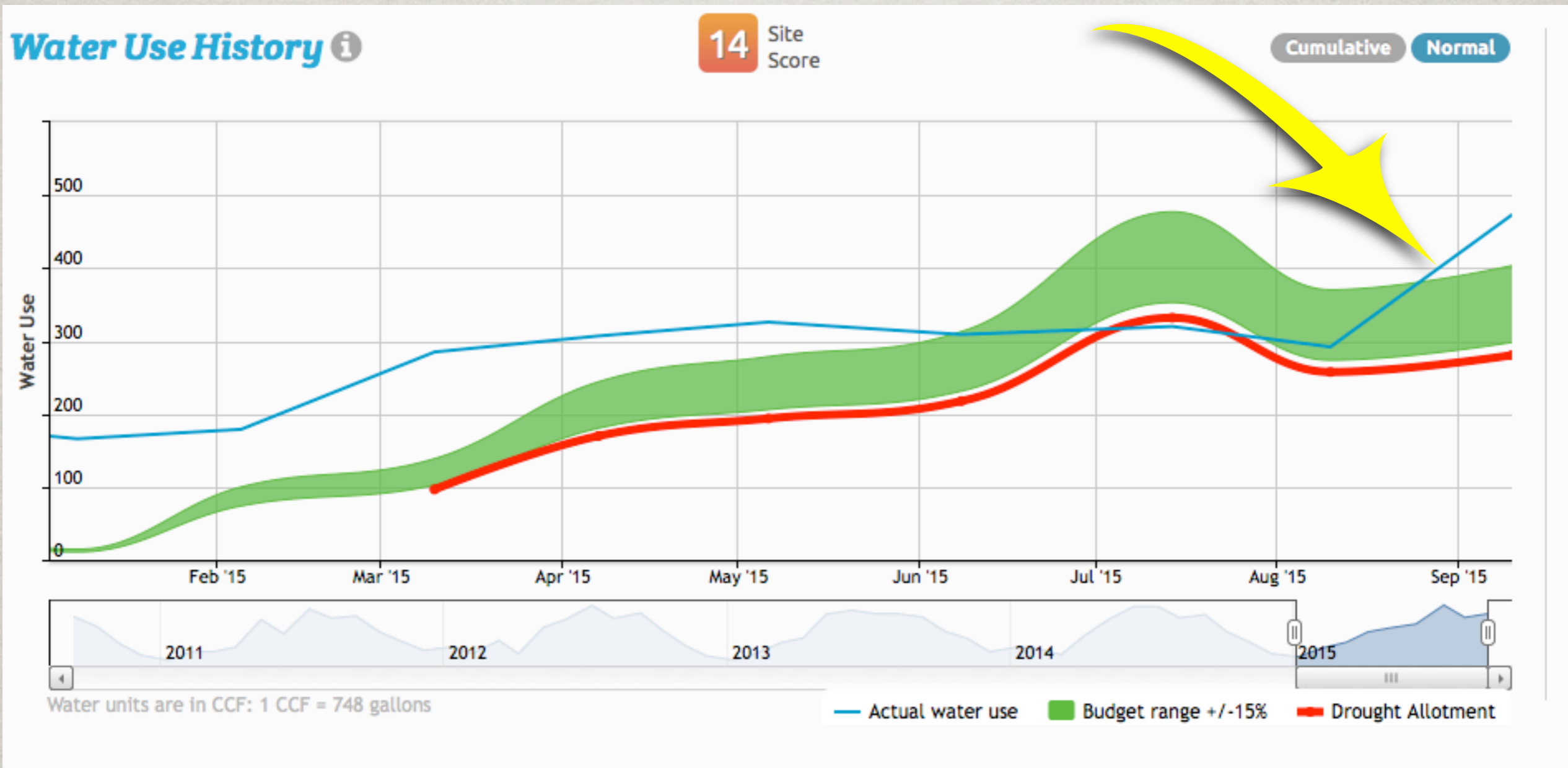
Turf Mean 5.6 ft (2014)

Shrub Mean 4.1 ft (2014)?



End Point Applied Water Data from
Waterfluence Field Survey Sites

Example: Establishment Water



LONG TERM VIEW

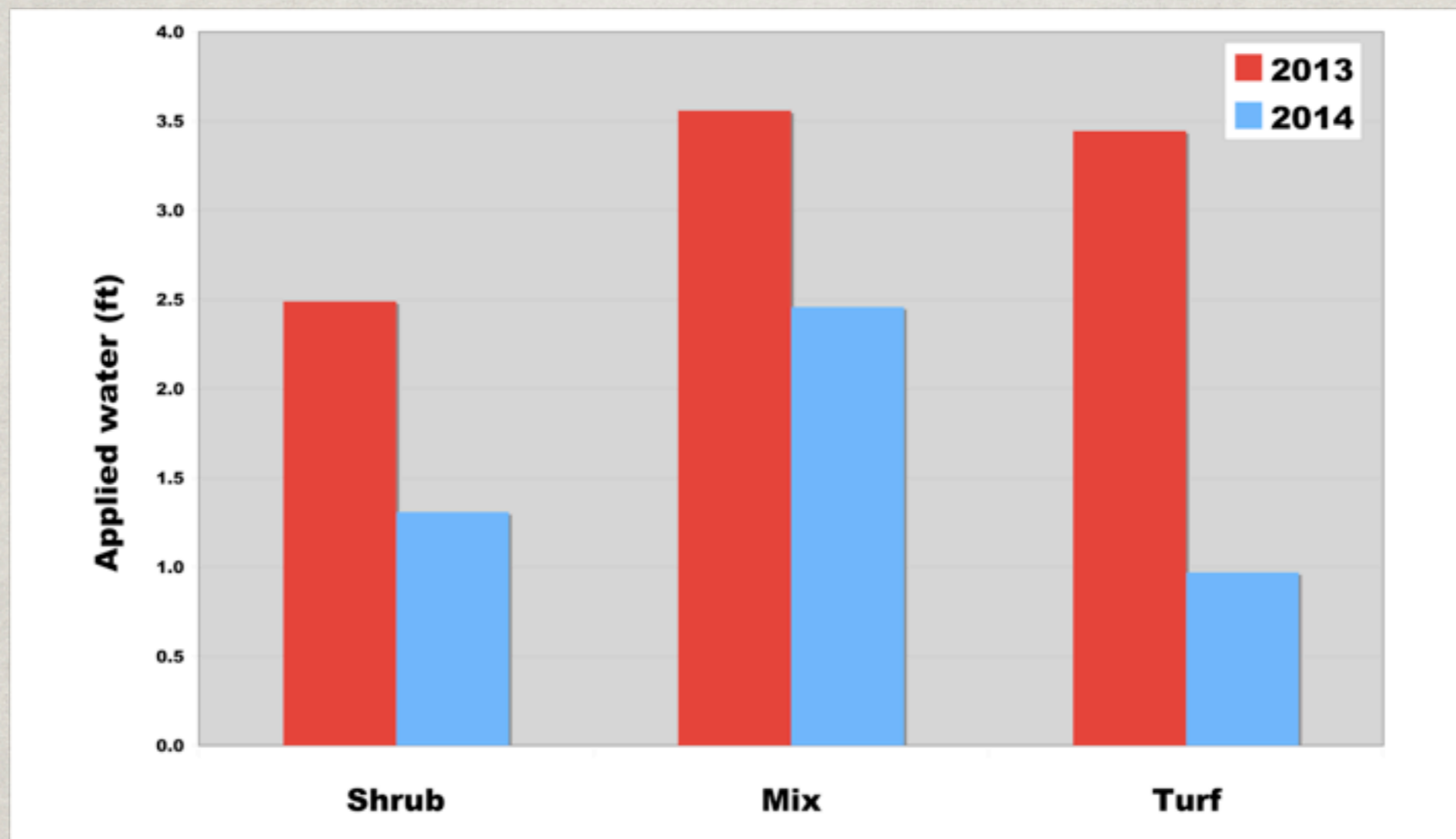
- ✻ Will water use return to the mean?
- ✻ How will landscape tastes change?
- ✻ Backlash?
- ✻ Environmental concerns including: heat rejection, health concerns, and wildlife sustenance.

ALT PROGRAMS

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

TURF VS SHRUB

UNDER TIGHT BUDGETS



| Type | 2014 | | 2013 | | Difference (2013-2014) | |
|-------|------------------|--------------------|------------------|--------------------|------------------------|--------------------|
| | Depth Applied Ft | Depth Overwater Ft | Depth Applied Ft | Depth Overwater Ft | Depth Applied Ft | Depth 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 |

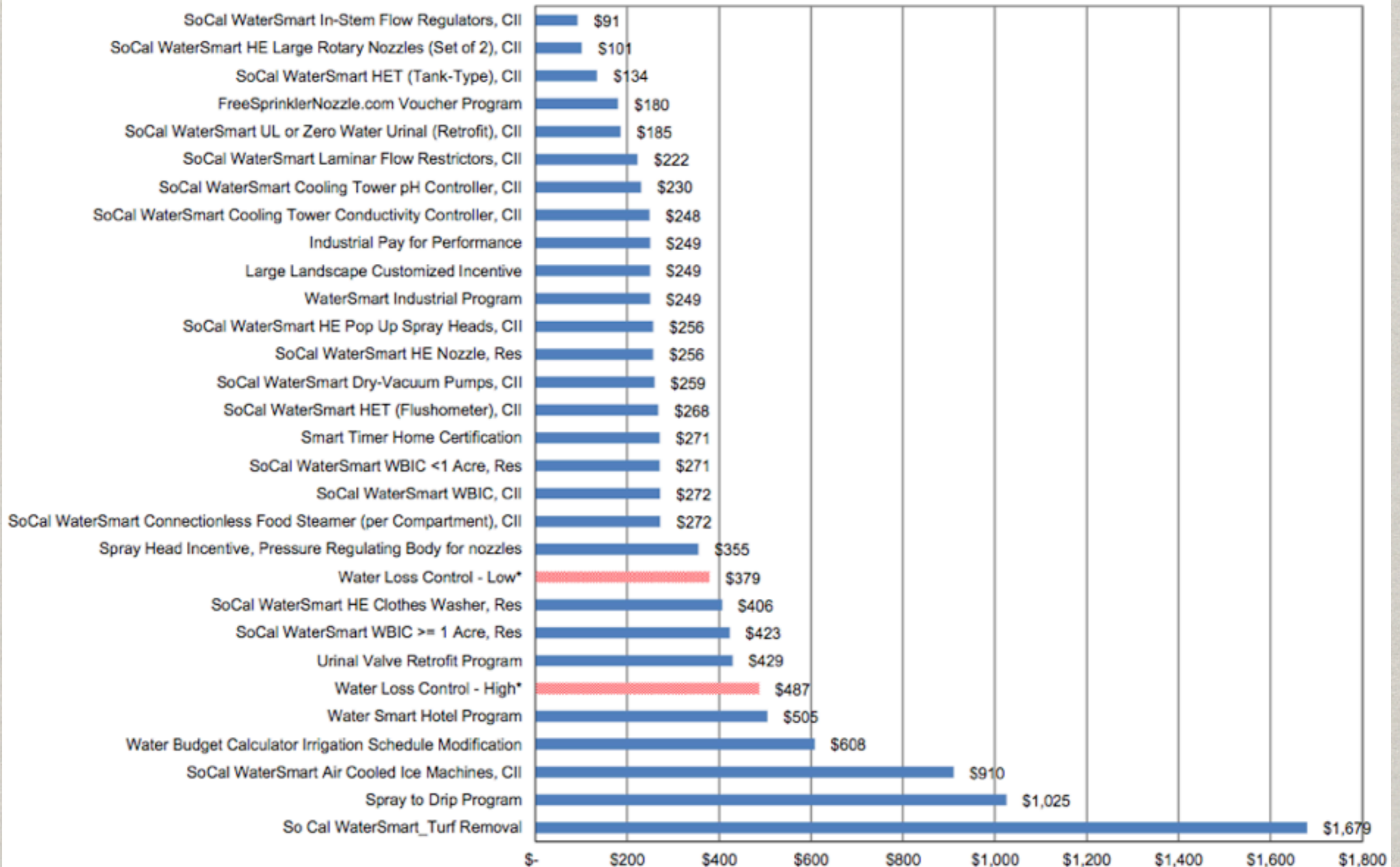
QUESTIONS NEEDED

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)



Thanks to Joe Berg of MWDOC!