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INNOVATIONS

So you think you're SMART?

Overcoming objections to installing SMART irrigation technologies.

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EWING
Irrigation Golf Industrial

Definition of SMART...

- Making one smart.
- Mentally alert.
- Operating by automation.
- Causing a sharp stinging.

Required Elements

- Education
- Site Analysis – knowing what you are working with.
- Technology
- Caution
- Confidence

“Half of being smart is knowing what you’re dumb at.”

Education = Credibility

- **IA Certification**

  CLIA – Certified Landscape Irrigation Auditor

  CID

- **EPA**

Site Analysis

Required information:

- Irrigated area
- Plant material
- Current irrigation schedule/practices
- Property water bills or meter readings
- Actual / historical ET
- Distribution uniformity
- Precipitation rate
- Dynamic pressure

Irrigation Myth Busters!

# of heads	Type	Nozzle	Space	psi	gpm	Flow % chg	Test run time (min)	DU	" / hr	PWR	IWR	Adj Run time req.	Gallons used	% CHG
6	Spray	12	12	**32**	3		8	**41%**	1.05"	.15	.37	21	63	
6	Spray	12	12	**6**	5.3	**3%**		**37%**	1.4	.15		17	91	**31%**
6	Multi-Stream	12'	12					%				24	28	
6	Multi-Stream	12'	12					%			.2	26	47	**40%**
4	Rotor	1.5	24					%			.21	18	110	
4	Rotor	1.5	24	**64**	7.5	**20%**	20	**74%**	.82"	.15	.20	15	111	**1%**
4	Multi-Stream	24'	24	**40**	3.6		20	**65%**	.44"	.15	.23	31	113	
4	Multi-Stream	24'	24	**72**	4.8	**25%**	20	**34%**	.46"	.15	.44	58	276	**59%**

Technology

- **SMART controllers**
  Weather based controllers

Adjust run times based on prevailing weather conditions….**ultimately estimating plant water use.**

Technology

- **SMART controllers**

  Soil moisture sensor controllers

Determine the frequency and/or duration of irrigation cycles from a sensor buried in the root zone of the **plant…ultimately measuring plant water use.**

Do SMART controllers work?

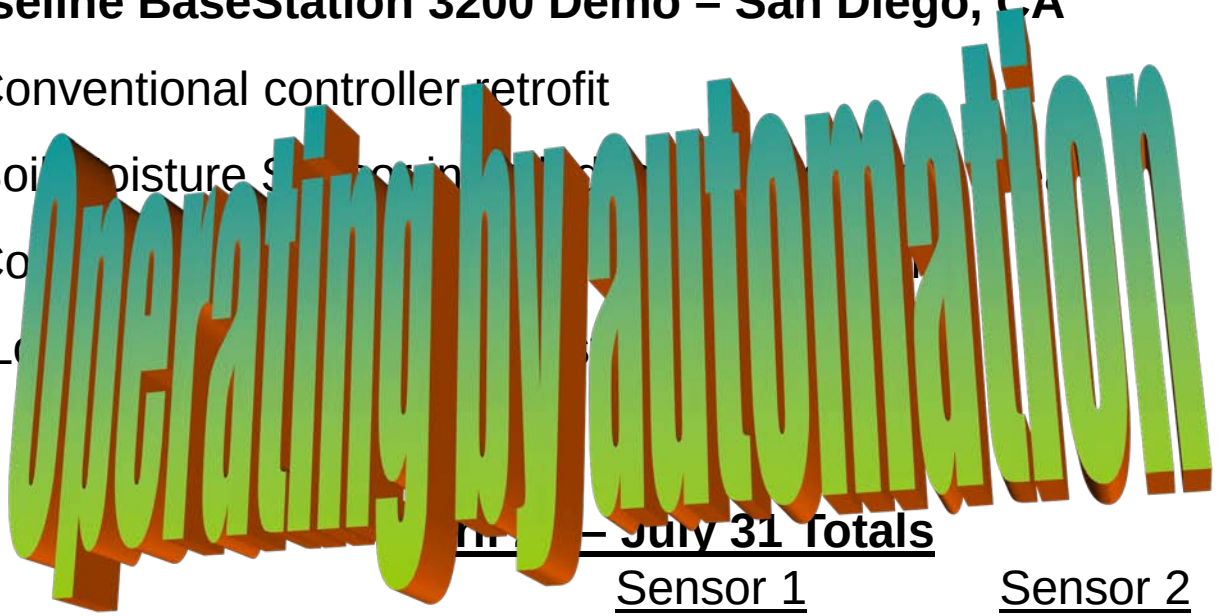
‘Evaluation of California Weather-Based “SMART” Irrigation Controller Programs’ (MWD and East Bay MUD)

- 2,294 controllers
- **Weather-normalized outdoor use was reduced by an average of 47.3 kgal per site, a reduction of 6.1% over pre-smart controller outdoor water use.**
- This is not a technology that can simply be installed and forgotten, adjustments are often required during the initial set up to calibrate the controller default settings to the specific conditions of the site.
- In this study, 41.8% of the study sites *increased* their weather-normalized irrigation water use in the first year after installation of the smart controller.

Do SMART controllers work?

Baseline BaseStation 3200 Demo – San Diego, CA

- Conventional controller retrofit
- Soi[illegible]oisture S[illegible]
- Co[illegible]
- "L[illegible]



[illegible] – July 31 Totals

	Sensor 1	Sensor 2
Available water days:	67	63
Actual water days:	32	11
Estimated water savings:	**52%**	**82%**

WARNING!

You can’t put a SMART controller on a DUMB system and assume you’ll have water savings!

Symptoms of a DUMB system...

Technology

- **High efficiency nozzles**

  Multi-stream rotating nozzles

  Hunter MP Rotator

  Rain Bird Rotary Nozzle

  High performance sprays

  Toro Precision

  Rain Bird U Series

Do high efficiency nozzles work?

- Multi-stream, multi-trajectory rotating stream sprinklers produce higher uniformity.

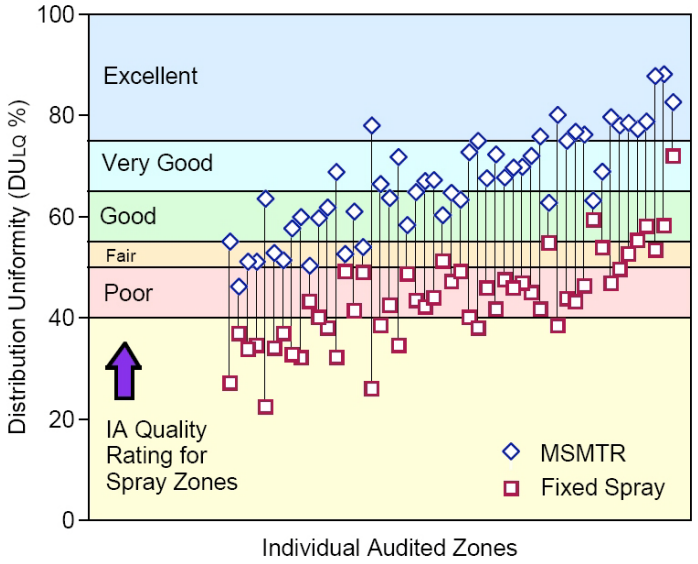


Figure 4. On average, DULQ improved by 23 points after conversion to MSMTR sprinklers.

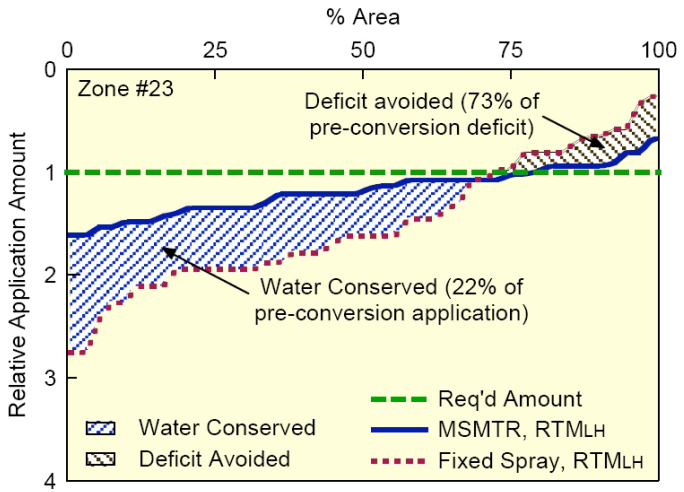


Figure 7. Water conservation (22%) and deficit avoided (73%) for the zone #23 conversion, assuming both pre- and post-conversion run times were set by RTMLH.

In a study conducted by Dr. Kenneth Solomon, 51 spray head systems were audited by independent auditors then retrofitted with MP Rotators and re-audited to measure the difference in the uniformity of water application.

Under Utilized Technology

- **Pressure Regulation**
  Maintain a constant outlet pressure regardless of inlet pressure.

Does pressure regulation work?

10 spray head example: 15 H nozzles

Regulated to 30 PSI

- 1.86 GPM
- 10 minutes per Day
- 18.6 gallons each
- 30 sprinklers per Zone
- 558 gallons per zone per Day

Non Regulated @ 40 PSI

- 2.27 GPM
- 10 minutes per Day
- 22.7 gallons each
- 30 sprinklers
- 681 gallons per zone per Day

Save:

123 gallons per zone / day

22,140 gallons per zone / year (180 days)

Putting it all together....

Existing site conditions

- 1 acre of turf
- 12 foot spray nozzles (roughly 302 heads)
- 62 psi operating pressure
- Measured DU = 37%
- Controller scheduled 7 days a week for 20 minutes
- ETo = 1.05” / week

Scheduled gallons used = 79,660

Turf requirement = 28,507

Putting it all together…

Upgrade proposal

- Retrofit spray nozzles to MP Rotators
- Regulate pressure to 40 psi
- Improve DU to 73%
- Controller scheduled 7 days a week for 24 minutes
- ETo = 1.05” / week

Scheduled gallons used = 37,632*

Turf requirement = 28,507

*Pre SMART controller. Run times adjusted for uniformity.

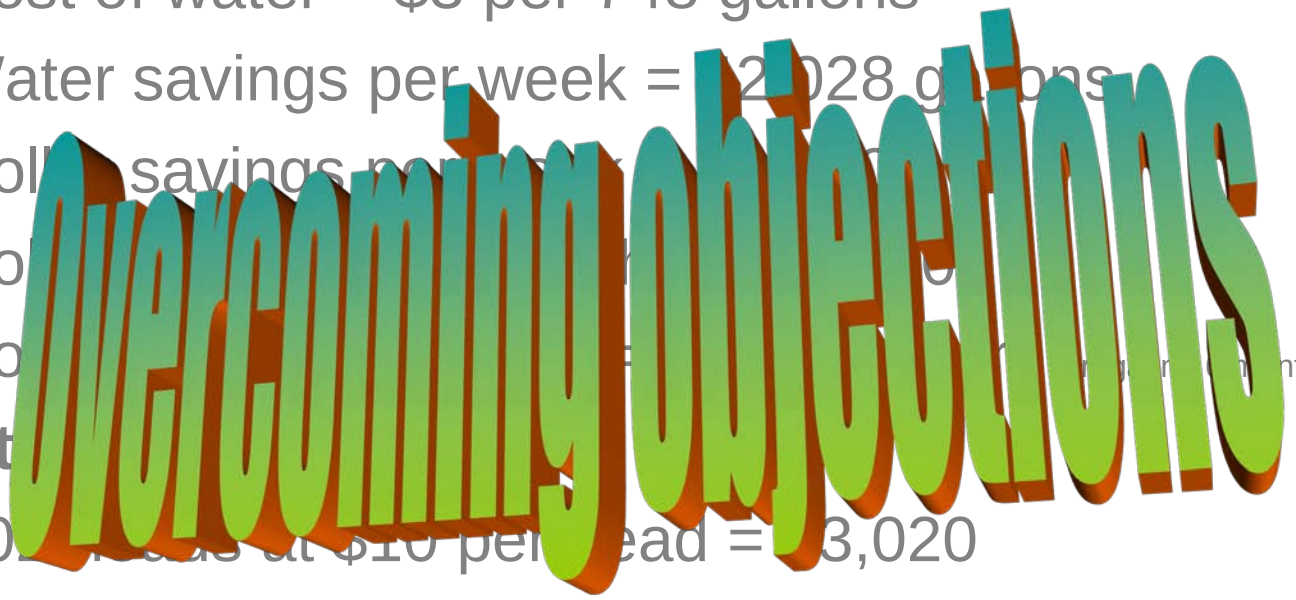
Putting it all together...results!

Dollar savings

- Cost of water = $3 per 748 gallons
- Water savings per week = 2,028 gallons
- Dollar savings per week = $8.12
- Dollar savings per month = $32.48
- Dollar savings per year (10 months) = $324.80

Cost

- 302 heads at $10 per head = $3,020
- 3 valves pressure regulation = $206.25
- SMART controller = $500 - $2,500



One to two year ROI!!!

THANK YOU.

For more information,
please contact:

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