

This presentation premiered at WaterSmart Innovations

watersmartinnovations.com



Off the Charts

High Irrigation Pressure = High Costs

Paul Kaiser
Austin Water Utility
Water Conservation Program Specialist

About Austin Water

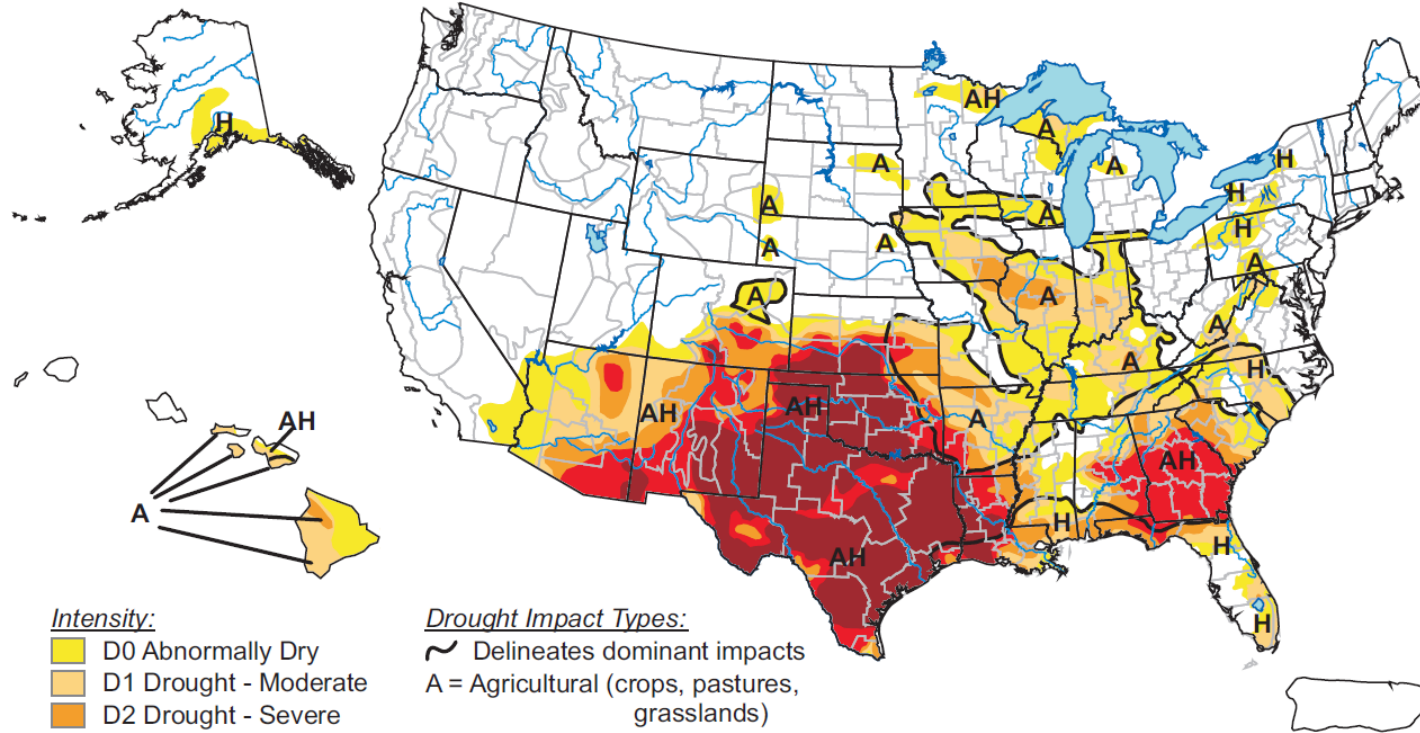
- Water Source - Colorado River
 - Firm water rights (“run of river”)
 - Contract with LCRA for stored water
- Service Area – 538 sq miles
- Customers – 900,000
 - 1,100 Employees
 - \$500+ Million Annual Budget



U.S. Drought Monitor

August 30, 2011

Valid 8 a.m. EDT



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

- Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>



Released Thursday, September 1, 2011

Authors: Eric Luebehusen, U.S. Department of Agriculture

The Problem- High Pressure!



The Problem

Participant	Typical PSI
1	108
2	103
3	88
4	88
5	130
6	75
7	97
8	99
9	73
10	96

		12 Ft. Radius			Nozzle 12		15 Ft. Radius			Nozzle 15	
		Fixed: 1/4, 1/3, 1/2, 2/3, 3/4, Full Trajectory: 28° Color Code: Green			●		Fixed: 1/4, 1/3, 1/2, 2/3, 3/4, Full Trajectory: 28° Color Code: Black			●	
Nozzle	Pattern	Pressure (PSI)	Radius (ft.)	Flow (GPM)	Precip in/hr		Radius (ft.)	Flow (GPM)	Precip in/hr		
					■	▲			■	▲	
		20	11	0.54	1.71	1.98	14	0.78	1.53	1.77	
		25	12	0.61	1.62	1.87	15	0.88	1.51	1.74	
		30	12	0.67	1.78	2.06	15	0.97	1.67	1.92	
		35	13	0.72	1.65	1.90	16	1.06	1.59	1.84	
		40	13	0.78	1.77	2.04	17	1.14	1.52	1.75	



Component loss ~15 psi

Goals from installation of a single component

- Quantifiable water savings resulting from PRV installation on a sprinkler system.
- Local data to evaluate or enhance Austin Water Conservation programs
- PRV Rebates (increase or decrease?)
- Will increasing efficiency decrease use?

Study Design

- 20 test subjects with permanently installed irrigation systems from a neighborhood with typically high pressure. (Avery Ranch, Pioneer Crossing)
- 10 of the 20 participants will have a PRV installed and properly adjusted on the irrigation system only.
- All participants will complete quarterly questionnaires regarding irrigation system watering frequency, run times, leaks, repairs and vacations and occupancy.

Study Design




- Find Participants
 - Homeowner Association Newsletter (not much response)
 - Active Yahoo! Group- Immediate response
- Monitor
 - Water meter reads once per week
- Questionnaire
 - # People in home
 - Leaks (keep updated)
 - Irrigation run times
 - Pool (no pools in sample allowed)

A Grinding Halt!

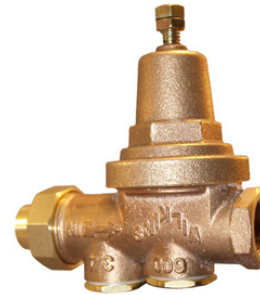
- Stage II Watering restrictions
 - 2009, 2012
- Installation not yet complete



Water Utility Rates

	Single Family Residential		Per 1000gal
	0-2,000 Gallons	\$	1.17
	2,001-9,000 Gallons	\$	3.08
	9,001-15,000 Gallons	\$	7.92
	15,001-25,000 Gallons	\$	10.95
	Over 25,000 Gallons	\$	12.19

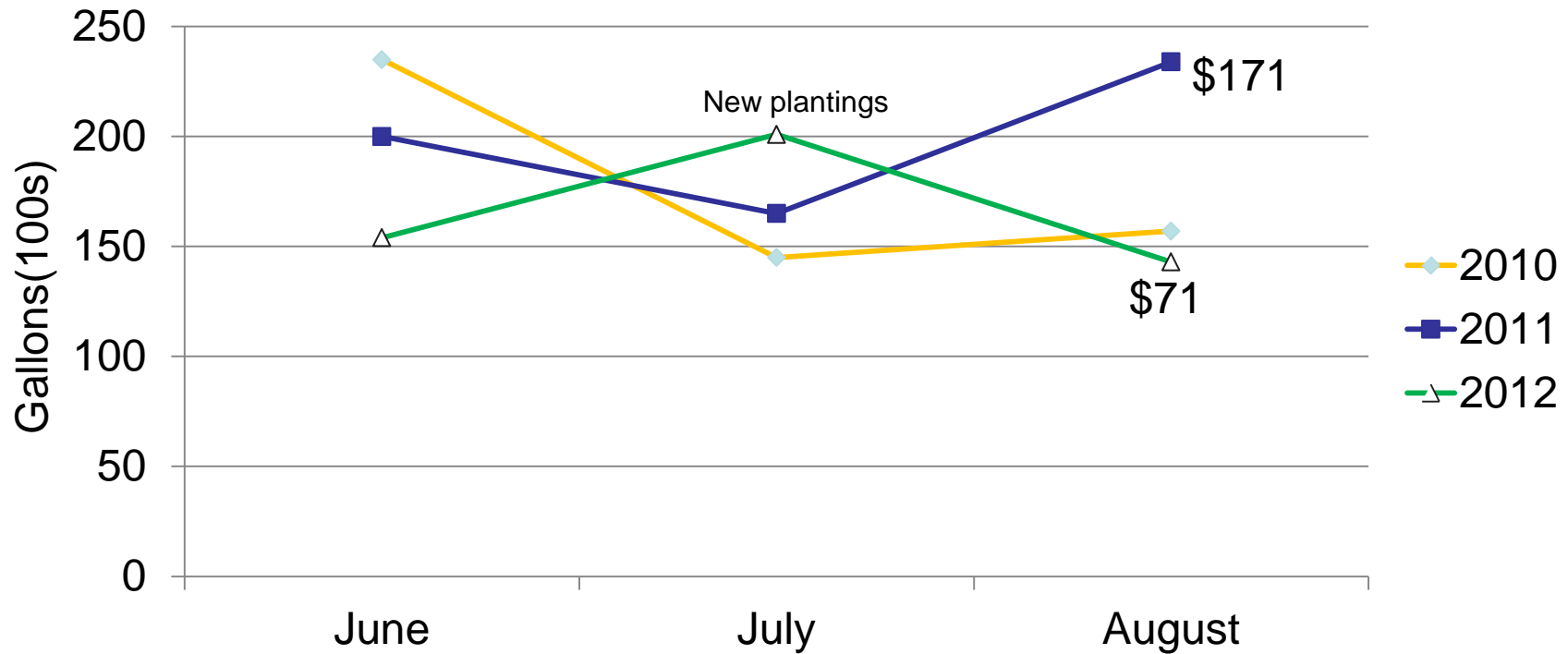
Case Study- Southwest Austin



Installed Winter 2012

Station	Head Type	GPM (Pre)	GPM(Post)
1	Spray	14	7
2	Spray	19	10
3	Spray	19	8
4	Spray	14	10
5	Rotor	21	12
6	Rotor	16	11

Case Study- Southwest Austin



Savings

Savings result of PRV or behavioral changes?

Expected Results

1. Reduction in flow (yes!)
2. Reduction in consumption (maybe ?)
3. Significant savings without site visit?



Next steps

- PRV only the beginning
 - Pressure regulated heads (closer to the source, bottom of the hill)
 - Pressure regulated valve attachments
 - Educated user!!!!
 - Scheduling could still be a problem

Questions?

Paul Kaiser
Landscape Irrigator #17079

Austin Water Utility
Paul.Kaiser@AustinTexas.gov