

This presentation premiered at WaterSmart Innovations

watersmartinnovations.com



Municipal Internal Water Conservation

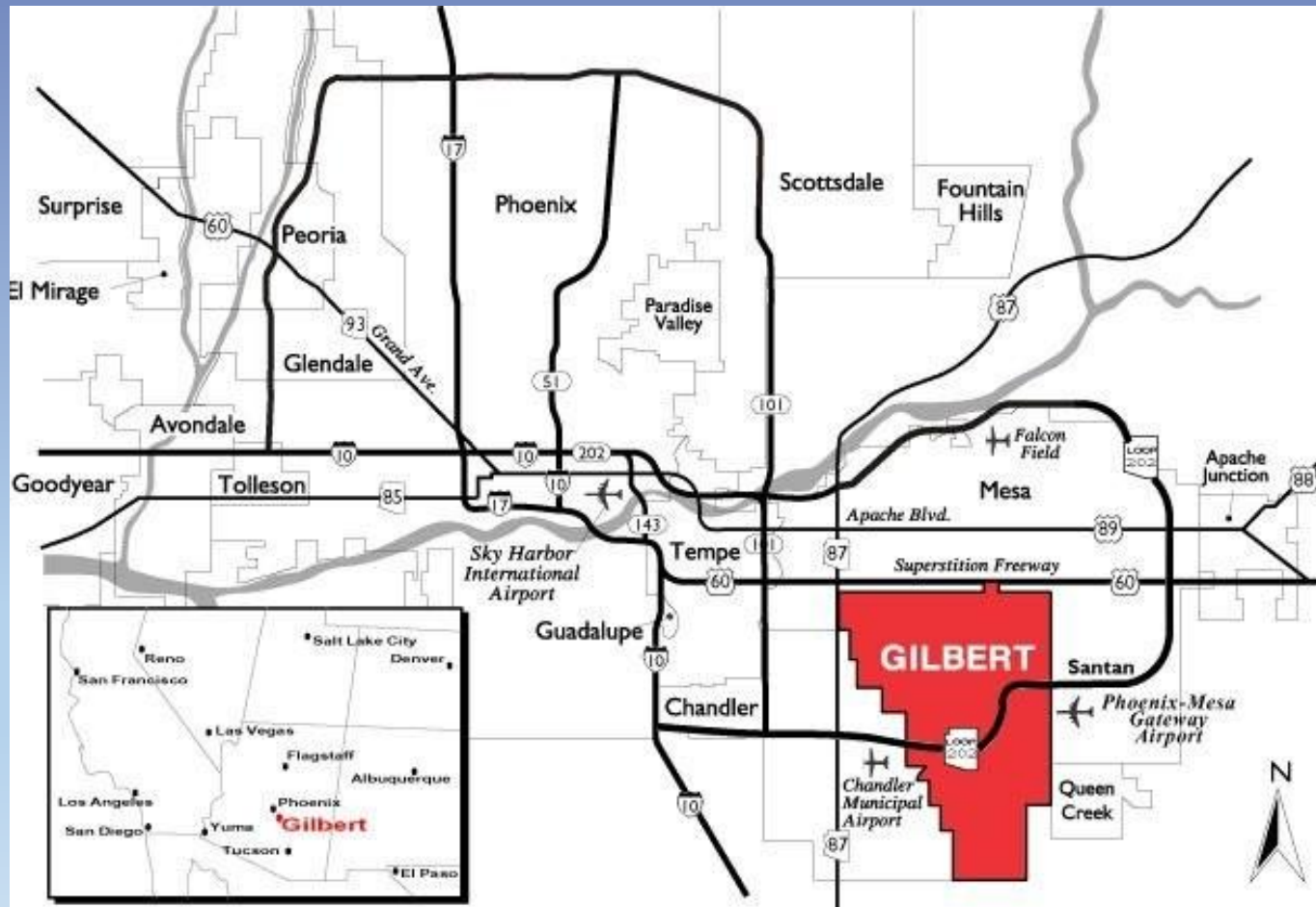
Gilbert, AZ



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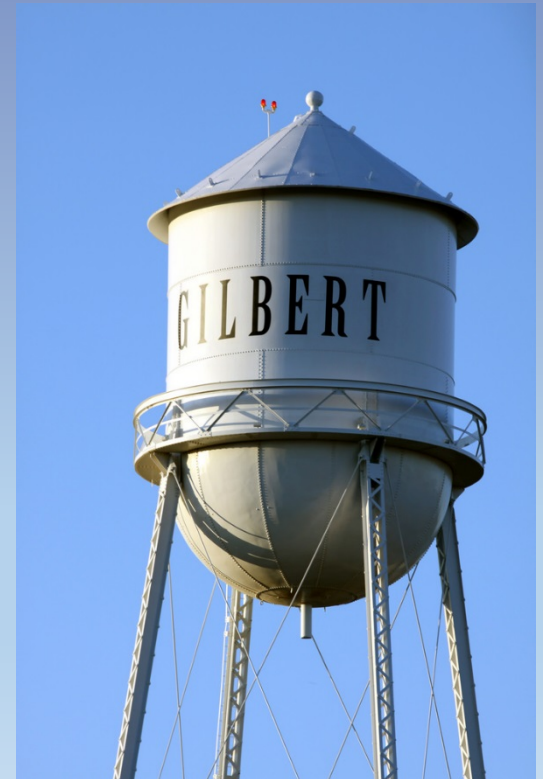
~ 250,000 residents; ~ 90,000 connections



Municipal Buildings & Landscapes

Why municipal water use?

- **We know:** municipal water use often the single highest combined user of water
- Public Visibility & Self Promotion
- Actual water savings can be significant
- Building internal and external relationships



Gilbert, Arizona

Internal Municipal Water Use

1) Domestic use & Municipal Facilities

2) Parks, Streets, Trails



Gilbert, Arizona

Internal Municipal Water Use

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Municipal Buildings & Landscapes

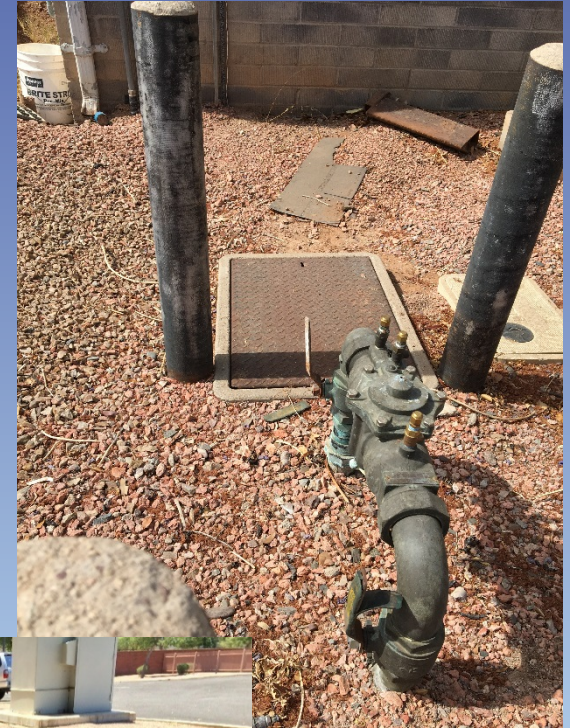
- Fire Stations
- Police Stations & Training Facilities
- Water Treatment Plants
- Well Sites, Pump Sites, Lift Stations
- Civic Center/Admin Complex
- Public Works Yards
- Community Centers, Rec Centers (Pools)
- Libraries
- Other Service Centers & Buildings



Municipal Buildings & Landscapes

- Largest Water Consumptions

- 1) Landscape Watering
- 2) Cooling Towers
- 3) Evaporative Cooling



Municipal Buildings & Landscapes

- Lessons Learned- Relationships

- 1) Start where they welcome you
- 2) Start with what you know
- 3) Stay in touch to support
- 4) Use eligible financial resources



Municipal Buildings & Landscapes

- Lessons Learned- Equipment

1) Indoor Plumbing

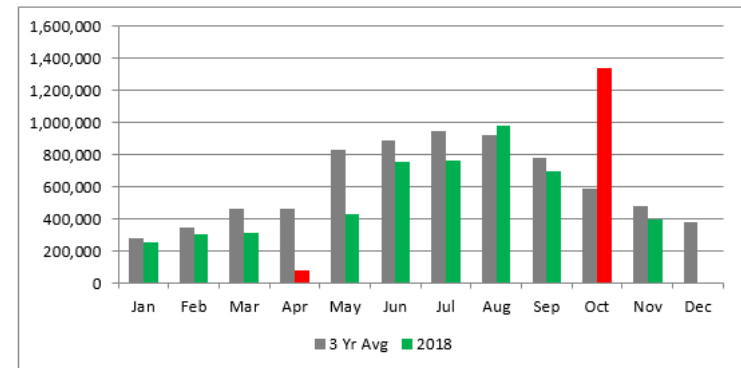
2) Evaporative Cooling

3) Smart Controllers

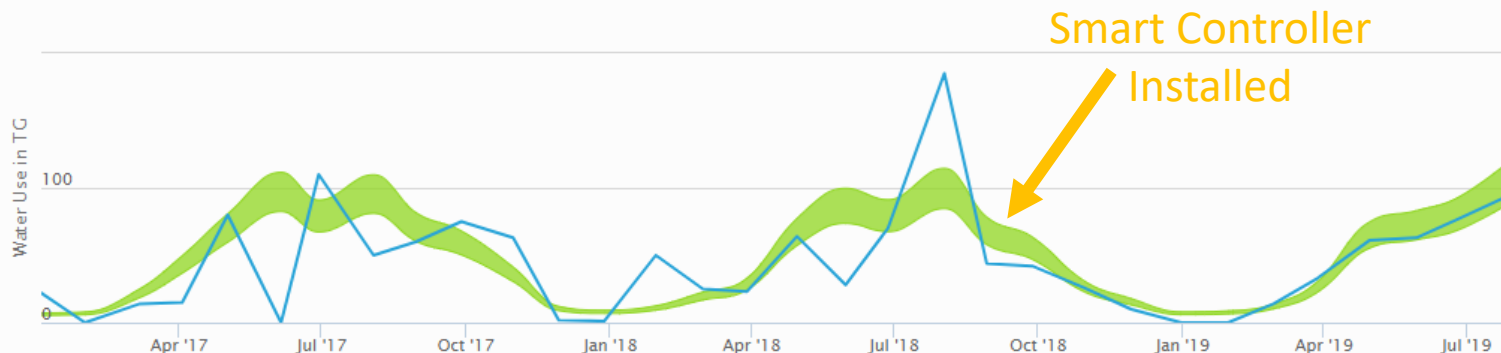
4) Use water data to focus your energy, where is the need?



Courts & Public Safety Indoor



Monthly Water Use ⓘ



Municipal Buildings & Landscapes

- Challenges

- 1) Buy-In: Management buy-in really helps, but immediate supervisors have most control over actual use & equipment
- 2) Contractors- landscaping & cooling vendors
- 3) Access & scheduling
- 4) Old equipment not eligible for upgrades

Municipal Buildings & Landscapes

- Benefits of Audits & Water Management

- 1) We can serve internal customers better
- 2) Assisting in finding unseen issues (Booster Station site example)
- 3) Inform water resources and distribution future decisions
- 4) Positive public visibility in times of shortage (or anytime!)
- 5) Actual water savings!



Water Savings

- 5.3 Million Gallons in 2018

- 1) Landscape Water leak repair and smart controllers
- 2) Indoor plumbing upgrades
- 3) Avoided cooling leaks



GILBERT FIRE
STATIONS
SAVE WATER



4 STATIONS DID
SHOWER &
FAUCET UPGRADES

2

STATIONS DID
TOILET UPGRADES



SAVING
2

GILBERT WATER TOWERS
FULL OF WATER
PER YEAR

Municipal Buildings & Landscapes

Where are we now?

In Progress:

- Municipal Pool Facility
- Cooling Tower Smart Controller Upgrades

2020 & Beyond

- 1 renovated park, 2 new parks, 1 cemetery
- Parks Restrooms: low water use but high visibility
- Standards for building maintenance

Gilbert, Arizona

1) Domestic Use & Municipal Facilities

2) Parks, Streets, Trails

Large Landscapes

- Challenges

Silos



Large Landscapes

- We're here to assist with evaluating water use
- Common Reactions:
 - 1) Go Away Kid, You Bother Me



Large Landscapes

2) Don't Tell Anyone!



Large Landscapes

- Find a Champion

- 1) Field Staff

- 2) Management

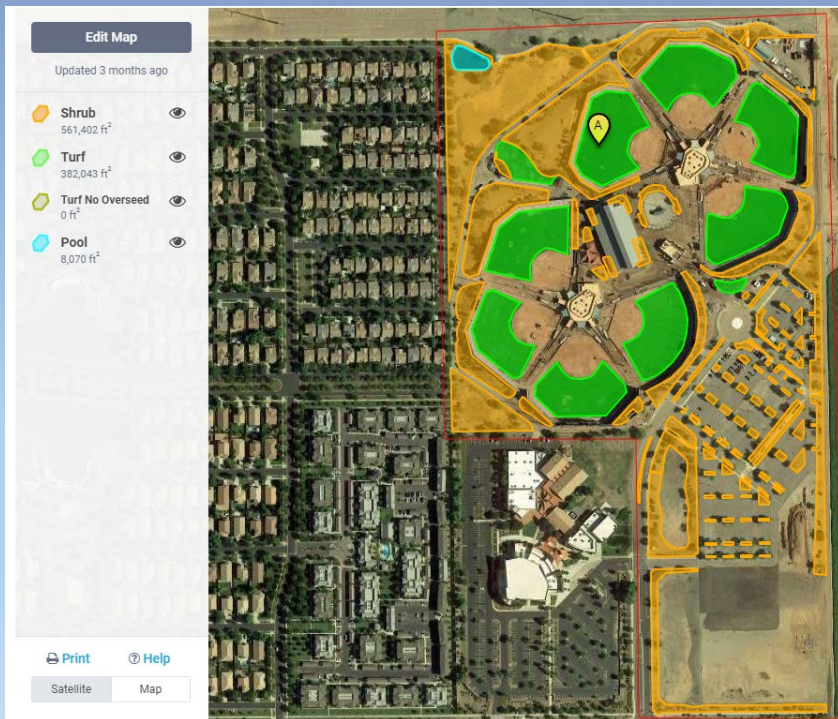
- Start Small

- Build upon that success



Large Landscapes

- Create the Landscape Water Budget



Water Budget Estimate Without Overseeding All PKIDs

SQ. FT. 1 acre = 43,560 sq.ft.

Turf	1,733,316	Density	0.40
Desert landscape	864,337		

Month	ETo (Inches)	Kc Turf	Turf Budget (K Gals)	Kc Desert	Desert Budget (K Gals)	Total Gallons K GALS	Cost Per K Gallons	Water Cost Per Month
January	2.62	0.1	283	0.3	169	452	\$1.02-\$1.70*	\$797.83
February	3.45	0.2	745	0.3	223	969	\$1.02-\$1.70*	\$1,726.79
March	5.4	0.3	1,750	0.3	349	2099	\$1.02-\$1.70*	\$3,762.37
April	8.08	0.5	4,365	0.3	522	4887	\$1.02-\$1.70*	\$8,780.62
May	9.85	0.7	7,450	0.3	637	8086	\$1.02-\$1.70*	\$14,538.95
June	10.79	0.7	8,161	0.3	698	8858	\$1.02-\$1.70*	\$15,928.01
July	10.37	0.7	7,843	0.3	670	8513	\$1.02-\$1.70*	\$15,307.36
August	8.99	0.7	6,799	0.3	581	7380	\$1.02-\$1.70*	\$13,268.11
September	7.51	0.5	4,057	0.3	486	4543	\$1.02-\$1.70*	\$8,160.02
October*	5.86	0.3	1,899	0.3	379	2278	\$1.02-\$1.70*	\$4,084.28
November	3.59	0.2	776	0.3	232	1008	\$1.02-\$1.70*	\$1,797.54
December	2.36	0.1	255	0.3	153	408	\$1.02-\$1.70*	\$717.01
	78.87		44,383		5,099	49,482		\$88,868.88

=yearly
water
budget

ETo = Evapotranspiration rate determined by weather data

Kc = The percentage of the ET that landscape plants or turf use

K Gals = 1000 gallons

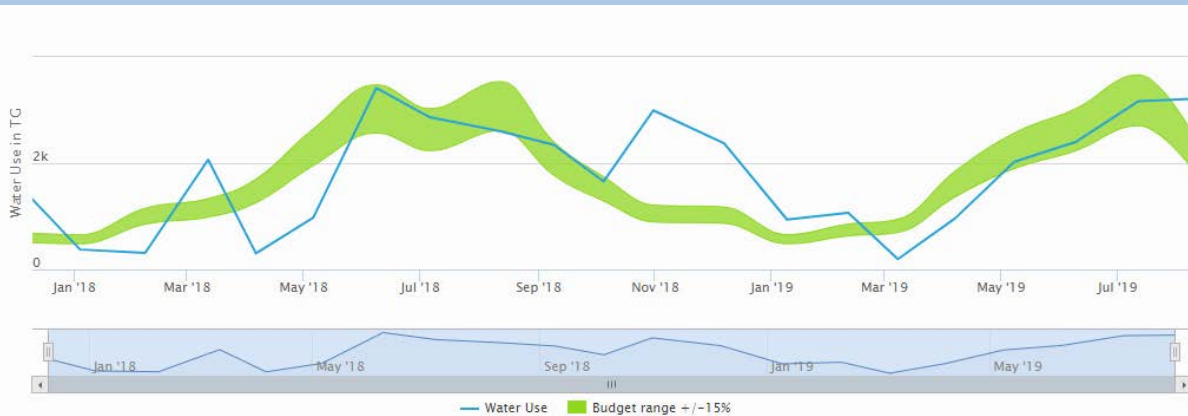
* overseed with winter rye

*Based on the current rate of: \$1.02/kgal for up to 10 kgals
\$1.08/kgal 11-20 kgals
\$1.43/kgal 21-30 kgals
\$1.70 for all usage over 30 kgals

The above figures are **estimates only**. These figures are not to be taken as exact amounts.

Large Landscapes

- 1) Compare to Actual Use
- 2) Understand Special Considerations
- 3) Understand the Politics
- 4) Identify Potential Savings
- 5) Celebrate Excellence

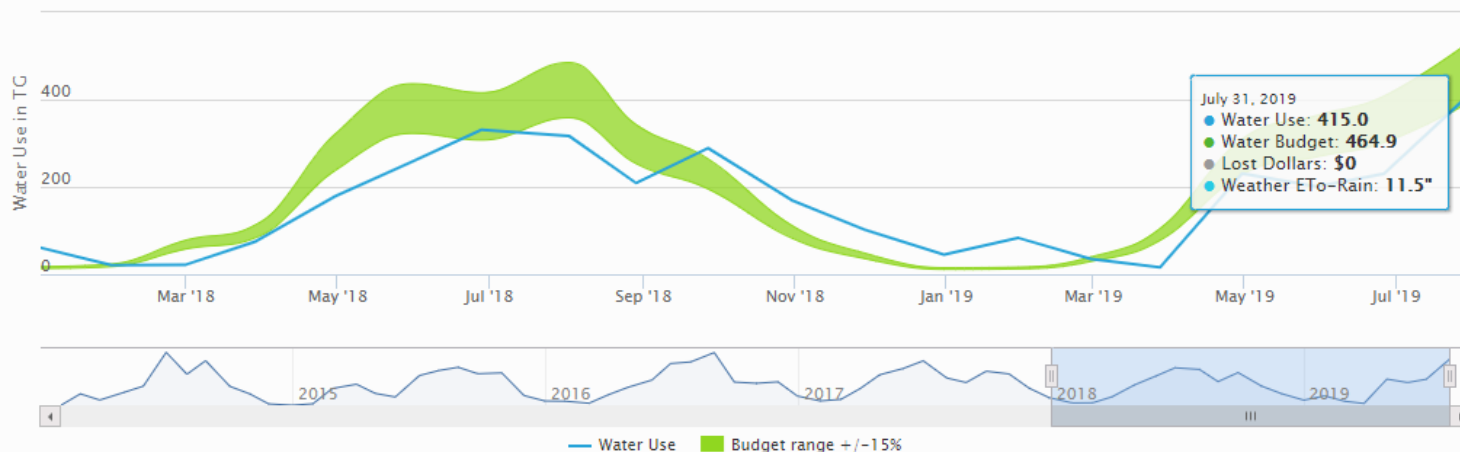


Large Landscapes

- Share the success with the public
- Share with management



Monthly Water Use 



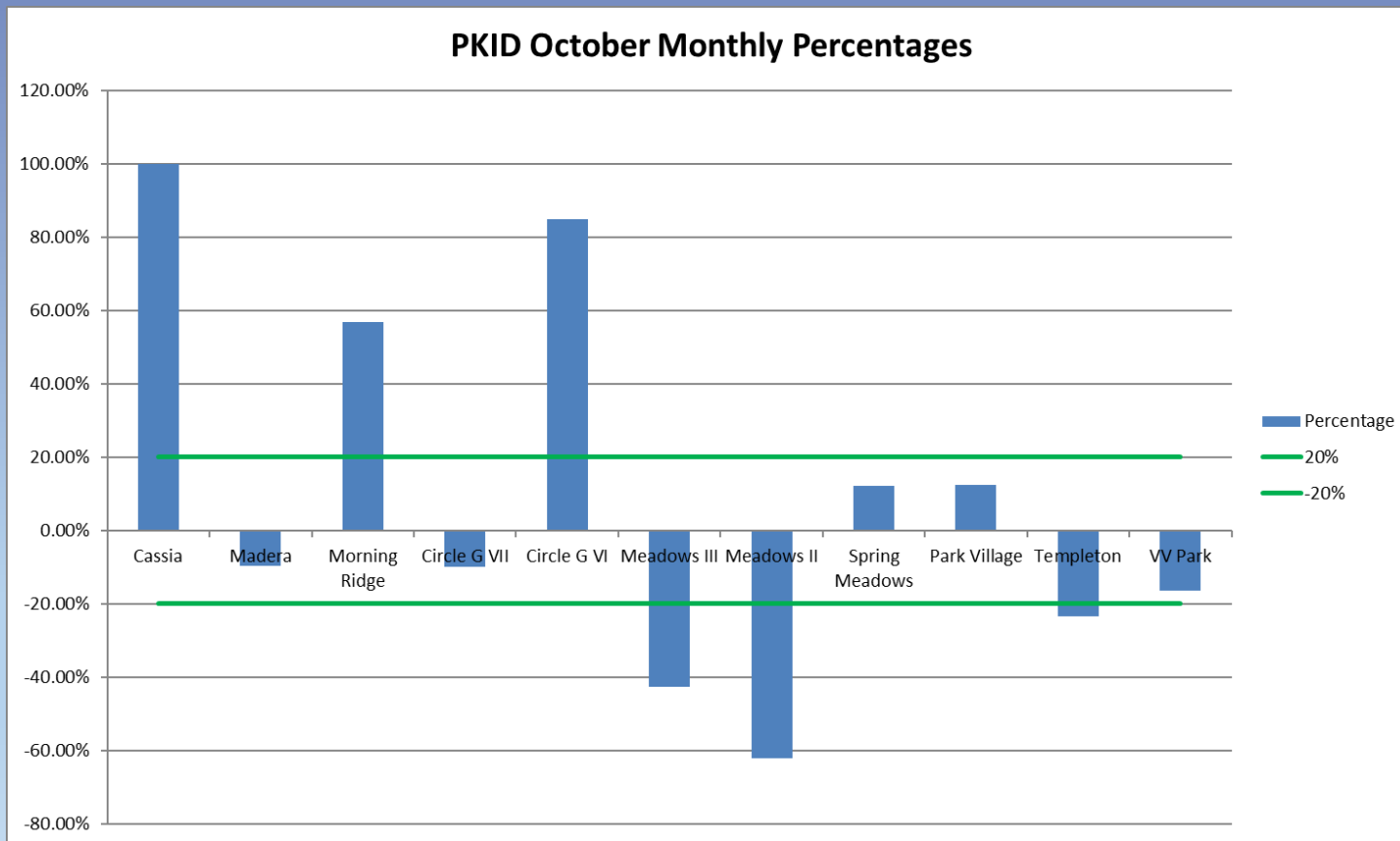
Large Landscapes

- Monthly Meetings
- Site by Site
- Meter by Meter

Acct#	Cassia Place 02725201	PK 11 02668301	00232902	02668401	Total
Addr	1500 E Douglas	1074 N Redrock	1555 E Raleigh Bay	1574 E Douglas	
Jan	8	18	31	28	85
Feb	6	20	30	46	102
Mar	17	42	38	64	161
Apr	52	68	45	83	248
May	86	97	35	85	303
Jun	93	97	32	61	283
Jul	122	128	38	82	370
Aug	78	81	31	79	269
Sep	46	58	32	106	242
Oct	15	16	38	135	204
Nov					0
Dec					0
Totals	523	625	350	769	

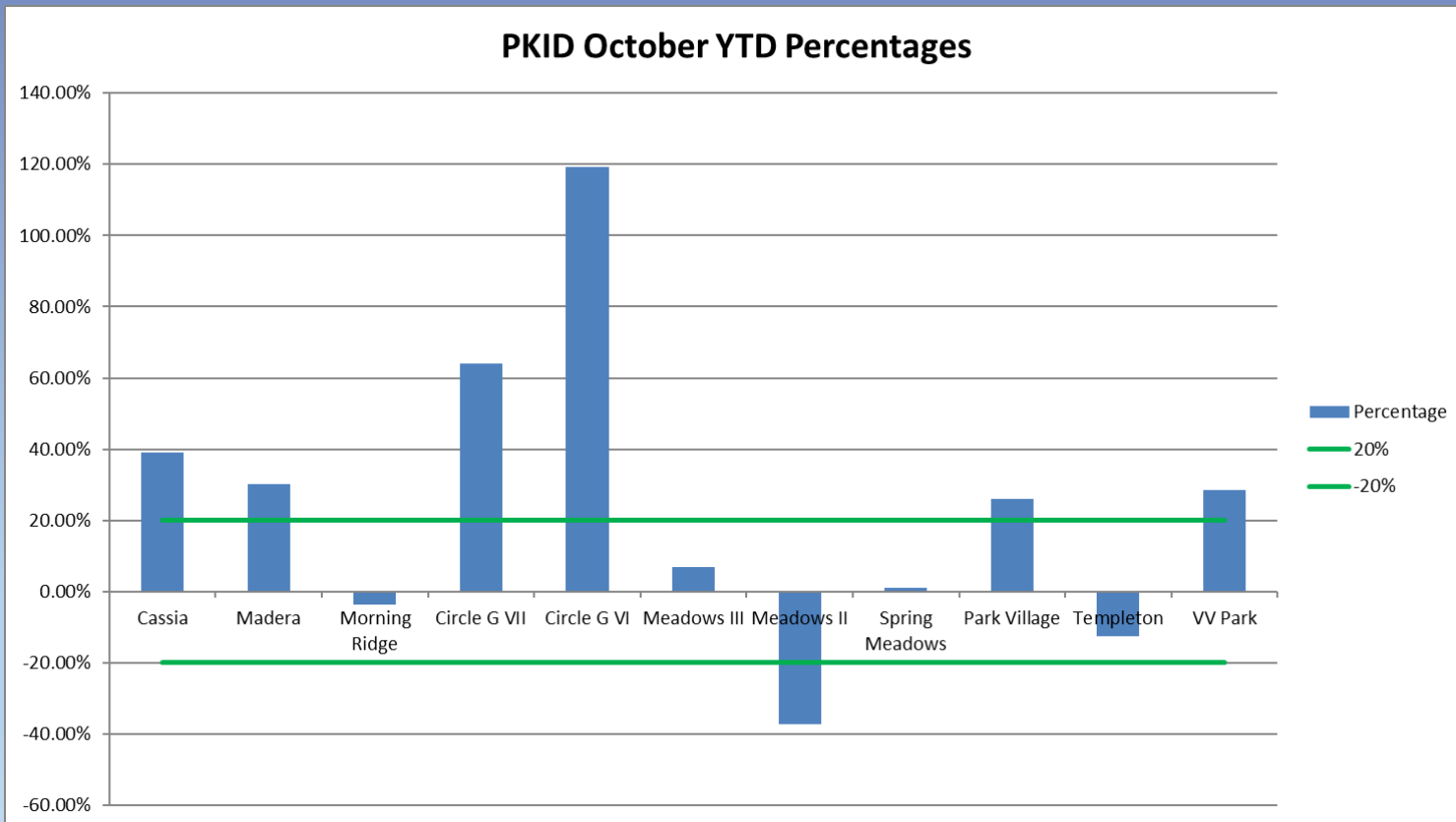
Large Landscapes

- Providing Information to managers



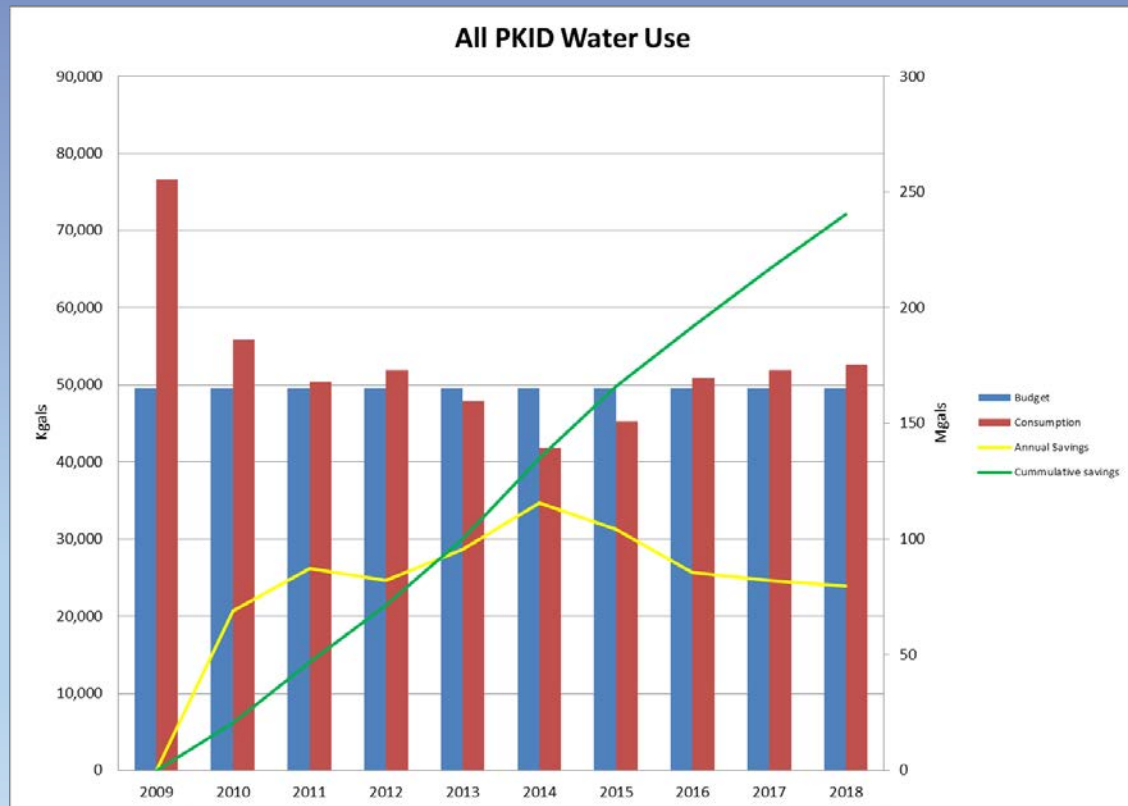
Large Landscapes

- Providing Information to managers



Results (Avg Annual Savings)

- Parkway Improvement Districts
 - 27 Million Gallons/Yr
- Parks (Potable Water)
 - 1.9 Million Gallons/Yr
- Parks (Reclaimed Water)
 - 29.1 Million Gallons/Yr
- Streets & ROW's
 - 775,000 Gallons/Yr



Results

Total Savings Parks and Streets

Average Annual Savings

58,562,000 gallons (179.7 AF)

Cumulative Savings

439,656,000 Gallons (1,349.2 AF)



Thank you!

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