This presentation premiered at WaterSmart Innovations

watersmartinnovations.com
Municipal Internal Water Conservation

Gilbert, AZ

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Gilbert, Arizona

~ 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

1) Domestic use & Municipal Facilities

2) Parks, Streets, Trails
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
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- Largest Water Consumptions
  1) Landscape Watering
  2) Cooling Towers
  3) Evaporative Cooling
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• 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
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• Lessons Learned - Equipment

1) Indoor Plumbing
2) Evaporative Cooling
3) Smart Controllers

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

<table>
<thead>
<tr>
<th>Month</th>
<th>ETo (Inches)</th>
<th>Kc Turf</th>
<th>Turf Budget (K Gals)</th>
<th>Kc Desert</th>
<th>Desert Budget (K Gals)</th>
<th>Total Gallons</th>
<th>Cost Per Gallons</th>
<th>Cost Per Month</th>
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</thead>
<tbody>
<tr>
<td>January</td>
<td>2.62</td>
<td>0.1</td>
<td>283</td>
<td>0.3</td>
<td>169</td>
<td>452</td>
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<td>3.45</td>
<td>0.2</td>
<td>745</td>
<td>0.3</td>
<td>223</td>
<td>969</td>
<td>$1.02-$1.70*</td>
<td>$1,726.79</td>
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<td>5.4</td>
<td>0.3</td>
<td>1,750</td>
<td>0.3</td>
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<td>2099</td>
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<td>8.08</td>
<td>0.5</td>
<td>4,365</td>
<td>0.3</td>
<td>522</td>
<td>4887</td>
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<td>0.7</td>
<td>7,450</td>
<td>0.3</td>
<td>637</td>
<td>8086</td>
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<td>10.79</td>
<td>0.7</td>
<td>8,161</td>
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<td>698</td>
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<td>7,843</td>
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<td>670</td>
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<td>0.7</td>
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<td>581</td>
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<tr>
<td>September</td>
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<td>0.5</td>
<td>4,057</td>
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<td>486</td>
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<td>78.87</td>
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<td>44,383</td>
<td></td>
<td>5,099</td>
<td>49,482</td>
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</tbody>
</table>

**Total**

- Turf: 1,733,316 sq.ft.
- Desert landscape: 864,337 sq.ft.
- Density: 0.40

<table>
<thead>
<tr>
<th>Turf Gallons</th>
<th>Desert Gallons</th>
<th>Total Gallons</th>
<th>Cost Per Gallons</th>
<th>Cost Per Month</th>
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</thead>
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<tr>
<td>78.87</td>
<td></td>
<td>44,383</td>
<td>5,099</td>
<td>49,482</td>
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\[
\text{Total} = \text{yearly water cost} = 49,482 	imes \text{rate} = 88,968.88
\]

**Notes:**

- 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
Large Landscapes

- Monthly Meetings
- Site by Site
- Meter by Meter

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<td>Totals</td>
<td>523</td>
<td>625</td>
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</table>
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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GilbertAZ.gov/water