Observed levels of demand reduction associated with water efficient landscape policies

Single-family Sector

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By 2002 it became clear that the Colorado River system had settled into a multi-year drought and the community needed to respond.

In 2003 the various municipalities in the Las Vegas Valley passed drought mitigating ordinances, many centering on turf limitations for new construction.

At homes, turf was prohibited in front-yards and is limited to a maximum of 50 percent the landscape area in backyards.

These provisions were made permanent in 2009.

This study was done to quantify the savings in water use from this landscape development policy in the single-family sector.
For SNWA consumptive use is outdoor use as we get return flow credits for all indoor use. Outdoor use reduction thus extends are supplies.
Water Use By Sector

2013 Municipal Metered Water Consumption
Use By Customer Type

- Residential (SF): 44.8%
- Residential (MF): 15.8%
- Commercial / Industrial: 12.4%
- Resorts: 7.6%
- Golf Courses: 6.4%
- Schools/Govt/Parks: 5.7%
- Common Areas: 5.7%
- Other: 1.7%
- Other: 1.7%

Total: 100%
Background Research

- We have known for some time that savings from conversions is real and substantial.

**Per Unit Area Application Intensity**

From submeter and area measurements. (*Xeriscape Conversion Study*, 2005)

<table>
<thead>
<tr>
<th>Lawns</th>
<th>Water Smart Landscape</th>
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<tr>
<td>73 gallons per square foot annually</td>
<td>17.2 gallons per square foot annually</td>
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Much less of a peak in application rates for xeric landscape areas
Methods

Selection Process

• Started from a pool of over 100,000 active single family residential (SFR) accounts that had use for every month in 2012.
  – This eliminates “Snow Bird” & “Fire Bat” seasonal residents.

• Divided into two groups: those constructed six years prior to 2003 and those built in the six years after (designated CY9702 & CY0409).

• Removed any that participated in our rebate programs.
Lot Size Distributions

Number of Houses vs. Lot Size Class

- CY0409
- CY9702
Sample Lot Size Distribution

Number of Houses

Lot Size Class

- CY0409
- CY9702
Average of Total by Lot Size Range

95% of SFRs are in this lot size range
• Just over 34,000 residences in each group
Average Total 2012 Use

19.8% Reduction, p < 0.00

1000 Gallons

CY9702

CY0409
25.9% Reduction, p < 0.00

Average Outdoor 2012 Use

1000 Gallons

CY9702

CY0409
Average Monthly Consumption for 2007 & 2008

- Construction Years 1990 - 1995
- Construction Years 2000 - 2003
- Water Smart Homes
- Same Construction Years as WSH 2005 - 2007
Conclusions

• Post-drought code constructed homes used about 31,000 gallons less than those built before.
  – Nearly a 20% total decrease.
  – Consumptive outdoor use decreased approximately 25%.

• In a separate study, Water Smart Homes show a 49% decrease over pre-code construction.
  – This is an average difference of 91,731 gallons annually.
Questions?