

This presentation premiered at WaterSmart Innovations

watersmartinnovations.com





Landscape Audits: Yes, They Save Water!



Presented by: Juan Zamora

Chino Basin Water Conservation District



Protect Chino Basin Groundwater

Manage 8 Storm Water Basins

Capture Storm Runoff and Recharge State Project Water



Education

Tours

Classes for Residents and Professionals



Community Outreach

Earth Day Celebrations for Students

Water Fair



Landscape Evaluation Audits

Commercial, Industrial, Institutional

Residential and Multi Family

LEAP Program Goals

LEAP is Funded through a grant from DWR; the goals of the grant are:

- ◆ Conduct 300 landscape audits over a 3 year period of which 50 will be residential water users.
- ◆ Achieve water savings of 1,610 AF over a 10 year period
- ◆ Water usage is tracked for a period of 2 years after the audit.

Grant Timeline

Year 1 (2008)

Year 2 (2009)

Year 3 (2010)

Complete 50 audits

Complete 100 audits

Complete 150 audits

LEAP Program Partners

The LEAP Program is a vehicle for local water agencies to comply with CUWCC Best Management Practices (BMPs)

- ◆ Department of Water Resources
- ◆ IEUA
- ◆ City of Chino
- ◆ City of Chino Hills
- ◆ City of Ontario
- ◆ City of Upland
- ◆ Cucamonga Valley Water District
- ◆ Fontana Water Company
- ◆ Monte Vista Water District
- ◆ San Antonio Water

Why Focus on Landscape?

- ◆ Approximately 60% of residential water consumption is used for landscape irrigation

Common issues include:

- ◆ Controller programming
- ◆ Sprinkler heads
- ◆ System water pressure
- ◆ Uniformity of coverage
- ◆ Overwatering
- ◆ Runoff



What is Involved in an Audit?

- ◆ Analysis of landscape water use and inspection of irrigation system at a specific site.
 - ◆ Gather data from irrigation timers
 - ◆ Conduct catch can tests to determine distribution uniformity
 - ◆ Document any problems with photos



After the Site Evaluation

CBWCD meets with the participant to review the report based on the field data collected.

The report developed includes:

- ◆ A water budget based on irrigable area and ET.
- ◆ Previous water consumption
- ◆ On-site issues (such as overspray, broken heads, etc) with photo documentation

Evapotranspiration or **ET** is the loss of water by evaporation from soil surface and by transpiration through the leaves of plants.

A **water budget** is a calculation of how much water a landscape requires or is allotted in order to maintain health, appearance, and reasonable growth.

After the Site Evaluation

The report also includes:

- ◆ Information on rebates and incentives such as Smart Controllers, and more efficient sprinkler heads.
- ◆ Recommendations
 - ◆ i.e. Consider reducing runtimes and or days from the current watering schedule.
 - ◆ Identify unused turf areas that can be replaced with permeable material or drought tolerant plants.
- ◆ Within 6 months CBWCD follows up with participant to discuss what recommendations have been implemented, successes, issues and lessons learned.

Sample Report



Summary of Findings

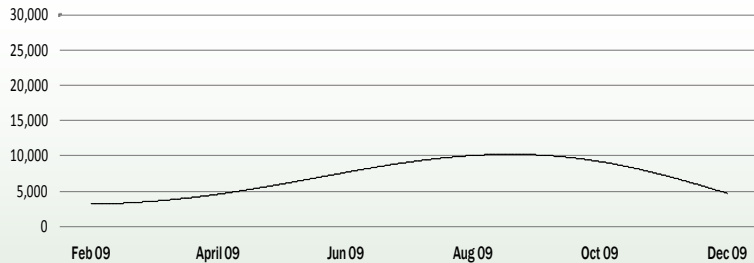
Total Year to Date Water Use:	141,577 Units
Estimated Year to Date Outdoor Use:	63,961 Units
Irrigated Landscape Area:	1,390,302 Sq Feet
Annual Outdoor Water Budget Based on Local ET for Landscape:	39,336 Units

*** Outdoor water use is calculated by subtracting the estimated indoor water use (in units) from the total monthly units billed.***

Potential Savings

Estimated Outdoor Water Savings :	24,625 Units
Estimated Annual Water Cost Savings:	Estimated \$34,721 at current price \$1.41 per unit

Historical Outdoor Water Use



■ Actual Use (Units) ■ Water Budget (Units) ■ 1 Unit = 748 gallons

	Feb 09	Apr 09	Jun 09	Aug 09	Oct 09	Dec 09
Actual Use (Units)	1,265	7,029	13,977	24,333	14,734	2,623
Water Budget (Units)	3,155	4,577	7,662	10,067	9,192	4,683
Over Budget (Units)	0	2,452	6,315	14,266	5,542	0

Field Data Collected

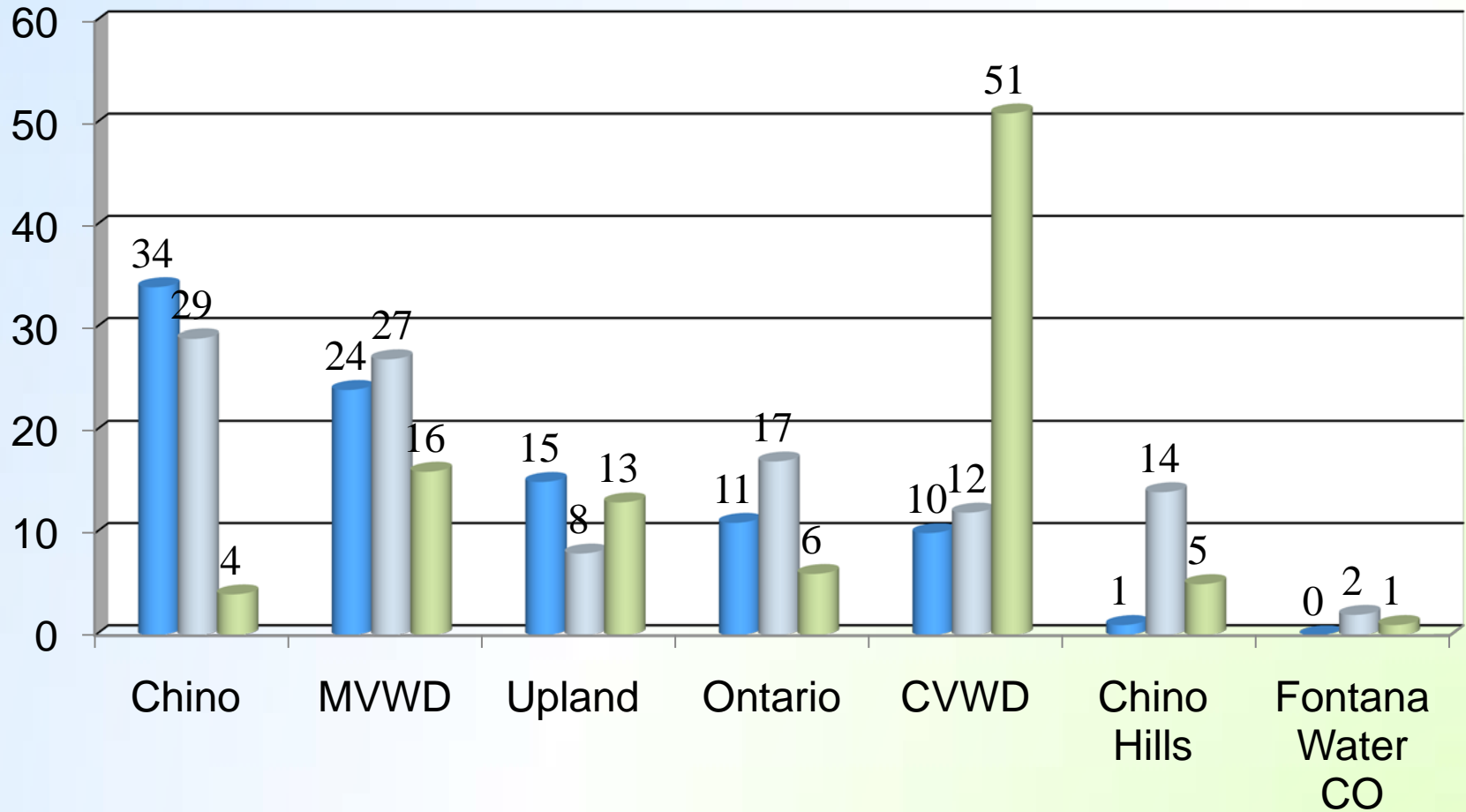
Representative Zone Test: Zone #6			
Sprinkler Type:	Spray	Test Location:	Aeronautics
Precipitation Rate in Zone:	1.02"/hr	Uniformity Lower Quarter:	65%
Soil Type:	Sandy Loam	Head to Head %:	60 - 70%
Minutes Until Runoff:	1 min	Slope Grade:	0%
Range of Application Rate:	.36"/hr - 2.04"/hr		
Representative Zone Test: Zone #1			
Sprinkler Type:	Rotor	Test Location:	Aeronautics
Precipitation Rate in Zone:	1.43"/hr	Uniformity Lower Quarter:	37%
Soil Type:	Sandy Loam	Head to Head %:	40 - 50%
Minutes Until Runoff:	NA	Slope Grade:	0%
Range of Application Rate:	.18"/hr - 3.84"/hr		
Representative Zone Test: Zone # 8			
Sprinkler Type:	MP Rotator	Test Location:	Business Education
Precipitation Rate in Zone:	.72"/hr	Uniformity Lower Quarter:	64%
Soil Type:	Sandy Loam	Head to Head %:	70 - 80%
Minutes Until Runoff:	N/A	Slope Grade:	0%
Range of Application Rate:	.4"/hr - 1.52"/hr		
Representative Zone Test: Zone # 33			
Sprinkler Type:	Rotor	Test Location:	Business Education
Precipitation Rate in Zone:	.58"/hr	Uniformity Lower Quarter:	60%
Soil Type:	Sandy Loam	Head to Head %:	80 - 90%
Minutes Until Runoff:	N/A	Slope Grade:	15%
Range of Application Rate:	.32"/hr - .84"/hr		
Representative Zone Test: Zone # 9			
Sprinkler Type:	Rotor	Test Location:	Business Education
Precipitation Rate in Zone:	1.04"/hr	Uniformity Lower Quarter:	51%
Soil Type:	Sandy Loam	Head to Head %:	80 - 90%
Minutes Until Runoff:	5 mins	Slope Grade:	30%
Range of Application Rate:	.4"/hr - 1.68"/hr		

Audits Performed by CBWCD

- ◆ 300 Audits Completed by August 2010
- ◆ Potential Potable Water Savings to date is 1502 AFY



Local Agency Participation

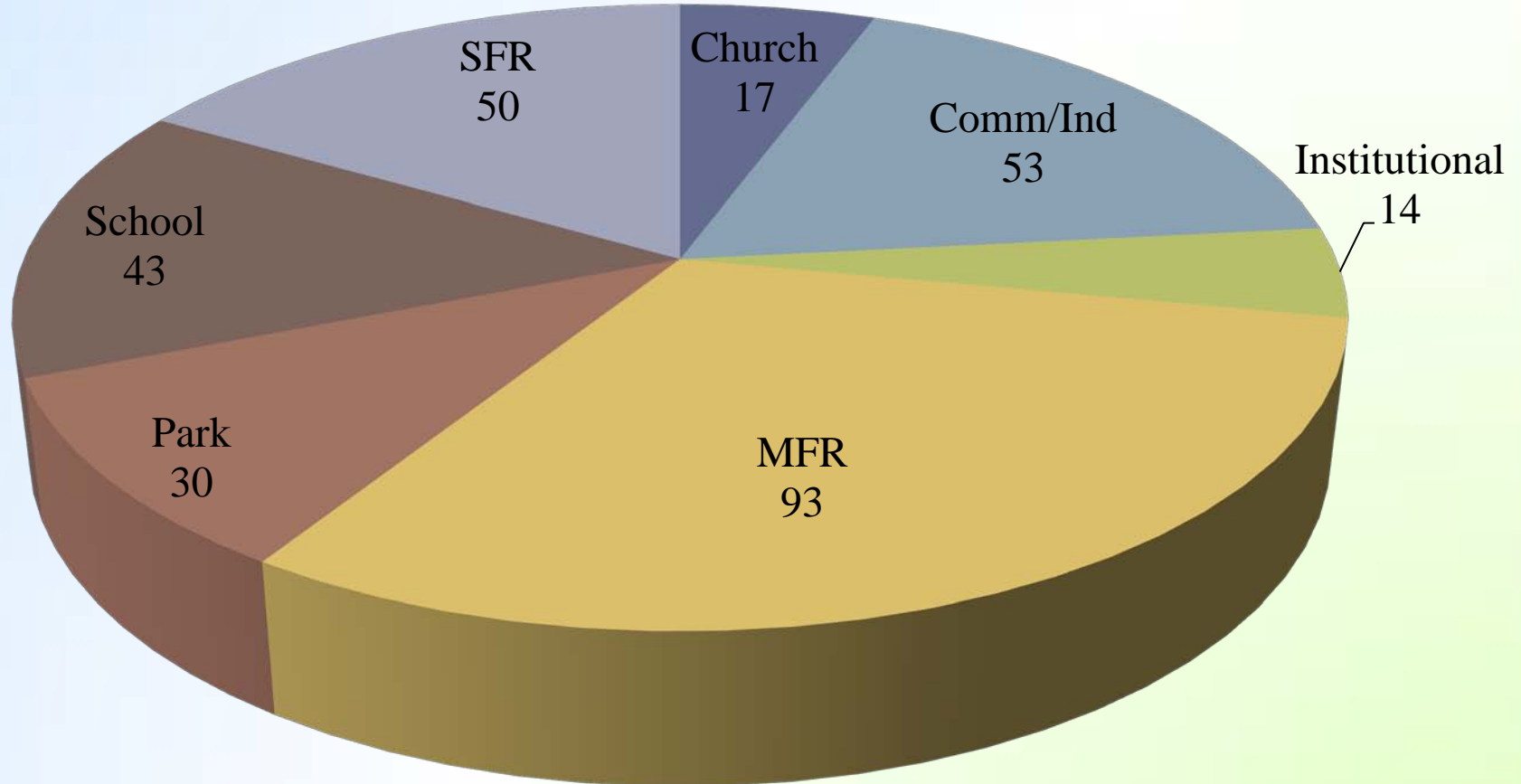


■ Year 1

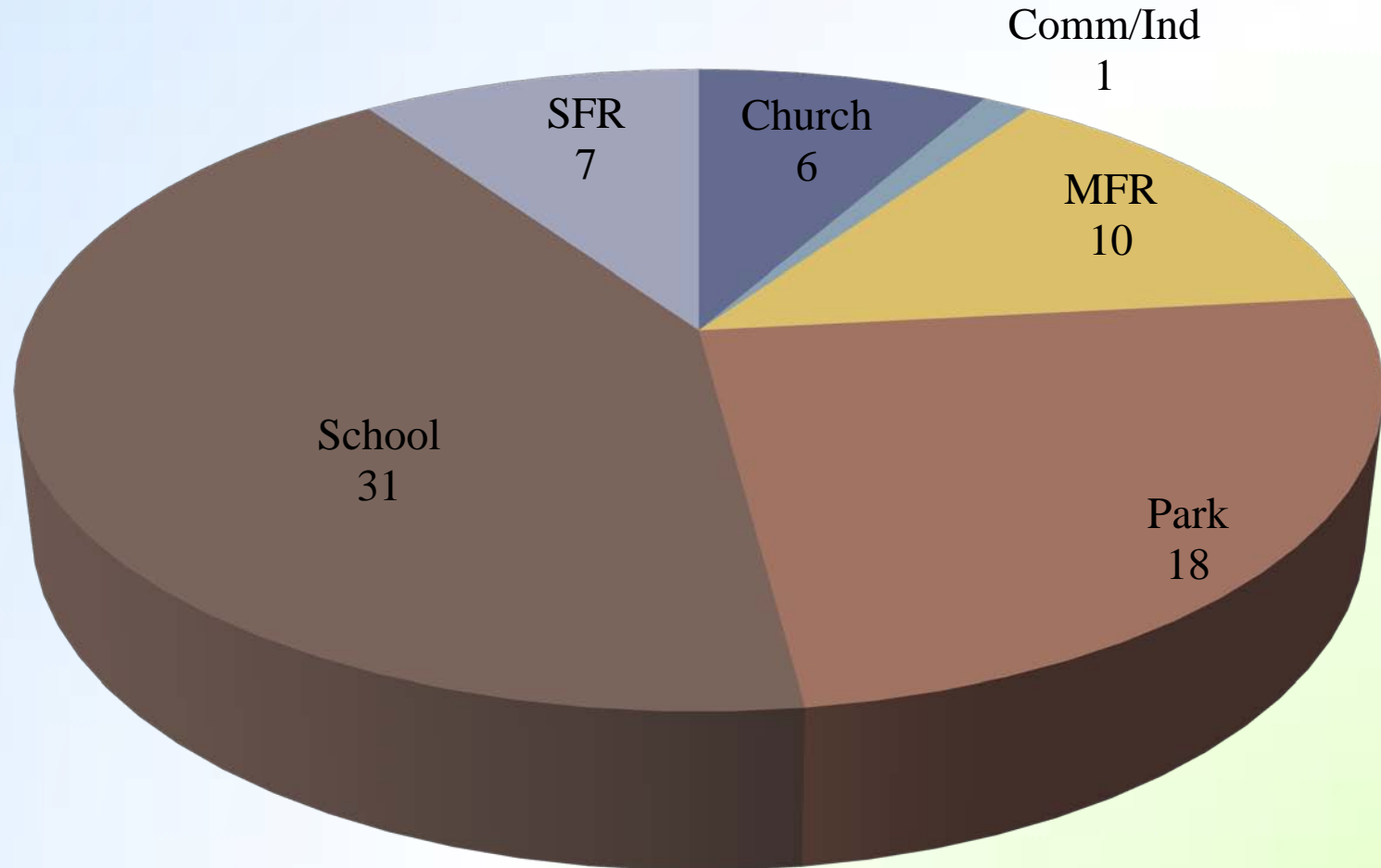
■ Year 2

■ Year 3

Property Type

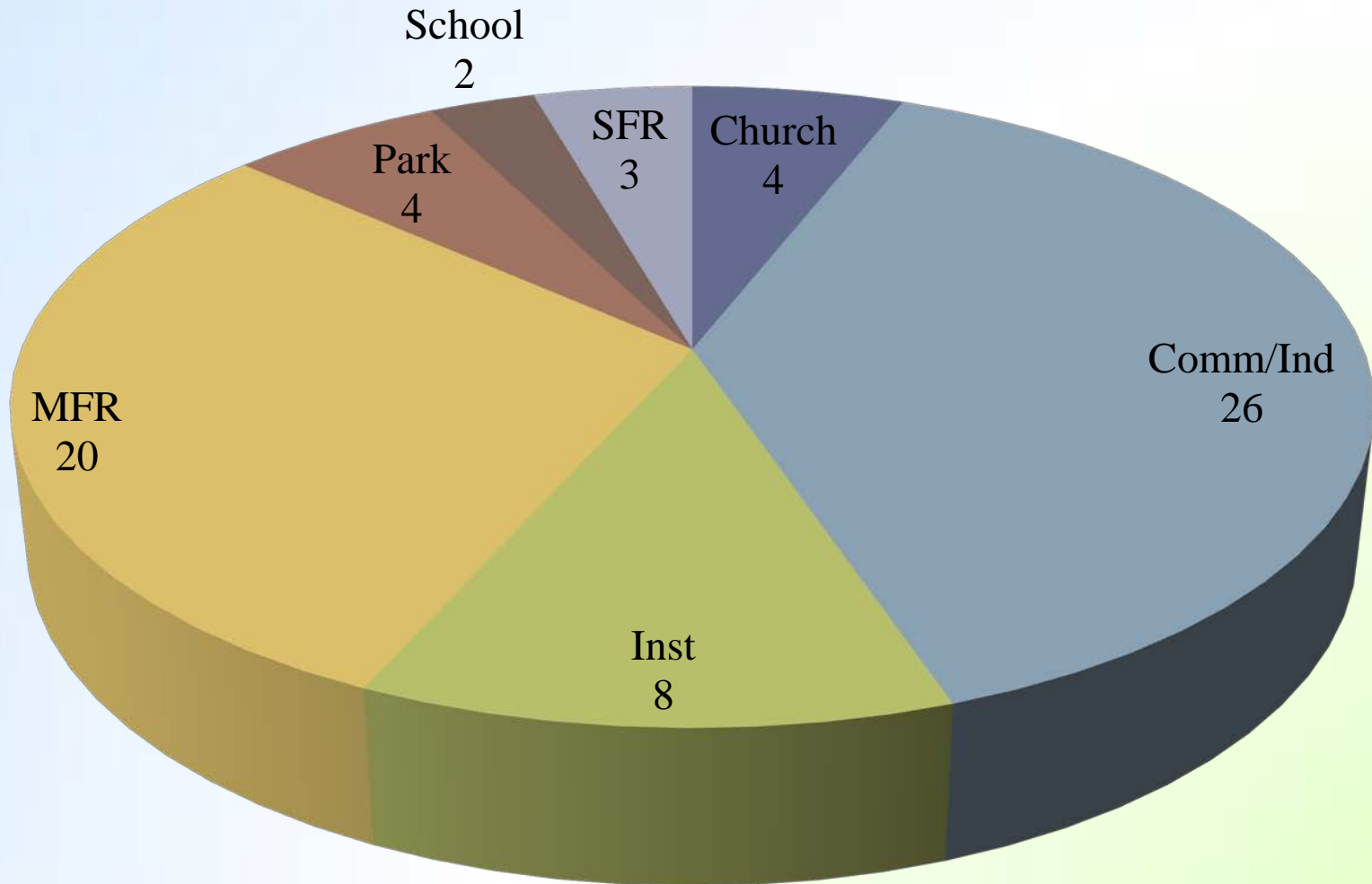


Cucamonga Valley Water District



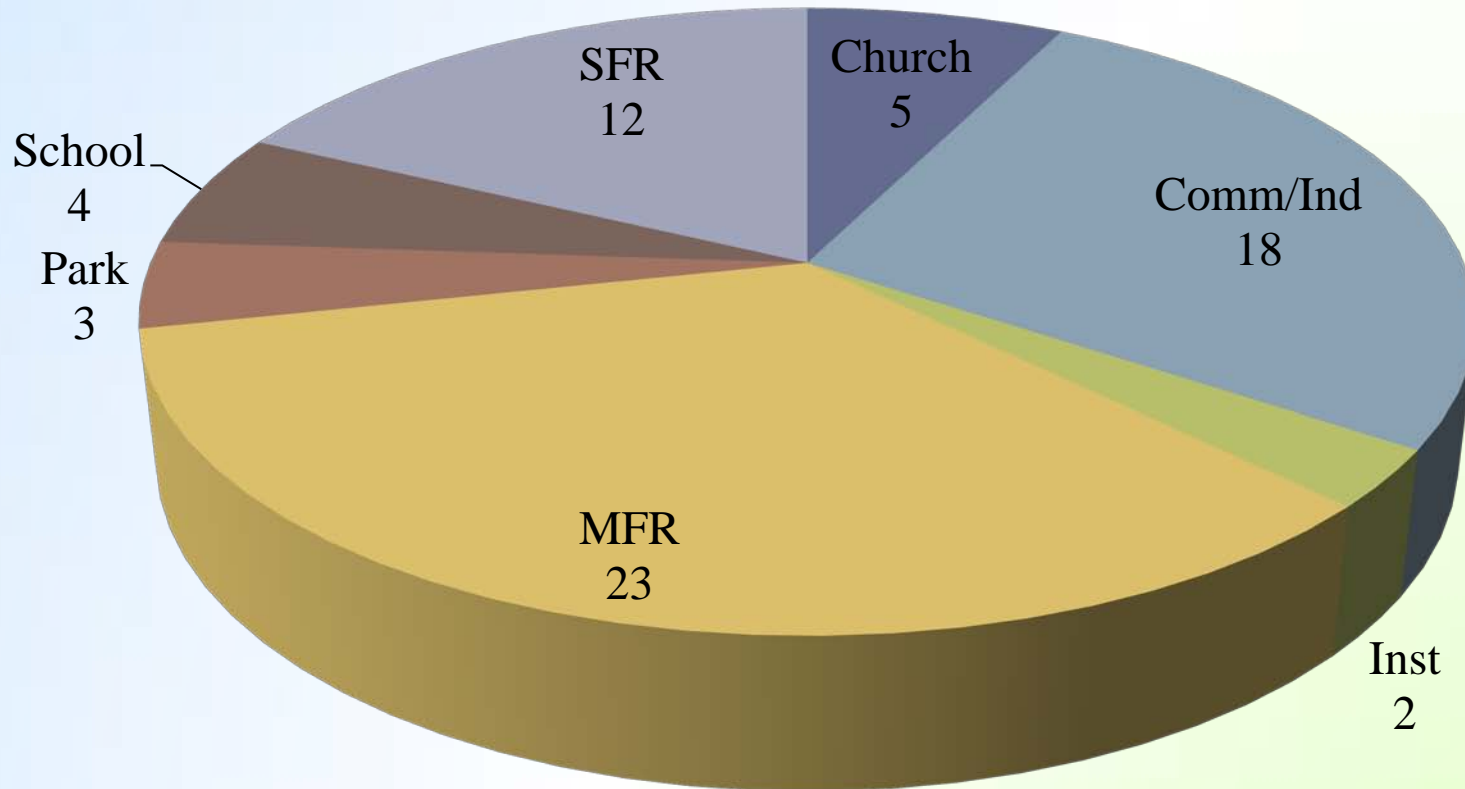
Total Participation
73

City of Chino



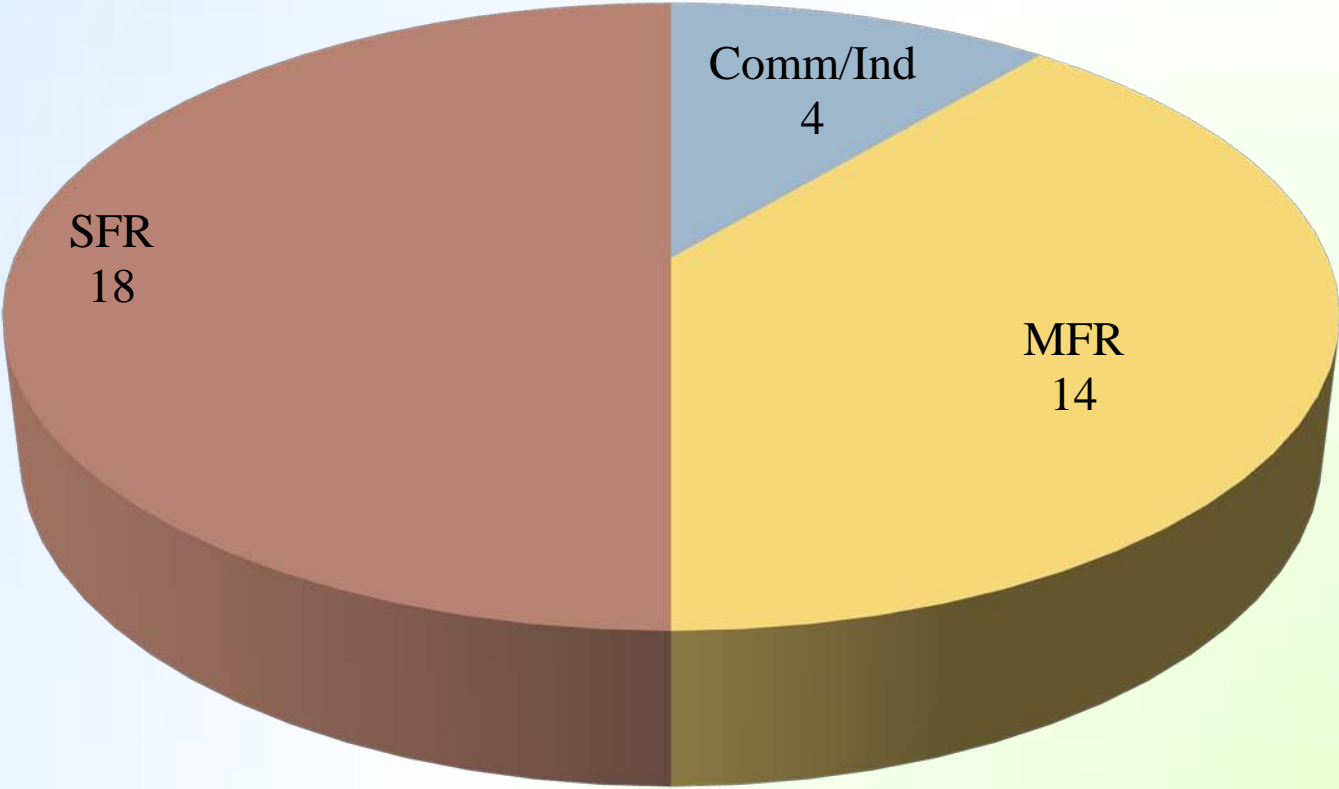
Total Participation
67

Monte Vista Water District



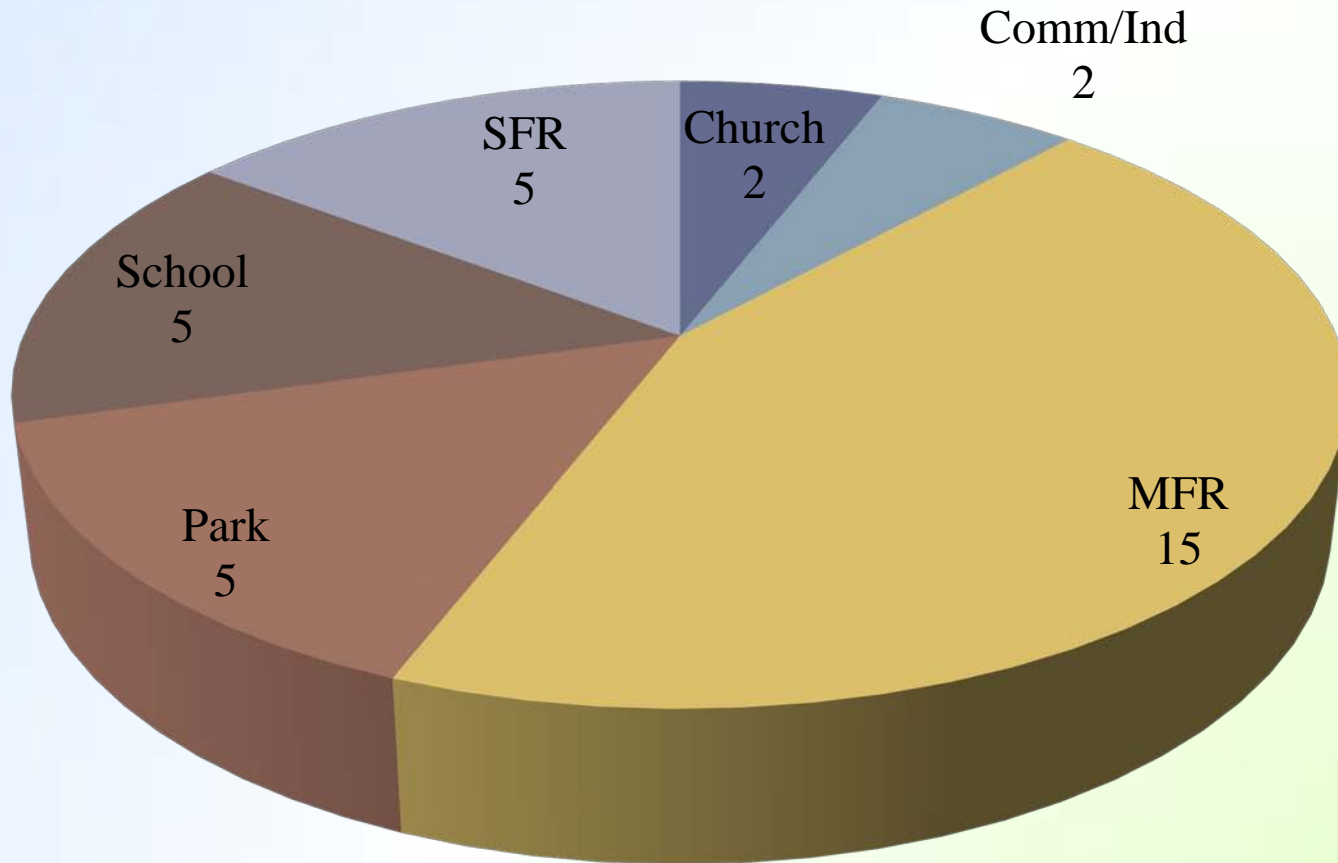
Total Participation
67

City of Upland



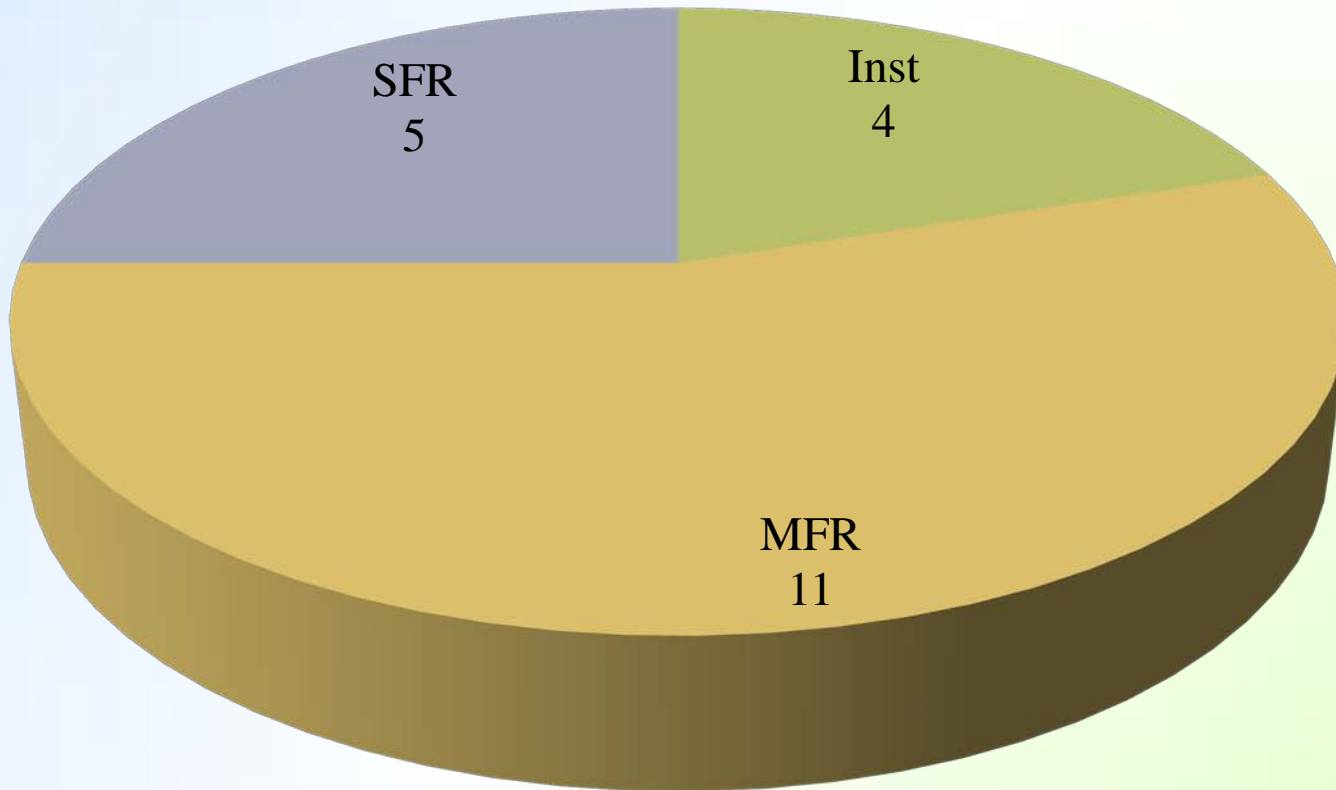
Total Participation
36

City of Ontario



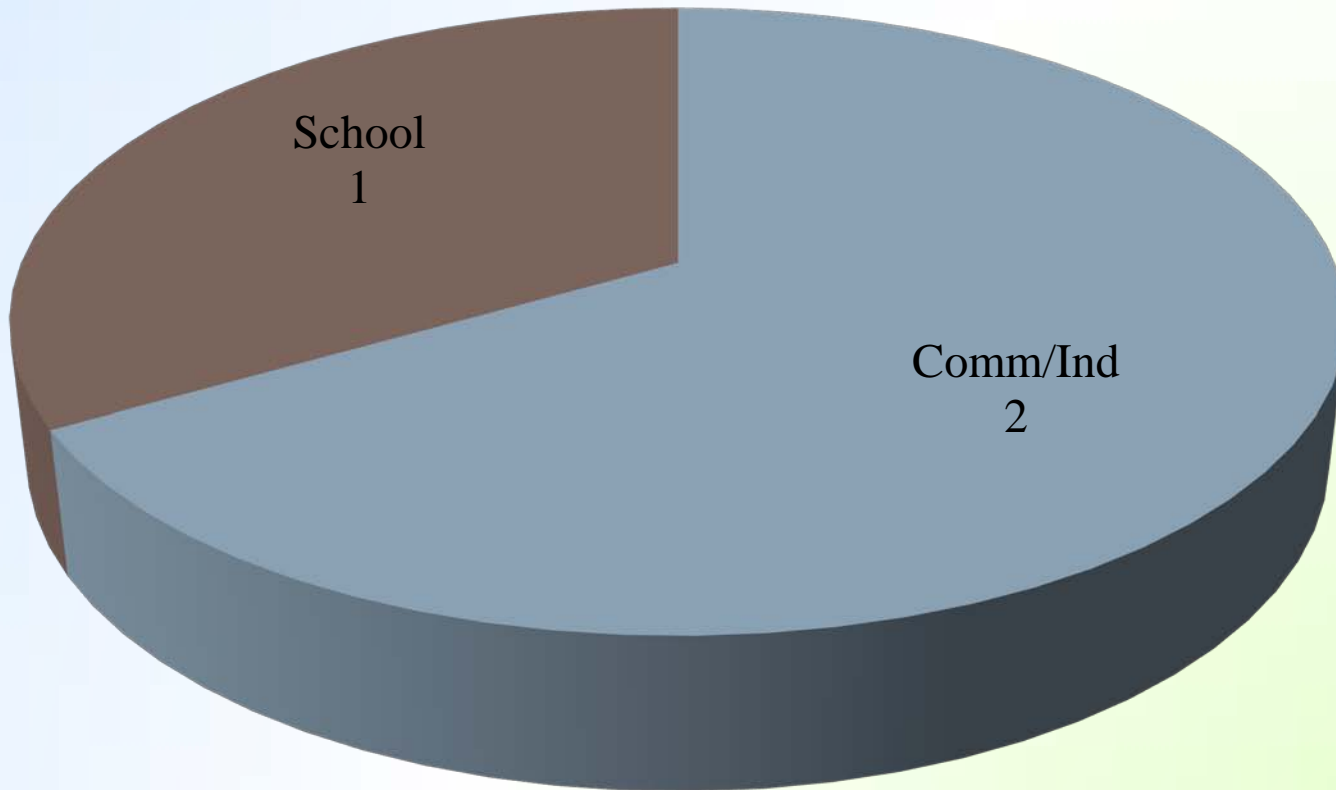
Total Participation
34

City of Chino Hills



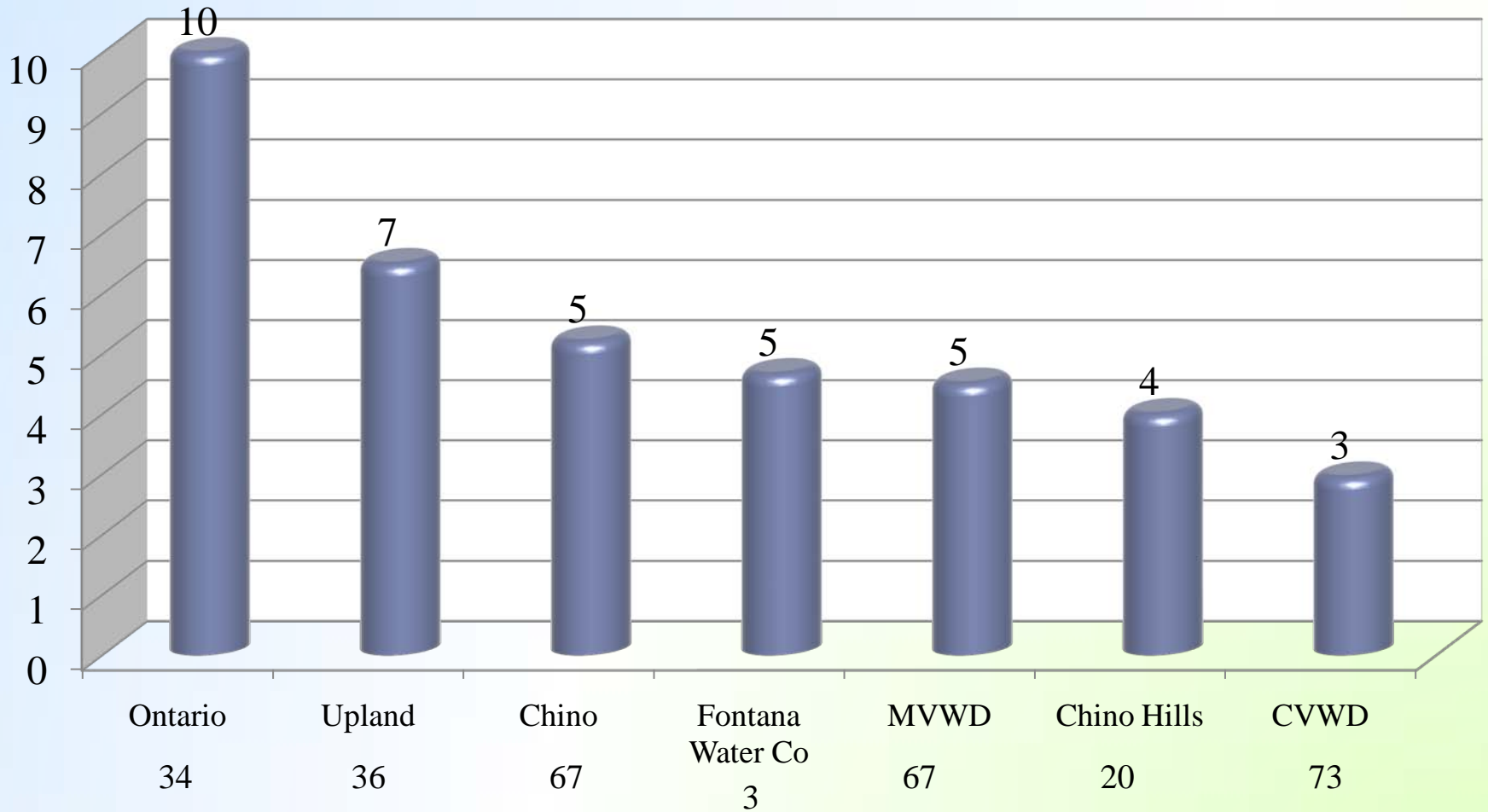
Total Participation
20

Fontana Water Company

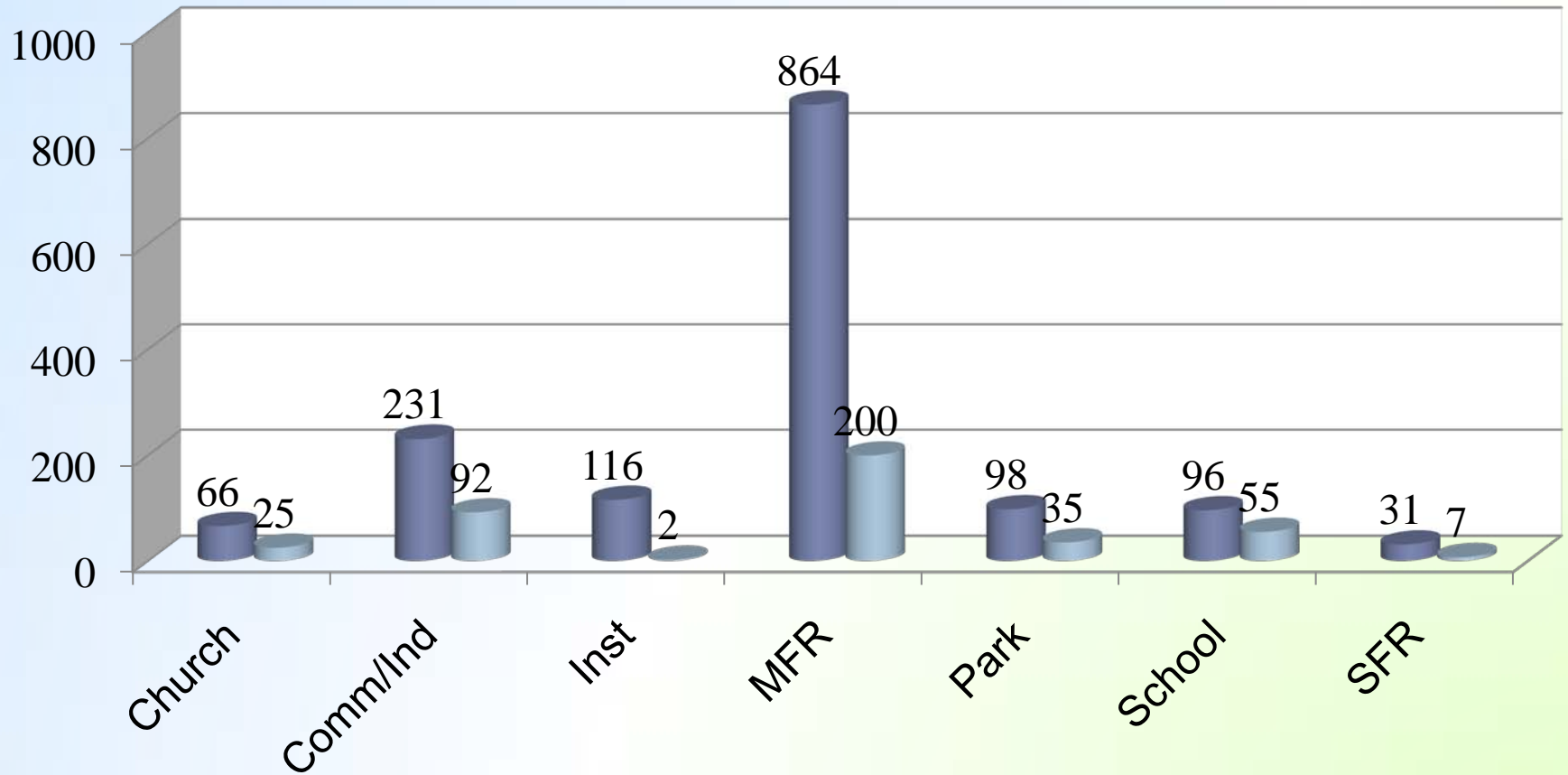


Total Participation
3

Average Potential Savings in AFY Per Site



Potential Savings in AFY Per Site

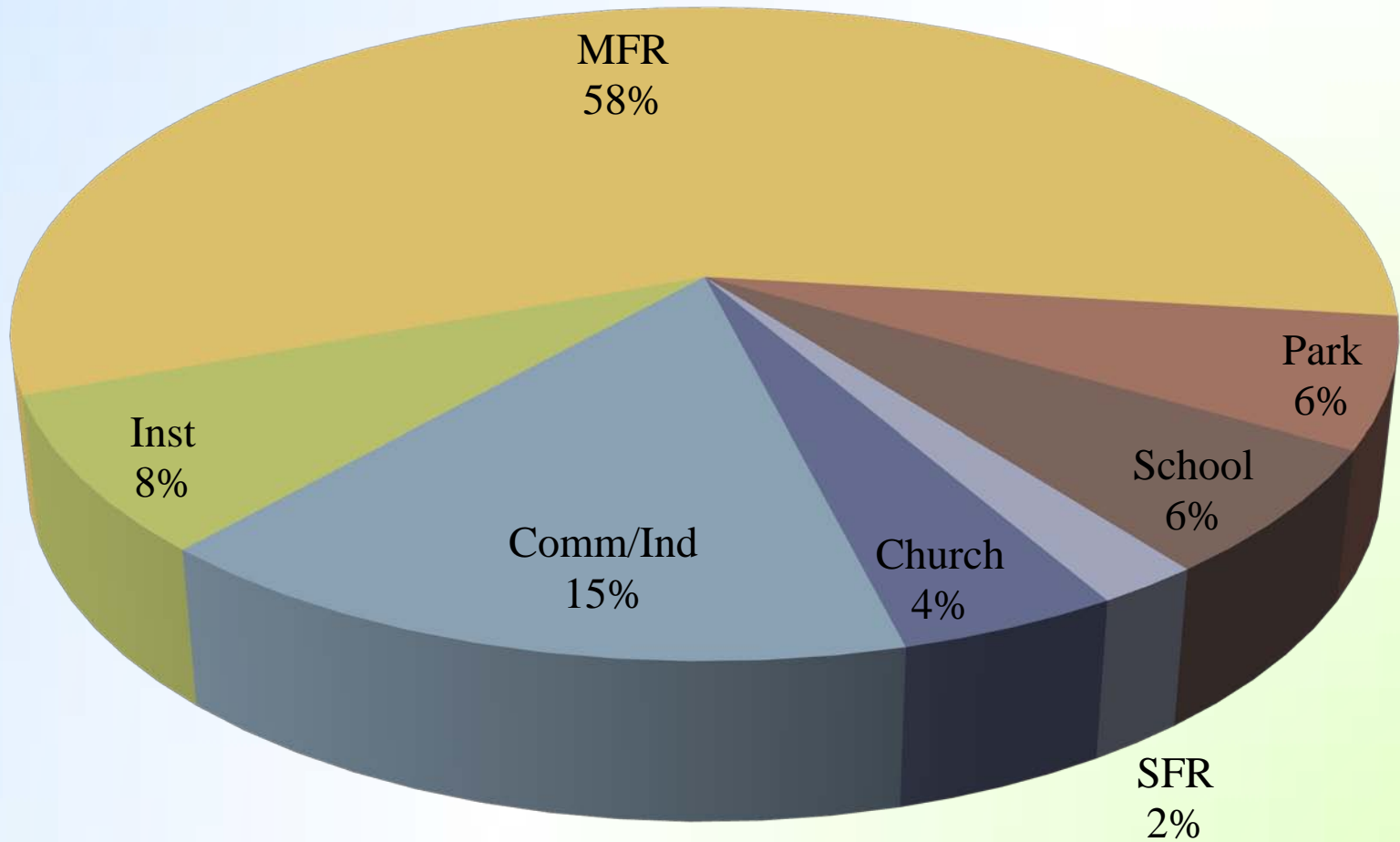


■ Potential
■ Actual

Potential Savings by Property Type

1. Multi Family Residential ≈ 10 AFY savings per site
2. Commercial/ Industrial ≈ 7 AFY savings per site
3. Institutional sites ≈ 7 AFY savings per site
4. Churches ≈ 4 AFY savings per site
5. Park sites ≈ 3 AFY savings per site
6. Institutional sites ≈ 7 AFY savings per site
7. Schools ≈ 3 AFY savings per site
8. Single Family Residential < 1 AFY savings per site

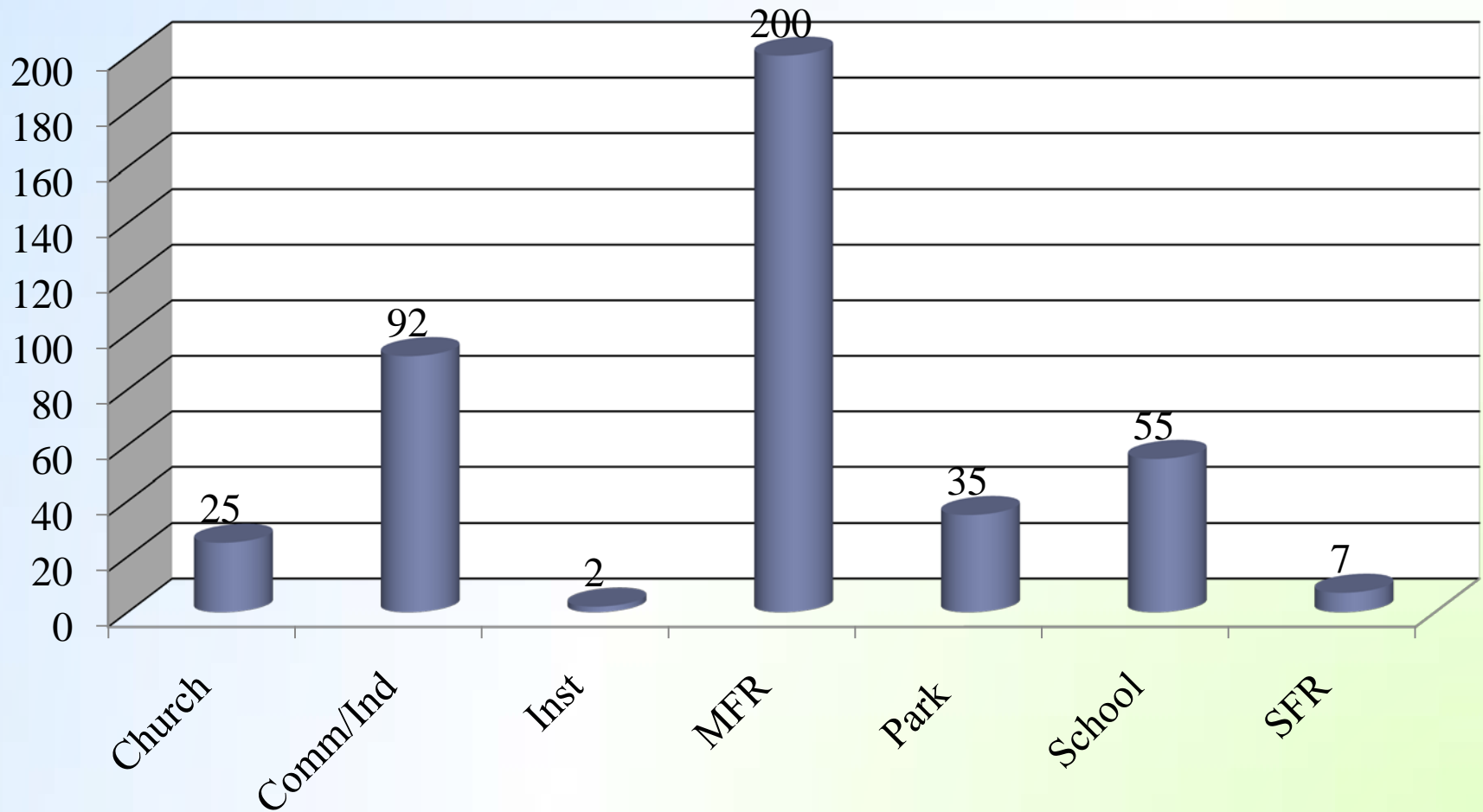
Potential Water Savings by Property Type



Actual Savings

- ◆ 416 AF Actual Savings since Program began.
- ◆ Average of 15-20% reduction in usage.
- ◆ All usage reduction is voluntary.

Actual Savings by Property Type



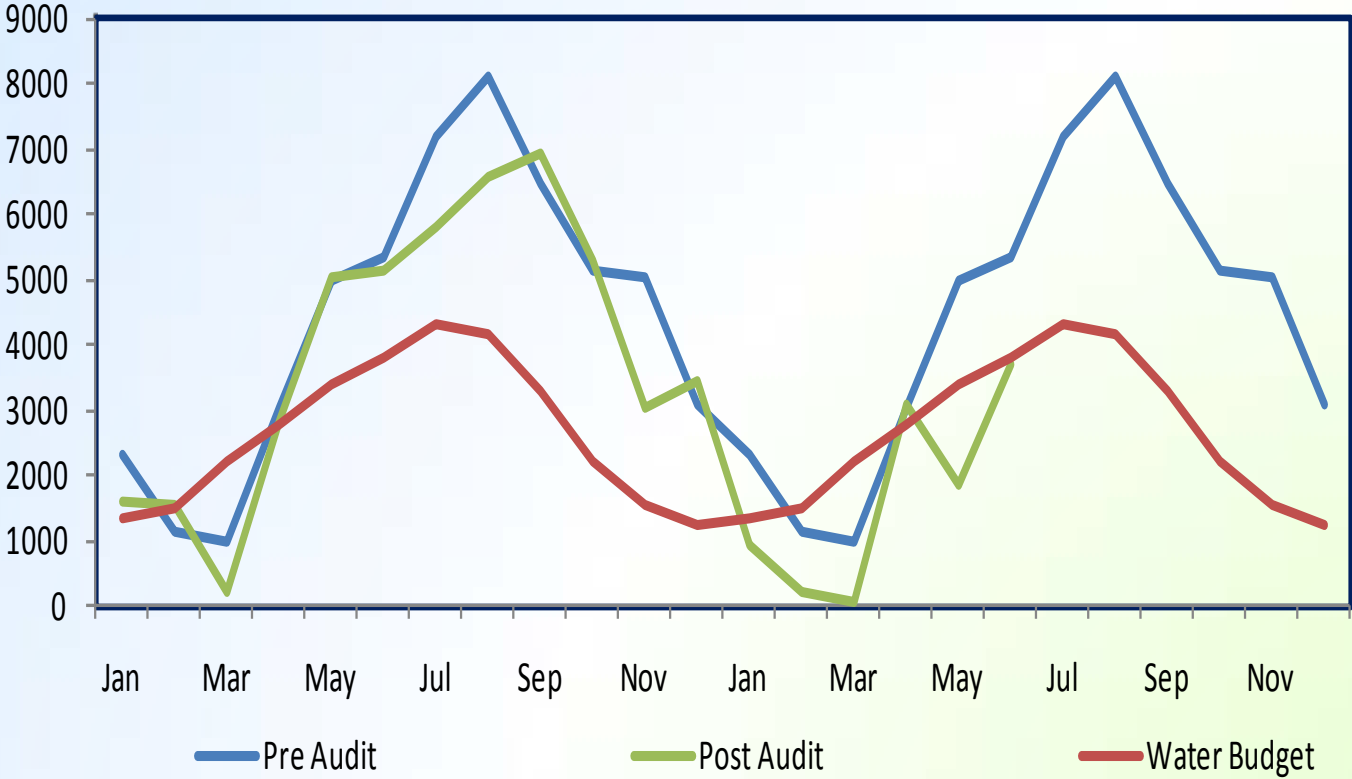
Total Potential Savings in AFY = 1,502

Total Actual Savings in AFY = 416



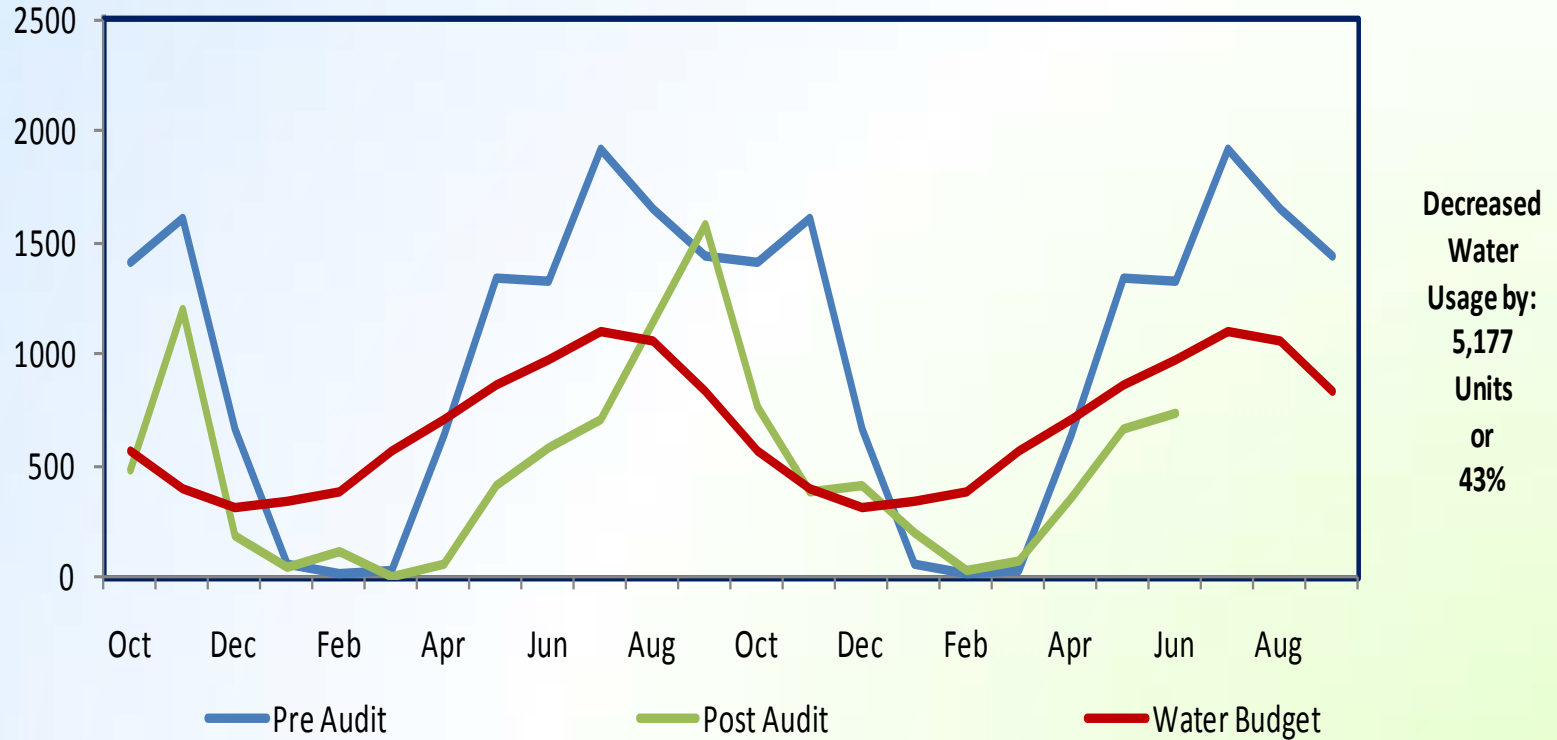
Examples

Summit Ranch (Carbon Canyon) HOA



Decreased
Water
Usage by:
8,835
Units
or
17%

Oak Ridge HOA



Summit Ranch (Carbon Canyon) HOA

Pre Audit



Post Audit



Summit Ranch (Carbon Canyon) HOA

Pre Audit



Post Audit



Oak Ridge HOA

Pre Audit



Post Audit

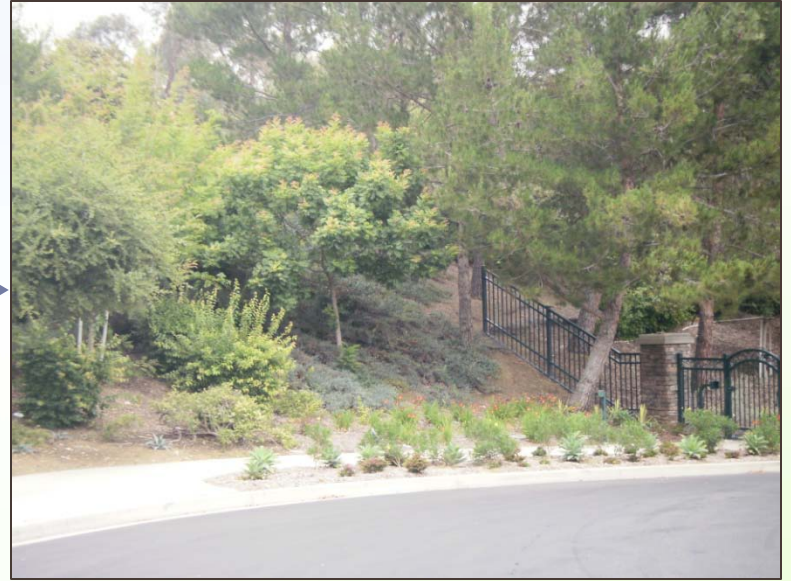


Oak Ridge HOA

Pre Audit



Post Audit



Questions??

