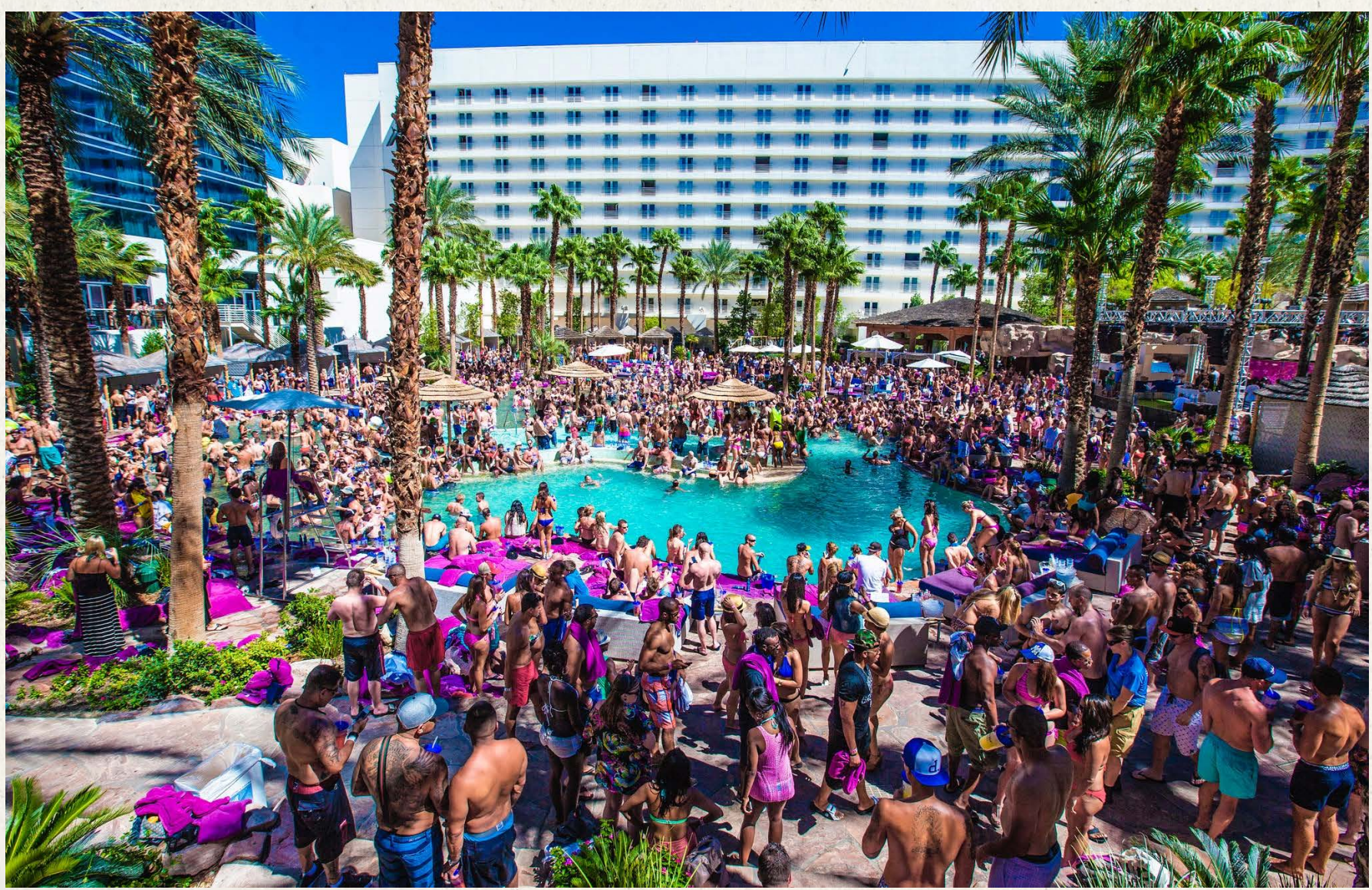
America's Driest City: Building a More Resilient Las Vegas

Bellagio Fountains

Hard Rock Hotel Pool



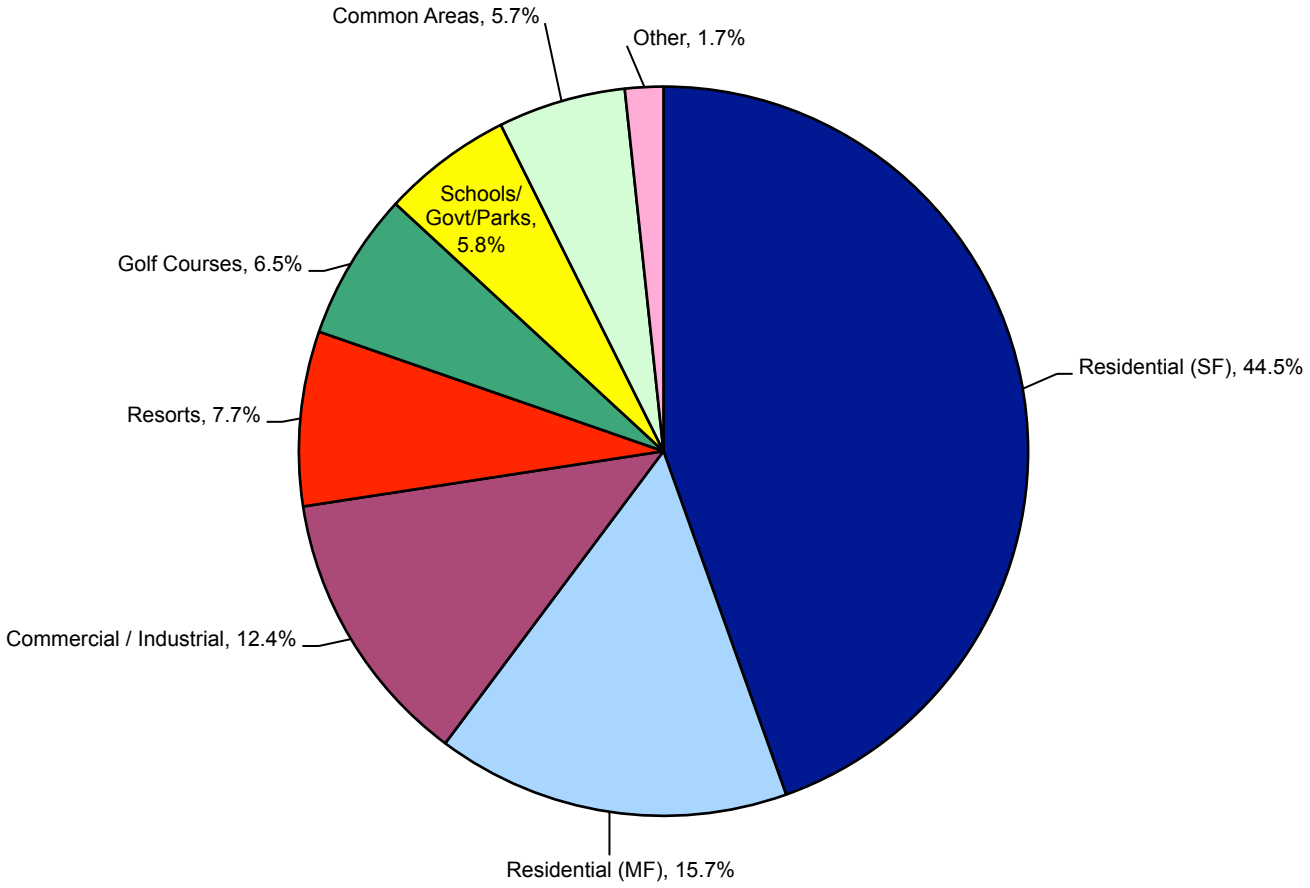
Colorado River

- Serves about 30 million people in 7 states and Mexico
- Irrigates 3 million acres of farmland (over 70% of water use)
- Allocations exceed average flow by 15-20%
- Climate change may reduce flows by 5-15%
- Current storage about 50% of capacity
- Provides 90% of Southern Nevada's Water

The Colorado River: Imperiled?

Southern Nevada uses just 1.8 percent of the water allocated from the Colorado River, but it constitutes 90 percent of our supply.

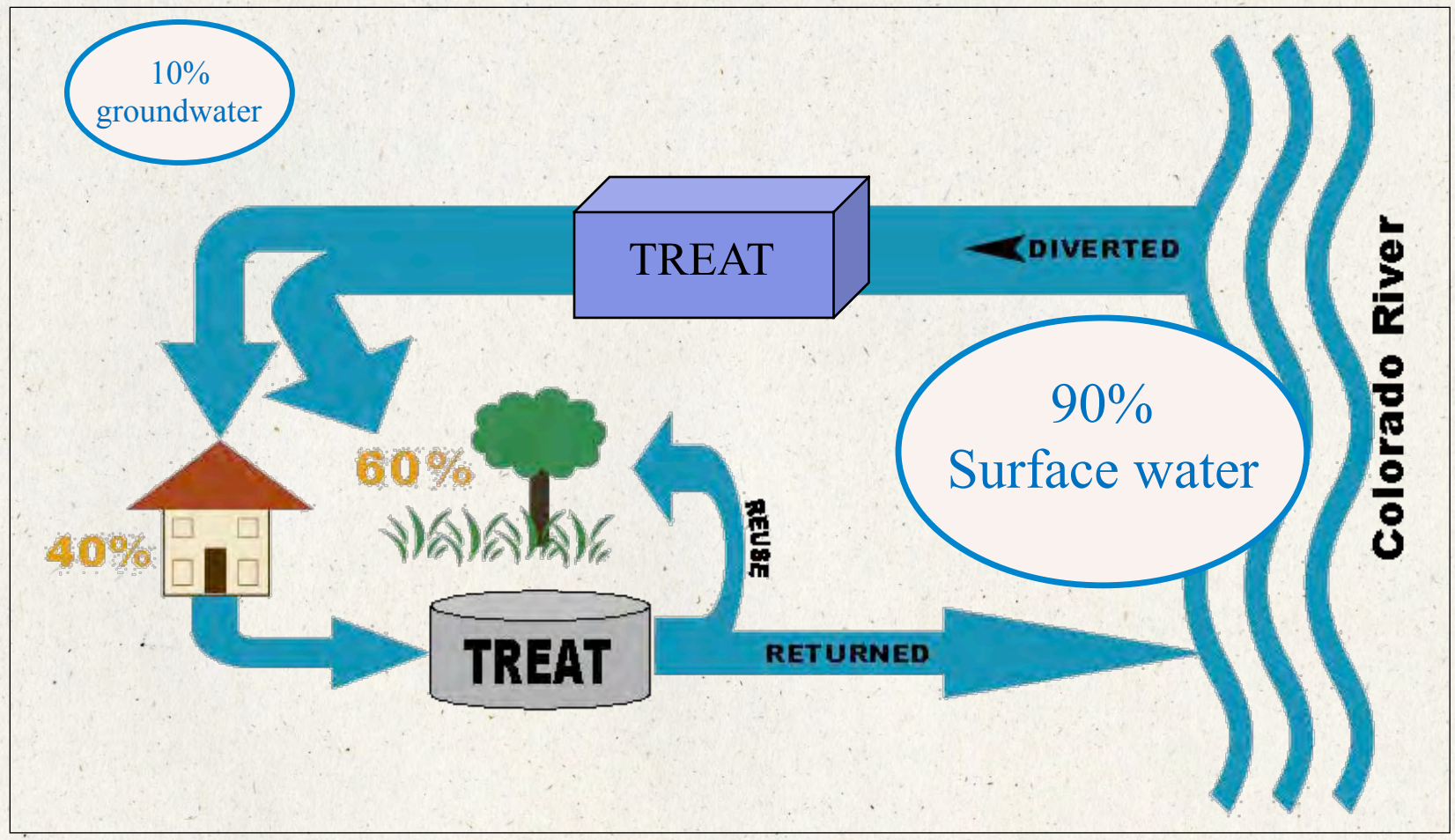
2012 Municipal Metered Water Consumption
Use By Customer Type



Notes:

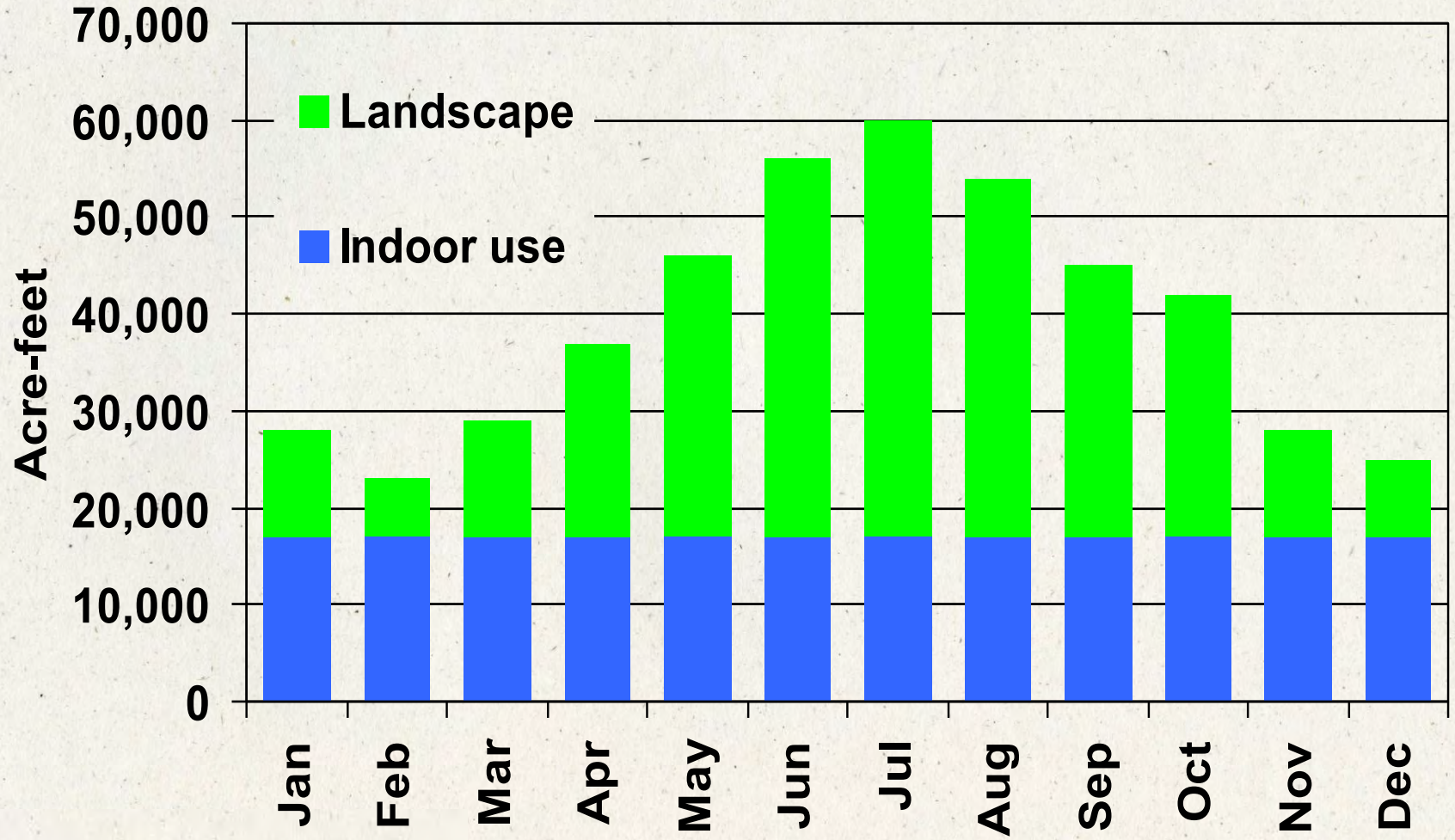
(a) Municipal metered water consumption billed to customers from all sources (potable and non-potable).
(b) Potable includes ground water and Colorado River water
(c) Non-Potable includes raw Colorado River water, reclaimed and reused water
(d) Reflects the service areas of all SNWA agencies providing potable and/or reclaimed water.

100 Percent Reuse



Water that is used indoors is recovered for direct or indirect reuse.

Seasonal Demand & Infrastructure



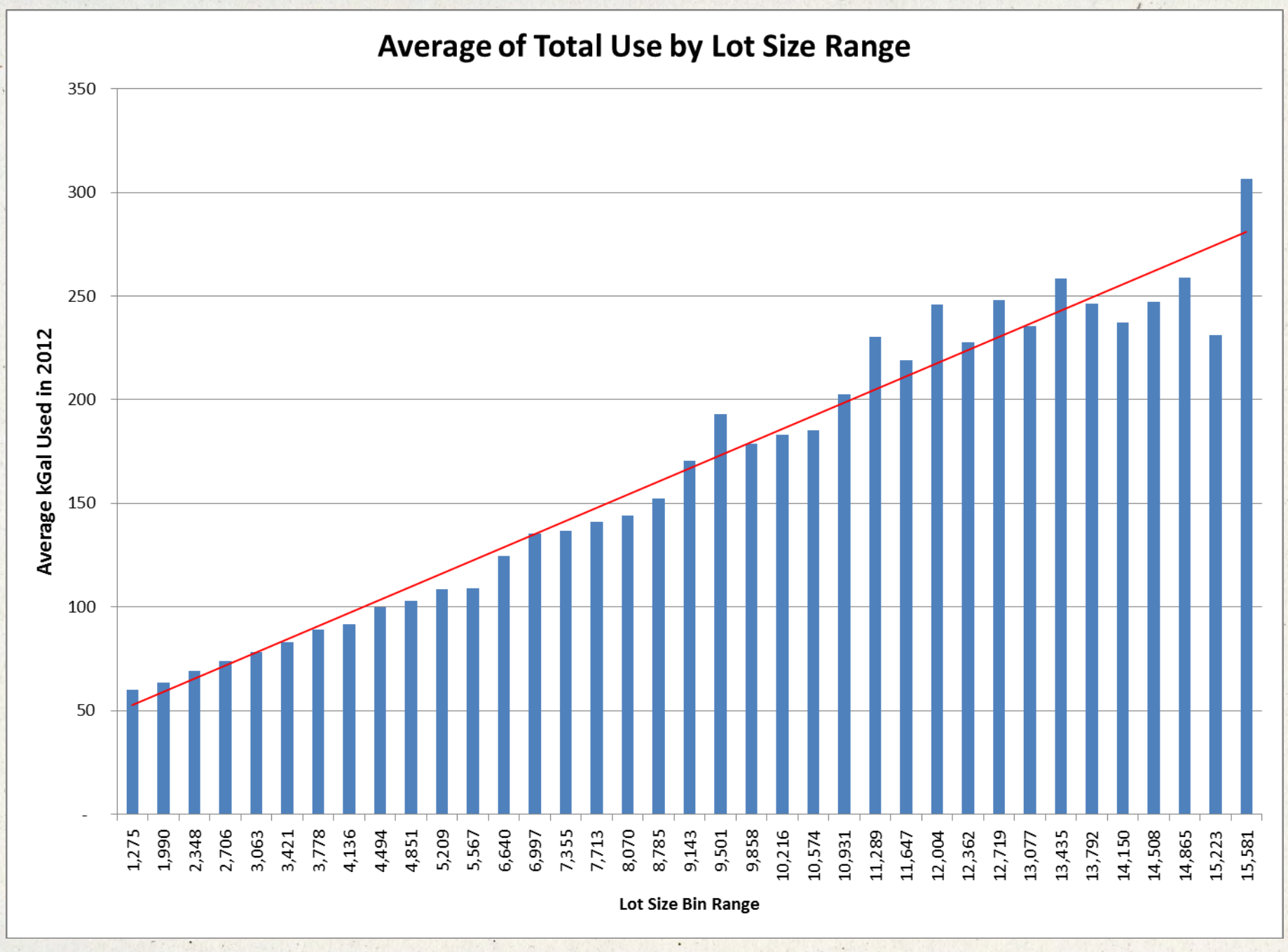
Annual Water Application
Lawns vs. Water Smart Landscape

73 gallons per square foot annually

17 gallons per square foot annually

Lawns

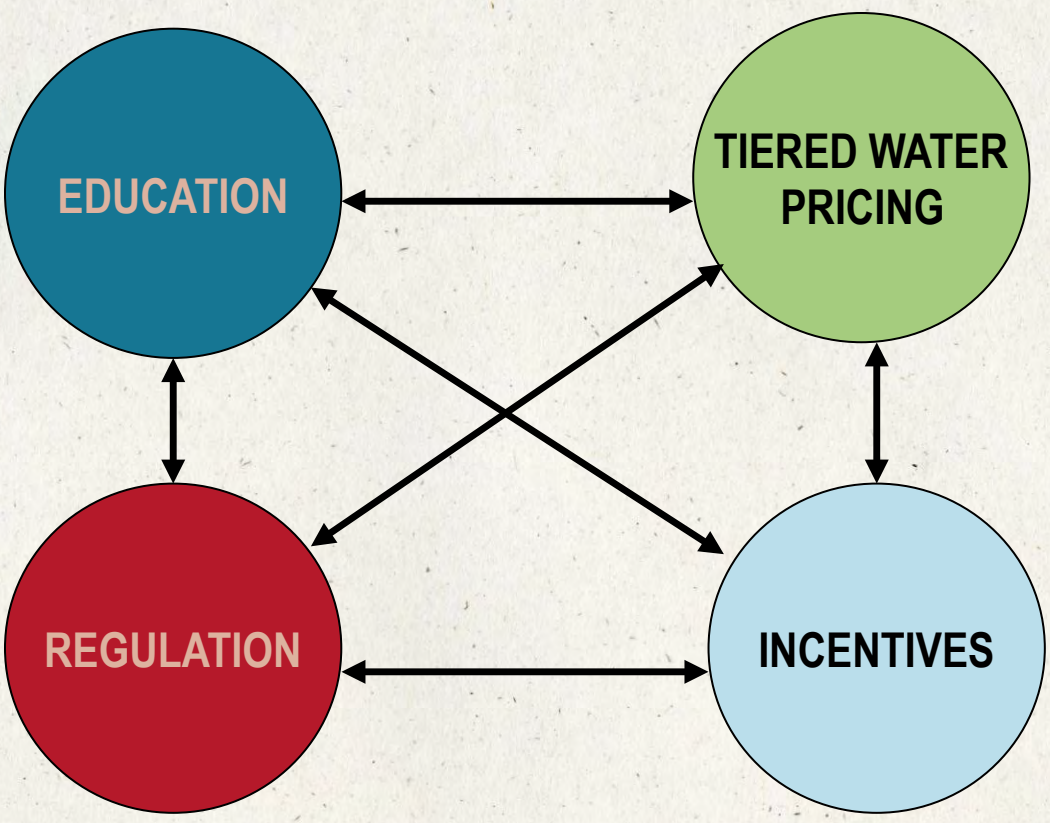
Water Smart Landscape


Average of Total Use by Lot Size Range
Average kGal Used in 2012
350
300
250
200
150
100
50
-
1,275
1,990
2,348
2,706
3,063
3,421
3,778
4,136
4,494
4,851
5,209
5,567
6,640
6,997
7,355
7,713
8,070
8,785
9,143
9,501
9,858
10,216
10,574
10,931
11,289
11,647
12,004
12,362
12,719
13,077
13,435
13,792
14,150
14,508
14,865
15,223
15,581
Lot Size Bin Range

Outdoor Water Use is the Key

In Southern Nevada, the greatest opportunity for water conservation lies in curbing wasteful outdoor uses.

Demand Management Tools



Through collaboration, eight agencies utilize a common suite of methods to reduce overall water use.

Regulation: Landscape Development Codes

Since 2003, lawns are prohibited in new residential front yards and limited to 50 percent of the landscape area in new backyards.

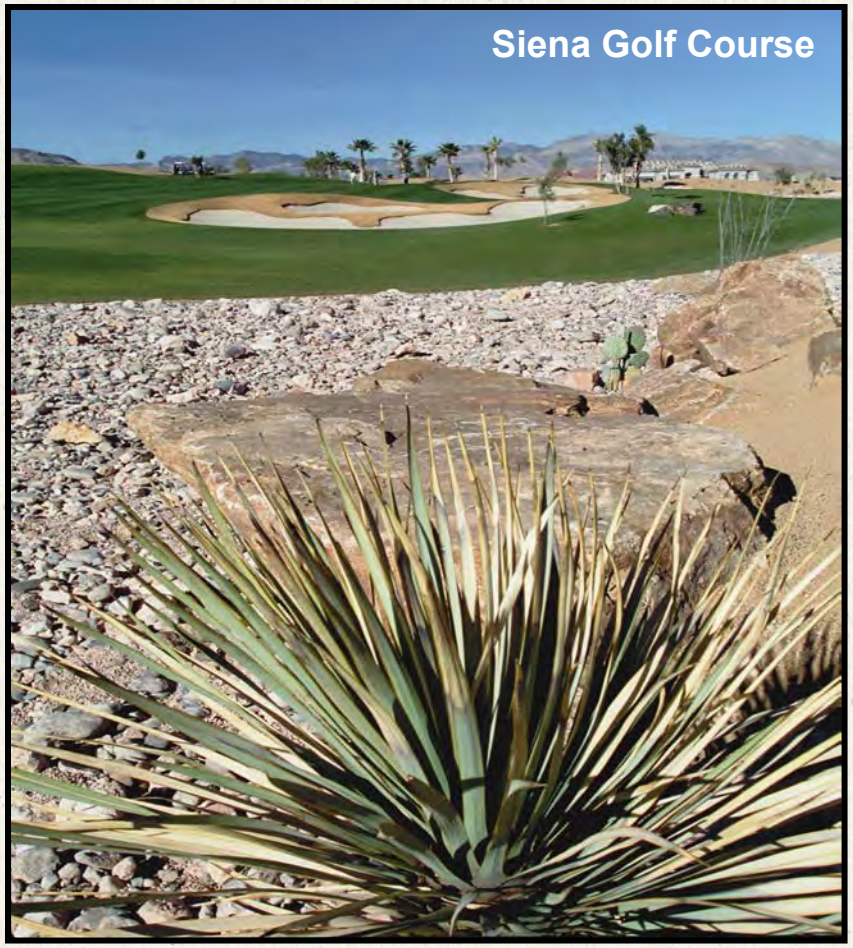
Regulation: Landscape Development Codes

Lawn is prohibited in new non-residential developments.

Regulation – Golf Courses

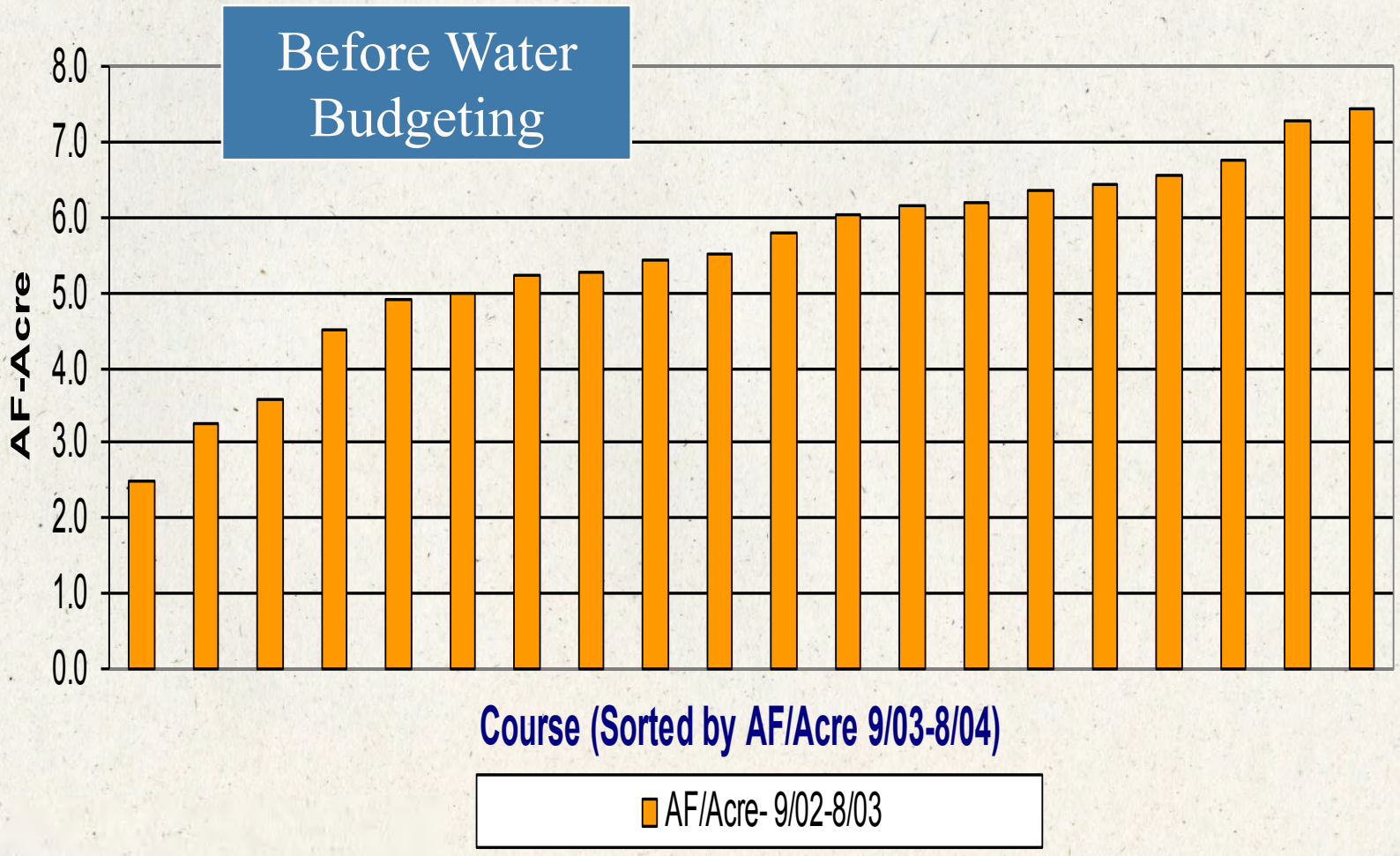
Existing golf courses are subject to water budgets based on irrigated acreage. Surcharges apply to overuse.

Golf courses have converted more than 35 million square feet of grass to water-smart landscaping.



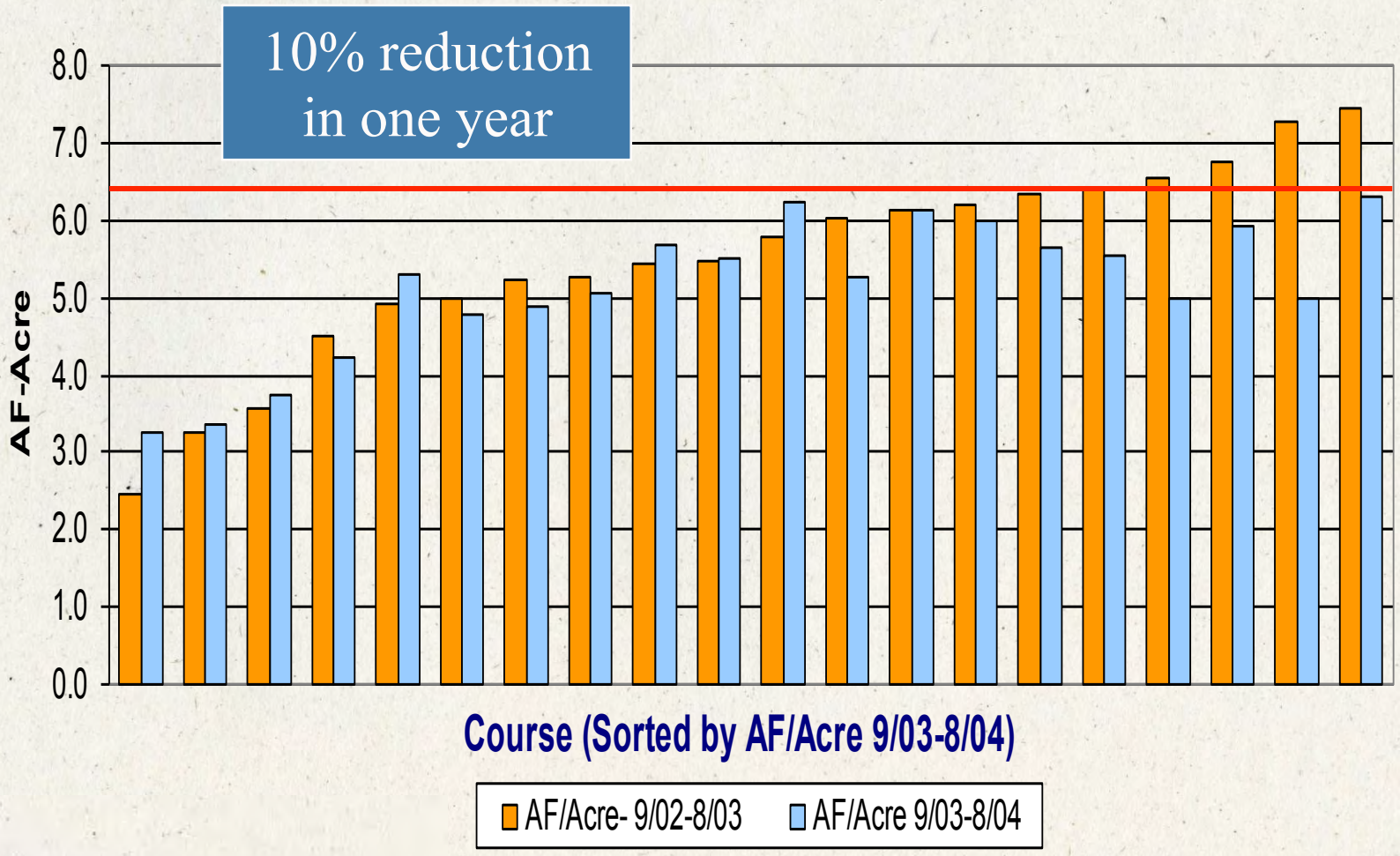
SOUTHERN NEVADA WATER AUTHORITY

Golf Water Budgets



SOUTHERN NEVADA WATER AUTHORITY

Golf Water Budgets



SIENA
GOLF CLUB
© 2012 Google
Google earth
Date: 6/21/2012
36°06'18.82" N 115°19'21.20" W elev 2784 ft
Eye alt 5686 ft

Regulation: Watering Restrictions

SNWA member agencies implement day-of-week and time-of-day watering restrictions.

DROUGHT WATERING RESTRICTIONS

Southern Nevada Water Authority

All water users have been assigned a watering group. **Mandatory** restrictions mean you may only run sprinklers on your group's allowed watering day(s). To locate your group, check your bill, visit **snwa.com** or call your water provider.

My assigned group: _____

Watering Group	Winter November - February	Spring / Fall March - April / September - October	Summer May - August
A	Monday	Monday, Wednesday, Friday	**Any** day
B	Tuesday	Tuesday, Thursday, Saturday	**Any** day
C	Wednesday	Monday, Wednesday, Friday	**Any** day
D	Thursday	Tuesday, Thursday, Saturday	**Any** day
E	Friday	Monday, Wednesday, Friday	**Any** day
F	Saturday	Tuesday, Thursday, Saturday	**Any** day

For watering instructions, see inside panel.

Regulation – Water Waste Investigations

Water Waste Investigators perform about 30,000 inspections and issue nearly 10,000 notices per year.

Fees double with each successive violation and may exceed $5,000 per event.

Violations:

- Allowing water to spray or flow off property.
- Watering at a prohibited time or on a prohibited day.

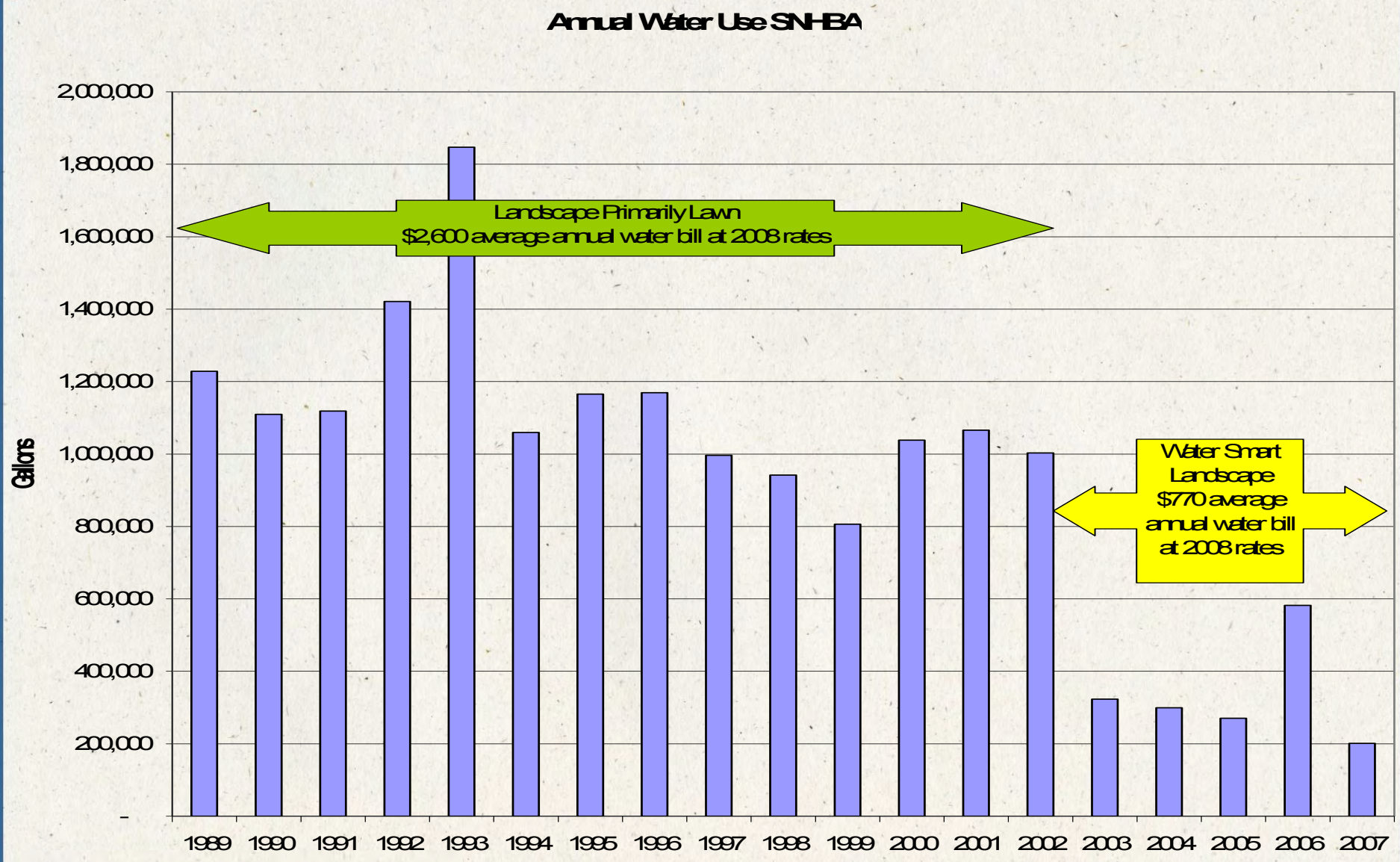
Incentives – Water Smart Landscape

Provides up to $1.50 rebate for each square foot of lawn converted to water-efficient plants and irrigation.

To date:

- **More than 50,000 projects**
- **160 million square feet**
- **$180 million rebated**
- **59 billion gallons saved**

Southern Nevada
Home Builders Association


Annual Water Use SNHBA
Gallons
2,000,000
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
-
Landscape Primarily Lawn
$2,600 average annual water bill at 2008 rates
Water Smart
Landscape
$770 average
annual water bill
at 2008 rates
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007

Partnerships

Partnerships help increase product and program adoption and build community ethic:

- Water Smart Home
- Water Smart Contractor Program (Landscape)
- Water Smart Car Wash
- Water Upon Request Program (Restaurants)
- Linen Exchange (Lodging)
- Water Conservation Coalition (Business)

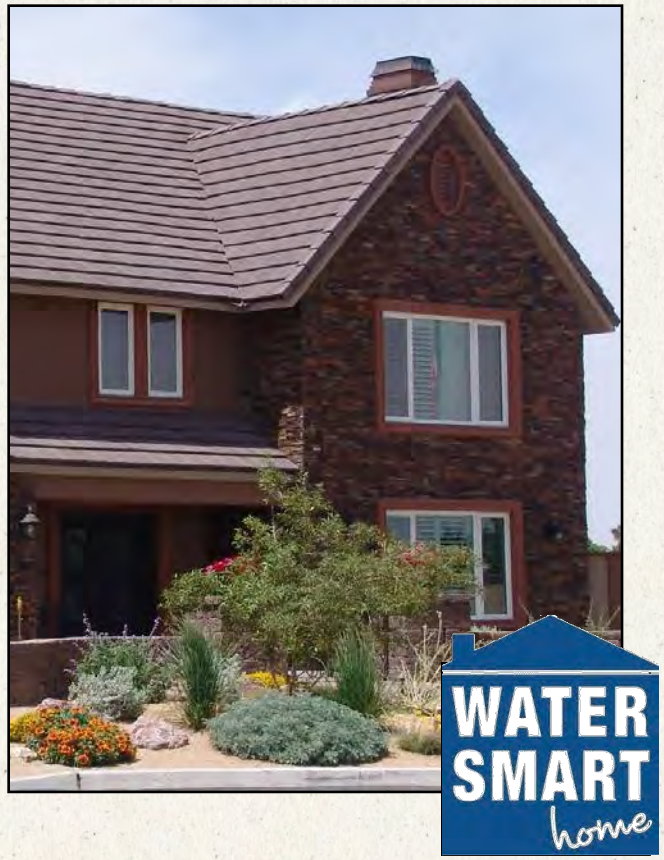
Water Smart Home

Voluntary program certifies new homes and neighborhoods as *Water Smart*.

Requires high efficiency plumbing fixtures, appliances, landscape and irrigation.

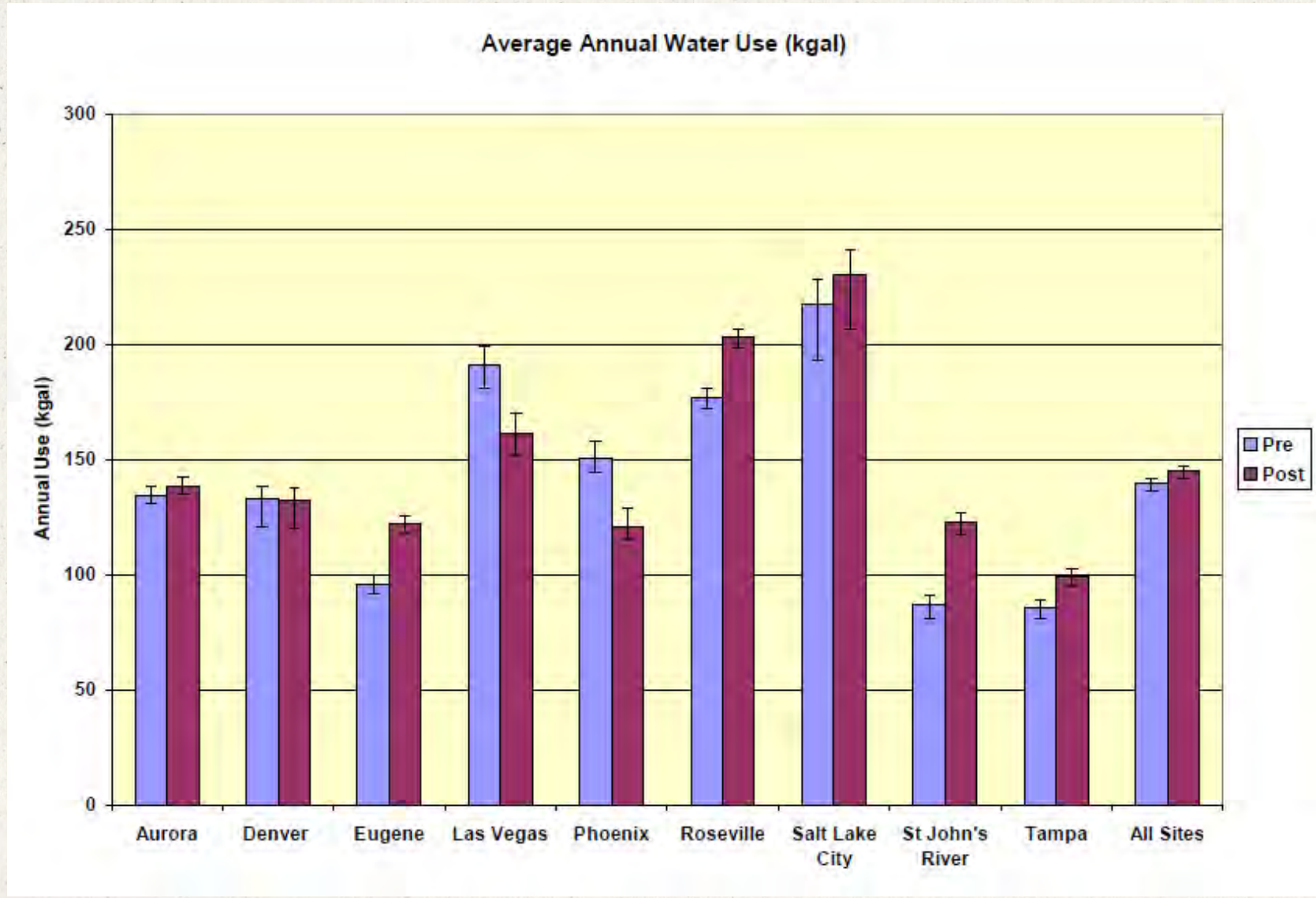
More than 9,000 built

Largest such program in the U.S.

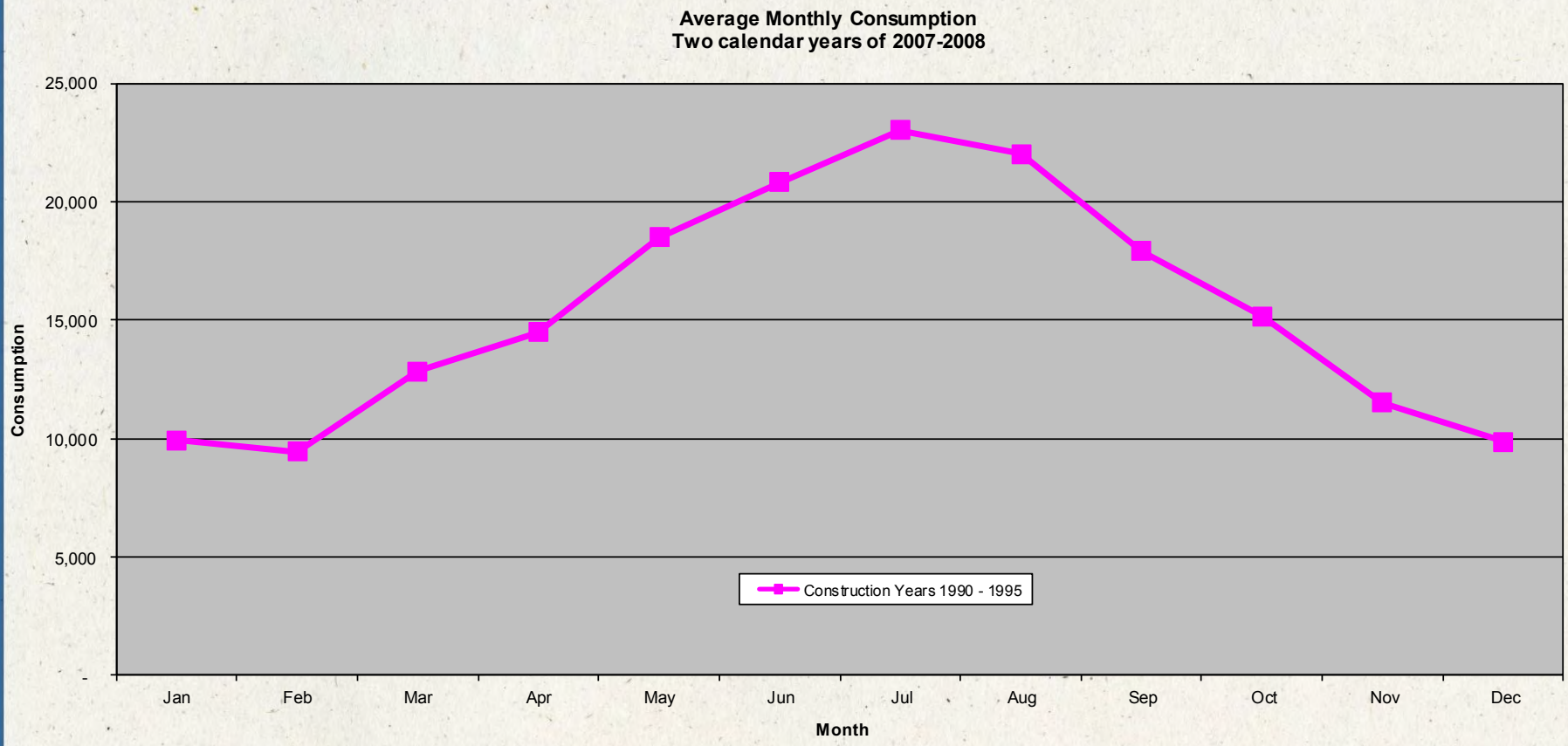


EPA New Homes Water Efficiency Study

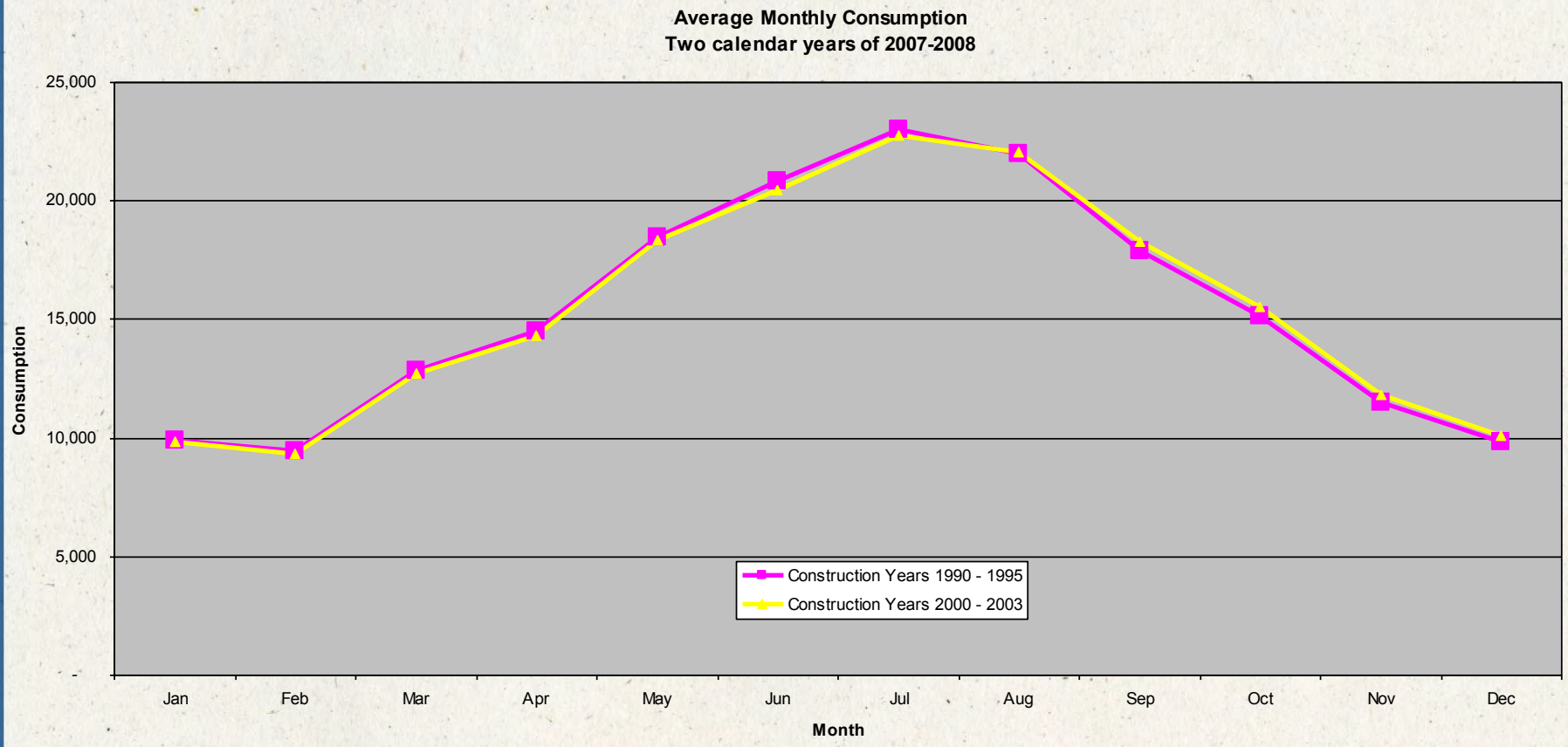
Pre/post January 1, 2001 construction dates



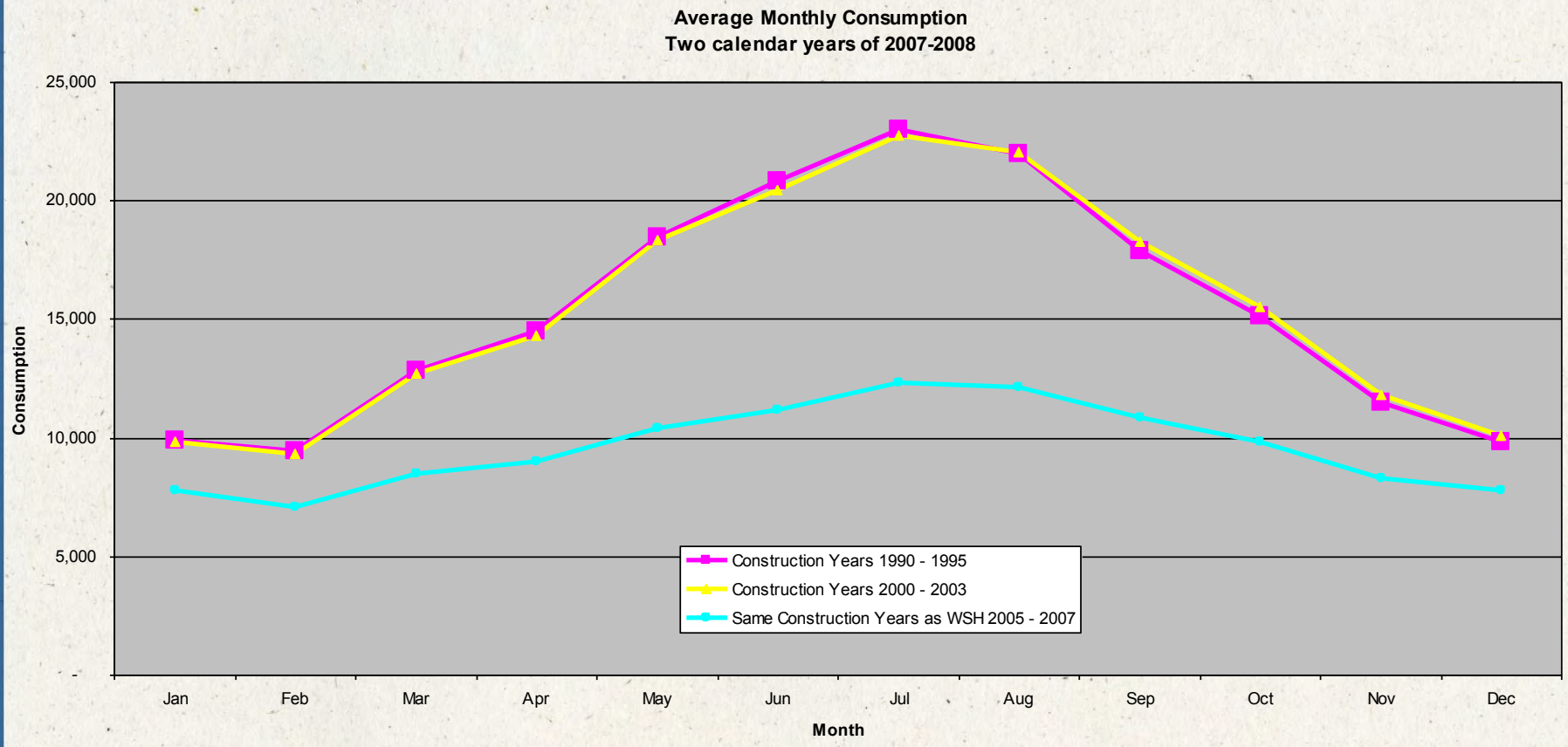
Monthly Consumption
Standing Homes Built 1990-1995



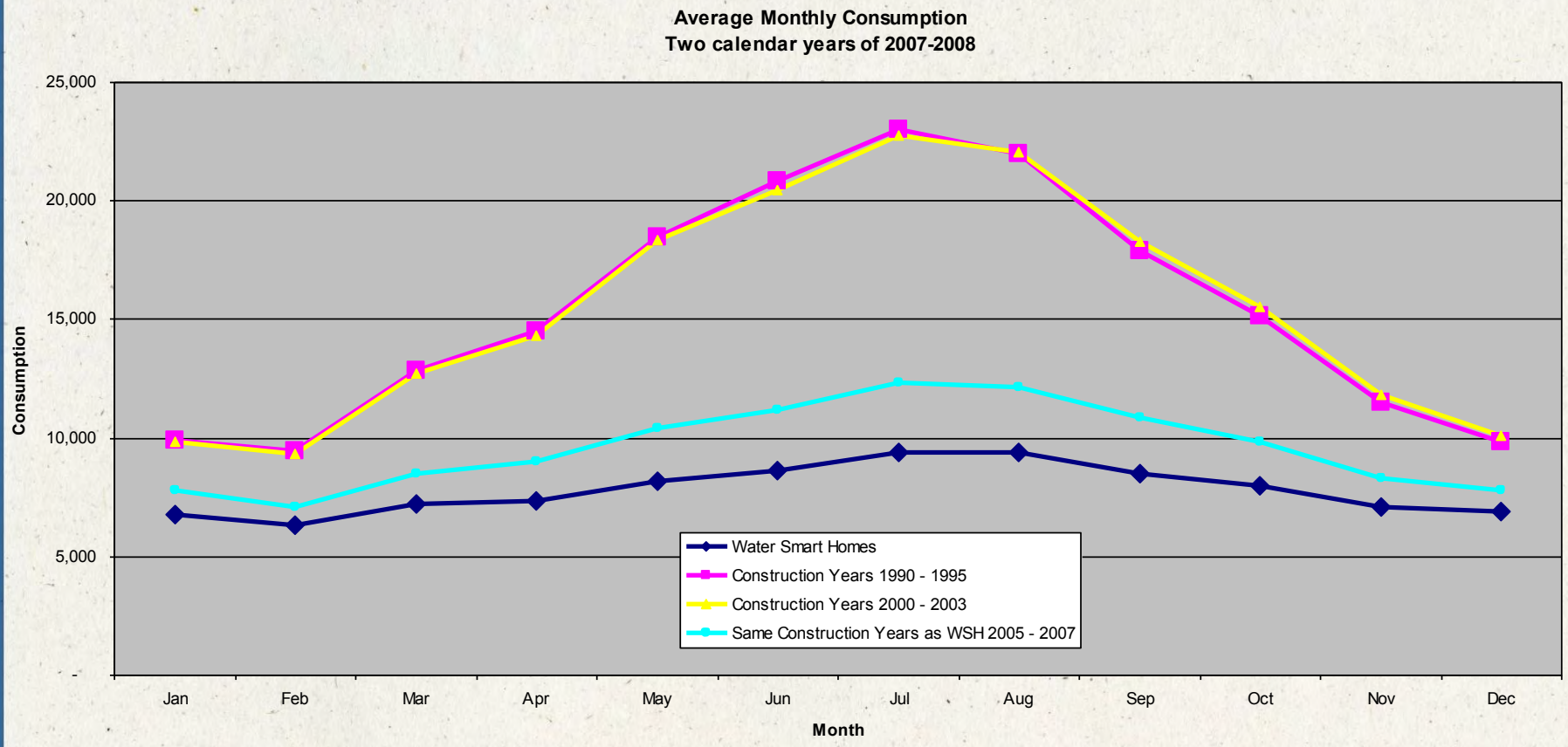
Monthly Consumption
1990-1995 v. 1995-2003



Monthly Consumption
Post 2003 Homes Comparison

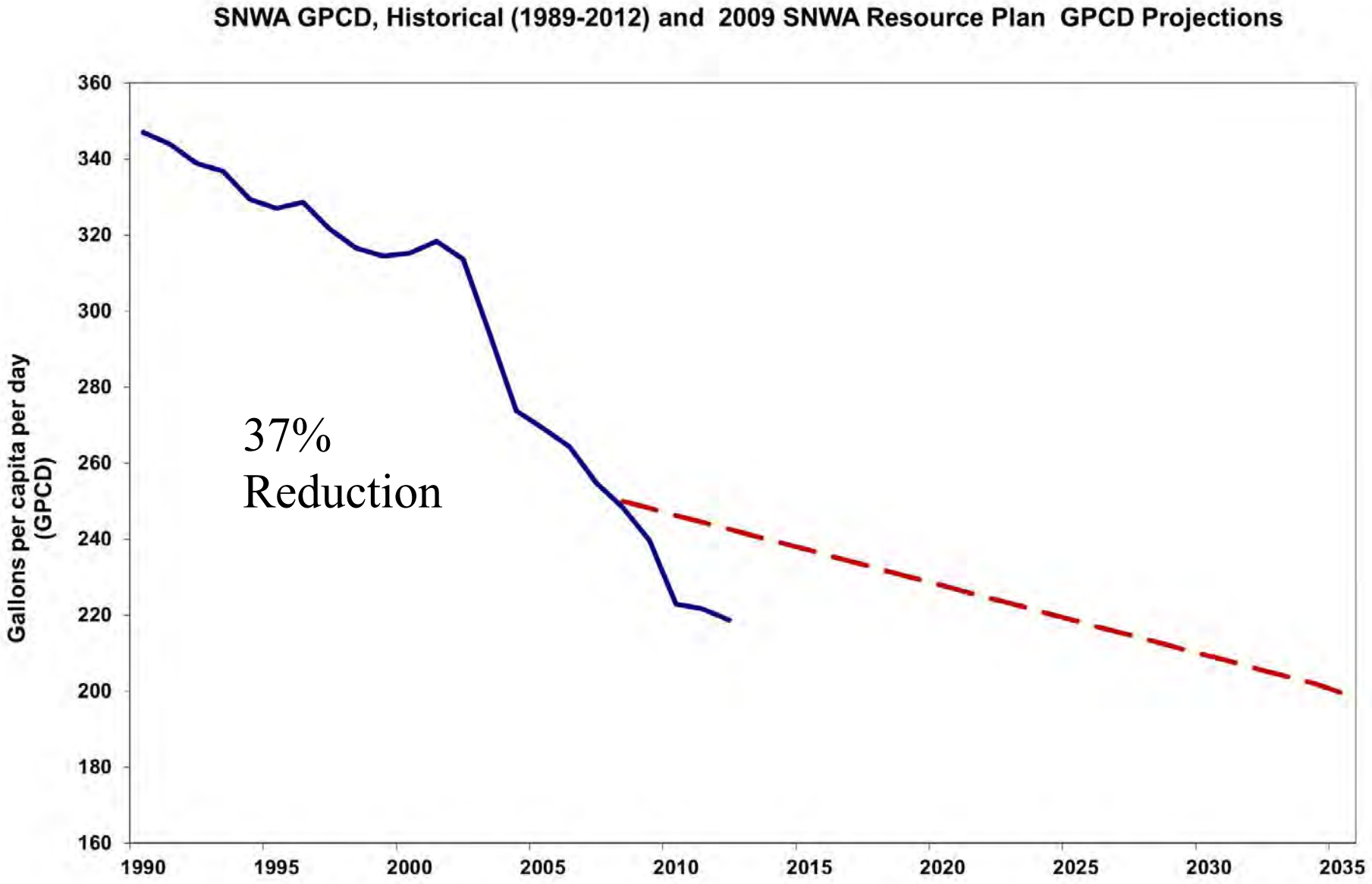


Monthly Consumption
Water Smart Homes Comparison



Aerial Assessment of Vegetation Types With Multi-Spectral Imagery

LiDAR Assessment


SNWA GPCD, Historical (1989-2012) and 2009 SNWA Resource Plan GPCD Projections
Gallons per capita per day (GPCD)
360
340
320
300
280
260
240
220
200
180
160
1990
1995
2000
2005
2010
2015
2020
2025
2030
2035
37%
Reduction

Principles of Success

These principles were critical to success in Southern Nevada

- Equity for all sectors – Everyone contributes
- Sustain economic value and jobs
- Regional collaboration in policy and marketing
- Engage stakeholders BEFORE a crisis

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Southern Nevada Water Authority

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