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Landscape Rebate Conversion Program Review

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Background

- Groundwater overdraft in Sierra Vista area, AZ
- Conserve water to protect critical habitat on the San Pedro River
- Landscape irrigation (consumptive use) can use up to 66% of potable water use in single family homes in semi-desert environments
- How much water use could be reduced and at what cost with landscape conversion (turf grass to xeriscape)?

Project Tasks

- Landscape conversion rebate program review
- In Poster:
- Assessment of conditions in Sierra Vista area
e.g. turf grass area, water codes/ rates
 - Recommendations for implementing a program

Benefits of Landscape Conversion

- Reduction in consumptive water use reduces:
 - Groundwater overdraft
 - Need to develop alternative water supply systems
 - Stormwater runoff, soil erosion, and costs for stormwater management
 - Landscape maintenance
 - Use of lawn chemicals
- Increase water system capacity
- Increase native plant diversity
- Rebate program encourages landscape conversion

Review of Landscape Conversion Programs

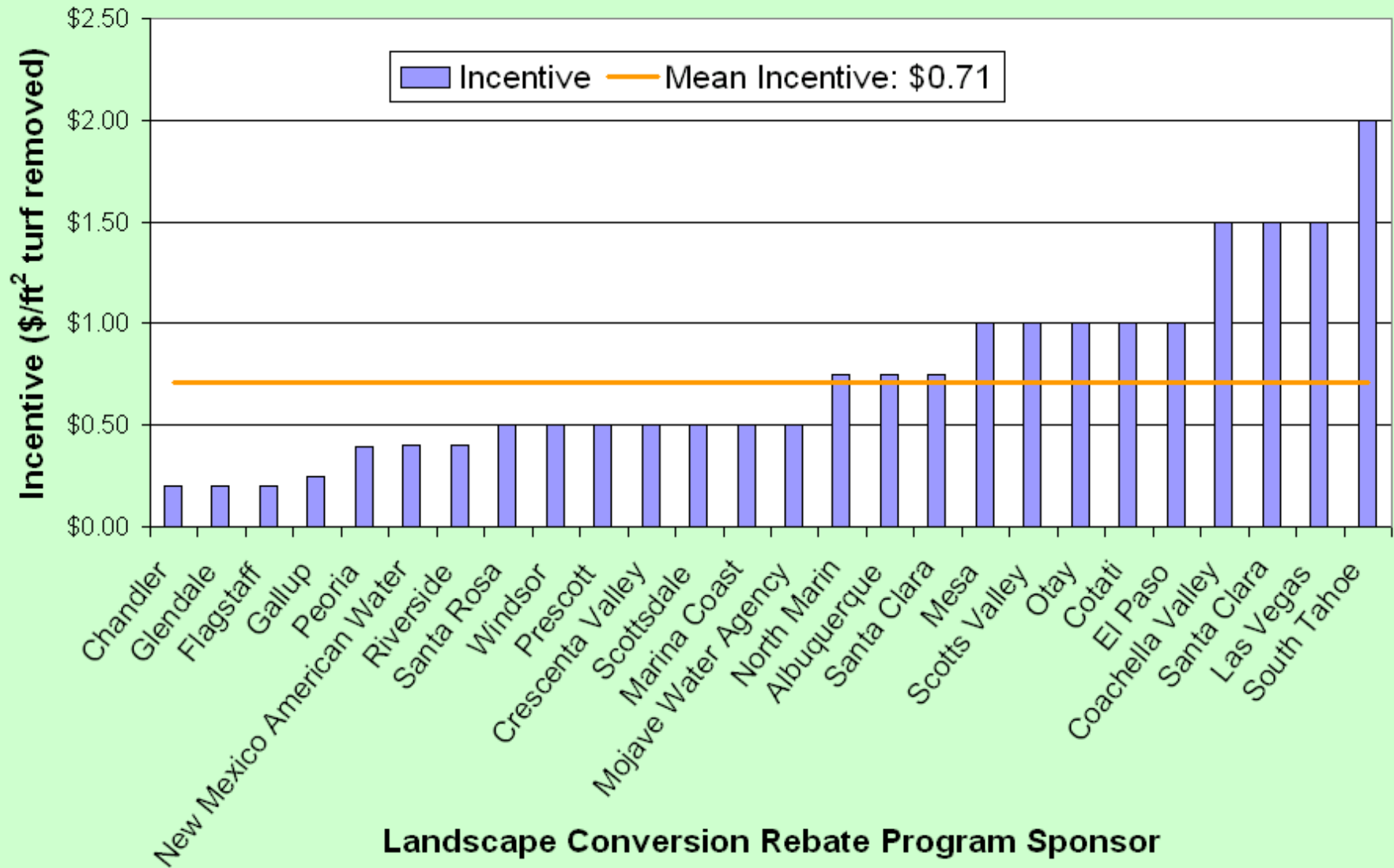
Program Evaluation Criteria

- Reviewed 36 landscape conversion rebate programs in Arizona, California, New Mexico, Nevada, and Texas for:
 - Participant qualifications
 - Program specifications
 - Costs and water savings

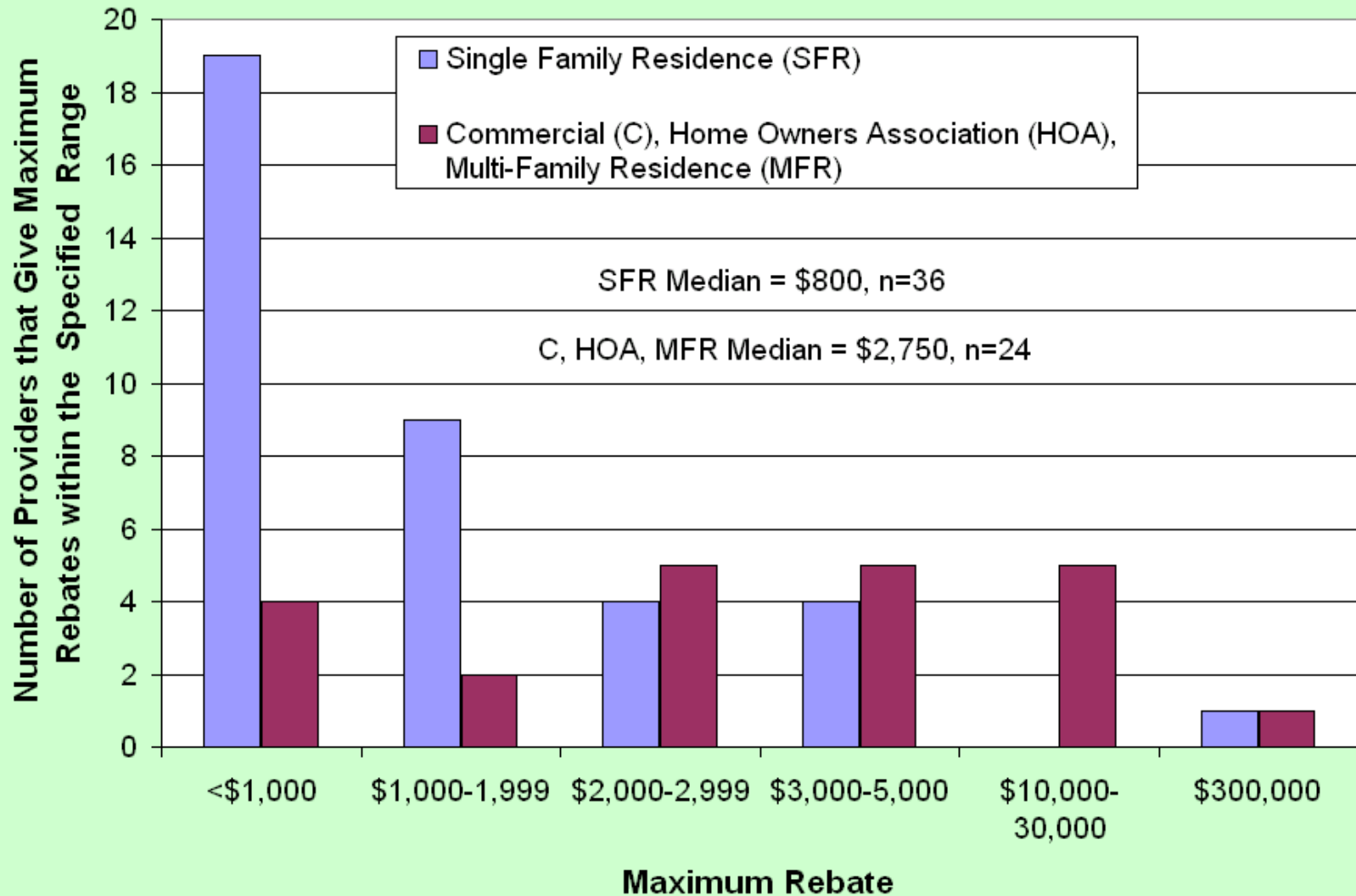
Program Observations

- Elements of a Successful Program:
 - Balance between:
 - Strict qualifications = most water savings, but less participation
 - Ease of applicant participation = encourages more participation
 - Rebate economically justified based on:
 - Cost of alternative water sources
 - Water use of old versus new landscape
 - Effective marketing and education
 - Follow-up (post-conversion site visits)
- Most landscape programs implemented within existing city/water utility programs
- Administration and marketing costs, and benefits typically not tracked

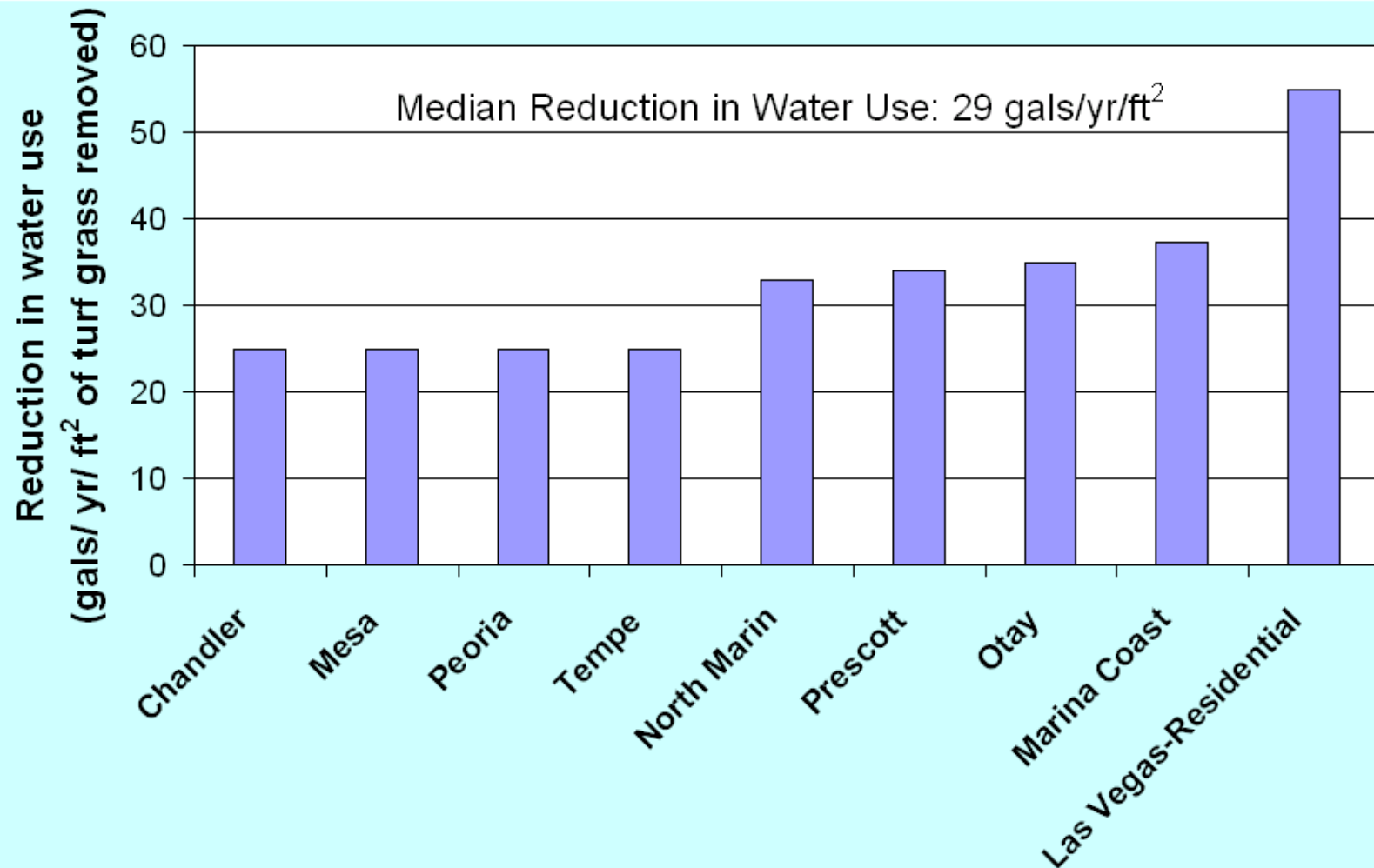
Range of Incentives



Maximum Rebates

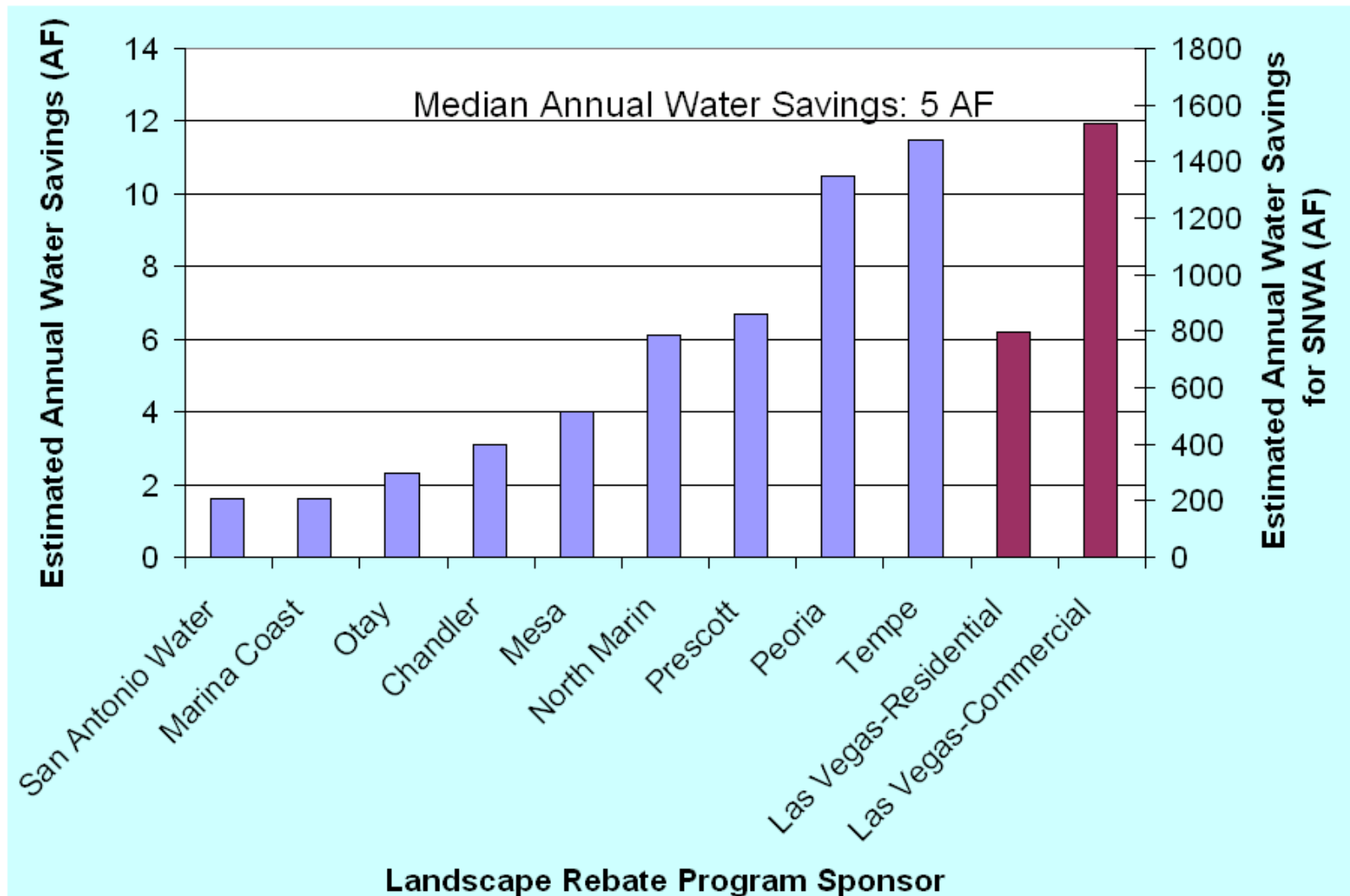


Estimated Reduction in Water Use



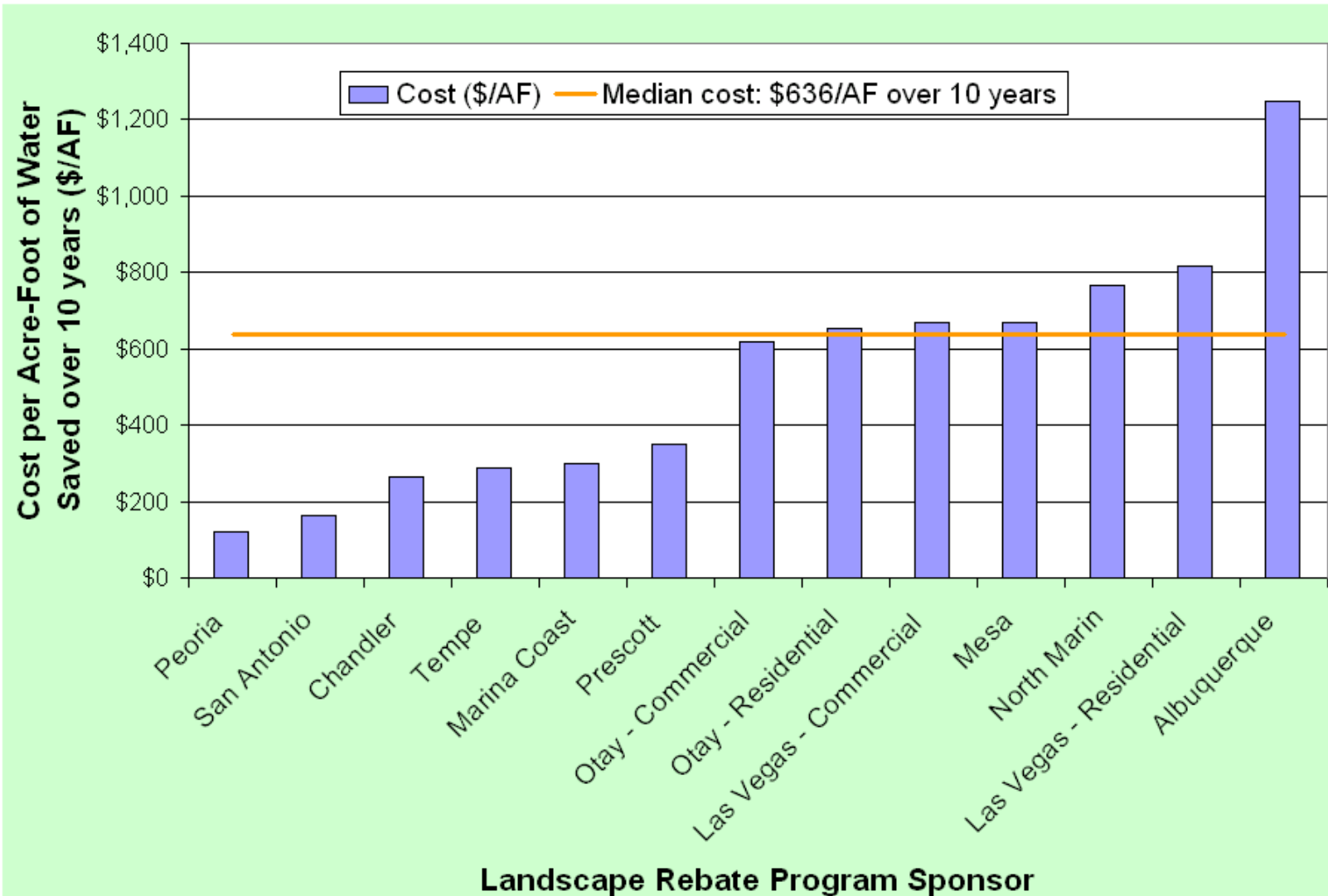
Estimated Annual Water Savings

(based on amount of turf grass removed)



Program Costs

(per AF of water saved, estimated 10 year return period)



Costs and Benefits to Sponsor

- Program Costs (survey of 14 programs)
 - Range: \$280 – \$1402/acre foot water over 10 years (\$0.82 to \$4.30 per 1000 gallons)
 - Average: \$636/acre foot (\$1.95/1000 gallons)
- Benefits
 - Reduction in water use: 12-55 gals/yr/sq.ft. (median 29 gals/yr/sq. ft.).
 - Dependent on:
 - local climate
 - water usage of old versus new landscape
 - Annual water savings: median 5 AF.
 - Dependent on amount of turf grass removed

Cost and Benefits to Participant

- Cost
 - Turf grass removal varies
 - Artificial turf: \$6-15/ sq. ft.
 - Xeriscape: \$2-4.50/ sq. ft, lower for large commercial/golf course
- Benefits
 - Dependent on local water rates
 - Reduced water bill (10-40% annual reduction of on-site water use)
 - Reduced labor and maintenance (\$0.30-0.60/ sq. ft./year)

Cost to Purchase/ Lease New Water in the Southwest

Water Source	Average Purchase or Lease Price for Water Rights (\$/AF)	Reference/ Source
CALIFORNIA: Centro sub-area	\$1,800-\$2,000	Water Strategist (2009)
NEW MEXICO: Roswell Basin water rights	\$2,300-\$2,400	Brown (2007)
NEW MEXICO: Lower Rio Grande water rights	\$3,000-\$5,000	Brown (2007)
CALIFORNIA: Alto sub-area	\$3,300-\$3,650	Water Strategist (2009)
TEXAS: Edwards Aquifer water rights	\$5,000	Water Strategist (2009)
NEVADA: Truckee River surface water rights	\$5,500 - \$45,000	Brown (2007)
NEVADA: Wet water rights purchased by SNWA	\$8,800	Doug Bennett, SNWA
NEW MEXICO: Middle Rio Grande water rights	\$9,000-\$35,000	Brown (2007)
NEW MEXICO: Taos tributaries' water rights	\$10,000-\$12,000	Brown (2007)
NEVADA: Warm Springs, Tracy Segment, Truckee Meadows, Washoe Valley groundwater rights	\$10,000-\$20,000	Water Strategist (2009)
NEW MEXICO: Rio Hondo water rights	\$10,500-\$14,000	Brown (2007)
NEVADA: Truckee River surface water rights	\$18,135	Water Strategist (2009)
NEVADA: Lemmon and Pleasant Valley groundwater rights	\$20,000-\$30,000	Water Strategist (2009)
NEW MEXICO: Santa Fe tributary water rights	\$35,000-\$45,000	Brown (2007)

Potential Barriers and Mitigation Strategies

Program Implementation

- Effective landscape conversion needs to:
 - Change irrigation schedules during the year based on the climate, plants needs, and life cycle
 - Provide educational materials and resources
 - Pictures and template design plans for xeriscapes
 - Community demonstration gardens
 - Recommended plant lists
 - “How-to” classes
 - Illustrated manuals
 - Recommend landscape professionals

Program Participation

- Participants do not want a lengthy, complex process
 - A simple (one-page) application
 - Online application process
 - Flexible site visits, including nights and/ or weekends
 - No submission of site plans/ pictures by participant
- Meaningful incentive (\$\$)
 - Issue rebates in a timely manner
 - Issue vendor coupons, if possible
 - Encourage large projects

Inaccurate Perceptions

- “Water-saving landscapes are ugly and barren and contribute to heat island effect.”
 - Community demonstration gardens, pictures of attractive xeriscapes (i.e. website/ brochures)
 - Site tours of houses with attractive xeriscapes
 - Landscape requirements:
 - Minimum percentage of plant cover material
 - Specified depth of mulch
 - “Cool” pavements in hardscapes

Conclusions

- Elements of a successful program:
 - Ease of participation for applicant
 - Size of rebate (must be meaningful)
 - Effective marketing and education
- Cost-benefit analysis:
 - Few programs conduct cost-benefit analysis/ program evaluation. Helpful to measure:
 - Water usage pre- and post-conversion
 - Area converted
 - Amount rebated
 - Pre- and post-landscape descriptions
 - Cost of new water is more than cost of water saved with most landscape rebate programs surveyed

Questions?

