

Introduction

Gilbert lies in the Sonoran Desert. As such, water planning is critical to ensure the municipality has adequate supplies to serve its residents. The Colorado River, Salt and Verde Rivers, groundwater, and reclaimed water are all water sources for Gilbert. Given the ongoing drought and a growing population, Gilbert is interested in exploring methods for conserving water that reduce demand. These reasons provide the motive for exploring different forms of water conservation strategies.

Question

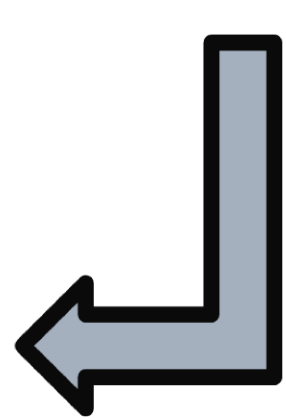
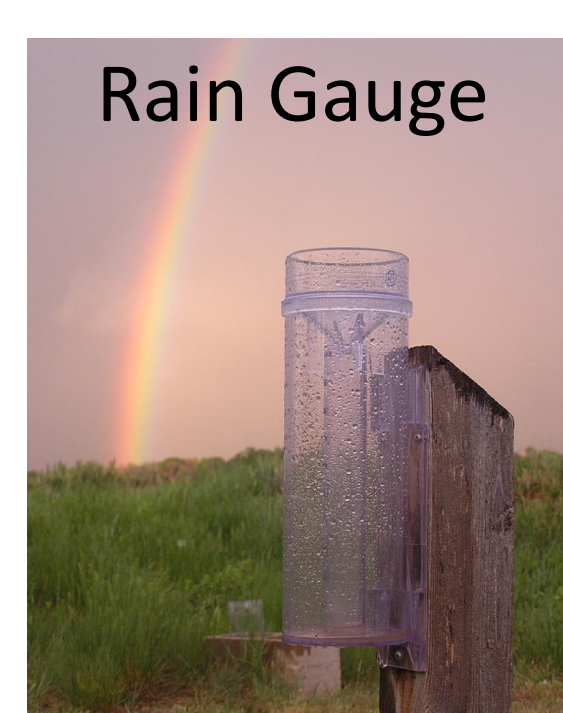
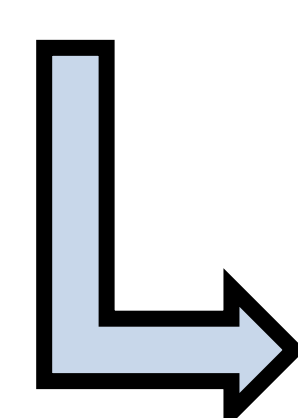
If people do not use outside irrigation after a monsoon storm, how much water could be saved and what type of cost avoidance could be achieved for the Town of Gilbert?

Methods

I collected rain fall data from two sources within the boundaries of Gilbert; CoCoRaHS and MCFCD. I took four years worth of data generated on rain fall amounts. Using residential consumption data and the cost of acquiring new water (\$3,500 per acre foot) I was then able to figure potential savings. Using this data I then generated three different scenarios of percentages of household accounts turning off water after a rain event.

Methods

Collected rain-fall data from MCFCD and CoCoRaHS.

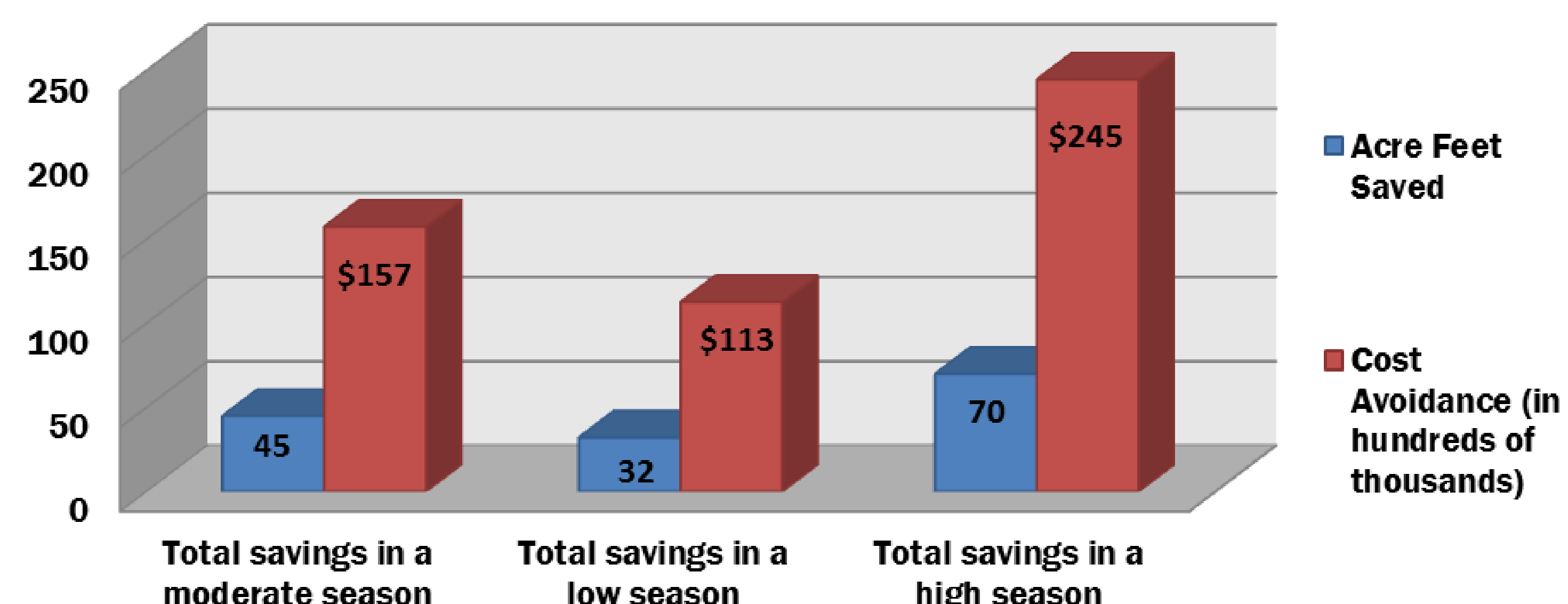


Collected water consumption data from random Gilbert residents.



Analyzed rainfall and consumption data to generate potential savings.

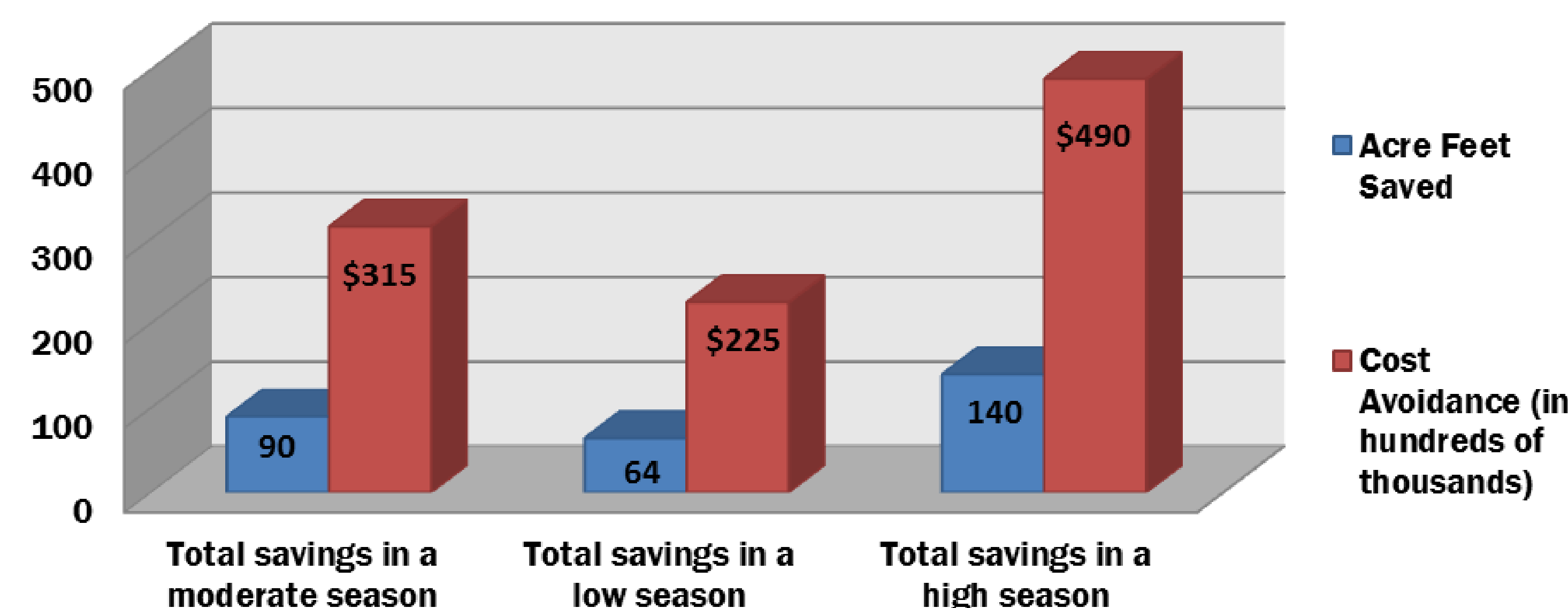
5% of Accounts Responding to Rainfall Events



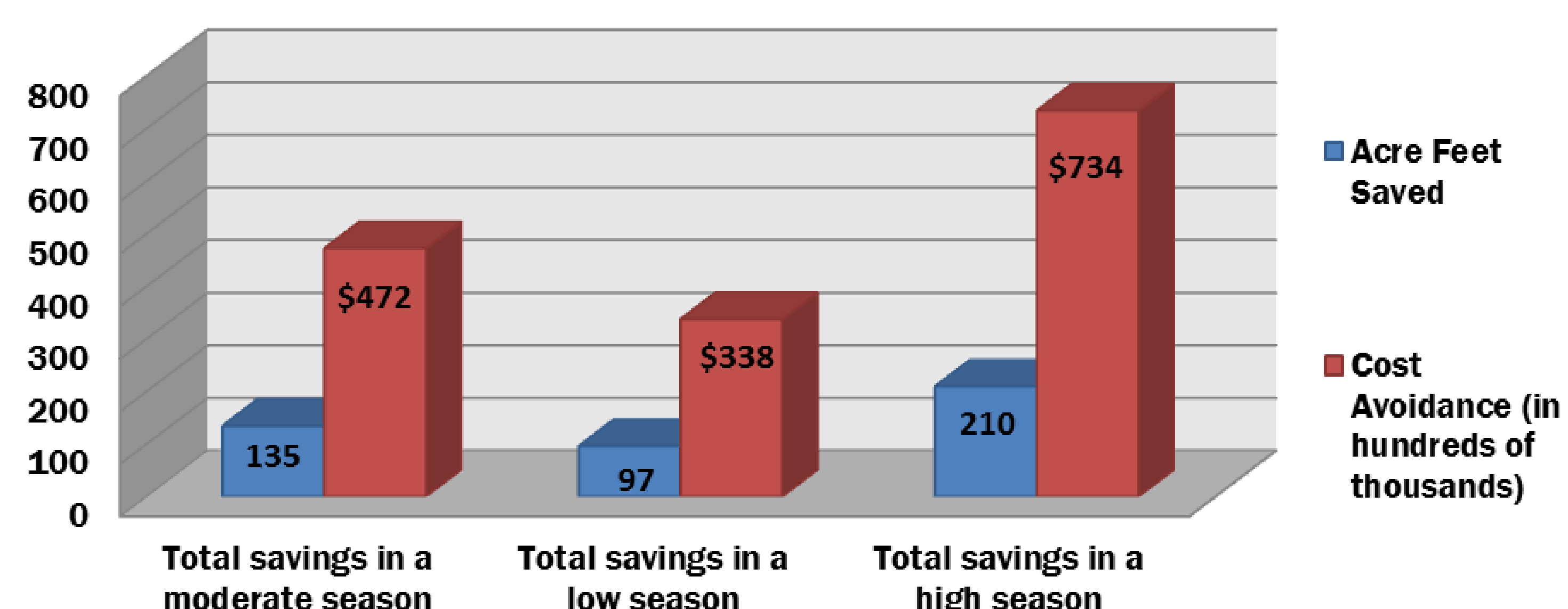
If 5% of accounts turn off water after a rain event in a Moderate (average) monsoon season, this scenario would save 45 AF of water and \$157,000 in cost avoidance (money saved by not purchasing new water rights).

10% of Accounts Responding to Rainfall Events

If 10% of accounts turn off water after a rain event in a Moderate season, this would save 90 AF of water and result in \$315,000 in cost avoidance.



15% of Accounts Responding to Rainfall Events



If 15% of accounts turn off water after a rain event in a Moderate season, this would save 135 AF of water and result in \$472,000 in cost avoidance.

Rain Gauge Networks

- CoCoRaHS:** Community Collaborative Rain, Hail & Snow Network, residents trained in measuring precipitation in their yards with standardized equipment.
- FCDMC:** Flood Control District of Maricopa County, professional rain gauge network using automated equipment.

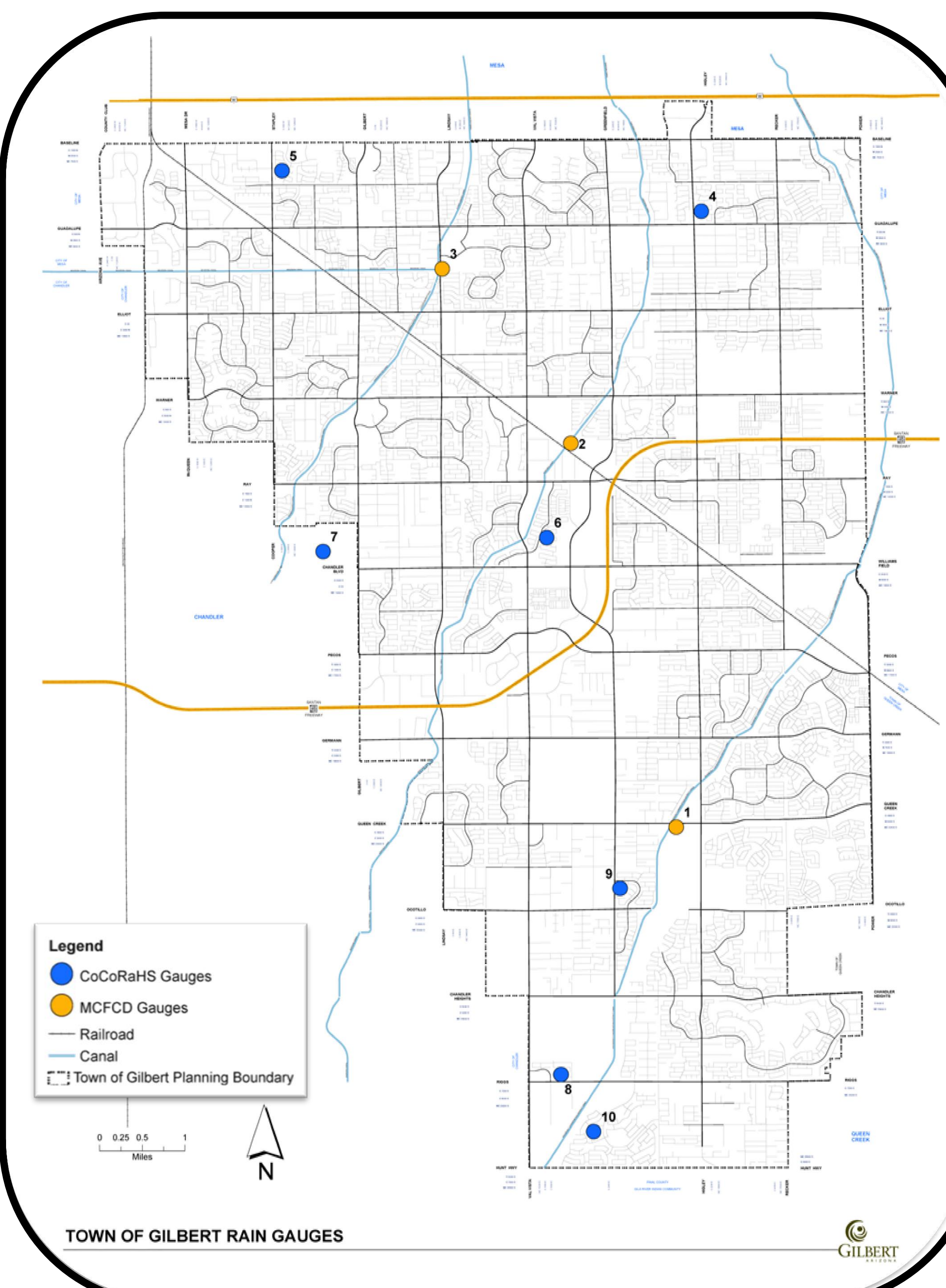
Sources

- Dekstop Computer Vector 26. Boy at Computer. Clipart.me. n.p. Web 10 April 2016 <http://clipart.me/technology/dekstop-computer-vector-26-37902>
- Rain Gauge. CoCoRaHS n.p. Web 10 April 2016 http://www.cocorahs.org/media/docs/CoCoTrainingSlideshow_v9.2A.pdf
- Acre Foot Equals Family Home. The Arizona Experience. N.p. Web 11 April 2016 <http://arizonaexperience.org/people/arizonas-water-uses-and-sources>

ONE ACRE-FOOT =

Approximately one acre-foot serves the freshwater needs of a family of five for one year.

325,851 GALLONS



Conclusion

These three scenarios show substantial savings not only in monetary terms but actual water savings are possible. Even if a relatively small number of accounts respond to precipitation by not irrigating their yards, this could save enough water to serve **32-210** households and **\$113,000-\$734,000** in cost avoidance. This presents an opportunity for the Town of Gilbert to implement a program which could take advantage of these unutilized savings. Future research should be done by conducting a study with two test groups; one group would be a control group and one would get rain alert notifications. Additionally, research social marketing of a rain alert program in order to increase effectiveness of program.

ACKNOWLEDGEMENT

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