

Benefits of H/E Low-Flow Toilets

Evan Fairweather, DCDC Internship for Science Practice Integration

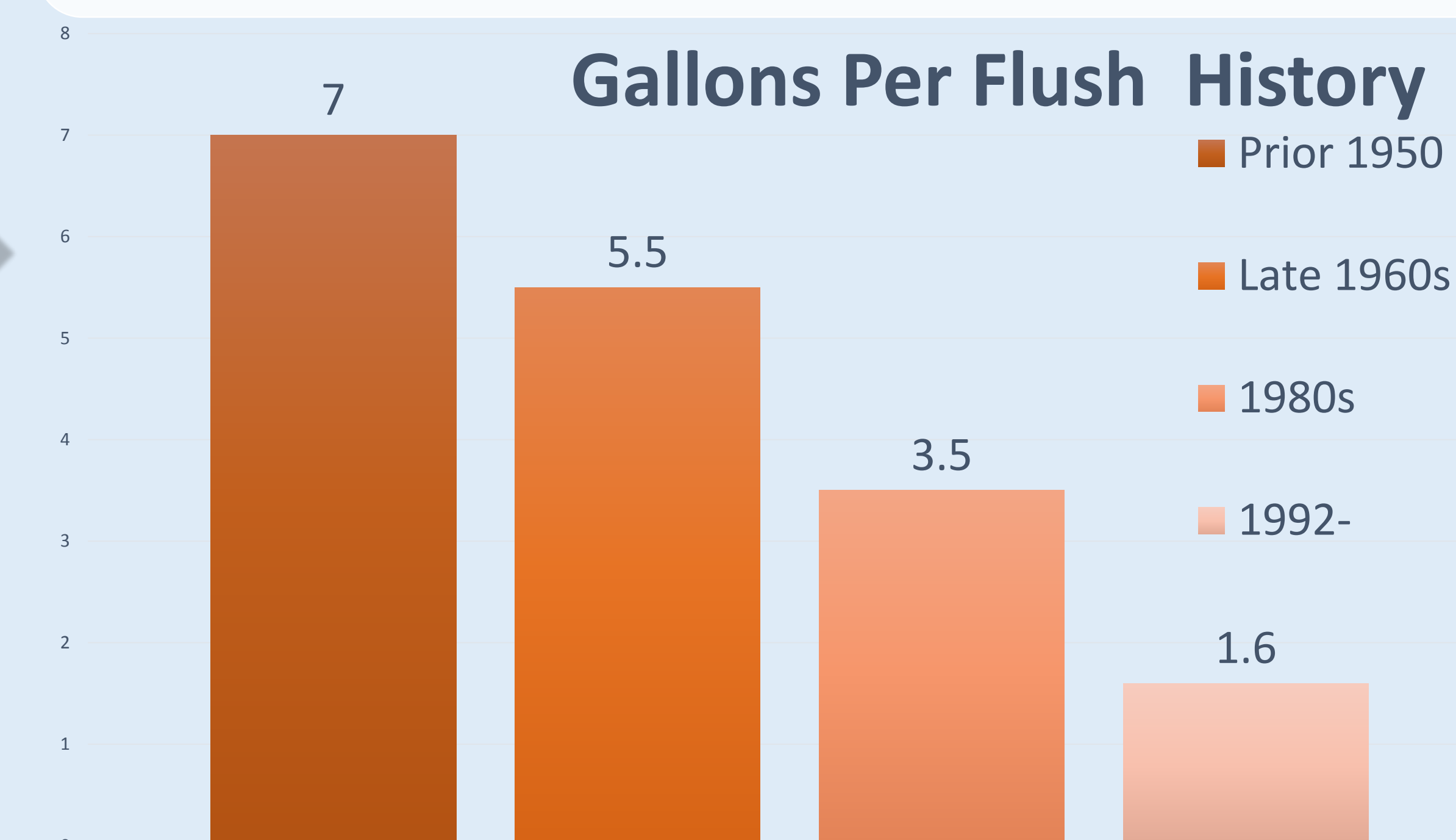
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Are high-efficiency toilets contributing to lower water use rates in the City of Tempe?

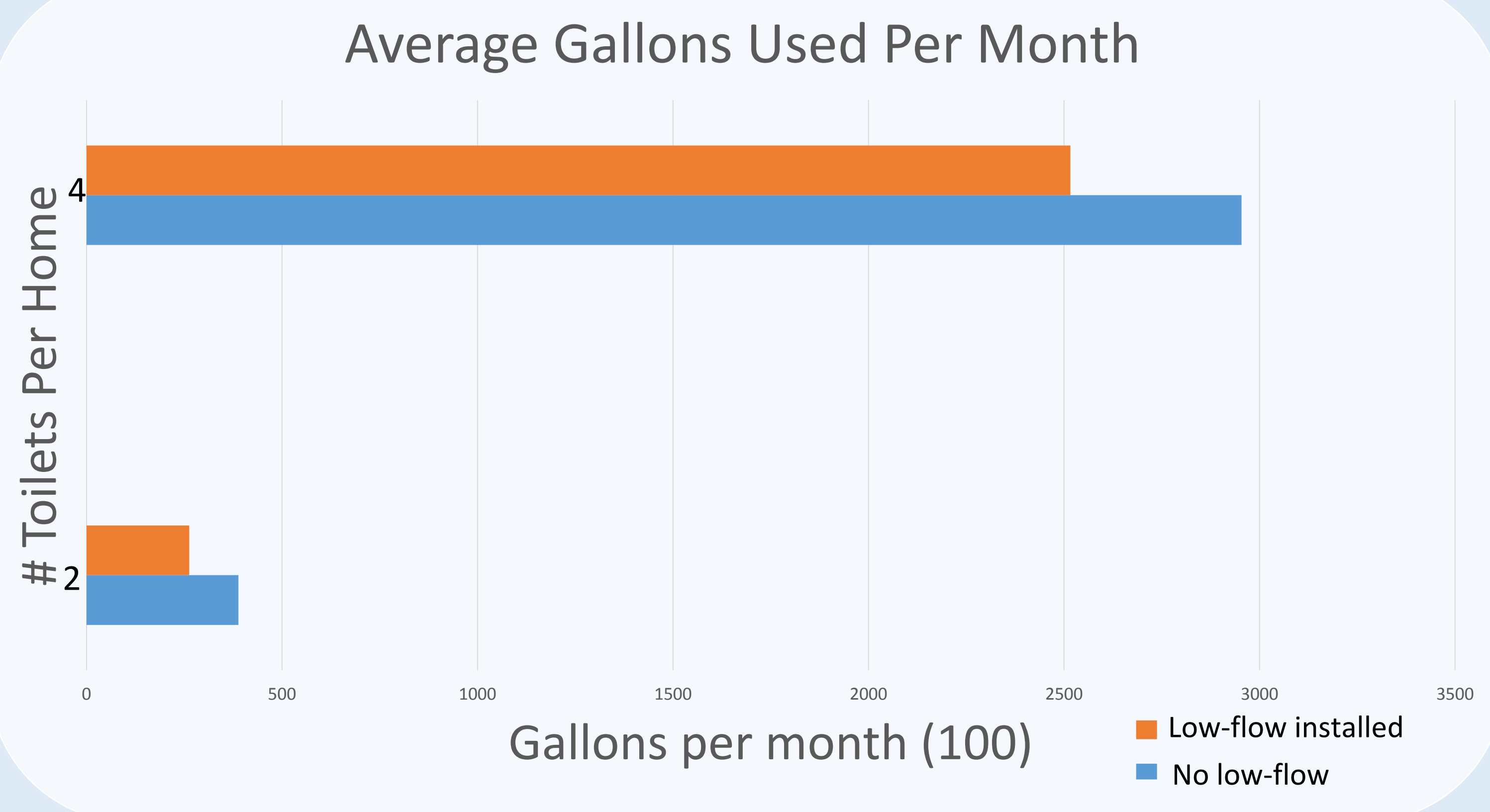
Specifically, What are the financial savings of a home with the installation of HE low-flow toilets versus a home without? This study examines water consumptive histories of Tempe homes to determine whether low-flow toilets homes consume less water overall in comparison to a home without.

What is considered "low-flow"?



In 1992 the National Energy Policy Act (H.R. 776) mandated 1.6 gallon toilets as installation standard.

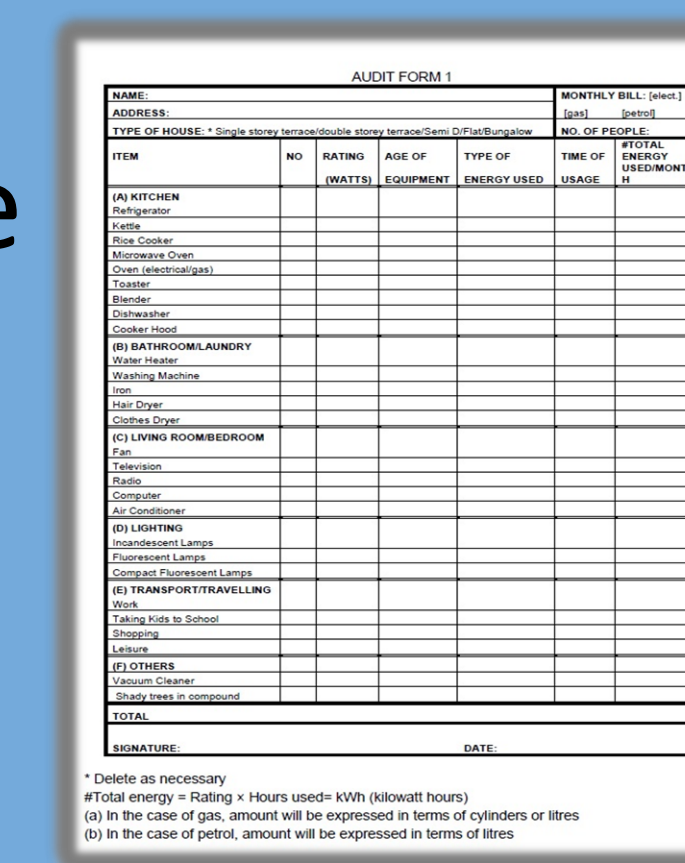
40 Home water audits analyzed: Categorized by # of toilets in home and # of occupants



Homes with similar landscape used to help avoid outliers in data

Data was collected from the City of Tempe internally and through home water audits.

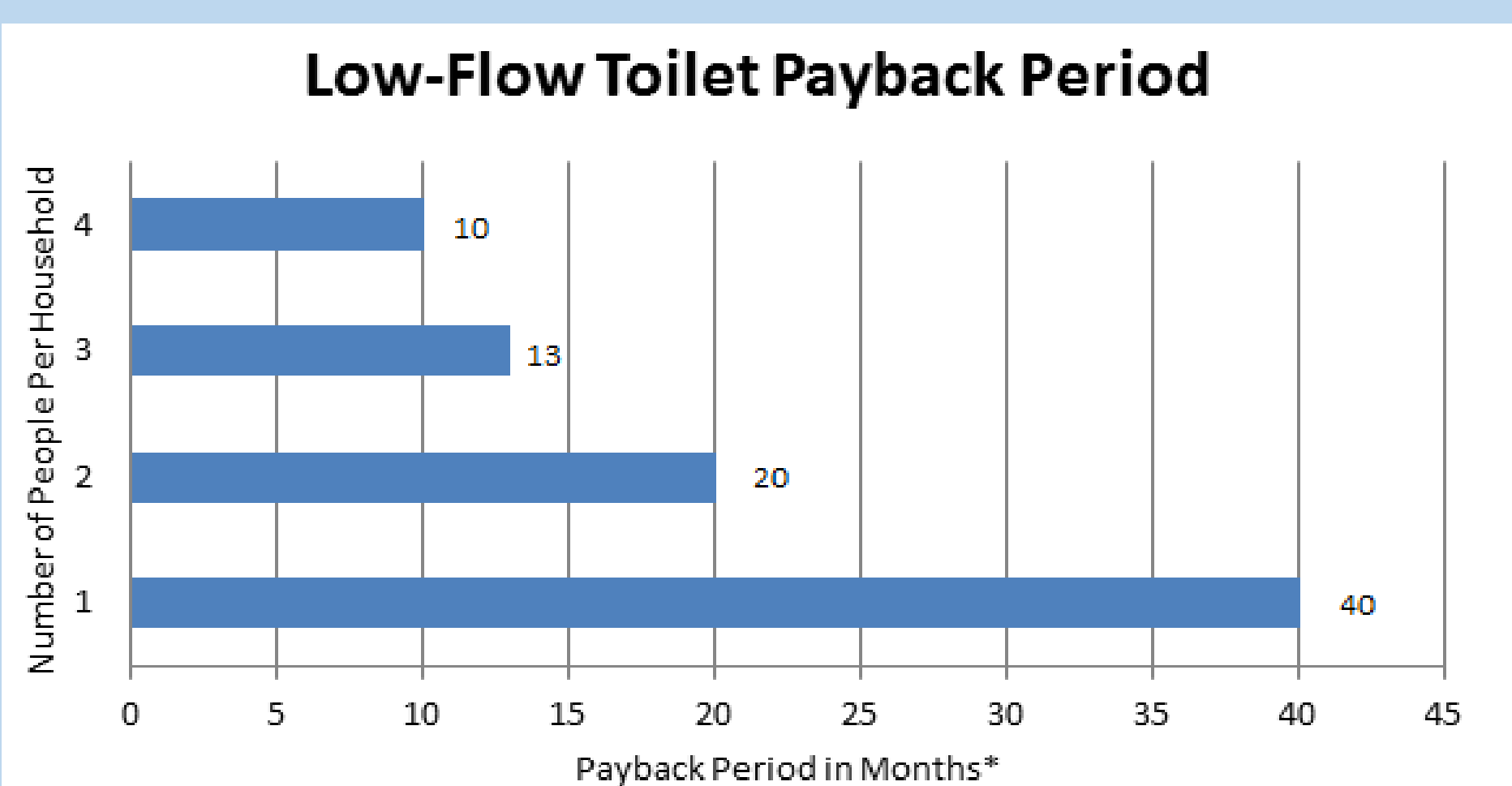
City of Tempe Residential Water Audit Form



Start Date	End Date	Days	Status	Current Amount
02-11-2014	03-14-2014	31	Frozen	\$24.62
01-16-2014	02-11-2014	26	Frozen	\$24.41
12-12-2013	01-16-2014	35	Frozen	\$23.10
11-12-2013	12-12-2013	30	Frozen	\$22.85
10-14-2013	11-12-2013	29	Frozen	\$23.06
09-17-2013	10-14-2013	27	Frozen	\$20.37
08-21-2013	09-17-2013	27	Frozen	\$21.81
07-17-2013	08-21-2013	35	Frozen	\$18.51
06-12-2013	07-17-2013	35	Frozen	\$24.49
05-31-2013	06-12-2013	13	Frozen	\$5.48

City of Tempe Oracle Water Billing System

Installing low-flow toilets garners long-term benefits.



Concluded that houses that had installed high efficiency low-flow toilets demonstrated on average less water use than those that have yet to implement 1.28gpf by about \$13/year and nearly 4,500gallons/year in a 4 bath home.

Learning from New York: A Future Application...

New York City's Department of Environmental Protection launched a \$23 million program to replace as many 200,000 toilets in up to 10,000 buildings citywide. This program is said to have ultimately save about **10 million gallons** of water each day and reduce city costs by **9 million a year**.

Acknowledgment

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Sources: Moloney, Claire. "Payback Period for Low Flow Toilets: Is the Cost Offset by the Water Savings?" *Payback Period for Low Flow Toilets: Is the Cost Offset by the Water Savings?* Popular Network, 26 June 2014. Web. 14 Mar. 2015. Saul, Michael H. "Low-Flow Is the Way to Go." *Wall Street Journal* [New York] 23 May 2014: A-17-20. Print.