

DUAL-FLUSH – How is it used? Australia and United States

Recent studies indicate that the reduced flush of dual-flush toilets is less frequently used in both residential and non-residential applications than was previously estimated. Study references are as follows:

Residential - Australia

Roberts, Peter, Yarra Valley Water, 2005. *Residential End Use Measurement Study*, June.

Beal, C. and Steward, R., Urban Water Security Research Alliance, 2011. *South East Queensland Residential End Use Study: Final Report, Technical Report No. 47*, November.

Non-Residential – United States

Arocha, J. and McCann, L., University of Missouri, 2012. *Behavioral Economics and the Design of a Dual-Flush Toilet*, October 15.

Dual-flush ‘awareness’ in residential applications existed for 15 years prior to the Yarra Valley study because the design was mandated for all new toilets sold in Australia for that entire period of time. However, end-use measurement studies of household water use revealed the frequency at which residents actually use the reduced flush option was much less than the widely accepted 2:1 ratio:

Study Reference	Geographic Area	Ratio of ‘Reduced’ Flushes to ‘Full’ Flushes (mean)
Queensland Residential End Use Study	Gold Coast	1.16:1
	Brisbane	1.16:1
	Ipswich	1.72:1
	Sunshine Coast	1.37:1

Study Reference	Type of Dual-Flush	Ratio of ‘Reduced’ Flushes to ‘Full’ Flushes (mean)
Yarra Valley Residential End Use Study	1.6/0.8 gpf	0.36:1
	2.9/1.6 gpf	1.17:1

For non-residential applications, the Arocha study demonstrated that the commonly installed dual-flush flushometer valve system does not result in the sizable water use reductions as claimed by proponents, due to the fact that users of these fixtures do not activate the reduced flush at a high frequency, as noted here:

Study Reference	Type of Dual-Flush	Ratio of ‘Reduced’ Flushes to ‘Full’ Flushes (mean)
Behavioral Economics and the Design of Dual-Flush Toilets (commercial)	1.6/1.1 gpf	0.63:1 (with signage)

The Arocha study also states “a non-dual flush, high efficiency 1.28 (gallons per flush) flushometer would also save a considerable amount of water over the (named dual-flush product)”. The study report goes on to show (in Table 6 of the report) that approximately 10% of the total water consumed through a dual-flush flushometer system could be saved with a single-flush HET rated at 1.28 gallons per flush.