

BASIX Performance Monitoring

Sydney Water verified water savings for 2007 - 2009

Sydney Water's monitoring study has found that BASIX dwellings are achieving close to the water saving target, with an average measured water savings, corrected for actual occupancy, of 39.1%.

About BASIX monitoring

The *BASIX Ongoing Monitoring Program* was established to evaluate and report on the outcomes of the BASIX policy, which mandates water, energy and thermal comfort targets for all new residential developments in NSW.

The *Outcomes Report* series evaluates BASIX certificates and identifies the commitments made to achieve the targets. To date the *2004-2005 Outcomes Report* (representing the first year of implementation and covering Sydney only) and the *Single Dwellings Outcomes 2005-2008 Report* have been finalised and are available on-line (<http://www.basix.nsw.gov.au/information/monitoring.jsp>).

In order to verify that the savings committed to in the BASIX certificates are being translated into actual savings within the home, the *BASIX Water Saving monitoring program* measures the consumption of water in a representative sample of constructed BASIX dwellings. This data is compared to the savings calculated on the BASIX certificate and the results are used to evaluate the effectiveness of BASIX in meeting its targets for reductions in potable water consumption.

About the project/background

To undertake the verification project, Sydney Water worked with data provided by the NSW Department of Planning. The monitoring included analysis of actual water consumption for a sample of verified BASIX-affected occupied single dwellings located within the Sydney Water area of operations.

The Department of planning provided the BASIX benchmark, target and water score for each dwelling. Sydney Water linked this data to quarterly water consumption, allowing a comparison to be made between the predicted water savings based on the BASIX target and the actual water consumption levels.

Findings

Sydney Water has prepared two reports, the *BASIX Monitoring Report - Water Savings for 2007-08* and the *BASIX Water Savings Monitoring - Dec 2009* that present the findings of the program. Both reports are available at <http://www.basix.nsw.gov.au/information/monitoring.jsp>

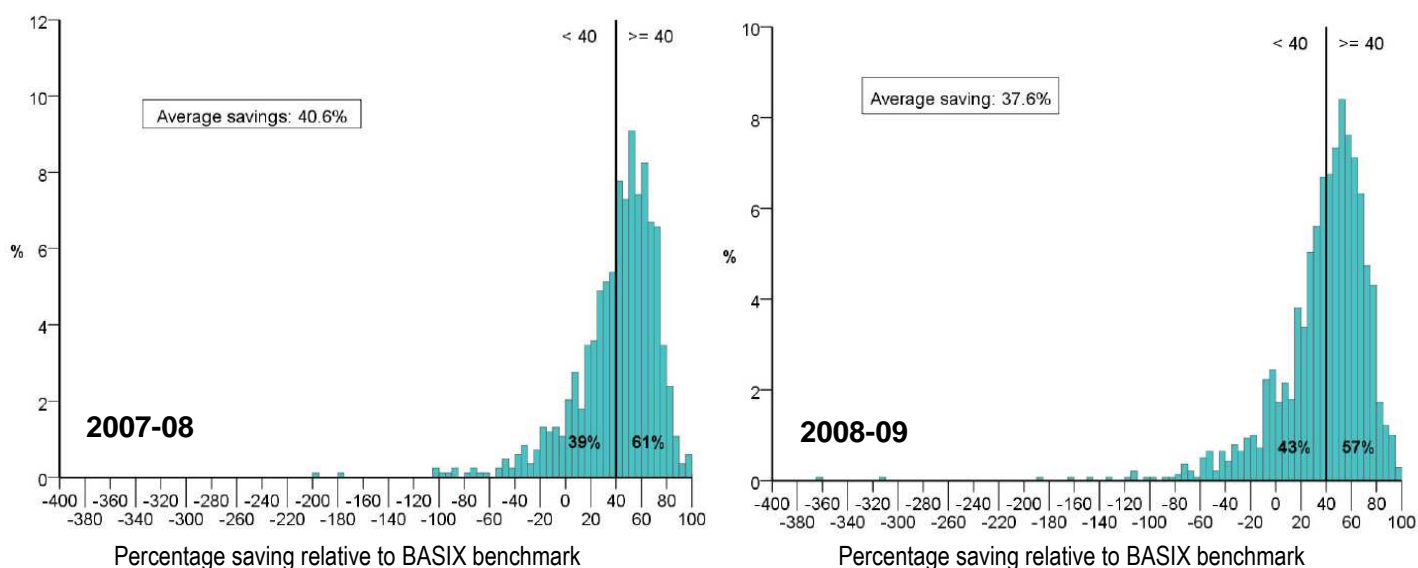
A sample of 834 BASIX-affected occupied homes was monitored for first stage in 2007-08 and a sample of 1392 dwellings for the 2008-09 study. Using the BASIX assumption of dwelling occupancy, the average per dwelling BASIX benchmark consumption for the sample was 324 kL per year¹ in 07/08 and 325 kL in 08/09. From this benchmark the BASIX 40% reduction target results in an average BASIX-predicted consumption of 195 kL/year for the analysed sample. The monitoring results indicate that over the two 12 month reporting periods the sample of BASIX dwellings achieved an average metered potable water consumption of 192 kL/year in 2007-08 and 201 kL/year in 2008-09.

The majority of dwellings saved more than the BASIX Target and across the sample there was an average saving of 40.6% in 2007-8 and 37.6% in 2008-09.

¹ Based on annual baseline consumption for a 366-day year, as 2008 was a leap year (February 2008 contained 29 days).



Figure 1 & 2: Distribution of actual percentage potable water savings relative to BASIX benchmark



The data shows a spread of performance from dwellings using far less water than predicted by the BASIX target, to those using more. In 2007-08, the majority of dwellings (61%) performed at or better than the BASIX target, whilst for 2008-09, 57% of dwellings performed better than the benchmark.

Other analysis presented

To further test the outcomes of BASIX, actual water consumption was also compared to:

- savings based on **actual occupancy**, using the results of the telephone survey in place of the occupancy estimated by BASIX using the methodology described above,
- savings based on **predicted performance**, i.e. *the BASIX Water Score* (the dwelling's estimated percentage potable water savings relative to the BASIX benchmark as estimated by the BASIX tool), and
- BASIX Water Scores reproduced for the sample using the actual rainfall and evaporation data.

These adjusted results showed that BASIX-affected occupied single dwellings located within the Sydney Water area of operations are achieving targeted water savings of 40% or better.

On-Ground truthing

As part of the study Sydney Water conducted on-site verification of 475 occupied dwellings to identify whether the savings potential of BASIX identified in the water consumption patterns is being limited by difficulties experienced in the installation, operation and use of the BASIX compliance measures.

Conclusion

The analysed sample achieved an average water saving of close to 40% from the BASIX benchmark. Based on the results of the verification project, improvements to the BASIX policy and calculations in the first two years of implementation appear to have resulted in higher certainty in achieving the long-term policy objectives. On-going monitoring is critical in understanding the long-term policy achievements and also the impact of water restrictions, weather variability, dwelling age and BASIX compliance measures.

