

Establishing a water baseline and measuring success

This 5 Minute Guide provides the tools needed to define and measure water saving success. It is an easy and cost effective process to measure past, present and future performance. Water bills and equipment guides contain readily available information which will provide a baseline of past and present performance to plan and improve for the future.

Baseline Basics

A baseline is a line or standard by which things can be measured, compared and managed. Baselines can be represented in a number of ways. With regard to water use baselines can be measured in kilolitres per annum (kL/a), however it may be more accurate to measure baselines in terms of a key performance indicator. For instance, this could be kilolitres per tonne of product produced or litres per litre of liquid chemical produced.

A few reasons for establishing a baseline include:

- Baselines are important because they allow the tracking of efficiency and progress over time.
- Baselines allow for target setting and are the first part of understanding onsite water usage.
- Until a baseline is established it is impossible to measure progress towards any water saving goals and to understand which efficiency actions work.

Baselines can also be set for energy usage, carbon emissions, waste production and other environmental performance indicators. Some actions improve both water and energy efficiency, and some others have contrary impacts on other factors. Prioritisation of efficiency objectives is required in such instances.

Establishing a water use baseline

Establishing a water use baseline is simple. It requires the compilation of the last two years of water bills and ideally two years of production figures for key production output indicators. Onsite water meter readings and sub-meter data for equipment provides even more accurate data. Sub-meter data for equipment will show if the system is operating as designed and at optimum efficiency as per equipment guides.

The easiest way to establish a baseline is to input the water usage bill figures into a simple excel spreadsheet which can be set up with the following headings as shown in Fig.1.

Remember to input the water use volume figures and not the charge amount as water cost rates change over time. Also, check with the accounts department as they may already be collating this type of data and it may be possible to adapt this rather than inputting figures again. The accounts department may also be able to continue to input this data once the system is set up.

Water bills are not necessarily issued in precise cycles as they can depend on when the water authority was available to undertake a meter reading. It may also be necessary to adapt production figures if they are recorded in monthly volumes. ➔

Fig.1

Bill cycle Period	Bill cycle number of days	Water usage (kL)	Daily Water Usage (Total Water Usage / Bill Cycle number of days)	Production	Key measure (e.g. kL/tonne of product)
19/10/07 – 23/01/08	98	2,470	25.2	4 tonnes	6.3 kL/T

Data can then be manipulated to provide figures such as monthly and annual production and water use figures.

Be aware, many industrial facilities may have more than one water meter, and be receiving multiple water bills.

Using the water use baseline to identify improvements

Using the table on the previous page, it is possible to graph water use over time (see Fig.2).

Long term trends can be observed by generating a line of best fit. The graph can also provide information and highlight areas when high and low water usage is experienced.

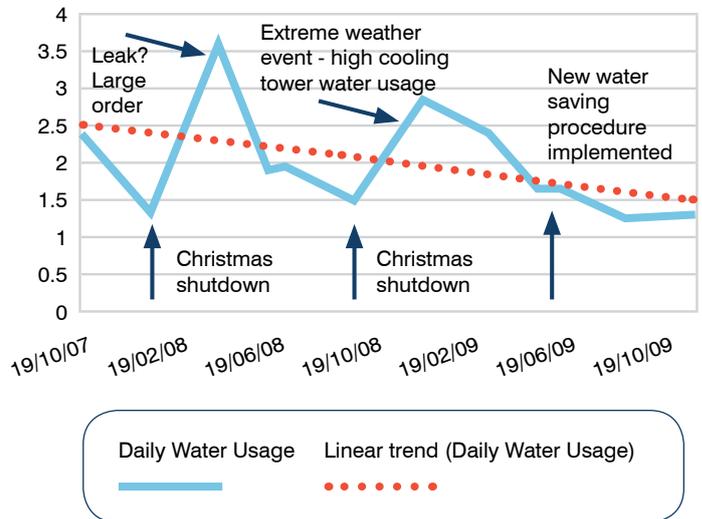
By looking at the baseline graph it will be possible to identify spikes in water usage and then work through possible causes. They may indicate a leak, a period of high production, high ambient air or operating temperatures causing increased cooling tower water consumption. Likewise falls in water consumption may indicate periods of shutdown, low production or the implementation of a new water saving measure, fixed leak or replacement of water intensive equipment.

Celebrating success

When implementing water saving initiatives it should be noticeable in the water use baseline. Map these events, determine how much water has been saved and how much the water bill has reduced by. Remember that reducing water usage also reduces costs associated with sewer or trade waste disposal, so it's a double pay back.

Document the water savings and share the good news and lessons learnt with company stakeholders internally and externally for example: staff, customers, community and professional associations.

Fig.2 Daily Water Usage



There are 9 titles in the 5 Minute Guide series. See also:

[How to improve boilers and steam efficiencies](#)

[Rainwater Harvesting](#)

[The new frontiers in water efficiency and conservation](#)

[Reducing your trade waste impact](#)

[Matching water and purpose](#)

[How to reduce the water use of Cooling Towers and Chillers](#)

[Top 10 water saving actions](#)

[Understanding water, sewage and trade waste bills](#)

Plastics and Chemicals Industries Association

Level 10, 10 Queen Street, Melbourne VIC 3000,
Phone: 03 9611 5400 Fax: 03 9611 5499
Email: info@pacia.org.au Website: pacia.org.au



PACIA acknowledges the contribution and work undertaken by Arup in compiling the 5 Minute Guide Series, and the Liquid Futures Steering Committee members for overseeing the program.