Enabling better water management

Australian Government
Bureau of Meteorology
ACTEW WATER

CASE STUDY

Seasonal Streamflow Forecast Service influencing water decisions

Water management decisions made with confidence

Using the Bureau's streamflow forecasting, ACTEW Water confidently removed temporary water restrictions after the millennium drought.

Millennium drought restrictions

The 1997–2009 millennium drought placed severe stress on water security in the Australia Capital Territory. In response, ACTEW Water put a range of water security measures in place. Temporary water restrictions were in effect between 2003 and 2010, with more severe restrictions active from 2006 to 2010.

Critical water decisions

In spring 2010, ACTEW Water was considering whether water storage levels had increased enough to remove water restrictions before summer.

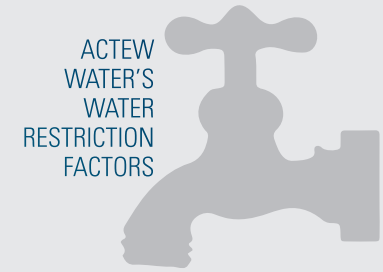
Due to the large variability in historic climate data, a small number of scenarios showed that water in the storages would remain below the level needed to lift restrictions over summer.

Restrictions removed

To assist, the Bureau provided ACTEW Water with seasonal streamflow forecasts. ACTEW Water converted these into water storage forecasts and overlaid them onto the historic reference period.

The streamflow forecasts were much less variable than historical data, and they are accurate and reliable. Importantly, the Bureau's streamflow forecasts did not indicate that water storages would decline below the level needed to keep restrictions in place. In fact, the forecasts showed there was a high chance that storage levels would increase.

This provided ACTEW Water with the confidence to remove water restrictions in October 2010. This decision proved prudent as the storage levels increased and remained above the threshold for water restrictions.



How restrictions affect communities and businesses

Conditions such as weather, storage levels and consumption

Available forecasts and projections

Historic consumption and inflows

SEASONAL STREAMFLOW LOCATIONS

Number of forecast locations across five States and Territories in 2014

74

Number of forecast locations when service was launched in 2010

21

Seasonal Streamflow Forecast Service

What are seasonal streamflow forecasts?

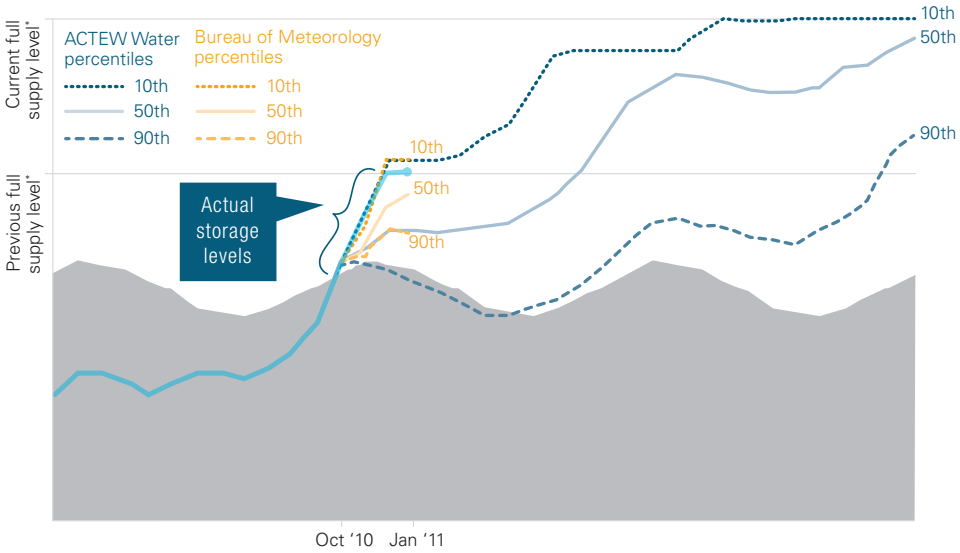
They are forecasts issued monthly by the Bureau that forecast three months ahead and predict how much water will flow into a stream or catchment. They are based on probabilities—that is the likelihood or chance of a given volume of water flowing into a stream based on recent climate and catchment conditions.

Why are they important?

Australian streamflows are among the most variable in the world. Streamflow forecasts are vital in helping water managers and users make informed decisions. For example, they help water managers decide which water source to use or whether environmental flows should be allocated.

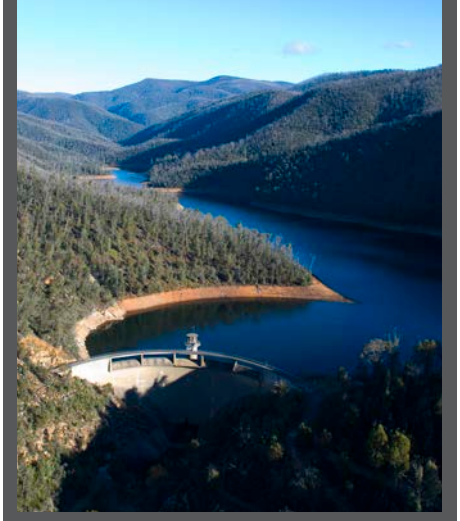
What areas do the forecasts cover?

They cover 74 locations across the Northern Territory, Queensland, New South Wales, Australian Capital Territory and Victoria. This has expanded from 21 locations when the service was launched in 2010, and will evolve to cover all jurisdictions by 2015.



In October 2010, storage levels had sufficiently recovered so ACTEW Water could consider removing temporary water restrictions. The Bureau's Seasonal Streamflow Forecast Service reduced the range of likely outcomes and the decision to remove water restrictions had a lower risk than the projections based on historic climate indicated.

*Note: Expected full supply level used in scenarios increased periodically between November 2010 and February 2012. This was due to the planned enlargement of the Cotter Dam.



ABOUT **ACTEW WATER**

How does ACTEW Water use the Bureau's streamflow forecasts?

ACTEW Water applies the Bureau's forecast using the following process:

- Three-month 10th, 50th and 90th percentile forecasts are selected for chosen locations.
- Forecasts are converted to monthly inflows using disaggregation factors specific to each month and location.
- These flows are incorporated into ACTEW Water's water supply planning model, along with estimates of water demand.
- Operational and environmental rules are applied to projected storage levels from each of the forecasts.
- Data are overlaid onto two-year water storage projections developed from their historic reference climate via the same water supply model.
- Projections then inform ACTEW Water's strategic operational decisions.

Infrastructure

ACTEW Water's infrastructure includes four storage sites, two extraction points and two water treatment plants.
It recently increased its capacity by enlarging the Cotter Dam and constructing the Murrumbidgee to Googong Transfer.

FIND OUT MORE

Visit www.bom.gov.au/water/ssf or email water_ssf@bom.gov.au
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