Wind Energy Simulation Tool

Wind Farm Generation Resource Assessment

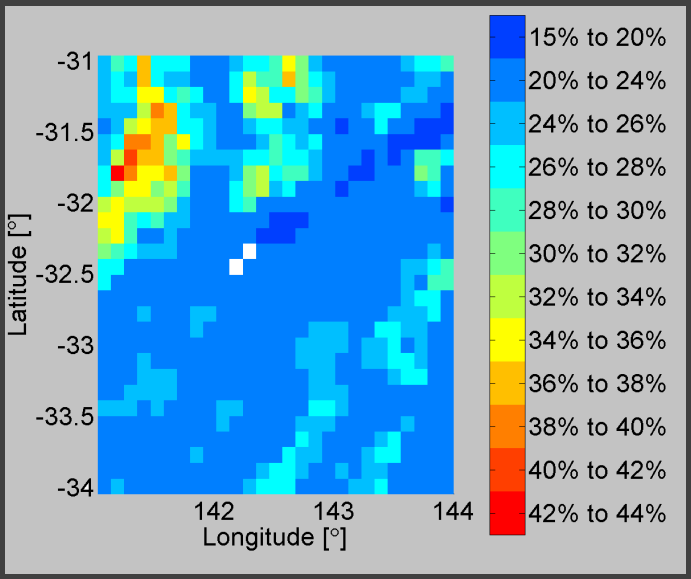
The Wind Energy Simulation Tool (WEST) is a wind farm site prospecting and modelling tool. WEST provides:

- A wind atlas or capacity factor estimate map on an 11 km grid across Australia
- 10 years of hourly historical expected wind farm generation time-series for any specific site
- Site characteristics for wind turbine layout planning, based on elevation and land-use categorisation

Benchmarking capacity factor estimations

WEST is trained on the existing Australian wind farm generation measurements, and has been benchmarked against these measurements with the following results:

- The capacity factor is estimated within three percentage points for the majority of wind farms
- The average capacity factor estimate error over a large region is near zero (zero bias)

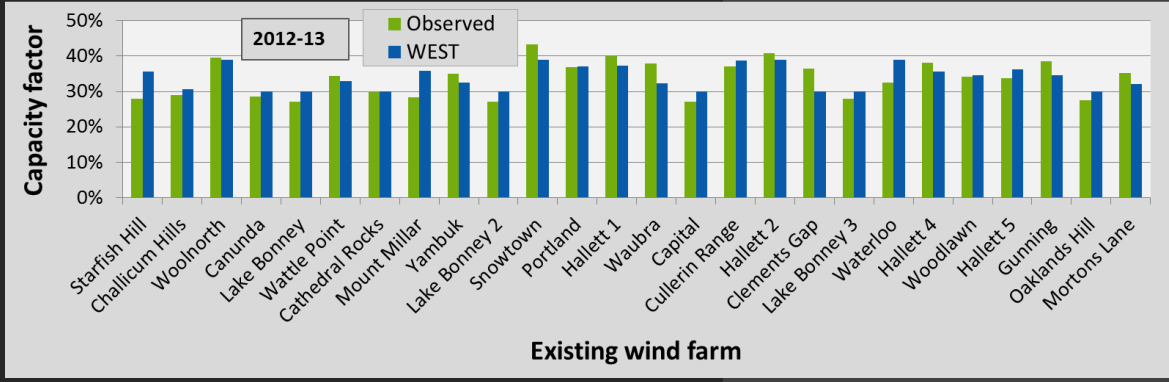


ABOVE: Sample of a WEST capacity factor estimate map, for south-western New South Wales in the vicinity of Broken Hill (white squares)

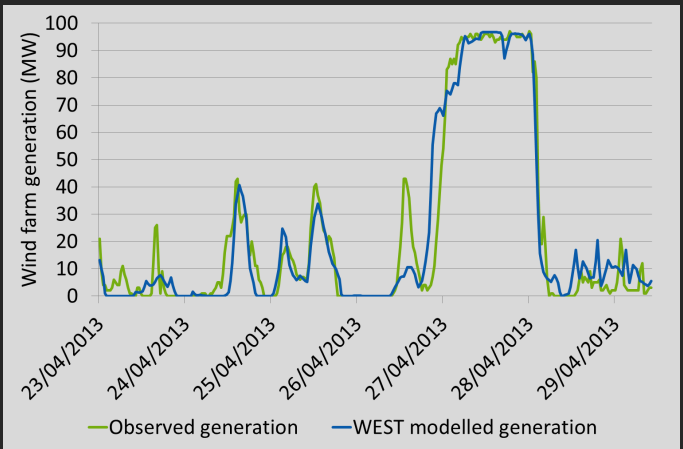
WEST Features

WEST has the flexibility to suit to your needs:

- Input your own site characteristics, such as wind turbine elevations
- Estimate wind farm capacity factors for any specific wind farm power curve
- Option to include land-use filtering on the suitability of potential wind farm sites

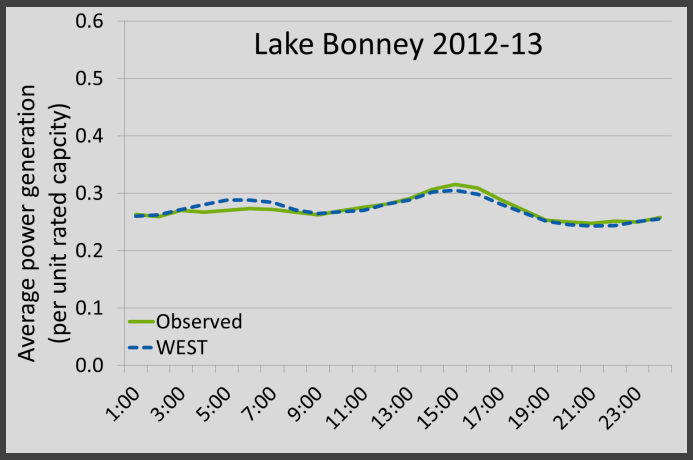


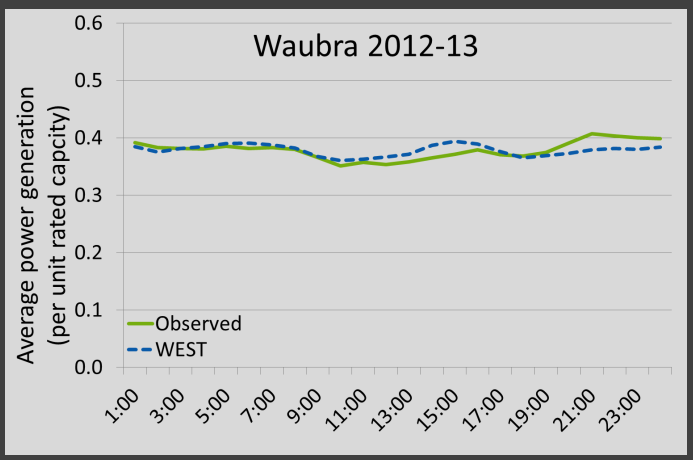
LEFT: Comparison of observed and WEST capacity factor estimates at all existing wind farms in 2012-13



ABOVE: Sample of an hourly wind farm generation time-series produced by WEST for the Snowtown wind farm site in South Australia, compared with the actual generation at Snowtown for a week in April 2013

BELOW: Comparison of observed and WEST time-of-day average estimates for two existing wind farms





Benchmarking time-of-day average predictions

The time-of-day average generation for a wind farm is important for assessing the correlation between the wind farm's generation and local electricity demand, which affects the wind farm revenue through the spot market as well as potential network congestion (including the interaction with other wind farm generation).

The WEST hourly wind generation time-series feature highly accurate time-of-day averages for individual wind farm sites, a shown in the figures to the RIGHT.

Want to know more?

WEST is applied extensively by ROAM to feed into generation production, congestion, loss factor and revenue modelling throughout the Australian electricity markets and isolated systems. Whether you are prospecting for a new site or require a due diligence assessment on a site you have in your portfolio, you need WEST.

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