Rising gas prices make renewables a sure bet

August 12 2014

New analysis by UNSW suggests that renewable investment is likely to be cheaper and lower risk for Australia, since rising and uncertain gas prices make baseload gas-fired electricity high risk and high cost.

The modelling, by researchers at the Centre for Energy and Environmental Markets (CEEM), compares the risks and uncertainties in using gas-fired electricity or renewable technologies as part of a low-carbon transition.

"We've explicitly incorporated uncertainty and risk in the model," one of the lead researchers, Dr Jenny Riesz, says.

"It significantly affects the results and gets neglected in most studies.

"Although the use of gas-fired electricity on the east-coast of Australia is modest at present, some parties are promoting this as a serious option for reducing greenhouse emissions and cleaning up our power sector."

However, the CEEM modelling found electricity portfolios with heavy reliance on baseload gas-fired generation could have 40% higher wholesale electricity costs.

For a typical Australian household with four people, this could equate to an additional cost of almost $500 a year.

Gas-fired electricity was also found to be much higher risk. Unlike renewable generation, gas-fired electricity is exposed to large uncertainty

in future gas prices and carbon prices.

These factors mean heavy reliance upon gas-fired generation also increases the cost risk by a factor of more than three.

"The risk and cost of gas-fired electricity is high primarily because of the uncertainty and potentially high cost of purchasing gas in the future," Dr Riesz says. "By contrast, renewables are a sure bet".

Australia's looming role as a major gas exporter adds a further dimension to price uncertainty.

"Domestic gas prices will be linked to international gas prices," Dr Riesz says.

"No one really knows what international gas prices are going to do in the future, or how precisely our domestic prices will be linked. This means that relying on gas is a big gamble".

Dr Riesz urged decision makers to consider these effects in the critical review of the Renewable Energy Target scheme now underway. The modelling suggests electricity costs will be lower and more certain with a diverse portfolio of renewables, including wind, solar photovoltaics, hydro, and others.

"Gas electricity can provide useful backup supply, but we're probably looking at higher costs if we use it for baseload energy," Dr Riesz says.

"Renewables can provide bulk power more cheaply and at lower risk."

The modelling also indicates it is worth rethinking existing electricity infrastructure.

"We have a huge fleet of coal-fired generators in Australia. Analysis in the United States suggests some coal-fired generators can be very flexible and shift to operating as peaking generators.

"If we can use our existing coal-fired generators in a peaking role to back up renewables, we can reduce our greenhouse emissions at low cost, and low risk, without having to invest in gas-fired electricity. We need to better understand what those coal-fired generators are capable of," Dr Riesz adds.

The full report can be found here (pdf).

Provided by University of New South Wales