Giving the electricity network more grunt

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A new Queensland University of Technology (QUT) research project aims to overcome one of Australia's main hurdles to the increased use of wind and solar energy.

QUT's Chair in Power Engineering, Professor Gerard Ledwich, said because renewable generation was not predictable other generation currently needed to be available to ensure continuity of supply.

He hopes to develop storage and demand management systems to ensure renewable electricity can be better stored during low usage times for use in peak periods, cutting down the amount of fossil generation that needs to be available as a back-up.

"Winds are variable and solar power isn't always available during peak evening usage times but essentially neither can be guaranteed to be present," Professor Ledwich said.

"Our aim is to develop new storage and management systems to better harness all of the electricity sources available and give the electricity grid greater strength.

"This will benefit all electricity users, not only those in remote locations."

He said electricity prices had been rising for the last few years essentially because consumers needed a lot of electricity during short peak periods of the day, for example 30 per cent of the network is often

needed only two per cent of the time.

"With new power lines costing more than $1 million per kilometre to build, saving and storing electricity locally rather than building more power lines, has to be the answer.

"If we can better store locally the vast amounts of renewable energy Australia is capable of producing, we'll be able to develop a stronger electricity network and significantly reduce our greenhouse gas emissions."

Professor Ledwich said providing fossil fuelled back-up generation for all renewable generators was too costly.

"The creation of solar or wind power itself isn't the problem – the problem is developing systems on the network to allow renewable power to keep feeding in.

"At the moment the grid can't accept wind generated energy that accounts for more than 20 per cent of the total power generated but we aim to turn this around.

"Wind is always going to be variable. We need a capacity to store its energy when it's available and also provide remote customers of this energy with electricity when it's not.

"The answer lies in creating local responses to overloads as well as balancing renewables thus providing a more robust network," Professor Ledwich said.

The three-year project Robust electricity network accommodating high levels of renewables has been allocated $320,000 from the Australian Research Council and will be undertaken in conjunction with researchers

in Newcastle, Singapore and China.

Provided by Queensland University of Technology