

KEY MESSAGES

Distributed Energy Targets, Trials and Product Development

- The highest priority for Horizon Power is always to ensure safe and reliable electricity for all of our customers.
- We are also acutely aware that our customers want more choice and help to enable them to reduce and take control of their power bills.
- A popular option to reduce power bills is the installation of rooftop solar panels. Utilities around the world are facing challenges connecting very large numbers of these to their traditional electricity systems. In the case of smaller, isolated power systems or micro grids like those operated by Horizon Power, the intermittency of renewable energy poses even more of a challenge.
- Electricity grids were originally designed for one-way flow of electricity rather than two-way flows of electricity that solar panels create when they export excess energy to the network. As a result, we have distributed energy targets (DET) for each of our small micro grids and these determine how much solar we can accommodate on these systems at any given time.
- At present, with the exception of the Pilbara and some of our more remote towns in the Mid-West and Kimberley, we cannot accommodate unmanaged additional rooftop solar because fluctuations in solar exported to the network, caused by cloud cover or extreme heat, can impact system stability, which in extreme cases can cause blackouts.
- However in most towns, if the rooftop solar system is managed with generation management (GM) options, it can still be installed. GM options include batteries or other smoothing devices.
- Horizon Power led the way in 2012 to develop these GM rules to allow additional solar installation on its systems. Ergon Energy in Queensland and Power and Water in the Northern Territory have now adopted these too.
- We are leading the way again with the trial of different types of generation management that will allow more customers to install rooftop solar. These options include feed in management devices to control energy exported back to the grid and batteries with enhanced software to avoid technical issues that can cause blackouts.
- As more people shift to solar, they contribute less revenue towards the fixed costs of the poles and wires, which they still rely on when the sun is not out. This means there is an increasing cost on those who do not adopt renewable energy, and often they are the more vulnerable customers.
- Horizon Power is considering how tariff reform can ensure electricity prices are more equitable, reduce the potential impact on the subsidy, while at the same time sending the right pricing signals to customers.

TRIALS

Carnarvon DER

- This uses a combination of sky imaging and satellite-based cloud monitoring to predict cloud events that will affect renewable energy generation spread across customers' homes and businesses. By monitoring the individual solar panels on more than 60 customer houses, we are able to apply advanced mathematics to analyse the impact of cloud events and how this in turn affects the operation of the power station.
- This will greatly assist in determining higher DET and advanced GM techniques, which will ultimately allow more customers to connect solar panels and energy storage.

Carnarvon battery

- Horizon Power is conducting a cutting-edge trial over the next 12 months into the benefits of two 1,000 kilowatt batteries housed in two 40 foot containers at the Mungullah Power Station in Carnarvon to explore ways of meeting energy demand at a lower cost. The batteries will be used to provide energy when demand spikes or a generator fails.

Smart Sun

- The Smart Sun pilot in the Broome North estate is a collaboration between Horizon Power and LandCorp and involves the release of new land/house packages which incorporate the very latest in renewable energy. It is also making these packages available to established homes on the estate (six established and six new builds).
- Household solar PV and batteries will be installed, in addition to smart appliances (air-conditioning, hot water systems and pool pumps) in order to trial technologies that will reduce the most extreme spikes in 'peak demand', reducing the need for investment in generation and helping the home owners manage electricity costs.

Solar in remote communities

- Horizon Power is working with a number of remote Aboriginal communities, including those along the Dampier Peninsula, to investigate lowering community power bills by installing solar on community assets such as the community office, water pumps and other facilities.

PRODUCTS

- Stand-alone Power Systems
 - Five stand-alone power systems, powered by solar panels and batteries and diesel generation back-up, have been operating successfully for more than a year in Esperance.
 - A system has recently been installed at the Exmouth Golf Club, enabling the decommissioning of the poles and wires.
 - A new system in Hopetoun at the iconic Fitzgerald National Park is being installed in early December 2017, allowing the decommissioning of 4km of poles and wires.
- Horizon Power is now actively looking to remove aging poles and wires and replace them with SPS solutions where this will provide a more efficient and cost-effective alternative for our customers.

PRICING

- Horizon Power is aiming to increase the penetration of distributed energy, including rooftop solar, to reduce the overall costs of the electricity system. We have developed system blueprints for each of our micro grids, which determine the most economically efficient method of supplying electricity.
- In Carnarvon and Onslow, work has already begun increasing the level of distributed energy supplying electricity to the towns.
- Currently, about 20 per cent of government investment in power generation in regional WA provides capacity for power used just 2 per cent of the time during the peak hours of 1-8pm in the summer months (and in the south, such as Esperance, in the winter peak).
- The current pricing model does not provide any incentive for customers to change their behaviour and move their energy use outside the peak hours. Horizon Power has developed an app (HAPP) that is already providing customers with real time energy use, allowing them to track what their final bill will be if they don't change their use.
- If energy use can be shifted from these peak times to off peak, then costs of maintaining generation for peak use can be reduced. So Horizon Power, with government, is looking at how fairer pricing can be used to help customers take control of their power bills and invest in technology whilst helping to reduce the cost of the electricity system, and therefore reduce the subsidy paid by taxpayers.

- The pricing product we are developing will give customers more choice and control over their bills while at the same time reducing the amount of investment in peak capacity.
- We will be offering a pricing plan trial to customers in Port Hedland and Broome in the coming weeks.
- The product is called MyPower and has been developed in response to changing electricity consumption patterns, renewable energy uptake and the availability of technologies such as batteries.
- The Power Ahead research conducted in Port Hedland last summer has shown that, when given the right incentives and price signals, customers can change their behaviour to use less power during the peak time.

More information on solar and DET is available on our website and you can view our solar video at this link:

<https://youtu.be/aXXB3lxfHNq>

IN CLOSING

Horizon Power is committed to the regional towns we service across Western Australia. We are not standing still. We are carefully working through solutions such as generation management that will allow the connection of additional renewable energy in Broome and other towns such as Esperance and Carnarvon.

We are determined to enable the connection of additional solar in increments as these technologies are further tested and proven. In the process, we will ensure that we do not risk electricity quality or reliability for customers as a whole.

/ends