



CUSTOMER CASE STUDY

Western Power meets customer energy needs with PI Vision™

Western Power - www.westernpower.com.au

Industry - Power generation

Goal

- Enable situational awareness of the network and factors impacting its performance

Solution

- The PI System™

Result

- Significant improvement in situational awareness across the company's network operations

Western Power is an Australian power company serving more than 1.1 million customers. It operates transmission and distribution assets in the South West Interconnected Network (SWIN). In a single year, the company supplies 17,000 gigawatts of power through more than 100,000 kilometers of circuit wiring to communities around southwestern Australia. But Western Power faced new challenges when customers across the sunny region began installing solar panels. As people generated more of their own power, Western Power experienced reduced system loads and net power flows back from consumers. The resulting low system loads required a complex balancing act to keep the grid voltage stable. Maintaining control of frequency and voltage is a constant challenge for power companies. A complete system failure can take up to ten hours to recover from and can cost the economy a billion dollars. The PI System™ was a big part of the solution.

Solar success brings new challenges

Western Power wanted to increase its situational awareness and reactivity in order to predict what was going to happen next in order to predict its customers' energy needs. "The challenge for us was to easily see what was going on in the system, to see the current state, and, more importantly, to know what would happen next," said Rudy Bake, network operations development manager at Western Power. "We needed to forecast information so we could see what was happening in the next hour, the next day, the next month."

The power of PI Vision

Western Power had relied on the PI System as a data historian for more than a decade. When the network control team relocated its offices in 2017, it chose to leverage the power of its data infrastructure by building out a new control room. The team used PI Vision, the web-based visualization platform of the PI System, to develop a series of status dashboards. It also installed several modular video walls, each with several slots for visual feeds, around the Network Operations Centre.

With its data structured by Asset Framework (AF), the contextualization layer of the PI System, the team quickly built over 50 PI Vision displays. These displays can be rotated through the video walls, depending on needs and current events. From a simple emergency status indicator to a massive real-time map of the entire transmission network, the displays keep staff members updated on every element of their work. These insights enable them to increase response time and improve situational awareness.

With the new low system loads, Western Power can efficiently absorb or create reactive power in its system. Reactive power is generated solely to maintain the power network's voltage at the correct level. It is crucial to keeping the network up and running. The most sophisticated of Western Power's PI Vision displays shows each generator's reactive power absorption ability. Just as too much water pressure in household pipes can cause them to burst, the wrong voltage can damage equipment and cause widespread blackouts in power systems. Each generator can create or absorb reactive power, and with PI Vision, each generator's status can be monitored at a glance of this single display.

"We have a much clearer understanding of what's happening and what's coming up."

- Rudy Bake,

Network Operations Development Manager, Western Power



Video walls are installed around Western Power's Network Operations Centre, with PI Vision displays providing real-time operational awareness across the entire transmission network.

In just two years, the Network Operations Centre witnessed impressive results from its use of the PI System. "Our operators at network control have been raving about how quickly this display was developed," said Bake. "It took just a few weeks for one employee, working part-time, to put together. If we had tried to develop it in our SCADA system or using any other type of technology, it would have taken months, probably years. You probably couldn't even do it – it'd be too hard. So we're really getting a lot of benefit from it."

For more information about Western Power and the PI System, [watch the full presentation here.](#)