## Case study – Queanbeyan Hospital

# Hospital fine-tunes for healthy savings

Queanbeyan Hospital cut its annual power bill by $146,915, or more than one quarter of the hospital's energy costs, by working with the Office of Environment and Heritage's (OEH) Energy Saver program. Most of these savings were achieved by reprogramming the system that controls the heating, ventilation and air-conditioning.

Queanbeyan Hospital is a modern, well-designed three-storey building that provides services including accident and emergency care and day surgery. Despite being purpose-built for the local environment in 2009 and with energy efficiency top of mind, the site was using significantly more energy than the old hospital complex. In fact, the 55-bed hospital consumed the most electricity of all hospitals in NSW Health's southern region.

The Hospital engineering staff knew something was amiss with the building's controls when it was discovered that the air-conditioning system's chillers were continuing to run throughout the cooler months. But they needed someone with expert knowledge of air-conditioning plant equipment to confirm the installation of the heating, ventilation and air conditioning (HVAC) system had been done correctly. This system consists of boilers and chillers supplying conditioned air to 46 local climate control units.

Not having the expertise in-house, they engaged with Energy Saver and commissioned an energy efficiency audit.

'Things just didn't make sense,' says the Local Health District's Energy Adviser, Chris Thomson. 'After ruling out installation issues, we fully expected the auditors would find problems with the building management system (BMS) programming, but the magnitude of the problems took us by surprise.'

## In brief

An Energy Saver audit of Queanbeyan Hospital revealed the Building Management System (BMS) controlling the heating, ventilation and air-conditioning (HVAC) system had not been programmed for maximum efficiency. Simply by optimising the BMS settings, the hospital reduced its power bill by more than $146,915. The audit found other opportunities, such as replacing halogen lights with LEDs, installing motion sensors on lights in toilets and timers on instant hot water heaters.

### Results

- Annual savings of more than $146,915 – 32 per cent at 2012 prices.
- Annual cut in electricity use of 350 megawatt hours and gas use of 2840 gigajoules.
- Annual cut in carbon emissions of 560 tonnes.
- Payback period of less than three months for all projects combined.
- Potential for further savings from reviewing BMS systems at NSW Health's other hospitals in the southern region.
- A guidance document allows the hospital staff to monitor and manage the BMS to ensure the system remains efficient.

'We had an external company providing ongoing maintenance support for the BMS, but it turned out the system's programming was not in their scope of service.

'We've learnt a valuable lesson from this experience and will be reviewing BMS controls for all our buildings.'

'Contractors installing BMS systems usually do the programming. But I will be pushing for a third party to commission our new installations from here on and get them to come back to fine-tune the system once we have four seasons worth of data.'

'I'm also planning to do some training, so that I can correctly read trend logs and understand programming fundamentals.'

A commissioning manual prepared by the auditor will help to ensure the BMS runs efficiently.

Changes made to the BMS controls during the retro-commissioning process included:

- reducing the operating hours of air handling units (AHUs) and fan coil units in line with each area's occupied times
- shutting down chillers in winter and boilers in the summer, when not required
- adjusting hot and cold deck setting on AHUs
- fine-tuning the control logic of boilers to reduce unnecessary operation.

The cost to implement these changes was a mere $3000 while the hospital is enjoying savings of more than $146,915 a year.

The energy saving projects at the hospital had a payback period of less than three months.

The Energy Saver auditor found other energy saving opportunities including:

- replacing halogen lights with LEDs
- installing motion sensors on toilet lights and timers on instant hot water heaters
- reducing hot water system set-points
- shutting down computers when not in use.

The Energy Saver audit also showed that the air-conditioning and lights in the hospital's administration building were left on continuously, even when the building was unoccupied at night and on weekends. Simply identifying this unnecessary use of electricity enabled the facilities staff to address the issue and reduce the hospital's energy bills further.

Thomson says he highly recommends the Energy Saver audit program to other hospitals and large health care facilities.

'Our auditors were excellent – very professional,' says Thomson.

'As an amateur, you can fiddle around the edges, spend a bit and achieve some savings. With help from Energy Saver auditors, there's the potential to achieve some outstanding results, such as identifying ways to cut your energy consumption by more than 40 per cent!'

## Your next step

To find out how your business can access support contact the Energy Saver team

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