



Charles Sturt University

Bathurst & Wagga Wagga Campus

Delivered by Conservia using
Optergy Software

Background

In 2007, Charles Sturt University (CSU) became a signatory to the Talloires Declaration, an international commitment to environmental sustainability in higher education, signed by over 350 universities around the world. As part of this commitment, CSU conducted an energy audit over 2 campuses to identify where energy savings could be made. Conservia, energy solution specialists, conducted these audits, outlining that they could reduce campus electricity usage by 15.55% and gas by 19.5%.

Gas and electricity initiatives were implemented throughout 17 buildings over 2 campuses during the year 2015, and a Measurement and Verification Procedure put in place to ensure true savings were made, the International Performance Measurement and Verification Protocol (IPMVP) methodology was used for this process. The first year of reporting concluded in June 2017 and the project achieved higher than expected savings with an electricity saving of 16.1% and a gas saving of 37.7%.

Opportunity

CSU had 17 buildings spread across their Bathurst and Wagga Wagga campuses that had a number of different and separate control systems managing and monitoring HVAC, lighting, cogeneration plant and other services throughout the two campuses.

Optergy was chosen because it enabled two typically siloed systems to be combined into one platform. Combining Building Automation and Energy Management allowed smart energy saving control strategies using information from both systems. The Optergy solution also maintained compliance with the reporting requirements necessary to conduct the IPMVP vital to project verification.

Optergy was used to visualise, track, monitor, control and alarm all utility usage and BMS systems over the multiple sites. Optergy as a solution was imperative to the success and monitoring of the multi-campus project.



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Solution

As part of the strategic upgrades to meet their commitments, CSU chose to engage one BMS contractor to deliver an institutional-wide control system across the 17 buildings with Optergy implemented as the single supervisory interface for all integrated systems, including HVAC and the cogeneration plant. This allowed for streamlined results and energy tuning moving forward.

Using the Optergy historical database, including site-wide sub-metering and HVAC trend logs, Conservia (an energy specialist company) were able to identify opportunities including:

- Updating current HVAC control with minimum hardware upgrades.
- Upgrading the existing lighting network to implement control strategies and new high-efficiency light fittings.
- Actively control peak demand in real time through use of the cogeneration plant and Optergy's built-in demand limiting tools.

Initiatives that were undertaken were:

- Upgrades to air-conditioning equipment.
- Replacement of fluorescent lighting with high-efficiency tubes.
- Installation of PIR motion sensors to relax HVAC dead bands and control.
- Lighting for sporadically occupied rooms.
- Replacement of campus external lighting with high efficiency LED technology.
- Scrolling energy awareness dashboards for increased staff and student engagement.
- Implementation of an extensive sub-metering network across the entire university to increase the granularity of visibility to their new energy management system.
- Demand Limiting to reduce apparent energy costs.
- Live feedback from system enabling facilities management to be proactive onsite rather than reactive to energy misuse.

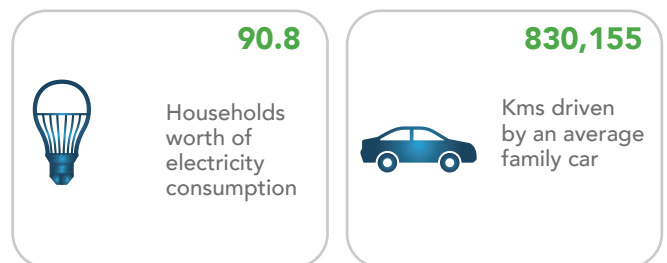
With this web-based university-wide Optergy system, CSU management are able to continuously monitor usage, attend to contextual alarms related to equipment operating outside of desired parameters, attend to utility alarms where overuse is alarmed in real time, adjust operating time schedules and track performance from any PC or smart mobile device connected to their nationwide network.

Following the Optergy system deployment, Conservia is able to constantly monitor their project, not needing to rely on 3rd party contractor to send monthly data. Conservia can remotely monitor HVAC operations and conditions, sub-metering, mains metering, point data, download and analyze any of this data to ensure that their client achieves the energy savings objectives.

Results

As at June 2017, after implementation of energy reduction schemes and 1 year of monitoring and validation, the site has been able to achieve 12.6% more savings than originally calculated. With more insight into day to day operations, it is believed this can be increased even further moving forwards. These savings equated to \$157,108 in the first year alone. Savings will continue over the next 9 years.

Energy Savings Equivalent



In electricity they have saved 813,966 kWh in 12 months and in gas 4,187 GJ in 12 months.

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