

Energy Smart Government - Developing an Energy Efficient Organisation

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IPAA Seminar 7 December 2011

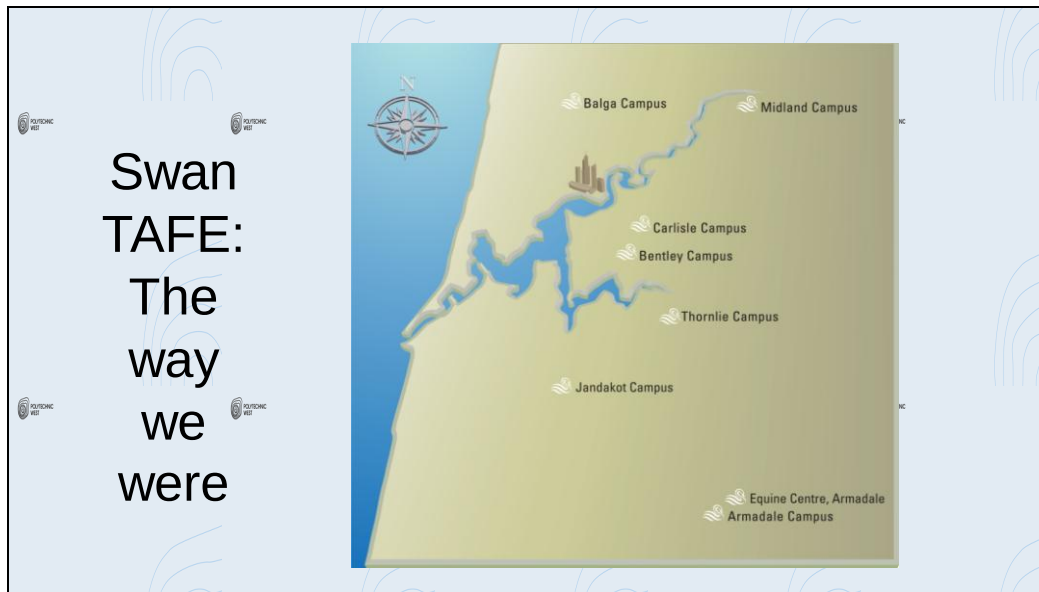


In 2010 Polytechnic West (formerly Swan TAFE) was the largest government funded registered training organisation in the Perth Metropolitan Region. It employs over 2,000 full-time, part-time and casual staff of which approximately two thirds are involved in training delivery. In 2010, the Polytechnic of WA (PWA) enrolled approximately 32,000 full-time, part-time, overseas and short course students in over 300 qualifications.

We were the first Vocational Education and Training (VET) organisation in WA to deliver Associate Degree courses. These qualifications, accredited against higher education requirements, provide alternative pathways for students wishing to progress to a university Bachelor Degree by capitalising on their VET qualifications.

Polytechnic West (PWA) has five major campuses located in Balga, Bentley, Carlisle, Midland and Thornlie. The organisation has specialised training facilities at the AeroSpace Training Centre, Jandakot Airport and the Equine Training Centre, Seville Grove and has other delivery Centres at Armadale, Wattle Grove, Pinjarra, Fremantle and Perth.

There are currently 14 sites comprised of specialised training facilities, classrooms, workshops and administration office space where PWA provides services to a much diversified training population. This presents an environmental sustainability challenge for the organisation.



In comparison, this was Polytechnic West (formerly Swan TAFE) in 2003.

Swan TAFE was established in mid 2003 by amalgamating South East Metropolitan College of TAFE, Midland Regional College of TAFE and the Balga Campus of North Metropolitan College of TAFE. The three organisations had differing approaches to energy efficiency. Swan TAFE became Polytechnic West in December 2009.

Energy Smart targets & our achievements		
2001-2	Baseline set	Swan TAFE (PWA)
2002-3	3% reduction	2.07% Achieved
2003-4	6%	7.2%
2004-5	8%	8.97%
2005-6	10%	10.86%
2006-7	12% reduction	19.8% Achieved

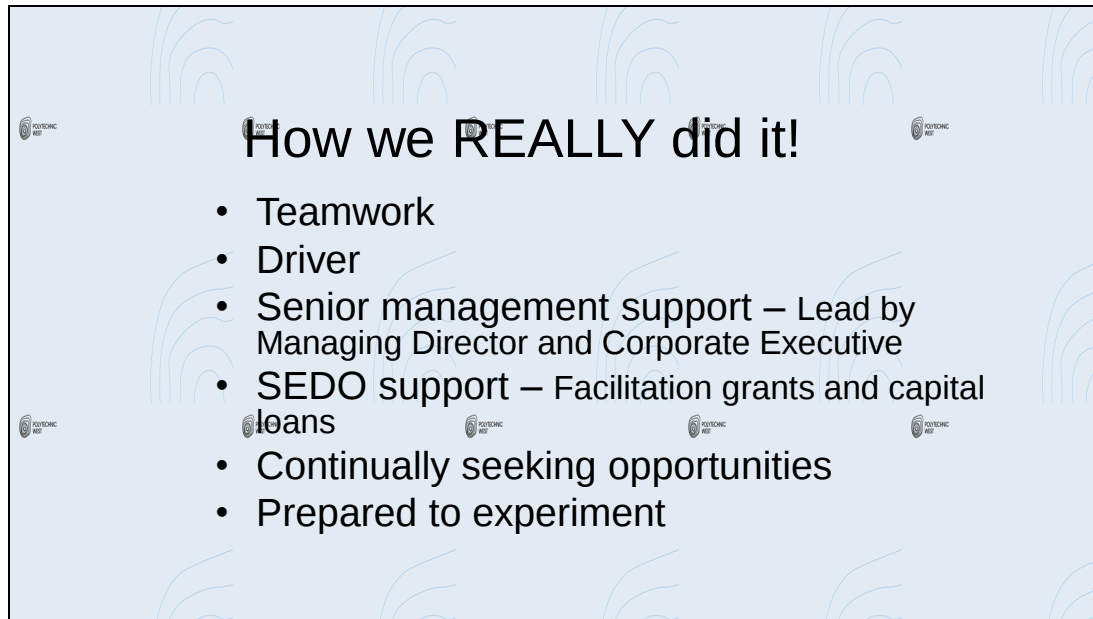
The Energy Smart Government Program set annual targets to achieve a reduction in energy consumption by 12% over a five year period.

After Swan TAFE was formed, the Campus Managers began to implement similar energy efficiency strategies and by 2003-4, we had exceeded the target. In 2005-6, we were the recipient of an Energy Champion Award for our innovative and team approach to energy efficiency. Overall we achieved a 19.8% reduction in power consumption. In June 2010, the Office of the Auditor General referred to our achievements in its program effectiveness report as an example for other government departments. So what did we do that was so successful?

How we did it!

- Energy audits for some of the campuses
- Low hanging fruit – turn off, switch off
- Upgrading computers with more energy efficient models and screens
- Upgrading fluorescent lighting tubes
- Automated power down of computers after hours
- Improvements to Building Management Systems at Carlisle, Midland and Balga campuses

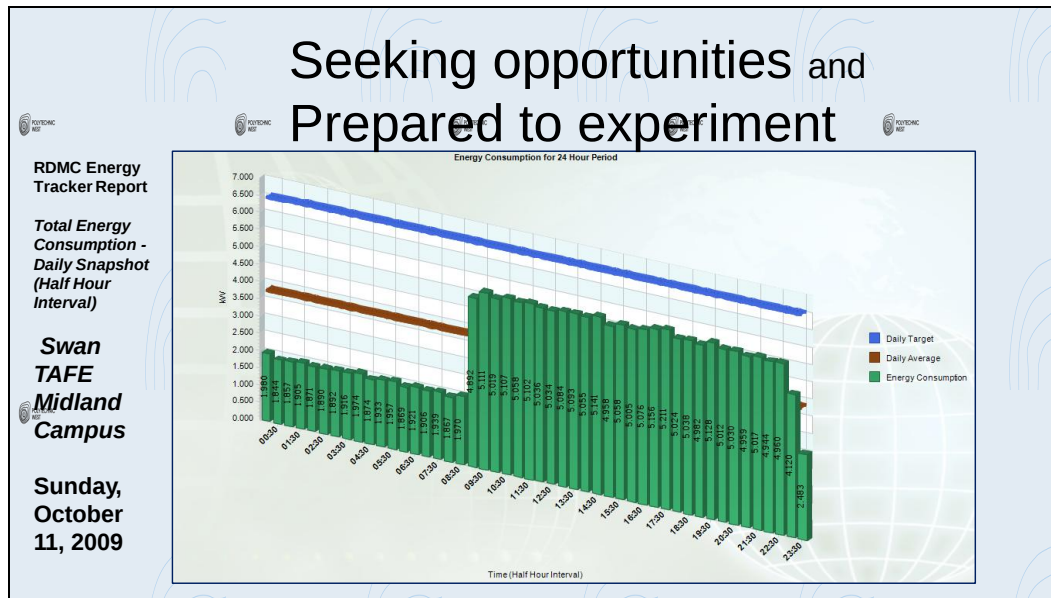
We did some of the usual things and we worked as a team. Originally, our five Campus Managers were the champions of sustainability and drove energy efficiency. We were supported by the campus maintenance fitters, training delivery technicians and store-persons in the training workshops. Only a few Lecturers were interested in our efforts at this time.



Teamwork was essential to implement energy efficiency measures and as the task progressed we needed someone to coordinate those efforts, provide direction and to engage Lecturing and administrative staff. In July 2005, the Director of Facilities proposed that an Environmental Lecturer provide that guidance and drive a wider programme of sustainability initiatives. Polytechnic West (formerly Swan TAFE) became the first vocational training organisation in Perth to establish an environmental Sustainability Coordinator position. In February 2009, I became the Sustainability Coordinator and, with the assistance of HAC Consultants, visited the five campuses and Armadale centre to consult with interested staff, obtain their input and develop a comprehensive Energy Management Plan which included both Corporate and Campus Action plans. SEDO (Sustainable Energy Development Office) provided the facilitation grant which allowed Swan TAFE to appoint the Consultants to audit the campuses and assist with engaging interested staff.

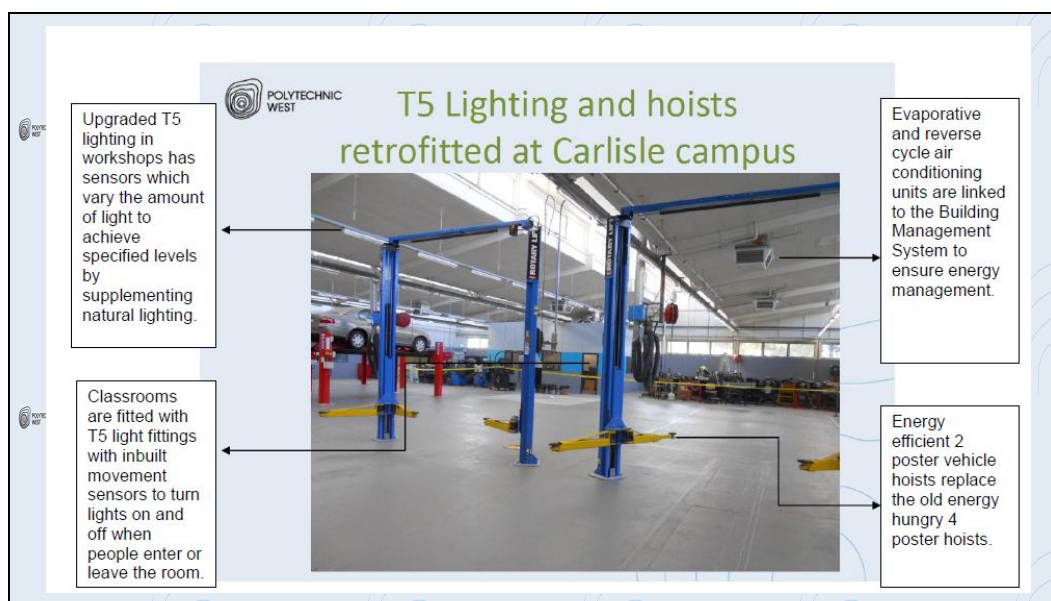
Senior Management Support: Senior management recognised very early on that Sustainability was very important to the long term success of the organisation. This support extended right up to the Office of the Managing Director and has allowed us to achieve some significant initiatives which I will talk about shortly. In July 2009, when the Energy Management Plan was submitted to Corporate Executive for approval, it received the necessary support and was incorporated into the Strategic Plan on his request. Managing Director and Corporate Executive support has been ongoing.

SEDO Support: During the years of the Energy Smart Government Program, SEDO was able to provide Facilitation Grants and Capital Loans. This enabled Polytechnic West to fund projects such as energy audits, development of tender specifications and implementation of Building Management system upgrades at Midland and Balga Campuses. When SEDO ceased to exist, the grants ceased and funding for sustainability is now sought via internal Polytechnic West budget proposals.

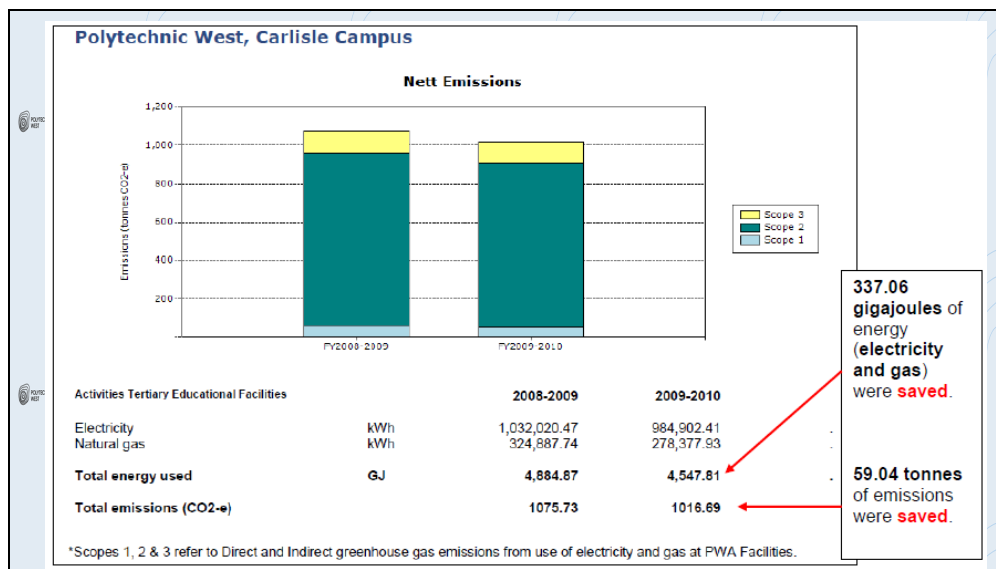


A behaviour change program was one of the high priority projects in the Energy Management Plan.

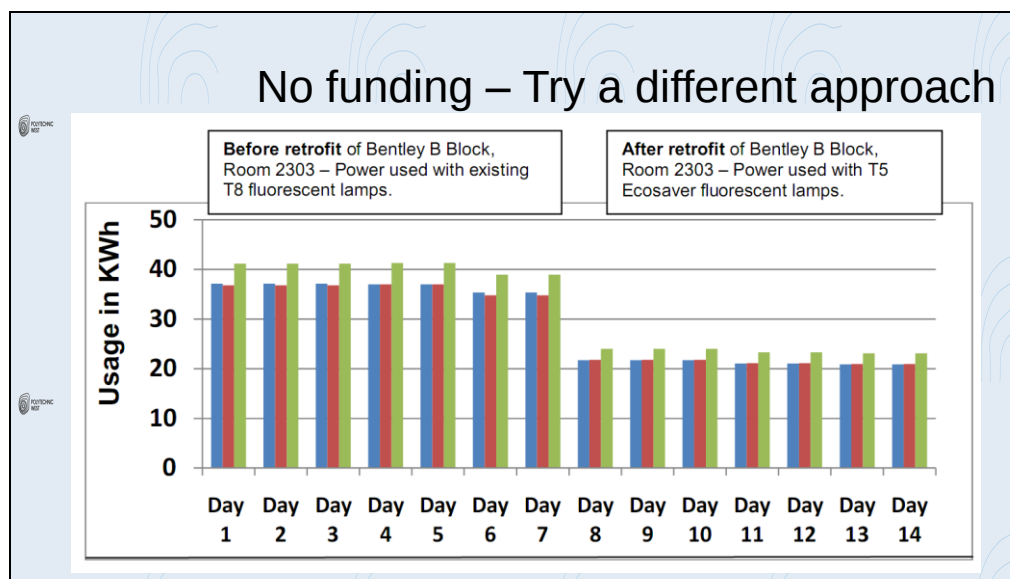
I had heard about the SoeSoft Energy Tracker system, contacted the company which developed it and discussed the possibility of a trial assessment. It was agreed that for the small fee of \$5000, CTs would be installed at the Administration Building, Midland Campus on the lighting and power circuits for a period of three months. In return, feedback would be provided on this newly developed product. This experiment proved that monitoring was as effective as behaviour change. It showed a power spike at 8.30am on a Sunday when the college was not operating. This graph highlights the power consumed when the computers switched on for an inventory process and reflected the situation across all sites for approximately 4000 computers. It demonstrated that the organisation's automatic computer power down system, implemented as part of the Energy Smart Program, needed to be extended to include power down on Saturdays and Sundays as well.



Another high priority project listed on the Energy Management Plan was to upgrade to T5 lighting. When special Commonwealth Government funding became available for refurbishment of Carlisle Campus, this project was implemented. The light fittings in the Automotive Workshops and Classrooms were replaced to obtain optimal energy efficiency through sensor operations.



Energy data showed these savings which are attributed to the T5 sensor lighting fittings and energy efficient machinery.

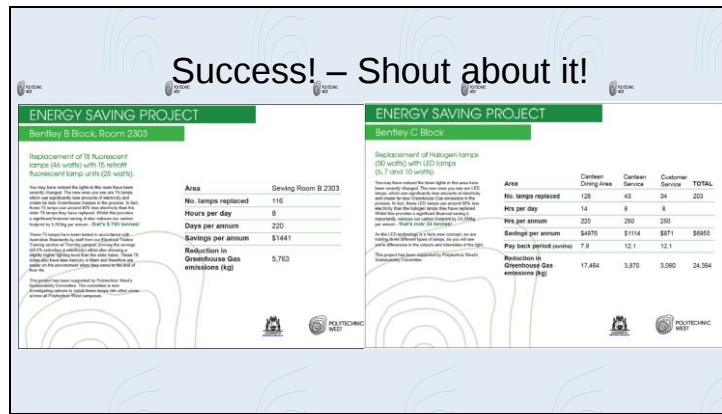


At our Sustainability Subcommittee meeting an opportunity to assess new lighting lamp technology was identified and supported. It included the replacement of tri-phosphorous fluorescent lighting in one of the fashion classrooms and halogen down lights in the cafeteria at Bentley Campus.

The Bentley Campus Manager, in conjunction with the Thornlie Campus Electrical Portfolio Manager, approached several retailers to undertake a trial of T5 Eco light lamps and LCD down lights. This provided an innovative live work project for students and enhanced their knowledge of energy efficient lighting technology. Results of the live work trial undertaken by Thornlie Electrical students showed great results over the two week trial period. The Director of Facilities Projects was so impressed by the trial results that money was provided to keep the new lighting lamps.

Currently, the Campus Managers of the five main campuses are examining existing lighting areas to determine which ones run a minimum of 10 hours per day and will provide payback within the 2012 financial year. Areas identified may be re-fitted in January from existing budgets.

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These posters were created after the trial and displayed in the fashion classroom and Bentley Cafeteria where the trials had been undertaken.

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Turning plans into projects

- Sustainability Sub-committee
- Sustainability Coordinator and Principal Lecturer, Green Skills
- Sustainability Strategy and Implementation Plan approved
- Friends of the Campus Groups approved
- Funding for projects approved 2010-12 include:
 - i. Staff training;
 - ii. Solar array at Carlisle campus; and
 - iii. Greensense View energy monitoring/behaviour change program.

In an organisation as large and diverse as Polytechnic West, one person alone cannot change the culture of the organisation and implement projects.

Late in 2009, as sustainable operations became more prominent at Polytechnic West, the college's Business Planning and Performance Standing Committee established a Sustainability Subcommittee. An Executive Director is Chair, the Sustainability Coordinator is Executive Officer, all campuses are represented, various levels of staff are represented and all members have an expressed interest in sustainability. The Subcommittee provides a platform to share ideas and outcomes; and supports initiatives proposed via its members. e.g. the lighting project just mentioned.

The National VET Sustainability Policy and Action Plan 2009-2012 was the catalyst for the appointment of a Principal Lecturer to assist lecturing staff to develop processes and resources for green skills delivery. The Principal Lecturer Green Skills and the Coordinator Sustainability work closely together as operational matters impact on training delivery and vice versa.

The Subcommittee is driving the way forward and has developed a Sustainability Strategy 2011-2013 which encompasses and surpasses the Energy Management Plan. The strategy focuses on outcomes for Sustainable Operations and the Delivery of Sustainability Training and has been approved by the Resources Committee, the Board of Studies and the Corporate Executive.

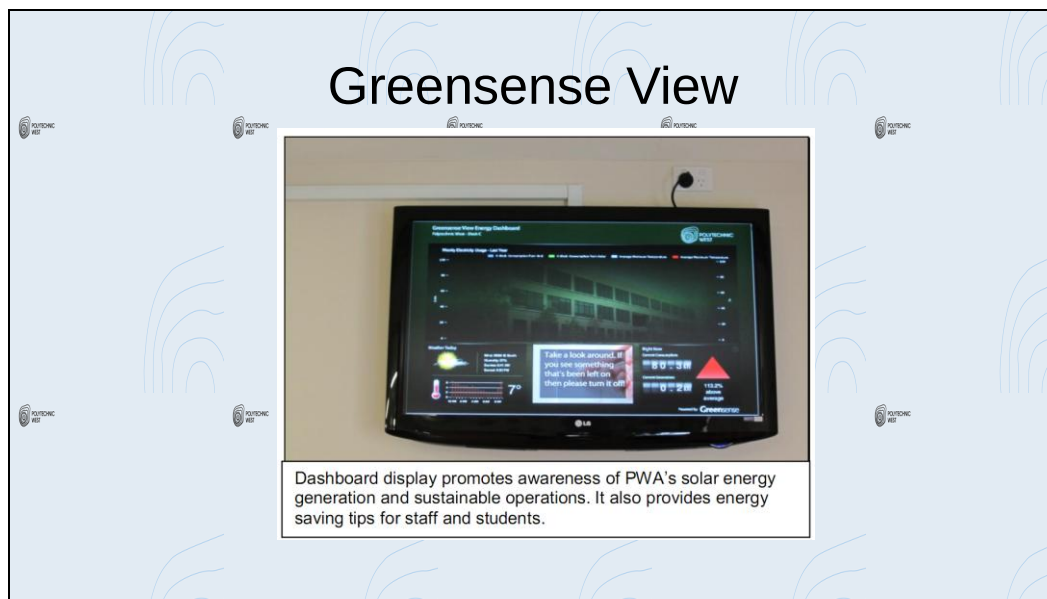


Western Australia's largest solar roof top system now covers B & C Blocks at Carlisle Campus.

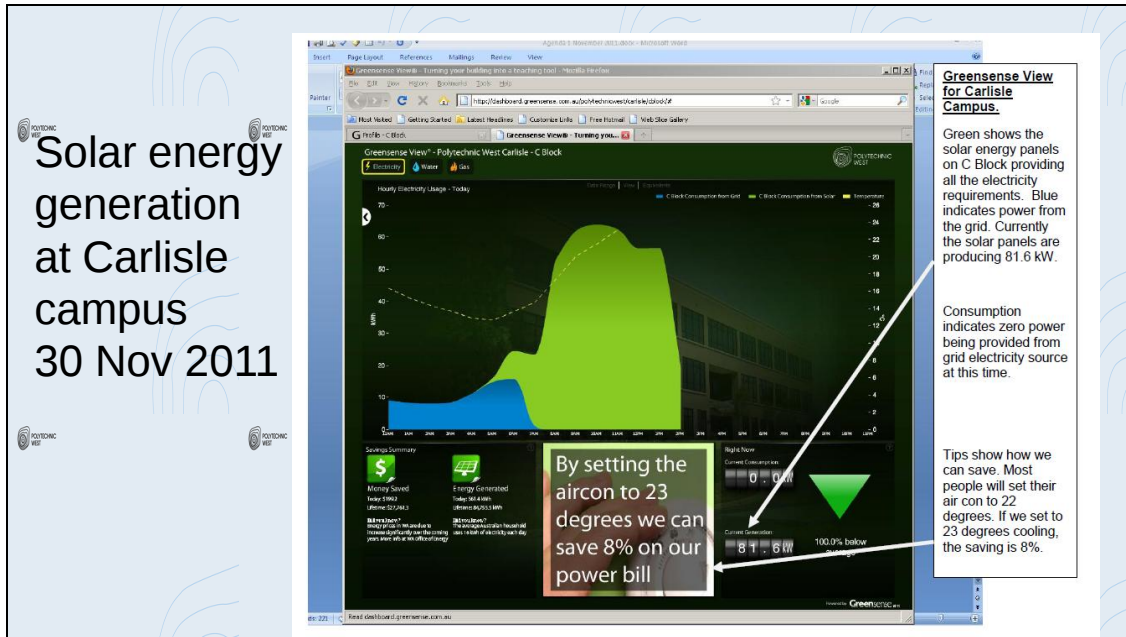
A 100kW solar array at Carlisle Campus, installed as part of the retrofitting of Automotive Training Facilities, is used to:

- Generate our own green energy for use onsite;
- Decrease our carbon footprint;
- Store solar energy for use in rapid charging of electric vehicle batteries; and
- Instruct apprentices/clients on solar energy applications.

Initiatives such as the solar energy are providing tangible results. The solar array commenced operations in February 2011 and produced 8,619 kWh of energy in its first month of operation.



The Greensense Energy monitoring system was installed to capture data generated by the Carlisle Campus solar array. The Sustainability Subcommittee recommended that a monitoring and behaviour change program be trialled at the Campus by utilising and extending this system. An innovative energy challenge program will soon be available to staff via the internet and will display Carlisle Campus electricity data for each building, as well as gas and water consumption for the site.



The solar energy system has more than sufficient capability to supply the energy needs of the Automotive Workshop block at Carlisle Campus on a training day. The remainder of the energy is utilised by other buildings. Unlike household solar energy which goes to the grid, the electricity generated at Carlisle Campus is entirely used by the Campus.

Other Initiatives

- Renewable energy training courses at Thornlie campus.
- Annual Quality Day awards recognise excellence in sustainable practices at Polytechnic West.
- Information sessions related to “Sustainable Operations” and “Green Skills in Training” are provided to all staff at Professional Development Days, induction and on request.