

Trident High School aims to be one of NZ's most energy efficient schools

High school projects don't usually come this grand, but thanks to Energy Solution Providers NZ's (ESP's) energy monitoring, Trident High School (THS) is on track to achieve its ambition of becoming one of the country's most energy efficient schools, by 2018.

[Trident High School aims to be one of NZ's most energy efficient schools \[pdf 87 KB\]](#)

OVERVIEW

Trident High School is the largest secondary school in the Whakatane-Ohope region, in the Eastern Bay of Plenty, catering to a roll of over 1200 students, starting from Year 9 up to Year 13 level. Total staff numbers for the school are in the realm of 100 - including approximately 70 teaching staff, and a team of 24 in administration and maintenance.

THS's aspirations for energy efficiency stemmed initially from metalwork teacher, David Dobbin. Dobbin began his work in 2011, partnering with sustainability expert Nik Gregg (of Sustainability Options) to develop and deliver a number of small renewable energy projects for the school.

Their efforts were ramped up in 2013, with the development of a five-year plan, which sought to assess the school's energy position and determine a starting point for efficiency efforts, as well as get teachers and students on board.

Over the course of the 2013 school year, a number of energy conservation initiatives were put in place, with the assistance of THS Maintenance Manager Paul Camburn and a small group of students from the school's APEX energy council (known as "Light Bashers"). These included efforts to switch off lights and appliances after hours, careful consideration of heat pump use, and transition to more energy efficient options for gym and auditorium lighting.

Thanks to these initiatives, THS was successful in reducing its energy consumption by 4.3 percent (over 17,000kWh) for the 2013 year.

Energy challenge

Following these initial successes, Dobbin recognised that if THS was to continue to increase its energy savings, and reach its ultimate goal of being totally energy self-sufficient, there was a need to engage students and staff at a deeper level.

It was determined that the best way to go about this was with the help of an energy monitoring system, provided by ESP, which would allow students and teachers alike to identify the school's hot spots of energy consumption, and to see how energy saving initiatives impacted on accurate data in real-time.

Technology overview

In March 2014, ESP were brought on board to install their proprietary energy monitoring system at THS - a process that was fully funded by EECA and the Ministry of Education.

Eight meters were installed to all major sub-loads and the main-incomer to allow in-depth analysis of the way in which electricity was being consumed.

Subsequent analysis of this data by ESP allowed THS to identify those areas within the school which were responsible for particularly high levels of energy usage, develop initiatives specifically to address those hot-spots, and then track the positive impact of those changes.

Actions taken

Based on ESP's data analysis and recommendations, a number of initiatives have been implemented by Dobbin and his team of "Light Bashers" at THS:

- Students undertook a full review of walkway lighting, to assess the various energy efficient options available. The new system, which was installed over the 2014/2015 Christmas holiday break, will save the school thousands of dollars, both in procurement and expected running costs.
- Insulation of hot water cylinders is underway, with tracking and comparison of before and after readings.
- A school-wide campaign to lower energy usage has been developed and rolled out - with the monitoring system utilised to track changes in energy consumption.
- Use of the school's heat pumps has undergone intense scrutiny, with the aim of reviewing and fine-tuning 'on-off' times according to class occupancy, external conditions, seasonality and teacher feedback.

Throughout the 2015 school year, a number of other initiatives will be put in place, including the testing of lighting sensors within a number of classrooms, close monitoring of heating, and continued curriculum engagement around energy efficiency.

Results

To date, ESP analysis of this data has contributed to a 17,000kWh (4.3 percent of their total energy usage) energy saving for THS. This brings the school's total energy reduction to nearly 9 percent, and approximately half of their ultimate goal of 20 percent.

Conclusion

Trident High School has proven once and for all that it doesn't always take big change to unlock significant value and savings. With a helping hand from ESP's energy monitoring system, and a little care and attention, THS is well on its way to realising its goal of becoming New Zealand's first energy self-sufficient school by 2018. In the words of Trident school Principal Peter Tootell, "We've committed to a five year energy plan; pursuing energy leadership, engaging our staff in management and behavior change, integrating energy efficiency in our building requirement and, most importantly, actively engaging our students in curriculum outcomes around energy management and energy efficiency".

PROFILES

The School

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The Consultants

Since its launch in 2001, Energy Solution Providers (ESP) has grown to become one of New Zealand's foremost energy management and measurement firms. ESP's world-class data capture and display system gives its clients a unique level of access to relevant energy consumption statistics and analytics, and identifies key opportunities to drive tangible savings. To date, ESP has generated over \$16,000,000 in cost savings for its enviable client roster, which includes a wide range of prominent public and private sector organisations. For more information, see www.espnz.co.nz.

KEY FACTS

- In early 2014, ESP installed their proprietary energy logging & monitoring system (funded by EECA and the Ministry of Education), which allows THS to track energy usage data in real time
- To date, ESP analysis of this data has contributed to a 17,000kWh, energy saving for THS (or 4.3 percent of their total energy usage)
- The total EECA funding was \$11,000, with no crown loan and \$9,000 from the Ministry of Education.

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