

# First Light - a reinterpretation of the New Zealand "bach"



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The Solar Decathlon, an international architecture competition hosted bi-annually by the U.S. Department of Energy, challenges 20 university teams to demonstrate innovative solutions to designing and building solar-powered houses that feature cost-effective, energy-efficient construction and incorporate energy-saving appliances and renewable energy systems. Since its inception in 2002, the Solar Decathlon has developed into a highly anticipated design competition that attracts significant media attention. In 2009, over 300,000 visitors attended the event on the National Mall, Washington DC. Befitting the size of its audience, the competition does not only address the student audience by providing participants with hands-on training and opportunities for inter-disciplinary collaboration; it also aims to encourage innovation, research, collaboration between academia and various industries involved in the field as well as to educate the general public about uses of renewable energy and energy efficiency.



Source all pictures: First Light, Victoria University of Wellington.

The First Light house has been entered into the competition by Victoria University, Wellington. Accepted as a contestant in April 2010, it is the first ever competition entry by a university in the Southern hemisphere. The 75 m<sup>2</sup> house is inspired by the “Kiwi bach” (pronounced *batch*), a type of modest holiday home popular with middle class owners in the mid to late 20th century. As the houses themselves do not always offer much comfort (some baches still lack running water or electricity), the outdoors are a significant component of bach life. Whilst First Light’s amenities, of course, go beyond electricity and running water, the focus on social and family time, recreation and outdoor living remains. Deck and patio, fitted with planter boxes that hold New Zealand native plants, have been partly internalised so that the “outdoor” space can be used year-round as an area to meet visitors and dine together. The emphasis is on providing social spaces; First Light is not conceptualised as a permanent domicile. Sleeping (for up to six people) and living places are on either side of the indoor/ outdoor area.

Materials and colours for the First Light House have been chosen such that the holiday home blends into the New Zealand landscape. Furniture by

New Zealand designers accompanies custom built parts of the interior. The preparation of detailed renderings has assisted in the selection of materials, colours and finishes. Building timber is a comparatively inexpensive in New Zealand; however, its real benefit lies in its flexibility that allows for accommodating technological equipment while using traditional 2-by-4 construction techniques. The external timber canopy provides shade and houses the 40m<sup>2</sup> of photovoltaic panels as well as the solar water heating system. In order to minimise energy consumption and maximise possibilities for the use of solar energy, the building is flexible to climatic conditions (for example, sliding shutters allow the manual regulation of solar gain), efficiently insulated and mechanically ventilated.

All products used in the competition need to be commercially available; this includes appliances with high energy efficiency ratings, the LED lighting that replaces the conventional incandescent or fluorescent lighting and the heating and cooling system that consists of a heat pump in combination with a heat recovery unit. Overall, First Light uses only one third of the energy used by a comparable New Zealand dwelling. Users of the house are able to monitor their energy usage

with an intuitive home monitoring system. This example of easily transferable technology does not immediately reduce energy consumption but increases user awareness of consumption of specific products and, as such, can have impacts beyond the First Light project. The main sponsor, a “green” energy provider, and the university hope to build knowledge of sustainable building among New Zealanders. It is possible to receive financial support for insulating existing buildings through the Energy Efficiency and Conservation Authority; contributions towards installation of solar panels are unavailable at present.

The modules of the First Light House have been pre-assembled in a storehouse. Then, in May 2011, the house was assembled for the first time on the Wellington waterfront. During that period of four weeks, the performance of the technology was tested. As “communication” is another category of judging criteria, guided tours for visitors were also piloted during that time. Students of tourism management have worked with the architecture and landscape design students in the development of guided tours and visitor management to be implemented in Wellington as well as in Washington.



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