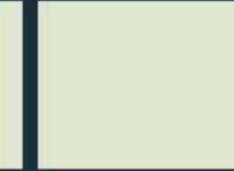


# NEW ZEALAND

## SOLAR DECATHLON



# FIRST LIGHT

Victoria University of Wellington was the team that designed the New Zealand Solar Decathlon named First Light. The house was inspired by a traditional New Zealand home called the “Kiwi bach”



The design approach of this house is to use low maintenance material. The house uses a contemporary spin on the traditional Kiwi. Weather and climate were both taken into consideration for the design approach, and rather than fight against both, the house finds ways to work together with the environment.

# SPACES

The First Light has three defines spaces in the house. A Living Room, a Study area and a Bedroom.

The living area has been designed to have custom-built furniture. The Furniture can be used as a seating area with ample storage or can be transformed to accommodate up to four overnight guests.

The Living are of the house has large bi-fold doors open to extend the living space to the outdoors, providing for a continuous flow between the internal and external decking. The Concrete table can seat eight people, while also being able to extend to accomidate more.

The Study creates a partial partition between the bedroom and living areas, creating visual privacy while keeping the open feel of the house. The unit offers storage on both sides and it can be transformed from a relaxing reading nook to a fully functional work space.



# MATERIALS

The First Light home used materials such as Wood. Pinus radiata is used in the exterior decking of the house. Recycled New Zealand Rimu is used for the interior walls of the house. Laminated veneer lumber (LVL) and plywood is used for the Walls and floor. The exterior cladding as well as the beams above of the roof are made of Western Red Cedar.

The two inch concrete slab flooring acts as a mass to stabilize the internal temperature by storing heat during the day and releasing it at night.

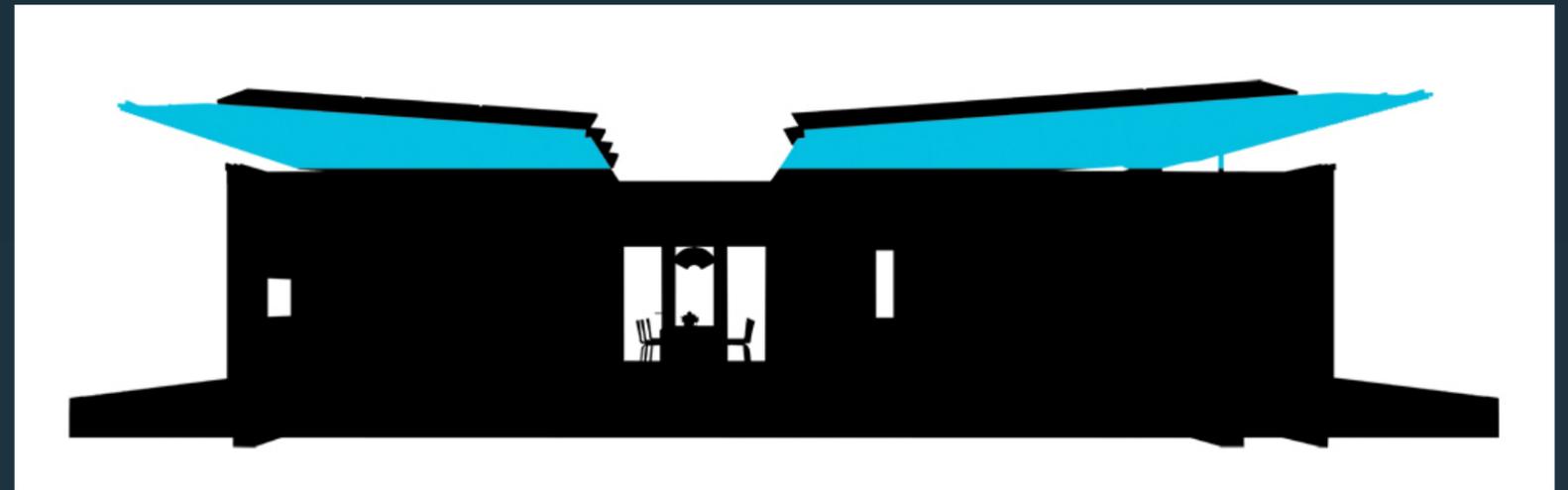
One of New Zealand's new renewable resource is wool. The First Light house uses a minimum of 10 inches of wool for the insulation of the house.

All the windows used in the house have triple glazing in order to allow the sunlight in while keeping the harmful UV rays out.

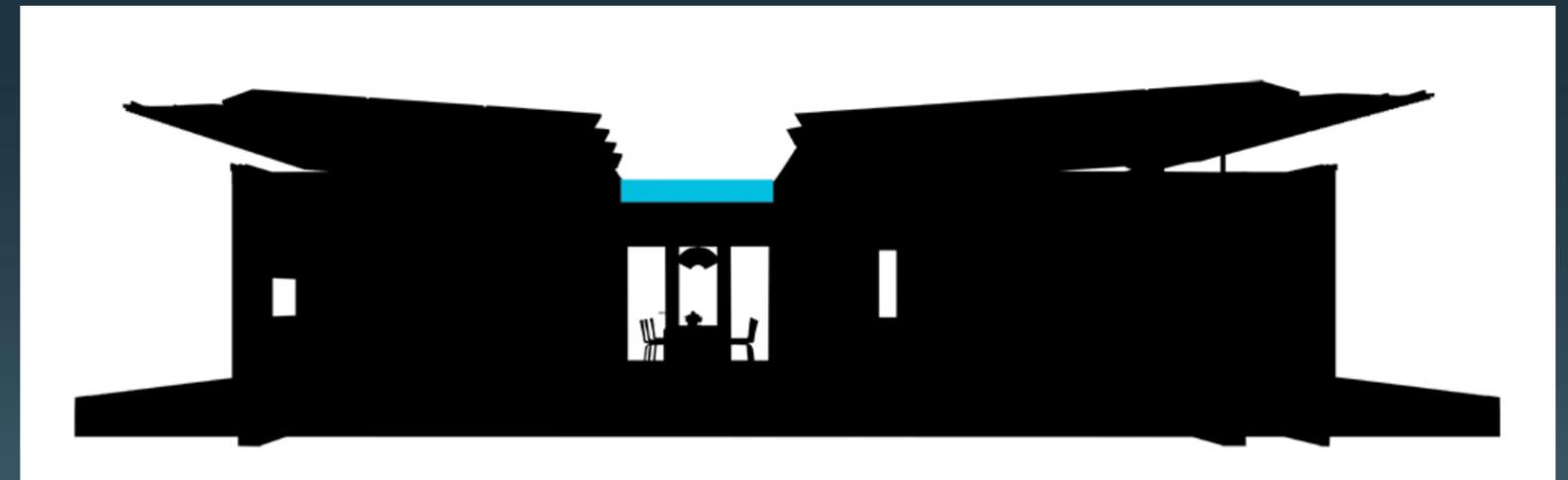


# DESIGN

Above The Roof of the house, photovoltaic Panels are located just below the western red cedar canopy. provides shade for the windows during the warmer seasons when the sun is high, while also keeping the solar panels cool and allowing the waterproof membrane roof below to remain uncompromised by the supports for the PV panels.



A triple-glazed skylight is located in the center of the house in order to illuminate the space, while also providing some heat for the house. A shading system is used in order to control the interior climate.



# SOLAR POWER

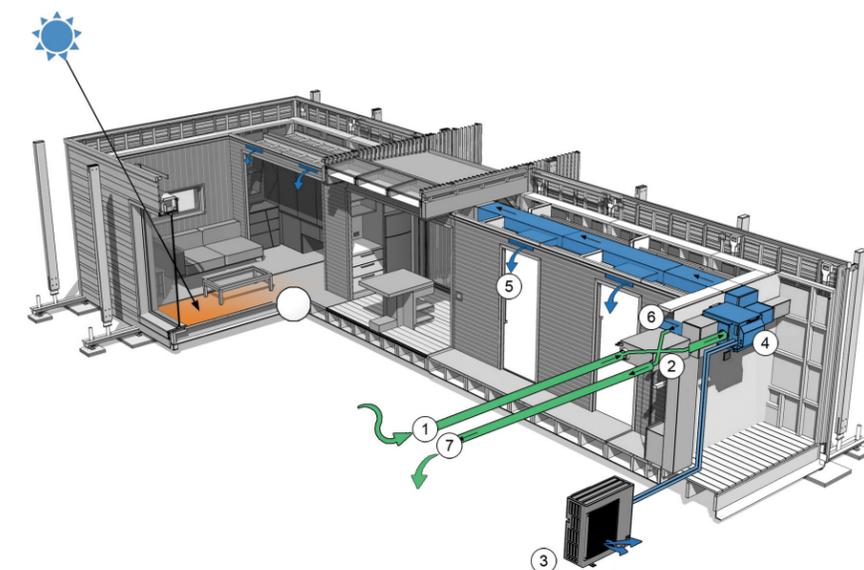
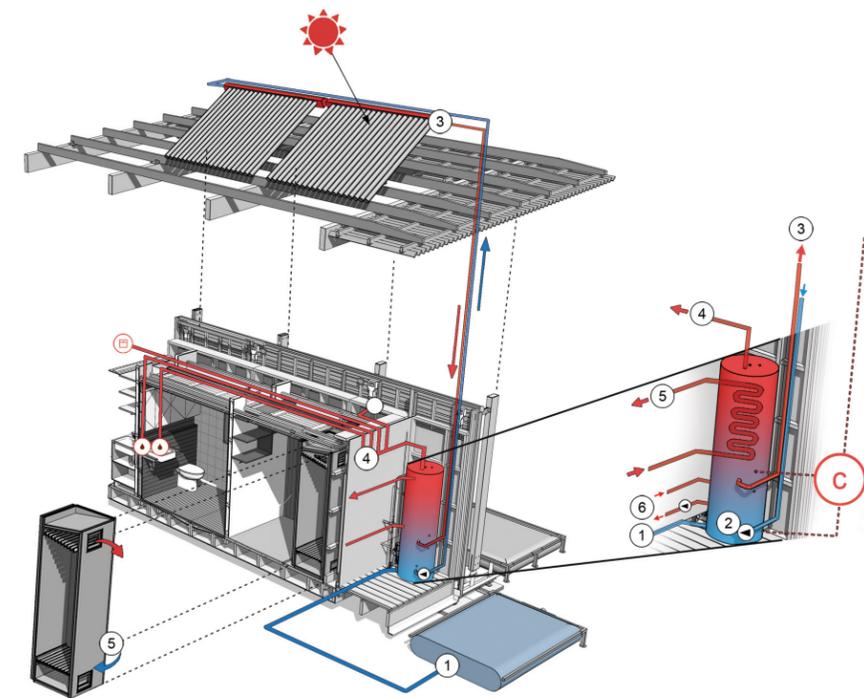
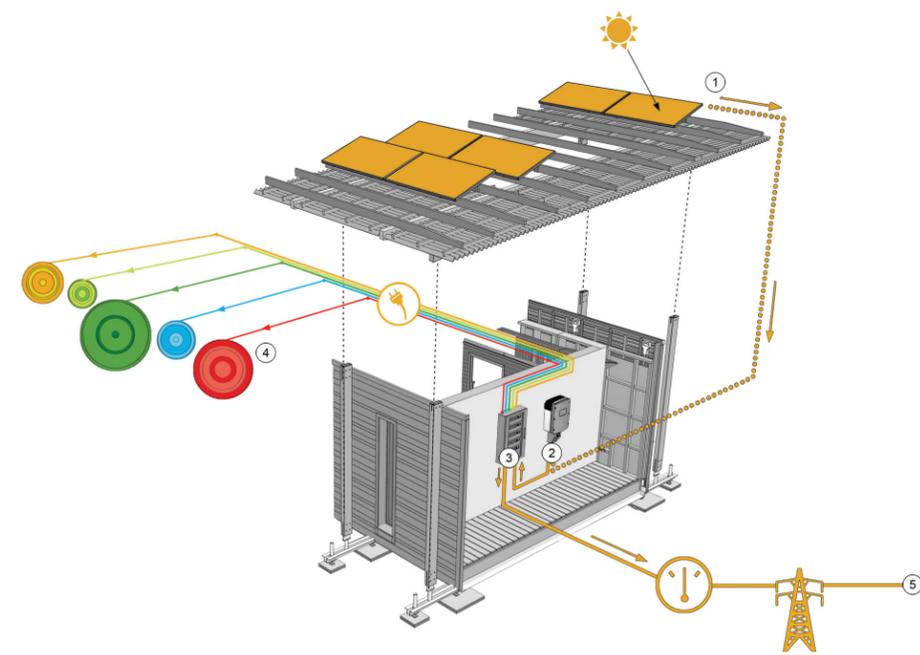
The First Light is a net zero energy home. Using as much of the solar energy to produce its power results in the home using less than a 1/3 of energy a typical U.S. house uses.

The First Light house has a 6.3kilowatt solar array with 28 polycrystalline photovoltaic panels installed onto the roof of the house. these convert energy into electricity. Each panel consists of a group of silicon wafers that are connected electrically and packaged into a frame. The panels generate electrical power by converting solar radiation into direct current electricity. This system generates enough electricity throughout the year.

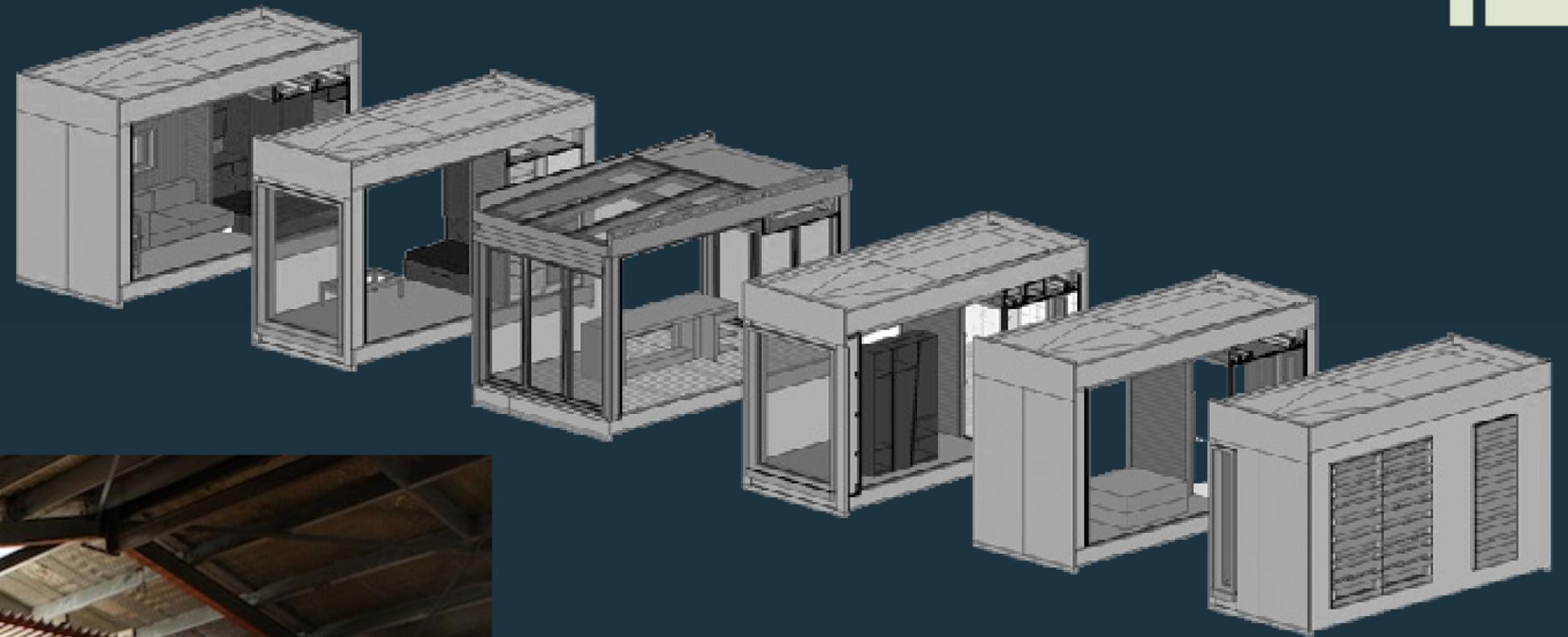
The First Light uses 40 evacuated tube solar collectors that collect energy from the sun and uses it for every hold water need in the house.

The house uses an energy efficient pump that cools the house on warm days while heating it in the cold days. The pump is capable of transferring up to four kilowatts of heat into the space while

The house uses a highly efficient energy recovery system. Energy from the air in the house is used to pre-heat or pre-cool filtered fresh air coming into the house while leaving the temperature and humidity in the house relatively stable.



# ASSEMBLY



The Assembly of the house is divided up to 6 different component that allow the house to be build and taken apart very easily, allowing it to be able to be transported from one place to another.

# SECTIONS

