

FACT SHEET

JOSH'S HOUSE - GRIGG PLACE HILTON | FACT SHEET

RENEWABLE

ENERGY

RESIDENTIAL SOLAR ENERGY STORAGE

IN AUSTRALIA MORE THAN 1.4 MILLION HOUSEHOLDS HAVE ROOFTOP SOLAR PANELS, WITH DOUBLE DIGIT GROWTH EVERY YEAR. IN PERTH ONE IN FIVE HOMES HAVE SOLAR POWER. COMBINED THEY EQUATE TO THE BIGGEST SOURCE OF POWER GENERATION IN THE STATE. THE PROBLEM IS SOLAR POWER IS ONLY AVAILABLE WHEN THE SUN IS SHINING.

WHY INSTALL BATTERIES?

An obvious drawback to using solar power on its own is that it is only available when the sun is shining. At night time households are still completely reliant on the grid - often from fossil fuel sourced power such as coal and gas. In addition to maximising the on-site benefits of solar generation, battery storage can also play a role in smoothing peak demand issues on the broader grid, reducing the need for costly network upgrades.

At Josh's House the existing 3 kilowatt (kW) solar panel system produces nearly double the electricity used over the year, making the house comfortably 'net zero energy'. Despite this, monitoring undertaken over the past 12 months has shown that over half of the power consumed (56%) is still being sourced from the grid.

By installing an 8 kilowatt hour (kWh) solar energy storage system along with the existing 3kW solar panel arrangement, Josh's House will only be using the grid for around 3% of its electricity needs. Now, you might ask why not go the last step and go entirely off grid? Well it is technically possible, but it's expensive. The small amount of power required from the grid will be imported during winter, when there are consecutive days with little sunshine. To take the last 3% off grid, it would require a much larger solar PV system (from 3 to 5kW) and a much larger battery (from 8 to 14kWh), and because this extra capacity would be used infrequently, it would take a very long time to pay off. Meanwhile the system sized for Josh's House cost around \$12,000 installed and will take approximately eight to ten years to pay off through reduced bills.



HOW THE SYSTEM WORKS

The solar energy storage system installed at Josh's House uses lithium iron phosphate battery technology – similar to what is used in mobile phones and lap top computers. They are safe, maintenance free, long lasting (10-15 years) and recyclable.

The system works by storing excess solar power generated during the day so it can be used at night time. Once the batteries are full, surplus power generated from the solar panels is diverted to the grid. If the household demand exceeds solar generation and battery storage, then power will be drawn from the grid. If there is a black out, then the batteries will provide backup power. Further details on how the system has been configured is provided below.

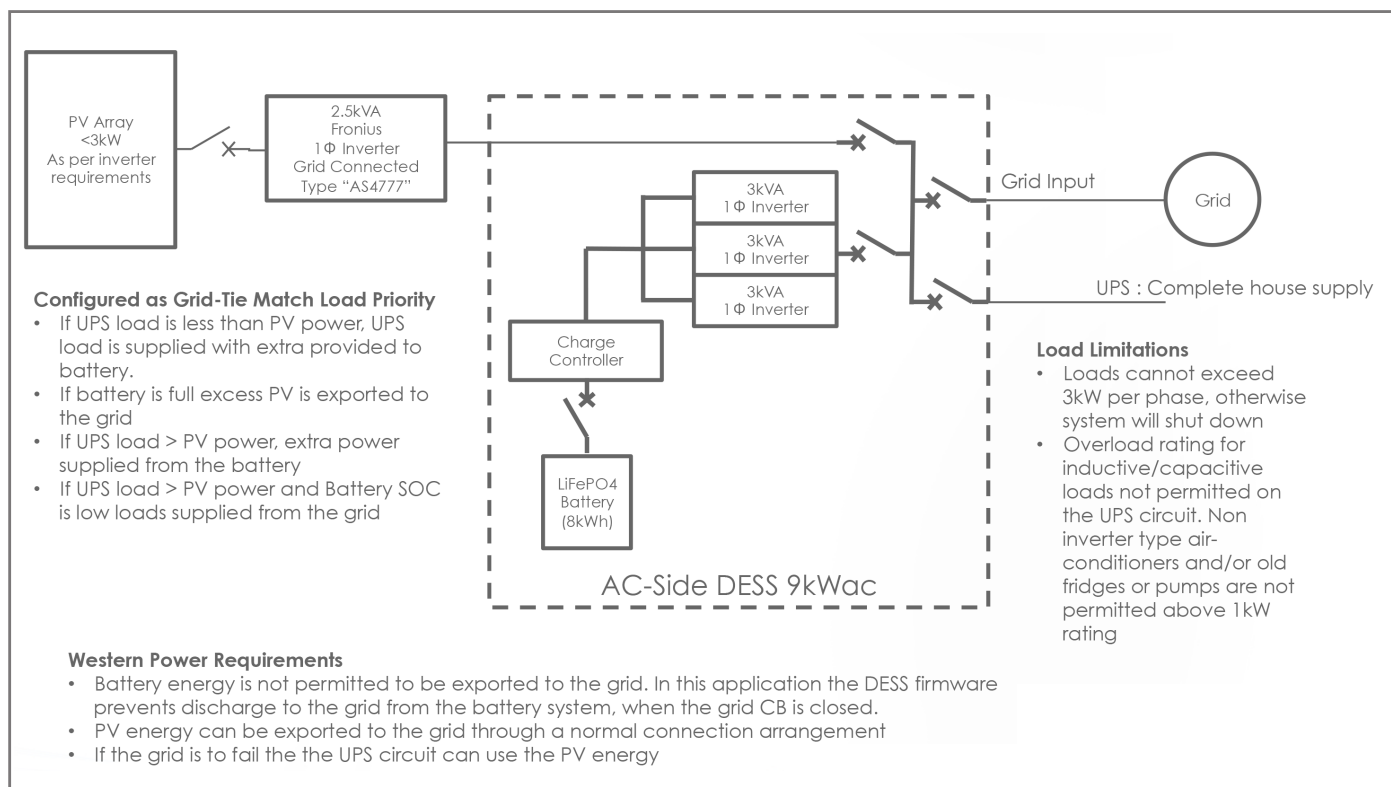
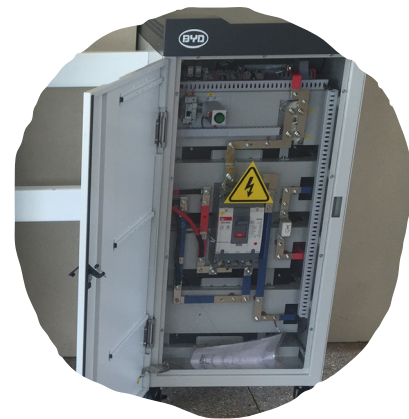


Figure 1: Schematic detailing the solar energy storage system at Josh's House (source: Solar Balance)

RESEARCH

The Josh's House battery trial was initiated by researcher Jemma Green, working with Professor Peter Newman from the Curtin University Sustainability Policy Institute, as part of a CRC for Low Carbon Living research project.. This is one of the first grid connected solar and battery research projects in the South West. Jemma and Peter are working on other battery trials as well - with the intention of the research being to understand how the technology works, what are the challenges to deployment, what are the implications for mass uptake of this technology in our energy system and how can it be mainstreamed. They expect the technology will work well for households that already have rooftop solar PV, and also be attractive for those yet to install solar PV, who decide to do solar and batteries at the same time. They also anticipate substantial uptake of batteries over the next five years as costs come down, and mainstream adoption of this technology within ten years.

MORE INFO

[Josh's House Solar Storage System Product Sheet](#)
[Real-time Battery Performance Data](#)

SUPPLIERS

Solar energy storage system: www.solarbalance.com.au
Original solar system: www.infiniteenergy.com.au