Topic:
The latest in solar power and battery storage

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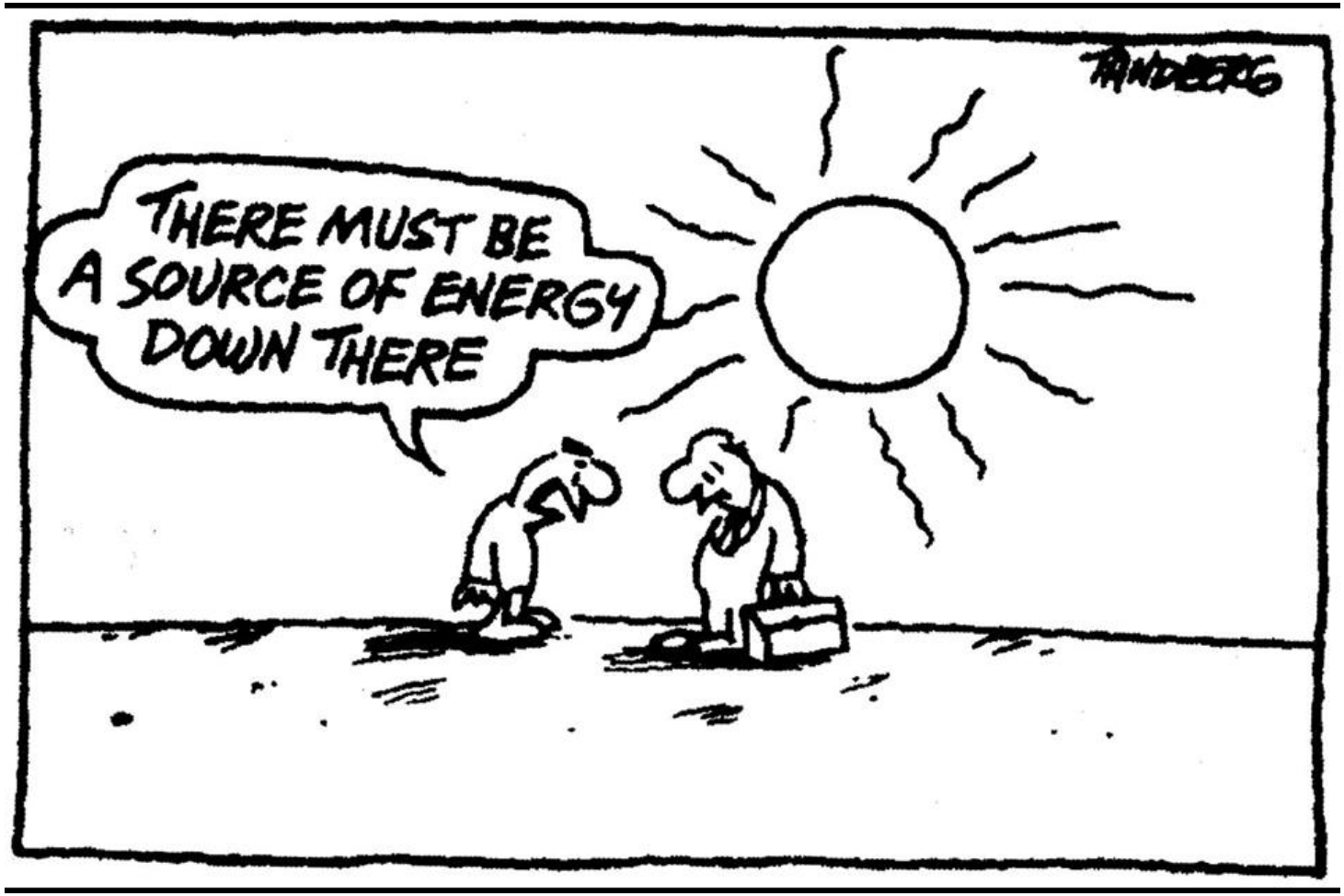
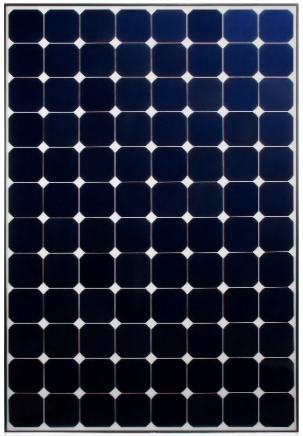
the energy efficiency experts

… helps households and businesses save money on their electricity bills by sourcing competitive quotes from multiple local companies specialising in:

SOLAR ELECTRICITY



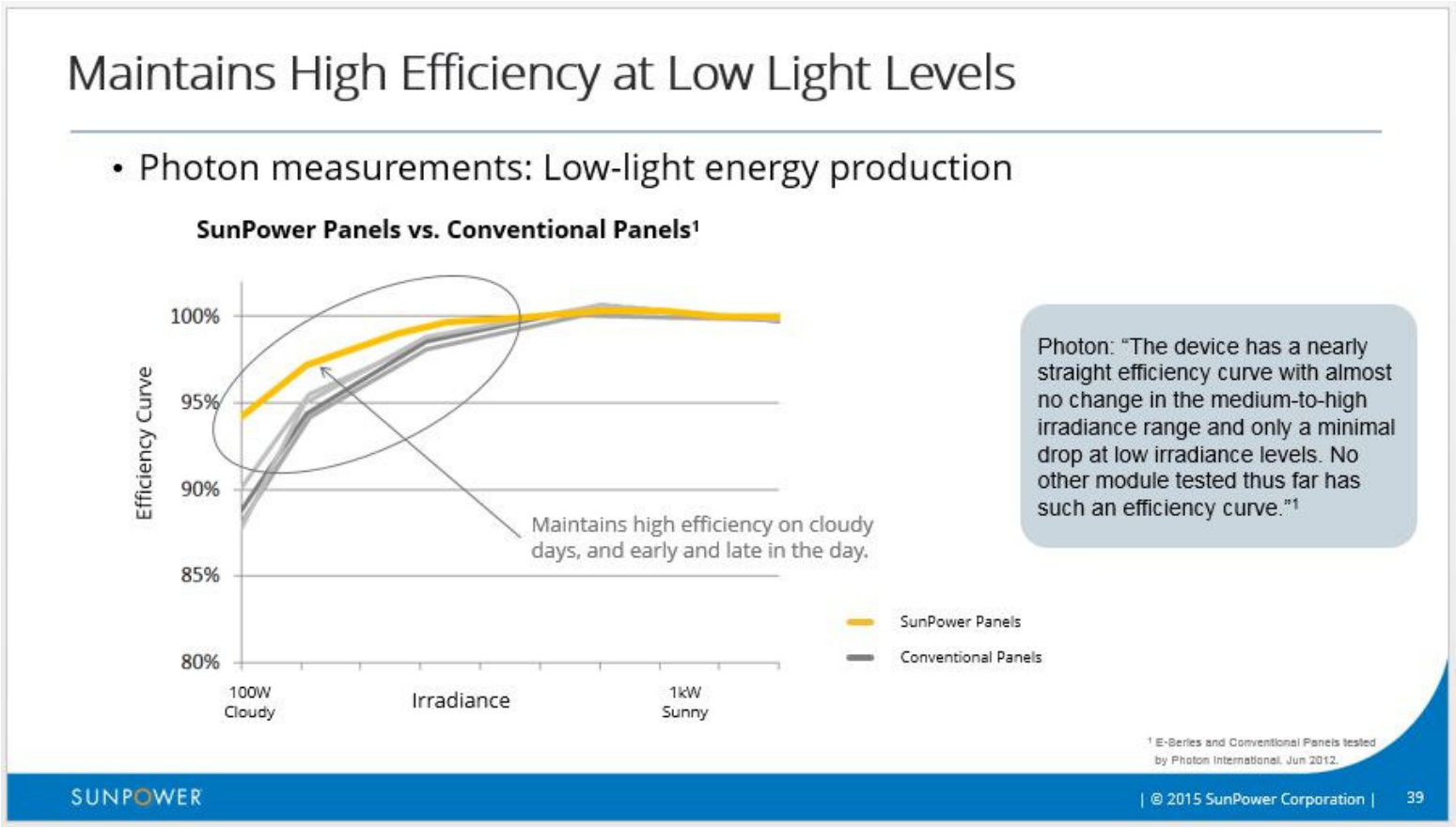
WHAT'S THE LATEST IN SOLAR?



- solar power systems are becoming more efficient.
- more efficient panels = each panel produces more power, so less roof space is needed.
- this is important when thinking about clients' future needs (system expansion, electric cars, battery storage, etc).
- the cost of solar power systems has dropped substantially over the last 5 years.

WHAT PANELS ARE MORE EFFICIENT?

- SunPower 327W and LG 320W panels produce more power than conventional panels in all weather conditions and are particularly effective in low light and hot/humid conditions.



INVERTERS

The inverter plays a critical role in the reliability and output of a solar power system.

- European/North American-made inverters tend to be more efficient, more reliable and longer-lasting.
- Reputable brands include:
  - Fronius (Austrian)
  - SMA (German)
  - SolarEdge (Canadian)
  - ABB (Italian)
  - Enphase (US)

SYSTEM SIZE

- Most households are preparing for battery storage and choosing to install larger systems.
- The average system size in NSW is now 5kW.
- Households with single phase power are limited to a maximum system size of 5kW; those with 3 phase power can install any size system they choose.

SOLAR REBATE

The Federal Government contributes to around 30% of the overall cost of systems.

The bigger the system, the bigger the rebate. A typical system (5kW) currently receives a $3,840 rebate.

SOLAR REBATES

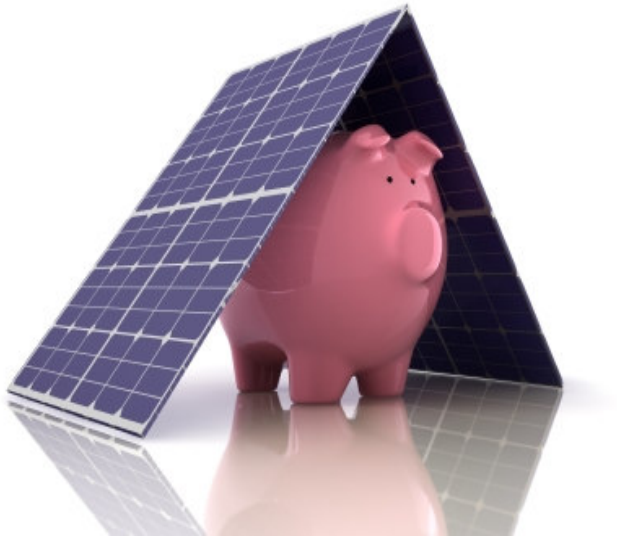
System prices <u>after rebates</u>:

Usage	System size	Mid-range system (after rebate)	Premium system (after rebate)
Smaller user ($300-$400/qtr)	2kW system	$3,900	$4,900
Medium user ($400-$600/qtr)	3kW system	$5,300	$5,800
Larger user ($600-$1000/qtr)	5kW system	$7,400	$8,200

PAYBACK

- Cost of solar power systems have come down by around 80% in the last 5 years.

- The payback for a top-of-the-range solar power system is now around 5 years.



COMMON TRAPS & PITFALLS

- people buy purely on price; not all solar panels (or inverters) are created equal.
- the 25 year performance warranty doesn't cover you for all problems that could affect your system.
- if the warranty isn't backed by an Australian entity, you may have to post your panels or inverter back to the country of origin at your own expense to get them tested or replaced!
- Not all installers honour the manufacturers' warranties.
- A poorly-installed system can be dangerous and can directly affect your expected output.

GROSS VS NET METERING

- The Solar Bonus Scheme, which paid homeowners a 60¢ or 20¢/kWh Feed-In Tariff for the power created comes to an end in December.
- Clients will want to change their gross meter to a net meter.
- If clients bought a small system on the old scheme. eg. 1.5kW or 2kW, they may want to add a supplementary system and/or batteries.
- Tip: use appliances more during the day.

HOW SOLAR WORKS WITHOUT BATTERIES

- You get to use the solar electricity your system generates, as it's being generated. This means you buy less electricity from the grid.
- Any surplus power not used at the time of generation is fed back to the grid (you get paid 5-8c/kWh for this).
- At night, when your panels aren't working, you buy the power you need from the grid.

SOLAR WITHOUT BATTERIES SUITS:

People who can use a reasonable amount of their electricity during the day.
For example:

1. young families
2. retired couples
3. those who work from home
4. those who can program appliances to come on when they're not home.

HOW SOLAR WORKS WITH BATTERIES

- You get to use the solar electricity your system generates, as it's being generated. This means you buy less electricity from the grid.
- Any surplus power not used at the time of generation is fed to your battery bank.
- At night, when your panels aren't working, you draw down from your battery bank.
- Any further power required comes from the grid.

SOLAR WITH BATTERIES SUITS PEOPLE WHO:

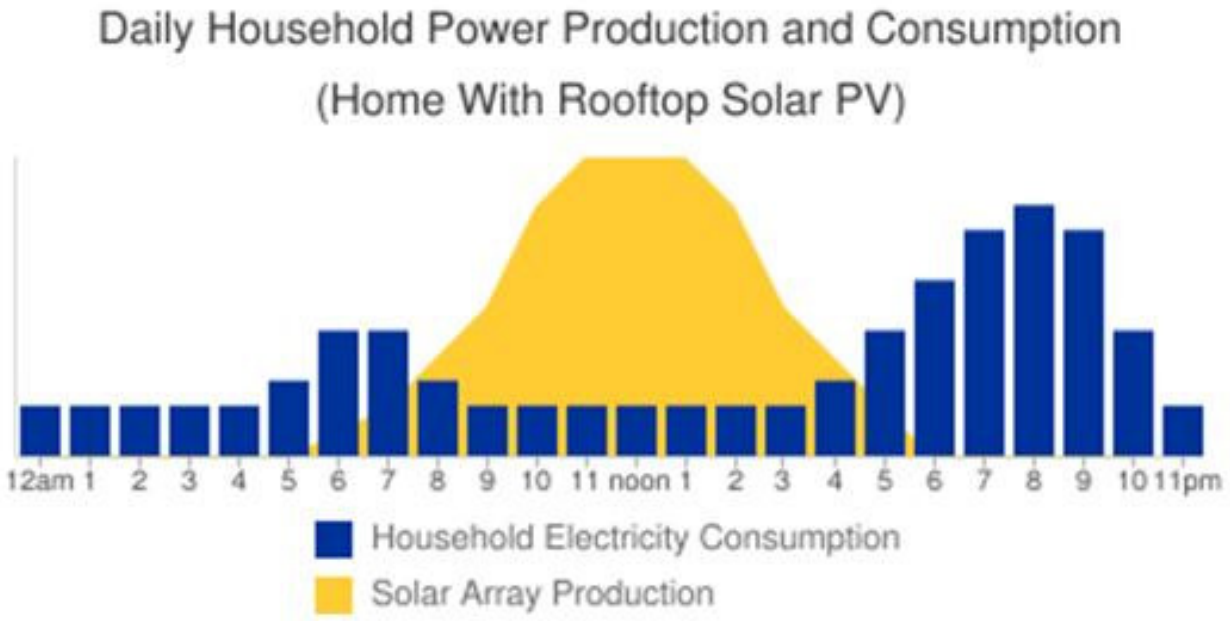
1. use more electricity early in the morning and late afternoon/evening. eg. working families
2. hate exporting their surplus energy to the grid for a pittance.
3. want to avoid ridiculously high peak electricity prices, by charging their batteries at cheap off-peak prices (or from the sun) and using their batteries during expensive peak price periods.
4. want to heavily reduce their dependence on the grid
5. want protection against blackouts and brownouts

BATTERY STORAGE

AUSTRALIA'S ENERGY FUTURE

- Battery storage will revolutionise the way Australians access electricity
- It will allow homes to become more independent of the grid
- Battery storage capacity is expected to grow 50-fold within a decade
- Australia is expected to be the number one market for home battery storage by 2018
- Battery systems, coupled with PV, can actually help networks get much better use out of their assets by smoothing out the demand on the grid

WHY BATTERIES …



STORING POWER

Because the Feed-In Tariff is so low (0-8c/kWh) and the cost of electricity is increasing, there's a surge in demand for battery storage systems.

HYBRID VS OFF-GRID?

- HYBRID: stay connected to the grid:
  - use your panels during the day
  - draw down from your batteries at night; and
  - have the grid as your backup.
  - you can reduce your reliance on the grid by 70-90% with a solar + hybrid battery system.

- OFF-GRID: not connected to the grid:
  - use your panels during the day
  - draw down on your battery system when required; and
  - usually you'll have a generator as your backup.
  - you reduce your reliance on the grid by 100% with an off-grid battery system.

TYPES OF BATTERIES

Main types:

1. Lithium-ion – eg. Tesla, LG, Samsung

PROS:

- provides an immediate and relatively large amount of power instantaneously
- Lasts longer
- Decent storage capacity
- Better discharge
- Scalable

CONS: output degrades over time; potentially dangerous if poorly installed; poor recyclability, costs a little more than other types of batteries

TYPES OF BATTERIES CONT'D

2. Lead acid – eg. Selectronics and Ecoult

PROS:

- relatively low upfront cost
- Proven technology: widely used and well-established
- Longer lifespan
- High recyclability
- Scalable
- Safe to use/install

CONS: fewer cycles than lithium-ion; can't be discharged as deeply; relatively short life cycle; requires lots of space.

TYPES OF BATTERIES CONT'D

3. Zinc bromide – eg. RedFlow

PROS:

- Decent storage capacity
- Suitable for on-grid and off-grid use
- can lie dormant for long periods at any level of charge without deteriorating
- its storage capacity will never decline over its over its lifespan
- Scalable
- 100% recyclable
- Excellent warranty
- Safe to use/install

- CONS: lower efficiency than lithium-ion; lower power output per kWh of storage than most lithium-ion batteries; not well suited for indoor installation

HOW MUCH CAN BATTERIES STORE AND HOW MUCH DO THEY COST?

- Hybrid battery storage systems currently cost between $8,000 – $12,000 for 5–10kWh of storage (plus the cost of a solar power system, if not already installed).

- Off–grid systems start at around $50,000 for 15-20kWh of storage.

REPUTABLE BRANDS

- Hybrid:

- Tesla
- LG Chem
- Samsung
- Enphase

- Off-grid:

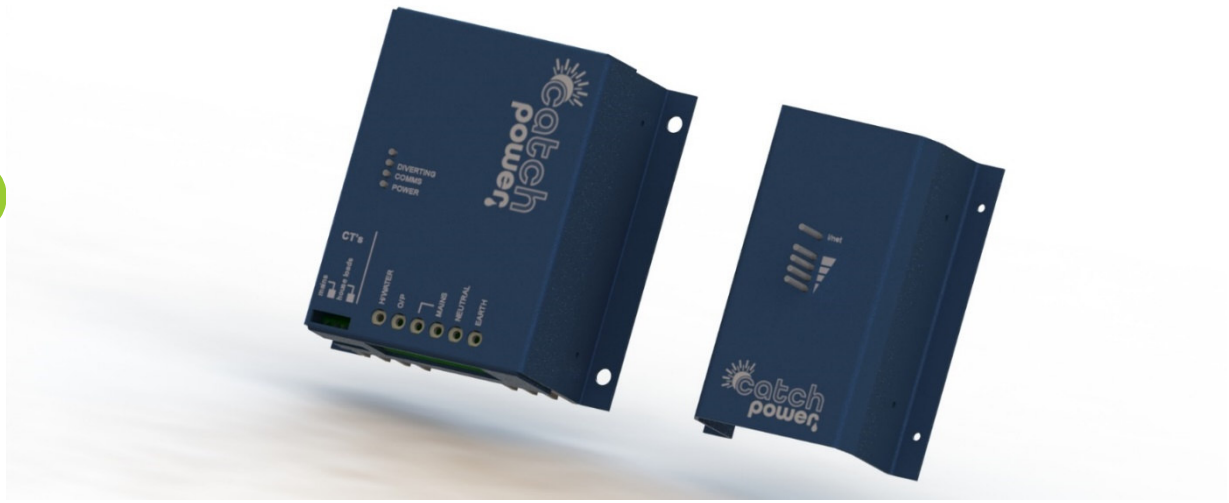
- Selectronics
- Ecoult

ARE THERE CHEAPER ALTERNATIVES TO BATTERIES?

Yes …

catch power™

www.catchpower.com.au



WHY CATCH?

- Heating water is the single largest load in every house (40% of consumption or more!)
- Many homes are vacant when the sun is shining – that solar goes to the grid (where you get paid very little)
- CATCH re-directs surplus solar to your hot water element (or electric underfloor heating)
- CATCH's sophisticated energy monitor allows you to see exactly what's happening with the power in your home

WHAT IS CATCH?

- CATCH is a sophisticated yet simple-to-use solar diverter can be used to heat your:
  - electric hot water system; or
  - solar hot water system (those with an electric booster); and/or
  - electric underfloor heating; and/or
  - hydronic heating
- CATCH is made up of one or two boxes; one that's installed in your meter box and the other plugged into your router.
- The unit's energy monitor shows you how much energy your solar power system is producing; how much surplus energy you're sending to your hot water system and how much you're sending to the grid, if any.

HOW DOES CATCH WORK?

- CATCH (Blue and Red) uses forecasted weather data. For example:
- Lots of solar available tomorrow? Divert the surplus to your hot water system
- No solar available tomorrow? Use all your available solar energy in the house; heat your water from the grid.
- Some solar available tomorrow? Divert a lesser amount to your hot water system and use what you need in the house.
- You can access the data in real time via your private web login.

THE RANGE

There are 3 models in the CATCH range:

- Green CATCH: controls your surplus solar without the need for the internet. Perfect for homes with small solar power systems, no internet and/or low hot water consumption.
- Blue CATCH: connects to the internet to give a huge range of benefits to use and understand the power in your house.
- Red CATCH: same functionality as Blue CATCH, but Red is designed for larger loads or 3 phase households.

WHAT'S THE COST?

- Including the sophisticated monitoring:

  - Green CATCH cost $1,000 supplied and installed
  - Blue CATCH costs $1,700 supplied and installed
  - Red CATCH: TBA

- Once installed, you have access to your household data via your iPhone, iPad or computer (this is set up for clients free of charge).

WHERE TO NOW … ?

STEP 1

Let's meet.

STEP 2

Get advice on the right solution for your clients' individual needs.

STEP 3

Help clients stay in charge of their electricity bill.