

# Inquiry into solar Panel reuse and recycling in Australia

House of Representatives Standing Committee on Climate Change, Energy, Environment and Water

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## Introduction

I work in the solar industry as an Engineer and it worries me how wasteful and 'un-clean' the solar and renewable industry is. I met so many passionate people working in the industry that want to do the right thing, however red tape prevents us from reusing solar panels in so many cases in Australia.

As an industry we are removing and dumping solar panels that are only a few years old when the bulk of these panels will last 20-25 years+.

- New solar panels are so cheap meaning there are less incentives for the installer to recommend options to keep existing panels.
- STCs (Small-scale Technology Certificates) mean reusing panels are not worth it as the credits reduce the panel cost.
- Inverter and Battery Technology are changing at a rapid pace.
- High labour costs in Australia prevent economical recycling and reuse in many cases.
- Too many poor-quality installs where the best or easy option is to totally replace the whole system.

Lots of resources go into making and shipping solar panels and most solar panels have long 20+ year life spans, therefore we should concentrate on reuse before recycling.

## CEC approval list

For PV panels to be sold and claim the governments STCs (Small-scale Technology Certificates), panels must be registered with the Clean Energy Council. The registration of PV panels on the CEC list normally expires after 3 years. This period is OK for claiming STCs as it means the customer is getting sold the latest technology panel and the government is not subsidising old technology.

Brand new panels can sometimes become waste once the panel has expired from the CEC list as they can't be installed on-grid connected systems due to a number of reasons. Even if they can be installed, in cases it's not worth doing as the credits can cover the panel cost.

## The Distribution Network Service Provider roll

The biggest issue is the condition of the Distribution Network Service Providers (DNSP) that the panels must be on the list to be installed on their network. As I live and work in South Australia, our DNSP (SA power networks) requires this. Therefore, any panel older than 3 years can only be used for off-grid applications and hobby projects (RV) etc, leading to a very short install period for many solar panels.

#### Recommendation:

Panels should still be required to be registered on the CES list, however the DNSP should be forced to allow any panel currently registered now or in the past to be installed unless recalled. Panels that are known to have faults or safety issues could be registered on a “Not allowed to be re-installed” list. This would greatly improve the reuse of panels. Many home owners and businesses upgrade their system well before the 25+ year life of the panel. These panels could then be “handed down” for use on-grid connected smaller roof top solar systems or agricultural farms where the efficiency/size of the panel does not matter. Older panels require more surface area to product the same amount of power.

## Closure of the Small-scale Renewable Energy Scheme

STC credit scheme was setup to encourage solar systems at a time the prices were high. Over the years the cost of manufacturing solar panels has crashed. Credits can now cover the purchase cost of panels reducing any incentive to reuse solar panels.

Closure of the Small-scale Renewable Energy Scheme (SRES) scheduled to end on 31 December 2030, should clean up some of the waste as there will be no subsidy or cash incentive to use brand new panels. One would expect that brand new panels would still be preferred, due to warranty cover and ease of installing brand new equipment, however it gives the owner the option to install 2<sup>nd</sup> hand panels due to cost or environmental preferences.

There also seems to be some fear around insurance and installing panels that have ‘fallen off’ the CEC approved panels. This may need to be address if the reuse of panels for grid-connect system was allowed.

## Recycling schemes

Panels that are sent to recyclers, should be tested before recycling. It should always be preferred to reuse and resell PV panels before stripping PV panels for recycling. At this time, there is no demand for 2<sup>nd</sup> hand panels as there are very limited applications like off-grid. With some removal of red tape, there could be a market for 2<sup>nd</sup> life solar panels.

- Grid connected houses with less energy requirements or large roof space.
- Donated to sporting clubs or community groups for grid connected installs.
- Solar pumping in agricultural
- Solar Fences
- Ceiling fans for patios
- Back shed lighting

## DNSP Inverter Requirements.

The solar panel waste problem has increased with the introduction of flexible exports in some states. Now when home and small business owners want to grade their system, in many cases an additional inverter with PV panels cannot be added. The reason for this is that the full site must be controlled to allow the DNSP to limit export in times of oversupply. This normally means older solar inverters

without grid “consumption” meters can’t be used. This consumption meter allows the solar inverter to control and amount of power exported to the grid.

Adding existing solar panels to new inverters can be difficult to do due to standards requiring that the existing installation be brought up to current standards. In most cases it’s easier and cleaner to remove all the current PV panels and inverters and start again creating much more waste. While I totally support Flexible export controls to allow stable operation of the network and to allow more solar to be installed, the waste needs to be considered. Being able to remove PV panels and “hand them down” to some one in need is a much better solution. This would mean only the inverter hardware would be wasted.

## Grant Money for Innovation and not just all recycling.

As we all know, we should only be recycling panels that have failed or at the end of their life. One possibility would be to part fund innovation into panel reuse.

This could be:

- DIY ceiling fans that run from one reused panel. One panel is very safe for DIY install.
- DIY shed lighting using one reused solar panel.
- Solar powered Fridges. Climate change is increasing storms and the most critical appliance in a home is the fridge. Power outages in rural areas can be multiple days.

While this would only use a limited number of solar panels, every bit helps to achieve the goal of reducing waste.

This is a picture of my Solarex 40W panel that is now 33 years old, while it has lost generation capacity, it still tests with around 60-70% of rated capacity. Today it’s still in service charging an off-grid tool battery charging system. We should be reusing as much as we can!



*Figure 1: 33 Year old Australian Made Solarex 40W Panel*

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