



SSROC submission on the *Going Circular in Clean Energy Issues Paper*

**Submitted to the NSW Office of Energy and Climate Change
by email:**

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Introduction

The Southern Sydney Regional Organisation of Councils (SSROC) is an association of 12 councils spanning Sydney's southern suburbs, eastern suburbs, CBD, and inner west and covering a third of the Greater Sydney's population, over 1.8m people. Our Councils manage around 655,000 tonnes of household waste each year; which is about 20% of all NSW household waste.

SSROC provides a forum through which our member councils can interact, exchange ideas and work collaboratively to solve regional issues and contribute to the future sustainability of the region.

We advocate on behalf of our region to ensure that the major issues are addressed by all levels of government. Our current focus includes the environment, transport, procurement, waste, and planning.

Issues around photovoltaics (PVs)

SSROC supports in principle the values and direction advocated by the [Going Circular in Clean Energy issues paper](#) January 2023 which seeks to use the emerging clean energy sector as a place to test and establish circular economy principles within the NSW marketplace. The paper identifies a range of barriers and pressure points in activating a circular transition at all stages and sectors such as manufacturing, biodiversity, water, mining, overseas trade and human resources – of the linear 'make-waste-dispose' consumption pattern.

According to the Clean Energy Regulator (CER), in 2021 [NSW led the country](#)¹ with 116,368 new rooftop installations. However, an impending end-of-use concern is approaching; of the approximately 80 million solar photovoltaic (PV) panels installed on Australian rooftops, up to 25% of these could be uninstalled and disposed by households by 2030. Solar panels are expected to create a cumulative waste volume of [more than 500,000 tonnes, and double that by 2040](#).²

The appendages of this problem are beginning to emerge now: as Councils and the waste industry receive more waste PVs, only about 10 credible solar panel recyclers operate across Australia in this new market. There should be safeguards for compliance and warranty of outcomes. But perhaps more importantly, there are very few opportunities for re-use of panels **even though most are still fully functional**. Retailers are not required to consider a consumer's end-of-life panels if they are replacing old panels.

At present the majority of solar panels still come from China where reporting on supply chain can be very difficult. According to an SSROC source, there is only one (1) panel manufacturer that has made some effort in researching and greening their supply chain. It is suspected that others may follow if it becomes a competitive advantage in the marketplace.

It is largely understood that the sourcing of raw inputs and manufacturing of clean energy products can be a dirty business, requiring extraction of natural resources, water and energy use, long distance transport and waste off-cuts. Furthermore, as councils build in protections and verification of overseas supply chains against Modern Slavery and Fair Trade requirements through procurement – for example SSROC's current PEERS renewable energy joint procurement with 20+ councils – it will become an increasingly difficult and costly area of compliance. The NSW EPA and Commonwealth can assist by funding and appointing an independent verifier or auditor of supply chains, particularly overseas.

¹ https://www.energycouncil.com.au/media/cz3fz3je/australian-energy-council-solar-report_q2-2021.pdf

² <https://www.energymagazine.com.au/managing-solar-waste-getting-ahead-of-the-challenge/>

Product Stewardship

Since COVID-19, labour and input fuel costs have been high, which limits and in fact prohibits scalable manufacturing of renewable energy technology in NSW. Whilst manufacturing for most components remains offshore, the key national issue is recycling/disposal and potentially setting acceptable levels of sustainable/recyclable materials in purchased products. These barriers have left industry and Government unable to credibly specify design standards such as panels made from reused or recycled materials, i.e. 'the start of the circle.'

Local governments generally bear the bulk of the cost of waste management and must overcome the implementation challenges of new recycling/disposal needs. These increasing costs cannot be borne under the tight financial constraints under which they increasingly operate.

[Significant legislation](#),³ upfront levy or waste levy hypothecation, and a National Solar Product Stewardship Scheme are needed to enable local government and industry to deal with end-of-life solar panels.

For a product stewardship scheme to be successful, it needs to be introduced with a significant funding commitment from the federal government to invest in the capacity and capability of the recycling and remanufacturing industry in Australia so that it can adequately respond. Investment is urgently needed to develop domestic reprocessing manufacturing facilities and end markets for recyclable materials such as plastic, glass, and rare earth and other minerals.

Jobs Plan

The discussion paper notes on page 6: "A circular economy for clean energy technologies can help decouple economic growth from the use of finite virgin resources. This will promote the recovery and reuse of materials, reduce environmental impacts, enhance local manufacturing, and create jobs in NSW." SSROC agrees, but where is the coupling of employment opportunities associated with circular design, recovery and reuse of energy making and storage products? Recycling of waste is known to create at least [nine times](#)⁴ the number of jobs as disposal, and the re-use/repair of waste can create up to 30-fold the number of jobs as disposal. This must surely be a serious driver for a NSW-supported transition to circularity. SSROC suggests that targets are established for the 'green collar jobs' (or similar jargon) that are essential to achieving a circular economy, and companies are incentivised to design and prepare for maximum recovery of materials.

Circular Economy Plan for NSW

SSROC and our member councils support a 'Circular Economy Plan' for NSW as proposed in the discussion paper and would like to be involved in its preparation and implementation. SSROC offers the following points:

- The Plan should apply to the energy sector in NSW, but hopefully extend to Australia by working with the Federal, State and Territory Ministers as outlined.
- It also needs to necessitate a First Nations voice at the design stage - the [First Nations Clean Energy Network](#)⁵ is a good place to start.
- The Plan should seek to consult across sectors and with peak bodies, such as the Smart Energy Council, Energy Lab, and local Universities with circularity and innovation expertise.

³ <https://www.energymagazine.com.au/managing-solar-waste-getting-ahead-of-the-challenge/>

⁴ <https://www.tellus.org/pub/More%20Jobs,%20Less%20Pollution%20-%20Growing%20the%20Recycling%20Economy%20in%20the%20US.pdf>

⁵ <https://www.firstnationscleanenergy.org.au/>

- The Plan should raise the objective, for example for ‘cradle to cradle’ rather than ‘cradle to grave’ and seek to ‘design-out’ rather than ‘minimise’ raw materials and residual waste.
- SSROC understands that Macquarie University and Griffith University have released research on Solar panel recycling and circular economy.
- A circular economy is, by definition, non-extractive. The plan should focus on design which avoids the use for raw materials and prioritises innovation, alternative materials, reuse and component recycling through dismantling, and the use of recycled materials in manufacturing.
- A key action will be NSW’s role for [National Product Stewardship](#)⁶ for PV, EVs, and components - outlining the role for producers, retailers, and consumers.
- Design should preference non-extraction which would lead to innovation such as [salt-batteries](#)⁷ to replace lithium.
- The Plan should include more local case studies where possible. SSROC is aware of several potential local operations worthy of investigation as potential good examples:
 - [The local company 5B](#)⁸: low impact agriculture and Design for Manufacturing and Assembly (DFMA).
 - [Allegro Energy](#)⁹: batteries made from common materials.
 - The [Very Small Particle Company](#)¹⁰: repurposes and refines old batteries – often from overseas – to make new batteries, and are proposing to set up a facility in QLD with new Australian refinement technology.
 - [Graphite Energy](#)¹¹: setting up a new thermal storage manufacturing facility in NSW using graphite that is heated using renewable energy to store heat at 700 degrees for 8 hours.
- DFMA and disassembly/processing for re-use (in addition to recycling) needs to be a feature of the plan.
- Right to Repair legislation has been featured in policy discussions around higher-order reuse and avoidance of waste. The Clean Energy sector is a good place to start.
- To influence the design focus and selection of materials as outlined, the Plan needs to consider:
 - Upstream supply chain carbon emissions (embodied emissions).
 - Downstream emissions at end of life.
 - Resource extraction through using virgin materials which may impact ecosystems and communities.
 - Pollution impacts in materials processing and manufacturing supply chains.
 - Impacts from deconstruction and how to manage materials and products at end of life.
- Reporting and transparency of data between recyclers and waste contractors, and on behalf of government and community managers will be a critical component. How much is being recovered and returned to the local economy? How much is exported or landfilled?

⁶ <https://www.energymagazine.com.au/managing-solar-waste-getting-ahead-of-the-challenge/>

⁷ <https://www.sydney.edu.au/news-opinion/news/2022/12/07/low-cost-battery-built-with-four-times-the-capacity-of-lithium.html>

⁸ <https://odoo.5b.com.au/>

⁹ <https://www.allegro.energy/>

¹⁰ <https://vspc.com/>

¹¹ <https://www.graphiteenergy.com/>

Will component, product or mineral reuse be accurately accounted for, and how can 'greenwash' be prevented?

Caution about a circular transition

SSROC is encouraged that the NSW Government appears to be interested in a framework for circular initiatives in clean energy. However, SSROC cautions that normal economic drivers do not yet exist to drive a compliant and robust program of work. From design stage to overseas compliance and importing, and from first-use, reuse and recovery, any Plan or framework must be substantially well-funded, using years of evidence from multiple sectors provide accountability and understand the complexity of issues. The discussion paper is a good start, but should be followed up with a co-design process, materials flow analysis, infrastructure and market gap analysis. As of this writing, there is no sense of the level of proactivity necessary to lead a transition being in place.

Furthermore, local government and industry should not be left to deliver solutions without substantial backing, certainty of delivery of outcomes, and transparent anticipation and sharing of risk.

Finally, the reality is that communities and businesses are both increasingly engaged with circular concepts and opportunities, but also perversely consuming more and routinely sending useable materials to landfill. Making a meaningful shift requires both pricing mechanisms and a massive education campaign, ideally in coordination from multi-state and national partners and vested interests.

In summary, our recommendations for this Discussion Paper and the establishment of a Circular Economy Plan (for clean energy) in NSW include:

- 1. Establish the push of pricing or scheme incentives for solar PV recyclers to enter the market, as well as the mechanism for compliance and protection of environmental outcomes.**
- 2. Provide support, audit services or independent investigations into regulating overseas supply chains with respect to Modern Slavery and Fair Trade requirements**
- 3. Work with industry and Government to support a tiering system for environmentally compliant suppliers of clean energy products. State Government procurement can lead the way with a panel of circular suppliers and recyclers for clean energy products.**
- 4. Mandate or establish co-regulatory product stewardship schemes for recycling clean energy products to stem the approaching disposal crisis, especially for PVs and lithium-ion batteries.**
- 5. Hypothecate waste levy revenue to support changes to legislation and to fund a major waste education campaign for clean energy product reuse and disposal.**
- 6. Provide pricing incentives or training for reuse and dismantling of clean energy products to harvest rare earths and other minerals.**
- 7. Establish and incentivise companies to set jobs targets to boost the clean energy reuse and recycling sector.**
- 8. Consider SSROC suggestions above with relation to a Circular Economy Plan for clean energy products in NSW, with a focus on designing out waste, repairability and market economic incentives.**



SSROC is grateful for the extension of one week to the deadline for submissions, which has enabled us to consult with officers of our member councils. However, please note that this submission has not yet been endorsed at a formal meeting of SSROC. I will contact you should any issues arise as a result.

Thank you for this opportunity to contribute to the discussion. For any enquiries, please contact me by email: ssroc@ssroc.nsw.gov.au, or 02 8396 3800.

A handwritten signature in black ink that reads "H Sloan".

Helen Sloan
Chief Executive Officer
Southern Sydney Regional Organisation of Councils
8 March 2023