

CONSUMER GUIDE TO RESPONSIBLE RECYCLING OF BATTERY STORAGE SYSTEMS

STEPS TO SAFE HANDLING,
COLLECTION, STORAGE, AND
PROCESSING OF BATTERIES
AT END OF LIFE



AUSTRALIAN BATTERY RECYCLING INITIATIVE



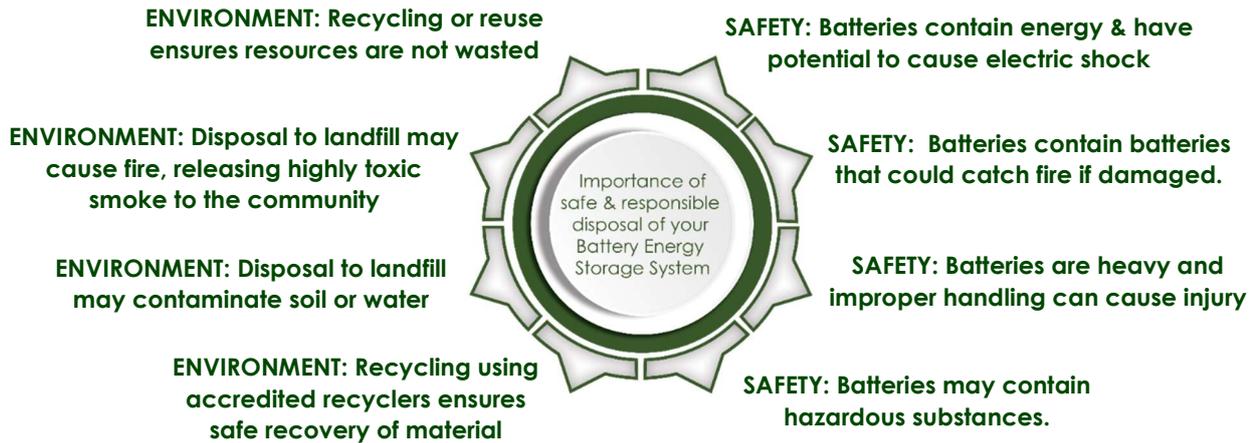
CLEAN
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PURPOSE OF THIS GUIDE

This guide provides you as a consumer an overview of the issues that need to be considered for the safe disposal and environmentally responsible management of used battery storage systems.

WHY IS IT IMPORTANT TO RECYCLE YOUR BATTERY STORAGE SYSTEM?

Depending on chemistry type, batteries may contain harmful and dangerous materials such as acid, lithium and heavy metals (e.g. cadmium, cobalt and lead).



You can be part of the solution

Ensure your batteries are managed responsibly and are recycled or reused, to:

- Enable the recovery and reuse of lead, iron, plastics, aluminium, copper, lithium, cobalt and electrolyte
- Divert toxic and hazardous materials from landfill
- Ensure that batteries are managed safely
- Prevent injury due to contractor training and experience in safe lifting and handling
- Minimise the risk of damage and potential for fire during removal and transport
- Protect system components during de-installation, improving potential for reuse in a second life

SIMPLE STEPS TO SAFE AND RESPONSIBLE BATTERY DISPOSAL

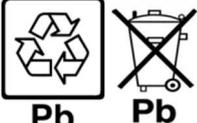


STEP 1: When buying your battery storage system, find out if your batteries contains recycled content and are recyclable

The most important step is to plan-ahead. When buying a system ask your supplier if they have an 'end-of-life' plan and if not, whether the battery system contains recycled content and if it is recyclable. Recycling processes are evolving quickly so always check at the time of purchase, the following can be used to inform your discussions.

Recyclability of different battery types

Safety, transport, recycling, and disposal issues varies widely and will depend on the type of battery. Many batteries look similar and may not be labelled with a chemistry symbol. If this is the case and you have not gathered this information at the installation stage, it is important to contact the supplier to find out the chemistry of your battery. The following will help you identify battery type and assist in finding an appropriate recycler.

Battery Type	LEAD ACID	LITHIUM ION (LI-ON)	NICKEL CADMIUM	OTHER
Labels	 Pb Pb	 Li-ion	 Ni-Cd Cd	New technologies may not have established recycling systems. Consult with the supplier or manufacturer for help with finding a recycler
Recyclability	Close to 100%	Most Li-ion batteries are recyclable although recycling technologies are still being developed.	Used Ni-Cd batteries are recyclable, with a diversion rate from landfill of over 95%	

Step 2: Learn about the risks of deinstallation

Most batteries are classified as a hazardous waste and/or a dangerous good at the end of their life. They must be managed carefully to avoid any environmental damage and to protect the health and safety of your workers and the general community. It is important not to deinstall your own batteries in order to avoid serious risks and ensure systems are properly recovered for recycling.

Batteries may contain harmful and dangerous materials such as acid, lithium, or heavy metals such as cadmium, cobalt, and lead. Batteries that require disposal must be stored safely in a cool dry place out of the reach of children and with any exposed terminals taped up.

DO NOT ATTEMPT TO DE-INSTALL A BATTERY YOURSELF! Avoid injury or property damage through:

- Electrocutation from the electrical charge stored in your batteries
- Fire arising damaged or charged batteries
- Heavy lifting
- Acid spills

Step 3. Plan for safe and responsible end-of-life management of your system

Prepare an end of life plan your battery system in partnership with your supplier, that documents:

- Information about your battery's chemistry type and how the product may recycled
- Defines end-of-life – how will we know when a system is dead
- The steps involved in removing and disposing an Energy Storage Device that has reached its end-of-life

In working with a supplier to design it is recommended that you consult the CEC "Guide to Installing a Household Battery Storage System" to explore options for investing in your home energy storage batteries.

Step 4. Find an accredited installer to advise you on deinstallation

If you have installed a system with an accredited installer who provided you with an end-of-life plan, contact the installer and arrange for de-installation. If not, you may need to seek assistance from a qualified de-installer. The benefit of using a CEC Accredited Designer/Installer is that the CEC can resolve complaints involving workmanship installation issues that breach the Accreditation Guidelines or relevant Australian Standards. This only applies to individual tradespeople who hold CEC accreditation and does not cover retailers. Complaints can be registered online at solaraccreditation.com.au/consumers/solar-pv-warranties-complaints-and-disputes.html

Step 5. Ensure your battery system is disposed of with a responsible recycler

Work with your installer or de-installer to ensure recycling is conducted by a responsible company to collect, transport and/or recycle your system. Some of the questions that you need to discuss the best the best methods to deinstall your system, include:

1. Do they intend to reuse or recycle your system components and if so, what safety measures do they have in place to minimise risks?
2. Who will transport the batteries, and do they have a licence to collect and transport your battery type? Most batteries require a licence to transport hazardous waste within Australia.
3. Who will recycle the batteries, will recycling be conducted in Australia, and is the recycler qualified to recycle the specific chemistry type and components?
4. What happens to the batteries or other system components they collect?

(see Planet Ark's checklist: [Choosing the right recycler](#) for more information)

RECYCLERS BY BATTERY TYPE:

To help you with your search, listed below are some examples of recyclers who will be able to collect your battery system at its end-of-life. Please note that this list is intended as a starting point and is not exhaustive. For more information, visit the [ABRI's website and search for your battery type on the menu provided](#).

LEAD ACID BATTERIES	LITHIUM ION (LI-ON) BATTERIES	NICKEL CADMIUM BATTERIES
<ul style="list-style-type: none"> ✓ Battery World ✓ Century Yuasa Batteries ✓ Club Assist Corporation ✓ CMA Ecocycle ✓ Dodd & Dodd Group ✓ Enirgi Power Storage ✓ Exide Batteries ✓ Gold Coast Resource Recovery ✓ Lex Enviro Services ✓ Marshall Batteries ✓ R&J Batteries ✓ Sims E-Recycling Solutions ✓ Supercharge Batteries ✓ Watts Batteries 	<ul style="list-style-type: none"> ✓ CMA Ecocycle ✓ Envirostream Australia ✓ MRI (Australia) ✓ Powercell (Australia) Trading ✓ PF Metals ✓ Sims E-Recycling Solutions ✓ TES ANZ Pty Ltd 	<ul style="list-style-type: none"> ✓ CMA Ecocycle ✓ Dodd & Dodd Group ✓ MRI (Australia) ✓ Powercell (Australia) Trading ✓ Sims E-Recycling Solutions ✓ Watts Batteries

Australian Battery Recycling Initiative	Clean Energy Council
<p>The Australian Battery Recycling Initiative (ABRI) is a not-for-profit association established in 2008 to promote responsible environmental management of batteries at end-of-life.</p>	<p>The CEC is the peak body for the clean energy industry in Australia. We represent and work with hundreds of leading businesses operating in solar, wind, hydro, bioenergy, marine and geothermal energy, energy storage and energy efficiency along with more than 5,000 solar installers.</p>
www.batteryrecycling.org.au	www.cleanenergycouncil.org.au

Acknowledgment

The guidelines have been prepared by the Australian Battery Recycling Initiative (ABRI) and the Clean Energy Council (CEC) as Guidance only and must be used in conjunction with your own due diligence processes. This is particularly important given that technology and recycling options are rapidly evolving.