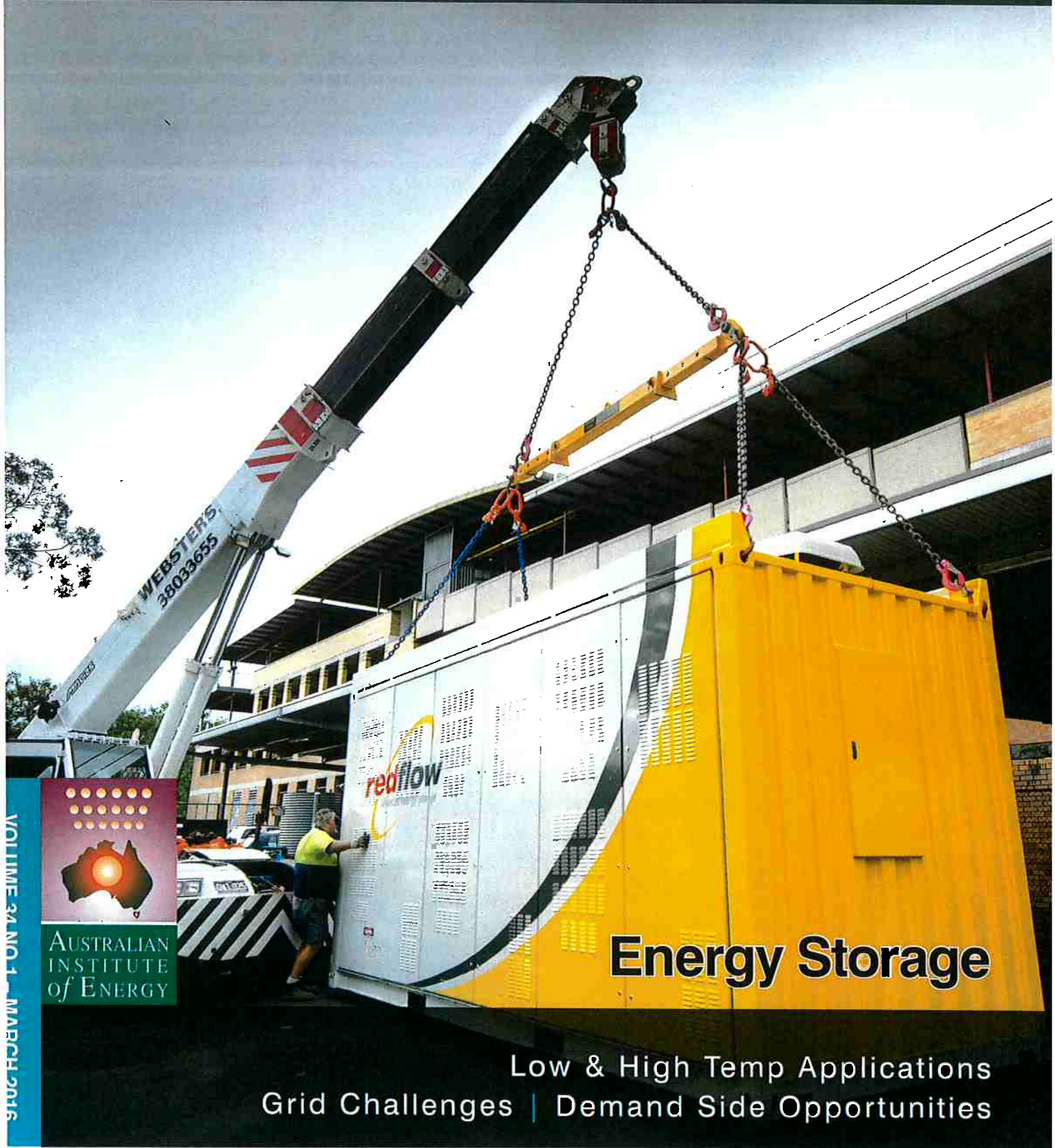


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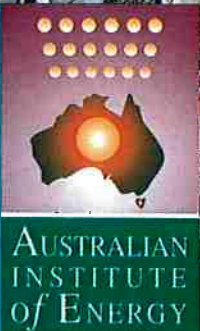
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IS IT TIME TO ESTABLISH A NATIONAL REGISTER FOR STATIONARY ENERGY STORAGE?

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Energy storage is predicted to boom in Australia, with Bloomberg New Energy Finance predicting there will be 33GW of battery storage installed by 2040¹.

There are already signs that the energy storage market in Australia has started to take off, with investment bank UBS stating that “solar and storage is already cost competitive for Australian households”².

This process is likely to accelerate in the next 12 months with 146,000 customers in New South Wales with 342MW of installed solar photovoltaics (PV), coming off the NSW Solar Bonus Scheme³.

The growth of distributed generation coupled with energy storage will fundamentally change Australia's National Electricity Market (NEM). However, for storage technologies that “have the potential to touch every point of the electricity sector”⁴ remarkably little is known about the current state of the Australian energy storage market.

While accurate statistics have been gathered for Australia's 2.2GW of pumped hydro storage⁵, we only have estimates for the both installed grid-connected battery storage systems and the off-grid battery storage systems.

These estimates vary widely by source with some Australian industry experts estimating there are currently three times more installed batteries than the Clean Energy Council (CEC) estimates.

The lack of accurate data within the sector is problematic. It affects a wide range of areas including market design, system reliability and planning, fire risk management, and product recalls.

It is arguable that a number of these risks could be better managed, if reliable data was publicly available, possibly through a regulated national register for stationary energy storage.

Market design, system reliability and planning

The lack of clarity about the current volume of energy storage in the NEM and its rate of growth is creating uncertainty and risk. It makes long-term market planning difficult, creates unnecessary unknowns in modelling decisions about future infrastructure development, and has the potential to affect system reliability.

A further concern relates to the impact that the uptake of storage will have on network costs. Network costs currently make up 51% of the average Australian electricity bill⁶.

As electricity costs continue to rise, and households lose the benefit of their Solar Bonus Schemes, questions are

increasingly being raised about the possibility of the ‘death spiral.’

This occurs when more and more customers seek to avoid or offset their network costs by using solar and storage, or in a more extreme case, going entirely off-grid⁷.

This places an increasing cost burden on the remaining customers, leading more and more of them to consider deploying energy storage.

While the risks of this phenomenon may have been overstated, we simply don't know the scale of the problem without accurate data.

It is enough of a problem that network tariff reform in conjunction with cost-reflective pricing has already commenced in many jurisdictions. Different jurisdictions are tackling this problem in different ways.

For example, Queensland increased their ‘per day electricity supply charge’ for all grid-connected customers⁸, while South Australia has removed the availability of feed-in tariffs for electricity exported from properties with solar and storage installed⁹.

These processes could benefit from the creation of a national register for energy storage.

Fire risk management

The chemical make-up of lithium-ion batteries means that, when placed under conditions of extreme heat and/or high pressure, they are likely to combust, release hazardous fumes, and possibly also explode¹⁰.

This presents a real risk in both bushfire and house fire scenarios, with emergency responders requiring specialised equipment such as breathing apparatus and different extinguishers, such as carbon dioxide (CO₂), dry powder or foam, depending on the battery chemistry.

Unfortunately, the lack of a national register means that when emergency responders are approaching a property, they often do not know if a stationary energy storage system is present.

Further, due to the classification of batteries as hazardous materials, once a battery has been identified on a property the protocol is that the fire cannot be dealt with by the Rural Fire Service (RFS) or Community Fire Unit (CFU) volunteers but rather must be dealt with by Fire and Rescue NSW.

To put this in context, if you live in Tibooburra in NSW, the closest Fire and Rescue NSW Station is Broken Hill, some 335km away. This could create serious issues if there is a significant uptake in storage in rural, remote and islanded communities.

This is of particular concern given that as battery storage systems are already an economically viable alternative to diesel storage and generation systems in many of these communities.

In some communities, there is evidence that individual households are choosing to install storage to provide them with a source of power for their water pumps in the event that the networks will switch off grid electricity during a bushfire.

If there is a high uptake in rural and remote communities, decisions will have to be made about whether RFS or CFU volunteers receive training and the specialised equipment needed to extinguish such fires.

Without knowing the location of battery storage systems, not only are individual firefighters being placed at unnecessary risk, but proper regional risk assessment and appropriate resource allocation and training are unable to occur.

Product recalls

Batteries have been the subject of a number of international recalls in recent years, with problems including electrical malfunction, fire risk, the risk of electric shocks and battery leakage.

Historically, product recalls in Australia have had limited effectiveness, with only 39% of products recalled by the Australian Competition and Consumer Commission (ACCC) being returned¹¹.

However, where a product poses a risk of injury to a consumer – a quality that arguably many of the previous product recalls affecting batteries possess – the Minister has the power to order a compulsory recall¹².

The effectiveness of compulsory recalls is dependent on the traceability of goods so that affected consumers may be contacted. Without a national register, affected consumers may not be aware of the existence of a recall, especially if their supplier or installer fails to keep proper records or goes out of business.

The solution – a national register for stationary energy storage

Energy storage is a necessary, and indeed, inevitable development within the Australian energy market. It presents a range of opportunities from deferring network expansion and grid augmentation, enabling more self-consumption of solar power and reducing diesel costs for mining and remote communities.

However, there is a clear need for accurate and publicly available data within the sector to enable better market planning and to ensure the safety of consumers and emergency responders.

This data set could be easily established by requiring either suppliers or installers to register all of the energy

storage systems that they sell/install on a national register maintained by the Clean Energy Regulator (CER).

As outlined above, the creation of such a register would have a range of benefits from enabling better market planning, improving fire management and increasing the effectiveness of product recalls.

References

1. *Bloomberg New Energy Finance, 'New Energy Outlook 2015', June 2015: www.bnef.com/core/new-energy-outlook*
2. *Giles Parkinson, 'UBS: Solar + storage is cost effective already in Australia', Renew Economy, November 14 2014: reneweconomy.com.au/2014/ubs-solar-storage-is-cost-effective-already-in-australia-20949*
3. *Department of Industry, Resources and Energy, Parliament of New South Wales, Progressing the NSW Renewable Energy Action Plan-Annual Report 2014 (2014) 11.*
4. *Australian Energy Market Commission, 'Integration of Energy Storage- Regulatory Implications', Discussion Paper, October 9 2015: www.aemc.gov.au/Major-Pages/Technology-impacts/Documents/Integration-of-Storage-Discussion-Paper.aspx*
5. *Craig Chambers, 'Enlivening Energy Storage: Technology, Status, Drivers and Economics', Presentation to the Australian Institute of Energy, Sydney, 29 July 2014: www.aie.org.au/AIE/Documents/SYD140729_Presentation_Craig_Chambers.pdf*
6. *Department of Industry, Resources and Energy, Commonwealth, The Facts on Electricity Prices, 2013: www.industry.gov.au/Energy/EnergyMarkets/Documents/ELECTRICITY-PRICES-FACTSHEET.pdf*
7. *Morgan Stanley, 'Solar Power & Energy Storage', July 28 2014: energystorage.org/system/files/resources/morgan_stanley_solar_power_energy_storage_blue_paper_july_19_2014.pdf*
8. *Department of Energy and Water Supply, Queensland Government, Current Electricity Prices, 15 November 2015: www.dews.qld.gov.au/electricity/prices/current*
9. *Water, Energy and Environment, South Australian Government, Solar Feed-in Scheme, 16 February 2016: www.sa.gov.au/topics/water-energy-and-environment/energy/energy-supply-and-sources/renewable-energy-sources/solar-energy/solar-photovoltaic-systems/solar-feed-in-scheme*
10. *Handheld Battery Recycling- Guidelines for Lithium Batteries, 2016: www.sustainability.vic.gov.au/-/media/resources/documents/services-and-advice/households/a-to-z-of-household-waste-disposal/batteryback/battery-recycling-safety-guideline-6---lithium-pdf.pdf?la=en*
11. *Australian Competition & Consumer Commission, Commonwealth, 'Review of the Australian Product Safety Recall System', 2010: www.accc.gov.au/system/files/Review%20of%20the%20Australian%20product%20safety%20recalls%20system.pdf*
12. *Ibid, 4.*