Smart Energy

AN OFFICIAL SMART ENERGY COUNCIL PUBLICATION

THE RISING POWER OF INDIA

A renewables and climate friendly federal budget
Smart funding to grow renewables
Showtime fun: Smart Energy in words and pictures
Electrifying Parliament – a spark of an idea
The vast yet imperilled Pacific
Distributed energy certainty

VOLUME 43. ISSUE 170. WINTER 2023

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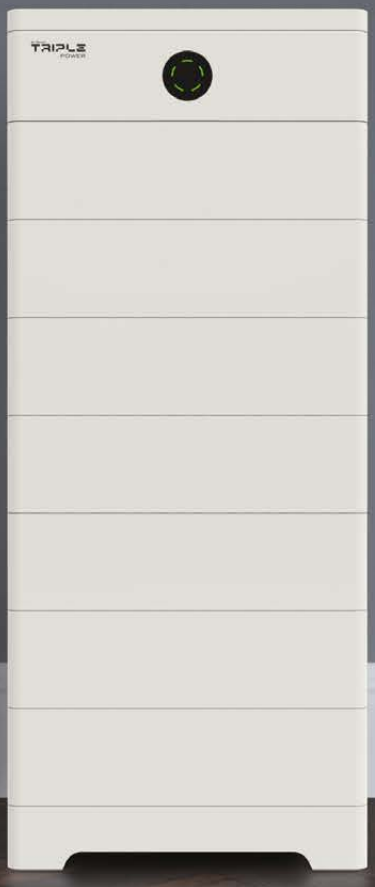

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MAGAZINE DESIGN
Mitzi Mann

The Smart Energy Council acknowledges the Traditional Owners and Custodians of the lands on which we work and pays respect to Indigenous Elders past, present and emerging.

Smart Energy was first published in 1980 as *Solar Progress*. The magazine aims to provide readers with an in-depth review of technologies, policies and progress towards a society which sources energy from renewables rather than fossil fuels.

Smart Energy is published quarterly.

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COVER *Goodwill and strong collaborations were the hallmark of the Smart Energy Council's Delegation to India which coincided with PM Albanese's visit*

SMART ENERGY COUNCIL

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WELCOME

John Grimes, Chief Executive
Smart Energy Council

IF WE HAVE ANY CHANCE of stopping runaway climate change, we need all countries to act. But we especially need the biggest and most polluting economies to shift, namely the United States, China and India.

In early May I spoke about the massive growth and investment in the Indian smart energy industry. India is on track to produce 100GW of solar modules each year by 2026. This year India will reach a milestone of 36GW per annum.

In late May I was in China. The scale and pace of Chinese industry development since I was last there in 2019 is staggering. So far this year China has installed around 50GW of new solar capacity. That puts China on track for over 100GW of new solar PV installed in 2023 alone. (Australia, 2023, around 5GW.)

And boy, electric vehicles are EVERYWHERE. Today, in China, around one-third of new cars sold are EVs. They are seen right across China. They look like spaceships. Petrol driven cars are finished. Dead as a dodo. And new Chinese EV car brands will take over the world.

And how about the United States. A $A1 trillion support package that could unlock an additional $A2 to $A3 trillion of private smart energy investment in that country.

And at home? At last a federal government with a clear vision for a renewable energy superpowered future. To harvest the world's cheapest and cleanest energy to value add our fantastic mineral resources, and massively increase the value of our exports to the world.

The year 2023 is proving to be a watershed, a time of action. The massive global economies all moving with speed. Proving that when it comes to tackling climate change, we need everything, everywhere, all at once, again and again and again.

IN MY VIEW

Karrina Nolan is Executive Director of Original Power and a member of the Steering Group for the First Nations Clean Energy Network

AUSTRALIA'S ENERGY TRANSITION will require access to large areas of land, waters and seas to accommodate thousands of kilometres of new transmission lines for storage and generation projects, and access to critical minerals.

Interaction between the clean energy sector and First Nations is inevitable – First Nations rights and interests in lands and waters are formally recognised over more than 50% of Australia.

Enabling and empowering First Nations to play a central role in the transition goes beyond social licence issues. We must include and embed First Nations as partners in our energy system transformation to deliver ongoing mutual benefits for the whole country.

And while Australia might be a world leader in the deployment of rooftop solar, with approximately one in three houses realising benefits that include reduced energy bills, these benefits are unevenly distributed. Research shows that First Nations residents of public housing in remote Australia using prepay metering experience frequent involuntary and unilateral 'self-disconnection' from energy services – a known indicator of insecurity.

With many First Nations communities on the forefront of the devastating impacts of climate change, a lack of energy security can mean living without energy, which means living in the stifling heat as the climate warms, without a refrigerator to keep food fresh and medicines cool, and without the possibility of recharging phones and computers. Disconnections from energy have disastrous consequences on health, well-being, family and economic life, culture and children's education.

Similarly, many remote First Nations communities get their electricity from diesel generators. Burning diesel is expensive and is known to be harmful to the environment and public health. Supporting community-driven clean energy projects can lead to improved economic development, energy independence, with necessary environmental and health outcomes.

That's why the First Nations Clean Energy Network was launched in November 2021.

Led by a Steering Group of First Nations peoples, we are bringing our First Nations communities into the energy transformation, to sit at the table, and to be a part of developing the policies and rules for the energy transition, while working in partnership with governments and industry.

This is a critical moment for us to work together and to do things differently. The energy transition cannot be done without First Nations consent, management and knowledge. The Network is a platform for us to work collectively together, driven by First Nations leadership and communities, to tackle with urgency the task of transitioning the energy system and to reset the way our economy extracts from this land.

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INDUSTRY DEVELOPMENTS

BIG DEALS Abolition of the Energy Security Board, a federal budget that delivers positivity for renewables including a $2 billion Renewable Hydrogen Fund; a new Net Zero Transition Authority; a $15 billion National Reconstruction Fund; and unlocking $1.6 billion for home electrification and a Small Business Energy Incentive to support electrification… just some of the major announcements in recent weeks welcomed by the Smart Energy Council.

Further, in late May Prime Minister Narendra Modi met with Prime Minister Albanese to sign an all-important **Australia India Green Hydrogen Taskforce** which the Smart Energy Council, through Zero Carbon Hydrogen Australia, hails as providing "Confidence to all stakeholders, including shareholders, financiers and off-takers alike that the Australian and Indian Governments are serious about green hydrogen."

The partnership builds on the critical work undertaken by the Smart Energy India Delegation in March.

(Read more on page 26.)

50GW FOR THE WEST Western Australia has developed a blueprint for 50GW of new energy capacity in two decades, predominantly large-scale wind and solar (41.8GW) to meet growing demand from electrification, new green industries, critical minerals and renewable hydrogen.

Energy Minister Bill Johnston wrote "Electrification of industries, transport and homes is key to reducing greenhouse gas emissions…. an expanded grid is the most cost-efficient way of supporting decarbonisation as it can reach further for wind and solar."

The announcement comes at a good time for Smart Energy Council which is staging a conference in Perth in late June. See page 68.

NEW ENGLAND SOLAR STAGE 1 which is the largest solar farm in NSW and one of the largest in Australia has been officially opened by Energy Minister Chris Bowen.

The first 400MW stage of the plant involved the installation of almost one million solar panels; work to scale up to 720MW will start next year.

MEANTIME IT'S SLOW GOING FOR SNOWY 2.0 – technical hiccups due to engineering complexities, delays of at least 12 months accompanied by a blowout in costs… the news gets no better for Snowy 2.0.

"This is crucial for our energy future, eventually it will supply enough storage for three million homes for a week," Minister Bowen said at the Smart Energy conference. When pressed he suggested late 2028 or 2029 could now be the operative dates…

STAYING ON STORAGE but In better news is the 40GW of big batteries in the pipeline as demonstrated by Marija Petkovic of Energy Synapse in tell-all graphics screened at the Smart Energy conference.

VALUE ADDING According to the Future Battery Industries Cooperative Research Centre the battery industry could provide $16.9bn pa in value-add and support 61,400 local jobs by 2030.

The report *Charging Ahead – Australia's Battery Powered Future*, considered global dynamics on the potential growth of Australia's battery industries, as a major supplier of battery minerals. With the support of the $15 billion National Reconstruction Fund and the $1 billion value add in resources sub-fund, Australia's battery industry could become a global leader.

THE SMART ENERGY COUNCIL extends congratulations to Scott Hamilton on his appointment as Adjunct Professor at Monash University. In this role, Scott will work with colleagues on researching renewable hydrogen and energy transition pathways for a sustainable energy future.

A beaming Professor Scott Hamilton, Senior Adviser to Smart Energy Council, steps into part-time academia

And he relishes the opportunity to help foster and facilitate impactful interdisciplinary research in collaboration with trusted industry partners in the smart energy sector.

Scott is also a Senior Adviser to the Smart Energy Council.

The Australian Environmental Grantmakers Network has partnered with Philanthropy Australia to launch **THE CLIMATE LENS**, a powerful and flexible tool designed to help inform funders, philanthropists and Australians interested in climate action by breaking down the unique impacts of climate change on various social issues. *http://aegn.org.au/climate-lens*

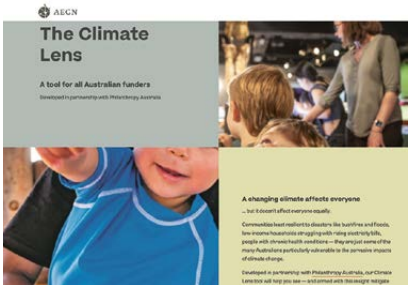

IMAGE COURTESY AEGN

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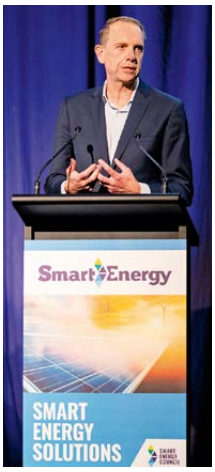
INDUSTRY DEVELOPMENTS

Renowned economist Ross Garnaut and economic expert Rod Sims have formed **THE SUPERPOWER INSTITUTE** to help Australia seize the extraordinary 'once in a century' economic opportunities of the post-carbon world with its perfect position to be a superpower in the world of net zero emissions.

On the elite board of the NFP Institute which formally launches later this year are Dr Gabrielle Kuiper and Simon Holmes à Court, who is also a Director of the Smart Energy Council and founder of Climate 200.

The **CLEAN ENERGY INVESTOR GROUP** has released research highlighting that investment of $421 billion is needed for Australia to align with growing global investor ambitions for limiting climate change to 1.5°C.



The modelling by consulting firm Baringa, in the report *Decarbonising Australia: Accelerating our energy transition with a credible 1.5°C scenario* highlights the coordinated efforts needed across the National Electricity Market.

Speaking at the Smart Energy conference CEIG's Simon Corbell (pictured) highlighted the "Dire state of play over the criticality of climate change and the impact on marginalised and disadvantaged communities around the world and already fragile and stressed ecosystems.

"We need to raise ambition to avoid most calamitous impact of warming climate and this means a very big build out of renewables – an additional $116 billion of investment on top of current commitments… and early closure of coal plants." We wish.

ONE STEP FORWARD, ANOTHER BACK Early in May two coal mines proposed for Queensland were cancelled after failing to prove their environmental credentials, despite repeated requests.

"I've been clear I will have zero tolerance for businesses who refuse to provide adequate information about the impact their projects will have on nature," Environment Minister Tanya Plibersek said, "If companies aren't willing to show how they will protect nature, then I'm willing to cancel their projects – and that's exactly what I've done."

A couple of weeks later however Plibersek approved the Isaac River coal mine which will spew 7,000,000 tonnes of emissions over its lifetime and is contrary to climate action and goals which demand a halt to all new coal mines. The approval for the coal mine has caused outcry among environmental and climate action groups.

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RECYCLED CONTENT RENEWABLE ENERGY FOREST MANAGEMENT CHLORINE FREE MANAGEMENT SYSTEMS CARBON NEUTRAL CERTIFICATION AUSTRALIAN MADE

LIBERTY STEEL IN WHYALLA is phasing out coal-based steelmaking with the purchase of a 160-tonne low carbon emissions electric arc furnace that will slash direct CO_2 emissions by 90% compared with traditional blast furnace production.

IMAGE COURTESY LIBERTY STEEL

Executive Chairman, Sanjeev Gupta, said "This marks the beginning of a new era placing Whyalla at the heart of a global revolution in the steel industry, moving it from being the most polluting of all industries to among the cleanest and greenest."

Whyalla is signatory to CN30 (Carbon Neutral by 2030).

Meanwhile the **AUSTRALIAN INDUSTRY ENERGY TRANSITIONS INITIATIVE** has identified five objectives to enable heavy industry to transition to net zero emissions consistent with global efforts to limit warming to 1.5ºC.

Signatories of the collective statement include Woodside, BHP, BlueScope Steel, bp Australia, Fortescue Metals Group, HSBC, Orica, Rio Tinto, Schneider Electric, Wesfarmers Chemicals, Energy & Fertilisers, Westpac, Ai Group, AIGN, AustralianSuper, Aurecon, Cbus, and the Clean Energy Finance Corporation.

"We are ready to work together and position Australia to prosper in a decarbonising global economy," the joint statement read. "Our organisations in the industrial sector will support investment in the development, deployment and integration of the low-carbon solutions needed to decarbonise effectively. Our organisations in the finance sector will be active stewards of capital to support a net zero emissions transition."

The European Commission is proposing **COMMON CRITERIA AGAINST GREENWASHING** and misleading environmental claims to provide clarity to consumers over what constitutes products touted 'green'.

A study found that 53.3% of examined environmental claims in the EU were vague, misleading or unfounded and 40% were unsubstantiated! Unabashed 'greenwashing' creates an uneven playing field to the disadvantage of genuinely sustainable companies.

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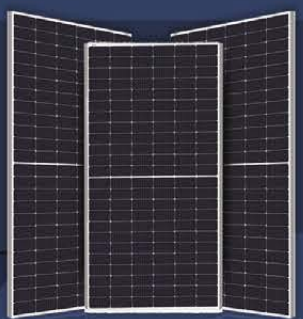

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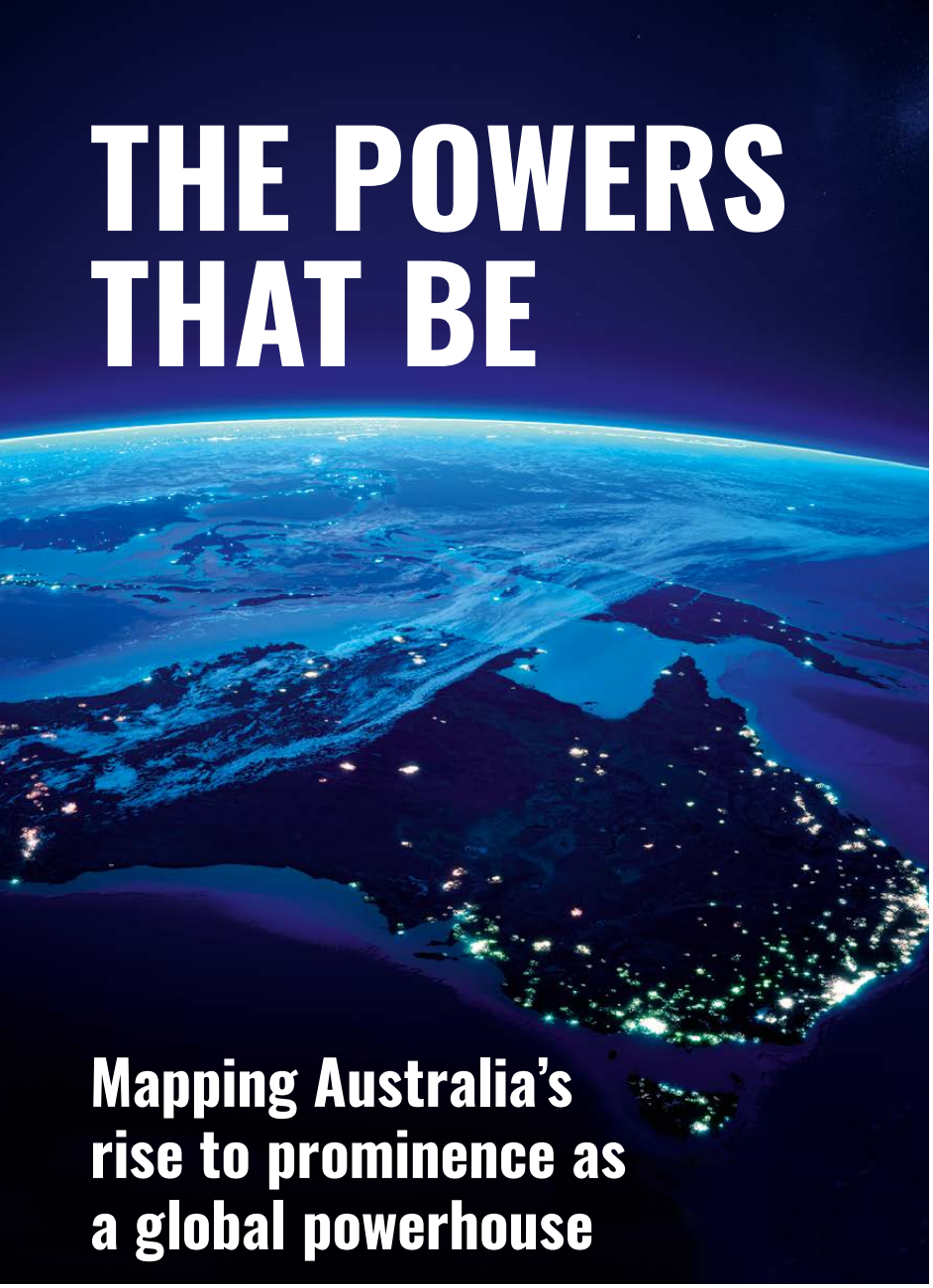


Mapping Australia's rise to prominence as a global powerhouse

Here we unpack key developments which cap off a remarkable year for renewables and help shape Australia as a renewables powerhouse.

AUSTRALIA IS THE LAND OF PLENTY – plenty of resources, plenty of hope and lots of ambition. A desire to develop all our resources to build a strong domestic manufacturing base that will feed into a robust export market for renewables.

May 9 marked a ringing endorsement of that vision with Treasurer Jim Chalmers stating in his Budget: "Australia's biggest opportunity for growth and prosperity is the global shift to clean energy".

"At the Smart Energy conference respected Elder Aunty Joan Bell called for respect from for all peoples and all parts of the country… saying look after the land and it will look after you. That is what we aspire to."

JOHN GRIMES
CEO, SMART ENERGY COUNCIL

The stars were aligned, the Treasurer was looking at a forecast budget surplus for the first time in 15 years, $4.2 billion for the year ending June 30, 2023 buoyed by the ongoing boom in commodity prices and continuing low unemployment.

The confluence of events provided the ingredients that allowed the Treasurer to deliver a budget that sets the foundation for Australia's rise to renewables superpower.

A recap of the announcements, each worth celebrating in its own right:

- a $2 billion **Renewable Hydrogen Fund** that is anticipated to unlock $10bn in investment and 6GW in new dispatchable energy;
- $83.2 million for a **National Net Zero Authority** from July 1 to support workers in emissions-intensive sectors to access new employment and facilitate investors and firms to engage with net zero transformation opportunities; and
- a $15 billion **National Reconstruction Fund** with a focus on investing in high-tech manufacturing "to revive our ability to make world-class products".

The NRF lists seven priority areas including clean energy and value-added manufacturing in mining and "enabling capabilities"; $400 million to the Critical Inputs to Clean Energy Industries stream supporting primary steel, cement, lime, aluminium and alumina industries, and another $400 million for the Industrial Transformation Stream to be administered by ARENA, supporting regional industrial facilities, including rail and aviation, and helping support new clean energy industries.

On the much-anticipated home electrification front, the Treasurer has set aside $1.3 billion for the **Household Energy Upgrades** Fund, $1 billion to CEFC for financing options for household energy upgrades, and $3 billion in electricity bill relief for 5.5 million households and about 1 million small businesses.

The Smart Energy Council verdict?

"This is the most important Federal Budget in Australia's history, a huge win for workers and the climate… a landmark day in climate action. Together the Reconstruction Fund and Net Zero Authority set up Australia's transition to a renewable energy and critical minerals superpower," John Grimes said.

"Finally genuine action to harness the benefits of renewable energy and grow our economy through investing in Australia's cutting-edge smart energy industry. This sends positive signals to investors and developers, and is reassuring for families".

Since gaining office twelve months ago the Albanese Government has committed $40bn to the sector, including previously announced flagship programs Rewiring the Nation and Powering the Regions.

On page 30 we highlight other significant wins for renewables: SolarStopper and CoalKeeper axed

SMART ENERGY COUNCIL

along with the Energy Security Board, a new Capacity Investment Scheme for large-scale renewables and renewable energy storage. It's a smart, sensible, *phenomenal* turnaround.

Energy Minister Bowen reminds us the federal administration has the full blessings of each of the states with their shared thinking, endorsement and actions, and are themselves powering ahead in the energy transformation. A happy and productive consensus. Newly appointed NSW Minister for Climate and Energy Penny Sharpe has eagerly embraced her portfolio, telling Smart Energy conference delegates "Our ambition is high, we want NSW to be a world leader in renewables."

The ubiquitous and profound shift in Australia's approach to the energy transition bolsters Australia's chances as a serious contender as host of the UN Climate Conference in 2026.

Between now and then the landscape could well have moved forward in leaps and bounds; on several occasions Energy Minister Bowen has declared the $40 billion committed to renewables is "just the start" – he's rolling up his sleeves and leading the charge.

Shoring up supplies

The full, multi-billion package of measures laid out and as contained in the Budget go some way to addressing the concerns over the impact of the US *Inflation Reduction Act* on Australia's aspirations to process critical minerals onshore to shore up supply chains, strengthen resilience and independence. Barely a conversation, webinar or meeting passes without mention of *that* Act.

Unless we foster local innovation and establish local manufacturing of electrolysers, batteries (adding value to, rather than shipping lithium, nickel and cobalt), solar panels, electric vehicles and more we'll have a "conga line of companies exiting Australia and going to the US if the government doesn't respond to the IRA," said John Grimes, adding this is a core priority for the Smart Energy Council.

Tim Buckley of Climate Energy Finance told a Smart Energy webinar "Each week in the US, major new developments are being announced; money is moving at huge speed we need the Australian government to respond at scale.

"Companies talk about the huge pipeline here then refer to the massive support in the US, saying 'unless Australia matches that in some form we are off to the US'."

In his keynote speech at Smart Energy conference Raghu Belur co-founder of microinverter manufacturer Enphase advised they

BUILDING MOMENTUM FOR RENEWABLES

"The urgency for Australia to do more remains, as the rest of the world, including our allies, moves quickly to decarbonise."

were building three new factories in the US thanks to the impetus and certainty of the IRA. "Hopefully Australia will develop something similar, to deliver a strong supply chain," he chimed. Just a few days before...

The Biden Albanese Compact

The month of May marked a series of welcome announcements, capped off by the momentous Biden Albanese compact, as explained by Wayne Smith.

"This vital agreement between the USA and Australia is the signing of a climate critical minerals and clean energy transformation compact, the third pillar of the Australia/US alliance, the other two being trade and security.

"President Biden will seek support from Congress to ensure Australian smart energy, critical minerals and relevant supply chains are considered 'domestic' for purposes of US *Inflation Reduction Act."*

Chris Bowen stated this represents closer climate and energy cooperation, and will help renewable energy exports as it builds on our two billion Hydrogen Headstart budget announcement, and it will see us work together to ensure the *Inflation Reduction Act* results in more investment in both countries, Wayne said.

There's much detail to thrash out before the Compact becomes operative assuming the green light from the US Congress, however it's a welcome breakthrough that also symbolises the trust and goodwill of the two nations.

Pressing matters

We're now on track to scale up and there is much to celebrate, "However there's plenty more to address as we 'race to the top'," John Grimes said.

Common interests: PM Albanese and President Biden are keen to form closer ties that will benefit both nations and complement common interests

"Skill shortages loom large, threatening the build of renewables. This was the most pressing issue identified in a recent survey of ours which is why we are taking action to attract more workers.

"We also need to devote far more to electrify households... we are calling for $12 billion to fund a comprehensive program, let's just say the amount funded in the budget is a standing start, our campaign continues."

According to SEC International Director Richie Merzian global rankings of energy use per capita place Australia 58th of 63 countries; lifting the star rating of a house from one to three can trim energy bills by almost a third.

"These numbers should be the trigger to drive investment in electrification and energy efficiency, and the CEFC will now work with retail financiers on options," Richie said.

And how about taxing the gas industry to raise funds for home electrification? Australia obtains just $1 billion in gas taxes, it's an industry that employs few Australians and reaps significant subsidies but is predominantly foreign owned.

In his former role at the Australia Institute Richie Merzian stated a windfall profits tax on LNG could raise $40 billion [and electrify Australia three times over].

The Climate Capital Forum notes recent changes to the Petroleum Resources Rent Tax will reap an additional $2.4 billion over four years but this represents "just the beginning of the major tax reform needed to make Australia a renewables and critical minerals superpower".

Tim Buckley (pictured left) of Climate Energy Finance says this sits well below the cumulative $100bn of public national interest-focused capital investment needed to crowd in the $200-300bn of private capital required to definitively position Australia as a global new energy economy leader.

No shortage of smart opinions on how to fund a better, smarter future for all.

Creating a liveable, comfortable future requires adaptation, a connotation long associated with Charles Darwin who observed "It is not the strongest of the species that survive, nor the most intelligent, but the one more responsive to change."

But with a strong and cerebral federal leadership driving change, Australia has lifted its game and is fitting the bill.

Elephants in the gas field

The progress of late is marred by the headwinds in fossil fuel extraction with the go-ahead for fracking in the Betaloo Basin ('a carbon time bomb') and a dirty new Isaac River coal plant generating significant harmful carbon emissions over its four- or five-decade lifespan.

The International Energy Agency's Net Zero Emissions scenario and pathway to a 1.5 degree target strictly rule out any new gas fields.

We also need to debunk a few myths and misconceptions, namely Woodside's misleading claims that "increasing gas use and production are compatible with keeping dangerous global heating below 1.5 degrees." Their outdated modelling magically assumes carbon capture at 220 times above what the world currently successfully captures and stores.

Mid last century former British Ambassador to the United States William David Ormsby-Gore who deplored 'oil-barrel politics' declared: "It would indeed be a tragedy if the history of the human race proved to be nothing more than the story of an ape playing with a box of matches on a petrol dump."

Climate Capital Forum

A group of finance, ethical investors, solar manufacturers, wind power advisors and philanthropists has fast established itself as the mouthpiece of smart investment, calling for a major era of significant economic reform to solidify Australia's place as a Zero Emissions Powerhouse.

Key points of the Forum's blueprint to modernise and decarbonise the economy include:

- A National Energy Transition Authority to plan, coordinate and manage the transition to renewable energy and a zero emissions economy
- An Advanced Manufacturing Tax Credit and a new 'Make Australia Make Again' program to drive smart energy and transport manufacturing and value-adding to the mining of metals and rare earth minerals
- Reforming the $245bn Future Fund through a new investment mandate *to focus exclusively on the zero emissions economy,* to provide equity investment in value- adding decarbonisation sectors, to encourage majority Australian ownership and industry best practice. This includes a new $20 billion Decarbonisation Fund. Failing that, *establish a new Sovereign Wealth Fund that positions Australia as a world leader in the critical minerals and zero emissions renewables that will drive the global economy of the future.*

"We don't have the budget to compete with the United States' *Inflation Reduction Act,* but what we do have is significantly scaled superannuation funds and bodies like the Clean Energy Finance Corporation to drive our economic transformation," Climate Capital Forum spokesman, Wayne Smith said.

The Climate Capital Forum brains trust at Parliament House

Forum members pictured above gathered at Parliament House in late March to hold meetings with Senator Jenny McAllister, Andrew Leigh MP, Offices of Chris Bowen and senior representatives from Department of Foreign Affairs and Trade and Department of Climate Change, Energy, Environment and Water.

"We have shifted the dial, escalating the discussion of some critical issues, strengthening relationships with some key offices and departments, demonstrating to government that there is a coordinated and strong coalition of support for bold action and building momentum for these initiatives," Wayne said.

The Climate Capital Forum plans to return to Canberra in spring and is setting its sights on the 2024-25 Federal Budget.

SMART GATHERING, SMART WORDS AND ACTIONS

At Smart Energy 2023 political and industrial leaders, regulators, product suppliers and innovators laid out their vision for abundant and reliable renewable energy. Here we dive into just some of the many strong messages that centred on acknowledging threats and ramping up ambitions and opportunities.

"TACKLING THE WORLD'S CLIMATE EMERGENCY CAN BECOME AUSTRALIA'S JOBS OPPORTUNITY": the month of May marked a year since Labor was elected into office and **Chris Bowen, Minister for Climate Change and Energy** kicked off Smart Energy 2023 by listing the profound transformational measures instituted by his government over twelve short months to create "a stable and welcome environment for investment in renewable energy".

His summary took just four minutes (somewhat ironic given the magnitude of the consequences): enactment of the *Climate Change Act* "that has played no small part in attracting 55% increase in renewables in the last year", $20 billion committed to Rewiring the Nation; the "very important" Marinus Link; cut to EV taxes lifting sales from 2% to 7%, a commitment to a National EV Strategy and fuel efficiency standards, reform of the Safeguard Mechanism and consensus on congestion reform.

"And most important is the agreement among state counterparts on Capacity Investment, effectively a storage target unlocking billions of dollars in investment and gigawatts in power," he said, "Measures that are essential to developing a stable and certain environment.

"By insisting that investments under the capacity investment scheme will be both renewable and dispatchable – it can't be one or the other, you've got to have both – we are ensuring that the investment occurs in energy storage which is so necessary."

The first auctions to attract the gigawatts of storage will start later this year and represent a watershed in Australia's energy transition to 82% renewables by 2030.

"The task is so big – and there are enormous opportunities, we have to put 60 million solar panels on roofs again – what we have done in the past ten years we need to do in seven," Bowen said.

"But it is not a feasible option to import all these panels, we have to act on that… it is inconceivable that of the 60 million solar panels on our roofs just 1% were made in Australia.

"We need to manufacture more products onshore, as is the intent of the National Reconstruction Fund, and that includes all components in the renewable supply chain… we also need to build 40 wind turbines a month to get the job done."

The Minister revealed the focus of the Quad meetings between Australia and its trade partners US, Japan and India is almost exclusively centred on the need to address supply chain issues in Asia Pacific by encouraging manufacturing.

He alluded to the US *Inflation Reduction Act* as "good for the planet and good for the United States and we want it to be good for us too, to be additional not distortionate".

That vision is shared by **Wyatt Roy of SunDrive Solar** who said "Establishing a sovereign Australian solar manufacturing industry for the domestic market and international export would mean thousands of local high paying jobs and cheap and clean energy for millions of households and millions of tonnes of carbon abatement".

The former federal Liberal MP enthralled delegates with SunDrive Solar's manufacturing roadmap featuring three solar PV factories –

"Australia could be home to the world's five biggest solar farms by the end of the decade."

WYATT ROY
SUNDRIVE SOLAR

premium rooftop, rooftop and utility scale – with combined annual production capacity of 8GW.

Noting reports that Australia needs 1,900GW of solar to reach net zero, and given that current total cumulative solar installed capacity is 30GW, we need to install 60GW every year for the next 30 years to reach net zero, Roy said.

Australia must grasp the opportunity to develop into a solar manufacturing powerhouse and we need to enact legislation comparable to the US *Inflation Reduction Act* to reach our potential and reap the gains. [We did say the Act is constantly referenced.]

"For every gigawatt of solar that's manufactured you create about 1,000 direct jobs throughout the supply chain… the total jobs of a fully integrated manufacturing with local supply chain of materials is approximately 10,000 direct jobs for every 10 gigawatts of solar," Wyatt Roy said.

"The global solar industry sits at $50 billion, but very little of that is captured here, however with the right policies and tax rebates across the PV the supply chain bolstering investment certainty, Australia could be home to the world's five biggest solar farms by the end of the decade."

Technical expedience lies at the heart of SunDrive Solar which has attracted funding from Clean Energy Finance Corporation, Cannon-Brookes, Blackbird Ventures, Virescent Ventures, and is pioneering the use of copper to replace silver in solar cells in a bid to boost panel efficiency and reduce cost. A process, Roy revealed, that was simpler in sound than execution.

Simon Corbell of the Clean Energy Investor Group: reinforced the critically important need to raise ambitions saying climate imperatives must drive momentum.

Our ambitions may be stronger than before yet they are not aligned with a 1.5 degree warming scenario, instead sit closer to 2 degrees. We need a more credible and achievable scenario especially from an investor perspective that takes in electrification across transport and industry in particular, Simon Corbell said. "It means a very big build out of renewables – an additional $116 billion of investment on top of current commitments – a total of $400 billion in the step change scenario under AEMO's Integrated System Plan.

"The good news is we have the right level of ambition in transmission, that is not the major barrier… coal closure is the barrier, they need to occur more quickly, by the early 2030s," he said referring to modelling on the energy market transition commissioned by CEIG and supported by Baringa and Boundless.

"Some reports say we need to develop 22GW variable renewables a year but this is not achievable, we are sitting at 3GW, and we need to lift that to 5-5.5GW a year on average.

"If we do that we have the right level of ambition and a credible pathway; storage plays a critical role, in particular utility-scale batteries, also long duration storage including pumped hydro and support for offshore wind development."

Corbell is calling on AEMO to develop a 1.5 degree credible scenario.

"And let's get a carbon budget into the electricity sector. A clear overall cap in the total emissions per minute," he said.

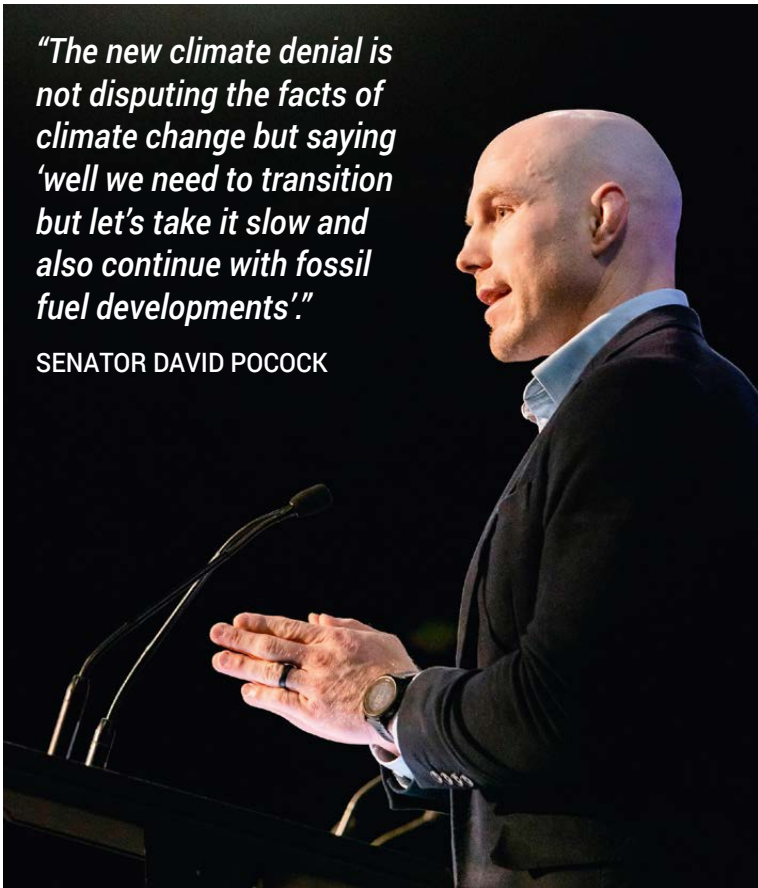
An enormous carbon bomb: "It's really worrying that on the same day we find out that Snowy Hydro is a couple of years behind, we find out that the Beetaloo Basin in the Northern Territory will be opened up for fracking and release a carbon bomb," **ACT Senator David Pocock** told delegates referring to two bombshells delivered at Smart Energy 2023.

"Clearly we can't have both. We can't continue down that path and yet say we will become a renewables superpower.

"The new climate denial is not disputing the facts of climate change but saying 'well we need to transition but let's take it slow and also continue with fossil fuel developments'.

"Change of pace can go from glacial to rapid if the political will persists, with big reforms and changed agendas.

"There is far more risk in failure to act… climate change is the most immediate threat to our national security.



SMART ENERGY ON SHOW

Pat Cummins – Cricket for Climate tells Wayne Smith of his drive for solar PV and batteries at all cricket grounds, and conversations with clubs in UK and India. It became too hot to bowl in Mumbai in the afternoons last year due to increasing severity of heatwaves in India

"The Climate wars is not between political parties, it's against the gas industry."

ADAM BANDT

"If we can afford to invest billions in submarines we can afford to reshape our economy, to decarbonise," said Pocock who has become a leading voice for renewables in his twelve months in office and promotes the 'triple whammy' of electrification which reduces cost of living and is anti-inflationary, reduces emissions and decarbonises.

"Climate action is a survival strategy, now is the time for ambition and action.

"Courage is not a choice."

Pocock's messages were amplified by **Greens leader Adam Bandt** who declared Australia is very much a petro-state: "Pollution from gas has wiped out any gains (in greenhouse gas reductions)... we need to safeguard the future with no more coal and gas.

"You can't have a foot on the accelerator and brake at the same time, we are at a critical inflection point," Bandt said.

"We need to cease the annual $7 billion fossil fuel subsidies and instead tax big gas corporations and through the Petroleum Resources Rent Tax raise $94 billion to drive the energy transition.

"Gas is as dirty as coal, it is not a suitable transition fuel... coal and gas fast track climate collapse. Get electrification in, gas out.

"The Climate wars is not between political parties, it's against the gas industry." (Smart line at Smart Energy!)

Each of the politicians presenting at Smart Energy demonstrated high levels of ambition.

Newly minted **NSW Minister for the Energy and Climate Change Penny Sharpe** – who gracefully acknowledged the leadership and collaboration of former state energy minister Matt Kean and has committed to finding ways to accelerate the Electricity Infrastructure Roadmap to deliver cheap, clean and reliable energy – wants "every person, every household, every business, every community to feel that they have a stake in the energy transformation."

Inclusion was her key message. "I want everyone to be in a position to seize the opportunities that come from this once-in-a-century, very rapid change," she said. "And I want NSW to be a world leader and legislate the targets to deliver the certainty that will drive the investment that needs to be undertaken to get us to net zero by 2050."

Accelerating coal closures forms part of the plan, the first tender for long-term storage is a positive move and the state is progressing plans to electrify everything with a plan to get 1.5 million households off gas. Importantly, the NSW Labor government will establish an Independent Net Zero Commission that will report to Parliament annually.

ACT Climate Change and Sustainability Minister Shane Rattenbury reeled off Territory inroads to decarbonisation underpinned by 100% renewables legislation and the plan to phase out gas by 2045 with new regulations banning gas connections for new suburbs. ACT now boasts an all-electric suburb and three all-electric schools, and is electrifying hospitals, TAFE and new government office buildings on the back of the 2019 'all electric' commitment. The jurisdiction may be small but notches some big achievements with 5,000 small-scale batteries installed to date.

And a fascinating insight into defence infrastructure from **Assistant Defence Minister Matt Thistlethwaite** whose Defence Strategic Review recognises climate as a distinct and strategic threat. The department's

"I want every person, every household, every business, every community to feel that they have a stake in the energy transformation."

PENNY SHARPE
NSW MINISTER FOR ENERGY AND CLIMATE CHANGE

"We are deeply committed to reducing emissions, Australian entrepreneurs and Defence can create high value products and jobs."

MATT THISTLETHWAITE
ASSISTANT DEFENCE MINISTER

Terri Butler and Wayne Smith escorted Minister Bowen through the Expo halls where he viewed local product innovators

This wrap represents just a fraction of the conference spanning two days and five themed streams and a packed-out exhibition floor but it's indicative of a bright and dynamic new future and key role Smart Energy Council members from all walks of life are contributing, as captured in pictures and words on page 54.

The Smart Energy Council would like to thank all conference participants – the 140 expert speakers, 110 exhibitors and 7,500 delegates – who made the event the success it was. The collective talent and commitment to renewables takes us closer to an electrified, decarbonised society.

We look forward to welcoming everyone again in early March next year. **Same place, different date – make a diary note for March 6 and 7, 2024!**

$64m renewable energy and energy security program is looking to develop 60MW and 25MWh on defence bases and tapping into PPAs for GreenPower.

"We are deeply committed to reducing emissions, Australian entrepreneurs and Defence can create high value products and jobs," Thistlethwite said, citing the solar panel innovation developed by 5B that is "good for warfare and disaster response".

There you have it – a glimpse of the thinking, the policies, the actions, and scale of ambition in renewables at federal and state levels driven by legislators now more closely aligned in their thinking and purpose, with major industry players poised to scale up.

Just need to de-escalate the enormous power wielded by the gas industry. Get over, and off, gas.

Minister Bowen told the gathering "The most important act of recognition will occur later this year when we enshrine a Voice for our most important First Nations people in our parliament, and their government, in the Constitution."

Smart Energy Council President Steve Blume (#VoteYes) affirmed the SEC Board will be a strong and proud Yes supporter in the referendum.

YES

It's time to recognise Aboriginal and Torres Strait Islander people in the Constitution

FIRST NATIONS ELDER AUNTY JOAN BELL, who was invited to present the Welcome to Country, called for peace and harmony among all, stating "Respect is everything – for all things living and growing, sea and rivers included. It shapes us and lifts us up."

Inclusion is vital, and the message was amplified by **Karrina Nolan** (pictured) of the First Nations Clean Energy Network and Yorta Yorta descendent who urges respect and change.

"We are resetting our relationship with extractive industries creating a lot of harm and damage and distrust," she said. "Some of our [indigenous] communities are on the frontline of fossil fuel expansion, we want to give them an economic choice rather than have to constantly sacrifice land. There is some way to go with goodwill.

"Communities have been completely left out of the discussion on some massive local developments… we are asking you to sit down with us and engage from an early stage.

"We don't have one indigenous community-owned project up and running – a couple are underway. The energy transition must include our Traditional Owners; I look forward to the First Nations Clean Energy Strategy that will helpfully address many of these issues."

Karrina listed the actions to be taken by industry, government and investors:

- Engagement and consent
- Energy security, and
- Capacity of communities and ownership

Concluding her eloquent address Karrina implored government, industry, ARENA, CEFC and investors to "Back us and invest in solutions, lift regulatory barriers, support First Nations ventures and understand that development needs our consent."

KEY MESSAGES

- **Blair Pritchard of Virescent Ventures** (which invests in founders, technologies, and businesses that can help achieve zero emissions and beyond): *"We invest in anything that moves the needle on climate change and reduces emissions – so energy is significant. Likewise food, circular economy, mobility and more…"*
- **Zoe Whitton of Pollination** (on getting money moving and at scale): *"The volume of money needed for clean energy is not the issue, the challenge is moving it from one place [fossils, extraction] to another… Capital is ready to go, we just need more demand… 87% of investors surveyed by IGCC are looking for projects. When you create demand, capital flows [but] the challenge of supply chains is acute and will remain so for five years."*

- **Jonathan Upson of Tilt Renewables**: *"What if the AEMC had asked market participants for their ideas and proposals to address congestion in early 2019? (and) We've wasted countless hours over four years battling locational marginal pricing."*
- **Jed Durdin of Circular Energy Group**: *"We need real zero carbon, not net zero with carbon offsets."*

- **Bridgette Carter of Bluescope** (which has set a goal for net zero greenhouse gas emissions across operations by 2050): *"There are so many reasons we should support sovereign manufacturing capability."*
- **Tom Stephenson of Stiebel Eltron**: *"It's time to re-educate consumers to get them off gas and onto heat pumps."*
- **Katie Hepworth of AMWU**: *"Decarbonisation presents one great opportunity to revive our battered manufacturing sector… we need Australian made electrical appliances in all new homes, and energy performance standards."*

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TOP PV MARKETS ADDITIONAL CAPACITY IN 2022

240GW of new systems installed and commissioned:

CHINA 106GW (reaching **414.5GW** PV capacity)

EU (27 nations) **38.7GW (209.2GW** capacity)

USA 18.6GW (total **142GW)**

INDIA 18.1GW (total **79.1GW)**

JAPAN 6.5GW (total **85GW)**

AUSTRALIA in 9th spot at **3.9GW** (total **29.7GW)**

1,185GW/1.2TW: (CUMULATIVE GLOBAL PV INSTALLATIONS TO END 2022)

Trajectory of global PV capacity:

910GW – 2021

767GW – 2020

622GW – 2019

511GW – 2018

404GW – 2017

Source: International Energy Agency (IEA) snapshot of global PV markets 2023 PV power systems (PVPS)

1399 Mt: CO_2 emissions avoided in 2022

23 countries installed **<1GW** PV in 2022

16 countries had installed **<10GW** cumulative capacity by end 2022

SOLAR PV PER CAPITA 2022

#1 AUSTRALIA 1166 watts per capita (with **>3.36m** rooftop PV systems)

#2 NETHERLANDS 1040 watts per capita

#3 GERMANY 807 watts per capita

Solar energy generated **6.2%** of world electricity in 2022 (well up on the 3.6% of 2021)

OF THE 240GW GLOBAL PV MARKET ADDITIONS IN 2022

ASIA PACIFIC 56%

THE AMERICAS 12%

EUROPE 15%

AFRICA AND MIDDLE EAST 4%

REST OF WORLD 13%

STORAGE
(ALL BATTERY-BASED ENERGY STORAGE SIZES)

43GW cumulative globally in 2023

Rising to **411GW** globally by 2030,

of which **20GW** capacity in Australia

Source: BloombergNEF

Australia has **>40GW** of big batteries in the pipeline

Australia is forecast to reach total installed PV capacity **>80GW** by 2030

Source: GlobalData and others

TRANSMISSION

Australia needs to build **10,000** kilometres more transmission in under **10 years**; equivalent to 25% of today's entire transmission grid

Source: Nexa Advisory

ARENA $2bn funding milestone since establishment in 2012

ICYMI: RECORD LOWS

NSW's first renewable energy tender

Winning bids: • **<$35MWh** (two solar farms)
• **<$50MWh** for wind farm

Projects averting **>11m** tonnes of GHG over 20 years

Source: Auction organiser AEMO services

STEEL

Estimated steel required for renewable energy infrastructure, tonnes per MW (t/MW) of capacity:

- SOLAR **40t/MW**
- ONSHORE WIND **60t/MW**
- HYDRO **60t/MW**
- OFFSHORE WIND **150t/MW**

2mt of additional steel needed to meet Australia's 2030 renewable energy targets, **10mt** to meet 2050 targets

Source: BlueScope based on AEMO forecasting

92% of BlueScope GHG are from hard-to-abate iron and steel making activities

Australia could add **$40 billion** to national income and **$65 billion** to Australian economic activity by 2050 capitalising on green iron and steel, new energy minerals and hydrogen. *Source: Ernst and Young*

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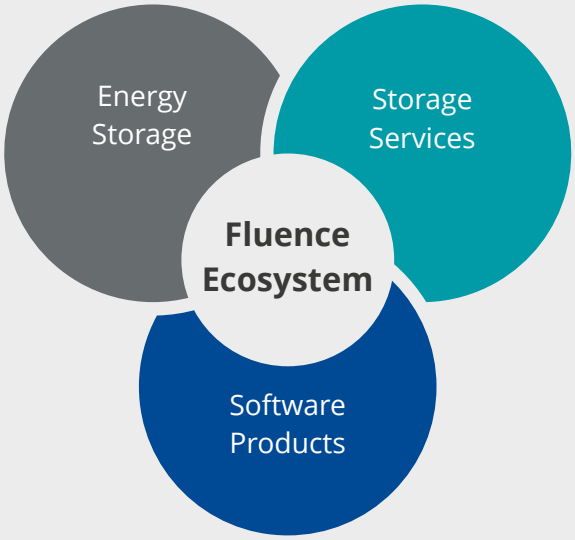
Engineering, Design, Consultative and commissioning services



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GREEN HYDROGEN ON THE MOVE

A series of significant developments in green hydrogen are set to propel Australia to becoming a renewables superpower. Have we finally turned the corner?

Hydrogen in the Budget: the catalyst we had hoped for

IT'S FAIR TO SAY we have been waiting for what seems an eternity. Years have slipped past as we've discussed and agreed on the vast untapped potential of Australia's renewables resources to build a green hydrogen industry. What has been lacking is impetus from above: a federal administration that both recognises and shares the vision, and sets an ambitious new direction.

Now, happily, the time has arrived with the federal budget of May 9 delivering a fiscal plan that heralds a bold yet blindingly smart new era where we embrace and commit $4bn to renewables technologies, including a considerable boost to the hopes and ambitions of green hydrogen innovators across Australia.

And a very welcome $2 billion has been committed to the Hydrogen Headstart program which provides revenue support for large-scale renewable hydrogen projects through competitive hydrogen production contracts.

The program will help bridge the commercial gap for early projects and "puts Australia on course for up to a gigawatt of electrolyser capacity by 2030 through two to three flagship projects," John Grimes said. "There is no shortage of interest among our hundreds of innovators across the land who have been waiting for this day and wanting to get on with the job."

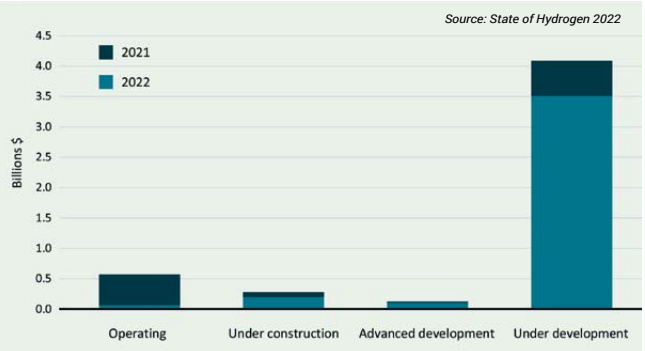
Budget funding for hydrogen

The funding includes $38.2 million for Guarantee of Origin scheme to certify renewable energy and track and verify emissions from 'clean energy products', hydrogen in particular (read: prevent greenwashing).

It also pledges $2 million to establish a fund to support First Nations people and businesses to engage with hydrogen project proponents, planning processes and program design.

While admittedly falling short of the US Green Deal and similar impetus in Europe, China, Japan and elsewhere, the plan does earmark $5.6 million to examine "the best ways to leverage Australia's competitive strengths in renewable energy, critical minerals and highly skilled workforce to accelerate our other clean industrial and manufacturing capabilities".

The $4 billion budget for renewables with $2 billion for hydrogen affirms Australia's ambition to become a renewable energy superpower, and Climate and Energy Minister Chris Bowen has set his sights on the reaping economic and associated benefits.



More than 100 'clean' hydrogen projects were announced in Australia in 2022 – more than double the projects announced in 2021

"By 2050, Australia's hydrogen industry alone could generate $50 billion in additional GDP and create more than 16,000 jobs in regional Australia," he said, drawing on departmental findings.

"Australia's regions have the resources, technical skills and track record with international partners to seize this opportunity and become a global hydrogen powerhouse, we need to make sure we don't get left behind as the rest of the world moves… We will keep our foot on the accelerator to achieve the scale of industry development necessary to compete internationally."

Zero Carbon Hydrogen Australia General Manager Joanna Kay declared the Budget undertakings as next level, saying "The scale of commitment in Hydrogen Headstart demonstrates the foresight of the government to realise Australia's immense hydrogen potential. This is a massive and significant development that delivers certainty and confidence to our burgeoning green hydrogen sector.

"Renewable hydrogen presents a major determinant of Australia's future prosperity and the Budget sets the right tone with strong signals to unlock and deliver that potential," said Joanna who has a seat the Advisory Board for the Scaling Green Hydrogen Cooperative Research Centres whose grants provide funding for medium to long-term, industry-led research collaborations to improve the competitiveness, productivity and sustainability of Australian industries.

Tracking and tabulating the potential

The budget announcement arrived hot on the heels of the 92-page *Annual State of Hydrogen* report prepared by the Department of Climate Change Energy Environment and Water (DCCEEW) which identifies Australia as home to about 40% of all announced global hydrogen projects. Yes – four in ten projects.

The report found Australia's pipeline of 106 active planned or operational hydrogen projects is worth around $230-300 billion of potential investment and could generate $50 billion in additional GDP by 2050. (As quoted by Bowen.) The majority of projects, however, are yet to reach final investment decisions; as of December 2022, just one project, from 64 announced in the year, with 10MW capacity or higher, had passed FID.

Prior to the budget ARENA announced $50 million for two funding rounds targeting R&D for green hydrogen and low-emissions iron and steel. Hydrogen Headstart will seek to back two to three flagship projects which could deliver up to 1GW of hydrogen electrolyser capacity. ARENA has been allocated $4.2 million this year to develop the program in consultation with DCCEEW.

Zero Carbon Certification for Frontier Energy's Bristol Springs

In mid-May the Smart Energy Council, through Zero Carbon Hydrogen Australia, proudly announced the pre-certification of Frontier Energy's Bristol Springs Renewable Energy Project.

The pre-certification assesses all direct and indirect greenhouse gas emissions associated with the Project's production and storage of renewable hydrogen.

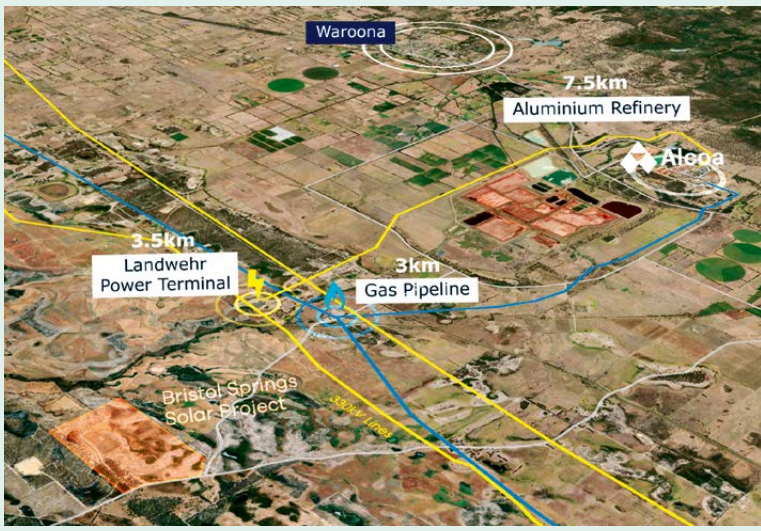
Frontier Energy's recent Definitive Feasibility Study confirmed the Bristol Springs Project will produce zero carbon renewable hydrogen.

The Bristol Springs Project located 120km from Perth is set to become one of the first, low-cost green hydrogen projects in Australia. The 2022 pre-feasibility study found that the Stage One 114MW solar farm would generate up to 4.4 million kilograms of green hydrogen annually at a low estimated cost of $2.83 per Kg of hydrogen produced. That's a fraction over the holy grail of $2 per Kg.

Bristol Springs becomes the third hydrogen project in Australia to achieve Zero Carbon Hydrogen Australia's pre-certification and directly aligns with the federal government's commitment to implement the Guarantee of Origin Certificate scheme.

John Grimes has long maintained the crucial need to certify hydrogen projects to prevent greenwashing, stating "By awarding certification to projects that do the right thing, we can build a credible new industry based on transparency and set Australia up as a renewable hydrogen superpower."

Joanna Kay describes the Bristol Springs Project as reaching "An important milestone... [our] industry driven certification scheme gives confidence to all stakeholders, including shareholders, financiers and off-takers alike that Frontier Energy will produce renewable hydrogen at the Bristol Springs Project.



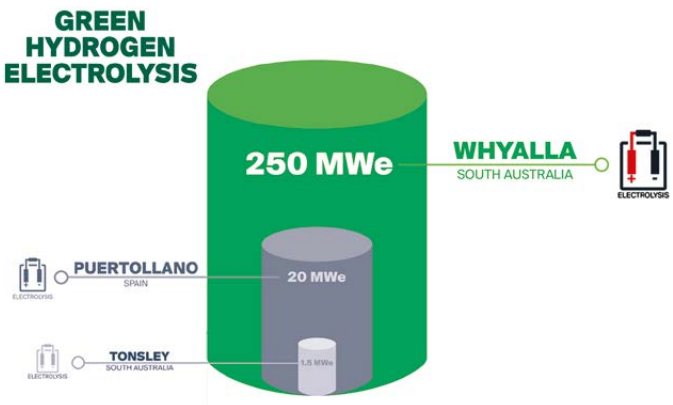
"Leadership from industry to secure early certification ensures that we are driving and building a strong renewable hydrogen economy here in Australia. The Zero Carbon Certification Scheme is demonstrating global leadership and ensuring the quality production of renewable hydrogen."

Frontier Energy Managing Director Sam Lee Moham amplified Joanna's sentiments, stating "Independent pre-certification of the origin and source of green hydrogen gives our stakeholders and shareholders confidence that the hydrogen produced at the Project is confirmed as 100% clean and made from 100% renewable energy."

50GW OF RENEWABLES CAPACITY BY 2043 Staying in Western Australia, the state government has mapped out a meteoric rise from current large scale generation capacity of 5.9GW (which includes 1.2GW large scale wind and solar) to 50GW of renewable energy capacity in 20 years to meet soaring demand from electrification, new green industries, critical minerals and renewable hydrogen.

SOUTH AUSTRALIA meanwhile is on track for 100% renewables by 2030 and likewise is taking a commanding lead in green hydrogen.

The breadth of ambition was spelt out by Sam Crafter from South Australia's Office of Hydrogen Power during Smart Energy 2023: by 2030 South Australia aims to be producing and exporting more than one million tonnes of renewable hydrogen annually.



Whyalla electrolyser capacity 250Mwe which dwarfs the 20Mwe Puertollano in Spain and Tonsley's 1.5Mwe electrolyser

"The South Australian strategy will maximise the value of renewable resources and establish a competitive export in valuating sector by addressing bottlenecks and roadblocks in legislation skills and infrastructure required," he said.

Supporting the strategy is South Australia's 'world-first' *Hydrogen and Renewable Energy Act* to streamline processes for companies wanting to invest in large-scale hydrogen and renewable energy projects into a single regulatory process covering the entire project lifecycle. "This cements the way for production and exports," Crafter said. "The Act is a key piece in our plans to realise the potential of green hydrogen."

The legislation is anticipated to be enacted by year's end.

GREEN HYDROGEN POWER STATION In other world-beating developments, the SA government has committed $593 million to build 250MWe of electrolysers and 200MW of power generation and hydrogen storage facility near Whyalla, by December 2025.

The magnitude of what will be Australia's largest electrolyser is put into perspective by the slide to the left.

The Whyalla project will play a major role in enhancing South Australia's grid security and prove hydrogen production and generation technology at scale while unlocking a pipeline of renewable energy developments and associated manufacturing opportunities, Crafter said, and it will catalyse other hydrogen projects in development, including export focused projects.

Elsewhere in the pipeline is Cape Hardy Green Hydrogen Project; Canada's Amp Energy is lead developer of the 5GW electrolyser and associated green hydrogen and ammonia production plant.

Meantime Marubeni's $12.5m pilot project which is part-funded by Japan's government is destined to start operations in August and export

green hydrogen from Adelaide to Indonesia by year's end. The project will include a 150kW proton-exchange-membrane (PEM) electrolyser and 5MW battery energy storage system.

"There are 29 proposals to deliver SA's hydrogen jobs plan to meet strong global interest and proposals from Europe, North and South America, the Asia Pacific," Crafter said, "Australia truly can pioneer the greater green hydrogen industry which includes renewable energy companies, equipment manufacturers, and technology providers."

THE SUNSHINE STATE Next we head to Queensland with its more than 50 green hydrogen projects at various stages of progress including those at green energy manufacturing centres; stage one of the $114 million electrolyser factory is supported by the Queensland government and well underway. Kahil Lloyd of the Office of Hydrogen explained the 3,000MW hydrogen project at Aldoga in central Queensland is expected to reach FID by late 2023 while the 1MW Kogan Creek renewable hydrogen demonstration plant is looking at completion by late 2023. The project has received $28.9 million in funding from Queensland's Renewable Energy and Hydrogen Jobs Fund.

Meanwhile the **NSW Hydrogen Strategy** to realise hydrogen opportunities involves 60 actions and $3 billion in incentives to reduce the cost of green hydrogen by $4 per Kg subsidies to deliver at $2.80 per Kg.

Action four of the extensive plan is the $150 million hydrogen hub initiative in which 10 applicants have been shortlisted; the first two hydrogen hubs (Mori Good Earth Green hydrogen and ammonia plant and Port Kembla's Illawarra hydrogen technology hub) have been awarded 22MW electrolyser capacity by 2025 building up to 760MW combined potential electrolyser capacity by 2030.

Rising power of influence

The ascent of green hydrogen in Australia received extensive coverage during Smart Energy 2023, where High Commissioner to Australia Manpreet Vohra also the podium in a much-anticipated address given his democratic nation is on the brink of becoming the most populous in the world in a few short weeks and developed strong renewables policies. To say nothing of the strong ties developed between Smart Energy Council executive staff and Indian counterparts, politicians and bureaucrats during the March 2023 delegation to India. (Full report on following pages.)

The High Commissioner acknowledged Australia's leading role in green hydrogen with its 2,062sqm and 100 projects in the pipeline by 2030, making it the largest or second largest exporter of hydrogen by 2050. He emphasised the need to strengthen resilience in supply chains and counter challenges by diversifying manufacturing bases and processing of critical minerals, while outlining India's plans to ramp up "mega scale" by investing $31bn in electrolysers by 2050.

High Commissioner Vohra welcomes the ongoing and harmonious 'India-Australia energy dialogue' and during the conference signed a Memorandum of Understanding with Australia that symbolises trust and goodwill.

Also addressing Smart Energy 2023 was Dr Guy Debelle of Fortescue Future Industries on the challenges Australia faces in embracing renewable hydrogen as an energy source, referencing game-changing US legislation.

"Our comparative advantage in renewable hydrogen export is blown out of the water by the *Inflation Reduction Act* and similar policies in other nations," he warned. We've not canvassed Debelle's views on how parameters have shifted in the wake of the subsequent Budget but daresay he shares the sense of optimism over Hydrogen Headstart.

Globally, FFI has five major hydrogen projects in the pipeline: two in the US to supply green hydrogen for heavy transport, one in Kenya to produce green ammonia for use as a local fertiliser, a Brazilian plant looking to export green ammonia for export, and another in Norway for export of green ammonia to Europe.

Closer to home and all being well FFI will commence production of Australian-made hydrogen electrolysers having delivered its first in-house prototype at the Gladstone factory, using Australian-made polymer electrolyte membrane (PEM) technology. The facility is slated to produce 2GW of electrolyser capacity annually.

Joanna Kay views the $2bn pledged to Hydrogen Headstart as a direct response to the US Inflation Reduction Act, saying "We look at this as de-risking the industry which means growth for investment while securing Australia's future."

Ironing it out

Australia is the world's number one exporter of iron ore, sending 900 million tonnes offshore and contributing to the 7% in global greenhouse gas emissions generated in steel making facilities.

Not before time, ARENA has announced $50 million for two Hydrogen Research and Development Rounds targeting innovation in green hydrogen and low-emissions iron and steel. $25 million will be allocated to each of the funding rounds for two streams: improving and optimising the production of renewable hydrogen and hydrogen derivatives such as ammonia; and investigating storage and distribution solutions. Grant funding for successful applicants is expected to range between $500,000 and $5 million.

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How India and Australia can help each other on the renewable energy journey

By Vibhuti Garg

IN A SIGN OF THE DEEPENING RELATIONSHIP between India and Australia, Prime Minister Narendra Modi recently visited Australia to hold bilateral talks with Prime Minister Anthony Albanese, despite the cancellation of the Quadrilateral Security Dialogue (Quad) summit in Sydney.

His visit followed Mr Albanese's trip to India in March, in which renewable energy, green hydrogen and solar and critical minerals supply chains featured high on the agenda, as well as a stop in Ahmedabad for the fourth cricket test.

Greater engagement on the 'green economy' and climate finance in international forums like the Group of 20 (G20) and the Quad will help India and Australia to achieve their ambitious net-zero goals, promote sustainable development and mitigate the impacts of climate change.

Meanwhile, the two countries also want to strengthen bilateral collaboration in clean energy research and innovation.

This will require boosting investment, technology transfer and knowledge sharing.

Mobilising capital for renewable energy infrastructure

Australian pension funds, with trillions of dollars in 'patient' capital and a growing need to address climate risk, have the potential to contribute to India's renewable energy journey.

India's target for half of its electricity capacity from non-fossil fuel sources by 2030 provides huge opportunities for institutional investors to finance renewable energy infrastructure, energy storage and grid expansion and modernisation.

Solar and critical minerals supply chains

India and Australia have set up a task force on solar that aims to provide both governments with advice on solar photovoltaic (PV) deployment and supply chains.

The International Energy Agency (IEA) has warned that countries need to diversify their solar supply chains. India's efforts to promote a domestic solar PV manufacturing industry have reduced its import dependence on China for solar equipment, which was previously more than 90%. It is also developing its solar export capacity.

A recent study by the Institute for Energy Economics and Financial Analysis (IEEFA) and JMK Research showed that Indian solar module manufacturing capacity could reach 110 gigawatts (GW) per year by 2026. India will achieve self-sufficiency in solar PV modules at this level and expand exports further.

Australia also wants to grow domestic manufacturing. The government has established a $15 billion National Reconstruction Fund to boost investment in domestic manufacturing projects in future industries, including solar and zero-emissions technologies.

Similarly, both countries will benefit from expanding trade and cooperation in critical minerals.

India is a major importer of critical minerals, such as lithium, cobalt and nickel, which are used in electric vehicle (EV) batteries, while Australia, as a leading producer of critical minerals, has an opportunity to promote further growth in exports and investment.

In its 2023-24 budget, the Australian government announced $57.1 million over four years to help the critical minerals sector build strategic and commercial partnerships globally. Developing new and existing partnerships will help to identify investment opportunities and strengthen supply chains to accelerate India's net-zero emissions plans.

Australia could also provide transfer of technologies and expertise in the exploration, mining and processing of critical minerals to support the successful extraction of India's newly discovered lithium deposits.

Green hydrogen

India has ambitions to become a global green hydrogen leader as part of its efforts to decarbonise emissions-intensive sectors, including fertiliser and steel production. The government has set a target to produce about five million metric tonnes of green hydrogen annually by 2030 under its National Hydrogen Mission.

PM Albanese chats with members of the Smart Energy delegation during the March visit to India including the author of this article Vibhuti Garg (second from right), between Wyatt Roy and Wayne Smith

Both India and Australia offer opportunities to explore green hydrogen and green ammonia development. India's Reliance Industries is reportedly planning green hydrogen investments in Western Australia. Indian company TheGreenBillions Limited recently announced plans to invest in Australia in sustainable energy projects, including green hydrogen, supported by the India Australia Strategic Alliance, an industry body for Indian and Australian businesses.

JSW Future Energy Limited, a JSW Energy subsidiary, has partnered with Fortescue Future Industries to develop green hydrogen projects in India.

India is likely to drive global steel production growth in the coming decades. In its Stated Policy Scenario, the IEA expects steel production in India to almost double by 2030 and quadruple by 2050. This corresponds to over 150Mt of new steel capacity by 2030-31.

Accelerating the transition towards green iron and steel technologies will be key to supporting Indian and global emissions reduction objectives.

As the leading global iron ore producer, with a huge yet untapped economic opportunity in developing a local green iron and steel industry, Australia can continue developing its research and innovation partnership on green steel with India under the updated India Economic Strategy.

Opportunities include investing in developing technologies to allow green iron and steel production, green hydrogen supply chains to feed into iron and steel production processes, and the capabilities required to operate green iron and steel assets. This presents a sizeable investment opportunity for Australian superannuation funds looking to support the global transition to net zero emissions.

Renewable energy best practices

Whether small steps or giant leaps, Indian and Australian companies, industry experts and academics and researchers can work together to identify areas of collaboration and share best practices and solutions.

A case in point is the launch of the Australia-India Centre for Energy (AICE), a virtual centre established by the Indian Institute of Technology (IIT) Madras, along with a consortium of Indian and Australian universities and research institutions. AICE aims to work towards achieving United Nations Sustainable Development Goal 7 (access to affordable, reliable, sustainable and modern energy for all).

Both countries can benefit from learning from each other's experiences. In South Australia, which has a high share of wind and solar penetration, the Australian Energy Market Operator (AEMO) manages large amounts of variable renewable energy in the electricity system. South Australia's experience of integrating renewables can help other states and nations transition from fossil fuel-based to high renewables grids.

Australia is the global leader in installed rooftop solar per capita and can share its experience of integrating distributed energy sources (DER) into the grid. While India has largely focused on grid-scale renewable energy expansion to date, accelerating the uptake of DER will play an important role in achieving its renewable energy goals.

"Australia and India both recognise the importance of accelerating the clean energy transformation for our economies, and for our people."

CHRIS BOWEN
CLIMATE CHANGE AND ENERGY MINISTER

Just transition

Policymakers in both India and Australia face challenges in managing a just transition as their economies move away from fossil fuels.

The two countries should use international forums like the G20 and the Quad as platforms to push for the transfer of technologies and finance from developed to emerging economies to support a global just transition.

There is also an opportunity to collaborate on strategies to tackle the impact of the EU's Carbon Border Adjustment Mechanism (CBAM). The policy aims to reduce carbon emissions by imposing a carbon border tax on goods imported into the EU from countries with weaker climate policies.

The EU is India's second-largest export market, with €64.6 billion of goods and services exported in 2021, and Australia's third-largest trading partner after China and the United States. India and Australia must engage with the EU to reduce their carbon emissions, improve their data collection and reporting, diversify their export markets, and develop low-carbon industries.

Australia is seeking a more comprehensive trade deal with India, building on the Economic Cooperation and Trade Agreement signed last year. The two have similar priorities and goals for renewable energy. A Free Trade Agreement (FTA) will increase trade, reduce or remove tariffs on goods and create new opportunities for Australian and Indian businesses to expand their markets.

Most importantly, it will break down barriers to the transfer of private capital. The transition to renewable energy will require massive investment in infrastructure and technology, and increasing private and public capital flows will be crucial in helping both countries meet their climate goals.

**Vibhuti Garg travelled to Australia on the Canberra Fellowships Program, organised by Australia's Department of Foreign Affairs and Trade*

Vibhuti Garg is an energy economist and IEEFA Director, South Asia. Vibhuti's focus is on promoting sustainable development through influencing policy intervention on energy pricing, adoption of new technologies, subsidy reforms, enhancing clean energy access, access to capital and private participation in various areas of the energy sector.

She formed part of the Smart Energy Council's delegation to India in March this year. (See following pages.)

POWERING UP INDIA

The Smart Energy Council's Delegation to India successfully forged closer ties with the vast nation which is powering ahead in renewable energy on an almighty scale. Despite the enormous difference in populations, the two nations share common values and a desire to form robust business partnerships while securing supply chains as the world competes for renewables supremacy.

EARLIER THIS YEAR a select group of Australia's renewable energy innovators took the opportunity to join the Smart Energy Council's Delegation to India to showcase their products and services to a nation on the cusp of a renewables boom.

Among the delegation's esteemed companies: SunDrive Solar, CSIRO, HydroSun, 5B, Powerledger, AERL, Selectronic, Rare Energy, Sunrise CSP, easy warm, CWP Global, Greenbank, Regen Power, Boundless, Good Car Co and IEEFA; each keen to grasp the scale of India's burgeoning renewables manufacturing capability and explore investment opportunities.

The mission also focused on the role of Australia's critical minerals and renewable energy resources in collaborations with India to provide the scale of investment required for the global transition to net zero emissions, SEC's John Grimes said.

"Strengthening India-Australia smart energy ties gives our nations an edge in the global race. Several very large Indian companies are looking to invest in 100GW scale projects in Australia."

The action packed 10-day tour took in the **Tata Power** Smart Grid Lab in Delhi. The century old power company with 14.1GW generation capacity which supplies clean energy to 37% of its twelve million distribution consumers is focused on renewables R&D.

Next stop was **ReNew Power** one of India's leading renewable energy generators with 13.4GW in projects under development and in the pipeline through interests in large-scale solar, wind, hybrid, hydropower and green hydrogen. ReNew Power officials discussed with SEC Delegates optimum means of integrating businesses opportunities in the Indian market – another potential win-win.

Scooting along: One of the many highlights was a trip to the Ola factory employing 10,000 women to churn out *10 million* LG powered electric scooters every year. With an affordable sticker price of $2,500 this opens the market to students and micro businesses.

Forging ties: The Smart Energy Council strengthened India-Australia ties by signing partnerships with Pandit Deendayal Energy University and the National Solar Energy Federation of India which advocates better smart energy policies.

High office: Delegates were thrilled to meet with Prime Minister Anthony Albanese (as seen on the cover of this magazine) before partnering with Cricket Captain Pat Cummins for the Fourth Test. Pat is the founder of Cricket for Climate established to support initiatives that drive cricket to net zero by 2035 by installing solar PV installations at cricket clubs across Australia... and now the world, with ambitions for a not-insignificant 75% reduction in emissions at clubs by 2030.

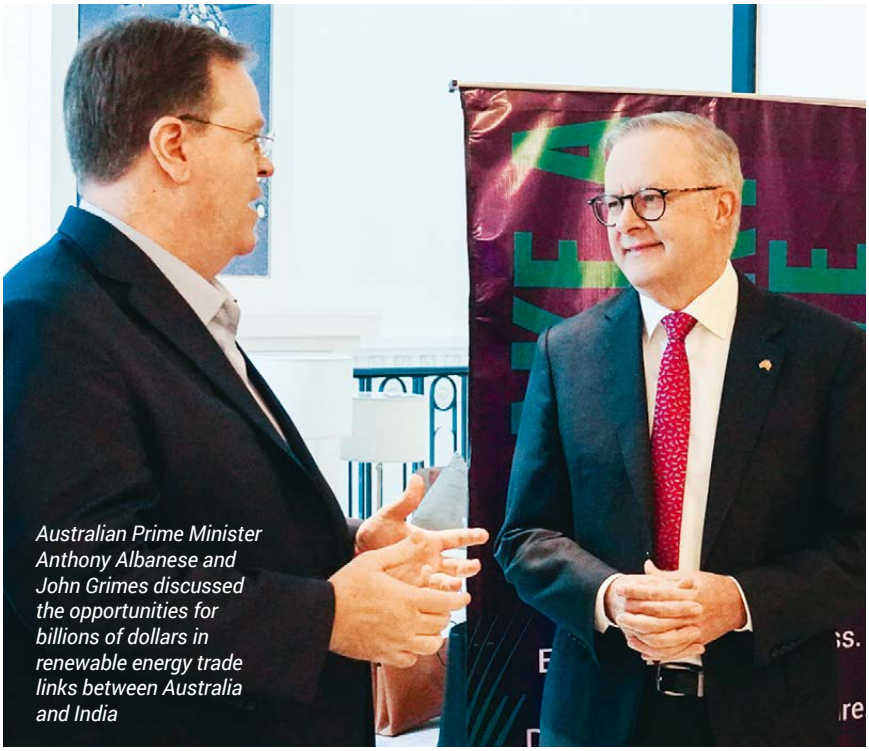
Back to business with a visit to the **Australian High Commission in Delhi** for high-level trade and business briefings by the Department of Foreign Affairs and Trade and Department of Industry, Science and Resources on bilateral trade developments.

The delegation was also supported by high-level patrons, including Tata Power CEO Dr Praveer Sinha, ACT Chief Minister Andrew Barr, Queensland MP Mick De Brenni, Senator Jenny McAllister and Indian High Commissioner to Australia Manpreet Vohra, who said "It's good that the delegation will take concrete steps to partner with suppliers of solar modules and inverters, wind technology, electrolysers, electric vehicles and related sectors such as batteries and EV software".

And in a video message from Climate Change and Energy Minister, Chris Bowen said: "Australia and India both recognise the importance of accelerating the clean energy transformation for our economies, and for our people.

"Australia's rich resources and clean technology expertise, paired with India's massive manufacturing capability, make us perfect partners to scale up production of those critical technologies."

Briefings concluded with the **International Solar Alliance** (ISA), a cooperation of 121 countries established by India and France to mobilise more than $1 trillion of investments in solar technologies by 2030.



Australian Prime Minister Anthony Albanese and John Grimes discussed the opportunities for billions of dollars in renewable energy trade links between Australia and India

Indian Prime Minister Modi, who harbours enormous ambition for green hydrogen domestic use and export, has directed the ISA to establish a Centre of Excellence for renewable hydrogen. (A fact that did not go unnoticed by Albanese during his trip and which is believed to have influenced the magnitude of Australia's Hydrogen Headstart program announced in the subsequent federal budget.)

"Indian Prime Minister Modi and his government are really setting the pace in renewables technologies and outputs… India is hungry for expertise and seeking strategic expert partners," John Grimes said.

"Building respectful relationships is key to unlocking the opportunity of Indian markets – we're delighted to have launched that first step for the smart energy sector.

"Australia is on the precipice of becoming a renewable energy superpower, knowledge and technology sharing with our Indian partners puts us in prime position, but for Australia to become a renewable energy exporting superpower we need a lot more supply chains and we need to diversify." No dispute on that!

Opportunities abound

On return to Australia John Grimes declared the commitments made for future trade and cooperation are of magnitudes "far greater than ever imagined".

"The scale of trade success, symbiotic partnerships and the promise of immense future opportunities are just starting to sink in."

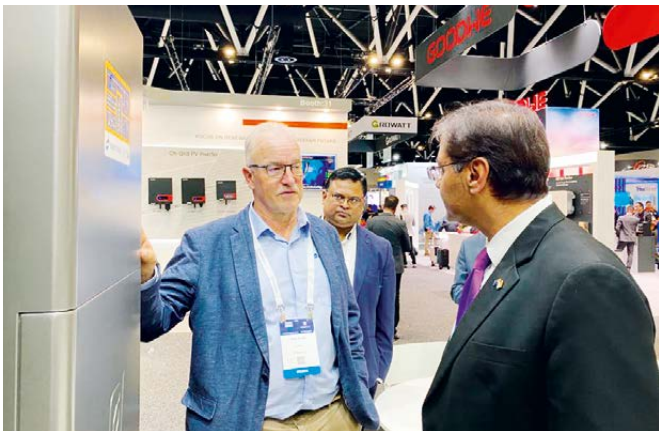
A special webinar listed key findings from the India Delegation: the fact India is more advanced than many assume, an intent that is driven from the uppermost levels; India is also hungry for expertise and looking to reward early support and engagement and build long-term relationships.

India too has scale (consider the 4GW solar farm underway!) and manufacturing opportunities abound in large-scale solar PV manufacturing, with an opportunity for power electronics to enable leading Australian companies Selectronic and AERL to scale up through exports.

Both countries are in embryonic stages of renewable hydrogen and aspire to export, but first need to get to scale. Likewise significant targets and ambitions in battery breakthroughs: solid state batteries and sodium ion could move fast to deliver mass production.

Plenty of scope, plenty of ambition and definitely no shortage of goodwill.

SEC received formal support from **Austrade**; other partners included the **Confederation of Indian Industry**, the **Australia India Business Council** and the **Hydrogen Association of India**.



Rod Scott discusses Selectronic's unique features with the Indian High Commissioner at Smart Energy 2023

One of the many highlights was a trip to the Ola factory which employs 10,000 women to churn out 10 million LG powered electric scooters every year

Watch this space!

Joanna Kay recently told *Smart Energy* "Our trip to India back in March was the start of something big, I have seen significant engagement from the states in the past week wanting to talk about opportunities in India, and Indian businesses keen to collaborate with Australian businesses.

"Several of our SEC members are in early stages of establishing enormous projects.

"India is scaling up and Australia has an incredible opportunity to be supportive in that process… we are front and centre, Indian companies and government are seeing us, the Smart Energy Council, as a conduit, we have positioned ourselves strongly," said the former ISA staffer and diplomat.

"Clearly our economic trading relationship with India is stronger than ever, they are very much focused on renewable energy and Prime Minister Modi has expressed particular interest.

"This is a watch-this-space activity, the start of a long, highly significant and valuable journey between two nations with common values and aspirations."

Albanese: potentially billions in trade

During his whirlwind trip to India Prime Minister Albanese said "This trip is about win-win, a win for Australia, a win for India – closer economic relations the fifth largest economy in the world and growing.

"As India scales up solar and battery production, looks to build massive projects overseas, and rolls out cutting-edge energy technology at home, the opportunities for collaboration are immense.

"We're in a critical and global race for renewable energy investment, if Australia seizes this opportunity, we could become a renewable energy superpower."

In a TV interview screened from India to audiences across Australia during prime-time viewing PM Albanese referenced the Smart Energy Council delegation stating "Thirty-four Australian companies says a lot about the opportunity in shifting to cleaner, smarter energy.

"It's also about reaching out to the world – there can't be a solution on climate change, without international action [and it] makes good economic sense, it's about Australian jobs and Australian businesses growing. It is indeed smart economics, not just smart energy."

"Australia has been very good at innovation, in renewables and smart technology, but we haven't always been good at commercialising those opportunities for Australia's advantage."

ELECTRIFYING AUSTRALIA

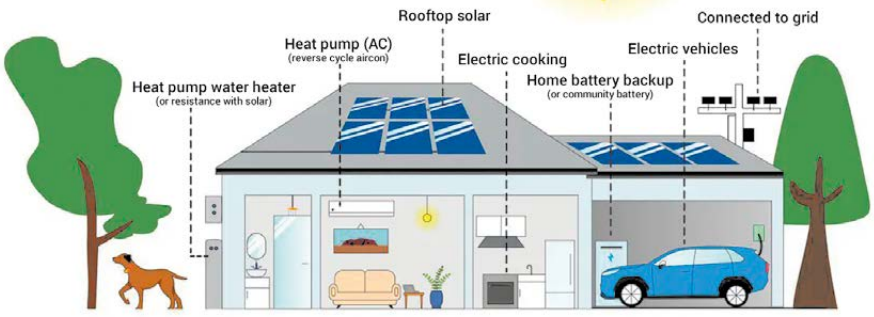
LATE LAST YEAR, Minister for Climate Change and Energy **Chris Bowen** indicated the government would support a "meaningful and substantial package" to help householders swap their gas appliances with electric ones and that electrification had been listed a "priority" in the transition from fossil fuels.

"Too many Australians are paying for wasted energy… the Albanese government wants to make every Watt count," he said. "Improving energy performance lowers energy costs, improves productivity and reduces emissions."

On this there is strong agreement from Rewiring Australia and the Smart Energy Council who teamed forces to campaign for a bold Federal Budget with deep investments in home electrification through a 10-year, $12 billion Powering Our Homes package (details below).

So, how did the May Federal Budget stack up? **The key elements of electrification include:**

- Up to $3 billion in electricity bill relief for 5.5 million households (and about 1 million small businesses)
- A $1.3 billion Household Energy Upgrades Fund
- $1 billion to CEFC for financing options for household energy upgrades – partnering with banks and other lenders on upgrading homes with battery-ready solar PV, modern appliances, helping more than 110,000 households
- $300 million to support upgrades to social housing, co-funded and co-designed with states and territories, with around 60,000 social housing properties saving up to one-third of their energy consumption from upgrades each year, and
- $310m in tax relief via Small Business Energy Incentive, to provide businesses with annual turnover of less than $50m with additional 20% deduction on spending that supports electrification and more efficient use of energy.



GRAPHIC COURTESY REWIRING AUSTRALIA

Smart Energy External Affairs Manager **Wayne Smith** lauded the measures, saying "This is the most significant budget ever in terms of climate and energy, and it represents a profound shift in Australia's approach to the most pressing matters of the day that shape the future.

"The Government has responded to the massive cost-of-living challenge facing households with a real commitment to include all Australians on the energy transition journey, unlocking $1.3 billion for home electrification and slashing power bills for those most needing it.

"Empowering homes to electrify is both anti-inflationary and delivers decarbonisation which are critical for the climate and our economy," he said, adding the Council is poised to play a key advisory role in delivering the potential of this Budget.

Wayne did however concede that he will continue to drive efforts to unlock the full $12 billion as laid out in *Powering Our Homes*.

"This budget delivered a significant down payment but the urgency for Australia to do more remains, as the rest of the world, including our allies, move quickly to decarbonise. Together with our partner Rewiring Australia we will continue to push for more encompassing change to electrify all homes and businesses," Wayne said, mindful of the 7 million homes still connected to gas.

Rewiring Australia: it's electrifying

A few weeks prior to the Budget the Smart Energy Council and Rewiring Australia's campaign to electrify homes and businesses was the focus of a Parliament House gathering attended by key policy makers and industry heavyweights. We like to think the event had an impact on the content of the budget.

SEC's **John Grimes** told the gathering "This is about empowering households and businesses to take hold of their energy future by electrifying premises with clean renewable energy… electrification delivers massive economic benefit to households, it addresses the family budget and also reduces emissions.

"It is potent to focus on the economic climate and opportunities; we need to harness the imagination of Australia to get the best community outcomes from the shift.

"We need to seize the opportunity, now is the time. There is some amazingly smart

Revisiting the Grand Plan to Power Homes

Earlier this year the Smart Energy Council, CANA and Rewiring Australia joined forces to list the Key Principles of the 10-year, $12 billion *Powering Our Homes* Package:

- A $6 billion Smart Energy Smart Families Package – low interest loans, direct and targeted rebates for smart energy products installed in homes
- A $6 billion Low Income New Energy (LINE) Public and Social Housing Package
- A national Small-scale Renewable Energy Storage Scheme built as an extension to the existing *Renewable Energy Electricity Act 2000* and stimulating local battery manufacturing and reuse industry in Australia
- Minimum energy efficiency and climate performance standards and disclosures for appliances and rental properties
- An $80m national education and communications campaign on household energy performance, solar, storage and smart energy management
- A new Powering Our Homes and Businesses Division in the Commonwealth Department of Climate Change to lead on improving efficiency and coordination between Australian governments, and
- Additional resources for voluntary industry initiatives for quality products, installations and services as well as public consumer protection agencies.

The consortium will continue to advocate for these critical measures to be included in the next Federal Budget.

A moment of levity as Industry Minister Ed Husic addresses a group of MPs and Senators who met with the Smart Energy Council and Rewiring Australia to discuss the vast economic, health and decarbonisation benefits of home electrification

technology… smart energy impacts all our economy," said John who also urged government to consider low-interest loans for smart energy products, electrification upgrades for public and social housing as well as implementing minimum efficiency standards and disclosures for rental properties.

"Insulating families from energy price shocks is crucial, and successful implementation of the policy suite would generate energy bill savings of up to $3,000–$5,000 per household, per year, in 2030."

Industry Minister **Ed Husic** amplified the message stating "Electrification is a big deal in terms of what we do; getting emissions down is critical and allows the next generation to enjoy life.

"We need to get our act together, to reduce emissions in homes and industry; there is a huge opportunity to electrify what we use in homes and businesses and create jobs in the process.

"At the heart of the National Reconstruction Fund is $3 billion to make it happen: low emission technologies created largely through electrification."

Broad consensus

Community independents **Monique Ryan, Kate Chaney, Kylea Tink** and **Allegra Spender** formed a significant and vocal contingency at the Parliament House gathering, elaborating on the unique opportunity for economic benefit and $300 billion in power bill savings from household electrification and calling for "bold and decisive government action".

Independent Senator **David Pocock** chimed in: "We've seen a huge shift in the way we talk about energy and with challenge comes opportunities. Change is inevitable, we need to speed up progress to unlock savings and this includes building transmission lines to develop the new economy, and new energy system."

On that score, the **latest IPCC report** delivered another wake-up call. Rewiring Australia's **Saul Griffith** warned "Breakneck speed is needed to contain warming to 1.5 degrees, and there's an enormous ambition gap – the difference between global policies and emissions.

"Technically we need no new projects to get us to zero emissions but we need five to 10 times the speed of solar and hydro developments on the supply side, and we need all government sector response on climate. This is yet to happen," Saul said.

"The US's *Inflation Reduction Act* is the most extraordinary step to date but even so only half the emissions cuts necessary will be achieved. While it did focus on households, with a significant spend on electrification, it doesn't address all sectors. I hope Australia can do better, we can lead on electrification and set a global precedent.

"This is now about deployment and it's go time.

"We need to do it all at once."

The gathering preceded a series of 30 meetings with MPs and Senators including **Jenny McAllister**, assistant Minster for Climate Change and Energy and who is responsible for national energy performance strategy which explores the opportunities mass electrification can bring.

Forward steps

Wayne Smith later commented "We shifted the dial on home electrification that day… we brought home the message to MPs and senators about the need to get families off gas and to electrify homes and small businesses, and raised a bunch of reforms we'd like to see.

"The end game is to get every home off gas – that is our ambition and we will achieve it. Getting off gas is good for health, and wallets, and homes.

"That is what Australians want and the Federal Budget is a big step forward.

"I'm highly optimistic we will get there in the long term because there is momentum and it makes sense for health and climate change and environmental perspective to electrify homes with renewable energy as soon as possible."

"We will push on."

Steve Blume and Wayne Smith of the SEC with Rewiring Australia staff and Dan Repacholi MP Member for Hunter at Parliament House

"The end game is to get every home off gas – that is our ambition and we will achieve it. Getting off gas is good for health, and wallets, and homes."

SMART ENERGY COUNCIL: Putting *energy into action*

The Smart Energy Council's advocacy team continues to spread the good word about smart energy – decarbonisation, electrification, storage targets and domestic supply – through campaigns, submissions and representations, webinars, public broadcasts and tweets. Clearly the messages are having an impact: during the past twelve months the Albanese government has committed more than $40 billion of investment to make Australia a renewable energy superpower. It can only get bigger and better…

First we celebrate one of our biggest wins – the abolition of the Energy Security Board whose agenda backed mechanism to shore up coal power and stall renewables. Common sense prevails with the board being replaced on July 1, 2023 with an Energy Advisory Panel to coordinate security, reliability and affordability of Australia's east coast energy system.

A jubilant Wayne Smith hails the ditching of the ESB as "Another very big win for the smart energy industry… this is very BIG, very welcome news, the Smart Energy Council campaigned hard and consistently for this.

"I'm not counting *[actually yes you are Wayne, and you have our blessing]*, but that's FOUR Energy Ministers' meetings in a row where the Smart Energy Council and the smart energy industry has had a massive win:

1 Abolished CoalKeeper (Capacity Mechanism)
2 Endorsed the new Capacity Investment Scheme for large-scale renewables and renewable energy storage
3 Abolished SolarStopper (Locational Marginal Pricing)
4 Axed the Energy Security Board

"And in the federal budget fossil hydrogen was ruled out which represents a massive win for renewable hydrogen.

"What's next? Strong fuel efficiency standards, a comprehensive response to the US *Inflation Reduction Act* and a Small-scale Renewable Energy Storage Scheme."

Wayne thanked all members and strategic supporters for their ongoing support, declaring "It couldn't be done, can't be done, without you."

Treasurer's Clean Energy Investor Roundtable: John Grimes was among the select few invited to attend Treasurer Jim Chalmers' Clean Energy Investor Roundtable in April in Brisbane. He told the gathering, which included Minister Chris Bowen and Senator Jenny McAllister, "The 1980s saw the great modernisation of the Australian economy, the 2020s must see the decarbonisation of our economy."

John Grimes and partner organisation Rewiring Australia's Saul Griffith drew a large crowd of 300 to the Clean Energy Community Fair in Sydney hosted by Independent MP Kylea Tink to discuss how small home improvements can generate big energy savings.

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Tune in to Twitter at: @SmartEnergyCncl

Platinum and Gold members receive regular industry briefings and updates via the special What'sApp group messages.

Appearances at Senate and parliamentary hearings

Policy Experts Wayne Smith and Leigh Heaney addressed the March 31 **Joint Standing Committee, Trade and Investment Growth** hearing at Parliament House on means to build a major new era of economic reform that positions Australia at the global centre for the zero-emissions economy.

In late May Wayne and Leigh appeared before the **Parliamentary Inquiry into Advanced Manufacturing** promoting support for domestic critical smart energy manufacturing in response to the *Inflation Reduction Act*. This followed their detailed submission on the topic, actions that mark the launch of SEC's 12-month campaign on the impact and opportunities presented by the IRA.

In the media

Among his many other interviews with the media, John Grimes featured on ABC radio to broadcast the benefits of getting off gas. This achieved the desired result with extensive follow up by TV, mainstream press and other radio channels.

And ABC's *The Business* featured SEC Expert Advisor **Nicolette Boele** eloquently spelling out the economic benefits of supercharging Australia's energy and mining industries.

The SEC's Manufacturing Working Group

Stay tuned in!

Our regular updates, media releases, industry webinars and digital newsletters are designed to keep members updated on dynamic developments. Gold and Platinum members are also privy to a special What's App group for up-to-the-minute intel on activities.

On the following pages we present the activities of the Solar Stewardship Committee, the Gender Action Plan, and National Electric Vehicle Strategy coordinated by Advocacy team specialists.

PUTTING ENERGY INTO ACTION

SMART ENERGY COUNCIL

The **SMART ENERGY COUNCIL** is the peak body of the smart energy sector in Australia. We are a not-for-profit, membership-based organisation with around 1,000 members nationwide, consisting of companies and individuals operating in this rapidly expanding industry.

We are passionate and independent. Our deep understanding of and connections with our members and industry ensures that we deliver results for the smart energy industry and the community.

"The Smart Energy Council has the key people, experience, demonstrated effectiveness, and industry and government network and relationships, to rate as one of the top industry bodies in Australia and globally."

– John Hewson, Former Liberal Party leader, financial and economic expert

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DEALING WITH PV WASTE

Wayne Smith is facilitating the PV Stewardship Scheme

The Smart Energy Council is facilitating a PV stewardship scheme that addresses workable and responsible best-practice solutions for the millions of solar panels that will inevitably reach end of life.

BY 2030, more than four million PV modules will have been removed from Australian rooftops. Let that sink in. Billions of tonnes of waste – glass, aluminium, plastic, polymer back sheet, copper wire and more that will need to be dismantled and responsibly dealt with.

The scenario prompted the Smart Energy Council to join forces with The Activ Group and the Queensland government earlier this year to announce Australia's first industry-led trial of solar panel recycling, funded by the state government.

Several meetings have since taken place, the most recent in mid-May where the group – the Queensland Stewardship Consultative Committee – documented the range of practical and administrative considerations.

Timelines too were set out: Stage one of the program which examines the economics of solar panel reuse and recycling is due to conclude on June 30, 2023 and Stage two – the rollout solar panel recycling trial – one year later in June 2024.

"The timing of our work is critical given the large and looming volume of PV waste that needs to be responsibly managed," said Wayne Smith who shared some of the many talking points of the Consultative Committee with delegates to the Smart Energy conference.

"Many fundamental aspects are being considered, such as whether a solar stewardship scheme should be heavily regulated, co-regulated (between government and industry) or industry regulated," he said.

"Further, should the Solar Stewardship Scheme be extended to include inverters, batteries and related products, given the anticipated end of life of these products.

"And who exactly should be responsible for the collection of solar panels – local councils, solar distributors, installers, government agencies or recycling experts? Beyond that, should solar panel processing be managed by government or industry?

"These are the basis of the key questions that need to be addressed in terms of what a successful solar panel recycling scheme looks like," Wayne said.

For such a scheme to be successful it must catalogue all the reasons for recycling, not just end of life but also the upgrading of systems, damaged panels, and faulty insurance replacement, he explained.

"We also need to drill down on whether there is a need for such a scheme to cover just PV panels or the rest of the system as a whole, also whether the scheme should include commercial panels in large-scale systems or whether these be managed under a separate scheme."

Wayne cited the unfortunate level of mistrust in the recycling industry due to the fiasco surrounding plastics recycling – a lot of hype and ostensibly good intentions but, essentially, stalled. A fizzer.

For this and other reasons he emphasised the need for the PV recycling scheme to be easy to implement on the administrative side, and to gain widespread support from installers in order to be successful.

"And an area we need to further explore is whether a landfill ban is good way to incentivise the industry, mindful of current bad practices."

Continued on next page

WOMEN IN BUSINESS: TILTING THE IMBALANCE

THE SMART ENERGY COUNCIL is rolling out a Gender Action Plan (GAP) to address the gender imbalance and attract more females to the smart energy industry. The key message is the scope of opportunities in the renewables sector, mindful of the need to attract and retain women as part of the next 480,000 new jobs forecast to deliver 2030 renewable targets.

Leading the charge on the Gender Action Plan is SEC Expert Advisor Nicolette Boele who explained the two-year plan includes recruiting, developing and coordinating communities of practice with a 'Men as Gender Leaders' program, to better equip our largely male-dominated industry, with skills to champion safe and inclusive workplaces.

Strategies for designing a community of practice that will guide the development of content, co-design solutions and encourage the creation of a network that will support the GAP's mission are also being developed, explained Nicolette who has notched up 25 years' experience in renewables policies and investment.

The third prong is a robust public communications campaign to empower businesses to promote their leadership role in gender diversity and inclusion.

"Building resources and materials will help, if we do this well our campaigns will successfully amplify the brand and emphasise quality and commitment," Nicolette said. "Inclusive employment is the only way forward.

"We want to partner with government and NGOs to amplify the brand but acknowledge all sectors are vying for workers – it is a competitive workplace. Engineers Australia and the mining sector have done an extraordinary job attracting women. Now we are putting our efforts into resourcing members on strategic recruitment – helping the industry and the economy too."

The plan was spelt out during a recent SEC webinar where key SEC members presented their perspectives.

The SEC acknowledges the significant support of the LMCF for the Gender Action Plan

Industry impressions

Sophie Wright who joined the renewables industry a bit later in her career regrets not being part of it earlier, given the extent of opportunities.

But as chief executive of Electrify Victoria and Geelong Electric Vehicle Chargers she can't help observe that customers always expect males. "Traditionally our industry has been very much male dominated," she said.

"I'm keen to drive opportunities for women across the board and suggest it's time to spread the word in the education system. It's a

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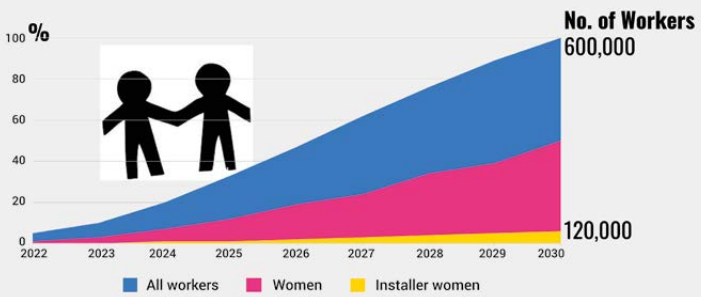

Vision: Our Smart Energy workforce is inclusive, safe and provides meaningful work for all.

DEALING WITH PV WASTE *continued from previous page*

Addressing major barriers

If the cost of the initial implementation is too high, government investment direct or indirect will be needed.

"And we believe that education of consumers, installers, distributors and others in the chain is vital as everyone needs to be on the same page considering rules and consequences," Wayne said, adding the poser of what constitutes the minimum acceptable percentage of recycling, given no one technology can do everything.

"Other matters continue to surface such as the relative weight of barriers and which are more vital to overcome; and what about those responsible for bearing the cost, should it be distributed equally among all stakeholders, in this instance government, industry and consumers?"

Discouraging landfill

The consultative committee recognises that for the scheme to be successful benefits must be shared, also that processes involving getting rid of panels must be reasonably simple to navigate for consumers; there is also a need for a monetary incentive for installers coupled with regulation providing certainty for the industry to incentivise investment, Wayne explained.

"We need to consider whether the government should implement a subsidy and if so, should it be capped and who should receive it?

"Finally, how do we encourage the reuse of still-operational solar? The reuse of solar panels is a viable option only if there are safety quality testing and output guidance in place, old panels can be used in other applications such as electric fences, water pumps and more, but we need to fully address safety.

"Perhaps used panels could be fire rated in order to be reinstalled on homes?

"There is a lot on the table and our meetings with Activ and Queensland government representations are hearty to say the least.

"The end game as we see it is to develop an efficient, robust PV recycling scheme to maximise uptake and guarantee all round benefits which, critically, means addressing environmental imperatives."

Wayne acknowledged the solid support of the Queensland government which sets a strong precedent for other states.

great idea to talk to kids in schools as they are not exposed to the smart renewable energy industry, and including renewables in the curriculum so kids can learn about the opportunities it presents."

The prospect of a school career program that includes work experience and attendance at job fairs also received positive response.

"This is where our next generation of superstars will come from!" Sophie commented.

Well known industry identity Nigel Morris of Solar Analytics has been "abnormally lucky by being surrounded by incredible women" throughout his 31-year long career in solar. "For this reason the problem of gender has not been overly evident to me."

He added "Men have dominated in so much across the world for ever and we need to correct this by elevating the conversation and that includes not letting disrespectful behaviour go unnoticed or uncorrected."

The line-up included Eddy May of NRG Solar which employs 28 staff. "Remove installers and we're 50/50 gender balance, otherwise we're 0%!" he said.

"Why are businesses not attracting more females? Of our 87 applicants for a job at NRG, nine in ten were male… we need to change who we are attracting. For example people question whether women can lift solar panels… there's a problem in our thinking, there is bias, we need to remove it or we will be left behind.

Different sector, similar issue: Women in parliament

A few parallels with the federal government pledging $5 million over five years to 'Women for Election Australia' to equip and encourage more women to enter politics. The program will include place-based training events, online training forums, and a tech-based training platform containing candidate resources and support forums.

Notably too, the Women's Leadership and Development Program goes beyond creating job opportunities for women by addressing the structural and systemic barriers that impede women's employment, and progression into leadership positions.

And more competition? Minister for Women Katy Gallagher said "This funding will help enable a new generation of women across the country to enter public office, including those who might have never considered it as a career option."

"If we as an industry want to survive we need to get gender equity in order – and to achieve our renewables targets."

By contrast and at the same time some "amazing" female chief executives have played pivotal roles in the renewables sector, Nicolette said.

View from the top

Cue former Shadow Environment Minister Terri Butler, who, with a keen interest in climate and energy, is a member of the advisory board for Griffith University's Climate Ready Initiative and is helping fast-track sustainable aviation fuels.

The newly elected SEC Board Director and Vice-President agrees gender balance in renewables is a significant issue and welcomes "the thinking and the work being put into this important issue by SEC and its leadership."

Chief executive John Grimes actively promotes the opportunities in smart energy courtesy of his high level participation in state several jobs and skills advisory committees where he flags Australia's path to 82% renewables and the workforce requirements.

Concluding, John stated "If we don't move it will hurt our business, younger people in our community need to consider gender equity as well as sustainability, renewable energy, the environment.

"We know there is a passionate and engaged group of people but all roads lead to signing up for the program… educating and empowering men is important.

"How about a race to the top where companies outpace each other and share their stories, this will help drive momentum."

Members are encouraged to sign up for the Gender Action Program at www.smartenergy.org.au/gender-action-plan/


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MOVING UP A GEAR: SMART TRANSPORT

"Australia's transport sector is undergoing a fundamental, once-in-a-lifetime transformation and we must implement fuel efficiency standards sooner rather than later."

AUDREY QUICKE, SEC TRANSPORT LEAD

LATE APRIL SAW THE LAUNCH of the federal government's much anticipated National Electric Vehicle Strategy which was broadly welcomed by the Smart Energy Council, but with a few qualifiers.

Topping the list of positives is the government's commitment to implement fuel efficiency standards, a move that will encourage a diverse range of electric vehicles models to the market, drive efficiency improvements, lower fuel use and emissions and reduce costs for all Australians.

Timelines however are the sticking point, with the government's aim to implement the Standard by late 2023 - a full 16 months after signalling its intent to do so and despite the imperatives.

Mindful that each day without fuel efficiency standards costs Australians more at the bowser, the SEC is calling for legislation to be introduced by December 2023 that aligns with international best practice (see Fuel Efficiency Submission on SEC website).

There's a need to ramp up ambitions to catch up to New Zealand, the United States and Europe by 2030 with fleet-average CO_2 emissions for new vehicles; perhaps by adopting the same targets as New Zealand's Clean Car Standard or following the International Council for Clean Transportation's world-class standards-aligned pathway.

The SEC is also urging integrity by following the Worldwide Harmonised Light Vehicle Test Procedure (WLTP) rather than the New European Driving Cycle (NEDC) to better reflect real world driving conditions and minimise the gap between real-world emissions and the test-cycle/reported emissions.

Among the less palatable aspects of the government strategy: the omission of E-bikes and E-scooters despite their inclusion in the consultation document and use of E-bikes replacing short car trips and consequently lowering emissions and improving the health of those in high density cities.

The wrap from the Smart Energy conference's Smart Transport stream

The consensus among speakers at SECE was the lack of real progress on EVs, although the ACT is soaring ahead in sales. The nexus between transport and energy is becoming more widely recognised and EV charging standards are being pursued with more vigour, although the potential for gold-plating of EV charging by networks appears a real concern.

Behyad Jafari of the Electric Vehicle Council highlighted key market dynamics: cheap EVs are going to come out of Asia (not US or Europe); more than 25,000 EVs originated in China, the next market is Korea at about 4000, although Japan remains the main source of all cars in Australia followed by Thailand, China and Korea with Germany trailing; 42% of car sales markets have banned petrol driven cars by 2035, 16 OEMs will stop selling fuel driven vehicles by 2040; during 2022 globally 14% of car sales were EVs.

John Grimes and Audrey Quicke addressed matters relating to the National Electric Vehicle Strategy in a media conference at Parliament House

Also omitted is public transport electrification preparing Australia to use E visas batteries on wheels through bidirectional charging or reforming the tax settings that favour fuel guzzling utes and SUVs.

The SEC's Smart Transport Working Group of 20-30 leading companies in smart transport, from vehicle manufacturers and importers to charging station installers and motoring associations, will continue to push for more timely and effective measures to hasten the uptake of electric vehicles.

At-a-glance: The Federal Budget impact on smart transport

- $7.8 million for a Transport and Infrastructure Net Zero Roadmap and Action Plan to support the decarbonisation of the transport and infrastructure sectors.
- $7.4 million to develop Fuel Efficiency Standards to encourage light vehicle manufacturers to increase the supply of fuel efficient and electric vehicles in the Australian market
- $5.2 million to Reducing Transport Emissions through EV guidance, demo's and training for first responders and more resources for the department to better plan for higher EV uptake

Separately, ARENA has announced $70 million in funding to be made available under the Driving the Nation Program aimed at fostering innovation in electric vehicle charging solutions across Australia.

Smart Energy Council Transport Lead Audrey Quicke (left) who is running a strong and effective campaign for Fuel Efficiency Standards recently reinforced the message in a meeting with federal transport minister Catherine King.

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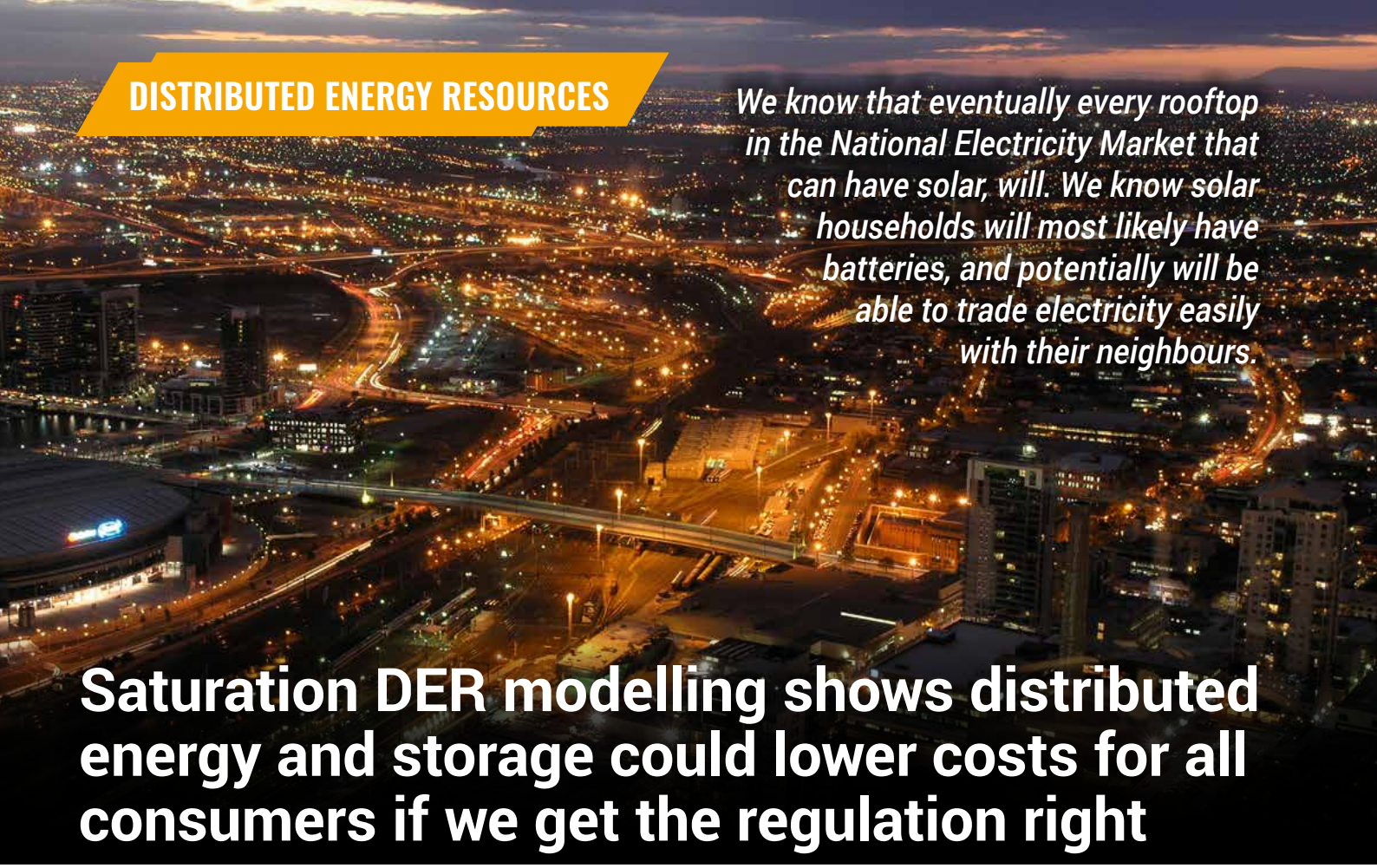
Delivered in partnership with New Energy Training Pty Ltd (RTO Number 45919)



We know that eventually every rooftop in the National Electricity Market that can have solar, will. We know solar households will most likely have batteries, and potentially will be able to trade electricity easily with their neighbours.

Saturation DER modelling shows distributed energy and storage could lower costs for all consumers if we get the regulation right

By Dr Gabrielle Kuiper

MODELLING PLAYS A CENTRAL ROLE in planning for the future of Australia's energy markets. It's a problematic tool given all modelling is based on the past and we know the future will be dramatically different.

Sometimes it's worth turning a tool on its head to create fresh understanding.

ITP Renewables has done this by 'backcasting' scenarios for saturation levels of distributed energy resources (DER). In other words, rather than model scenarios based on forecast energy needs, on my suggestion ITP Renewables started with the inevitability that some day we will reach saturation DER, and modelled what this would mean for the electricity system.

We know that eventually every rooftop in the National Electricity Market (NEM) that can have solar, will. We know solar households will most likely have batteries, and potentially will be able to trade electricity easily with their neighbours. They will also be all electric, with flexible demand in the form of controlled loads able to be time-shifted, and have electric vehicles (EVs) that can charge in the daytime or overnight. We'll also have community batteries in some form.

We don't know when this will happen, but ITP modelled what this might look like through a range of scenarios, starting with 70% of houses with solar, then adding different varieties of DER in sequence (eg batteries, controlled loads, EVs) to examine the impacts on solar photovoltaic (PV) exports, PV export peaks, network peaks and high spot price periods (4–8pm).

This approach to modelling gives a sense of the consequences for electricity flows locally and through the broader grid for a saturation DER suburb in a way that iterative modelling from the past is unlikely to do.

The most significant finding from this fresh approach is that rooftop solar plus batteries will put the famous solar-created supply-demand duck curve (Figure 1) to sleep.

Figure 1 shows three scenarios for the load of an average household in the modelled suburb: PV only (with average PV system size of 12.43kW); PV plus battery storage with no battery trading (with average PV + battery system size of 15kWh); and PV plus battery storage with battery trading within the suburb with no friction and at no net cost (with average PV + battery system size of 15kWh).

The black line in the figure shows the imports from the wider grid into the household for the three scenarios. This illustrates the change by scenario – from a big fat-bellied duck to a sleeping one.

The significance of a sleeping duck is twofold – it dramatically reduces the abundant belly of solar generation during the middle of the day and there is no steep ramp rate to the head of the duck in the evening peak. In fact, there is no evening peak. Across all the modelled scenarios, rooftop solar plus battery trading (third graph in Figure 1) reduces the 4–8pm wholesale market evening peak by 67–92%.

How much and how fast the duck sleeps will depend a lot on the number and size of batteries and EVs per household and the regulations for trading this capacity. The more batteries and flexible load in the system, the greater the likelihood of a sleeping duck – that is, a flatter grid demand/supply curve.

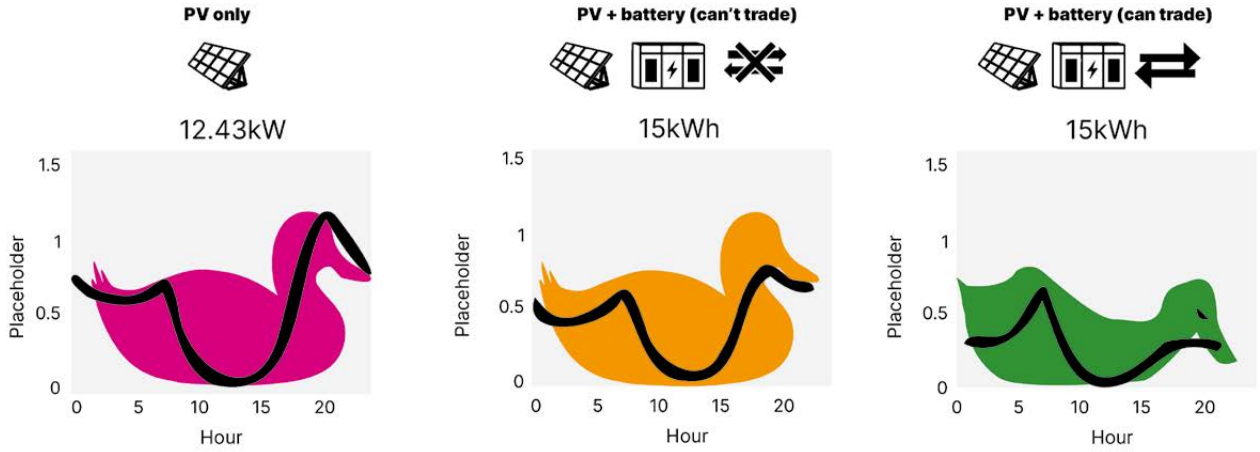
Regardless, the 4–8pm peak is the time where generators have traditionally earnt the bulk of their revenue. If this peak no longer exists, there will likely be significant impacts on the spot market.

At the same time, concerns about managing minimum demand on the grid in the middle of the day are eased (minimum demand increases by 21% in the scenario where batteries can trade). Similarly, concerns about the afternoon ramp rate are also reduced (afternoon ramp rate decreases by 17% in the battery trading scenario). The logical consequences should be significant downward pressure on wholesale spot prices, providing benefits for all consumers.

Poles and wires

Despite the recent increases in wholesale electricity market prices, the costs for the local poles and wires (the distribution network) have always been the largest component of household customers' electricity

Figure 1. Average import from grid



bills. Over the last two decades, distribution networks in Australia have generally been built to meet summer evening air-conditioning peaks. The $82.6 billion collective value of the regulated asset bases of distribution network service providers (DNSPs) in the NEM is largely based on their capacity to supply electricity from the grid at these peak times.

Rooftop solar exported back into the grid reduces the need for distribution network capacity. In the modelled suburb, solar PV alone reduces the average summer network peak by 28% and moves it 2.5 hours later in the day. In the third scenario where local 'trading' is made 'frictionless', household batteries reduce the average summer network peak by 64%, more than half. The summer network peak reduction figures are less than the average wholesale evening peak reductions because they are based on five specific events throughout the year.

Of course, there will also be winter peaks, which will change, especially in southern states such as Victoria, as heating switches from gas to electricity, and networks will need to consider this location-specific issue.

In general, however, the implications of these changes to network peaks are that DNSPs should not be arguing for increased network investment to cope with increasing electricity flows from DER. Instead, they should be arguing for increased software investment to help facilitate these flows on their networks.

All Victorian DNSPs have received approved expenditure for such investments, in particular Dynamic Voltage Management Systems (DVMS) and DER Management Systems (DERMS). Such smart

software systems can be cost-effectively combined with traditional tools that quickly and cheaply enable more solar in the system, such as transformer tap changes at substations.

One interesting trial is Project Edith, which is looking at the use of real-time network pricing to this end. Real-time network pricing is far more thoughtful than bluntly charging solar customers to export excess solar to the grid, which this analysis suggests would be perverse given the benefits PV can provide to networks.

Distribution revenue regulation

Overall, with decreased network peaks driven by solar and battery uptake, reduced capital expenditure would seem logical, and with that, lower distribution charges for customers. The system-level benefits of DER should be passed on to all customers. This requires the Australian Energy Regulator to understand this modelling and, preferably, to adapt distribution revenue regulation to meet the new circumstances of growing levels of DER. Ideally, the Australian Energy Market Commission would rethink revenue regulation from first principles given the dramatic changes coming in distribution networks.

Saturation levels of rooftop solar will create a large low belly in the duck curve. Without large load shifting, we won't make the most of the abundant solar generation in the middle of the day. There are many solutions to this challenge.

Shifting controlled load to the middle of the day has limited benefits with the currently low levels of controlled demand in most states. In Victoria, South Australia and much of New South Wales, however, there is a large opportunity to switch from gas to smart (controllable) electric hot water, which can be heated by solar electricity in the middle of the day.

Queensland's Ergon and Energex already have 850 megawatts of controlled demand in both hot water and air-conditioning systems. The state has a huge head start on the demand flexibility needed to optimise variable renewable energy generation and consumption, yet Energy Queensland has recently implemented rooftop solar cutoffs for systems over 10kVA meaning they can switch off these systems when requested by the Australian Energy Market Operator (AEMO).

While behind-the-meter (BTM) batteries and load shifting can soak up some of the midday sun, the other big opportunity is in daytime EV charging. In a separate scenario for households with PV, batteries and daytime EV charging saw a 47–84% increase in minimum demand from the wider grid. This shows that we need to get smart EV charging standards into the NEM as soon as possible.

It's worth noting that none of the scenarios modelled were designed to optimise outcomes across the electricity system or for consumers.

"The most significant finding from this fresh approach is that rooftop solar plus batteries will put the famous solar-created supply-demand duck curve to sleep."

DR GABRIELLE KUIPER

They were simply different combinations of technology and enabling conditions. We could create even better outcomes if we plan for them.

Policies and programs

From the insights of ITP Renewable's saturation DER modelling, there are some clear policy directions for the Commonwealth's energy performance strategy and state governments' DER policies and programs.

Policies and programs should aim to maximise flexible demand, especially shifting water heating with controlled load to the middle of the day and assisting consumers to switch from gas to smart electric hot water systems.

DNSPs should be looking at matching renewable resources and network capacity by location for EV charging. It's not clear any organisations are taking a system-optimisation view of EV charging and there's a danger that the lack of EV charging standards and coordination will end up increasing overall costs for consumers. The modelling also looked at scenarios involving 'neighbourhood' batteries and further investigation is needed into how these can be used for the greatest benefit for consumers, as opposed to the DNSPs.

Projects Edith, Edge and Symphony have begun to experiment with targeted remuneration for DER services within a local network area. DNSPs should continue to support this evolving work and the energy market institutions need to ensure consumers can be compensated for the services their BTM devices can provide to the grid.

Finally, AEMO's next Integrated System Plan (ISP) should revise its DER uptake forecasts and attempt integrated planning with distribution networks. In particular, the ISP should model as many different scenarios for DER as it does for large-scale renewables. In general, we need energy system and market planning to better understand the implications of high levels of DER on the need for large-scale generation and storage.

DER saturation modelling has shown that DER has the ability to reduce peak demand in networks if managed well with significant implications for network capital expenditure requirements. In aggregate, DER also has the ability to bring down wholesale electricity prices. Given the delays to transmission builds and the Snowy 2.0 project, there should be greater focus on taking this 'small stuff' seriously and designing the policies, programs and regulations that will mean growing levels of DER will result in lower costs for all consumers. The ITP Renewables modelling shows saturation DER could benefit all consumers, including those without rooftop solar, if we get the policy and regulatory settings right.

DER Specialist, Senior Adviser to the Smart Energy Council and a Director at The Superpower Institute, Dr Gabrielle Kuiper is an energy, sustainability and climate change professional with over twenty years' experience in the corporate world, government and non-government organisations and academia. She was previously the DER Strategy Specialist with the Energy Security Board.

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FROM PARADISE TO THE PRECIPICE OF PERILOUS: THE (RISING) BLUE PACIFIC

THE PACIFIC REGION is, at last, gaining the attention it so vitally needs in highlighting the plight of rising sea levels and increasing storm ferocity and frequency. And the imbalance is palpable, as Alani Tuivucilevu, of Fiji's Women in Fisheries Network told Craig Reucassel of ABC: "I think our contribution to the effects of climate change is about a drop in the ocean… it is frustrating, because all we do is face the consequences."

Images of former dwellings in Fiji reduced to wooden stumps barely visible above seawater aired on our TV screens in the *Foreign Correspondent* documentary earlier this year. The tagline: In Fiji, the climate crisis is no longer off in the future – it's a daily reality.

The village of Vunidogoloa, we were told, "has the dubious honour of being one of the first communities in the world to be forced into a government-planned relocation because of climate change".

One-fifth of Fiji's population of nearly a million are living on the edge of disaster and could have no option but to relocate to higher ground.

Reacting to the ABC exposé Joanna Kay of the Smart Energy Council remarked: "The TV footage was incredibly insightful but also heartbreaking, to me this represents an urgent call to action.

"It brought to mind the address by His Excellency Simon Kofe of Tuvalu at COP26 which was recorded with him standing knee deep in seawater to emphasise the plight faced by his nation and the greater Pacific region. 'We are sinking', he declared.

"It was a profound illustration of just what's at stake. Entire communities sinking as waters rise and envelop their surrounds. We are talking about mass displacement unless we wake up to our accountabilities as responsible global citizens."

Confronting situations

Pictures of devastation are becoming all too familiar. In 2016, category five tropical cyclone Winston caused damage estimated at $1.35 billion. Among the carnage was several recently completed school solar installations by the ever-giving Its Time Foundation run by Rob Edwards. Sparkling new PV systems donated and installed by teams of volunteers smashed to smithereens.

Earlier this year wild scenes of winds of 230km/h whipped Vanuata on the back of category 4 cyclone Kevin which unleased its fury just three days after cyclone Judy. So much for one devastating event in a lifetime, two in one week!

A visibly distraught – and somewhat frustrated – Professor Dave Peebles was filmed on a blustery Vanuatu balcony bearing the brunt of the storm while taking the opportunity to stress the contribution of climate change to the region's brutal weather extremities. He's witnessed profound change during his three decades of academic and professional experience across the Pacific.

The Smart Energy Council's Pacific Summit

Professor Peebles will be among the keynote speakers at the Smart Energy Council's Pacific Summit being staged in Melbourne later this year as a follow up from last year's gathering of Pacific ambassadors and key players instrumental to climate action.

The SEC's Pacific Summit will address the very survival of the low-lying Pacific islands and actions Australia should and must take to mitigate the worst effects. The outlook is dire: according to a recent World Bank report rises in the sea level could result in the disappearance of the Marshall Islands, which lie mid-way between Hawaii and Australia.

The 1,156 islands form a land mass of 180sq km and are home to 60,000 people.

The scale of the situation is almost beyond comprehension. Some of the earth's most stunning landscapes which are home to millions will disappear unless real action is taken by polluting nations.

Will that day ever arrive? Is the scale of destruction reversible?

Last November's COP27 talks saw agreement among developed countries for a 'Loss and Damage' climate compensation fund for small island nations and developing countries, estimated to need up to $860 billion by 2030. Yet there is no obligation and is not the best solution to a looming issue to fix it before it escalates? What about a bit of rear vision?

The Federal Budget committed almost $2 billion to the Pacific region, some of which will be targeted to economic and development opportunities that could produce flow-on benefits for the region's energy transition.

The Australian Government has now put its hand up to host the world's largest climate event and tradeshow in 2026. Its hosting bid for the UN Climate Conference (COP), in partnership with Pacific Island neighbours, is looking strong. If successful, the COP could showcase a new side of Australia – one willing to step up on climate leadership and climate solutions. It would be a huge opportunity for the local smart energy industry.

Referencing the potential for Australia to host COP31, Richie Merzian, SEC International Director, stated "I'd argue that we can put on the biggest international pageant of our time to address the biggest international threat of our time." Richie is leading the charge for Australia to step up activities in the Asia Pacific region.

More recently six Pacific nations, Vanuatu, Tuvalu, Tonga, Fiji, Niue and the Solomon Islands, called for global backing for a fossil fuel non-proliferation treaty to persuade world leaders to phase out coal, oil and gas production as consistent with limiting global warming to 1.5°C

Vanuatu prime minister Alatoi Ishmael Kalsakau said "We need both domestic action and international cooperation to explicitly stop the expansion of fossil fuel emissions and production in order to fulfil the aims of the Paris Agreement. "Transitioning away from an extractive economy provides us with the opportunity to build one that is instead visionary, regenerative and fruitful."

Resolve

In late March a UN resolution to hold polluting countries legally accountable for failure to act on the climate crisis was hailed by Vanuatu prime minister Ishmael Kalsakau as "a win for climate justice of epic proportions".

"It's the beginning of a new era in multilateral climate cooperation, one that is more fully focused on upholding the rule of international law and an era that places human rights and intergenerational equity at the forefront of climate decision-making," he said.

Vanuatu climate change minister Ralph Regenvanu states "We are clear eyed that existing international frameworks have significant gaps," and is calling for a fossil fuel non-proliferation treaty or criminalising "climate destroying activities".

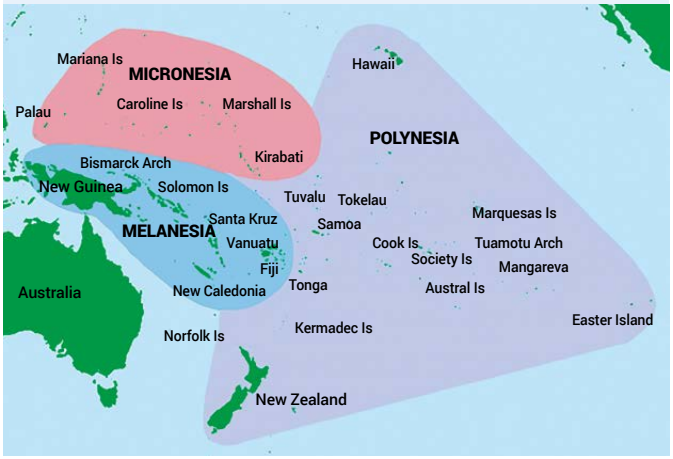
Also, Canberra welcomed Samoan Prime Minister Fiamē Naomi Mata'afa who is urging an end to fossil fuel subsidies and greater financing for climate resilience projects in the Pacific.

Addressing parliament in her presence was Prime Minister Anthony Albanese who acknowledged the need for "good relations in the Pacific based on action on climate change… it's a threat to their very existence. That's why these relationships are so important."

Scoping the Pacific Islands

The many hundreds of Pacific Islands cover 800,000 square kilometres and millions of square miles of ocean – equivalent to 15% of the earth's surface. There are 15 independent Pacific Island nations in addition to tens of thousands of islands, islets and atolls: the Commonwealth of the Northern Mariana Islands, the Federated States of Micronesia, Fiji, French Polynesia, Kiribati, the Marshall Islands, Nauru, New Caledonia, New Zealand, Palau, Solomon Islands, Tonga, Tuvalu, Vanuatu, and Wallis and Futuna.

Pacific Island member countries have a combined population of about 2.3 million. Unsurprisingly the majority of the Pacific Islanders live along the coast unless under threat of rising water levels and storm activity



BATTERY BONANZA

"Tomorrow and tomorrow..." for years we've been forecasting a tipping point where home battery storage takes off. It looks like that time has come.

During 2022 record amounts of battery energy storage systems were installed in Australian homes and businesses. New analysis by SunWiz advises that installations of batteries linked to solar systems actually grew a whopping 55% last year.

SunWiz data reveals 47,100 residential energy storage systems were installed in 2022, representing one battery energy storage system installation for every seven solar power systems installed last year – well up on the one-in-12 during 2021.

The number of Australian homes and businesses with solar and batteries has now hit the 180,000 mark, taking the national tally of home energy storage systems to 1,920MWh.

Warwick Johnson attributes the trend to Australians' response to Russia's invasion of Ukraine, COVID, the energy price crisis and worsening climate fuelled disasters.

In short, energy independence, resilience and self-reliance lies at the heart of the move by more households to reap the benefits of home energy storage.

"Many solar households are seeing the light – with one-third of battery installations being retrofitted to existing solar systems," he said, acknowledging there is some way to go given the three million homes with solar PV.

At the Smart Energy conference in May 'Woracle' Warwick Johnston drilled down on data contained in his comprehensive *Battery Market and Manufacturer Market Share* report which earlier had gained significant media attention for all the right reasons.

The populous states of Victoria and NSW installed the greatest amount of energy storage systems in 2022, though South Australia leads in per-household uptake. Tasmania and the ACT were the highest growth markets in Australia in 2022, installing four times more batteries in 2022 than in 2021.

Setting a cracking pace, though one key thing is that the battery market isn't homogenous, Warwick told delegates. "There are sub-sectors within the storage market, each with strongly different drivers and technical solutions... there's actually six different battery markets.

"Starting with non-ESS systems, you'll be aware that of the new PV systems that were installed last year, a chunk of them (20%) were installed at the site of an existing PV system. Then there's the more simple markets – the retrofit to an existing unchanged PV system, about 25% of the market, plus an additional 5% of installations that were simply up-sizing their storage – another important emerging part of the market. Just as people are now upgrading their PV systems, early movers are now upgrading their battery systems" he said. "That leaves the customers who've never bought a battery or PV system previously, who are now buying both together – 50% of the market.

"Energy storage systems were far more likely to be installed at the site of an existing PV system and installation of an ESS was also more likely to drive an up-sizing of a PV system."

Another key difference was the percentage of people adding a separate PV system to their existing one when they add an ESS – this was 2.5 times more likely, Warwick explained. "When compared to PV-only installations, four times as many people extend their existing PV system without modifying their PV inverter when adding a battery. So you're seeing this as an opportunity to make the most out of your existing inverter power."

For 2022 installations of PV without ESS the data shows 81% completely new, 13% were replacement systems, 5% were additions and 1% were extensions.

Brands: The 2022 leader board puts AlphaESS and Tesla at the top, followed by Sungrow and SolarEdge, with BYD, Redback and GoodWe tying. Growatt, LG and SolaX rounded off the top 10 who combined dominate 82% of the market.

"In the early days of the solar industry, batteries weren't yet trusted but people trusted brand names. LG and Tesla dominated, but 2022 was the year that consumers accepted batteries as a solution in their own right, retailers didn't have to rely upon brand names to get sales on brands," Warwick said.

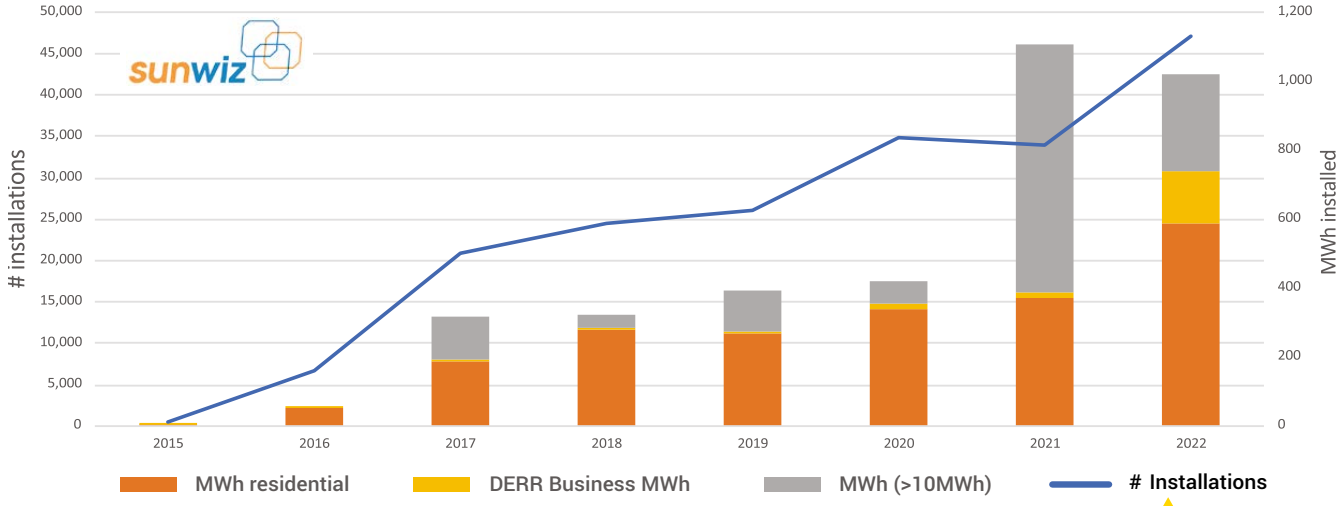
"Hence the ascension of lower-priced solutions from Alpha-ESS and Sungrow," he said, adding production constraints in 2022 at Tesla and LG ES were part of the reason they're not higher up the list.

"The other big trend is towards unification – where battery manufacturers are bringing in their own inverter, and vice-versa. Ultimately this is better for everyone as it enables better product alignment and it removes any finger-pointing when things go wrong.

"So how do you succeed as a retailer in this market? You specialise. Our analysis shows specialists – retailers doing more battery sales than they do PV sales – make up 41% of sales, and some of those companies are doing batteries exclusively."

For more information:
www.sunwiz.com.au/battery-market-report-australia-2023

Energy Storage System installations: 2015-2022



TOP SOLAR COMPANY AWARD CEREMONY LED BY SUNWIZ

Oh boy did we underestimate the popularity of this event. Seating for 100 but, for those who kept arriving, it was very much standing room only – back and sides of the room and spilling into the corridor. By our estimates 200 turned out for the much anticipated event.

Warwick kicked off by emphasising the numbers of 5-star reviews secured by most of the award winners – in excess of 1,000 top ratings for some.

He also acknowledged the pressures faced by equipment suppliers who are under constant pressure to deliver "a good product at the right price, with reliable availability and support while navigating immensely complex supply chains and customer service" yet succeed admirably.

So let's take a look at all of the industry winners – the SunWiz 2023 award recipients.

Top volume manufacturers: LONGi and Jinko (panels); GoodWe (inverters), Clenergy (mounting manufacturer – enough railing in 2022 to span the width of Australia!).

Sungrow came in as No.1 inverter supplier while Jinko – a proud Smart Energy Council Positive Quality participant – reigns as No.1 panel manufacturer.

Top volume retailers: Solar Safari, Sungain Solar, Solar Power Direct, Sun Group Energy, Essential Solar, Clean Technology Services, Sun Current, Sunbuilt Solar, Venergy Australia, Integra Energy Group, Smart Energy Answers, Arkarna Energy, Solar Run, Kuga Electrical, Solar Power Nation, Sunboost.

No. 1 commercial retailer was AGL which has secured the top spot for five consecutive years. All-time top volume retailer is Origin.

Best rated retailers: My Energy Engineering, Rescom Solar, Solar Air Energy and Marshall Energy, Sunny Sky Solar, Total Solar Solutions, Solar Pro Bendigo, Fritts Solar, Perth Solar Warehouse and Penrith Solar which also took out the number one All Star Solar Retailer with 1,140 reviews averaging a mighty 4.96 start rating, Take a bow, Jake Warner!

Smart Energy Council chief executive John Grimes who handed out plaques and award certificates to winners warmly congratulated one and all for their "critical role at the grassroots end of the energy transition," saying "Together you are achieving great things by helping households reap enormous savings through their home energy systems and of course substantially reducing carbon emissions in the process. These are both significant and important steps forward."

Warwick Johnson concluded the ceremony commenting "The challenge is delivering a five-star customer experience each and every time… we encourage you to keep delivering outstanding customer service and look forward to seeing you next year!"

John Grimes and Warwick Johnston congratulate award winners Jinko Solar

Penrith Solar was another winning team

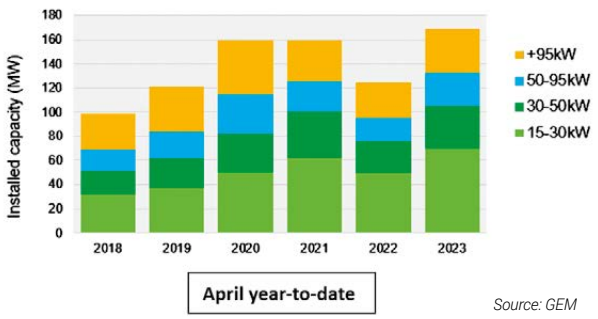
More winners and grinners

Tracking the PV market

According to Green Energy Markets year-to-date installed capacity of small-scale rooftop PV at the end April reached 948MW; the second highest April year-to-date installed capacity on record. Not quite reaching 2021 which by April saw the highest ever of 1,092MW installed capacity.

At the end April 2023, commercial PV installed capacity was 169MW, making this the highest April year-to-date level on record, beating the 159MW struck in 2021 by the end of April. Commercial installed capacity has been bolstered by an increase in systems with 15-30kW capacity.

Commercial PV SGU installed capacity by capacity band



Source: GEM

LGES: DELIVERING BATTERY SAFETY

LG ENERGY SOLUTION (LGES) is proud of its unwavering commitment to customer safety. This means disclosing all issues transparently.

This was the approach for its Energy Storage System (ESS) Home Batteries recall, initiated in August 2020 after reports of thermal failures in the field. The Australian Competition & Consumer Commission (ACCC) was notified immediately, and an investigation followed to determine the root cause and extent of the issue.

There were five steps to the recall: locating the affected batteries, interim safety measures, replacement, compensation and recycling.

While replacing recalled batteries, LGES also decided to perform a diagnostic software upgrade to units that were not in the recall range but had a lower risk of thermal failure. The sophisticated software constantly applies a health check to identify any potential risks and shuts down any battery operating outside optimal parameters.

IMAGE COURTESY LG ENERGY SOLUTION

Since our corrective action in 2019, LGES has produced more than half a million batteries with no additional thermal failures. This wasn't only a case of correcting an issue but also discovering a historic issue that had already been addressed in the company culture of continuous process improvement.

Combined, the software upgrade recall and the replacement recall have eliminated 78 per cent of total risk, with LGES continuing to aggressively push that figure to 100 per cent.

Lessons from the recall were incorporated into LGES' commentary submission to the ACCC in response to its *Lithium-ion Batteries Issues Paper* (produced in December 2022).

Recommendations included establishing a national ESS battery registration scheme to create a comprehensive customer database, and centralised incident reporting by fire departments to identify similar failures across the industry, enabling regulators and manufacturers to respond appropriately.

LGES will continue to take the lead in solving problems by actively cooperating with the ACCC and related organisations.

Jinko Solar

TigerNeo+ESS

No.1 in Global Module Shipment:

Reach 150GW

#1 Global Shipment in Q1 2023

EUPD RESEARCH
TOP BRAND PV
MODULES
AUSTRALIA
2023

sunwiz AWARD
TOP SOLAR COMPANY
#1 PANEL
JINKO SOLAR
AUSTRALIA
2022

FIRST ROOFTOP
440W
Now on Sale
in Australia

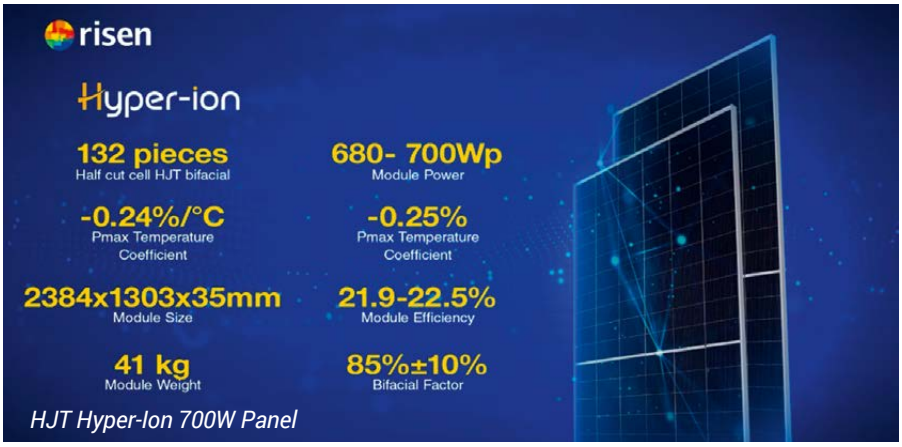
Residential | C&I | Utility

www.jinkosolar.com.au

Risen Energy unveils new Hyper-Ion HJT panels at Smart Energy Conference and plans for a pipeline of large-scale projects

RISEN ENERGY AUSTRALIA (REA) introduced the first panel in its Hyper-Ion HJT series at the May Smart Energy Conference & Expo in Sydney. The Hyper-Ion HJT 700W panel, perfect for large-scale utility projects, incorporates a combination of Risen Energy's innovative technologies, including HJT and n-type.

- Available in anodized aluminium alloy or high strength alloy steel. Using advanced manufacturing processes, these frames offer a 20% increase in the tear-resistant capability of the steel material and reduce carbon emissions during manufacturing compared to the conventional metal frame
- Better temperature coefficient than the traditional P type panels
- Excellent low irradiance performance
- Excellent PID resistance
- Comes with a performance warranty of 30 years and a product warranty of 15 years.



HJT Hyper-Ion 700W Panel

Mass Production of HJT Hyper-ion

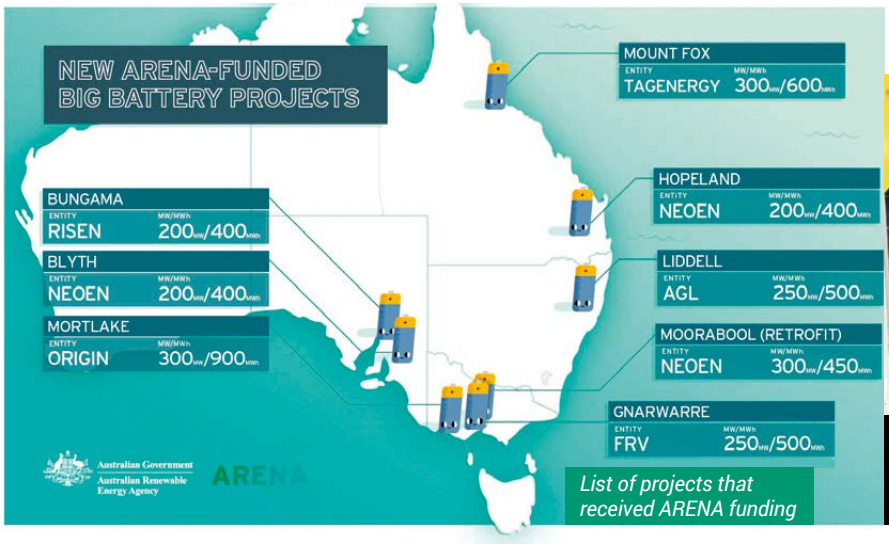
Risen began mass-producing its HJT Hyper-ion solar modules earlier this year, and the company plans to increase production capacity to 5GW by the first half of 2023 and triple it to 15GW in the following six months. Risen Energy's commitment to reducing its carbon footprint and producing cost-effective solutions highlights its dedication to sustainability and responsible manufacturing practices.

Risen's Large Scale Project Plans

To establish itself as a key renewable energy player in the Australian market, Risen has expanded its offering to the investment and development of Battery Energy Storage System (BESS) projects. Notably, one of Risen's projects, the Bungama BESS project in South Australia, received funding from ARENA late last year. This project will be located adjacent to the 275/132kV Bungama Substation near Port Pirie and will have a capacity of 200MW/400MWh. The BESS project will play an important role in strengthening the South Australian energy network and will likely become the home for several other large generator/load connections.

Prominent gentailer EnergyAustralia has set an ambitious goal of developing 3GW and delivering 1GW renewable projects by 2027 and has five other large-scale projects in various stages of development. The company's interest in branching out to BESS projects in Australia highlights its commitment to providing sustainable energy solutions and supporting the development of a renewable energy future in Australia.

By focusing on large-scale projects, Risen Energy Australia is positioning itself as a major player in the renewable energy industry, and the Bungama BESS project is expected to be operational by mid to end 2024. The organisation's dedication to reducing its carbon footprint and increasing its production capacity demonstrates its commitment to driving positive change in the industry. The mass-production of HJT Hyper-ion solar modules is a significant step towards providing more efficient and cost-effective solar solutions. *https://risenenergy.com.au*



List of projects that received ARENA funding

Risen's Lorraine Khng with the new Hyper-ion panel at Smart Energy 2023

Information, views and technical details on this page supplied by Smart Energy Council Members

Pylontech: Empower the Future with Dedication

*The year 2023 is special for Pylontech, with Pylontech climbing to the No.1 position in the global residential energy storage market (S&P Global Commodity Insights, global shipments) and marking its 10th anniversary after delivering the first energy storage system in 2013. Here Pylontech vice president **Geoffrey Song** discusses the legacy and the future of the company.*

PYLONTECH

Pylontech marks its milestone 10th anniversary in energy storage this year. When you reflect on those 10 years, what gives you most pride in Pylontech's involvement in energy storage?

We were founded in 2009 and strategically entered the energy storage systems market in 2013 when it was a new and relatively unknown field. That same year, we delivered the very first battery storage system. As an early participant, we're glad and proud to witness the robust growth of the industry of the past few years, which also validates our choice a decade ago. We have now delivered over one million energy storage systems to over 80 nations and regions. We appreciate the trust our clients have placed in us over the years. What's more exciting is seeing how our systems empower people with energy freedom while driving low-carbon development worldwide during the green energy transition.

Pylontech has been ranked by S&P Global Commodity Insights the No.1 residential battery energy storage provider, taking a leadership role in the industry. What are the main drivers of your growth?

Firstly it's about our long-term commitment to being a reliable energy storage provider. We are fully dedicated to energy storage, pouring all of our R&D and production resources into developing cutting-edge products and solutions. We allocate roughly 7% of our total revenue annually solely to advancing energy storage technologies, such as extending the cycle life of Li-ion batteries, production of Sodium-ion batteries, designing predictive SOH algorithms, and establishing an end-to-end energy flow management architecture.

Secondly, it's our vertical integration of the production chain. We possess all the necessary technologies and manufacturing capabilities for ESS applications, from cell production to BMS and system integration, which is unique in the industry.

Your battery energy storage systems have been chosen by thousands of users around the world. What features do you observe users care about the most?

Top of the list of priorities is safety and stability, followed by cost and performance. Other factors that users value include scalability and footprint, etc. Currently, LFP batteries are the most competitive in terms of safety and cost; this is the technology route we have been developing all along. In terms of performance, our battery, tested by independent third-party ITP Renewables (supported by the Australian Renewable Energy Agency) was rated as one of the best-performing batteries by showing the best capacity retention after a high number of recycles and no operational issues on the trial. This is a key reason why our batteries have gained such popular acclaim among users.

What significant trends do you foresee in the energy storage market, and how will they shape the future?

We anticipate several key trends in the future. Firstly, we believe the market will become more competitive and technology-neutral while also becoming increasingly open and flexible, supported by a more comprehensive market framework. We expect to see an influx of innovative business models and added value. Secondly, the advancement of digital technology will facilitate the creation of more powerful energy storage systems that can effectively meet rising client demands and deliver cost savings.

Finally, we note the growing trend towards pursuing energy security and independence. To this end, DER (distributed energy sources) are expected to become more popular, with energy storage systems playing an increasingly important role in this regard. The future of our world will be characterised by multiple poles of power and awareness of global citizenship will be awakened. People will be granted more options for energy sources.

www.pylontech.com.cn

"It's exciting seeing how our systems empower people with energy freedom while driving low-carbon development worldwide during the green energy transition." Geoffrey Song, Vice President, Pylontech

Raystech: A leading renewable energy wholesale distributor in Australia and New Zealand

RAYSTECH OPERATES in Australia and New Zealand with self-operated sales offices and distribution centres in Queensland, NSW, Victoria, WA, Tasmania and Auckland providing comprehensive solar solutions to clients.

"No job is too little, and no customer is treated differently."

Raystech recognises its clients, and we are proud of our commitment. In this competitive market, we commit to continue offering quality products, the best services, and value to our partnered installers, retailers, and wholesalers.

Why Raystech?

Raystech is a company that goes above and beyond to deliver more than just products to its clients, no matter their business size. We treat all our clients equally and guarantee that the same high-quality level of services will be delivered.

Over the years, Raystech has expanded its value-added services with partners and suppliers to help clients to stand out and gain competitor advantage.

We offer various services, including customer support, product options, high-efficiency freight, marketing, energy services, and finance.

Moreover, Raystech has developed in-house warranty support, C&I EPC services, Virtual Power Plants (VPP) partnerships, and energy plans to provide additional support and value to its customers.

RAYSTECH
Your Trusted Solar Partner

Mission and vision

- To enable the global renewable industry to grow by supporting partners and moving towards a carbon-neutral economy protecting our planet Earth.
- To accelerate the adoption of solar energy by providing high-quality solar products and services that are accessible, affordable, and reliable while contributing to a more sustainable and equitable future for all.

As a leading solar distributor in the industry, Raystech is known for its innovation, expertise, and commitment to customer satisfaction while helping to drive the transition to a cleaner, more resilient energy system that benefits people and the planet.

www.raystech.com.au

Information, views and technical details on this page supplied by Smart Energy Council Members

Growatt's Innovative Energy Solutions for 2023

GROWATT IS INTRODUCING a series of cutting-edge smart energy solutions for the Australian market during 2023. These products include battery-ready inverters, customised batteries, solar-driven EV chargers, commercial-sized energy storage systems, and portable power stations. They redefine the solar industry and address evolving energy needs: they promote energy independence, optimise self-consumption, support green transportation, enable efficient energy management for businesses, and provide portable and eco-friendly power sources.

Growatt's smart energy solutions revolutionise the Australian market for residential, commercial, and industrial sectors.

MOD 3-10KTL3-XH battery-ready inverter

One of the notable offerings is the MOD 3-10KTL3-XH Battery-Ready Inverter. This versatile solution functions as both an on-grid inverter and a battery integration option. With a remarkable 200% DC oversizing ability, it maximises solar generation and optimises energy use. The MOD 3-10KTL3-XH is adaptable to various household sizes, ranging from 3kW to 10kW discharge capacity.

APX HV Battery

Another noteworthy product is the APX HV Battery, designed to seamlessly work with Growatt's MIN-XH and MOD-XH inverters. This high-voltage battery features independent charging and discharging of each module, ensuring flexibility and safety. With an IP66 weather-resistant rating and a flexible energy storage capacity range of 5-30kWh, the APX offers reliable and efficient energy storage solutions.

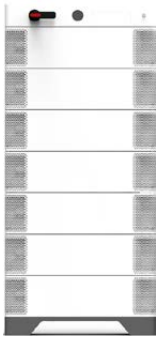
ALP LV Battery

Growatt proudly introduces the ALP LV Battery, a low voltage battery option that revolutionises the Australian residential storage market. With an IP66 rating, each module provides 5kWh, and the battery's maximum capacity reaches 40kWh. The ALP battery seamlessly integrates with Growatt's SPH/SPH-UP hybrid inverter, delivering exceptional performance with its high energy density and weather-resistant construction.

THOR EV Charger

In line with expanding its presence in the solar energy industry, Growatt presents the THOR EV Charger. This innovative solution combines solar panels, batteries, and electric vehicle (EV) chargers to maximise the use of solar energy. By intelligently charging EVs with surplus solar power, the THOR EV Charger represents the future of solar energy and electric vehicles.

WIT 50-100K-HU



APX Commercial Battery

The WIT 50-100K-HU Commercial Hybrid Inverter is a powerful solution for commercial and small industrial sites. With a capacity of up to 100kW and an inbuilt UPS function, it can parallel three inverters on one site, providing a total capacity of 300kW output. When combined with Growatt's APX commercial battery, ranging from 129kWh to 200kWh, it offers a comprehensive commercial storage solution.

Infinity 1500

Infinity 1300

VITA 550

Growatt's portable power stations, including the Infinity 1500, Infinity 1300, and VITA 550 models, provide reliable and convenient power solutions for camping and emergency situations. These power stations feature bi-directional superfast charging, allowing them to reach 80% capacity in just one hour. With battery sizes ranging from 538Wh to 1,512Wh, they ensure a dependable power source.

Discover the future of energy solutions with Growatt in 2023. These innovative products are designed to meet specific energy needs while promoting sustainability and efficiency.

For more information on how Growatt can revolutionise your energy experience, visit au.growatt.com

SMART ENERGY ACTION STATIONS!

The Smart Energy conference and exhibition attracted a record breaking 7,500 delegates who were able to view the vast range of renewables products and services on display in the sprawling conference hall. Several companies took the opportunity to announce new programs and projects. Here we look at some of them.

5B proudly launched its new visual identity at the Smart Energy expo, marking its evolution from pioneer of a single 5B Maverick product into the home of solar innovation solutions.

The brand has already become synonymous with Aussie success and garnered much interest and engagement at the 5B stand at the Smart Energy expo from all levels of government with federal and state ministers, Chris Bowen, Penny Sharpe, Matt Thistlethwaite, Adam Bandt, as well as Indian High Commissioner Manpreet Vohra dropping by for a chat.

"The Expo was an incredibly effective forum to launch our new visual identity. It gave us the awareness and opportunity to engage with stakeholders to explain our platform for future innovations," said Bernadette Jolley, head of marketing at 5B.

John Grimes, Bernadette Jolley and Terri Butler with Simeon Baker-Finch of 5B talking to NSW Energy Minister Penny Sharpe

Energy Minister Chris Bowen with 5B staff

Elsewhere at the expo, GREENBANK WAS LAUNCHING ITS 'NET ZERO HERO' PROGRAM which enables businesses to offset their vehicle's carbon emissions by tapping kilometres travelled into the Net Zero Hero Simple Carbon Calculator. Greenbank then offsets the emissions by supporting projects that reduce remove or capture emissions from the atmosphere such as reforestation, renewable energy or energy efficiency.

"Show your customers you're committed to reducing your carbon footprint. Start by letting us offset your fleet and become a net zero hero today," the animated YouTube clip says.

GreenBank Chief Executive Ria O'Hehir told *Smart Energy* "Net Hero Zero came to me when I was looking at ways we can improve our service

5B chief operating officer Brett Freeman told Seven TV news how diesel re-placement is a booming business for 5B. The solar pioneer is helping remote communities and industries in hard to access locations, such as mining, transition to renewables.

offering to clients and suppliers. Trying to predict and understand what would a benefit to them. So tapping into my expertise and background knowledge of carbon and trading what better way than to start with their own transportation and their business values. Helping them promote what they have a vested interest in, combatting climate change.

"Sometimes all it takes is a start. And why not start with the cars, trucks and vehicles that are transporting solar systems around our great country."

THE REDEARTH TEAM on the expo floor welcomed hundreds of visitors to their stand including Federal Climate Change and Energy Minister Chris Bowen, no less. The Minister complimented RedEarth on its Australian made batteries, said NSW-based BDM

Tony Zareei who lives near the Minister's electorate office in Sydney and said he'd had long been a strong supporter of the solar industry. RedEarth had in turn campaigned for Bowen during the federal election.

Another prominent stand visitor was the crew from TV's Channel 7. RedEarth chief technology officer and co-founder Chris Winter told the TV reporters about the fundamental technical improvements that can be made in the home which will be realised over the next decade.

Chris also addressed 'The future of household energy' as part of the Electrification of Everything conference stream.

PROMINENT DISTRIBUTOR OSW took the opportunity at SECE to announce its partnership with Japanese residential PV modules maker Sharp. This represents a significant step forward from the Japanese company in the Australian solar market.

The collaboration aims to provide innovative and reliable solar solutions to the Australian market by leveraging Sharp's technical expertise and OSW's extensive experience in the local solar industry.

MEANTIME GOODWE AUSTRALIA debuted a new lightweight solar panel solution for commercial and low load-bearing rooftops. The Galaxy Series is one of the feature products of a new product division of PV building materials, developed and manufactured in-house by GoodWe, to further enhance the largest range of inverters on the market. The new Galaxy solar 335W panel has been developed for rooftops that are unable to support traditional PV and racking, that also creates water damage, corrosion and leaks. The Galaxy series weighs in at just

Ria O'Hehir and the trusty team from Greenbank

Greenbank launched its 'Net Zero Hero' program which enables businesses to offset their vehicle's carbon emissions by tapping kilometres travelled into the Net Zero Hero Simple Carbon Calculator

OSW announced its partnership with Japanese residential PV modules maker Sharp at Smart Energy 2023

Minister Bowen speaks with RedEarth's Dave Nolan (left), Tony Zareei and Chris Winter (right)

SHOWCASING PRODUCT LAUNCHES AND INNOVATION

6.1kg/m² and 1.6mm in thickness, and is touted as the ideal solution to the 25% of rooftops that can't be installed with traditional solar panels and mounting systems, due to the risk of weather damage and structural integrity being compromised, especially for commercial property owners who are looking for solar solutions to reduce operational costs at a time when energy prices are increasing.

GoodWe Australia also showcased their complete range of residential and new Commercial scale energy storage solutions at the Smart Energy Exhibition.

Country Manager for GoodWe Australia, Dean Williamson commented: "GoodWe's offering includes our new ET three phase 15-30kW hybrid inverter that pairs with our high-voltage Lynx F Series battery, along with our new Commercial scale energy storage solutions."

GoodWe Australia debuted its Galaxy Series, a new lightweight solar panel solution for commercial and low load-bearing rooftops

Fronius places great importance on providing educational activities

ENERGY SOLUTIONS DISTRIBUTOR ENERGY SPURT was thrilled to announce the signing of an exclusive distribution agreement with prominent energy storage company **AlphaESS** for their latest cutting-edge product, the SMILE-G3-B5.

CEO of Energy Spurt, Gavin Li, and Katherine Gao, the General Manager of AlphaESS APAC Region, were present at the signing ceremony taking place on day one of the Smart Energy Council Conference and Exhibition.

The SMILE-G3-B5 offers a fast Frequency Control Ancillary Services feature and is endorsed by Ausgrid (Sydney), effectively functioning as a virtual power plant.

Energy Spurt offerings extend to connecting its customers with specialised entities in related fields, such as engineering and finance, who are capable of financing and implementing large-scale solar farms and commercial and industrial contracts.

MEANWHILE THE TOP LEVEL OF THE ICC was all about top training. Upstairs at the exhibition centre, installer training sessions were staged by **FRONIUS, SMA, POWERPLUS** and **ENPHASE** reaching hundreds of installers.

Yihan Chong of Fronius told *Smart Energy* "Fronius places great emphasis on providing educational activities for our customers to ensure that they have the latest knowledge about our sustainable products and solutions.

"Having our presence during the training event creates a great opportunity for us to get to know the customers better and for customers to better understand our services."

POWERPLUS addressed 'Designing Off-grid to Succeed', which included an overview of

Energy solutions distributor Energy Spurt announced the signing of an exclusive distribution agreement with prominent energy storage company AlphaESS for their latest cutting-edge product, the SMILE-G3-B5

LONGi was awarded a Wallop Water Certificate of Achievement at Smart Energy 2023

SHOWCASING PRODUCT LAUNCHES AND INNOVATION

PowerPlus's history, products, chemistry and benefits of self-managed batteries.

"We also explained advanced design rules to design reliable and stable stand-alone power systems and issues when rules are broken," Aleks Djuric said.

This session was aimed at installers interested in larger battery systems, either grid connect or off-grid, or those already designing and installing systems.

The PowerPlus session explained advanced design rules to design reliable and stable stand-alone power systems

Warwick Johnston presented the SunWiz Top Solar Company Awards at Smart Energy 2023 with assistance from the Smart Energy Council's CEO John Grimes

LUCKY WINNER SCOOPS UP LG RESIDENTIAL BATTERY in prize draw

One very happy conference goer was lucky enough to snap up a 6.5KWh LG residential battery worth several thousand dollars.

That winner was Francis Diao from family-owned Lumico Solar & Electrical in South Australia, founded in 1997 as a small TV repair business operated from the spare room of founder Chang Zhou.

"Francis was most happy that she won such a valuable prize at the Smart Energy Expo," National Business Development Manager George Elovaris told *Smart Energy.*

Featuring a 48V lithium-ion battery, the RESU6.5 is one of the smallest and most compact residential solar batteries on the market.

Francis Diao was presented with a 6.5KWh LG residential battery by Aaron Lee, GM of Residential Sales, LG Energy Solution Australia

MELBOURNE-BASED ENERGY STORAGE PROVIDER EVO POWER was founded four short years ago but has quickly commandeered a place in the market.

The most recent development is the announcement of a leading role in Energy Queensland's project to future-proof the local energy network and support its plans to eliminate reliance on fossil fuels.

In all six major projects have been awarded to EVO Power by Ergon Energy, a subsidiary of Energy Queensland, across 2023. Each of the six sites will see the deployment of EVO Power's state-of-the-art Medium Voltage (MV) Battery Energy Storage Systems (BESS) providing network security for Queensland residents and businesses alike.

EVO Power will be responsible for the design, engineering, integration and supply of their energy storage solutions and will assume responsibility for grid modelling support, commissioning and training to ensure smooth project delivery.

Construction of the first 4.5MW/10.435MWh MV BESS will commence in the third quarter of 2023 with a target to complete all three by the end of 2023.

Peter Price of Energy Queensland said: "The planned battery systems are another step closer to supporting Queensland's target of 70% renewables by 2032 in a safe and reliable way.

EVO Power Group chief executive Jamie Allen (pictured at right) describes the Energy Queensland partnership as a 'coming of age' for the company and explained "Having previously focused on large commercial and industrial projects, we've now also got our sights set firmly on utility-scale projects. "The energy industry is evolving at a lighting pace."

Indeed, and so is EVO Power which is deploying energy storage solutions to solar farms across Australia and in small and medium utility projects and recently opened offices in the USA. *www.evopower.com.au*

FRANKLIN HOME POWER (FHP) was launched to the Australian market in early May at the Smart Energy exhibition. FHP is a whole-home energy management system integrating solar, battery, grid and generator power sources and managing them to optimise the safety, reliability and efficiency of home energy.

The system contains aPower battery/batteries – the LFP battery with built-in advanced inverter, an aGate – the energy management device connecting the home to solar, grid, aPower battery/batteries, or generator (if present), and FranklinWH App for real-time monitoring and control of whole home energy.

A spokesperson described the FHP as "using the safest battery chemistry and featuring higher peak power and capacity… we are an energy management system, not just regular storage, which implies more advanced energy sources management tools and capabilities. We also feature longer warranty and high level of scalability.

One of the key advantages is the smart load management system, which allows users to categorise and manage backup loads according to the load hierarchy and required power needs."

He added the system can be connected to almost any EV charger (without any additional upgrades on the side of the PV systems).

Distribution and sales of the Franklin Home Power are scheduled to commence in the coming months.

www.franklinwh.com

POWERPLUS ENERGY recently welcomed Climate Change and Energy Minister Chris Bowen to their facility in Melbourne's outer east. Chief executive Bradley Paton was delighted to host the ministerial visit and showcase the PowerPlus energy storage solutions which are designed and built in the 8,000m^2 facility in Scoresby.

The company, which employs 76 staff and participates in the Jobs Victoria employment program, is providing systems to power authorities for SWER (single-wire earth return or single-wire ground return) line replacement and developing solar battery systems solutions for domestic and commercial micro-grids.

"Although we import the lithium cells, the rest – the metal casing, the cables, labels and packaging are manufactured locally," Bradley explained. "Many of our enclosures are manufactured locally as well, and we are also working towards local manufacture of all of our battery management systems.

"We are currently reviewing opportunities for batteries for mining and heavy vehicle electrification, and automation for increasing productivity."

"It was fantastic to have the opportunity to explain our technology to the minister in person and demonstrate first-hand the benefits of Australian manufacturing for the renewable energy market both in Australia and for export markets," Bradley said.

www.powerplus-energy.com.au

Information, views and technical details on these pages supplied by Smart Energy Council Members

ALLUME ENERGY, AXITEC ENERGY, CLENERGY AND FRONIUS AUSTRALIA have joined forces to make solar energy for multi-tenant social housing buildings more affordable.

And it could not be more timely as households battle sharp increases to the cost of living and energy prices at their highest in decades.

Apartments constitute a significant proportion of social housing in Australia and are home to more than two million Australians; these low and medium rise apartment buildings have suitable roof space for solar.

The four clean tech companies have collaborated to provide a reduced-cost, solar equipment package that can connect residents of multi-tenanted buildings to lower cost renewable energy.

Dubbed the 'Solar Social Housing Package', the initiative offers a discount on the solar panels, roof mounting equipment, smart meters and solar sharing technology required to provide apartment residents with self-generated solar energy.

The discount amounts to around $3,750, although the partnership is now negotiating to potentially offer an even better reduction.

This breaks down the technical and ownership barriers that have historically prevented apartment residents from accessing cheaper and cleaner energy from the sun.

Customers span a range of industries including social housing providers, multi-family landlords, property developers and apartment owners.

"Allume is thrilled to work together with our associates to solve problems that matter," commented Cameron Knox, CEO of Allume Energy. "It is crucial that apartment residents can access clean, affordable energy, particularly social housing tenants, who are often disproportionately affected by the rising cost of energy. Communities shouldn't have to decide between putting food on the table and heating their homes."

World-first technology SolShare enables the sharing of solar energy from a single rooftop solar system among multiple dwellings within the same building.

www.allumeenergy.com

BRISBANE COMPANY AERL (Australian Energy Research Laboratories) recently launched its new CoolMax SRX-R Solar Charge Controllers, a new utility grade plug and play architecture which significantly reduces infrastructure deployment times.

The CoolMax SRX-R Solar Charge Controllers feature over 35 years of MPPT innovation, offering a superior tracking algorithm with an ultra-low loss, high-efficiency thermal design, backed by their Australian factory warranty and local support.

AERL CEO Peter Watkinson

AERL CEO Peter Watkinson said "With record-breaking conversion efficiencies, intelligent thermal management, and state of the art MPPT tracking in an exciting 2U form factor, the SRX is a key component of any high-quality energy storage system.

"Households now have access to utility grade reliability and redundancy at a competitive price point. For utility companies, it means a drastic reduction is the total cost over the lifetime of the system - which is incredibly important for owning and operating energy storage assets."

The CoolMax SRX-R is Australian made, designed and manufactured locally under strict quality control standards in AERL's ISO 9001:2015 facilities in Brisbane.

More tech specs: The CoolMax SRX-R has a 2U rack format for ease of install and servicing, is scalable for large storage applications, has remote module control and monitoring, PV array oversizing support (+40%), superior peak power efficiency (over 98%), reverse polarity and current protection, built-in overload and thermal protection, and on-board ground fault detection.

https://www.aerl.com.au/rack-mount-solar-charge-controllers/

TRINA SOLAR has maintained its AAA ranking for the fourth consecutive quarter in the latest PV ModuleTech Bankability Ratings report released by PV Tech.

Trina Solar's Vertex modules, with high power, high efficiency, high reliability, high energy yield and low LCOE, have become popular the world over and the company has been ranked as a 'Top Performer' by PVEL for the eighth year in a row and recognised as an RETC 'Overall High Achiever' for the third consecutive year in 2022.

As an early mover in the field, Trina Solar has developed advanced n-type technology that has been brought into large-scale industrial application.

www.trinasolar.com

FIMER'S PVS-100 INVERTER will help drive energy costs down for family-owned business Allprint Graphics in Sydney which wanted reduce the facility's carbon footprint.

The 99.9kW roof-top mounted solar system incorporates over 200 450W Solahart SunCell Plus panels, a FIMER PVS-100 string inverter, and a smart Solahart Energy Management solution to monitor solar energy production and energy use.

FIMER's PVS-100 is an all-in-one high-power string inverter suited to businesses needing to maximise their investment return for large, decentralised roof-top installations. The PVS-100 inverter installed at Allprint Graphics has six MPPTs enabling greater design flexibility and energy yield, the system can also be ordered with two MPPTs for applications where the inverter is located some way from the solar panel array.

Since the installation and commissioning in October 2022, Allprint Graphics' solar system has generated over 65MWh of energy and is estimated to reduce annual electricity consumption by 42%, saving them more than $17,000 annually while offsetting approximately 128.5 tonnes of CO_2 annually.

www.fimer.com

S-5! METAL ROOF ATTACHMENT SOLUTIONS have been selected for the Arkaroola Wilderness Sanctuary Microgrid in the northern Flinders Ranges, South Australia.

Designed and installed by off-grid specialist Apex Energy, the microgrid provides critical energy security to power decades of global science and environmental research at the multi-award-winning site, slated for the United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Listing.

The Arkaroola microgrid will be powered in part by a 61.6kW rooftop solar system on the sanctuary's Mawson Lodge.

The S-5! PVKIT was chosen for its ability to be installed on the rooftop system without rails meaning lower freight costs (and systems savings of 750 kilograms), maximising the available rooftop space for solar, an easier installation and ultimately a reliable and better-looking, low-profile rooftop system that blends with the natural landscape.

Backed by a $1.3 million grant from the Australian government and located 600 kilometres north of Adelaide, the entire microgrid project will power the eco-tourism hot spot, a landmark of global significance that showcases unique wilderness, almost two billion years of geological history and world-class dark skies for astronomical observations, with a joint US operated observatory at the site. Arkaroola is frequented by artists, aviators, astronomers, adventure bikers, birdwatchers, bushwalkers, four-wheel drive adventurers, geologists and others

Made in the USA, S-5! solutions are engineered for a variety of roof-mounted applications and are now installed on more than 2.5 million metal roofs worldwide, including 6GW of photovoltaics.

www.S-5.com

LONGI GREEN ENERGY TECHNOLOGY, Shanghai Juss Sports and the ATP Tour have signed a global strategic partnership agreement, making LONGi the Rolex Shanghai Masters' Patron Sponsor, as well as the ATP Tour's Official Solar Energy and Hydrogen Partner.

During the signing ceremony for the strategic agreement, LONGi announced the launch of its global energy creation initiative, "Plan-GET" Green Energy Tours. This initiative advocates for the exploration of new ways for the development of sustainable, zero-carbon sports and events.

LONGi's Plan-GET aspires to have an impact on the world by inspiring everyone to take action towards 'green' ideas. It aims to create a stronger voice across the globe in pursuit of green and low-carbon initiatives that can be implemented indefinitely.

Dennis She, Vice President of LONGi, said: "Photovoltaics is set to play a pivotal part in the future energy landscape and era".

Massimo Calvelli, ATP CEO, commented: "Climate change is having an impact on our sport – from hotter temperatures to extreme weather. Addressing this is our most important challenge. LONGi shares our commitment to sustainable development and our collaboration will support transition to a Net Zero future, under ATP Serves."

The 55th edition of the Tour will begin in December 2023 with one of the first ATP 250 games held in Adelaide, followed by the Australian Open in Melbourne. LONGi will be supporting players, sponsors and the Australian community. Needless to say, ATP tournaments are watched by billions around the world.

www.longi.com

SUPERCHARGING AUSTRALIA Perth-based lithium battery recycler, **Renewable Metals**, won the inaugural Supercharge Australia Innovation Challenge Award with its unique technology that turns battery waste into battery metals.

The renewable metals process achieves more than 95% recovery of the valuable materials in lithium batteries including lithium, nickel, cobalt, copper, manganese and graphite, without creating black mass and saving 20-30% of the costs of standard recycling.

Despite producing almost 60% of the world's lithium, Australia retains less than 1% of the US$400 billion and rising annual product value. Ninety-eight per cent of the lithium mined in Australia is refined overseas.

Second placed was **Sicona** with a University of Wollongong-developed technology to produce next gen battery materials technology used in the anodes of lithium-ion batteries for electric-mobility and storage of renewable energy.

Third was **Roev** which converts large fleets of utes to electric, solving unmet demand and managing energy usage.

Fourth: Brisbane-based **Vaulta**, which makes recyclable and repairable high-performance batteries. Vaulta's batteries are designed, assembled and tested at their manufacturing facility in Brisbane's inner north.

Supercharge Australia aims to support lithium battery innovation in Australia and capture more of the lithium value chain, by encouraging export-oriented lithium battery value chain start-ups. It is a project of two not-for-profit organisations, global clean energy start-up accelerator New Energy Nexus, and Australia's largest climate tech start-up accelerator EnergyLab.

Since 2016 New Energy Nexus has supported 5,268 entrepreneurs globally, created more than 6,000 green jobs and mobilised more than $US1.5 billion in investments.

"Australian innovators are uniquely placed to supply emerging and mature global markets with low impact lithium products and resources to support our energy transition with better batteries," said Danny Kennedy, CEO New Energy Nexus and Managing Director of the California Clean Energy Fund.

"I've seen billion-dollar battery recycling start-ups in the United States emerging in the last few years and none have technology as exciting as this," says Kennedy.

"Australia can become a leader in lithium battery technology, from sourcing to advanced battery and EV manufacturing, and capture massive market opportunities as the world electrifies. But to do this, we need much more activity across all phases of the lithium battery value chain, and this requires more investment and more start-ups to meet the demand. *www.energylab.org.au*

Q&A

THE BIG PICTURE

***Jonathan Upson** who is Chair of the Smart Energy Council's Large-scale Working Group has spent more than two decades in the renewables industry. What's his take on the trajectory of the industry?*

SMART ENERGY: Which large scale wind installation has caused you the most pride or grief or inspired the most awe?

At the request of local landowners, I started the 145MW Flyers Creek wind farm project near Orange, NSW over ten years ago. There were many challenges – 'Dr' Sarah Laurie was in full swing touting Wind Turbine Syndrome, the then NSW Government didn't like wind farms and there were 16-17 landowners to keep on side. It was a great feeling to speak to the lead landowner after the project started construction last year; I look forward to seeing its completion in the not too distant future.

SE: What do you identify as key developments in the wind industry?

When I started in the industry a 50 metre hub height wind speed of 8 metres/second was the cut off between viable and unviable projects and over $100/MWh was the required long term Power Purchase Agreement (PPA) price. I was surprised at how quickly wind turbines grew in size, and efficiency, to cutting the required PPA prices in half. Even very modest wind speeds make viable wind farm sites now.

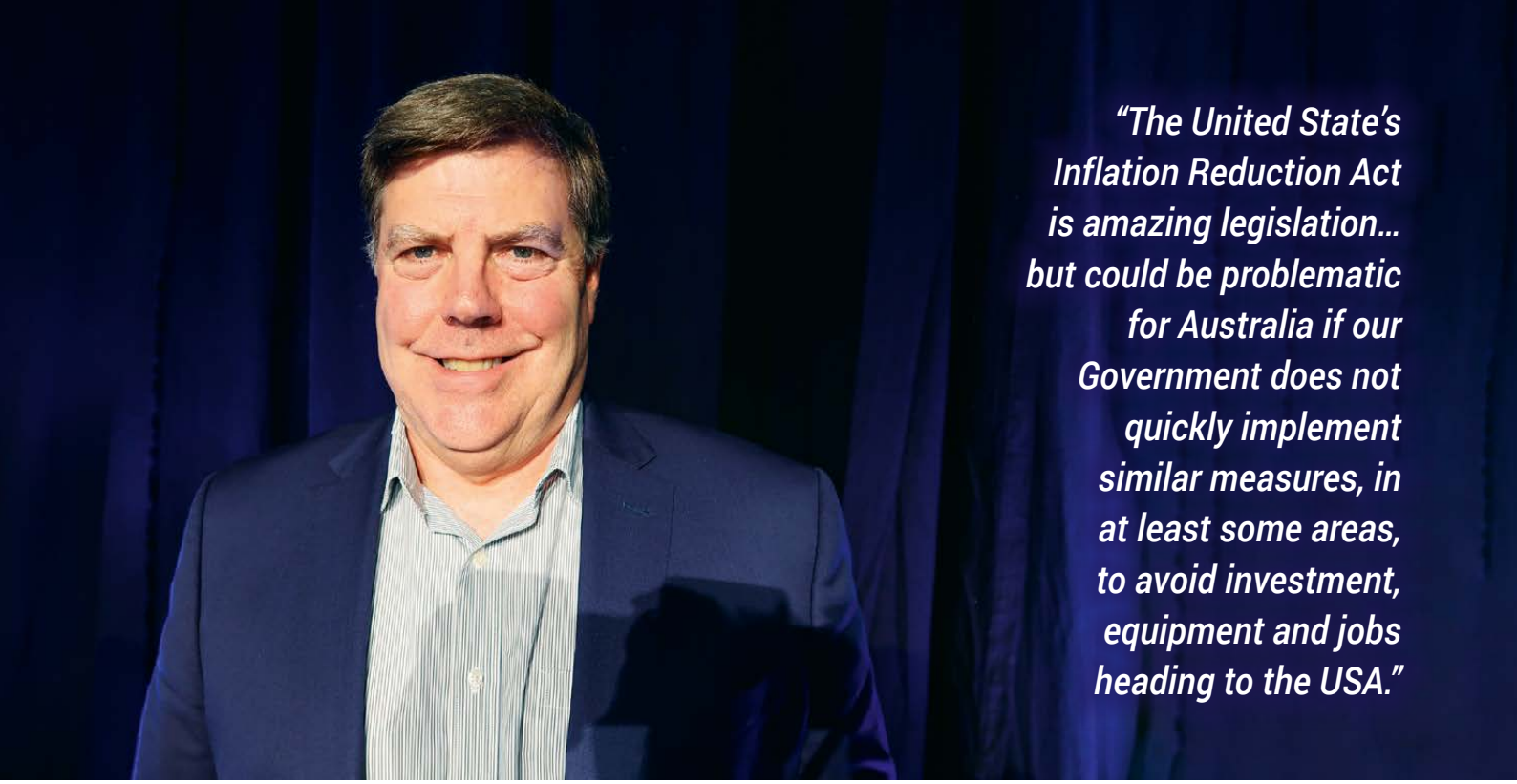
SE: You have taken a strong stand for renewables, what stands out?

The first pivotal moment was around 2006 after the Howard Government refused to extend the very successful (9,800MW) MRET scheme and wind industry companies were laying off lots of employees. I remember the AusWind Conference in Manly, NSW was more of a wake than a conference. However, when the Bracks Government announced their VRET scheme, it threw a lifeline to the industry avoiding our industry going over the cliff.

The second pivotal moment was when Clive Palmer took the stage in 2014 with Al Gore to state his 'Puppies' (party's Senators) would not support repealing the LRET, ARENA or CEFC. Yes, it's hard to believe, but Clive Palmer, yes, that Clive Palmer, saved the renewables industry as he denied the Abbott Government the numbers in the Senate to unilaterally slash, or eliminate, the LRET. While the LRET was reduced to 33TWh to achieve a major party bipartisan compromise, it still enabled rapid growth of our industry resulting in us exceeding Rudd's original 41TWh LRET target a year to two ago.

SE: On reflection are you pleased or frustrated by the current uptake of renewables in Australia?

I am pleased with the progress we have made, particularly since 2016. When I started, I never envisioned States being powered by 100% Variable Renewable Energy (VRE) for hours at a time, 6MW wind turbines and GW scale projects. However, we cannot be complacent; we are in a critical race as the biggest risk to our industry is the lights going out as coal generators



"The United State's Inflation Reduction Act is amazing legislation… but could be problematic for Australia if our Government does not quickly implement similar measures, in at least some areas, to avoid investment, equipment and jobs heading to the USA."

become less reliable and/or leave the market. We need to build more VRE (and storage) as fast as possible; it's as simple as that.

SE: What should Australia now do to hasten the uptake of wind, solar and battery storage?

My top three would be build more transmission lines ASAP (looking after the landowners and their communities), speed up the diabolical grid connection process, and implement the Government's Capacity Investment Scheme which the Smart Energy Council was proactive in developing and represented an amazing turn around from the ill-conceived Capacity Market being pushed by the ESB.

SE: You were a staunch supporter of the Smart Energy Council's bin sticker campaign in the build-up to the 2022 federal election…

Yes, I helped hand out the first box of bin stickers at a Sundowner event in December 2021 as it was most certainly a make or break election for our industry. Below is a photo of two stickers some reprobate put up that night.

SE: Have you ever considered a career in politics?

That's your easiest question; 'No'. Although it reminds me of the last time I was asked that question. I had the opportunity to ask Prime Minister Turnbull the last question from the audience at a NSW Smart Energy Summit 3 years or so ago which was, Do you think the best way for us to get real action on climate change is for 'small L' Liberals to run as independents and start winning safe Liberal seats? Malcolm smiled and asked if I was putting my hand up for Liberal pre-selection!

SE: Given your American background, how would you contrast or compare the US with Australia?

The Inflation Reduction Act is amazing legislation despite its unrelated and misleading title. However, it's also amazing for the planet due to its enormous scope in reducing emission. Yet, it could be problematic for Australia if our Government does not quickly implement similar measures, in at least some areas, to avoid investment, equipment and jobs heading to the USA.

SE: Had you not chosen a career in energy, what might you be doing now?

If PCs existed when I attended Uni instead of typewriters (yes, I'm that old), I probably would have gone to law school. I thought I might be a good lawyer, but I could not stand the thought of typing papers, reports, etc. on a typewriter!

SE: And to round things off:

YOUR FIRST JOB: *General Electric's Aircraft Engine Group [which is] just about the best place for a recently graduated Mechanical Engineer. I even participated in bird strike tests, shooting dead birds out of a pneumatic cannon into operating jet engines (yes, that's a real engine certification test).*

BEST ADVICE RECEIVED: *In my early days at GE: "If you see something of interest that needs to be done at your company; assume consent and start working on it." That advice helped me to progress my career several times, including starting work in Government Affairs.*

CURRENTLY READING: *'The Ministry of the Future' by Kim Stanley Robinson, a fascinating piece of fiction set 10-20 years from now when climate impacts, and attempts to reverse them, are more significant and extreme. It starts out pretty grim, but get past that and get set for a great read about climate change mitigation and the evolution of the Extinction Rebellion.*

SPARE TIME INTERESTS: *Water sports such as white-water kayaking and odd sports like kayak water polo. I'm currently trying to learn how to successfully ride a Waveski. I also persist with Mini Mal surfing.*

FAVOURITE PODCASTS: *Easy – Pod Save America. Twice-a-week pods on American politics by former Obama White House Advisors. It's funny and depressing at the same time and helped maintain my sanity during the Trump years!*

ECONOMIC AND ENVIRONMENTAL IMPERATIVES

"Lithium has an extraordinary capacity. We need to not just dig it up. I want to make sure we use the lithium and nickel and other products we have to make batteries here."

PRIME MINISTER ANTHONY ALBANESE addressing the National Press Club, February 2023

"Australia created barbed wire, Wi-Fi, the black box flight recorder, the PERC solar cell, the first bionic ear, the electric drill, cervical cancer vaccine and even the stump-jump plough! We're certainly capable of creating of closed loop solution for batteries and are capable of realising the opportunity to fast-track manufacture of batteries here in Australia."

The Good Car Company in its Submission to the EV Inquiry

"A net zero Australian economy will reduce global emissions by just over 1%. But if Australia successfully seizes the economic advantage in exporting zero emissions goods, this can create an economic boom larger and more sustained than the mining boom and reduce global emissions by around an additional 7%."

The Superpower Institute (comprising Australia's leading thinkers, business-people and scientists including ROSS GARNAUT, ROD SIMS, SIMON HOLMES À COURT and DR GABRIELLE KUIPER)

"Our focus is very much on market signals changing, allowing capital to more freely flow into impact investing, so that those who are willing to fund our energy transition know if their investment is safe... like a climate bond set-up, a binary 'yes or no' as to whether an impact investment is good... we've got a window of opportunity, we need to know how to take it."

BLAIR PALESE of Ethinvest (pictured left) addressing the Climate Capital Forum gathering at Parliament House, ACT

"The secret to change is to focus all of your energy not on fighting the old but on building the new."

SOCRATES

"We need to ensure our footprint is light and our legacy is long."

Member for North Sydney KYLEA TINK whose priority is the wellbeing of youth

"The onus shouldn't be on the community to call out greenwashing. We need clear science-based definitions and regulations to stop industry (and government) making misleading claims."

POLLY HEMMING, The Australia Institute (in relation to Senate inquiry into greenwashing with a report due by December 2023). Separately, the ACCC is investigating several businesses for potential 'greenwashing'

"Australia has been very good at innovation, in renewables and smart technology, but we haven't always been good at commercialising those opportunities for Australia's advantage. This [trip to India with 35 Smart Energy companies] is about win-win, a win for Australia, a win for India – closer economic relations with what is the fifth largest economy in the world and growing."

PRIME MINISTER ANTHONY ALBANESE in a joint media conference in India with Smart Energy Council

"As India scales up solar and battery production, looks to build massive projects overseas, and rolls out cutting-edge energy technology at home, the opportunities for collaboration are immense. We're in a critical and global race for renewable energy investment, if Australia seizes this opportunity, we could become a renewable energy superpower."

Smart Energy Council's JOHN GRIMES

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HALL OF FAME

Two new members were inducted into the Smart Energy Council's Hall of Fame during Smart Energy 2023.

Simon Corbell who is former ACT Energy Minister and ACT Minister for the Environment and Climate Change and designed and pioneered the use of renewable energy reverse auctions in Australia, now the policy tool at the heart of the Capacity Investment Scheme.

Simon is also credited with keeping the renewable energy industry alive as the Federal Government tried to axe the Renewable Energy Target, ARENA and the Clean Energy Finance Corporation and was "an uncompromising voice in the COAG Energy Ministers' meetings," John said. Today Simon Corbell chairs the Clean Energy Investor Group with its combined portfolio value of around $24 billion. He is also a Patron of the Smart Energy Council.

Also inducted to the Hall of Fame was **Geoff Stapleton**, the former long-term Managing Director of international training organisation GSES. "From the outset Geoff has had a massive impact on raising the quality and safety bar across our industry," John Grimes said. "At home, across our region, and beyond, in the Pacific, Asia and more recently into Africa."

Geoff is Executive Officer of the Sustainable Energy Industry Association of Pacific Islands and former director of the International Solar Energy Society (ISES). His involvement with SEC and its predecessors, Australian Solar Energy Society and the Australian New Zealand Solar Energy Society spans decades.

Geoff said: "Over the past 35 years my involvement with the various parts of the industry has been to help it grow, I have been lucky making a living doing what I love."

Geoff is currently Chair of the ISES Online Museum Committee *(see box below for more on the online museum).*

THE ANTONY SACHS AWARD FOR INDUSTRY IMPACT

THE SMART ENERGY COUNCIL has launched the Antony Sachs Award for Industry Impact in honour of Antony's tremendous contribution to the industry and the board.

"Antony was a long-term and valued director of the Smart Energy Council, a staunch advocate of the need to modernise, to move the organisation into a new stage, to be an influential voice for the solar, and later the smart energy industries," John Grimes said, crediting Antony for highlighting the importance of a healthy business balance sheet which proved critical to SEC during COVID.

Antony was pivotal to the Council's progress and development up until 2020 and remains the longest serving Director in SEC's history.

Mid-last year, Antony passed away after collapsing following his regular 12km Saturday run with friends. The award in his name recognises vision, courage and determination in a person who has made a significant impact on the industry over the past 12 months. Antony's widow Margaux presented the award to inaugural recipient Lara Panjkov of Fluence.

"An extraordinarily talented Energy Storage Market expert," John said. "Last year the Energy Security Board was again pushing to prop up coal and gas in the energy market and keep renewables at bay, rather than a rapid build program of energy storage to firm up the growing renewables fleet."

Lara was a key architect of the Smart Energy Council mechanism recommended to achieve reform, and in February 2023 the proposal for a Capacity Investment Scheme was endorsed by all Australian governments.

The breakthrough policy will deliver a phenomenal additional $10bn in energy storage build.

THE ISES ONLINE MUSEUM OF SOLAR ENERGY

The online museum was established in 2020 to celebrate 50 years since the first international ISES Solar World Congress and to highlight the many individuals, research institutes, companies, NGOs and more who have shaped all aspects of solar energy through cutting edge developments.

The Virtual Museum is now calling for submissions via the ISES website which includes comprehensive guidelines on the process. The newly designed museum will be relaunched at the Solar World Congress 2023 in New Delhi later this year. *For more information email swc50@ises.org, www.swc50.org/ises-online-solar-energy-museum*

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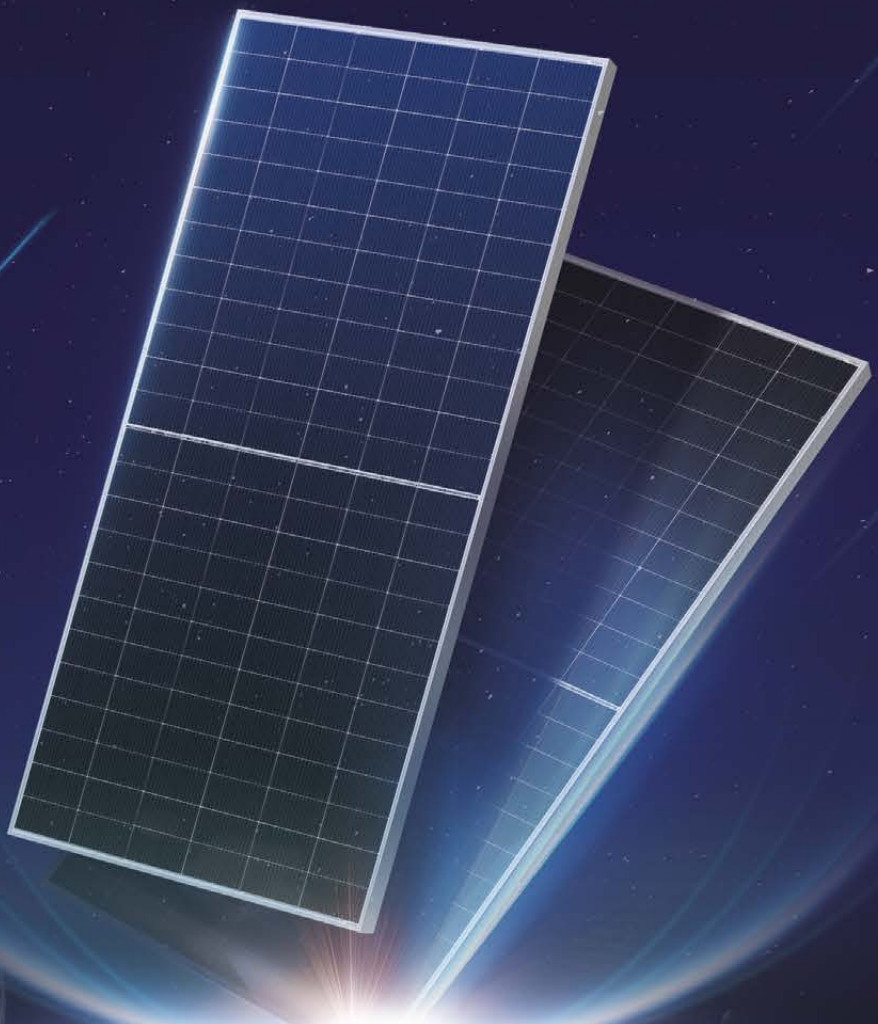
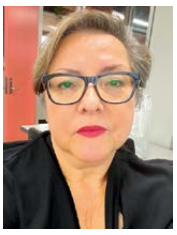


Level 25, 100 Mount Street, North Sydney NSW 2060
+61 289 122 165
www.jasolar.com

Here we welcome some new faces to the Smart Energy Council.

Jess Keyes, Executive Assistant to External Affairs Manager Wayne Smith



Jess is a driven professional with extensive experience in public administration, professional associations, high-level client service and business management. Previous roles include Office Manager for a consulting firm and Executive Assistant for National Managers in various government departments.

Jess's dedication to her work and attention to detail have enabled her to support high-level executives in managing their schedules, coordinating meetings, and handling confidential information.

Outside of work, Jess enjoys travelling, reading and spending time with her family and friends. She speaks Spanish and is now learning Italian.

The Smart Energy Council congratulates Board member and new mum Sam Craft, pictured here with husband Tom and beautiful baby Zali born in November last year and loving all the attention from doting parents and staff at NRG Solar in Adelaide!

Terri Butler, newly elected Smart Energy Council Board Director and Vice-President

Terri is a non-executive director and consultant with experience in public life, the community sector and private enterprise.

As a former Shadow Environment Minister and MP she has a significant interest in the role of public policy in promoting sustainability, decarbonisation, biodiversity protection, and pollution reduction.

Terri is a member of the advisory board for Griffith University's Climate Ready Initiative. She is a patron for causes including veterans support, refugees and community support. Prior to being elected to the parliament, she was a partner at a national law firm.

Terri recently commenced as Chair of the Bioenergy Australia Sustainable Aviation Fuel Alliance of Australia and New Zealand whose mission is to fast-track the development of sustainable aviation fuel and accelerate decarbonisation in the sector.

Terri fills the vacancy on the Smart Energy Council Board created by the retirement of the talented and tireless Geoff Bragg.

CALENDAR

DATES FOR INDUSTRY **UPDATES**

The Smart Energy Council is delivering a series of events on hot topics at events in capital cities in the coming months.

Monday June 26 – Renewable and Critical Mineral Superpower Summit, Perth

Topics: Positioning Australia as a renewable energy exporting superpower. Value adding of critical minerals – low carbon steel, manufacture of LI batteries.
The summit will focus on large scale RE export opportunities from WA including green hydrogen and steel.
The event will feature a top line-up of speaker including Tim Buckley of Climate Energy Finance.

July 24-27 – Installer roadshows

Adelaide: Monday July 24
Brisbane: Tuesday July 25
Melbourne: Wednesday July 26
Perth: Thursday July 27

Friday August 11 – Renewable Energy Storage Summit, Melbourne

Topics: Large scale storage, storage for grid services and as virtual transmission, behind meter storage, community batteries, pumped hydro, EVs as batteries on wheels.
This event will be of interest to those working in industry supply chains, policymakers, investors and others.

Tuesday September 5 – Smart Energy Queensland, Brisbane Showgrounds

The 3rd Smart Energy Queensland Conference

November (date TBC) – Pacific Summit (Melbourne)

More details at www.smartenergy.org.au

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SOLAR INDUSTRY Positive Quality™

THE SMART ENERGY COUNCIL'S Positive Quality™ program sets rigorous standards that ensure manufacturers who achieve and maintain high standards are singled out and recognised.

Prominent panel maker **JinkoSolar** meets those high standards and proudly displays the Positive Quality™ logo, a symbol of manufacturing excellence, which sends a signal of confidence to consumers.

Participating manufacturers are fully recognised, consumers enjoy peace of mind and the industry's reputation is strengthened, delivering **Positive Quality™** for all. Australian consumers and businesses can have confidence in the quality of the solar panels they are installing by looking out for the **Positive Quality™** logo.

The Smart Energy Council developed the program because the generic appearance of panels makes it difficult to determine good from bad, unless an identification mark denotes otherwise.

The **Positive Quality™** program admits and endorses manufacturers that are independently tested and verified through plant visits. The initial assessment consists of a company's entire manufacturing processes undergoing independent and intensive inspection and testing.

This is carried out by the Smart Energy Council's specially appointed **Positive Quality™** specialists in a three step process: Certification check and compliance with IEC and Australian standards; Factory inspection with a 60-point check; and a Product quality check: appearance, IV, EL, Hi-Pot, and leakage current.

Positive Quality™ participants' premises are then inspected at random every 12 weeks to ensure the continuity of those high standards. All solar PV manufacturers of high quality can participate.

JinkoSolar was awarded the 'Top Brand PV Australia 2021' by specialised European research firm EuPD Research.*

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Continuous Quality Assurance

By displaying the Positive Quality™ logo solar companies convey high standards in panel manufacturing to industry and consumers

Solar JinKO

Contact Positive Quality™ Manager Alistair McGrath-Kerr on 0499 345 013, email alistair@smartenergy.org.au or visit www.smartenergy.org.au

WINTER 2023 ADVERTISING CONTENT

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Alpha ESS	43	www.alphaess.com
Astronergy	71	www.astronergy.com
ATESS	5	www.atesspower.com
Brighte	18	http:// brighte.com.au/smartenergy
Capral	65	http:// lowcarbonaluminium.com.au
Ecovantage	48	https://ecovantage.com.au
Envelon	11	www.envelon.com
Fluence	19	https://fluenceenergy.com/
Fluke	Inside back cover	http://fluke.co/smft-se
FranklinWH	69	www.franklinwh.com/au
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JA solar	67	www.jasolar.com
Jinko	49	www.jinkosolar.com.au
Kuga	37	www.13kuga.com.au
Leda	62	https://leda.inc
Panasonic	9	https://au.panasonic.com.au
PowerPlus	31	https://powerplus-energy.com.au
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Stiebel Eltron	57	www.stiebel-eltron.com.au
Sungrow	Outside back cover	www.sungrowpower.com
Suntech	23	www.suntech-power.com.au
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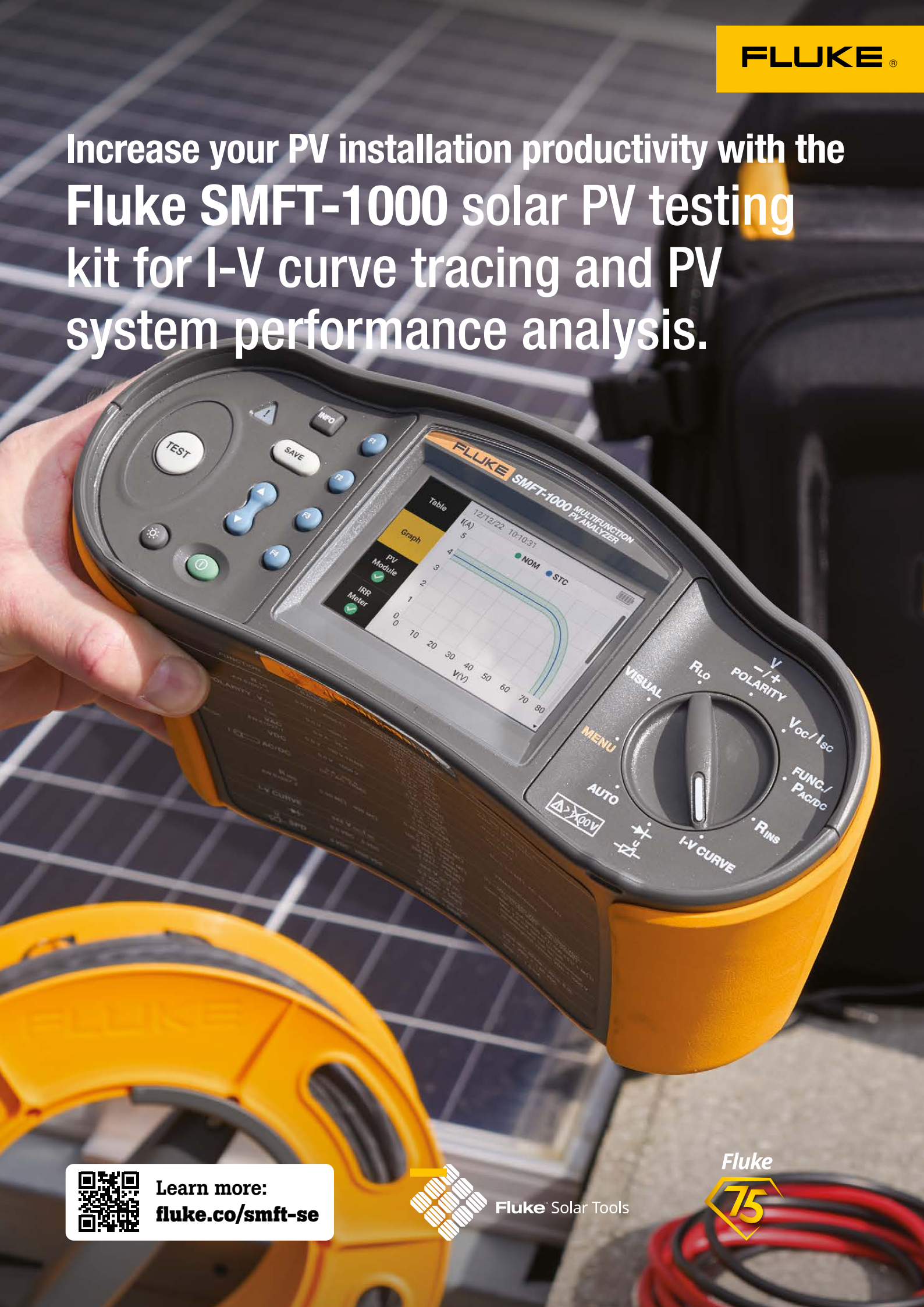

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