

Change to Emissions Reduction Fund Fixed Delivery Contracts

Benefits Many Carbon Credit Companies and Emitters, Leaves Taxpayers Worse Off

Executive Summary

In the Australian Government's Emissions Reduction Fund (ERF) scheme, eligible carbon abatement projects (such as soil carbon sequestration, revegetation, landfill gas emissions abatement, energy efficiency etc) earn one Australian Carbon Credit Unit (ACCU) for each tonne of carbon dioxide equivalent (CO_2 -e) abated.

A recent change to the ERF allows carbon abatement suppliers who were in fixed delivery contracts with the Federal Government to exit from their contracts. They can then sell their carbon credits on the open market to other buyers including emitters and corporates, rather than the government, and receive higher prices for them.

The increase in supply of carbon credits to the open market has resulted in prices dropping 36%, from \$47 per ACCU prior to the change to around \$30 after the change. This is delivering likely savings to emitters and others seeking to buy carbon credits as they can now buy them for a lower price. However, the carbon market as a whole had not expected this change and many will be worse off.

The carbon market as a whole had not expected this change and many will be worse off.

Carbon abatement suppliers in optional delivery contracts will receive less for their abatement if they try to sell in the open market while prices remain at current depressed levels. Stakeholders who are developing or investing in carbon abatement projects are now seeing the low prices, volatility and regulatory risk in the carbon market and may have less confidence in moving forward with projects and investments.

The recent ERF change could also lead to higher costs for taxpayers. Carbon credit prices are now much higher than they were when the original contracts were signed between suppliers and the Federal Government. If the Federal Government were to buy new carbon credits to make up for the original cheap credits, in order to stay on track with their forecast 35% emission reduction by 2030, this will likely come at a

much higher cost – with taxpayers footing the bill which could be between \$600 million and \$2.5 billion.*

^{*} Note that this depends on how voluntary abatement is treated – IEEFA assumes that voluntary abatement is additional to anything the government has committed and therefore does not count towards meeting the government targets. Therefore if credits are bought by companies and voluntarily surrendered, this will not help the government get to the 35% target. To IEEFA's understanding, the formal international and domestic procedures regarding voluntary abatement treatment are not yet finalised. From the Clean Energy Regulator: "Article 6 provides the rules for international trading and use of emissions reductions, with operational details to be worked out during 2022 and at COP27. Voluntary market trades can exist both within and outside the framework of Article 6" (March 2022). As it currently stands in the Australian Government's 2021 emissions projections, all the Emissions Reduction Fund actions are taken into account in the emissions projections, but then voluntary action is added back into the emissions reduction task, so that it is neutralised (i.e. voluntary surrender does not reduce Australia's emissions reduction task). IEEFA assumes this treatment to remain constant into the future. Legislation exists regarding how to treat voluntary surrender. Part 6 of The Australian National Registry of Emissions Units Act 2011 states that in the case that a person was to voluntarily cancel an ACCU then the government would remove a Kyoto unit from the Government's account to the voluntary surrender account. This would effectively act to tighten/reduce the emissions budget that the government had committed to achieving under the Kyoto Protocol. The Kyoto Protocol is now no longer in force but this provision was never repealed and remains active (although effectively defunct). The legislation reflects an underlying precedent that voluntary action would be additional to what the government had committed to achieving under international commitments.

See: Australian Government. Department of Industry, Science, Energy and Resources. Australia's emissions projections 2021. October 2021. Australian Government. Clean Energy Regulator. Quarterly Carbon Market Report. December Quarter 2021. And, Australian Government Federal Register of Legislation. Part 6 of The Australian National Registry of Emissions Units Act 2011. Accessed March 2022.

Table of Contents

Executive Summary	1
The Emissions Reduction Fund Scheme	4
Recent Change to the ERF	6
Winners	7
Losers	8
Future of the ERF	13
Appendix – DISER Emissions Projection	14
About the Author	15

The Emissions Reduction Fund Scheme

In the Emissions Reduction Fund (ERF) scheme, eligible carbon abatement projects (such as soil carbon sequestration, revegetation, landfill gas emissions abatement, energy efficiency etc) earn one Australian Carbon Credit Unit (ACCU) for each tonne of carbon dioxide equivalent (CO_2 -e) abated.



Figure 1: 2021 ACCU Demand by Category

Source: Clean Energy Regulator.¹

The abatement projects can sell the ACCUs via three potential channels:

1. The Federal Government

To date, the Federal Government has been by far the main buyer of ACCUs via its ERF, in order to its meet emissions reduction targets. In 2021 alone, the government purchased and surrendered 12.4 million ACCUs.

2. Companies seeking to voluntarily offset their emissions

Companies seeking to voluntarily offset their emissions are also buyers of ACCUs, including for example large corporates aiming to go "net zero." In 2021 there were 950,000 ACCUs bought and surrendered voluntarily.

3. Companies obligated to offset emissions above a particular baseline through the Safeguard Mechanism²

Emitters that are included in the Safeguard Mechanism include mining, oil and gas extraction, manufacturing, transport, and waste facilities that have a significant amount of emissions.³ For these emitters, if they emit anything above a particular baseline⁴, they have to buy ACCUs to "offset" the baseline exceedance. However, because these baselines were originally set at high levels of emissions and were even allowed to be further weakened, it has been extremely rare for facilities to exceed their baselines. In 2021 there were just

¹ Clean Energy Regulator. QCMR data workbook – December Quarter 2021. December 2021.

² Clean Energy Regulator. The Safeguard Mechanism. 18 June 2021.

³ Clean Energy Regulator. The Safeguard Mechanism: Coverage. 18 June 2021.

⁴ Clean Energy Regulator. The Safeguard Mechanism: Baselines. 18 June 2021.

122,000 ACCUs bought and surrendered by emitters to meet Safeguard baseline requirements.⁵

The government is the key buyer of ACCUs by far. Since the ERF held its first auction in 2015, the government has entered into fixed delivery contracts that obligate companies to deliver 208 million ACCUs at an average price of \$12.50 per ACCU, representing \$2.6 billion of value. Of these, 76 million have been delivered, another almost 20 million of contracted ACCU projects failed to deliver and were terminated, leaving 112 million outstanding ACCUs⁶ – at a contract value of approximately \$1.4 billion. These 112 million ACCUs are to be delivered to the Clean Energy Regulator over the next 12 vears.7

There are 112 million outstanding ACCUs at a contract value of approximately \$1.4 billion.

In more recent auctions, the government also began offering optional delivery contracts. Under these contracts, the government committed to purchase a nominated volume of abatement from contract holders at an agreed price, but contract holders were under no obligation to deliver this abatement to the government. This represents a further 21 million of ACCUs contracted under the ERF.

However, what became readily apparent since the disastrous ERF auction of 2017, when the amount of ACCU volume acquired collapsed, is that the ERF would obtain less and less abatement each year for the same cost.

Gradually the government has inched up the price it was prepared to pay for ACCUs in subsequent auctions, but the volume companies were willing to commit to sell under fixed delivery has remained tiny. This has exposed a fundamental structural weakness in the taxpayer-funded ERF model as Australia's main policy mechanism for lowering emissions.

This became even more obvious in the past 9 months as the price of ACCUs in the private sector brokered market soared, increasing from less than \$20 before July 2021 to \$57 in January 2022.

Further complicating matters was a clause in the fixed delivery contracts allowing companies to opt out of delivering ACCUs to the government via an exit fee. This exit fee is set at a price per ACCU equal to the payment they were entitled to under the

⁵ Note that in some cases emitters also can have obligations to buy ACCUs to offset their emissions under State Environmental Protection Agency (EPA) requirements as well.

⁶ Clean Energy Regulator. Carbon Abatement Contract Table. Data as of 6 March 2022.

⁷ Clean Energy Regulator. Quarterly Carbon Market Report December Quarter 2021. 16 March 2022.

contract. The average price of the contracts was around \$12.50/ACCU.⁸ This means it would cost these ACCU providers on average \$25 per ACCU to exit from their fixed delivery contract – the \$12.50 exit fee plus \$12.50 in forgone expected payment from the government contract.

With the private sector market willing to pay \$55 in February 2022 and \$47 before the recent government announcement, exiting would appear extremely lucrative.

Recent Change to the ERF

The government has now conceded that it will not try to stand in the way of contract exits (for example by possibly refusing to enter into future agreements with organisations that exit their contracts or by publicly shaming them).

As of 4 March 2022, it is allowing any ACCU provider under a fixed delivery contract to exit the contract. According to the government, the exit "will occur in a streamlined fashion without the legal and likely reputational risks of non-delivery or default." Contract exits are to be coordinated by the Clean Energy Regulator in a staged manner.

However, because this announcement makes it clear that large amounts of ACCUs will be free to be sold on the open market over time, ACCU prices have plummeted. ACCU prices had already fallen from the record spot price high of \$57 in the months leading into this government announcement, with the spot price before the announcement being \$47. After the announcement, prices went into free-fall to reach about \$30 in mid-March, approximately the price that would make the \$25 exit worthwhile, as shown in Figure 2.



Figure 2: ACCU Spot Price Chart (\$)

Source: Green Energy Markets Abatement Certificate Trade Dataset; IEEFA.

⁸ Clean Energy Regulator. Auctions Results. 18 June 2021.

Winners

Those Trading Before the Change

Large amounts of ACCUs were traded before the 4 March announcement. ACCU spot prices were trending upwards consistently through 2021 and early 2022, peaking at \$57 on 24 January 2022. Then they dropped 18% in the intervening weeks, reaching \$47 on 3 March right before the announcement. This is a major fall considering that ACCU prices previously had been trending rapidly upwards.

Spot trading volume in February 2022 was very high at 436,000, approximately 4 times the January 2022 volume of 114,000 and the 2021 monthly average of 107,000.

This raises the possibility that some players in the market may have anticipated or known about the coming change before it was publicly announced, causing them to sell high volumes of ACCUs at lower prices.⁹

ACCU Fixed Delivery Contract Holders Make Windfall Gain

Assuming a fixed delivery contracted seller faces the average government contracted price of \$12.50, plus exit fee of \$12.50, they would make a windfall gain of, on average, \$5 per ACCU if they exited their ERF contract now – in mid-March with ACCU prices hovering around \$30. The total potential windfall gain for the 112 million outstanding contracts is \$560 million approximately.

The total potential windfall gain for the 112 million outstanding contracts is \$560 million.

The biggest potential winners, who could benefit from having the largest amounts of unfulfilled ACCUs in fixed contracts (assuming they face contract prices close to the average of \$12.50) are:

- **Greencollar via Terra Carbon**: 42 million outstanding ACCUs potential windfall gain of \$211 million.
- **Agriprove Solutions**: 18 million outstanding ACCUs potential windfall gain of \$91 million.
- **Corporate Carbon Solutions**: 16 million outstanding ACCUs potential windfall gain of \$79 million.

The Clean Energy Regulator (CER) has begun a consultation process to determine how these windfall gains should be shared between the parties involved in the

⁹ Green Energy Markets Abatement Certificate Trade Dataset. March 2022.

project – including landholders, carbon service providers and project proponents.¹⁰

The Carbon Market Institute (CMI) has requested that the CER delay the proposed change to give the carbon project developers more time to consult with landholders and other stakeholders.¹¹

Emitters and Corporates Can Now Buy Cheaper ACCUs

The drop in ACCU prices post this change means that corporates seeking to meet voluntary commitments or emitters facing legal mandates to reduce emissions under the Safeguard or EPA obligations are certainly major winners from this event, at least in the short term while ACCU prices remain depressed.

They can now buy carbon credits at a much lower price than prior to this change. For some emitters, it may be cheaper to buy ACCUs to offset their emissions rather than directly reducing the emissions involved in their operations.

For example, Chevron has a shortfall of 5.23 million tonnes of CO_2 -e from its Gorgon Carbon Capture and Storage (CCS) project as it failed to meet emission reduction commitments, so will need to buy ACCUs or other types of emission reduction units in the coming months.¹² Buying ACCUs at \$30 now, rather than the previous \$47, Chevron would save \$17 per unit, amounting to an overall saving of up to \$90 million (if ACCUs made up the whole emission reduction purchase).

For some emitters, it may be cheaper to buy ACCUs to offset their emissions rather than directly reducing the emissions involved in their operations.

Losers

ACCU Providers in Optional Delivery Contracts May Be Subject to Lower Prices

ACCU providers that were *not* under fixed delivery contracts with the government are major losers from this event. If they were planning to sell their ACCUs soon, they will not receive as much as they expected due to the drop in ACCU prices.

¹⁰ Clean Energy Regulator. Update - transitional arrangements for Emissions Reduction Fund fixed delivery contracts. 9 March 2022.

¹¹ Carbon Market Institute. CMI requests postponement of initial CAC exit window. 18 March 2022.

¹² Chevron. Gorgon Gas Development and Janz feed Gas Pipeline Environmental Performance Report 2021. Page 45. November 2021.

For the 21 million ACCUs under optional delivery contracts, which will now likely fetch ACCU prices closer to the current \$30 rather than the earlier \$47, approximately \$360 million of value has been wiped from their abatement projects.

The biggest potential losers here are¹³:

- **Orica**: 3 million outstanding ACCUs potentially worth \$57 million less now than prior to the change.
- **AI Carbon WA**: 2 million outstanding ACCUs potentially worth \$42 million less.
- **Australia Integrated Carbon Finance**: 2 million outstanding ACCUs potentially worth \$36 million less.

New Carbon Abatement Projects May Be Under Question

Other losers from this change include budding new carbon abatement projects. Carbon abatement projects that are currently in the planning stages, and are reliant on a high ACCU price for their business case to stack up, are less likely to go ahead given the recent massive drop in the carbon price. Projects could be cancelled or delayed.

Inevitably, future abatement efforts will be made more difficult by the loss of such projects in the pipeline now. Such an abrupt loss in project value will make farmers, among others, wary of developing abatement projects in future.

The Carbon Market Has Lower Investment Certainty

This change to the ERF has been introduced without public consultation, when the country may be only weeks away from a Federal Election being called, at which point the government will move into "caretaker" mode and customarily refrain from major decisions.

The change undermines the carbon market as a whole. The unexpected nature of the change and the price volatility it has created reduces certainty for investors in the nascent carbon market.

The CMI stated, "We are concerned that continuing arbitrary changes in Australia's carbon market will challenge investor as well as community confidence in supporting carbon reduction or removal activities credited by the Government with ACCUs."¹⁴

If the government continued to hold the full 112 million fixed delivery contracts in their previous form, it could exert more control over the market, modulating it as

¹³ Assuming a \$17 reduction in value per outstanding ACCU in optional delivery contracts (worth \$47 prior to the change, now worth around \$30).

¹⁴ Carbon Market Institute. ERF Changes could impact investor & community confidence in growing carbon market. 4 March 2022.

needed gradually over time. Instead, the recent change will flood the market with lower priced ACCUs. If there are future issues with ACCU prices, the government has lost a key policy lever they could pull to modulate the market – the store of ACCUs.

There are Costs to the Government/Taxpayer

The ACCUs bought through a contract with the Government count towards meeting Australia's 26-28% by 2030 official emissions reduction target, and towards the forecast of 30-35% emission reduction taken to COP26 in Glasgow.¹⁵ Under a baseline scenario, Australia is currently forecast to achieve 30% emissions reduction by 2030, and under a technology investment roadmap-aligned scenario, Australia is forecast to achieve 35% emissions reduction by 2030.¹⁶

The major issue with the recent change is that the government now has up to 112 million fewer ACCUs to go towards meeting its emissions reduction targets.

Up to 112m ACCUs that exit from government contracts will be sold to companies seeking to voluntarily offset their emissions, or emitters who have Safeguard Mechanism obligations.

The question arises as to whether ACCUs bought by companies seeking to voluntarily offset their emissions are included in helping the government meet the 35% target, or if they are additional to the 35% and therefore do not count towards meeting the government's emissions reduction targets.

IEEFA's understanding, the formal international and domestic procedures regarding voluntary abatement treatment are not yet finalised. The Clean Energy Regulator stated in March 2022, "Article 6 provides the rules for international trading and use of emissions reductions, with operational details to be worked out during 2022 and at COP27. Voluntary market trades can exist both within and outside the framework of Article 6."¹⁷

As it currently stands in the Australian Government's 2021 emissions projections¹⁸, the Emissions Reduction Fund actions are taken into account in the projections, but then voluntary action is added back into the emissions reduction task, so that it is neutralised (so that voluntary surrender does not reduce Australia's emissions reduction task). IEEFA assumes this treatment to remain constant into the future – that the voluntary surrender is not counted towards meeting the government target but is additional to the target.

Legislation exists regarding how to treat voluntary surrender. Part 6 of The

¹⁵ Department of Industry, Science, Energy and Resources. Methodology for the 2021 projections. October 2021.

¹⁶ Department of Industry, Science, Energy and Resources. Australia's emissions projections 2021. October 2021.

¹⁷ Clean Energy Regulator. Quarterly Carbon Market Report December Quarter 2021. March 2022.

¹⁸ Department of Industry, Science, Energy and Resources. Australia's emissions

projections 2021. October 2021.

Australian National Registry of Emissions Units Act 2011¹⁹ states that in the case that a person was to voluntarily cancel an ACCU then the government would remove a Kyoto unit from the Government's account to the voluntary surrender account. This would effectively act to tighten/reduce the emissions budget that the government had committed to achieving under the Kyoto Protocol. The Kyoto Protocol is now no longer in force but this provision was never repealed and remains active (although effectively defunct). The legislation reflects an underlying precedent that voluntary action would be additional to what the government had committed to achieving under international commitments. Therefore as mentioned previously, IEEFA assumes that the voluntary surrender does not reduce the government's emissions reduction task.

Any ACCUs bought by big emitters to cover for emissions above regulatory Safeguard baselines just cover extra emissions not currently accounted for in the national emissions projections. So, while they are important in keeping Australia on track with meeting emissions projections, they do not directly contribute to reducing emissions below the projection.

So, the government is up to 112 million tonnes of CO_2 -e behind on its emissions reduction task by allowing these fixed delivery contract exits. This means it is at risk of not meeting the 35% reduction forecast in the government's Emissions Projections unless it buys back an amount of ACCUs equal to the number of ACCUs that exit from their government contracts.

	26% Target	28% Target
Cumulative emissions forecast 2021–2030 (Mt CO ₂ -e)*	4,744	4,744
Budget trajectory (Mt CO ₂ -e) *	4,915	4,847
Emissions reduction task before voluntary action (Mt CO_2 -e)^	-171	-103
Voluntary action using ACCUs (Mt CO ₂ -e)*	23	23
Emissions reduction task post voluntary action (Mt CO ₂ -e) *	-148	-80
	Overachievement by	Overachievement by
	4.3 percentage points	2.3 percentage points
	Reaches 30% reduction	Reaches 30% reduction
Emissions reduction task (Mt CO ₂ -e)*	-343	-275
(high technology uptake scenario)	Overachievement by	Overachievement by
	9 percentage points	7 percentage points
	Reaches 35% reduction	Reaches 35% reduction
Government maximum ACCU loss (Mt CO ₂ -e)~	112	112

Table 1: Emissions Reduction Task

Source: *DISER²⁰ and ~CER²¹. See appendix for DISER reference table.

If the Federal government went to the market to buy replacement ACCUs to make up

¹⁹ Australian Government Federal Register of Legislation. Part 6 of The Australian National Registry of Emissions Units Act 2011. Accessed March 2022.

²⁰ Department of Industry, Science, Energy and Resources. Australia's emissions

projections 2021. October 2021.

²¹ Clean Energy Regulator. Carbon Abatement Contract Table. Data as of 6 March 2022.

for the contract exits, so as to stay on track with previous emissions projections, this would come at a high cost to taxpayers.

It is highly unlikely that the government will be able to secure ACCU contracts at prices anywhere near the original average of \$12.50. Prices closer to the current market rate of \$30 or even the previous \$47 seem more likely (the cost of carbon abatement tends to increase each year as we focus on harder-to-abate sectors)²². If all contracts were exited and the government had to buy the whole 112 million ACCUs back at \$30, it would cost \$3.4 billion, and at \$47, it would cost \$5.3 billion.

The \$12.50 per ACCU average exit fee the government will receive frees up money to "support new ERF projects" (according to the Clean Energy Regulator²³) but that will not go far towards purchasing the future required emissions reductions. If all 112 million fixed delivery contracts were exited, the government would receive \$1.4 billion in exit fee revenue and save \$1.4 billion by not having to pay out the initial contracts, for a total government benefit of \$2.8 billion.

So, taking the government costs (of buying new ACCUs to make up for the loss) and subtracting the benefits (the exit fee and the avoided initial contract payments), the total cost to the government/taxpayer of this recent change, if the whole 112 million contracts were exited, could be between \$600 million and \$2.5 billion – or even more if ACCU prices increase above \$47.

This is a transfer of wealth from taxpayers to a small group of beneficiaries. Some will now receive more for emissions abatement than they originally accepted under fixed delivery contracts. Emitters such as oil and gas producers who face a near-term requirement to reduce emissions will have to pay less for their offsets.

The government is worse off in meeting its 2030 targets. Not only that, it will also need to purchase more ACCUs in coming years as it seeks to reach net zero by 2050.

The total cost to the government/taxpayer of this ERF change could be between \$600 million and \$2.5 billion – or even more if ACCU prices increase about \$47.

It is quite obvious that taxpayers face an extremely big bill if we continue to rely predominantly on the ERF to meet the 2050 net-zero target.

Also, as recently brought to light by Professor Macintosh, many of the ACCUs are not even delivering legitimate abatement. Professor Macintosh found in his analysis that

²² Note that the government may be able to secure *optional* delivery contracts at low prices, as the suppliers have the option to sell into the open market at a later date and potentially receive higher prices. However, they are very unlikely to find suppliers wiling to enter *fixed* delivery contracts at the original \$12.50.

²³ Clean Energy Regulator. Media Release: The evolving carbon market: transitional arrangements for Emissions Reduction Fund fixed delivery contracts. 4 March 2022.

70-80% of the ACCUs are low in integrity.²⁴ So the abatement that is secured by the government or companies is questionable.

Future of the ERF

How can this mess be solved?

Introducing stronger Safeguard Mechanism requirements could be a first step. The baseline for emitters could be lowered each year so that they must make progressively greater annual emissions reductions (or buy ACCUs if they are not able to). This will increase demand for ACCUs and stimulate the market, and will be funded by emitters rather than by the taxpayer.

Also, as Professor Macintosh has suggested, an independent inquiry must be run to analyse the integrity of ACCUs and reforms developed to ensure low integrity projects do not receive credits.²⁵

However, ideally the whole carbon market should be redesigned as a comprehensive "gross" emissions trading scheme in which emissions are paid for or offset in full (rather than only emissions above a baseline). A long-term mandatory obligation for emitters to reduce emissions in each sector should be implemented, with a mechanism for flexibility via trading. Sectoral targets should be based on a steady reduction in annual emissions in line with the Australian Government's net zero by 2050 targets, with interim targets set well below an expected business-as-usual trajectory.

Ideally the whole carbon market should be redesigned as a comprehensive "gross" emissions trading scheme.

This would enable Australia to meet much more stringent emissions reduction targets across all sectors, and align with the Paris agreement to limit global warming to 1.5 degrees Celsius.

With Europe moving forward with carbon border taxes²⁶ – to place a fee on carbonheavy imports from countries with lagging climate policies – Australia must move quickly on climate or face very real economic consequences.

²⁴ ABC News. Insider blows whistle on Australia's greenhouse gas reduction schemes. 24 March 2022.

²⁵ ABC News. Insider blows whistle on Australia's greenhouse gas reduction schemes. 24 March 2022.

²⁶ Climate Wire. Europe moves forward with carbon border taxes. 16 March 2022.

Appendix – DISER Emissions Projection

Table 1: Cumulative emissions reduction task 2021 to 2030

Calculation of 2030 emissions	26% below 2005 level in 2030	28% below 2005 level in 2030
reduction task	(Mt CO₂-e)	(Mt CO ₂ -e)
Cumulative emissions 2021–2030	4,744	4,744
Emissions budget 2021–2030	4,915	4,847
-		
	-148	-80
Emissions reduction task ³	Overachievement by	Overachievement by
	4.3 percentage points	2.3 percentage points
	ne personage perso	
	-343	-275
Emissions reduction task		
(high technology untake scenario)	Overachievement by	Overachievement by
(ingliteenhology uptake scenario)	0 norcontago noints	7 norcontago points
	9 percentage points	/ percentage points

³ The emissions reduction task is adjusted by 23 Mt CO₂-e to account for projected voluntary action using Australian Carbon Credit Units over the period 2021–30.

Source: DISER.27

²⁷ Department of Industry, Science, Energy and Resources. Australia's emissions projections 2021. October 2021.

About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

About the Author

Johanna Bowyer

Lead Research Analyst for Australian Electricity, Johanna Bowyer has previously worked for CSIRO, Solar Analytics and Suntech and as a management consultant at Kearney. Johanna has research experience in microgrids, energy tariffs and distribution networks. She has a degree in Photovoltaics and Solar Energy Engineering from UNSW. jbowyer@ieefa.org

This report is for information and educational purposes only. The Institute for Energy Economics and Financial Analysis ("IEEFA") does not provide tax, legal, investment, financial product or accounting advice. This report is not intended to provide, and should not be relied on for, tax, legal, investment, financial product or accounting advice. Nothing in this report is intended as investment or financial product advice, as an offer or solicitation of an offer to buy or sell, or as a recommendation, opinion, endorsement, or sponsorship of any financial product, class of financial products, security, company, or fund. IEEFA is not responsible for any investment or other decisions. This report is not meant as a general guide to investing, nor as a source of any specific or general recommendation or opinion in relation to any financial products. Unless attributed to others, any opinions expressed are our current opinions only. Certain information presented may have been provided by third-parties. IEEFA believes that such third-party information is reliable, and has checked public records to verify it where possible, but does not guarantee its accuracy, timeliness or completeness; and it is subject to change without notice.