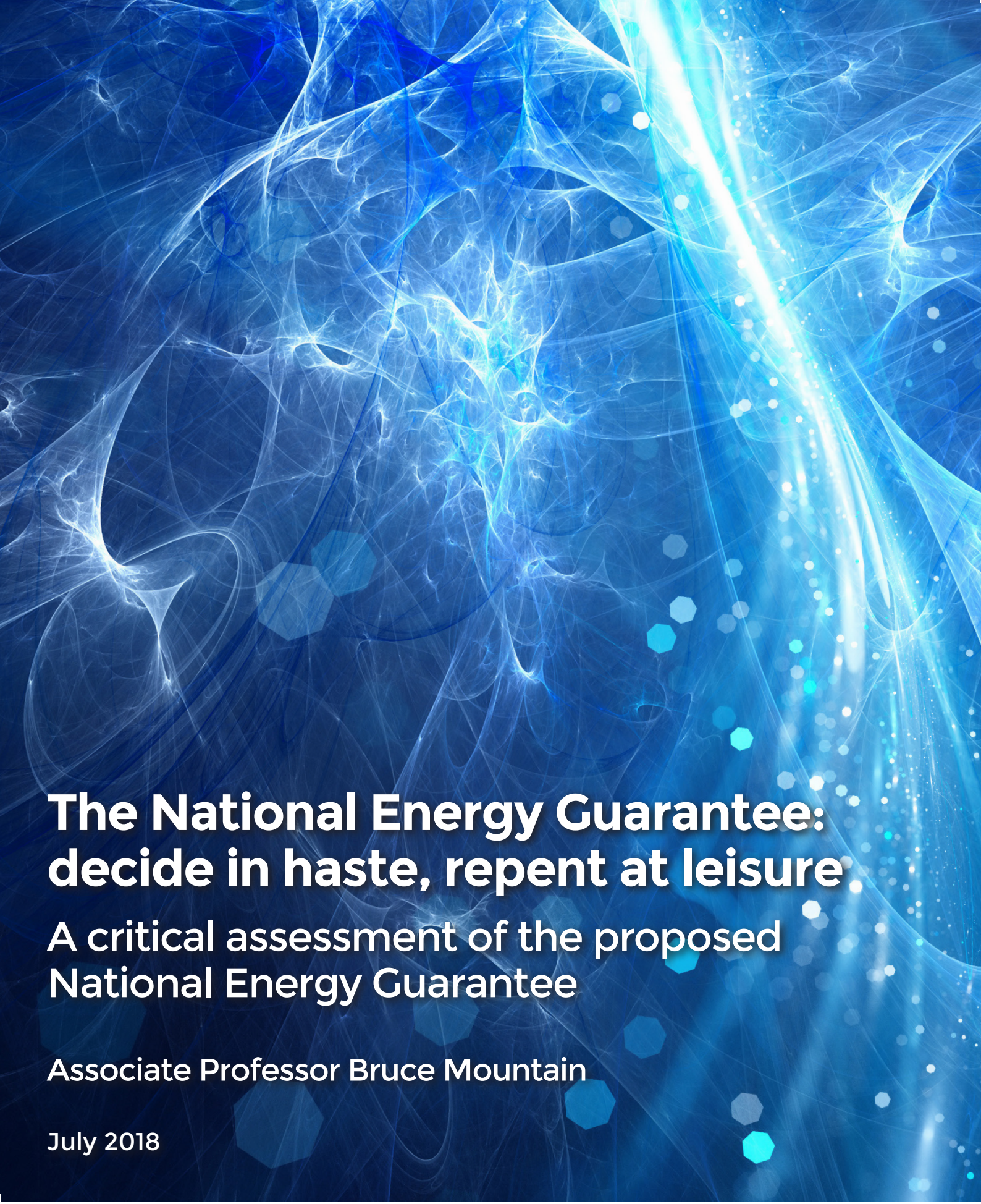


The National Energy Guarantee: decide in haste, repent at leisure

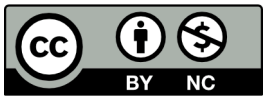
A critical assessment of the proposed National Energy Guarantee

Associate Professor Bruce Mountain

July 2018

Victoria Energy Policy Centre

VICTORIA UNIVERSITY
MELBOURNE AUSTRALIA



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Executive summary

In October 2017, the Australian Government announced that it would not accept the recommendation of the Finkel Review to establish a Clean Energy Target. In its place, it proposed the National Energy Guarantee (NEG). The initial proposals were subsequently substantially revised in a "High Level Design" published in April 2018, followed by Issues Papers in May, Technical Working Papers in June and Final Design in July. This paper examines the "High Level Design" and its subsequent elaborations.

The two "arms" of the NEG – the Emissions Guarantee and the Reliability Guarantee – address very different issues, and each is examined separately in this paper. The economics of both arms are complex.

Emissions Guarantee

The Emissions Guarantee (EG) obliges retailers to contract with generators for their output to be associated with that retailer and a record of these transactions will be stored in a registry. The emissions and electricity associated with these transactions for each retailer will be added up for each year. Retailers are required to ensure that their total emissions, divided by the total electricity whose association rights they have bought, is less than the value of this ratio (set in Commonwealth legislation) for each year to 2030. For any amount of the electricity that a retailer sells that it has not contracted with generators to associate with it, it will be assigned the average emission intensity of unassociated generation.

In addition to an obligation on retailers to reduce the emission intensity of their sales below a target, retailers are also obliged to contract for no more generation than is needed to exactly match the volume of their sales. If they contract for too much, the volume of over-allocated generation will be deemed to have an emission intensity equivalent to that of the least emission intensive rights that that retailer has purchased and the retailer will lose those rights without compensation.

The EG is sometimes described as a type of emissions intensity scheme. While the EG targets emissions intensity, it is very different to what has hitherto been understood as an emissions intensity scheme. The difference is that the EG focuses on the emissions intensity of electricity sold, rather than of electricity produced. The liable entity under the EG is the retailer, not the producer. Making retailers responsible for the emission intensity of the electricity they sell can be likened to making car dealerships, rather than car producers, accountable for the emission intensity of the motor cars they sell.

The EG can also be likened to the Renewable Energy Target (RET), in that retailers are obliged to enter into purchases that they otherwise would not. The EG is also like the RET (or the Finkel Review's proposed Clean Energy Target), in that it is entirely separate from the electricity market.

However, the EG is fundamentally different to the RET or CET in important respects. The RET follows a standard model applied in Australia since 2001 and in most countries in the EU and most states in the United States of America, whereby retailers are required to purchase a volume of certificates in proportion to the electricity they sell. By comparison with the EG, retailers are obliged to buy the right for production, of varying emission intensity, to be associated with the electricity they sell.

This is much more complex than buying standardised certificates. This is because retailers have to satisfy a constraint that they acquire as many of such rights as is needed to match the volume of electricity they sell, but also that the total volume of emissions associated with that volume of electricity is no higher than the emission target. This is extremely complex (it requires the co-optimisation of electricity and emissions), and this complexity translates into high search costs, ineffective and expensive risk management, and poor price discovery.

There is abundant literature on the standard (RET) model, and its properties are well understood. By contrast, we can find no example of a mechanism like the EG ever having been implemented anywhere, ever. Neither can we find any literature that proposes approaches such as this.

Regardless of the qualities of the emission's guarantee, with the Government's emission target for the electricity sector, no policy is needed to meet the target. Specifically, the Government's emission reduction objective for 2030 is likely to be achieved by 2020 or not long after. If the expectation is that in future the emission reduction objective to 2030 will be no higher than the current Government's policy, then introducing the EG will pointlessly impose higher costs on consumers.

Some have argued that agreeing to the EG will promote investment certainty. This is wishful thinking: Australia's inability to hold a steady course on emission reduction policy reflects deep-seated disagreement on the objective – emission reduction – not on the methods by which this is to be achieved. Implementing the EG does nothing to resolve the fundamental disagreement.

It has also been argued that even if the emission reduction target is inconsequential initially, it would be advantageous to lock in the EG so that an adequate mechanism will be available to reduce emissions if a subsequent Commonwealth Government later sets a higher target.

Again, to the contrary, the problems the EG presents become more significant as the mechanism is called on to deliver higher emission reductions. The RET exists and can deliver straight away, or the Finkel Review's proposed Clean Energy Target, if preferred, can be implemented quickly. Alternatively, auctions which are now commonplace globally and have an excellent track record in Australia, can be used. Any of these approaches would deliver emission reductions far more efficiently than the EG.

Reliability Guarantee

Turning to the Reliability Guarantee (RG), the essence of the proposal here is to decentralise resource adequacy to the retailers by requiring them to contract with generators if the energy market operator forecasts that demand will exceed supply. This is conceptually similar to an approach adopted in France, which took seven years from legislation to implementation (at the end of 2017). The application of this approach in Australia has additional difficulties that the French did not have to overcome (cooperative federalism and a mandatory electricity spot market, which means all contracts between generators and retailers are necessarily financial not physical). Nevertheless, the Government projects that the ESB's recommended approach can be implemented in seven months (from legislation in October 2018 to implementation in July 2019).

However, an attractive property of the RG is that the contracting obligation will only be decentralised if various triggers are exceeded. At the time of writing, AEMO predicts the market will be well supplied for the next decade, and so it may well not be necessary to trigger the contracting obligation. This allows time for the approach to be developed and improved further. In addition, AEMO's continued obligation to ensure strategic reserves (through the Reliability and Emergency Reserve Trader mechanism), provides confidence that the power system can be kept secure as the RG is being developed and refined. For this reason, we suggest that agreement to the RG limb of the NEG – while not advisable – may not be terribly problematic as long as any legislation needed to establish it does not prevent further refinement of the current proposals.

1 Introduction

This paper examines the economics of the National Energy Guarantee (NEG) as proposed in the Energy Security Board's (ESB) "High Level Document" released in April, and subsequently elaborated in a suite of "Issues Papers" released in May, and a suite of "Technical Working Papers" released in June and the Final Design released in July.

The two "arms" of the NEG – the Emissions Guarantee and the Reliability Guarantee – address very different issues, and each is examined separately in this paper. Both arms grapple with issues whose economics are amongst the most complex in the electricity industry.

The purpose of this paper is not to analyse all aspects of the mechanics of the proposals, but rather to describe and evaluate their essence. From this analysis, the paper considers whether the proposals should be supported or rejected by state and territory government energy ministers.

The paper begins by summarising the proposals for the EG and RG, and then analyses the economics of each. The last section examines whether policy makers should support the EG and RG as they are currently proposed.

2 Summary of the proposed National Energy Guarantee

2.1 Emissions Guarantee

The Emissions Guarantee (EG) obliges retailers to contract with generators for their output to be associated with that retailer, and a record of these transactions to be stored in a registry. The emissions and electricity associated with these transactions for each retailer will be added up for each year. Retailers are required to ensure that their total emissions, divided by the total electricity whose association rights they have bought, is less than the value of this ratio that the Government will set for each year to 2030. For any amount of the electricity that retailers sell that they have not contracted with generators to associate with them, they will be assigned the average emission intensity of uncontracted generation.

In addition to an obligation on retailers to reduce the emission intensity of their sales below a target, retailers are also obliged to contract for the association rights of no more generation than is needed to match the volume of their sales. If they buy more association rights than is their demand, the excess will be deemed to have an emission intensity equivalent to that of the less emissions intensive rights they have bought and they will lose those rights without compensation.

To give effect to this arrangement, the registry will need to record all transactions of association rights between generators and retailers. It will also need to identify the volume and emission intensity of embedded generation, the volume of rooftop solar produced and exported, the volume of all Green Power or other forms of voluntary renewable energy purchased by end customers, and the volume of electricity used by customers deemed to be emission intensive trade and exposed electricity. These volumes, and the associated emission intensities, will need to be allocated to each retailer so that the emission intensity of the electricity that they sell can be established.

The EG proposals also set out processes for compliance and enforcement. No specific financial penalty is established if any retailer fails to reduce the emission intensity of the electricity that they sell below the target that the Government sets. A variety of "flexible compliance" options are proposed, but if a retailer persistently fails to reduce the emission intensity of their sales below the target, they may be liable to penalties that will need to be established by civil courts.

2.2 Reliability Guarantee

The Reliability Guarantee (RG) decentralises responsibility for power system reliability to electricity retailers and large customers (the "liable entities"). It does this by obliging them, subject to various triggers, to enter into financial contracts[1] with generators in order to demonstrate that they have sufficient contracted capacity to meet forecast peak demand.

This arrangement is triggered if AEMO says that it expects a gap in reliability three years ahead. If the Australian Energy Regulator expects, in the second year of this three year period, that the reliability gap will persist in the third year, the AER can ask the liable entities to submit information on the contracts they have entered into to meet their demand in the third year. If retailers do not enter into sufficient contracts to meet the AER's expectation of a demand (measured using the AER's forecast of a one in two year demand), the retailers risk being charged penalties as well as a share of costs that the Australian Energy Market Operator (AEMO) might incur if it procures reserves that it considers are necessary to ensure power system reliability in that third year.

1. To be more precise, "any wholesale contract with a direct link to the electricity market which a liable entity uses to reduce exposure to high spot prices".

The idea underlying this approach is that by obliging retailers to enter into contracts (if the power system operator assesses that supply might not meet demand), it will be possible to decentralise the obligation for the provision of power system reliability to retailers rather than to centrally coordinate the provision of capacity.

The implementation of a conceptually similar approach in France in 2017, is the only other example of such an approach that we are aware of. As shown in Figure 1, by far the most widely adopted approach to power system reliability (in countries that incorporate contestable wholesale markets), is the use of centrally coordinated capacity markets that require generators to compete for payments to make plant available. In those countries that operate wholesale markets that pay only for energy produced ("energy only markets"), regulated capacity payments are common in order to address concerns that an energy only market will not deliver sufficient capacity. Sweden (and Australia's National Electricity Market) currently combine capped spot energy-only market prices with strategic reserves (in the NEM procured through the Reliability and Emergency Reserve Trade mechanism). The implementation of the RG in the NEM will add a new arm in the taxonomy, consisting of the combination of a decentralised capacity obligation and centralised mandatory "energy-only" market.

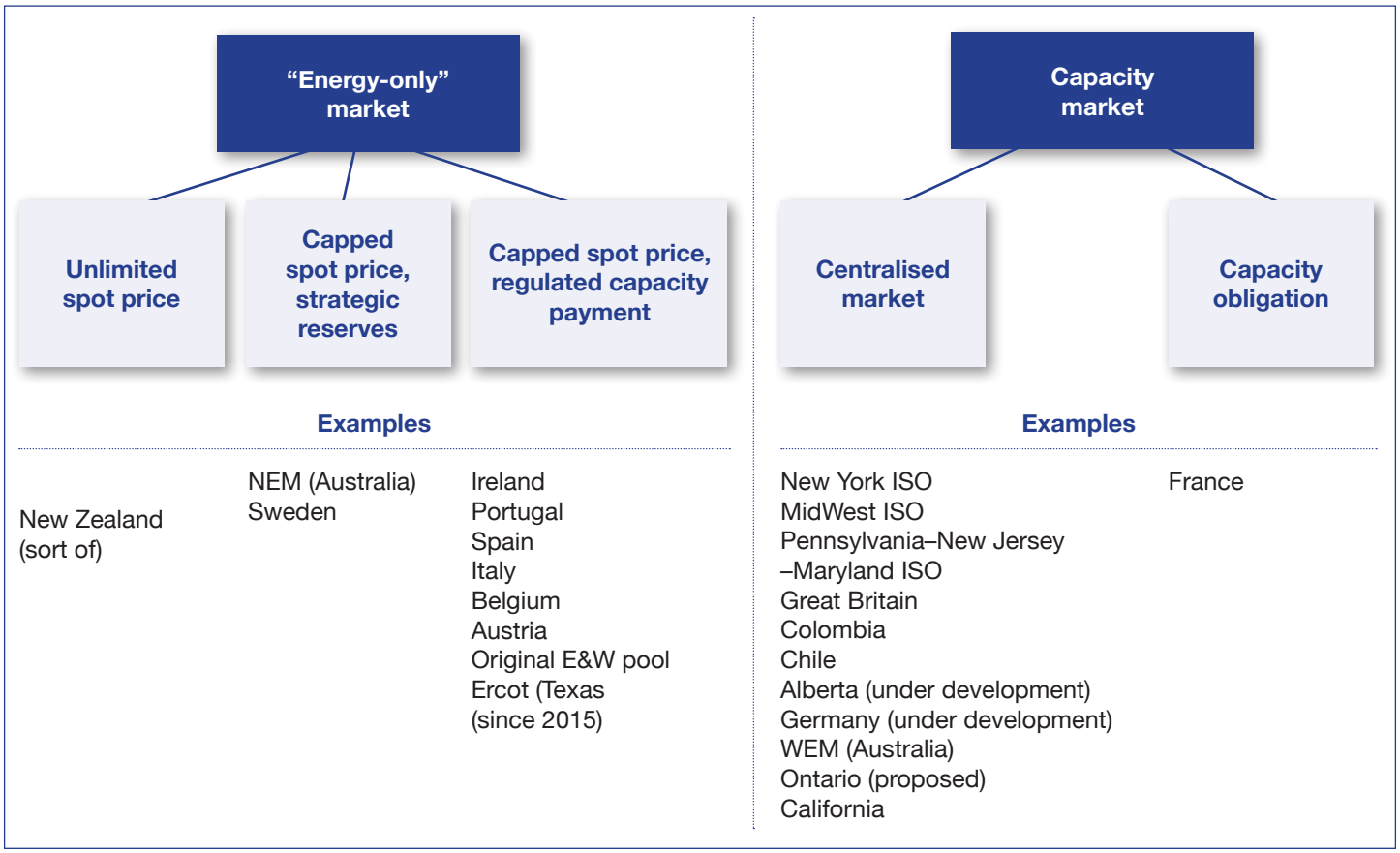

Figure 1 Taxonomy of resource adequacy approaches

A particular challenge in the NEM (which is not relevant in France), is that in the NEM the energy market is mandatory and centrally settled: the Australian Energy Market Operator is the counter-party in the transaction with generators for the sale of electricity by centrally dispatched generators. Generators are able also to contract with retailers but these contracts are financial – they entail various forms of hedges settled against the NEM's spot price. Being financial, the contracts do not bind producers to meet the contract from any particular power stations. Indeed, production source is irrelevant in the contract.

To implement the RG, retailers will need to examine contracts they have entered into in order to estimate how likely it is that the capacity in that financial contract can be counted as capacity that will be available at the time of any future "gap" as determined by the AER using its one in two year forecasts. The ESB says that the "firmness factor", calculated by the liable entity applied to each product, would consider characteristics such as strike price, volatility and likelihood of cover for the period of the gap. The liability entities will be left to produce their own estimates, but the aggregate net position "will be reviewed and confirmed by an appropriately qualified independent auditor".

2.3 Emissions reduction target relative to business-as-usual

The Energy Security Board's (ESB) modelling[2] of the NEG concluded that relative to their estimate of business-as-usual (BAU), the EG would induce an additional 835 MW of dispatchable renewables and 2,674 MW of intermittent renewables between 2020 and 2030. The ESB projects that this would mean that renewable generation would account for 32–36% of electrical production in 2030.

The ESB also projects that without the NEG, 597 MW of additional renewable generation will be built between 2020 and 2030 under BAU.[3] This compares to Bloomberg New Energy Finance's projection of 23 GW of additional generation under BAU, and 21 GW if the NEG is adopted. BNEF's calculation that the NEG will not reduce emissions or increase renewable generation, relative to BAU, is consistent with the conclusion of all other analysis that we know of.[4]

In the estimation of BAU, the ESB assumes that existing state government renewable targets will be rescinded. In addition, the Government assumes the average cost of wind and solar in 2020 will be around twice as much as the price that such a plant is currently being contracted for. None of these assumptions are plausible:

1. There is no basis to assume that the cost of wind and solar in 2020 will be around twice current levels. To the contrary, continued declines from current levels can reasonably be expected.
2. State governments have defended their renewable targets, and none have given any indication that they intend to drop their targets – whether or not the NEG is implemented.
3. Rooftop solar seems to continue to have a bright future. In fact, more rooftop solar was installed in the first five months of 2018 than the ESB says will be the total amount of additional intermittent renewable capacity (both distributed and centrally dispatched) to be built between 2020 and 2030 if the NEG is not implemented (BAU).[5]

The volume of existing renewable capacity is such that the total volume of renewable generation currently operational, plus the volume of renewable plant under construction, committed, tendered or shortly to be auctioned[6], means that renewable production in 2020 is expected to be 33% of demand, not far from the 36% that the ESB expects will be needed to meet the NEG by 2030.

In summary, the Government's emission reduction target to 2030 is likely to be achieved before the EG even takes effect, or not long after.

3 The economics of the NEG

3.1 Emissions Guarantee

The EG is sometimes described as a type of emissions intensity scheme. While the EG targets emission intensity, it is very different to what has hitherto been understood as an "emissions intensity" scheme. This difference originates in that the EG focusses on the emissions intensity of electricity sold, rather than of electricity produced. Under the EG, the liable entity is the retailer not the producer. Making retailers responsible for the emission intensity of the electricity they sell can be likened to making car dealerships, rather than car producers, accountable for the emission intensity of the cars they sell.

While the EG might be likened to the RET – in that the retailer is the liable entity – a fundamental difference is that whereas the RET requires retailers to periodically surrender a specified volume of standardised certificates, the EG requires retailers to purchase the right for production from generators to be associated with the electricity that they, the retailers, sell. For each retailer, the aggregate emissions associated with the electricity produced[7] will then be divided by the volume of electricity sold to derive the retailers' emissions intensity, which is required to be below the target legislated by the Government.

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2. Energy Security Board, November 2017, Modelling of Australia's National Energy Guarantee White Paper.
3. This is described as "uncommitted generation". In its 23 July 2018 Final Decision, the ESB seems to indicate that around 7,000 MW of uncommitted generation will now be built under BAU, of which all is rooftop solar and non grid-scale solar or wind generation.
4. This includes: Edis, T. 2018. Renewable Energy Index, available from www.greenenergymarkets.com.au; Sadler, H. 2018. National Energy and Emissions Audit, 2018. Supporting Technical Paper: Calculating Greenhouse Gas Emissions Arising from Electricity Generation in the National Electricity Market; Quong, L., Bhavnagri K., and A. Asghar. 2017. Modelling of Australia's National Energy Guarantee. Bloomberg New Energy Finance, Sydney; RepuTex Energy, July 2018. The impact of the NEG on emissions and electricity prices by 2030, Melbourne. In addition to these reports, we note that the Integrated System Plan released by the Australian Energy Market predicts about five times as much renewable generation will be built between 2020 and 2030, than the ESB predict even including the effect of the NEG.
5. Data on rooftop solar installation from SunWiz and reported in https://onestepoffthegrid.com.au/commercial-solar-boom-delivers-second-best-rooftop-pv-month-record. The total additional intermittent renewable generation that the Government expects under BAU between 2020 and 2030 is 597 MW.
6. https://www.afr.com/news/coalition-fiddles-as-renewables-remake-grid-20180702-h124mh. See also footnote 3.
7. As measured in the National Greenhouse and Energy Reporting accounts.

Whereas the RET in Australia follows a standard model successfully applied in Australia since 2001, and widely used in the United States, countries in Europe and elsewhere, we are unable to find any example of a mechanism such as the EG having been applied or even considered elsewhere. Extensive literature[8] can be found on the merits of mandatory certificate schemes such as the RET, and in their application in numerous other countries over the last 20 years. We can find no such literature on a scheme such as the EG since, as far we know, it has not been implemented, or even considered by policy makers or researchers, anywhere. This is not surprising considering the problems – complexity, poor price discovery, high search costs and windfalls – described below.

Complexity

The EG mechanism is terrifically complex, and it is helpful to be specific on where this complexity arises. We describe the main aspects here. The central issue is the way that retailers, rather than producers, are made liable for the emission intensity of electricity that is sold, and also liable to acquire a volume of association rights that matches their demand.

The "standard model" that is applied when mandatory obligations are placed on retailers, is to require that they purchase a certificate that is created by eligible generators. In Australia, this is known as the Large Scale Generation Certificate (LGC).[9]

The Finkel Review had proposed that eligibility to create certificates be extended to also include some non-renewable generation capacity. As an alternative, it could easily be extended across the portfolio of fossil fuel generators, so that the most emission intensive receives no certificate and progressively less emission intensive generators progressively larger fractions of a certificate, per MWh produced.

Standardisation, and hence the creation of an easily tradeable "currency", greatly simplifies the obligation on retailers: the volume that they are required to purchase is easily established with reference to the volume of their sales.

By contrast with the EG, instead of obliging retailers to purchase a standardised certificate, retailers are obliged to buy the right for the production of varying emission intensity generation to be associated with the electricity they sell. This is a much more complex obligation that combines emissions and the volume of electrical energy. Various additional constraints define the obligation:

1. Retailers who buy association rights for more generation than their load, will have their least emission intensive rights automatically deducted and added to the pool of unassigned rights, up the volume of the surplus association rights they have contracted.[10]
2. Retailers who do not buy sufficient association rights to match their demand will be assigned the average emission intensity of unassociated generation for any shortfall. But the emission intensity of this unassociated generation will not be known with any certainty until four months after the end of the compliance period.
3. Retailers who exceed the emission intensity obligation face an undefined penalty for doing so. Sustained failure to satisfy the emission intensity obligation may expose the retailer to civil liability with a suggested $100m penalty. But this is surely highly unlikely.
4. Retailers who reduce their emission intensity below the mandated emission intensity threshold do not obtain any meaningful credit for doing so.[11]

The requirement on retailers, and the constraints that apply, translate into a highly complex objective function that requires retailers to co-optimise the volume of the associations rights they buy and the emission intensity of those rights.

Mechanisms are suggested so that retailers can true-up for any difference between expected and actual associated generation. With uncertain demand, retailers might be expected, prima face, to under-contract for associated generation. Whether or not this is a suitable strategy will depend on the emission intensity of their portfolio.

It is possible that the NEG requirement that total generation is matched with total retail sales will not be met. Some retailers might over-contract for association rights even if they are exposed to the emission intensity of the most emission intensive plant for the excess. They could do this if, in aggregate, their weighted average emission intensity is still less than the emission target. In this case, they comply with the requirement at the expense of other retailers who will not comply (since there will not be enough generation available to match their demand). In this case, the NEG's constraints will not be satisfied for those retailers that have not bought sufficient association rights.

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8. Dinica, V. and Arentsen, M. 2003; Meszaros, M. T., Shrestha, S. O. and Zhou, H. 2010; Fristrup, P. 2003; Raadal, H.L., Dotzauer, E., Hanssen, O. J. and Kildal, H. P. 2012; Colcelli, V. 2012; Verbruggen, A. 2004; Backman, G. 2011; Levin, T., Thomas, V. and Lee, A. 2011; Kent, A. and Mercer, D. 2006; Morthorst, P. E. 2003; Yin, H. and Powers, N. 2010; Gillenwater, M. 2008; De Jonghe, C., Delarue, E., Belmans, R. and D'Haeseleer, W. 2009; Lund, P. 2007; Farooq, M., Kumar, S. and Shrestha, R. M. 2013; Soderholm, P. 2008; Sovacool, B. 2011; and Boots, M. 2003.
9. A separate small-scale certificate scheme also exists, but this is a fixed price scheme. Before the large and small schemes were split, the certificate was known as the Renewable Energy Certificate (REC).
10. This is specified in the Final Design document, and differs from the treatment in the previous proposal and Technical Working Papers.
11. A limited amount of the exceedance can be carried forward (unless all retailers comply), but for most retailers this is likely to inconsequential.

It is not clear how this will be dealt with.

In addition, a consequence of an emission intensity obligation is that in establishing the emission intensity of a retailers' load, difficult adjustments need to be made for the emission intensity of embedded generation, the treatment of Green Power (or other voluntary emission reduction action by end customers), and the treatment of the emissions associated with emission intensive trade exposed customers – whose consumption the Government said it intends to exclude from emission costs.

This complexity has significant negative implications for price discovery, search costs, risk management and windfalls, as discussed below.

Price discovery

Discovering the price of emissions is impeded by the complexity of the objective function. Obscuring the price of a commodity undermines the efficiency with which that commodity can be bought and sold. Consumers pay for this inefficiency in higher electricity prices.

Search costs

The EG is likely to deliver high search costs. This is explained, in part, by the complex objective function. In addition, the liable entities (the retailers) are unlikely to find sellers (generators), other than through bilateral exchange, since they are trading in a complex non-homogeneous product (emission intensity).

Risk management

Price and volume risk management will be expensive. This is attributable, in part, to the complexity of the obligation. Poor risk management can also be attributed to the fact that it is only retailers and generators that will have access to the registry. Potential brokers, traders and arbitrageurs that in any well-functioning market assist in risk management and promote liquidity, will be disadvantaged relative to retailers and generators in their ability to access market information and trade since they will not have direct access to the registry.

In addition, the EG holds retailers liable to the average emission intensity of the uncontracted generation for any amount of their sales that they do not contract. But this uncontracted average emission intensity will not be known with any certainty until four months after the end of the compliance period. Market participants will have an incentive to withhold information (from the registry) of the trades they have made as a way to induce uncontracted retailers to purchase their association rights. In this context, the dominant vertically integrated generator-retailers will have a distinct advantage relative to those retailers (all the new entrants), whose generation does not match their load. Such exercise of market power will come at the expense of new entrants and consumers. It is difficult to imagine that market authorities will be effective in policing behaviour in what will be an extraordinarily complex market.

Windfalls

The EG will create a windfall for existing lower emission intensity generation (particularly Tasmania Hydro and Snowy, but also all existing wind and solar generation and existing gas generation). Some part of this windfall will be funded by the more emission-intensive retailers, but the greatest part will fall onto the shoulders of consumers who will be required to pay more without any matching reduction in emissions. While we do not expect that windfalls will be a major issue as long as the emission reduction target is no more demanding than BAU emission reductions, windfalls funded by customers could become significant if meaningful emission reduction targets are set.

Complexity also arises from the need to create a new registry with its necessary systems, compliance requirements and reporting. We expect that establishing such a registry will be a non-trivial task.

3.2 Reliability Guarantee

At the heart of the RG is the philosophy, to some perhaps an ideology, that reliability will be more efficiently achieved by making retailers responsible for it, rather than by centralising it – either through reserve procurement by the power system operator, or through the operation of capacity markets that pay generators to keep their plant available, even if it not called upon to produce. As discussed earlier, this resource adequacy decentralisation philosophy is very much the exception rather than the rule, because as far as we know, only in France has a conceptually similar approach been adopted. In all other markets, capacity is secured through regulated capacity payments, through capacity markets or through the provision of strategic reserves procured by the power system operator. The reason for this is that the architecture needed to decentralise resource adequacy is terrifically complex. At the heart of the complexity is the need to identify how a retailer contributes to demand on a power system at those times at which the balance between aggregate demand and supply is tight.

The French application of this idea is, nonetheless, a lot simpler than it will be in the NEM. This is because the French power market uses the standard model of non-mandatory, bi-lateral physical contracting. The power exchange is voluntary and is used by market participants to settle imbalances in their contracted positions. By contrast, the NEM is a mandatory, centrally settled market. This means that all contracts between retailers and generators in the NEM are financial (i.e. various forms of swaps that set fixed prices calculated relative to the NEM's relevant regional spot market price). This means that implementing the RG requires these financial contracts – that by definition do not specify production sources – to be transformed, so that retailers can nominate how much physical capacity they obtain from these contracts. The retailers then add this up to demonstrate to the AER that they have contracted sufficient capacity to meet their demand at the times of power system scarcity that the AER and AEMO forecast.

This process of transforming financial contracts into contracts with a firm physical commitment to produce, is unavoidably subjective: there is no way that a financial contract that does not bind the seller to produce electricity, can be objectively claimed to deliver a specific level of production during any specific half-hourly trading period. To deal with this, the NEG proposes various ways that retailers (and liable large customers) are to estimate the firm capacity associated with the various types of financial contracts that they might enter into. The ESB's relevant Technical Working Paper identifies swaps and caps, interregional contracts, load following contracts, fixed shape swaps, options, weather contracts, tolling agreements, power purchase agreements and demand response products.

The Technical Working Paper provides no precise guidelines as to how liable entities are to transform these contracts to determine the physical capacity. Instead it refers to a "framework approach" rather than a "prescriptive approach". But the "framework approach" provides no guidance or even meaningfully tractable principles for liable entities to apply. Recognising the incentives on liable entities to favourably interpret the firm capacity associated with their financial contracts, the ESB proposes that liable entities will be required to appoint "an appropriately qualified independent auditor" to review their calculations. In practice, this is no solution: unless the auditor has objective rules to apply in its assessment, it too has no objective way to measure the claims of the liable entities that it audits.

There is no solution to this. The problem arises inevitably as a result of the attempt to infer the firm capacity from financial contracts that make no undertaking on such capacity (i.e. firm production in every half-hourly[12] trading period).

A possible redeeming feature of the RG is that the requirement on retailers to contract (and then to transform their financial contracts), need not arise unless the trigger events (three years ahead and then again one year ahead) occur. At the time of writing, AEMO does not predict power system scarcity for the next decade. If this forecast is correct, all of the "transforming" complexity might be avoided in practice.

The RG establishes AEMO as the "procurer of last resort", through the use of the Reliability and Emergency Reserve Trader mechanism. The costs associated with this mechanism are likely to be small, whereas the costs of contracting – and then demonstrating compliance of those contracts with the RG – is likely to be very large, particularly for small retailers relative to their other costs. It may be much easier (and cheaper) for retailers, both large and small, to not comply with the RG's contracting requirements, and instead to pay a share of the costs AEMO incurs pursuant to costs it incurs under its RERT mechanism.

Finally, we stress that this analysis has sought merely to skim over the essence of the RG. There are many other significant issues with the mechanism, amongst which: how AEMO is to develop its forecasts three years ahead; how the AER is to assess a one in two year demand one year ahead; how the AER will assess compliance; how the relationship between liable customers and their retailers will be disentangled; and how any possible expenditure under RERT will be sheeted back to non-compliant retailers and liable customers. In the interests of brevity, we do not analyse these further here.

12. Or, to be precise, five-minute trading periods from 2021.

4 Should decision makers support the NEG?

4.1 Emissions guarantee

If the Government's emissions reduction target remains unchanged to 2030 (as the Government proposes it should) then there is no purpose in implementing the EG. Even if the EG works well it would be pointless since it will deliver no more than what would happen anyway. It will impose complexity – which will be reflected in higher costs to consumers – for no additional environmental benefit. To the extent that decision-makers consider that the Government's emission reduction target will remain unchanged to 2030, an assessment of the merits of the EG is therefore unnecessary in deciding whether to adopt it. A policy that delivers no more than will be achieved anyway is pointless.

It is possible that later the emissions reduction target for the electricity sector will be higher than the current government proposes. This might happen if the government changes its mind, or if a future government succeeds in raising the emission reduction target. In this case, if decision-makers consider the NEG is deeply flawed – as we do – it would still be wise to reject it.

An alternative (and commonly held) view is that while the EG is a second-rate approach, agreeing to it provides policy or investment certainty, and that agreeing to it will mean that an accepted approach is available to quickly deliver emission reductions if these are sought. The rest of this section considers these arguments.

Will deciding now provide investment and policy certainty?

An enduring theme of Australia's emission reduction debate has been the stated desire from industry and its representatives for "investment certainty", or sometimes "policy certainty". Some argue that agreeing to the EG is that such a "bi-partisan" agreement will provide investment or policy certainty. This is mistaken. The current federal government and some jurisdictions seek emission reductions at a much slower rate than the federal opposition and other jurisdictions. The difference on this objective has long proved to be intractable. Perhaps in time it will change, but what is gained from agreement on the design of a second-rate mouse trap if there is no agreement on whether mice should be trapped?

Will deciding now ensure that possibly higher federal emission reduction targets in future can be quickly delivered?

Those decision-makers that seek more rapid emission reductions than the Government has chosen, may incline towards agreement to the EG on the basis that if tougher emission reductions be decided in future, a ready mechanism will be available to ensure those reductions are delivered. This is an understandable but refutable argument:

- Firstly, more rapid emission reductions than the current government has chosen may not be decided. In this case, agreement to the EG is agreement to the pointless imposition of additional costs on consumers.
- Second, agreement to the EG does not create an option, but rather ties governments and industry to a legislated mechanism. Having gone to the expense of implementing these obligations, market participants will quite reasonably resist additional approaches, even if they are better.
- Third, even if the EG could not quickly be implemented, a future Commonwealth Government intent on more rapid emission reduction could achieve rapid change through executive action, which is unlikely to require legislative approval. If a future government has a mandate to reduce emissions more quickly than business-as-usual, they will have a mandate to select the appropriate method to do so.

For these reasons, we suggest that if policy makers agree that the EG is badly flawed, there is no good reason to accept it now, even if there is a prospect of higher emission reduction targets in future.

4.2 Reliability guarantee

Like the EG, the RG is a terrifically complex mechanism. The arrangements adopted in France[13], which provide the closest parallel, took seven years to progress from law to implementation. We find it difficult to imagine that the implementation of the RG would be any quicker in Australia. This is partly as a result of the frictions endemic to cooperative federalism in the governance of energy in the southern and eastern states of Australia.

Furthermore, the mandatory, centrally settled spot market in the NEM provides additional difficulties in transforming financial contracts to estimate the firm production associated with such contracts. Nevertheless, a distinct possibility (and advantage) of the RG approach, is that all this complexity might be avoided if triggers are not exceeded. Indeed, AEMO's prediction that the power market in the NEM will be secure for the next decade provides some assurance that the complexity of the RG might possibly be avoided. This will provide the breathing room for the approach to be considered further and adapted if it becomes more widely understood (as we suggest it will) that the practical implementation of the contracting approach is problematic. If decision makers support the RG proposal, it will be important to ensure the maximum latitude is maintained to allow the arrangements to evolve and adapt, rather than be constrained by legislation whose unintended adverse consequences have not yet been anticipated.

13. For an excellent exposition of the French scheme, see Réseau de transport d'electricité, 2014. French Capacity Market: Report accompanying the rules.

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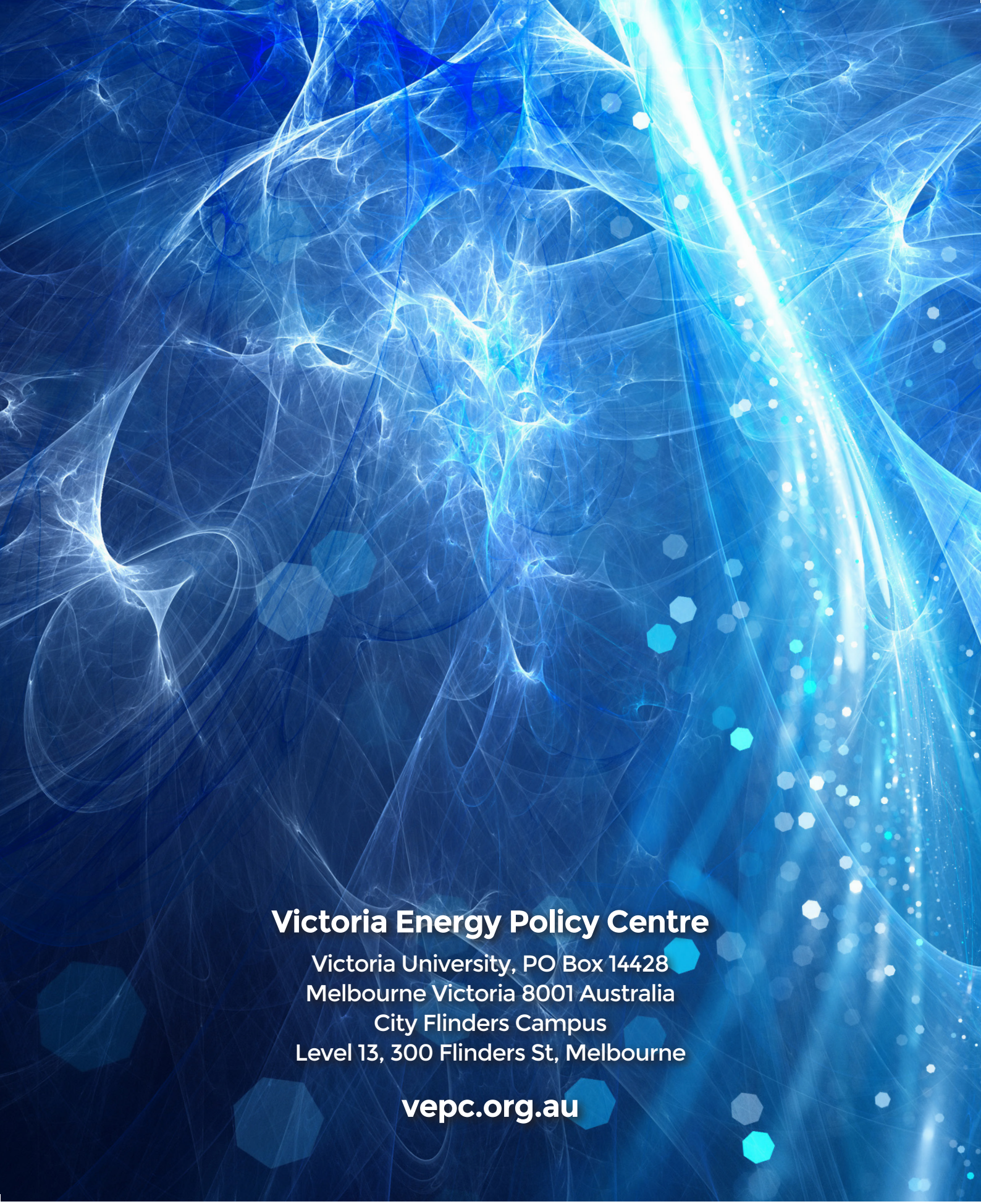

Victoria Energy Policy Centre

Victoria University, PO Box 14428
Melbourne Victoria 8001 Australia
City Flinders Campus
Level 13, 300 Flinders St, Melbourne

vepc.org.au

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