

THE ENERGY
REGULATION
AND MARKETS
REVIEW

TENTH EDITION

Editor
David L Schwartz

THE LAWREVIEWS

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AND MARKETS
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PREFACE

In our tenth year of writing and publishing *The Energy Regulation and Markets Review*, the most pressing global concerns have again revolved around the covid-19 pandemic, which has slowed infrastructure development globally. Accordingly, many of our contributing authors have emphasised concerns associated with the effects of the crisis on energy demand and consumption, and delays in the development of infrastructure. Beyond this crisis, we have seen many other significant geopolitical changes that have added uncertainties to global energy policies. For example, oil prices have hit record lows (hitting negative values in April of 2020), which has slowed exploration and production efforts, and has threatened economic stability for countries that depend upon oil revenues. The United Kingdom is transitioning out of the European Union (a process known as Brexit), creating uncertainties regarding the future of the UK's energy policies and its coordination and cooperation with the European Union, including with respect to commitments to reduce greenhouse gases (GHGs). Following the end of the Trump administration's 'America First' trade policies, the Biden administration is seeking to reassure US allies and historical trading partners and re-commit to the 2015 Paris Agreement. The 2011 Fukushima nuclear incident continues to affect energy policy in many countries. Finally, there are continued efforts to liberalise the energy sector globally.

I CLIMATE CHANGE DEVELOPMENTS

We continue to see significant carbon reduction efforts globally, including increased use of renewable resources, and measures to improve energy efficiency and reduce demand.

In the United States, contrasting with the Trump administration's support for fossil fuels, the Biden administration has committed to being a leader in the fight against climate change. While coal and other aged fossil fuel plants continue to retire at an unprecedented rate (due primarily to the economics of those facilities), the Texas winter storm in February 2021 raised some questions about whether renewable resources alone will be sufficient for long-term reliability. Many states have pushed for the procurement of thousands of megawatts of renewable resources, including from new offshore wind development projects on the east coast and, in May 2021, the US Bureau of Ocean Energy Management granted its first approval for the Vineyard Wind offshore project. The Federal Energy Regulatory Commission has continued to struggle with whether and how to impose regulatory restrictions on the ability of state-subsidised renewable energy projects to clear in the regional capacity markets through a minimum offer price rule to mitigate buyer market power.

Despite Brexit, the United Kingdom's renewable energy targets have already exceeded those of the European Union. France is seeking to double its wind and solar capacity and President Macron has announced a goal to close the remaining coal plants by 2022. Italy had

previously targeted a 28 per cent reliance on renewable energy by 2030 but is now working to reach the 32 per cent target adopted by the European Union. Belgium has continued its significant offshore wind procurement efforts, and is seeking to reduce subsidies in future procurements. While Germany has had difficulty meeting its previous emissions reductions goals, it has now set a target of 2038 for the phase-out of coal power plants, and remains focused on the continued development of renewable generation, energy efficiency and conservation, as well as energy storage technologies. In Portugal, carbon emissions dropped by 7 per cent, perhaps in part due to the covid-19 pandemic. Poland has been struggling to meet the European Union renewable energy targets but has plans to develop offshore wind generation.

Japan has continued its efforts to develop solar and wind resources, including opening new sea areas for offshore wind. But the shutdown of most of its nuclear generation has resulted in a significant reliance upon natural gas, including liquefied natural gas, and reductions in renewable energy prices have caused a slowdown in new solar and wind development. Japan has long utilised a feed-in tariff mechanism to encourage renewable development, and in 2022 will implement a feed-in premium to further encourage renewable investment. China continues to have ambitious renewable energy goals, aiming for an emissions peak by 2030, carbon neutrality by 2060 and a goal of 15 per cent of generation supplied by non-fossil fuel generation. Taiwan is seeking 20GW of solar PV installed capacity by 2025, and is looking to develop 5.5GW of offshore wind capacity.

There remains significant debate in Australia regarding the role of gas and coal in the energy landscape, which has led to a patchwork of national and state policies that points to continued uncertainty regarding Australia's commitment to carbon reduction. Malaysia continues its efforts to encourage greater entry into the renewable energy market and has approved 349 new renewable projects over the last decade.

The United Arab Emirates aims to reduce its carbon footprint by 70 per cent by relying on 50 per cent renewable energy by 2050, and Abu Dhabi is seeking to reduce electricity consumption by 22 per cent by 2030. In Brazil, hydroelectric resources constitute more than half of its installed generation capacity, and efforts continue to increase wind and solar generation as the cost of renewable generation has decreased.

II INFRASTRUCTURE DEVELOPMENT

The covid-19 pandemic has slowed infrastructure development for many countries, particularly those in which a reliable energy supply remains the primary concern, regardless of fuel source. As less than half of Myanmar is connected to the grid, there are continued efforts to electrify remote parts of the country (55 per cent by 2021 and 100 per cent by 2030). Lebanon has been relying upon floating generation barges to increase electricity supply, but now faces the risk of having some of these barges leave Lebanese shores due to the government's failure to make payments to the barge owners.

III NUCLEAR POWER GENERATION

Nine years after the Fukushima disaster, Japan has stopped operations at all but seven of its 36 nuclear power stations, and 11 nuclear power stations are in the process of being reviewed for restart under Japan's stringent new safety standards. Germany continues efforts to phase out all nuclear generation by 2022, and Belgium's nuclear plants have often been offline

for maintenance for technical issues in the past few years. France had previously sought to eliminate nuclear generation by 2025 but has extended that date. South Korea has continued its efforts to phase out nuclear power (replacing nuclear plants with new renewable facilities over time). South Africa's nuclear ambitions appear to be on hold at least until 2030.

However, the phasing out of nuclear energy is not universal. The United Arab Emirates' new 5,600MW Barakh nuclear power station is almost complete and one of its units is already operational. When all units are online, Barakh will supply 25 per cent of the emirates' electrical needs. Poland still intends to explore the development of nuclear power in the future, with a target date for the first unit in 2033. In the United States, even though the early retirement of certain nuclear plants has been driven by cost and power market considerations (rather than safety concerns), some states have passed legislation to subsidise nuclear energy to allow owners to continue to operate through zero emissions credit programmes, including Illinois, New York, New Jersey and Ohio.

IV LIBERALISATION OF THE ENERGY SECTOR

We have seen significant energy sector regulatory reforms in many countries. The European Union has sought to continue efforts to centralise the regulation of the EU energy sector. France has taken significant steps towards further liberalisation of its energy sector. Japan has fully liberalised its electricity and gas sectors and is encouraging market entry. Australia has opened access to transmission through regulatory reforms to encourage entry into the generation market and is undertaking significant energy market reforms to send more accurate price signals to market participants. Brazil continues its efforts to implement net metering regulations. China has reduced subsidies for renewable energy, price transmission and distribution rates based upon a cost-plus regulatory methodology, and has implemented a market-priced mechanism for pricing coal-based generation. The United Kingdom has implemented a competitive tender process for the development of offshore transmission. In the United States, while states have continued to subsidise nuclear and renewable generation, the Federal Energy Regulatory Commission has permitted certain regional markets to implement minimum offer price rules to combat buyer-side mitigation in an effort to maintain competitive capacity markets.

I would like to thank all the authors for their thoughtful consideration of the myriad interesting, yet challenging, issues that they have identified in their chapters in this tenth edition of *The Energy Regulation and Markets Review*.

David L Schwartz

Latham & Watkins LLP

Washington, DC

May 2021

AUSTRALIA

Chris Flynn, Geoff Petersen, Jeremy Jose, Simon Muys and Adela Smith¹

I OVERVIEW

The Australian energy regulatory framework is characterised by a history of state and territory government ownership and regulation of energy assets with a concerted but incomplete push towards a unified national framework over a number of decades.

The largest energy markets are those on the east coast – the National Electricity Market (NEM) and an interconnected gas grid across the east coast and Northern Territory. These markets are principally overseen by national regulators operating under national policies, although state governments still have important policy and regulatory roles, particularly where there is policy divergence between state and federal governments, such as on climate change strategies.

The primary body for energy policy in Australia is the Energy National Cabinet Reform Committee (ENCRC), which was established in 2020 as part of the introduction of the National Federation Reform Council (NFRC). The current policy priorities of the ENCRC are:

- a* reliability of electricity supply, particularly in volatile summer periods;
- b* redesign of the NEM, to take effect after 2025; and
- c* reforms to unlock new gas supply, improve competition and better regulate gas pipelines.

The primary Commonwealth government policy for delivering renewable power is the renewable energy target (RET). This is a legislated target aiming for 23.5 per cent of electricity to be generated by renewable sources by 2020. This target has now been met. The RET will continue to operate until 2030 and new renewable power stations can still be accredited; however, it is not currently operating as a significant incentive for new renewable power.

In part due to a lack of forward-looking Commonwealth government energy policy aimed at addressing climate change, most state and territory governments have separate renewable energy targets. State governments have also undertaken their own initiatives, including grid-scale battery deployments and the establishment of renewable energy zones.

¹ Chris Flynn, Geoff Petersen, Simon Muys and Adela Smith are partners and Geoff Petersen and Jeremy Jose are special counsels at Gilbert + Tobin.

II REGULATION

i The regulators

The key national Australian authorities with specific energy regulation responsibilities are:

- a Energy National Cabinet Reform Committee (ENCRC): established in 2020 as part of the establishment of the NFRC, which replaced the Council of Australian Governments. The ENCRC is tasked with delivering on the key reform priorities of the National Cabinet and does so through direct oversight of key national energy market institutions.
- b Energy Security Board (ESB): established in 2017 to coordinate the implementation of the recommendations of the Finkel Review of the NEM. The ESB is also tasked with providing whole-system oversight for energy security and reliability.
- c Clean Energy Regulator (CER): the Commonwealth body responsible for administering legislation designed to reduce carbon emissions and increase the use of clean energy, including the RET. It also has a role in collecting, analysing, assessing, providing and publishing information and data relating to carbon emissions and abatement, including administration of the National Greenhouse and Energy Reporting scheme that provides a framework for reporting and disseminating company information about greenhouse emissions and energy production and consumption.
- d Australian Energy Markets Commission (AEMC): an independent Commonwealth statutory body with two primary roles: making and amending rules for the NEM, elements of the natural gas market and related retail markets; and providing strategic and operational advice to the ENCRC. The National Electricity, gas and retail rules made by the AEMC have the force of law.
- e Australian Energy Market Operator (AEMO): oversees the operation and security of electricity and gas markets across Australia, including the NEM, the Wholesale Energy Market (WEM) in Western Australia and various short-term gas trading markets and pipeline markets in the east coast interconnected system. AEMO also has a role in system planning, including transmission network planning and long-term planning via forecasting and scenario analysis.
- f Australian Energy Regulator (AER): operates across all Australian jurisdictions, except Western Australia. Its responsibilities include: economic regulation of electricity networks and covered gas pipelines in all jurisdictions except Western Australia; monitoring compliance and enforcement of key electricity and gas rules; and assessing applications for retail authorisations and exemptions, except in Victoria.
- g Australian Competition and Consumer Commission (ACCC): has an ongoing monitoring and policy role in energy through ongoing electricity and gas enquiries. It also has an enforcement role in relation to the Electricity Retail Industry Code and Part XICA of the Competition and Consumer Act 2010 (the CCA) that prohibits misconduct in the electricity market and is working on a Consumer Data Right in relation to energy.

In addition to these national authorities, the economic regulatory authority in each state and territory jurisdiction has some energy regulatory role. These roles include a relatively minimal oversight and reporting role undertaken by the Independent Pricing and Regulatory Tribunal in NSW, an extensive retail regulation and consumer role by the Essential Services Commission (ESC) in Victoria, and a wide-ranging economic regulatory and enforcement role undertaken by the Economic Regulation Authority (ERA) in Western Australia.

Other non-sector specific regulatory authorities also have a role in overseeing the operations of energy companies. This includes workplace health and safety authorities, environmental protection agencies, planning authorities and the Australian Securities and Investments Commission (ASIC) (see Section II.ii).

ii Regulated activities

Almost all activities involving connection to or the supply of electricity or gas through interconnected gas and electricity systems in Australia require regulatory approval. The key regulatory approvals required for engaging in energy supply activities are:

- a* Energy retailing: In all jurisdictions, a non-exempt person must be authorised or licenced to supply gas or electricity to end customers. In Queensland, the Australian Capital Territory, Tasmania, South Australia and New South Wales, authorisation is granted by the AER under the National Energy Retail Law (NERL). To apply for and receive an authorisation under the NERL, a retailer must demonstrate to the AER their organisational and technical capacity, financial viability and suitability. Energy retail licences are granted by the relevant state regulators, ESC in Victoria and the ERA in Western Australia, which apply similar criteria as under the NERL in assessing licence applications. Electricity retailers must also be authorised by AEMO as market customers to purchase wholesale electricity for supply to customers in the NEM and WEM. Applicants for authorisation must demonstrate organisational capability, financial viability and regulatory compliance.
- b* Electricity networks (transmission and distribution): Electricity network providers are governed by state-specific legislation that grants them powers to construct, operate and maintain their networks. Each state also maintains a licensing framework for electricity networks and monitors compliance with these licences. A person who owns, operates or controls an electricity network must also register with AEMO as a network service provider.
- c* Electricity generation: Authorisation from AEMO is required to operate grid-connected electricity plants. Applicants for authorisation must demonstrate their operational capability, financial viability and regulatory compliance. Qualifying generating units must be classified as scheduled, non-scheduled or semi-scheduled depending on how the generating unit participates in central dispatch. A standing exemption from this authorisation requirement is available for some generators with a capacity of less than 5MW and other exemptions are available on application. In Victoria, Queensland, South Australia, the Australian Capital Territory and Tasmania, a generator must also apply for authorisation in each of those particular states, as well as the National Electricity Market authorisation. In New South Wales, separate approval from the state body is not required. The controlling body of an entity that has operational control of a facility that exceeds the greenhouse gas emissions reporting thresholds under the National Greenhouse and Energy Reporting Act 2007 (Cth) must register with the CER and report emissions.
- d* Gas pipeline: A licence is required for construction and operation of gas pipelines. Licensing (and monitoring of compliance with licence conditions) is done at a state level, under state-specific legislation. Registration with AEMO is also required for participation in certain regulated gas markets, including a declared wholesale gas market or a short-term trading market.

- e* Trading of electricity derivatives and financial instruments: Some businesses trading in electricity or other energy derivatives may have to apply to ASIC for an Australian financial services licence (AFSL). Licence holders have a general obligation to provide financial services efficiently, honestly and fairly. Parties wishing to participate in electricity reallocation transactions or participate in a settlements residue auction in the NEM must also register as market participants with AEMO.

In addition to these requirements, constructing major energy facilities such as a grid-scale generator will require planning and development consents, which are issued under state law and local planning schemes. Planning permits usually impose a number of conditions on the applicant. Construction of such facilities also generally requires environmental licences, permits and approvals, which are administered under state regimes. Additional approval may be required under the Environmental Protection and Biodiversity Conservation Act 1999 (Cth), if the facility will have an impact on a matter of national environmental significance.

iii Ownership and market access restrictions

While Australia generally welcomes foreign investment, there are extensive restrictions on foreign ownership of Australian companies or assets. This is particularly so in the power sector given the critical nature of this infrastructure.

Approval from the Foreign Investment Review Board (FIRB) is required for a wide range of transactions involving ‘foreign persons’. The main laws that regulate these transactions are the Foreign Acquisitions and Takeovers Act 1975 (Cth) (FATA) and the Foreign Acquisitions and the Takeovers Regulation 2015 (Cth) (FATR), and more recently the Security of Critical Infrastructure Act 2018 (Cth).

Transactions that are typically relevant to the energy sector include:

- a* acquisition by a foreign person of an interest of 20 per cent or more in Australian entities;
- b* acquisition of an interest in Australian land, including (among others) a freehold interest, a lease or licence that is reasonably likely to exceed five years, and an interest in a share or unit of an entity where Australian land makes up more than 50 per cent of the assets of the entity;
- c* acquisition by a foreign government investor of an interest in an Australian company, unit trust or business;
- d* acquisition by a foreign person of an interest in a ‘national security business’ or a foreign person starting a ‘national security business’; and
- e* acquisition by a foreign person of an interest in ‘national security land’.

Categories (a) and (b) are subject to a monetary threshold depending on the nature of the interest being acquired and the jurisdiction of the relevant foreign person. The standard monetary threshold is A\$275 million, which applies to most business acquisitions and acquisitions of interests in Australian-developed commercial land by private foreign investors. Higher monetary thresholds apply in some circumstances for certain partner jurisdictions: Canada, Chile, China, Hong Kong, Japan, Mexico, New Zealand, Peru, Singapore, South Korea, Vietnam and the United States.

If an action has been taken or a transaction completed without obtaining the necessary FIRB approval, the Treasurer may make divestment and unwinding orders. Significant criminal and civil penalties may also apply to corporations and individuals who breach these rules.

Additionally, over recent years, Australia has implemented a suite of statutory reforms aimed at strengthening and buttressing national security interests with a particular focus on critical infrastructure and energy security. These reforms are aimed at giving the Commonwealth government greater control over foreign investment and participation in the infrastructure, more flexibility to impose specific conditions on foreign investments through the foreign investment review process, clear reporting obligations regarding ownership and control of critical infrastructure, and new obligations and corresponding offences regarding foreign influence and foreign interference.

The Security of Critical Infrastructure Act 2018 (Cth) (SCI Act) came into force on 11 July 2018. The SCI Act provides greater scrutiny of the ownership and operations of certain 'critical infrastructure' assets. Critical infrastructure assets include electricity generators above specific jurisdictional megawatt thresholds and electricity transmission networks or distribution systems that ultimately service at least 100,000 customers. The SCI Act is administered by the Critical Infrastructure Centre, within the Department of Home Affairs (CIC). When a FIRB application has been submitted which concerns one of Australia's critical infrastructure assets, the CIC is consulted to provide 'early and national security advice to inform the Treasurer's decision' on the proposal. The CIC will consider possible risks to Australia's national security if the proposal is accepted, specifically regarding risks of sabotage, espionage and coercion.

Further, transactions in the energy sector are subject to the generally applicable prohibition in Section 50 of the CCA that prohibits mergers and acquisitions that have the effect or likely effect of substantially lessening competition in any market in Australia. The CCA, including Section 50, is enforced by the ACCC. The ACCC has a history of closely scrutinising transactions in the electricity sector, including its public opposition of the acquisition of two major baseload generators by AGL in 2003 and 2014. The ACCC's opposition of both transactions was subject to successful challenges by AGL in the Federal Court and Australian Competition Tribunal, respectively.

In its report following its 2018 Retail Electricity Pricing Inquiry, the ACCC raised concerns about perceived competition issues arising from what it considered to be high levels of concentration in generation markets. Reflecting these concerns, and its past lack of success in prosecuting its opposition to mergers involving generators, its first recommendation in this inquiry was that the National Electricity Law should be amended to prevent any acquisition or transaction that would result in a market participant owning or controlling dispatch of more than 20 per cent of generation capacity in any NEM region or across the whole NEM. This recommendation was accepted in principle by the former COAG Energy Council, which conducted public consultation on its implementation in early 2019. There has been no public update on the status of the implementation of this recommendation since that consultation.

Restrictions also apply to vertical integration by electricity network operators and gas pipelines:

- a* Electricity networks: Network service providers are required to comply with 'ring-fencing guidelines' published by the AER. Under these guidelines, a network service provider is effectively limited to providing network services, and is prohibited from engaging in

contestable generation or retail activities (although a related entity may engage in these activities). The ring-fencing guidelines also include a range of ‘functional separation’ measures directed at preventing discrimination in favour of related businesses operating in contestable markets – these include restrictions on the sharing of office space, staff sharing and information flows.

- a* Gas pipelines: Under the National Gas Law, there are restrictions on vertical integration by ‘covered’ pipeline service providers. A covered pipeline is a pipeline to which a ‘coverage determination’ applies, meaning that it is subject to greater regulatory oversight. Where a coverage determination applies to a pipeline, the service provider is prohibited from carrying on a related gas production or retail business. Restrictions also apply to sharing of staff between a covered pipeline service provider and associate entity that is engaged in gas production or retail activities.

iv Transfers of control and assignments

The potential requirement for FIRB approval for changes of control in and assignments of energy companies and assets is detailed in Section II.iii.

It is standard practice for FIRB to consult with the ACCC about the potential competition impacts of any notified transaction as part of FIRB’s consideration as to whether the transaction is contrary to the national interest. Because of this practice, it is often advisable for parties to separately approach the ACCC to provide information and submissions relevant to the ACCC’s assessment of any competition impacts.

For transactions where FIRB notification is not required, parties are able to make an independent decision as to whether notification to the ACCC is appropriate. Notification of merger transactions to the ACCC is voluntary, although the ACCC has a range of tools to enforce merger control laws, including the ability to seek an injunction in court to restrain potential transactions on competition grounds. The ACCC strongly recommends that parties notify transactions where post-transaction market shares would be above 20 per cent in any market. The ACCC also recommends that significant transactions in sensitive industries (including energy) be notified.

Some specific energy authorisations and licences require change of control transactions to be notified to the relevant regulatory authority. This includes electricity generation licences issued by state authorities, electricity and gas retail licences issued by the ESC in Victoria and authorisations provided by AEMO for participation in the WEM. If a change of control transaction has an impact on any of the matters underpinning the grant of an authorisation or licence of any form (e.g., operational or financial capacity) then notification should be made to the relevant authority.

III TRANSMISSION/TRANSPORTATION AND DISTRIBUTION SERVICES

i Vertical integration and unbundling

The gas and electricity supply chains are now largely disaggregated between monopoly activities (operation of networks and pipelines) and contestable activities (production and generation and retail). Historically there has been a degree of integration, particularly between network operation and retail. However, this has receded over the past two decades as previously government-owned businesses have been privatised and retail contestability has been gradually introduced. Today, electricity network operators and pipeline owners are generally not affiliated with businesses at the production and generation and retail levels.

This reflects a policy position that monopoly network service providers should not be engaged in contestable activities where they have the ability and incentive to discriminate against competing businesses. This position has been taken with a view to promoting and protecting competition where this is feasible (i.e., at the generation or production and retail levels of the supply chain).

Consistent with this policy position, there continues to be a regulatory focus on ring-fencing network businesses. Maintaining this regulatory focus is seen as particularly important as the energy market evolves, deployment of distributed energy resources continues to grow, and the lines between monopoly and contestable activities start to blur. The AER is continuing to review the ring-fencing framework to ensure that as technology evolves it maintains an appropriate balance between protecting competition and facilitating innovation and investment in new technologies. At the time of writing, the AER was conducting a review of the distribution ring-fencing guidelines with a particular focus on its application to stand-alone power systems (SAPS) and storage devices. In its consultation paper, the AER noted that, while ring-fencing aims to separate monopoly network services from competitive services such as electricity generation and retailing, ‘energy storage devices and SAPS blur these boundaries and our approach to ring-fencing may need to adapt to ensure consumers can benefit from the use of these technologies’.

ii Transmission/transportation and distribution access

Electricity network service providers are required to provide access to their networks on terms and conditions determined under the National Electricity Rules. Depending on the class of access service, these terms may either be determined by the regulator or negotiated under an approved negotiating framework.

Pipeline service providers are required to make an access offer to a prospective user if access is requested, provided that access is technically and operationally feasible. Parties will then negotiate the terms of access to the pipeline. For covered pipelines, default terms of access (including tariffs) will be set out in an access arrangement approved by the AER.

iii Rates

Tariffs for access to electricity networks and some gas pipelines are determined by the AER.

Tariffs for core electricity network access services (known as direct control services) are reviewed and reset by the AER periodically – typically every five years – as part of a distribution determination or transmission determination. Tariffs are calculated to reflect the efficient costs of providing access, including operating costs, asset depreciation and a return on capital. Various incentive schemes apply to electricity network businesses – including incentives to improve efficiency and maintain service standards – and adjustments may be made to the service provider’s revenue allowance under these schemes.

Some electricity network services may be classified as ‘negotiated services’. For these services, the AER will not set tariffs as part of its determination. Instead, the AER will approve a negotiating framework and will resolve any disputes that arise in relation to these services.

For covered gas pipelines that are subject to full regulation, the AER will periodically review and approve an access arrangement that includes reference tariffs. Again, this review will typically occur every five years. As for electricity networks, these reference tariffs will be based on the efficient costs of providing access (as assessed by the AER) and may include adjustments made under an efficiency incentive mechanism.

For gas pipelines that are not covered, or are subject to light regulation only, there is no *ex ante* tariff regulation. For these pipelines, rates (and other terms) are commercially negotiated, with recourse to arbitration if they cannot be agreed.

iv Security and technology restrictions

Through the FIRB process detailed in Section II.iii, the Commonwealth government may impose specific conditions regarding the use, access to, export of, maintenance and storage of energy related data or technology, or personal data related to energy usage. The conditions can be restrictive and acting contrary to them may constitute an offence (for which a custodial sentence may be the penalty).

In late 2018, Australia also introduced the Australian Energy Sector Cyber Security Framework (AESCSF). The AESCSF is based on the US ES-C2M2 framework. While adoption of the AESCSF is currently not mandatory, participation in the framework provides market participants with access to framework data that helps to track cybersecurity incidents and provides participants with an improved opportunity to respond to developing threats. Although participation is not mandatory, it is possible for the Commonwealth to require a foreign investor to participate in the framework through the imposition of a specific FIRB approval condition.

IV ENERGY MARKETS

i Development of energy markets

The largest electricity market in Australia is the NEM, which was established in 1998. The NEM operates on one of the world's longest interconnected power systems, extending around 5,000km from end to end. The NEM comprises five physically connected regions on the east coast of Australia – Queensland, New South Wales (including the ACT), Victoria, Tasmania and South Australia. The NEM generates approximately 200TWh of electricity annually, supplying approximately 80 per cent of Australia's electricity consumption.

The NEM is administered by AEMO, which ensures simultaneous dispatch of power supply and demand across the market. AEMO uses the spot market to balance supply and demand and all electricity in the spot market is bought and sold at the spot price. Because this dynamic spot price is the only direct market payment received by generators for energy in the NEM, the NEM is the oldest and largest 'energy-only' market in the world; there are no separate payments by the market for capacity, although there are payments for a range of ancillary services (such as frequency control ancillary services) that incentivise certain types of capacity.

There are also a range of mechanisms that sit outside of the NEM's energy-only framework that provide payments or incentives to investment in generation in other ways, including contract markets and the RET.

In the NEM spot market, generators submit offers to AEMO. AEMO's central dispatch engine orders the generator's offers from least to most expensive and determines which generators will be dispatched to meet expected demand, subject-to-system constraints and security considerations. AEMO dispatches electricity every five minutes, so generators are required to bid to supply electricity for each five-minute 'dispatch interval'.

Currently, the spot market price is averaged over a 30-minute trading interval, with the spot price of that interval being the average of the price in six dispatch intervals. There is a separate regional spot price calculated for each of the five NEM regions. The market is

moving towards five-minute settlement on 1 October 2021 and the dispatch and trading intervals will be aligned from that time. The purpose of the move to five-minute settlement is to provide a better price signal for investment in fast-response technologies such as batteries, new generation gas-peaking plants and demand response.

The spot market is subject to a market floor limit (currently negative A\$1,000/MWh) and a market price cap (currently A\$15,000/MWh) that are periodically reviewed.

Market customers (generally retailers but also some large individual loads) purchase wholesale electricity from the NEM at the spot price and sell to retail customers. Market risk is managed by participants through derivative financial instruments (including swaps and caps) that operate generally outside of the NEM, although there are some links such as the reallocation mechanism.

Gas markets have historically operated in most parts of Australia on a contract carriage model. Under this model, gas has been traded under long-term bilateral agreements (gas supply agreements) between producers of gas and retailers or industrial customers. To support these long-term supply arrangements, pipeline capacity has similarly been contracted on a long-term basis.

While large quantities of gas continue to be traded under long-term agreements, there has been a shift towards use of trading hubs and short-term trading markets. Several facilitated gas markets have been developed, including the declared wholesale gas market (DWGM) in Victoria and the short-term trading market (STTM) hubs in Sydney, Brisbane and Adelaide. To date, these market mechanisms have largely been used to manage daily supply imbalances. However, recent inquiries by the AEMC and ACCC have suggested that these markets could increasingly play a role in gas portfolio management. In recent years a number of reforms have been directed at facilitating greater use of these market mechanisms, including reforms providing for pipeline capacity trading and auctioning of unused capacity.

ii Energy market rules and regulation

The key national legislative instruments establishing energy market authorities and regulating the conduct of energy market participants are:

- a* National Electricity Law (NEL): The NEL is set out in the National Electricity (South Australia) Act 1996 (SA) and adopted by each of the other participating jurisdictions through mirroring legislation (with jurisdictional derogations and modifications). The NEL codifies the obligations of participants in the NEM, establishes AEMO and sets out the processes for the implementation, adoption and amendment of the National Electricity Rules. The NEL is supported by regulations adopted in each of the participating jurisdictions.
- b* National Electricity Rules (NER): These set out the detailed provisions governing the operation of the NEM. The NER are made under the NEL and carry the force of law.
- c* National Energy Retail Law (NERL): The schedule to the National Energy Retail Law (South Australia) Act 2011 (SA) is implemented in South Australia and mirrored in participating jurisdictions in a similar way to the NEL (with some jurisdictional derogations and modifications). Victoria has not adopted the NERL and instead, jurisdictional legislation applies, including the Energy Retail Code. The NERL implements the national energy customer framework that regulates the supply and sale of energy (electricity and gas) to retail customers. The NERL is supported by the National Energy Retail Regulations and the National Energy Retail Rules (NERR) (which also have the force of law).

- d* Competition and Consumer Act 2010 (Cth) (CCA): Part IIIAA of the CCA establishes the AER. Part XICA of the CCA contains newly implemented prohibitions on electricity market misconduct (see Section IV.iv).
- e* National Gas Law (NGL): The NGL is set out in the National Gas (South Australia) Act 2008 (SA) and adopted by each of the other participating jurisdictions through mirroring legislation (with jurisdictional derogations and modifications). The NGL establishes the regulatory functions and powers of the AER and the AEMC, and the role of AEMO in administering certain gas market mechanisms, including the Victorian declared wholesale markets and short-term trading markets. It also sets out the framework for classification of pipelines and coverage determinations.
- f* National Gas Rules (NGR): These set out the detailed provisions governing regulation of access to gas pipelines and operation of regulated gas markets and supply hubs. The NGR are made under the NGL and carry the force of law.

In addition to these instruments that operate nationally, there are a range of separate state and territory electricity legislation and regulations.

iii Contracts for sale of energy

Market participants (e.g., generators and power consumers, or gas producers and gas consumers) are generally free to enter into energy supply and offtake agreements as they see fit. In respect of power purchase agreements (PPAs) and gas supply agreements, there is no set form of agreement in Australia. However, while those agreements are free to be bilaterally negotiated between the parties as they see fit, there is an expectation that they will contain certain customary terms with key variables sitting within customary parameters to be bankable. Those expectations are broadly consistent with those encountered in other similar developed markets.

Typically, PPAs will be in the form of a contract for difference with the floating price being the NEM wholesale price (see Section IV.i). Because of this, it is common for PPAs to be in the form of an ISDA.

Traditionally, the market for PPAs had been dominated by Australia's power retailers but is becoming increasingly characterised by corporate PPA customers such as large industrial, resources and other commercial enterprises, purchasing from renewable generators.

In respect of gas supply agreements, in recent times, higher gas price volatility (as our LNG export industry has seen domestic prices become more closely linked to global prices) has driven a shift towards shorter-term agreements with recurring price review and renewal provisions.

As gas pipelines are not privately owned by gas producers, customers who wish to utilise the pipelines must enter into a contract with a producer to buy gas, and then contract separately with pipeline owners to transport their nominated gas quantities, typically by way of a gas transportation agreement. See Section III.iii above for further information on these arrangements.

iv Market developments

Australian energy markets over the past decade have been subject to significant and continuing change. This change and uncertainty reflects a range of underlying trends including public concerns over high energy prices, an unstable federal climate change policy environment and rapid technology change.

Key recent trends include:

- a* ‘Big stick’ legislation enacted: The Treasury Laws Amendment (Prohibiting Energy Market Misconduct) Act 2019 (Cth) (PEMM Act) passed Parliament in late 2019 and commenced in mid-2020. It has three key prohibitions relating to retail pricing, financial market liquidity and spot market conduct (see Section VI).
- b* Renewable energy zones (REZs): The NSW government is in the planning stage for the state’s first pilot REZ in the Central-West Orana region around Dubbo and Wellington stage. This REZ is expected to commence in 2022 and bring up to 3,000MW of new electricity capacity by the mid-2020s.
- c* Wholesale demand response mechanism: In June 2020, the AEMC made a final rule to implement a wholesale demand response mechanism in the NEM. This will allow consumers to participate in the wholesale market by bidding in demand reductions as a substitute for generation (see Section V.ii).
- d* Victorian legislation to allow state to act outside the NEM: In March 2020, the Victorian Parliament passed the National Electricity (Victoria) Amendment Act 2020 (Vic). This Act allows the Victorian Energy Minister to act outside the NEM framework by specifying a particular augmentation or augmentation services to transmission systems, bypassing the usual assessment tests including the regulatory investment test for transmission (RIT-T).
- e* Progress towards Snowy 2.0: Snowy 2.0 is an expansion to the major existing Snowy pumped hydro scheme. In 2020, the project began exploratory work with geological studies. The project goal is to provide 2,000MW of additional dispatchable generation capacity and 350,000MWh of storage.

V RENEWABLE ENERGY AND CONSERVATION

i Development of renewable energy

Policies supporting the development of renewable energy have been implemented at all government levels. The Commonwealth’s Renewable Energy Target (RET) scheme sets targets to encourage the generation of electricity from renewable energy sources until 2030. The scheme comprises the large-scale RET, which incentivises investment in renewable energy power stations, such as wind farms, and the small-scale renewable energy scheme, which encourages households, businesses and community organisations to use small-scale systems, for example rooftop solar panels.

Each state and territory has its own renewable energy targets and supporting regulatory framework, including feed-in tariffs with varying prices. States and territories have conducted a range of processes to procure large-scale renewable energy and battery projects, with Victoria, Queensland and the Australian Capital Territory having conducted reverse auctions, while a tender process has been used in New South Wales and South Australia. Recent developments at state level include the New South Wales Government’s Electricity Infrastructure Roadmap promising A\$32 billion for electricity infrastructure, creating renewable energy zones and pumped hydroelectricity projects, and Victoria’s 2020/21 Budget, committing A\$1.6 billion for investment in renewable energy initiatives.

ii Energy efficiency and conservation

Australia has employed a range of mechanisms to improve energy efficiency and conservation efforts at both a federal and state level. Few of the relevant schemes are mandatory in their operation; most policies are aimed at increasing consumer knowledge to influence decision making, or operate as opt-in programmes aimed at incentivising energy reduction through cost savings.

The federal government has implemented the National Energy Productivity Plan (NEPP), a package of measures intended to improve Australia's energy productivity by 40 per cent between 2015 and 2030. Most federal programmes fall under this banner, though state schemes operate separately.

Long-standing measures include the system of energy rating labels used across a range of appliances. New commercial buildings must also comply with standardised minimum performance requirements, and an energy rating system for buildings has been developed. However, an assessment is only required for certain types of commercial buildings. Neither set of requirements has been imposed on residential buildings.

An example of innovation at a state level is NSW's market-based energy savings scheme, which is the provision of financial incentives for organisations to invest in energy savings projects. Energy savings are achieved by accredited certificate providers installing, improving or replacing energy savings equipment, who in turn create energy savings certificates by carrying out these activities. These companies can then sell the certificates to scheme participants who have an obligation under the scheme to meet energy savings targets (which can be met by purchasing and surrendering certificates). In a similar but separate federal incentives-based scheme, the Energy Efficient Communities Program aims to deliver A\$40 million in grants to help businesses and community groups lower their energy bills and reduce emissions. This will primarily be done through equipment upgrades.

A significant development in energy conservation is the wholesale demand response mechanism that will come into effect in October 2021. In this arrangement, consumers will be able to sell demand response in the wholesale national energy market either directly or through specialist aggregators for the first time. The specialist aggregators are a new category of registered participant, the demand response service provider (DRSP). The DRSP will be able to bid demand response directly into the wholesale market as a substitute for generation and will also be able to engage directly with a customer without the involvement of that customer's retailer. Currently the only eligible customers will be large electricity users, as the scheme has not yet been extended to households and small businesses. In the long term there is a plan to move to a two-sided market, which would increase variable supply and provide more flexible, price-responsive demand.

iii Technological developments

Commonwealth technology investment roadmap

As part of Australia's Technology Investment Roadmap, the Australian government published the First Low Emissions Technology Statement which prioritises future investment in technologies for clean hydrogen, low-carbon materials, energy storage, CO₂ compression, hub transport and storage, and soil carbon.

Electricity markets

The ESB, AEMC, AER and AEMO partnered for the post-2025 market design. While the consultation process is ongoing, the Directions Paper, published in 2021, provides insight into potential market reforms. It identified the need to develop transmission and access to it, to account for decentralised energy sources, as well as increase demand-side participation, by making it easier for customers to participate in, and new, innovative technologies to enter, the market. Recommendations will be made to energy ministers in mid-2021.

In addition to this, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and Energy Networks Australia, published the Electricity Network Transformation Roadmap in 2016. This roadmap provides a timeline of actions to develop Australia's energy system until 2027, and sets goals for 2050. The report identifies key areas for change including customer-oriented electricity, power system security, carbon abatement, incentives and network regulation, and intelligent networks and markets. This now informs policy decisions by regulators, government and energy providers.

Hydrogen

The development of Australia's hydrogen industry is a key renewable energy goal for the Australian government. Australia's National Hydrogen Strategy, published by the COAG Energy Council, aims to grow the industry and position Australia as a major producer and supplier of hydrogen internationally by 2030. The strategy identifies actions to be undertaken by government, the private sector and researchers. It prioritises improving regulatory efficiency and stimulation of investment, encouraging international cooperation, and investment in clean energy technology.

Smart-grid technologies

In 2015, the AEMC changed the requirements for metering services to encourage market-led roll-out of smart meters. The amendments 'transferred the metering related roles and responsibilities from the distribution network service provider . . . to the newly created role of the metering coordinator', and required that any new or replacement meters be a smart meter. Separately, Victoria has facilitated its own smart meter programme, making them mandatory. This has resulted in every Victorian household having a smart meter.

Carbon abatement

The Emissions Reduction Fund (ERF) is a voluntary scheme providing incentives for the adoption of new practices and technologies to reduce carbon emissions. It issues Australian carbon credit units (ACCUs) to participants for every tonne of emissions reduced or stored through a project. These ACCUs can be sold to the Australian government at a CER-run auction, or to private or public sector organisations. To earn ACCUs, a project must meet certain requirements, such as newness and following an approved method. Approved methods include different management techniques of vegetation, fire, soil or livestock to increase carbon storage or to reduce emissions.

The Australian government has also created the Climate Solutions Package, which aims to meet Australia's 2030 commitments under the Paris Agreement by investing in carbon-abatement technologies, developing a National Electric Vehicle Strategy, improving consumer energy efficiency and provide funding for pumped hydroelectricity projects.

VI THE YEAR IN REVIEW

2020 was another significant year for energy regulation in Australia. As with other sectors of the economy, covid-19 had an impact. However, the bigger factors came from continuation of the key long-term trends impacting the Australian energy sector – a lack of holistic policy coordination and implementation, resulting in a diverse range of solutions to the challenges posed by climate change and the rise of distributed energy generation, coupled with continuing government regulatory intervention in response to consumer concerns about energy prices.

i Continued debate about role of fossil fuels in energy mix

There is significant public debate in Australia about the role of gas and coal in the energy landscape as their role becomes challenged in the face of concerns about climate change and the falling cost of renewable technologies.

In September 2020, the Commonwealth government announced a ‘gas-fired recovery plan’, which included:

- a* gas supply targets and potential enforcement of ‘use it or lose it’ requirements on gas licences;
- b* plans to unlock large gas basins;
- c* additional arrangements with east-coast LNG exports to support the domestic market;
- d* exploration of a potential gas reservation scheme; and
- e* additional measures to empower gas consumers, including a gas supplier code of conduct and establishment of an Australian Gas Hub at Wallumbilla in Queensland to deliver an open, transparent liquid gas trading system.

Against a background of accelerating closures of coal-fired power stations due to age, emissions concerns and lower pool prices arising from increased renewable generation, the Commonwealth government has also announced its intention to invest directly in gas-fired generators unless ‘energy companies choose to step up and make . . . investments to create that capacity’.

The extent to which gas fulfils a role as a transition fuel to lower-carbon technologies in Australia is still in flux, with no clear or unified policy direction across the Commonwealth and state governments, all of which have roles in the Australian energy landscape.

ii Impact of covid-19

The disruption to supply chains and demand caused by covid-19 had an immediate and sustained impact on key energy commodity prices. These price falls had an impact on Australian domestic energy markets, with lower gas prices contributing to reductions in electricity spot market prices in the first half of the year and the ACCC reporting that large domestic users had experienced reductions in prices for contracted gas supply. Gas prices rebounded somewhat in the middle of the year but overall the heat very much came off domestic electricity and gas prices, at least in part as a result of covid-19.

As the disruption posed by covid-19 became apparent, the ACCC rapidly granted interim authorisation to oil companies and the energy sector more broadly to cooperate in relation to fuel and energy supply security during the pandemic. Both of these matters were granted interim authorisation in April 2020, but the parties to the authorisations continued

to work with the ACCC over the course of the year in relation to specific aspects of the authorised conduct and associated conditions before final authorisation in each was granted in September.

In response to covid-19, the AER and ESC published expectations and placed additional obligations on energy retailers in their dealings with people affected by the pandemic. This included additional restrictions on customer disconnections and obligations relating to residential and small business customers undergoing hardship. The AEMC responded to the pandemic by looking for ways to ease regulatory pressure on industry, seeking to strike a balance on what work needs to continue and what could be slowed down or deferred. One outcome of this process was that the start date for the move to five-minute settlement was deferred by three months, to 1 October 2021.

ACCC handed 'big stick' regulatory powers

In 2018, the government proposed 'big stick' legislation as part of its response to the ACCC's 2018 report into retail electricity prices. The most notable feature of the proposed laws at the time was divestiture powers that were originally proposed to be granted directly to the Commonwealth energy minister. As the law was developed by the Treasury and moved through Parliament, the punitive nature of the legislation was gradually watered down – in particular, the divestiture powers in the final legislation are subject to court oversight.

The final version of the bill was passed as the PEMM Act in late 2019. This law, which commenced in mid-2020 and amends the CCA, has three key prohibitions relating to:

- a* retail pricing, requiring retailers to make reasonable adjustments to prices in response to significant and sustained changes in their underlying costs of procuring electricity;
- b* financial market liquidity, prohibiting parties from refusing to supply electricity financial contracts for the purpose of substantially lessening competition in any electricity market; and
- c* spot market conduct, prohibiting fraudulent, dishonest and bad faith bidding or bidding for the purpose of distorting or manipulating electricity spot market prices.

The ACCC is actively enforcing these laws, announcing in January 2020 that it was investigating two retailers over potential contraventions of the retail pricing prohibition.

Abandonment of COGATI and move towards state-based solutions

The biggest long-term trends facing Australian electricity markets are the challenges posed by climate and rapid technology change, which have resulted in fundamental changes to the physical nature of generation, transmission and distribution. Participants across the energy sector have long realised that these changes are not well supported by current market and regulatory designs, which are fundamentally premised on a legacy model of generation location and technologies.

In 2016, the AEMC, under the direction of the COAG Energy Council, commenced its Coordination of Generation and Transmission Investment (COGATI) review. The first report in that review, which included comprehensive proposals designed to coordinate renewable generation and network transmission investment over the long term, was published in 2018. In proposing such fundamental changes to the status quo, this report was controversial.

The AEMC commenced a second round of COGATI in 2019. The AEMC published 11 papers over the course of 2019 and 2020, culminating in a set of reports in September 2020 that were intended to lead to a final report in December 2020. Key aspects of the

AEMC's proposal in these reports were sufficiently controversial to cause it ultimately to abandon its final report, instead progressing work on REZ as an 'interim step, that will build towards the long-term solution'.

The ESB kicked off 2021 with a Directions Paper setting out the key areas of reform it intends to pursue as part of the post-2025 market design project. Consistent with the feedback received by the AEMC in its COGATI review, changes to transmission access frameworks (including locational marginal pricing and financial transmission rights) will be seen by the ESB as longer-term objectives rather than immediate priorities for reform. The ESB will instead focus its attention on resource adequacy mechanisms, ensuring availability of essential system services such as frequency control and inertia, fostering demand-side participation and early implementation of REZs.

Simultaneously, state governments are pushing ahead with initiatives such as the NSW government's REZ pilot and the Victorian legislative change to give the energy minister the power to act outside the NEM investment framework (see Section IV.iv). These moves are not aligned with central coordination projects and contribute to an uncertain and changing regulatory landscape.

VII CONCLUSIONS AND OUTLOOK

As with energy markets globally, the Australian energy industry has undergone substantial changes and faced significant challenges over the past 15 years. The regulatory landscape in Australia has struggled to keep up, with a series of extensive reviews, reports, blueprints and plans being commissioned that fail to establish a clear and unified path forward. In particular, there has been no strong or enduring political consensus around a framework for addressing climate change, and this has significantly impacted energy policy and regulation. The lack of a national consensus has led to an increased propensity for state governments to take steps outside the nationally coordinated framework, adding further challenges and leading to a continued level of uncertainty in the energy regulatory outlook.

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In 2017, following a tour of international industry, government and academic stakeholders, Simon co-authored a significant White Paper on global regulatory responses to the transformation of energy markets – and their implications for Australian energy policy. He also authors one of the leading energy regulatory market updates, published monthly.

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