GILBERT +TOBIN

ENERGY MARKETS IN TRANSITION

Insights from a Gilbert + Tobin global fact-finding tour

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INTRODUCTION

"THE SECRET OF CHANGE IS TO FOCUS ALL YOUR ENERGY NOT ON FIGHTING THE OLD, BUT ON BUILDING THE NEW."

SOCRATES

It has now been a year since the current energy policy debate began in earnest. In September 2016, South Australia was hit by a Black System event, plunging the state into darkness and sending the whole nation headlong into a fervent policy debate – a debate that, one way or another, we had to have.

In January this year, as the Australian policy debate was starting to heat up, two senior members of Gilbert + Tobin's energy regulation team, Simon Muys and Geoff Petersen, headed to colder climes for a two-week study tour. The purpose of this tour was to seek global insights and perspectives on the challenges facing our energy markets, regulation and policy. During the tour, Simon and Geoff met with and discussed current trends in energy market regulation and transformation with a range of leading new energy businesses, utilities, policy advocates, regulators and academics.

This paper includes a selection of our key insights, drawing on what Simon and Geoff saw and heard during their tour. More detailed discussion of these insights can be found in our recent white paper: *Wrestling with the electricity market transformation*.

This paper, and the more detailed White Paper, seek to contribute to the energy policy conversation at a critical time. In doing so, we are realistic in our objectives. We do not assume that policy measures from other jurisdictions are necessarily superior or appropriate for an Australian context. We also acknowledge that politics is the "art of the possible" and energy policy has become highly politicised in recent times, so solutions need to be able to be shaped to the current climate.

Our objective is simply to contribute ideas and insights drawn from our conversations with leading thinkers from around the world, in the hope that this will lead to a richer and more productive energy policy debate.

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CONTEXT: THE TWIN ENERGY POLICY CHALLENGES

Both in Australia and globally – traditional energy market models and policy frameworks are under stress.

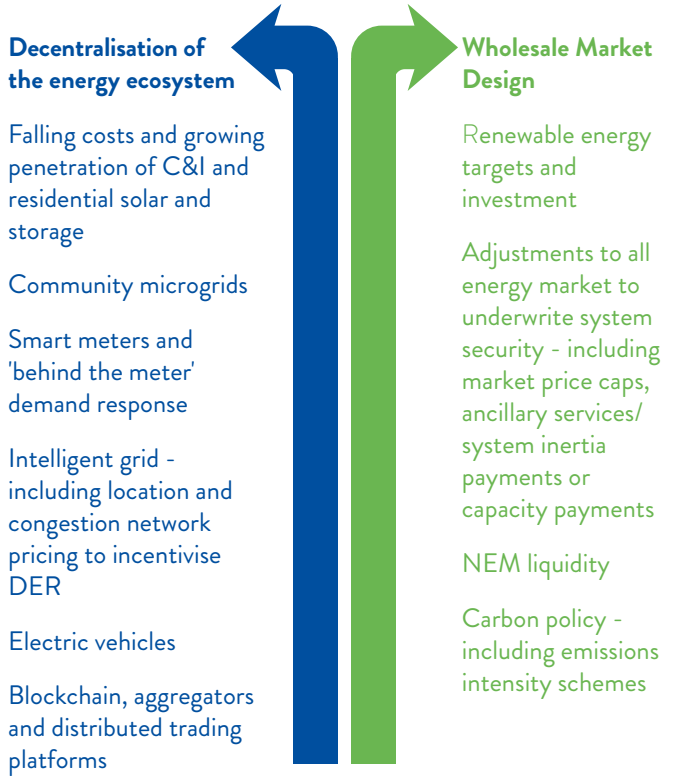
There is a sense of panic, driven by a number of different but related factors, including:

+ the political pain associated with high, and rising, power prices – coupled with a public sense that reliability of the system is falling (the politics of consumers paying "more for less");
+ fears, particularly in industry, about future system security, including following the 'Black System' event in South Australia in September 2016 and subsequent rolling reliability events in NSW and South Australia;
+ confusing and fractured political approach to carbon and renewables policy over the last decade;
+ the significant impact on investment in the NEM wholesale generation mix caused by a combination of government subsidies (through the RET scheme), the falling cost of renewable technologies, an aging stock of gas and coal-fired plant and unprecedented changes in energy demand; and
+ a perception that PV solar, battery storage, smart meters and similar technologies behind the meter have come of age and are likely to fundamentally disrupt the operation of the grid and the way we consume electricity.

All of these factors are real and significant. To some extent, the amount and complexity of change in the market over such a short timeframe appears to have caused confusion in the Australian energy debate.

We therefore think it is helpful to start any discussion by attempting to cut through the clutter to isolate the core questions. Distilled to their fundamentals, we see the current disruption playing out in two distinct, but related, policy areas as illustrated below. While technological disruption is common to both policy challenges – in each case, this disruption impacts different parts of the energy supply chain and, in our view, demands a different set of policy responses.

Two distinct policy challenges



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The first challenge is the integration of distributed and 'intelligent' technology into the grid, including behind the meter

Advances in technology have allowed for a proliferation of distributed energy resources (DER), including distribution-connected generation and storage, and demand management technology. Growth in DER means that our energy system will increasing look like an 'energy web', rather than a one-way system. Evidently, this has implications for the business models relied on by existing and new players, and for the future of regulation.

These and other trends, such as electric vehicles (EVs), are creating a much more complex, distributed and inter-dependent grid, with significant policy and funding implications.

Some of the critical questions for regulation and policy are:

+ **How should the grid evolve to handle this decentralisation, and what investment will be required to facilitate this?**
+ **Who should be allowed to own and operate DER, and how (if at all) should DER be regulated?**
+ **What is the role of the utility in the future energy system?** Should the utility just be a platform provider, or should it be allowed to diversify its revenue base through provision of distributed resources (behind the meter)? What limits, if any, should apply to its role in DER?
+ **How is the system operated?** By whom? Does the grid start to look increasingly like the transmission system that, in Australia, is independently managed and operated – or is the greater integration of operation of Australian distribution networks an advantage in such a complex environment?
+ **How can we ensure DER is located in areas that maximise benefit for the grid – and how can this be incentivised through price or other signals?** How can we ensure granular price signals deep into the network that reflect the value of locational congestion? Does there need to be a process for third parties to obtain access to network data, to assist them in deciding where to deploy distributed resources, such as storage?
+ **How to incentivise innovation?** To what extent should utility revenue allowances cater for spending on innovation?
+ **What are the implications for network funding models and the cost of capital?** Do investors in network infrastructure need to accept greater risk, if there is to be a stronger incentive regime and greater focus on innovation? How does this affect the cost of capital and sources of funding?

These challenges are being recognised to varying degrees by regulators and policy-makers around the world and in Australia. However there is a wide range of policy and regulatory responses being proposed and implemented in different jurisdictions, ranging from incremental reform to existing frameworks to policies that claim to fundamentally overhaul historical approaches to the regulation of the grid.

The second challenge is the rise of intermittent, renewable resources and the implications it poses for the national electricity market (NEM).

The NEM faces a perfect storm that has been almost a decade in the making.

NEM demand peaked in 2009-10 at precisely the same time as the renewable energy target was increased substantially by Prime Minister Rudd (from 9500GWh to 44,000GWh by 2020). Since that time, while the target was reduced to 33,000GWh in 2015, a significant amount of intermittent wind and solar capacity – subsidised by the RET – has displaced synchronous base load and mid-merit plant.

The integration of non-synchronous intermittent renewable generation capacity creates significant technical challenges, in terms of maintaining system reliability and stability. Some of these technical challenges are identified by Professor Finkel in his report.

The entry of subsidised renewable generation plant also poses a challenge to the economics of the NEM. As this renewable capacity displaces legacy thermal plant capacity in the NEM merit order, the economics of thermal generation are being fundamentally challenged. This appears to be contributing to plant closures.

Putting super-cheap, "base-cost" renewable power at the heart of the world's grids in this way will require a revolution in the way the electricity system is regulated. Renewable power's progress to date has been achieved mainly by subsidizing or mandating its installation, while forcing the rest of the system to provide flexibility, within otherwise unchanged regulatory environments and power market rules. The additional system costs have been material but generally affordable.

That has taken renewable energy to 20, 30 or 40 per cent of supply in many markets. But it won't work when it comes to 60, 70 per cent or higher. That would mean a smaller and smaller proportion of conventional power generation has to provide a larger and larger amount of flexible supply for which it was never designed. We are reaching a point in the story where power system regulation will have to be fundamentally rethought.

Bloomberg New Energy Finance 2017

KEY GLOBAL INSIGHTS

1. Politicisation of energy policy is a global phenomenon

Despite the increase in penetration of low-marginal cost renewable generation, electricity prices are likely to continue rising over the short to medium term as a result of high gas prices and the retirement or mothballing of Australia's aging fleet of coal and gas-fired plant.

The result is that energy politics is here to stay and will drive policy.

We are not alone in observing this trend. Indeed, Australia follows a number of other countries where energy policy has become a highly politicised issue. This reflects the impacts of technology disruption and climate change and a recognition on the part of policy-makers that reform is needed to facilitate modernisation and decarbonisation of our energy systems, while ensuring energy security and reliability – at a price that voters are prepared to pay.

To some extent the politicisation of energy policy, like much of what we see in politics, is crisis-driven. It is notable, for example, how profoundly US energy policy and regulation have been shaped by historical crises. In California, the energy sector still bears scars from the collapse of Enron, which has led to a distrust of "direct access" (contestable) models. More recently, the willingness of the New York and Californian regulators to actively encourage distributed storage to provide improved system reliability was a direct result of the aftermath of Hurricane Sandy in 2012.

Recent crises, both here and overseas, have focused attention on the energy "trilemma" – how to make energy supply greener, more reliable and more affordable. For New Yorkers, Hurricane Sandy brought into focus the importance of system reliability and resilience, as well as the potential dangers of climate change.

Similarly, in the United Kingdom, high gas prices forced energy prices to the front page of newspapers for a sustained period during the mid-late 2000s. The result was a more direct involvement by the UK government into energy policy, culminating in the 'Energy Market Reform' policy process in 2010-11 and ultimately the introduction of both contracts for difference and a fully-fledged capacity market through legislative reform in 2013.[1] The relevant government department, together with National Grid, directly undertakes the capacity auctions, while the regulator (Ofgem) administers the provision of capacity services and resolves disputes.

Here in Australia, it may be that the 2016 Black System event turns out to be 'the crisis that we had to have' – an event that catalyses real and meaningful reform.

2. We may need to brace for 'competitive Federalism'

A consequence of the politicisation of energy policy appears to be the dismantling of any coherent and integrated approach towards a national energy policy. As a case in point, the recent South Australian "Our SA Energy Plan" is unabashedly parochial and explicitly rejects the operation or benefits of the NEM for South Australia. This trend is deeply regrettable.

We anticipate that a form of "competitive federalism" is likely to emerge, with parallels to the US – where states take an often explicitly competitive approach in their approach to energy policy. We query whether individual states may be more likely to "go it alone" in areas such as capacity mechanisms (or other stimulus for generation investment), subsidy schemes, innovation subsidies, and EV policy.

In this politically charged, impatient and fractured environment, we are concerned that Australia risks losing the window of opportunity presented by the Finkel Review to take a coherent and integrated approach to reform.

While competitive federalism may have some benefits, overall we are concerned that without a coordinated and integrated approach to policy reform, we will quickly fall behind our global peers.

"Never let a good crisis go to waste."

Attributed to Winston Churchill

1 Energy Act 2013. An overview of the Energy Market Reform is available from Ofgem. https://www.ofgem.gov.uk/electricity/wholesale-market/market-efficiency-review-and-reform/electricity-market-reform-emr

3. Corporates have an important role to play

One obvious theme in the US, in particular, is the leading role that major corporates have taken in the energy policy debate, particularly around sustainability issues (and often through sophisticated peak bodies, such as the Advanced Energy Economy association). A range of large household names, such as Apple, Google, Walmart and even some of the Nevada casinos, have become leading public voices in pressing US policy makers, regulators and utilities around energy issues. In California, for example, a number of IT companies in particular regularly raise energy issues as part of sustainability concerns over the operation of their data centres. Large corporates have also been active on price issues – in Iowa, a coalition of large customers including Google, Microsoft and Facebook objected to a 2,000 MW wind project (known as the Wind XI project), protesting that the rate of return sought by MidAmerican, a subsidiary of Berkshire Hathaway, was seeking for the project was too high.

While Australian corporates (particularly in resources and manufacturing) have been vocal, in recent times, around energy security concerns – the role has been more limited. It remains to be seen whether a wider set of Australian corporates will see energy policy as an area where they wish to actively participate in the policy debate.

At the same time, the recent intervention of Elon Musk into the debate over battery storage and energy security in South Australia is reflective of the growing voice that the PV solar and battery industry is having in shaping the energy policy debate. This is playing out very profoundly in active, and at times aggressive, policy debates around PV solar subsidies in the US (the 'net metering' debates). As the sector continues to mature in Australia, we can expect a similarly increased role for them in the policy debate.

4. The 'all energy' wholesale market design is under threat

There is a longstanding, and at times fierce, global debate between proponents of "all energy" markets (which only compensate for power that is dispatched) and capacity markets (which also compensate for firm capacity).

The model for the NEM is an all-energy model, though we have had some experience using capacity market mechanisms (the 'Reserve Capacity Mechanism' used in Western Australia).

Capacity payment mechanisms can take various forms, including targeted mechanisms which compensate specific peaking plant (such as targeted capacity payments such as the 'inertia payments' proposed by AGL or strategic reserves) or market-wide mechanisms that compensate all generators providing firm capacity (e.g. the 'single buyer' approach to capacity auctions adopted in the UK).

Across most states of the US, state regulators use a capacity market or similar process to secure future capacity. After political concerns over the volatility of wholesale energy prices in the mid to late 2000s, the UK government also introduced a capacity market (together with contracts for difference) in 2013. In simple terms, this involves the Government determining how much generation capacity is needed and then paying generators (and others) to ensure that this capacity is available, if needed, with penalties if it is not supplied when required. The capacity market then becomes an adjunct to the wholesale energy market.

The debate between proponents of 'all energy' markets and capacity markets is both fierce and longstanding. Those against capacity markets argue that it is an expensive way to acquire capacity, which may not ultimately be dispatched and that fixing the current NEM (or supplementing it with more targeted capacity payment methods, such as appropriate ancillary service payments) is all that is needed. Leading academics that we spoke to noted that the problem with such mechanisms is that they tend towards over-procuring capacity (at significant deadweight cost to taxpayers) because there is a fear of greater political consequences if they err on the downside. Indeed, this concern has been expressed consistently by market participants in Western Australia in support of moving away from a capacity market to all-energy only. It was also the driving concern behind Australia originally adopting an all energy market for the NEM.

Those in favour of capacity payments argue that the "missing money" problem means that market signals will remain inadequate, because they are muted by price caps and other administrative distortions. They argue that the wholesale market is also prone to market power, does not sufficiently incentivise

demand-side response and its reliance on price spikes to incentivise investment is simply not politically palatable.

We do not take a side in that debate. However we think that it is a debate that needs to be had in Australia. We consider that exploring contestable capacity payment mechanisms to resolve political concerns about system security is preferable to the kind of direct intervention in generation that has been a feature of the recent federal and South Australian Government announcements.

5. We need a carbon policy, not a renewables policy

Energy security is strongly correlated to diversity of the sources of energy supply.

While the heavy concentration of renewable energy generation capacity in some parts of Australia has attracted criticism, in a properly structured market, renewable energy can provide an important broadening of Australia's power generation portfolio. Consequently, it can play a significant role in improving energy security, quite apart from the very real and important environmental benefits associated with it.

However, Australia needs to better manage the transition from its current generation portfolio (which is more heavily weighted to a smaller number of thermal power generation facilities), to a portfolio favouring a larger number of smaller and dispersed renewable energy power generators.

Australia urgently needs a sober and balanced policy debate around 'least-cost' carbon abatement. That debate needs to be framed properly. To do that, it should be framed such that energy security and preferred environmental outcomes are not seen to be mutually exclusive. Policy settings will need to encourage a balanced transition from thermal base load power to renewable energy so as to ensure ongoing reliability and security of supply.

International energy policy experts that we spoke to stressed the need to distinguish between a carbon emissions reduction policy and renewable sector policy. Simply promoting renewable technologies will not necessarily reduce carbon emissions, as recent experience in Germany has demonstrated. Perhaps more importantly, a policy which simply promotes renewable technology development is unlikely to provide the least cost path to carbon abatement.

It is generally acknowledged that emissions intensity schemes (or similar mechanisms) are the most economically efficient way to encourage investment in renewable energy and decrease emissions. These schemes also naturally motivate energy producers and consumers to improve energy efficiency. They do this by efficiently dealing with the key environmental externalities associated with carbon intensive thermal power production through price signals by internalising those costs.

An emissions intensity scheme also allows for improved allocative efficiency throughout an energy market. That's because although it internalises the environmental costs associated with carbon intensive thermal power, it also allows them to be allocated to the relevant part of the power industry. That is, if designed properly, it does not have to increase the cost of all power produced in the

NEM. Rather, it should only increase the cost of the power generated by those associated with producing the relevant externality (in this case, costs associated with carbon emissions).

The Finkel Report's recommendation for a Clean Energy Target represents an important step forward. At a minimum, this recommendation should be given real consideration as an alternative to current polies which simply target renewables development and penetration.

6. Innovation at the network layer will be critical

Distributed resources – including distributed generation, storage, and smart meters – are likely to have an important role to play in addressing future system constraints. However in order to get the most out of distributed resources, our networks need to be smarter. This will require innovation and investment at the network layer – for example investment in feeder-level telemetry to readily identify network constraints and signal where DER investment is most needed.

Regulators around the world are increasingly recognising the need for innovation and investment by networks to facilitate system modernisation. A number of jurisdictions, including the UK and New York, are adopting modified approaches to network regulation in an effort to better incentivise network owners to increase use of third party DER services, where this can aid to delay or avoid the need for capital investment. For example:

+ The UK has offered innovation payments for distribution operators since 2004. More recently, Ofgem introduced an Electricity Network Innovation Competition (**NIC**) which, as at 2017, allows for distribution network operators to bid for up to £81 million per annum. Most UK stakeholders that we spoke to, including grid owners, acknowledged that the NIC has been effective at stimulating investment in new and emerging network solutions. As well as the NIC, distribution operators in the UK also receive a fixed allowance as part of their periodic building block process, to fund smaller innovative projects (as well as to fund the preparation of submissions for the NIC).[2]
+ New York utilities are required to file "distribution system implementation plans" with the regulator, which are required to show how they are transitioning the grid to a more actively managed network. They are also required to include information about pilot projects.
+ Italy has undertaken competitive processes to undertake innovation pilots. Various innovative projects were selected, and were permitted to be capitalised. These also benefited from an additional 2% rate of return for 12 years. [3]

While the AER has commenced work on an incentive framework, Australia lags behind a number of jurisdictions – such as the UK and Italy – which have been providing grid operators explicit incentives for R&D for a number of years including through innovation competitions, direct R&D payments and by allowing uplifts to the cost of capital recoverable on pilot projects.

We sense that there is more work to be done around incentives for network innovation and investment. At least a part of the job here may be to recognise that innovation is inherently risky and messy, and does not always deliver immediate and tangible results – in other words, investment of the type required to deliver network innovation is likely to be different to traditional models of grid investment, and is likely to require a different set of incentives.

2 See the Ofgem website: https://www.ofgem.gov.uk/network-regulation-riio-model/network-innovation/electricity-network-innovation-allowance
3 MIT Energy Initiative at page 175.

7. The role of the grid may need to be reimagined, with consequences for regulation

Some industry experts see a future in which our energy system looks fundamentally different to the systems of the late 20th century. The imagined 21st century energy system is one in which networks act as a platform for two-way flows of energy – a platform for energy transactions, rather than just a set of wires for transporting electrons from centralised generation sites to end-users.

The strongest proponents of this view are to be found in New York, where the state governor (supported by the regulator, the New York Public Service Commission (**PSC**) has sought to fundamentally overhaul the way in which energy is delivered and regulated through an ambitious reform project known as "Reforming the Energy Vision" or "**REV**".

REV was developed in the aftermath of Hurricane Sandy, as response to concerns around system resilience and reliability, as well as climate change fears. The initiative has various components, including initiatives directed at grid modernisation (led by state-owned utility, NYPA), regulatory reform, public energy procurement and clean energy financing.

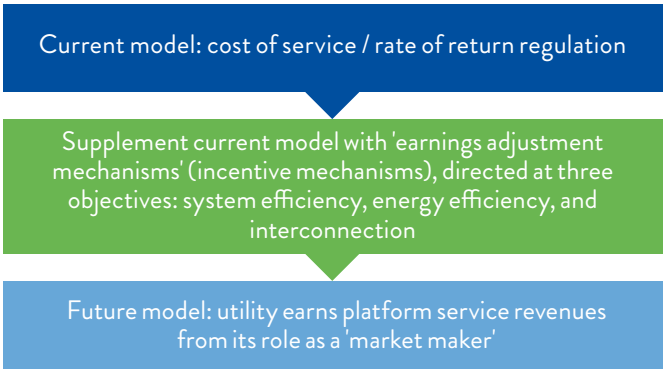
While other parts of the package are of interest, the part that is perhaps most likely to be exportable relates to the reforms proposed to utility revenue regulation. The PSC is looking to reform the way in which utility revenues are regulated, to align with its vision of the 21st century grid operator as a "platform service provider" rather than just an owner or provider of infrastructure.

Those that support REV argue that the kind of technology disruption that we are witnessing calls for an equally significant overhaul of utility regulation and funding. They argue that the traditional cost-of-service regulatory model drives the wrong incentives for utilities, tending towards capital investment in the grid as the solution to all, or most, capacity constraints.

There is also a sense among some stakeholders that the current cost-of-service model is unsustainable, in that it is only likely to lead to price increases as ageing infrastructure needs to be replaced and network load declines. Reform is therefore seen as necessary in order to provide utilities with better incentives to modernise grid infrastructure and efficiently integrate and maximise the value of distributed resources such as demand management systems, storage and distributed PV generation. Regulatory reform is also seen as a means of addressing price and affordability issues, since it is hoped that utilities can be weaned off traditional revenue streams as new revenue streams (referred to as "platform service revenues") open up new opportunities.

It was explained to us that REV is directed at both how the utility *makes* its money (the revenue model) as well as how it *collects* its money (tariffs).

PSC has proposed moving away from pure cost-of-service regulation focused on the utility's investment in network infrastructure towards a model that compensates utilities through "earnings adjustment mechanisms" (incentive mechanisms) and "platform service revenues" (alternative revenue streams).



All of this also forms part of a suite of wider REV policies championed by the Governor, including a 50% renewables target by 2030 to be supported by big subsidies for some nuclear plants and the retirement of others, the establishment of a Greenbank (for clean energy financing), and government support for clean municipal transport fleets and sweeping new public energy procurement policies.

Quite how all of this will ultimately look, or whether it will work at all, remains open to debate in the context of a US legal system that allows significant protection for utilities in relation to their regulatory assets and reasonable capital returns.[4]

For our part, looking from the outside, REV certainly appears ambitious and probably overly so. Large parts of REV are also not well suited to an Australian context because of the very different market structure in the United States. However, the program nonetheless has interesting elements that deserve further consideration in Australia. For example:

+ The program is holistic and integrated – addressing carbon policy, clean energy financing, baseload generation investment, government procurement policies, network regulation and retail tariff reform.
+ REV adopts a more agnostic view to regulatory expenditure than our Australian regime (i.e. replacing the concepts of 'capex' and 'opex' with a single expenditure concept of 'totex' is an idea drawn from the UK, which is worth exploring);
+ The focus on new types of investment incentives for utilities recognises that there is a need for the grid to become more intelligent and able to better provide congestion signals that can be used to incentivise investment in DER. We need to give more thought to how to drive greater investment into grid innovation.

When we crossed the Atlantic to meet with policy-makers and regulators in the UK, we heard a more measured view of the task ahead. Like so many things British, the vision for regulatory reform in the UK is a little more understated and evolutionary than New York.

> *"Drawing from an exhaustive analysis of trends in technology, markets, and environmental policy, the Commission has concluded that its core statutory duties can no longer be met with the utility regulatory model of the previous century."*
>
> New York Public Service Commission

The UK Government and the regulator, Ofgem, have long-recognised that regulatory frameworks may need to evolve and adapt. Over the past decade, Ofgem and the UK Government have embarked on a series of projects aimed at ensuring that the regulatory regime remained fit-for-purpose. These projects led to incremental reforms to the regulatory frameworks governing the supply of energy supply in the UK, including the "RIIO" model for network regulation, capacity market mechanisms directed at procuring sufficient reserve generation capacity, and "contracts for difference" to promote investment certainty for low-carbon generation technologies.

The UK Government has also sought to promote electric vehicle uptake through a generous subsidy scheme, and has initiated a supplier-led smart meter rollout program, with a target completion date for the rollout of December 2020.

Of those stakeholders we met, there seemed a reasonable consensus that Ofgem's RIIO model for network revenue regulation – together with capacity markets and contracts for difference to address supply reliability – appear to be working reasonably well. However we got the sense that there was some appetite for further refinement. Areas identified for incremental reform include:

+ increased separation of the transmission system operation function from ownership of the transmission assets, to address perceived conflicts of interest for National Grid around how it plans and develops its transmission network to meet system needs;

4 For a critical analysis of REV that provides a useful overview of some of the constitutional protections, see J. D. Makholm, The REVolution yields to a more familiar path: New York's Reforming the Energy Vision, The Electricity Journal, 29 (2016) 48-55.

- allowing for more active system management by distribution network operators, as penetration of distributed energy resources increases; and
- reviewing tariff structures and allocation of costs between different users of the grid (particularly where this distorts the size and location of generation, as between transmission and distribution-connected and 'behind the meter' generation).

The UK Government and Ofgem are taking a refreshingly evidence-based approach to assessing the need for future regulatory reform. The relevant Government department and Ofgem have recently issued a joint "call for evidence", asking open questions about whether and to what extent there may need to be reform in order to facilitate a transition to a smarter, more resilient and more flexible energy system.[5] We consider the call for evidence a comprehensive and thoughtful example of 'joined up' policy work in this area.

8. We need to continue on the tariff reform jouney

Tariff reform (and rebalancing) is a key part of the energy market transformation – tariff signals are critical to driving efficient incentives for efficient in demand management, DER and distributed generation.

Australia has already undertaken significant steps in moving towards cost-reflective network tariffs, through the Power of Choice program and subsequent rule changes.[6] Many retailers now provide some form of "time of use" tariff and have taken steps to rebalance tariff structures.

The next and critical phase in tariff reform is to develop signals (both temporal and locational) that reward customers for DER and demand response. For example, these could take the form of:

- new tariffs designed to support particular DER (such as storage);
- tariffs that recognise the benefits derived from reduced demand at critical times (such as critical peak pricing);
- tariffs within the distribution network that provide zonal or nodal cost signals.

This is likely to require more work to be done on assessing the value of DER and demand response. There have been a large number of 'value of solar PV' studies undertaken in the US (as part of the debate around net metering), however only one Australian state regulator has, to date, tried to explicitly analyse and value the cost/contribution of DER to the grid.[7]

5 Ofgem, Department for Business, Energy & Industrial Strategy, A Smart, Flexible Energy System: A call for evidence, November 2016.
6 See AEMC summary: www.aemc.gov.au/Major-Pages/Power-of-choice

9. Smart meters and electric vehicles need to be a part of the policy conversation

Australia's inconsistent approach to both retail contestability and smart meters risks holding it back. The UK and a number of European countries have announced full national smart meter rollouts to be completed by 2020. Over half of homes in the US already have a two-way smart meter.

In Australia, unless you live in Victoria (where a mandatory rollout is now 95% complete), you risk being left behind. Work by the AEMC in 2015 coming out of the Power of Choice program set minimum standards for smart meters and allows for mandatory rollouts (with customer 'opt out')[8] and, since then, retailers have made progress. Nonetheless, policy support on the ground from state governments outside Victoria, and to a lesser extent NSW, remains hesitant and even the AEMC rule change does not take effect until 1 December 2017.

Similarly fragmented approaches to issues such as privatisation and retail contestability also put us behind other countries and will limit scope for consumer-centric innovations at the 'edge' of the grid.

Finally, Australia has one of the least developed (or, indeed, non-existent) policy approaches to EVs in the developed world. Almost all of our peers incentivise EVs through rebates, tax credits or direct subsidies, including the UK, Canada, across Western Europe and the US.

7 See ESC, The Network Value of Distributed Generation, October 2016.
8 AEMC, Expanding competition in metering and related services, Rule Determination, 26 November 2015.

10. Culture is king

We were struck by how many times in conversation with overseas energy market stakeholders a reference is made to the impact of "regulatory culture" on the effectiveness of policy. The impact of culture should not be underestimated.

Australia's regulatory framework for energy is highly codified. The centralised, 'top down' and relatively stable development of the electricity market over the last three decades has allowed for the grid to be planned and regulated in an equally centralised and 'top down' manner, with a focus principally on achieving cost efficiencies, reporting and enforcing strict service performance standards.

Innovation and disruption, by contrast, are risky and messy. They do not fit well with a highly codified, risk-averse framework, focused principally on cost reduction. Over coming years, the market transition is likely to require a degree of cultural change from all stakeholders, including regulators, network businesses, policy-makers, retailers and consumers. In the short term, examples of the kind of flexibility that may be needed include:

+ when funding innovation, it needs to be recognised that many R&D projects fail – and this is not mark of inefficiency (indeed, it may justify further investment);
+ market participants, and not the regulator, should be encouraged to develop innovative tariff structures;
+ appropriate flexibility may be required in relation to service targets, where network businesses are reliant on third party or 'behind the meter' solutions; and
+ appropriate flexibility in relation to ring fencing constraints, where collaboration between regulated and contestable elements are needed to support innovative grid projects.

The energy market transformation is likely to require an evolution in the cultural approach of all stakeholders – regulators, networks, retailers, investors and customers. Innovation is uncertain and messy. Failed investments in dynamic markets are commonplace, but that does not imply they are inefficient or unacceptable. Increased reliance on third party DER, rather than old fashioned investment in 'poles and wires', may reduce cost but could also impact service levels, at times. In our view, an open, flexible and collaborative regulatory culture is called for.

At the same time, care needs to be taken to respect the 'sunk' investment expectations of existing players. For example, we feel that the radical "Reforming the Energy Vision" or "**REV**" proposals in New York to redefine the revenues of grid owners (away from cost of service toward undefined 'platform revenues') do not adequately acknowledge the history and reasonable expectations that those investors have in relation to their sunk assets.

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