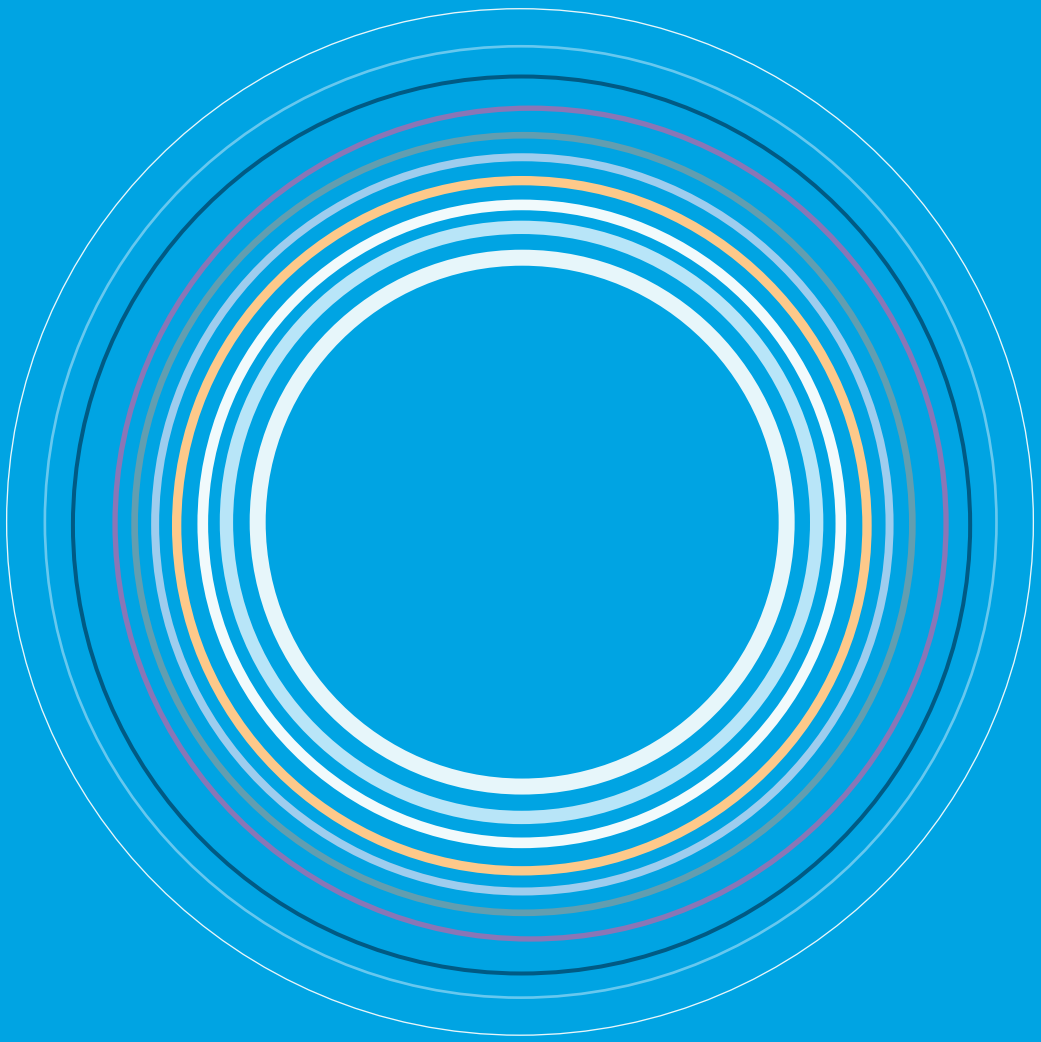
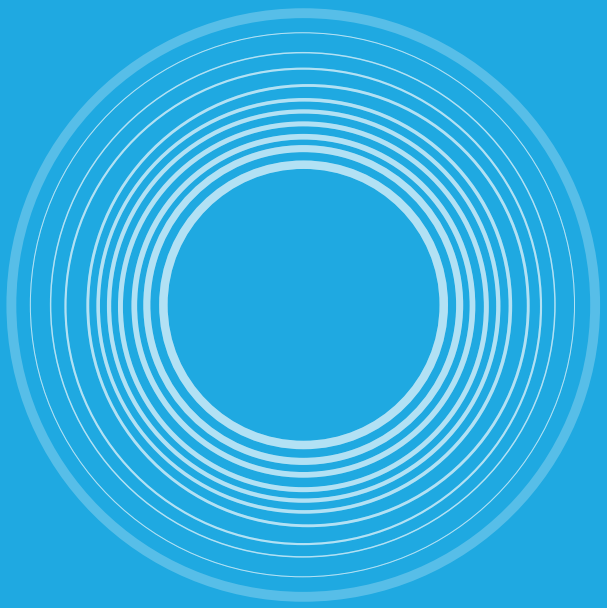
NATIONAL ELECTRICITY MARKET



A case study in successful microeconomic reform

AEMC

KPMG
cutting through complexity



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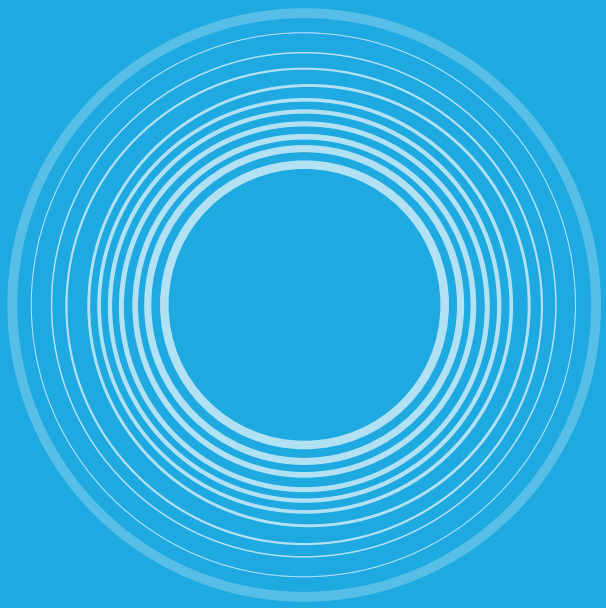
A case study in successful microeconomic reform



Economic growth and prosperity to a significant degree, involves a continuing process of structural change. Of employment opportunities moving from one industry to another, from one place to another. Of investment responding to changing patterns of consumer demand and changes in relative prices brought about by innovation, new technologies and the opportunities for improved productivity.

This process cannot be centrally directed or planned. But that does not mean the process, and its consequences, are not in need of being led or managed in order to produce sustainable benefits for consumers.

We know this process as 'microeconomic reform'. While broader in scope, the 'reform agenda' in the 1990s had a particular focus on capital intensive utility services such as energy, communications, transport and water: that is, the non-traded goods sector; the efficiency of which was seen as underpinning our potential long term growth. A common feature of these sectors was that they were dominated by publicly owned enterprises often with a monopoly industry structure. Prices did not reflect efficient costs and investment decisions were centrally directed. The risks associated with the efficiency of the sector were therefore borne by consumers. They also intersected the interests and responsibilities of multiple levels of government.

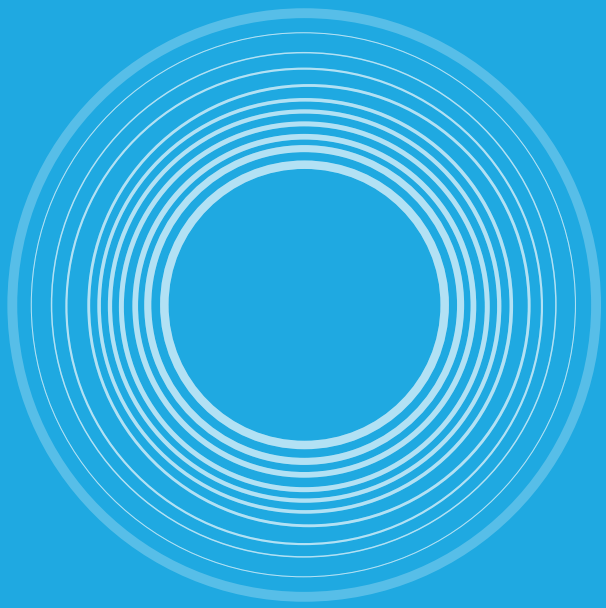
One of the enduring stories of microeconomic reform has been the National Electricity Market (NEM). In celebrating that achievement we acknowledge the many hundreds of leaders: politicians across jurisdictions who recognised the need and benefits of change and set the direction; officials and people within the sector who worked together to make it possible; international experts who contributed their ideas; and everyone in the electricity industry who helped us learn how to make it work in practice.

The NEM has proved to be a sustainable reform – capable of being built upon and a fundamentally important input to the performance of the Australian economy.

In this, the fifteenth anniversary year of NEM commencement, we commissioned KPMG to interview those involved in the market's evolution in order to identify the lessons of their experience. The purpose then is not so much to focus on the NEM itself, but rather the people and the processes they led and managed in order to bring it about.

We hope the findings of this case study will provide lessons and insights for dealing with the issues we face today in the energy sector and other sectors of the economy.

John Pierce
Chairman
Australian Energy Market Commission



"KPMG was a major participant in the electricity reforms that occurred during the 1990s and early 2000s."

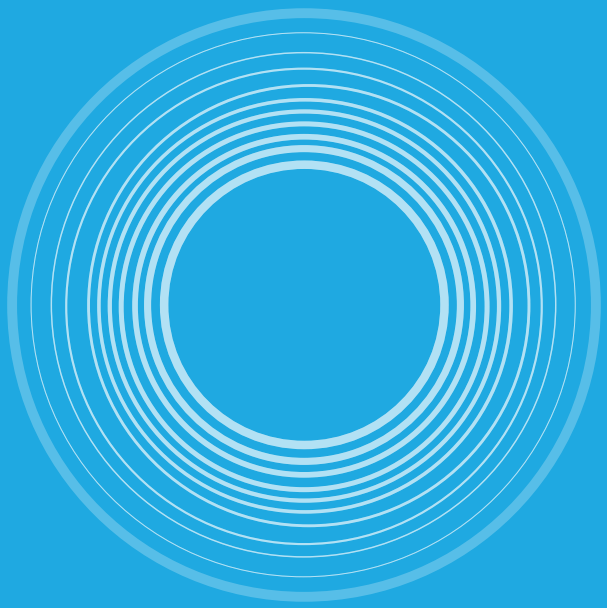
KPMG was honoured by the Commission's request to prepare this case study of the establishment of the NEM as an example of successful microeconomic reform.

KPMG was a major participant in the electricity reforms that occurred during the 1990s and early 2000s. We were joint lead advisors to the Victorian State Government for the reform and privatisation of the electricity and gas sectors, and to the South Australian State Government for the reform and privatisation of their electricity sector. More recently, we have advised the NSW Government across a number of their State owned assets including helping develop a more efficient structure for the electricity distribution businesses.

For this study, we interviewed thirty-one people who played important roles in the reform process from government, the electricity industry, or business (e.g. consumers). We and the Commission appreciate that this is only a very small proportion of the hundreds of people involved across Queensland, NSW, ACT, Victoria, South Australia, and Tasmania who brought the NEM and the associated industry restructuring to fruition.

KPMG hopes that this case study will provide a useful guide on how to develop and implement microeconomic reform policies in assisting with improving productivity and growing prosperity for the benefit of all Australians. It could also underpin effective energy policy and markets in the future, helping to establish the basis for financing the investments required to drive efficient energy markets.

Michael Bray
KPMG Asia Pacific Energy Leader



Contents

Executive Summary

The purpose of this report on the development of the National Electricity Market (NEM) is to identify the key elements and lessons of the process that made it a success. The report has been written with a level of detail intended to address a broad audience of Governments, companies, consumers and industry associations.

Background

The formal process to develop the NEM began in 1991 with a decision by the Council of Australian Governments (COAG) to establish a National Grid Management Council (NGMC) to coordinate the planning, operation and development of a competitive electricity market. COAG took this decision in response to a report tabled in 1991 by the Industry Commission which found that potentially significant increases in Australia's Gross Domestic Product (GDP) could be realised by:

- a restructuring of the electricity supply industry with the vertical separation of generation and retail from the natural monopoly elements of transmission and distribution;
- the introduction of competition into generation and retail by providing access to the transmission and distribution systems on a non-discriminatory basis;

- progressively selling publicly owned electricity generation, transmission and distribution assets to the private sector; and
- the enhancement and extension of the interconnected systems of New South Wales, ACT, Victoria, and South Australia to eventually include, when economically viable, the power systems of Queensland and Tasmania.

In the interviews, participants focused on the period 1991 to 1998 which was the period leading up to, and including:

- the introduction of a uniform single wholesale electricity market across eastern and southern Australia,
- disaggregation of the vertically integrated electricity sector into competing generators and retailers, and monopoly transmission and distribution network service providers,
- the passage of a National Electricity Law as cooperative legislation across the participating jurisdictions to enable the NEM to operate with harmonised laws and regulations including a National Electricity Code that defines the rules for the wholesale electricity market and access to the networks;
- the establishment of the National Electricity Code Administrator (NECA) as an independent company responsible for managing changes to market rules and the network access regime;
- the establishment of the National Electricity Market Management Company (NEMMCO) as the market operator and power system operator for the NEM;
- customer choice in electricity supplier across the NEM, initially for large customers, which was a first step in the transition to full retail competition and the deregulation of retail pricing.

The diagram overleaf provides a brief summary of the major events over the period 1991 to 1998. A glossary of acronyms is provided at the end of this publication.

National Electricity Market
development time line 1991-1998

'91-'92

1991 – Industry Commission *Energy Generation and Distribution Report*

1991 – COAG is formed and establishes National Grid Management Council

State Electricity Commission of Victoria (SECV)

1992 – VicPool II trial internal power market

Electricity Commission of NSW renamed Pacific Power and internally restructured into generation and transmission

1991/92 – Pacific Power Internal Power Market ("ELEX")

1991 – Queensland Electricity Commission (QEC) established with generation, electricity transmission, and industry regulation

'93-'94

1993/94 – NEM Paper Trial

1994 – NEM market design and Code development

1993 – SECV split into corporatised bodies – generation, transmission, distribution/retail

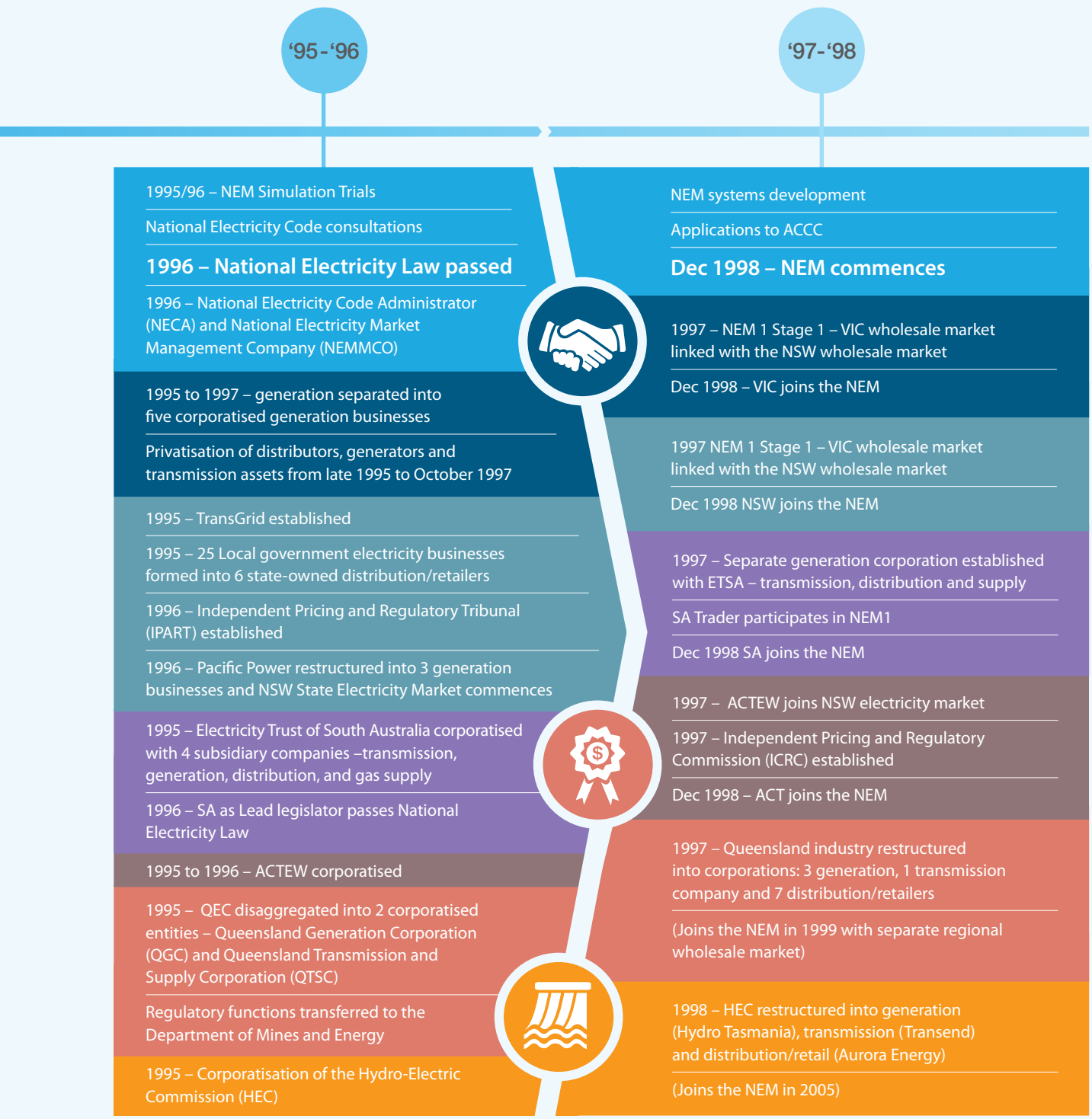
1994 – VicPool III state based electricity market

1994 Office of Regulator General established

"Key reform agenda elements overall: Separation of policy and regulation from industry, industry restructuring, and introduction of competition."

Legend

- NATIONAL
- VIC
- NSW
- SA
- ACT
- QLD
- TAS


'95-'96
'97-'98
1995/96 – NEM Simulation Trials
National Electricity Code consultations
1996 – National Electricity Law passed
1996 – National Electricity Code Administrator (NECA) and National Electricity Market Management Company (NEMMCO)
1995 to 1997 – generation separated into five corporatised generation businesses
Privatisation of distributors, generators and transmission assets from late 1995 to October 1997
1995 – TransGrid established
1995 – 25 Local government electricity businesses formed into 6 state-owned distribution/retailers
1996 – Independent Pricing and Regulatory Tribunal (IPART) established
1996 – Pacific Power restructured into 3 generation businesses and NSW State Electricity Market commences
1995 – Electricity Trust of South Australia corporatised with 4 subsidiary companies –transmission, generation, distribution, and gas supply
1996 – SA as Lead legislator passes National Electricity Law
1995 to 1996 – ACTEW corporatised
1995 – QEC disaggregated into 2 corporatised entities – Queensland Generation Corporation (QGC) and Queensland Transmission and Supply Corporation (QTSC)
Regulatory functions transferred to the Department of Mines and Energy
1995 – Corporatisation of the Hydro-Electric Commission (HEC)
NEM systems development
Applications to ACCC
Dec 1998 – NEM commences
1997 – NEM 1 Stage 1 – VIC wholesale market linked with the NSW wholesale market
Dec 1998 – VIC joins the NEM
1997 NEM 1 Stage 1 – VIC wholesale market linked with the NSW wholesale market
Dec 1998 NSW joins the NEM
1997 – Separate generation corporation established with ETSA – transmission, distribution and supply
SA Trader participates in NEM1
Dec 1998 SA joins the NEM
1997 – ACTEW joins NSW electricity market
1997 – Independent Pricing and Regulatory Commission (ICRC) established
Dec 1998 – ACT joins the NEM
1997 – Queensland industry restructured into corporations: 3 generation, 1 transmission company and 7 distribution/retailers
(Joins the NEM in 1999 with separate regional wholesale market)
1998 – HEC restructured into generation (Hydro Tasmania), transmission (Transend) and distribution/retail (Aurora Energy)
(Joins the NEM in 2005)

Findings

This case study presents a summary of the key lessons from the NEM reform process. Based on interviews with some of the key participants, these lessons can be listed as following.

1. **The material problems were defined and clear reform objectives were set**

    - In embarking on the reform of the electricity sector, clear objectives for change were defined and the change approach was transparent. The economic and policy implications, commercial and financial impacts, and technical and operational impacts were brought into alignment. This alignment was maintained throughout the process and has underpinned the NEM's durability.

2. **Reform took high-level political drive; provision of time, energy and, according to many reform participants, financial incentives**

    - Ministers involved in the reform were required to make a significant commitment of personal time in order to make things happen and keep the process on a consistent path.
    - In the energy sector, the National Competition Payments[1] had three benefits: first, the State Governments had an incentive to change as they wanted the payments; second, there was a political cost if some payments were seen to be withheld; and third, they could use the payments as an argument to undertake reform in the face of opposition. Looking to future reform, there are risks that the incentive becomes payment maximisation, rather than policy optimisation; and the relationship between the Commonwealth and the states changes from a partnership to a quasi contract. Incentive payments are not a substitute for mutual commitment to policy outcomes.

3. **Strategies were developed to enhance confidence in the reforms**

    - Confidence in the proposed reforms was developed by specifying market designs and rules in detail and then taking the time to run trial simulations and model the reforms with the involvement of the key industry and government representatives to iron out design flaws. Reforms were implemented at the state level before moving to full national reforms. The learning from these state experiences was invaluable and boosted confidence in the reforms.

4. Strong and appropriate support structures were established with key stakeholder participation

- Reform across the Commonwealth and the States required significant collaboration and cooperation. Establishment of appropriate governance structures across federal, jurisdictional and industry levels was essential to ensure the reform had appropriate coordination of policy, technical design and implementation.
- It was important to give credibility to the process. This was enhanced by having an independent, highly regarded chair. The people who were involved understood the commercial realities of the businesses and the impacts of the reform on them.

5. The pace of the reform allowed for effective consultation across all stakeholders

- It was important to ensure the time allowed for reform was manageable and realistic for all involved.
- The reform was managed so that the key things were done early, such as setting agreed principles and conceptual design for the market mechanisms. Ensuring there were incremental implementation steps and delivery of incremental benefits helped keep stakeholders engaged on the longer journey.
- Identifying the key stakeholders and having open and ongoing dialogue helped to build trust and engagement.

6. Getting the industry structures right was key for effective competition

- The process highlighted that competitive markets only work well with a competitive industry structure.
- It also demonstrated there is an explicit trade-off between the benefits of a competitive industry structure and maximising sales proceeds from privatisation. The gains for the economy of a competitive industry structure needs to take precedence over the fiscal impacts of privatisation. To do otherwise poses a risk to the benefits of the reform being sustained.

1 To encourage reform, the Federal Government established a system of payments to States known as National Competition Payments. These payments recognised the benefits to federal government revenues to be gained from the reforms (particularly in electricity and gas), and sought to share them with State Governments that had to make the changes to bring these benefits about.

1 Our Approach

> *"The history of Australia's National Electricity Market provides an example of how major reforms can be implemented through careful market design and management. The competition reforms of the 1980s and 1990s represented a significant structural shift in the Australian economy. The process of NEM development and implementation demonstrates how careful design and management can deliver market systems which maximise the benefits of these reforms while minimising costs and disruption to consumers."*
>
> John Pierce, *The Australian National Electricity Market: Choosing A New Future*, Fifth Forum on Energy Regulation in Quebec City, Canada on 12 May 2012

In suggesting that the history of the NEM provides an example of how major reforms can be successfully implemented, KPMG and the Australian Energy Market Commission (Commission) decided to test this point of view with a cross section of reform participants who played a variety of important roles in the reform process.

The objectives of this approach were to:

- Confirm whether reform participants agreed with this point of view regarding the reform process; and
- Define in more detail the key elements and lessons from the electricity reform process summarised in the hypotheses.

In this case study participants focused on the period 1991 to 1998 which was the period leading up to, and including:

- the introduction of a uniform single wholesale electricity market across eastern and southern Australia;
- disaggregation of the vertically integrated electricity sector into competing generators and retailers and monopoly transmission and distribution network service providers;
- the passage of a National Electricity Law as cooperative legislation across the participating jurisdictions to enable the NEM to operate with harmonized laws and regulations including a National Electricity Code that defines the rules for the wholesale electricity market and access to the networks;
- the establishment of the National Electricity Code Administrator (NECA) as an independent company responsible for managing changes to market rules and the network access regime;
- the establishment of the National Electricity Market Management Company (NEMMCO) as the market operator and power system operator for the NEM;
- customer choice in electricity supplier across the NEM initially for large customers which was a first step in the transition to full retail competition and the deregulation of retail pricing.

In this case study, we also describe the major changes in the retail electricity market and the NEM governance and regulatory framework that took place post 1999. These developments were not discussed in any detail in the participant interviews.

Based on participant feedback we also present a summary of the key findings from the success of the NEM reform process.

In order to better understand the perspectives being provided, the table below presents the list of people interviewed and what their primary roles were during the 1990s.

1. Ken Baxter
   (Victorian and NSW Department of Premier and Cabinet, Chair Baxter Group)
2. Roger Beale
   (Associate Secretary, Prime Minister and Cabinet 1993-96)
3. Dr. Peter Boxall
   (Under Treasurer, South Australia Department of Finance and Treasury)
4. Vicki Brown
   (ACCC official)
5. Ross Bunyon
   (Chief Executive – Pacific Power)
6. Dr. Ralph Craven
   (NGMC Paper Trial Project Manager, Queensland Transmission and Supply Corporation)
7. David Croft
   (Chief Executive – TransGrid)
8. Bernie Delaney
   (BHP, Business Council of Australia, Member of NGMC's Market Steering Committee)
9. Steve Edwell
   (Queensland Treasury, Queensland Electricity Reform Task Force)
10. Michael Egan
    (NSW State Treasurer)
11. Sally Farrier
    (Victorian Electricity Supply Industry Reform Unit)
12. Jim Gallaugher
    (Convener – NGMC's Market Trading Working Group, Technical Director of Victorian Power Exchange)
13. Len Gill
    (Victorian Generator Participant, Victorian Market Design Working Group and Vesting Contracts Working Group)
14. Neville Henderson
    (National Grid Management Council – General Manager Projects, Project Manager NEM Governance Reforms 2004/05)
15. Russell Higgins
    (Secretary Department of Resources and Energy – Commonwealth)
16. David Hoch
    (NGMC's Market Rules Working Group, Victorian Generator Participant, Victorian Market Design Working Group and Vesting Contracts Working Group)

17. Graham Holdaway
(KPMG Partner – Victorian Electricity Supply Industry Reform Unit)

18. Michael Lambert
(Secretary NSW Treasury)

19. John Landels
(National Grid Management Council – Chairman)

20. Ted Matthews
(Head – Electricity Reform Task Force, Department of Resources and Energy – Commonwealth)

21. Robert Milliner
(Partner Mallesons Stephens Jaques – Legal Advisor to NGMC and Victorian Government)

22. Dan Norton
(National Electricity Market Management Company Chairman)

23. Stephen Orr
(Victorian Generator Participant, Victorian Market Design Working Group and Vesting Contracts Working Group)

24. John Pierce
(Chief Economist Pacific Power and Deputy Secretary NSW Treasury))

25. Rod Sims
(Deputy Secretary, Department of Prime Minister and Cabinet)

26. Brian Spalding
(TransGrid, Program Manager NSW State Electricity Market)

27. Tim Spencer
(Queensland Premiers Department and South Australian Treasury)

28. Alan Stockdale
(Victorian State Treasurer)

29. Geoff Swier
(Victorian Electricity Supply Industry Reform Unit)

30. David Swift
(South Australian ETSA and Electricity Reform Unit)

31. Roger Wilkins
(Director General NSW Department of Premier and Cabinet)

Peer review: Drew Clarke
(Secretary Department of Communications)

2 Development of the National Electricity Market 1991 to 1998

In order to understand the development of the NEM over the period 1991 to 1998, it is important to understand the:

- broader context for electricity reform in the period prior to the 1990s,
- other reforms that were being undertaken during the 1990s
- elements of the electricity market reform process.

During the participants' interviews, a number of key process elements were identified. This section has been structured to reflect these process elements, alongside some commentary from participants regarding the process and the key lessons both positive and negative.

2.1 The context for electricity reform

In the 1960s, 1970s and early 1980s Australia had a somewhat insular, highly regulated economy, with many public sector monopolies, relatively low productivity growth and poor comparative economic performance.

> *"There was a loose but extended alliance of politicians and senior officials who felt Australia had to move past post-war protectionism, subsidies and wage fixing. These protectionist policies meant Australia kept having inflation issues when activity picked up."*

In the early 1980s there was gradual change in trade reform as tariff quotas were phased out and some very high tariff levels were lowered.

In 1983 the Australian dollar was floated, which, together with winding back of industry protection, progressively made the business community more economically savvy.

The greater exposure to international competition created pressures for more efficient delivery of utility services. Consequently, in the mid to late 1980s, there was increasing focus at the Commonwealth level and in some State jurisdictions on aligning prices of government business enterprises (GBEs) more closely to actual costs and on improving productivity.

› *"Realisation in business community and government officials (and over time at political level) that the only way to enable economic growth was a full microeconomic reform."*

From the late 1980s into the early 1990s there was some initial reform activity in telecommunications, electricity, water, road and rail. However, it was seen that the early microeconomic reforms begun since the late 1980s were being progressed on a sector-by-sector basis without the benefit of a broader framework covering both economic principles and political governance.

Furthermore, those reforms had shown that the *Trade Practices Act 1974* (which preceded the current *Competition and Consumer Act, 2010)* was too limited in its application, with legal coverage linked to ownership or corporate form.

By the late 1980s electricity utilities had progressed administrative reform, but a step change was required to further increase productivity and efficiency.

› *"It is easy to focus on this as a reform process but there is a need to focus on the context of reform. The electricity industry is voter sensitive, unionised, there are multiple state governments with different factions, pressure points and margins and over staffed – so reform would lead to job losses. An immense inertia is built in to the system so that there would be winners and losers. Losers are smart enough to be able to mobilise. The government relied on dividends. When you overlay this, this is a very complex environment to undertake reform."*

Competition in the generation segment of the electricity industry in England and Wales was introduced in 1990 with the privatisation of non-nuclear generating assets. At privatisation there were 7 companies participating in the generation market of England and Wales. The introduction of competition in the supply of electricity to industrial and commercial customers began in 1990.

› *"The UK experience with power sector reform and privatisation gave both central agencies and ministers a greater degree of confidence in the feasibility of competition reforms in Australia."*

2.2 Electricity reform had a clear, structured agenda

In May 1990, the Commonwealth Treasurer, Paul Keating, requested the Industry Commission inquire into the generation, transmission and distribution of electricity and the transmission and distribution of gas.

› *"One of the major motivations in a number of jurisdictions (certainly this was the case in NSW) for supporting the reform was the very strong desire to avoid any government involvement in decision making on the next increments of generating capacity. This was a concern to avoid the clear mistakes of the 1970s and 1980s over expansion in capacity."*

In their 1991 *Energy Generation and Distribution* report, the Industry Commission found that the electricity and natural gas supply industries had not been performing to their full potential. Poor investment decisions leading to excess capacity and gross overstaffing during the 1980s provided the most striking evidence that electricity and gas had not been supplied at least cost.

› *"The Industry Commission study was crucial to the process. That was important, not only because of the study but through COAG to get some States on board. While there was reluctance, everyone could see the size of the prize. As a comparison, 1.25% of GDP doesn't sound like much but the major tax reform at the time only had 0.5% GDP benefits. So it was big and worth pursuing."*

The 1991 Industry Commission's report recommended that potentially significant Gross Domestic Product (GDP) improvements (around 1.25% of GDP) could be realised by:

- a restructuring of the electricity supply industry with the vertical separation of generation and retail from the natural monopoly elements of transmission and distribution;
- the introduction of competition into generation and retail by providing access to the transmission and distribution systems on a non-discriminatory basis;
- progressively selling publicly owned electricity generation and electricity transmission and distribution assets to the private sector; and
- the enhancement and extension of the interconnected systems of New South Wales, ACT, Victoria, and South Australia to eventually include, when economically viable, the systems of Queensland and Tasmania.

At a Special Premiers Conference in 1991, the Australian Commonwealth, State and Territory governments reached agreement on the need for a national competition policy. An independent Committee of Inquiry into a National Competition Policy for Australia was later commissioned and reported in August 1993. (This report led to the Hilmer competition policy reforms endorsed by COAG in 1995.)

› *"The 1991 Industry Commission report established a baseline for microeconomic reform in the electricity sector that identified potential efficiency gains and convinced politicians that reform was necessary. This data-driven, evidence-based review convinced Stockdale at the state and Keating at the national level that the effort to reform was worth it."*

2.3 Role of the jurisdictions and the electricity industry

Electricity reform started in Victoria and NSW before there was extensive Commonwealth involvement and a fully developed concept of a National Electricity Market. In 1991, the Electricity Commission of NSW was renamed Pacific Power and internally restructured into six business units – which consisted of three generating groups, a pool trading unit, a transmission network business and a services unit. Pacific Power also established ELEX, an internal power market in 1991/92. In 1992, the State Electricity Commission of Victoria commenced VicPool II which was a trial of an internal power market. These power market trials were a critical confidence building exercise that competition in generation supply was feasible.

As part of the reform process, the jurisdictions were responsible for: restructuring of their state owned electricity industry, local trials of competitive markets, setting up an independent economic regulator and supporting the legal and regulatory changes. The reforms in each state had the following common features:

- vertical separation of generation, transmission and distribution;
- separation or ring-fencing of retail supply from electricity distribution;

- ring-fencing of transmission and the power system control functions;
- corporatisation of electricity entities;
- use of 'vesting' contracts for the sale of electricity to retailers from generators to minimise the risks to generators and retailers/ consumers in the transition to a competitive market;
- gradual unwinding of cross-subsidies between consumer groups;
- establishment of special electricity reform units to manage the process; and
- establishment of independent regulatory agencies responsible for the economic regulation of the sector and in particular electricity transmission and distribution network businesses.

› *"Difference with electricity was that no-one in Commonwealth knew anything about electricity. They knew the other areas: road, rail etc. Independent Commission report gave it credibility at a national level. Needed the COAG imprimatur, but COAG was not able to make it happen. Needed the states to drive reform."*

The history of these events merits a separate case study for each jurisdiction. Victoria and NSW were the first to restructure their electricity industry. This was followed by the other jurisdictions for their respective electricity industries. In this section we present a summary of the common process elements that occurred.

› *"It is fair to say that the reform program nationally, and in other jurisdictions, benefitted greatly from the work taking place in Victoria and NSW on market design, the network access regime, industry restructuring, and the development of regulatory frameworks. Each state that followed Victoria and NSW were able to learn from them in terms of process, issues to be addressed etc. This also laid the foundation for the transition to the NEM and governance under NEMMCO, NECA and the ACCC."*

The electricity reform process was organised along similar lines in each jurisdiction:

- A strong Minister was supported by a core team with a strong Project Manager in a Reform Unit with industry representatives and key external advisors (legal, market design, etc.).

- The Electricity Reform unit (this is a generic term – each jurisdiction had different names for this entity) was set up (usually under Treasury) to manage reform and to co-ordinate jurisdictional inputs into the national process.
- There were clear accountabilities between government and industry. Government set policy based on economic and technical advice provided by industry.
- The jurisdictional reform working groups consisted of the best talent mixed with industry, government officials, and external advisors.
- There was an open consultation process with all stakeholders.

› *"If Victoria hadn't privatised, may not have got there in the end. Needed one state to put in the political capital to drive it – VIC had more at stake than anyone else. They were prepared to barter and push to get it through. Stockdale and Kennett were aggressively driving reform policy. If they hadn't been privatising, there wouldn't have been the motivation."*

While competition reform in electricity had a level of consistency across the jurisdictions, there was a need for each jurisdiction to understand how to manage local special issues (e.g. legacy power supply contracts with smelters, retail tariff policy and community service obligations.)

› *"In NSW Egan was a reformer – when things got tough, he banged the table."*

Each jurisdiction undertook an analysis of impact of the competition reforms in electricity (e.g. Victoria Status Report 1993, NSW 1995 Electricity Reform Statement, QLD Electricity Industry Structure Task Force Report December1996, the Industry Commission Report for South Australia 1996). This analysis allowed each jurisdiction to tailor the reform for the special features in this jurisdiction excluding the wholesale market trading design. It also provided everyone some confidence that they knew what the local issues were. The development of each report was prepared with a consultation process with industry and other stakeholders.

› *"There was a political imperative to make it work. There were a lot of smart people in the industry back then. Once they understood the model was changing they had the capacity to get in and work through the development of the model to create the market."*

A good example is Victoria where the first task of the Electricity Supply Reform Unit was to prepare with industry a Status Report of 21 areas of the electricity industry in Victoria including Information Technology (IT), Human Resources (HR), wholesale market design and fuel supply issues. The draft report underwent a high-level critique by two consultants for each of the 21 areas. This technique drove momentum for reform, engaged with the businesses, showed a level of interest in what they thought, flushed out their views, and used other experts to express views to create tension. This one-off exercise was used to establish a baseline for reform.

› *"The reform units set up in each jurisdiction were important because they provided the NGMC and Senior Officials with a single point of contact for the national reform process."*

Orchestrating a separate review enabled a neutral assessment of the industry, minimising the likelihood of preconceived ideas clouding the issues.

› *"If the electricity industry had been in private ownership, these reforms would have been very difficult to achieve without substantial compensation being paid to private investors. In the USA the same degree of structural separation has never occurred because the industry is predominantly privately owned."*

Each State also removed economic and technical regulation from the electricity industry and reassigned it to either an independent jurisdictional economic regulator for electricity network regulation or technical regulator. In some cases technical regulation was assigned to a government department or agency (e.g. Victorian Office of Electrical Safety).

There was also a staged transition to the NEM from the initial trial markets in Victoria and NSW in 1991/92 through to a live market in Victoria in 1993 (VicPool III), the NSW State Market in 1996 and the joining of the Victorian and NSW markets under NEM1 in 1997.

2.4 Strong political leadership drove the reform

› *"COAG was driven by the central agencies to push competition reforms, and COAG agreement to those reforms was very important – critical to formation of NEM."*

In May 1992 a Council of Australian Governments (COAG) forum replaced the Special Premiers Conferences. During the 1990s COAG drove the electricity reform process; receiving reports and recommendations from the NGMC until the NGMC was wound up in February 1997.

› *"The baton might shift around in terms of who was driving reform process hardest e.g. Greiner/Hawke, Keating/Kennett, then Howard, but always someone was driving it at the highest levels."*

Over this period there was strong political leadership for electricity and other microeconomic reforms (e.g. transport, gas). The Prime Minister, the Treasurer and key Ministers in the 1983-1996 Labour Government drove the early reforms, and were assisted by some strong, pro reform Premiers and State Treasurers. The then Leader of the Opposition, John Howard, also supported many of the Labour Government's reforms. In a number of areas he carried forward the reforms and he benefited from them as Prime Minister from 1996-2007. This bi-partisan consensus for reform also made it difficult for those wanting to oppose reform.

› *"The cooperation at senior official level was really unique. It was a very results oriented, cooperative approach. All working on getting an outcome. Positive not negative approach."*

The Senior Officials group (known as "the Baxter group") was a group of senior officials from the jurisdictions and the Commonwealth which formed to provide secretariat support for COAG meetings. It was an important process element as it had key central agencies and groups involved across the Commonwealth and jurisdictions. The Senior Officials Group provided advice on electricity and other microeconomic reforms to COAG.

"A lot of shuttle diplomacy by the Feds working with jurisdictions was important in getting the NEM up."

- *"There was complexity in this exercise because the Commonwealth had no constitutional power so Federal Government played a facilitating and constructive role and not a dictating role."*

While there was strong Federal support for reform, the State Governments also relied on key advocates to drive the reforms. In the early 1990s, Greiner was actively pushing for reform in NSW. By the mid 1990s, Kennett in VIC was the strongest advocate, spurred on by the need to improve productivity and address the state's debt problems. The role of the states was significant as they had control of the sector, thus they had the most to gain and the most to lose through reform.

- *"One of the catalysts with the Baxter Group was the Jurisdictional Senior Officials had a degree of authority as a state official and not as a Commonwealth official. So the Jurisdictional Senior Officials didn't come with 'This is Canberra speaking.' Dynamics that we had with the Commonwealth provided a peculiar set of circumstance that hasn't been repeated."*

2.5 Financial incentives were critical to getting some states on board

At the April 1995 meeting of COAG, the Heads of Government agreed to the implementation of a package of National Competition Policy Reforms that would increase the competitiveness and growth prospects of the national economy.

- *"Looking back, many electricity reform participants have suggested that it was nearly an impossible task because of the various stakeholders who did not want to lose access to the existing monopoly rents (e.g. state governments and vertically integrated utilities)."*

Under this package of reforms, COAG created a new institution, the National Competition Council (NCC), as an independent body to assess the progress of all Governments on implementing their agreed reforms.

› *"The Competition Policy Reforms with incentive payments were critical to SA, NSW, ACT and QLD coming on board – not in Victoria (who were nearly bankrupt). The competition payments were made to compensate the states for the loss of monopoly rents."*

To encourage reform, the Federal Government established a system of payments to States known as National Competition Payments. These payments recognised the benefits to Federal Government revenues to be gained from the reforms (particularly in electricity and gas), and sought to share them with State Governments that had to make the changes to bring these benefits about.

› *"That incentive … Keating had a famous saying of never stand between a state premier and a bucket of money."*

Far more important than the fiscal significance of the payments was:

- the sense of collaboration they established between the Commonwealth and the States. The Commonwealth taxation system captured the fiscal benefits of the reform which were shared with the States that had to implement them; and
- the tool they provided State Treasurers for dealing with internal resistance.

It was the NCC that recommended to the Federal Treasurer whether the State Governments had "earned" their payments; whether they had sufficiently undertaken the agreed reforms, and appropriately assessed other legislation that restricted competition.

These payments were instrumental in getting some states to sign up to, and commence implementation of, changes required to achieve the framework for a national electricity market.

2.6 Role of the National Grid Management Council (NGMC) and electricity industry

The reform program established by COAG had a division of labour with the NGMC established to manage open access to the grid, competitive sourcing of generation, and the supporting legal and regulatory framework. As noted above, jurisdictions were responsible for industry restructuring, local trials of competitive markets, setting up an independent economic regulator and supporting the legal and regulatory changes. Initially it was important that utilities were involved as they had knowledgeable staff that were able to participate in developing the market design options.

2.6.1 Importance of an independent chairperson

The NGMC was led by an independent Chair, John Landels, and initially consisted of senior executives from the vertically integrated utilities (e.g. Pacific Power, ETSA, State Electricity Commission of Victoria, ACTEW) and government officials from Queensland and Tasmania. As the NGMC matured and the nature of the work evolved, the composition of the Council itself changed, becoming primarily made up of Treasury/Energy policy officials from the jurisdictions excluding Western Australia and Northern Territory. The NGMC's working groups, created to resolve more detailed technical issues, drew heavily on industry resources from the electricity authorities and member jurisdictions.

> *"John had the good skill to talk to senior politicians with their own agendas. When he started there was hostility around the room with participants from states (energy ministers) with their own agendas. Industry had seen governments come and go and thought this reform agenda might pass too. They were prepared to try to wait it out."*

Several reform participants commented on the importance of having the right independent chair for the program:

- You needed someone who had status and a name to give the process cudos. The person also needed the conceptual skills to drive the process and time to do it. Status and credibility were two key elements.
- The NGMC Chairman, John Landels, had excellent political access to the Prime Minster, Premiers, Energy Ministers and the business community (e.g. Business Council of Australia).

- He had a strong background in private sector industrial relations with unions.
- It was important to have a Chairperson who had the good skill to talk to senior politicians with their own agendas, interact with senior Ministers with a focus on reform outcomes and minimal technical knowledge; thereby allowing technical details to be left to officials.

› *"Great patience is also another key attribute. In the case of the NGMC Chair, John Landels, it took a long time to build trust between John and Ministers who changed during the six years so he regularly had to start over. He was able to facilitate a general understanding by the Energy Ministers which helped to achieve progress."*

2.6.2 Value of research and the Paper Trial Simulation

Between 1991 and 1993, the NGMC prepared several research and discussion papers on the design of a competitive electricity market incorporating access and pricing arrangements in electricity networks for public discussion including:

- options for network service pricing and asset valuation methodologies;
- options for common trading arrangements for electricity based on a review of market models overseas;
- options for the structure of an interstate transmission network for eastern and southern Australia;
- options for regulatory arrangements for a national electricity market;
- key issues for government in establishing a market;
- options for demand management in the NEM; and
- options for reducing the initial 10 MW customer threshold for choice of electricity supplier.

› *"One of the key lessons was the importance of recognising what was happening in the rest of the world. There is sometimes the tendency to not be interested in what is happening elsewhere in the world but to invent it here in Australia. The approach was to look worldwide for the best expertise to help design and implement."*

In 1992, the NGMC produced a national grid protocol (NGP) which established a set of rules, responsibilities and technical requirements for connecting to the national grid and participating in trade of bulk electricity. While initially limited to generators and large customers, the NGP established an initial framework for the development of a single national market. Although the Protocol spoke of a national market, there was no detail around how the concept would be designed and established.

› *"The focus of the reform process at the national level at that stage was on generation expansion competition, i.e. the best process across multiple states instead of each state looking after themselves. There was little interest in retail competition or major restructuring in those days (early NGMC days). Industry wanted to minimise the change. Basically the Grid Protocol set out a national process for generation expansion."*

In early 1993, the NGMC's research showed that a number of market models were either in operation or being discussed both in Australia and overseas. The NGMC, with the agreement of COAG, determined that a Paper Trial of a national electricity market should be conducted involving as many participants and stakeholders as possible to assess the operation of an electricity market in the Australian context. It was also viewed as a suitable vehicle through which all stakeholders could raise their awareness of the operational and financial implications of a competitive electricity market with no financial risks to the participants.

The National Electricity Market (NEM) Paper Trial simulation was conducted from November 1993 to end of June 1994. Approximately 170 organisations took part including major customers, distributors and generation utilities.

› *"Every participant learnt from the process, but especially those jurisdictions like Queensland, ACT, South Australia, and Tasmania which had not been running a regional market."*

In assessing the important lessons of the Trial, the NGMC was mindful that the market model used was a compromise between the views of the parties involved in its establishment. All parties acknowledged that the model had a number of features that would not be accepted in a real market (e.g. ancillary services were not taken into account in the scheduling of generation plant). It was also recognised that commercial and reliable information systems would need to be developed and be in place before the market commenced.

› *"First half of '90s there was a lot of resistance but after the Paper Trial it tipped the other way. People got on board."*

2.6.3 Clear objectives were set for a competitive electricity market

Following the Paper Trial, the main objectives of a fully competitive national electricity market proposed by the NGMC were agreed by COAG at the meeting of 19 August 1994:

- the ability for customers to choose which supplier, including generators, retailers and traders, they will trade with;
- non-discriminatory access to the interconnected transmission and distribution network;
- non-discriminatory legislative or regulatory barriers to entry for new participants in generation or retail supply; and
- non-discriminatory legislative or regulatory barriers to interstate and/or intrastate trade.

› *"Challenge was to bring a mixture of states along in the reform process – each had its own unique set of issues – and try to achieve a uniform market design for the competitive market objectives."*

2.6.4 Appropriate resourcing of the NGMC's reform program

In July 1994, the NGMC recognised that the reform program was going too slowly using part-time resources from industry. The NGMC was provided with joint funding from the Commonwealth and jurisdictions to engage appropriate expertise to support the development of the NEM. A full-time General Manager Projects, Neville Henderson, was appointed with consultancy support including a project manager and a legal advisor.

› *"Importance of full time Program Management Office to drive the national process: First two years with part-time industry resources was not working – it was taking too long."*

In 1994, the NGMC established the Market Steering Committee, the Market Implementation Steering Committee and various NGMC working groups (e.g. Market Trading WG, Transmission Pricing WG, and National Electricity Code WG). The Market Steering Committee and Code Working Groups had broad representation of market participants, including generators, retailers, Network Service Providers, major customers (e.g. from the BCA and the Australian Chamber of Commerce and Industry), power systems operators and the financial sector.

› *"Central agencies will only intervene if they think you're not doing the job. In late 1993 the NGMC nearly ran out of gas because the electricity industry providing support started to back off and withdraw resources. That was a weakness until Neville was appointed."*

The various working groups were tasked with developing a National Electricity Code (Code) that would specify market governance arrangements, market trading rules, power system security rules, third party access arrangements for transmission and distribution networks, and metering rules.

› *"Access to appropriate expertise and budgets – they hired good people to research other countries and studied the dynamics of the industry."*

2.6.5 Value of industry resources

Engagement of industry was vital to build trust and encourage involvement. The process was made up of people who had a long history within the industry and a good understanding of issues that enabled the industry to work out how the market would operate.

- *"There were a lot of people in the industry who supported change, but the process was set up in such a way that key resistance from other senior people was marginalised as the NGMC reported through the Senior Officials Group straight through to COAG and not through utility boards or Chief Executives."*

The electricity industry also played an important role in educating governments and other stakeholders about how competition could be introduced in generation and retail. This role was important because, unlike other sectors, no one in the Commonwealth, State Government or the business community knew much about electricity (except for large electricity consumers).

- *"An important lesson is that you need to choose people with the right intellect, not driven by ego, who want to get the job done and who can work constructively with others."*

The NGMC's cross-jurisdictional working groups were beneficial to the program.

There was a geographic distribution of working groups (working group heads were spread across the states and membership of the working groups was always cross-jurisdictional).

Each member could go back and communicate to their teams. This process worked well in communicating working group developments and providing a feedback loop into the process.

The members were all technocrats, but went back to states and had others provide commercial input where required.

If issues could not be resolved within working groups / state discussions there was an escalation process to ensure rapid resolution within the objectives of the reform.

"The sign off by each Premier of the conceptual wholesale electricity design provided the high level drafting instructions for the detailed market design and the Code and avoided on-going debates on the type of wholesale market (i.e. energy only versus a capacity market)."

2.6.6 Setting a considered pace for reform – time to "demystify the process"

Political approval for the conceptual wholesale market design

In late 1994 and early 1995 the NGMC considered and endorsed several policy papers developed by its working groups on a set of market trading arrangements and an access regime. These policy papers provided the initial "drafting instructions" for the National Electricity Code.

A key milestone was achieved in 1995 when each State Premier signed off on the wholesale electricity conceptual design (i.e. proposed market National Design). Achieving this milestone required significant time investment by the chair of the NGMC, as well as influence from within the industry and certain Government officials to get it approved. The proposed design provided structure to the NEM, leaving the technical detail to be developed around these design guidelines in the conceptual design paper.

Market simulation program to test the wholesale market design

In late 1994, the NGMC commissioned Intelligent Energy Systems to develop a market simulation model to test key features of the market design in a laboratory environment. Many functional areas of the proposed market design are still at the leading edge of global developments in electricity market design and although some aspects have been used in other markets, they were untried in the electricity sector.

› *"It was very important confidence building, learning experience and understanding of market technical details – Lesson learnt from that, getting confidence, demystifying concepts, communication is all key to getting support for something. Adept management and knowing you are unlikely to get things right first time around. Simulation effectively does that. Once you have operated with it you get more comfortable."*

In addition, it was clear to the NGMC that there were certain features of the Australian electricity industry that would require special attention to ensure that the market model was workable and the resultant outcomes were consistent with achieving market objectives endorsed by COAG.

› *"If you look at some jurisdictions, which did not have regional markets, the simulation model was very important to get them comfortable. Talking to people there, the simulation was important in getting grips on the interaction between the spot market and vesting contracts etc. Simulation allowed them to see this, and then inform ministers of this."*

The US economist, Vernon L. Smith was commissioned as a consultant advisor to the market simulation program. Vernon Smith was engaged because he had popularised experimental economics which highlighted the value in trials and experimentation as part of the process of designing a market. Later in 2002, Vernon Smith was awarded the Nobel Prize in economics "for having established laboratory experiments as a tool in empirical analysis, especially in the study of alternative market mechanisms."

› *"We were lucky to engage Vernon before he won the Nobel Prize. After 2002, we may not have been able to afford him. His contribution to market simulation program was invaluable."*

The simulation testing program was conducted with market participants. It demonstrated the feasibility of the proposed market design and the importance of providing market participants the ability to make their own, independent commercial decisions regarding when to commit their generation plant.

Independent review of the wholesale market design in the draft National Electricity Code

› *"Mega-brief program – Was helpful at the time. Provided expert overview of key elements of whatever they were looking at."*

In late 1995, after the NGMC had released its first version of the National Electricity Code for public comment, the NGMC undertook a major consultancy program ("mega-brief program") to subject the proposed Market Rules and System Security Code provisions to a final review by independent consultants. Most of the world's leading firms in electricity industry reform and market design participated in the program. The objective was to obtain

an independent review of the market design as set out in the draft Code and to receive proposed refinements to the market design (e.g. Inter-Regional Trader, short term forward market and Reserve Trader) and to develop recommendations on operational details of some of the market mechanisms. The Market Rules in the Code were subsequently revised, to incorporate many of the consultants' recommendations.

› *"Rigorous checks and balances. Get others to look from different perspectives, legal, consultants etc to ensure it is developed as robustly as possible."*

Getting jurisdictional agreement to the market governance arrangements took a long time

In 1995/1996, the NGMC developed the institutional and governance arrangements for the market; including the establishment of NEMMCO (National Electricity Market Management Company) as the market and system operator and NECA as the National Electricity Code Administrator as companies under the *Corporations Act* with an independent chair and participating jurisdictions as members.

› *"Several government officials were not familiar with Corporations Law and the concept of a Members Agreement and Articles of Association for NEMMCO and NECA. There was a strong initial reluctance to relinquish control to the Boards of these new companies. It took over a year to get all jurisdictions on board to establish NEMMCO and NECA."*

NECA's major roles were to manage the Code change process and monitor Code compliance and seek enforcement of Code breaches through a National Electricity Tribunal.

NEMMCO's major roles were to operate the physical dispatch process across the NEM, register Code participants, and perform pool settlements and co-ordinate and plan for power system security.

Establishing these companies in effect took some of the control of the electricity businesses away from the State Governments. However, establishing independence for the national market institutions was important to create an environment to attract private sector investment.

Getting agreement to the National Electricity Law (NEL) was even harder

In order to operate the NEM, it was necessary to harmonise laws and regulations governing electricity supply in participating jurisdictions. Because the Commonwealth had no constitutional authority over electricity, it was necessary to get an agreement from the jurisdictions to these harmonised instruments.

> *"The NEM required a credible regulatory regime that would provide legitimacy for private sector investment, by giving consumers and Governments confidence that their interests would be protected. That legitimacy would also give confidence to investors about the security of their investment and returns."*

COAG endorsed a cooperative legislative scheme that allowed one jurisdiction, South Australia, to be the lead legislator for a National Electricity Law (NEL).

Each participating jurisdiction signed on to a Legislation Agreement, where each participating jurisdiction agreed to adopt legislation identical to that of the lead legislature (i.e. South Australia) and not to change or repeal the cooperative legislation without unanimous consent.

> *"A lot of trouble from a governance point of view to get this locked in. States weren't allowed to unilaterally change the rules. It was unique and bespoke. It was ideas / compromises that were worked through to create the NEL."*

The NEL requires all Network Service Providers, anyone operating a wholesale electricity market, all purchasers of electricity from NEMMCO and all generators, to register with NEMMCO in accordance with the National Electricity Code (now the National Electricity Rules).

> *"Getting agreement to the NEL was a major achievement, as it was only the second time cooperative legislation had been agreed to and passed by the jurisdictions."*

A staged transition to the NEM in 1998 avoided a big bang approach

There was a staged transition to the NEM from the initial trial markets in Victoria and NSW in 1991/92 through to a live market in Victoria in 1993 (VicPool III), the NSW State Market in 1996 and the joining of the Victorian and NSW Markets under NEM1 in 1997. South Australia participated as a separate trader. Queensland joined the NEM and implemented a wholesale market in 1999, which operated as a separate regional pool until interconnection with NSW in 2001. Tasmania joined the NEM in 2005.

› *"A triumph of this process was that detailed development of markets could be done at the state level and successfully transferred to the national level. A national process needs to have practiced trialling on the ground, at the state level."*

Taking the lessons learnt from each stage, particularly when combining the separate markets that were operating in Victoria and NSW, to get the final market ensured there was clarity around what worked. It also meant there was a significant pool of people who had been operating the smaller markets and therefore they were already aware of the technical and commercial implications of competing in the market. This reduced the risks for the market as a whole but also, importantly, for each of the businesses.

› *"One of the reasons this worked. The jurisdictional trials and regional markets enabled experience in how to operate in the market with a safety net. You could try different ways of running a market as we did initially with different market designs in VicPool III and ELEX (NSW internal market 1991/92), NSW State Electricity Market in 1996, NEM1. When it came time to do it for real, not just half a dozen who put it together understood it, but there were 100's in the businesses who knew how it was supposed to work, what their role was and how to pick up things that fell through the cracks. It's the people in the business who made it work."*

2.6.7 Open and adequate consultation across all stakeholder groups

The NGMC consulted widely in determining the model for the NEM and as they developed the Code.

› *"The thing that characterised all of this was the degree of consultation and opportunity to have an impact on the outcome. The effort that went into a genuine conversation was important. There was serious consultation. We didn't always get what we wanted but neither did anyone else. So overall, it probably delivered a good outcome."*

The NGMC utilised a seminar/submission process as a consultative tool to develop a number of key issues in its early years (1991 to 1994). In addition, a general mailing list was used to circulate material or notify of its availability. This list grew to include some 3000 individuals and organisations who had expressed an interest in the reform process. As the NGMC structure moved to the "Development" phase (post 1994), the use of this general mailing list was largely overtaken by the establishment of the Reference Group and the interactive process that it entailed. Public seminars continued to be used from time to time to develop the Code.

The NGMC Chairman and the GM Projects, Neville Henderson, made presentations on the reform process at numerous industry conferences and had frequent meetings with electricity industry, business, federal, state and local government representatives, environment and other groups to discuss issues related to the competitive reform.

One of the key aspects to all of this consultation was the two-way communication that resulted. Feedback and ideas were genuinely taken on by the NGMC and incorporated into the final outcome. It was accepted that the market was complex and no one person could design it in isolation.

› *"On everything you must engage people. Impossible to know it all. You need to test against reality. Not just electricity but everything. Very complex thing, no one had done anything like this before. Needed to get experts to bear on issues. Wouldn't have been successful without taking the time and having adequate consultation."*

The consultation also resulted in a significant improvement in the general knowledge of how the industry functioned and the impact of the reforms across a wide stakeholder group. This was important as it increased the number of advocates and it reduced the perception of risk amongst those in decision making roles.

2.6.8 On-going and staged engagement with regulatory bodies like the ACCC

Before the NEM could commence, the network access regime in the Code would require ACCC approval under Part III of the *Trade Practices Act, 1974* while the market rules would require authorisation under Part IV.

› *"It was good the ACCC was actively involved on the Code working groups. This allowed a clear understanding of what was meant with every word, and how the Market was meant to operate. This was a very complex process at the time. ACCC involvement allowed competition law requirements to be factored in at the design and drafting stages of the Code. This proved extremely beneficial in the long run in ensuring the authorisations of the Victorian, NSW and combined markets and the final National Electricity Code."*

To assist in these roles, the ACCC was an "active" observer on most of the NGMC's working groups.

In addition, the ACCC issued interim authorisations for the Victorian and NSW wholesale electricity markets as well as the initial combined market. This included approval for the third party access regimes in each state.

This involvement provided both the jurisdictions and the ACCC with important experience prior to the submission of the Code. ACCC approval was required for the establishment of the market so engaging them early meant they understood the significance of the issues surrounding the market design and the expected impact on the businesses that were to join it.

The Code went through applications and reviews by the ACCC from the approval in mid 1997 for the access regime and authorisation for the market rules to December 1999 where some additional market mechanisms were authorised.

2.7 Limitations of the electricity reform process

Participants were asked to comment on any limitations or negative aspects of the electricity reform process during the period 1991 to 1998. The range of feedback is given below:

Role of electricity industry –

"Initially, senior utility people shouldn't have been on the NGMC. They had agendas they were pushing and probably delayed process a few years. The Victorian reform process killed that. On the other hand senior public servants have a high turnover which can be seen in NGMC membership records. The problem was a high turnover of these guys. These aren't a solution either. When trying to design a process to work: clear policy direction and constraints should be documented with clear timeframes. Form a group of people who know what they're doing to get on with the work."

"The reform process relied on resources from state electricity bodies, this had its limitations. Feds understood, and John [Landels] understood, that the NEM wouldn't happen without buy in from all those organisations (state bodies). Political intervention wasn't enough. Needed their market and technical input / understanding to make sure it was designed right. It could have scuttled at any point unless there was a process to ensure everyone understood all the issues. Process took 3-4 times as long as anyone thought as we just kept peeling back the layers finding more and more issues to resolve."

Difficulties in managing reform across the states –

"Where they could, the states persisted in being parochial. They all reserved the right to have their own structure, market opening timetables, regulatory regime and network standards. There were very few things other than dispatch that they conceded at the national level."

"Timetables, political agendas, cabinet decision made it hard to manage across the states. Had to agree with the states what were their priorities and get them to focus on this as a priority to be done in an orderly, timely way."

A disjointed reform process –

"Got a result but would have been better with a clear objective from Federal Government and clear engagement to achieve the objectives from the beginning. The process was being developed as it went along which resulted in it being disjointed."

"Would have been better to have formed a National Grid Corporation and let them lead the reform process instead of NGMC – no support from States for Keating proposal made in 1992."

Uncompetitive industry structures –

"Other than Victoria, privatisation in other states led to uncompetitive industry structures. Ownership matters, but the reason for privatising should be for competition and efficiency, not for maximum sale proceeds. It follows that governments need to be very careful when privatising to avoid sacrificing competition benefits for sales proceeds. Anyone can sell a monopoly at a high price as monopolies are a licence to print money."

Delays in NEMMCO's Market IT systems with unrealistic deadlines –

"Following the decision to establish NEMMCO, the interaction with industry became even more important. Reasonable interaction between NEMMCO and the generators on establishing the NEM could have been improved. NEMMCO over-promised and under-delivered, particularly with respect to timelines. There was a lot of pressure on NEMMCO to deliver the IT systems in certain timeframes. NEMMCO lost credibility in the early stages as whatever date they put up failed. When you have a lot of interaction with business, combined with the political pressure, NEMMCO were forced to promise things that were impossible to achieve in terms of deadlines."

Wind up of the NGMC in February 1997 –

"Winding up the NGMC was a huge mistake which subsequent events proved to be the case. It created a policy vacuum for 2-3 years where nothing moved except the development of the Frequency Control Ancillary Services Market in 2001 which NEMMCO led."

Was it a success? –

In assessing the limitations, some participants commented that the overall process was still appropriate given the challenges of convincing the jurisdictions to establish and join the NEM. Four key comments were:

"Overall it was a process fit for the time. It wouldn't have happened without some of the key forums that were put in place at the time, they weren't always perfect but they served the purpose overall. It was a success as a model to move forward with."

"The NGMC worked really well. Bringing the working groups together with the jurisdictions, this brought everyone along on the process. This provided participants' full ownership of the process and end result. It was very complex to do this. There were a lot of issues and problems that had to be resolved in those working groups. Eventually, the team process took over, the groups would see a problem then massive effort would go into fixing it. In some instances the working groups were working so perfectly some members were called back to their jurisdictions to bring them in to line with a view to pushing their jurisdiction issues rather than taking a pure market approach."

"Might not be happy with precise outcome but can't complain about the process. Design of market has stood test of time. Basic structures are still there."

"The initial focus was to put into place structural separation of generation and transmission with a competitive wholesale market across the states that would provide the foundation for retail competition and other reforms. There may be some unfinished reforms like retail price deregulation but the wholesale market underpins all other reforms."

3
Evolution of the NEM post 1998 period

There have been three major developments in the evolution of the NEM in the post 1998 period. The first was the gradual introduction of full retail competition in electricity in the participating NEM jurisdictions; the second was the major change in the NEM governance arrangements in 2004/05 and the third has been the major changes in the structure of the electricity industry.

The diagram provides a summary of these major changes with snap shots of 1991, 1998 and 2013.

‘98

COAG and ACCC

Independent jurisdictional economic regulators – electricity networks and retail regulation

Industry structure – separate corporation for generation, transmission, distribution/retail (removed from local government)

National Electricity Law and National Electricity Code for wholesale electricity market

National Electricity Market Management Company (NEMMCO)

National Electricity Code Administrator (NECA)

Privatised industry in Victoria

NEM commences across NSW, VIC, SA, and ACT and replaces IOA

Planned network connection to Queensland

Retail competition only for large customers

‘13

Standing Council on Energy and Resources (SCER)

Australian Energy Regulator – electricity networks and non-price retail regulation (in most states)

National Electricity Law and National Electricity Retail Rules in place of Code

National Energy Retail Rules (in most states)

Australian Energy Market Operator (AEMO) – electricity and gas market operator

Australian Energy Market Commission (AEMC) – to determine electricity and gas rules and provide market development advice to SCER

Vertical integration and market concentration of generation and retail as “gentailers”

Privatised generation except in QLD and Tasmania (NSW underway) with privatised networks in SA and VIC, and privatised retail except in Tasmania

NEM operates across NSW, VIC, SA, ACT, QLD, and Tasmania – across transmission interconnectors

Full retail competition in all jurisdictions except Tasmania

3.1 Introduction of full retail competition in electricity

Full retail competition was an important step as it created competitive pressure in the wholesale electricity market and provided customers with the power of choice in electricity supplier.

Full retail competition (FRC) was gradually introduced across the NEM, with Victoria and NSW the first to go to full competition in 2002. The other states followed and Tasmania intends to introduce FRC in January 2014.

The introduction of FRC was a complex exercise led by NEMMCO who worked with market participants to develop the market procedures and IT systems to support retail competition.

The unfinished agenda for FRC is the full de-regulation of retail prices and the introduction of the National Energy Customer Framework across all NEM jurisdictions.

In 2013 only Victoria and South Australia have implemented full de-regulation of retail prices. Recently Queensland indicated they may remove electricity price regulation in south-east Queensland by July 2015 along with the introduction of price monitoring. NSW is still considering a recommendation by the Australian Energy Market Commission to remove retail price regulation.

In 2010, the National Energy Retail Law (NERL) was passed by South Australian Parliament. The NERL established a single national set of laws, regulations and rules which regulate the sale and supply of electricity and gas by retailers and distributors to end-use customers. The National Energy Retail Rules (NERR) have been adopted in Tasmania, ACT, South Australia, and NSW. Decisions by Queensland and Victoria are pending.

3.2 Change in NEM governance arrangements

Following the establishment of NECA and NEMMCO, governments withdrew from the policy space with respect to the NEM. However by 2001 there was general dissatisfaction with the original governance arrangements for the NEM, particularly in relation to NECA progressing policy matters. At that time COAG commissioned an independent review of the strategic direction for stationary energy market reform in Australia. The final report of the review (Parer Report) published in early 2003, recommended significant changes to the NEM institutions.

Prior to that in 2001, COAG established a new Ministerial Council on Energy (MCE) to provide a forum for national leadership on energy issues. The MCE included federal, State and Territory energy ministers. The MCE was responsible for providing policy leadership for the stationary energy sector.

The MCE agreed to a series of far reaching reforms of the energy market. At its December 2003 meeting, the MCE recommended to COAG that NECA be abolished and two new statutory commissions be established:

- an Australian Energy Market Commission (AEMC) replaced NECA as the Rule maker and provides market development advice to SCER; and
- an Australian Energy Regulator (AER) to be responsible for economic regulation and Rule compliance at national level.

In 2004 COAG approved the *Australian Energy Market Agreement* which set out the new national governance, regulatory and legislative framework of the Australian Energy Market (and the NEM).

In 2005 a new National Electricity Law (NEL) commenced to replace the old NEL and the new National Electricity Rules replaced the old Code to reflect the status of the Rules as a set of statutory rules, though the new Rules were in much the same form as the old Code.

Some important changes were:

- The original list of Market objectives in the Code were replaced by a single national electricity objective in the NEL. The new NEL objective is an economic concept and is intended to be interpreted as "acting in the long term interests of consumers". If the National Electricity Market is efficient in an economic sense the long term economic interests of consumers in respect of price, quality, reliability, safety and security of electricity services will be maximised.
- The new NEL enables any person to initiate a Rule change proposal, including industry participants, end users, the Ministerial Council on Energy.
- The AEMC is not empowered to initiate any change to the Rules other than where the proposed change seeks to correct a minor error or is non-material. Instead, its role is to manage the Rule change process and to consult and decide on Rule changes that are proposed by others, including the Ministerial Council on Energy, the Reliability Panel, industry participants and electricity users.
- In so far as its market development function is concerned, the Australian Energy Market Commission must conduct such reviews into any matter related to the national electricity market or the Rules as directed by the Ministerial Council on Energy (now SCER: see below). This strict policy control on market development was introduced because of the importance of attracting finance to the Australian energy sector at competitive rates. In the view of COAG, this required a policy environment that investors understand and that is relatively stable, with transparent and well understood processes for any policy changes.

In 2009, the Australian Energy Market Operator (AEMO) was established by COAG to manage the NEM and gas markets from 1 July 2009. AEMO carries out the electricity functions previously undertaken by the National Electricity Market Management Company (NEMMCO) with respect to the NEM and the planning responsibilities of the Electricity Supply Industry Planning Council (ESIPC, South Australia). Additionally, AEMO assumed the retail and wholesale gas market responsibilities of the Victorian Energy Networks Corporation (VENCorp), Retail Energy Market Company (REMCO), Gas Market Company (GMC) and Gas Retail Market Operator (GRMO).

In 2011, COAG went one step further and merged the MCE with the Ministerial Council on Minerals and Petroleum Resources (MCMPR) into one body called the Standing Committee on Energy and Resources (SCER).

3.3 Change in industry structure and ownership

While governments structurally separated the energy supply industry in the 1990s, generation and retail were in separate corporations. Since then retailers and generators have tended to vertically integrate to form 'gentailer' structures, as a way of managing the risk of price volatility in wholesale energy markets. Some key examples are:

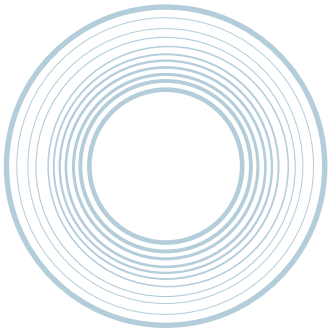
- Three retailers – AGL Energy, Origin Energy and EnergyAustralia – jointly supply 76 per cent of retail electricity customers and 85 per cent of gas customers in eastern Australia. The entities increased their market share in generation from zero percent in 1998 to 35 per cent in 2012.
- Many new entrant retailers since 1998 are vertically integrated with entities that were previously standalone generators – for example, International Power (trading as Simply Energy in retail markets), Infratil (Lumo Energy) and Alinta. Government owned generators are also vertically integrating. The generator Snowy Hydro owns Red Energy, which operates in the New South Wales, Victorian and South Australian retail markets. The Tasmanian Government owned Hydro Tasmania has a retail arm (Momentum Energy) that trades in the NEM outside of Tasmania.[2]

Separate transmission companies still operate in each state. There has been major restructuring of electricity distribution in New South Wales and Queensland. In NSW six electricity distributors are now three operating subsidiaries under the holding company Network NSW. In regional Queensland, six electricity distributors were merged to establish Ergon Energy in 1999. Tasmania has plans to merge their electricity transmission company, Transend, and electricity distributor, Aurora Energy into one company by July 2014.

Generation has been privatised in all states excluding Queensland and Tasmania (NSW is a work in progress). Electricity retail is also privatised except in Tasmania. Electricity transmission and distribution have been privatised only in Victoria and South Australia.

2 Australian Energy Market Regulator, *State of the Energy Market 2012*, page 19.

4
Key lessons for the future



This case study presents a summary of the key lessons from the NEM reform process. Based on interviews with some of the key participants, these lessons can be listed as following.

1. **The material problems were defined and clear reform objectives were set**
    - Government policy was driven by policy debates, about what was best for Australia's future.
    - In embarking on the reform of the electricity sector, clear objectives for change were set and the change approach was transparent.
    - The Industry Commission (now the Productivity Commission) was used to establish an independent assessment of the real and material problems and potential policies to address them, thereby providing clear reform objectives.
    - The electricity reform benefits were large enough to withstand changing state priorities or resistance from existing rent holders (and seekers).
    - The economic and policy implications, commercial and financial impacts, and technical and operational impacts were brought into alignment. This alignment was maintained throughout the process and has underpinned the NEM's durability.

2. Reform took high-level political drive; provision of time, energy, and according to many reform participants, financial incentives

   - Ministers involved in the reform were required to make a significant commitment of personal time in order to make things happen and keep the process on a consistent path. They were able to sell it effectively because they took the time to understand upfront the pros and cons, the risks and the consequences of what they were doing.
   - In the energy sector, the National Competition Payments had three benefits: first, the State Governments had an incentive to change as they wanted the payments; second, there was a political cost if some payments were seen to be withheld; and third, they could use the payments as an argument to undertake reform in the face of opposition. Looking to future reform, there are risks that the incentive becomes payment maximisation, rather than policy optimisation; and the relationship between the Commonwealth and the states changes from a partnership to a quasi contract. Incentive payments are not a substitute for mutual commitment to policy outcomes.

3. Strategies were developed to enhance confidence in the reforms

   - Confidence in the proposed reforms was developed by specifying market designs and rules in detail and then taking the time to run trial simulations and model the reforms with the involvement of the key industry and government representatives to iron out design flaws. This also drove further engagement by stakeholders.
   - Electricity market reforms were implemented at the state level before moving to a full national electricity market. The learning from these state experiences was invaluable and boosted confidence in the national electricity market.

4. Strong and appropriate support structures were established with key stakeholder participation

   - Reform across the Commonwealth and the States required significant collaboration and cooperation. Establishment of appropriate governance structures across federal, jurisdictional and industry levels was essential to ensure the reform process had appropriate co-ordination of policy, technical design and implementation.

- Reform programs are often complex involving a wide range of stakeholders. Full-time resources were allocated to manage the program, and access to the appropriate subject matter specialists was included in resource budgets.
- The Commonwealth Government recognised that jurisdictions and industry had skills/knowledge that the Federal Government did not have. Electricity reform was a collaborative process.
- While each state was not at the same point along the journey, they each agreed to drive the reform within their jurisdiction, to be signed up financially and politically, and to learn from each other throughout the process. It was also important to ensure each jurisdiction had a key role to play, either owning sub-committees or in the national governance framework. The more connected to the process each jurisdiction was, the more they understood the complexities and became advocates for the overall agenda.
- It was important to give credibility to the process. This was enhanced by having an independent, highly regarded chair. The people who were involved understood the commercial realities of the businesses and the impacts of the reform on them.
- Linked to the governance structures were the people chosen for each working group. They were the right people, with the appropriate skills, knowledge and influence. Keeping the working groups to a critical mass, with all the relevant parties represented, minimised the need for multiple briefings and bartering outside the formal reform process. The people chosen were able to consider everything from the bigger picture rather than bringing their own agendas to the table.

5. **The pace of the reform allowed for effective consultation across all stakeholders**

- It was important to ensure the time allowed for reform was manageable and realistic for all involved.

  "The moral is clear. It was not enough to set strong goals and to have a clear vision. The reform road was long and required constant attention."

- The reform was managed so that the key things were done early, such as setting agreed principles and conceptual design for the market mechanism. This resulted in an agreed roadmap for all to follow throughout the process, which in turn enabled the relevant government and industry bodies to justify allocating budget and time to

the reforms. Ensuring there were incremental implementation steps and delivery of incremental benefits helped keep stakeholders engaged on the longer journey.

- Identifying the key stakeholders and having open and ongoing dialogue helped to build trust and engagement. The stakeholders were identified at all levels. It was also recognised that no one person knew all the aspects of the major reform so it was important to work with all the participants to identify issues early and adjust the reform as required.

6. **Getting the industry structures right was key for effective competition**

   - The process highlighted that competitive markets only work well with a competitive industry structure.

   - When restructuring the incumbent electricity monopolies there were two key elements, one vertical, and the other horizontal. At the vertical level, there was a separation of potentially competitive segments (e.g. generation and retail) from the natural monopolies segments (electricity transmission and distribution and system operations). At the horizontal level, it was important to break up the competitive segments to create sufficient competition. For example, in the State of Victoria the old electricity generation monopoly was broken up into many separate operating units despite considerable opposition at the time. The subsequent reform experience has seen the development of a diverse and competitive electricity generation and retail sector.

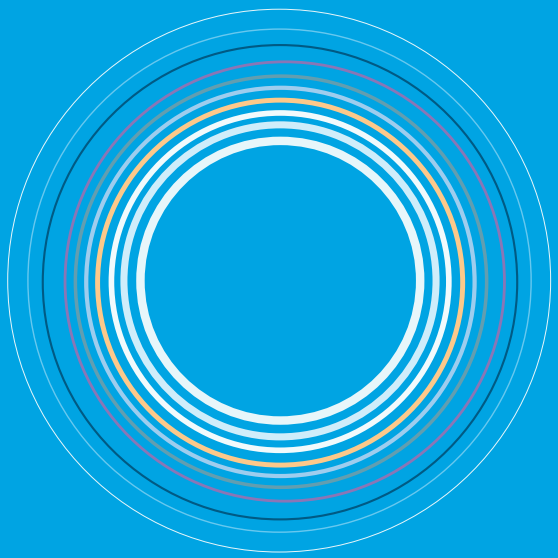
   - It also demonstrated there is an explicit trade-off between the benefits of a competitive industry structure and maximising sales proceeds from privatisation. The gains for the economy of a competitive industry structure need to take precedence over the fiscal impacts of privatisation. To do otherwise poses a risk to the benefits of the reform being sustained.

Acronym Glossary

ACCC	Australian Competition and Consumer Commission
ACT	Australian Capital Territory
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
BCA	Business Council of Australia
COAG	Council of Australian Governments
Code	National Electricity Code
ESPIC	Electricity Supply Planning Council
ETSA	Electricity Trust of South Australia
FRC	full retail contestability
GBE	Government business enterprise
GDP	Gross Domestic Product
GMC	Gas Market Company
GRMO	Gas Retail Market Operator
ICRC	Independent Competition and Regulatory Commission
IPART	Independent Pricing and Regulatory Tribunal
MW	megawatt of electricity
NCC	National Competition Council
NCP	National Competition Policy
NECA	National Electricity Code Administrator
NEL	National Electricity Law
NEM	National Electricity Market
NEMMCO	National Electricity Market Management Company
NERL	National Energy Retail Law
NERR	National Energy Retail Rules
NGMC	National Grid Management Council
NGP	National Grid Protocol NSW – New South Wales
OTTER	Office of the Tasmanian Economic Regulator
QCA	Queensland Competition Authority
QLD	Queensland
REMCO	Retail Energy Market Company
SA	South Australia
SCER	Standing Council on Energy and Resources
SECV	State Electricity Commission of Victoria
VENCorp	Victorian Energy Networks Corporation
VIC	Victoria

NATIONAL ELECTRICITY MARKET

A case study in successful microeconomic reform



This report has been prepared by KPMG at the request of Australian Energy Market Commission in our capacity as advisors in accordance with the terms of our engagement contract.

The information presented in this report is based on publicly available information and information provided by Australian Energy Market Commission's stakeholders through the consultation process. The views expressed in this report reflect those of stakeholders consulted during the workshops and are not necessarily the view of KPMG or Australian Energy Market Commission. KPMG has relied upon the accuracy and completeness of this information, and has not independently verified it, except to the extent specified in this report.

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