

Energy Market Review



Issues Paper

March 2002

Council of Australian Governments

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Contents

1	Introduction	1
1.1	Background to the Energy Market Review	1
1.2	Review process and consultation	2
2	Realising the full benefits of energy market reform, including an examination of the regulatory arrangements	5
2.1	The Australian energy market reform context	5
2.2	Achievements and challenges	5
2.3	Wholesale markets	6
2.4	Networks	9
2.5	Retail markets	10
2.6	Regulation	11
3	Energy market reform – potential benefits for regional areas and small business	13
3.1	Regional Australia	13
3.2	Small business	14
4	Options within the energy market to reduce greenhouse gas emissions	17
4.1	Australia’s greenhouse response	17
4.2	Stationary energy greenhouse gas emissions	17
4.3	Energy market reform	18
4.4	Energy market based options to reduce greenhouse gas emissions	18
5	Increasing the penetration of natural gas	21
5.1	Potential growth sectors	21
5.2	Price of natural gas	21
5.3	Upstream competition	22
5.4	Expanding the network reach	22
6	Identifying strategic directions for further energy market reform	23
6.1	A world perspective on energy market reform	23
6.2	The issues for Australia	24
7	Glossary	27





I. Introduction

I.1 Background to the Energy Market Review

I.1.1 COAG national energy policy

Energy is a shared responsibility in Australia among the Commonwealth, State and Territory governments. The Commonwealth has a national leadership role to ensure overall prosperity, and that Australia's international obligations are met. States and Territories have particular responsibilities within their jurisdictions, including in relation to provision of energy services to the communities they serve.

The Council of Australian Governments (COAG), at its 8 June 2001 meeting, considered a range of energy policy matters, including a national energy policy framework, establishment of the Ministerial Council on Energy (MCE), and identification of high priority National Electricity Market (NEM) issues for referral to the NEM Ministers' Forum and other parties. In addition, COAG commissioned an independent strategic review of medium to longer-term energy market directions.

COAG agreed to the following national energy policy objectives:

- encouraging efficient provision of reliable, competitively-priced energy services to Australians, underpinning wealth and job creation and improved quality of life, taking into account the needs of regional, rural and remote areas;
- encouraging responsible development of Australia's energy resources, technology and expertise, their efficient use by industries and households and their exploitation in export markets; and
- mitigating local and global environmental impacts, notably greenhouse impacts, of energy production, transformation, supply and use.

Consistent with these objectives, COAG also agreed the following (paraphrased) principles to guide government energy policy development:

- recognise the importance of competitive and sustainable energy markets;
- continuously improve Australia's national energy markets;
- enhance the security and reliability of energy supply;
- stimulate sustained energy efficiency improvements;
- encourage the development and application of less carbon-intensive energy sources and technologies;
- recognise and enhance Australia's competitiveness in world energy markets;
- provide transparency and clarity in government decision making to achieve confidence in current and future investment decisions;
- consider the social and economic impacts on regional and remote areas; and
- facilitate effective inter-jurisdictional cooperation and productive international collaboration on energy matters.

I.1.2 Terms of reference

COAG agreed that the independent Energy Market Review be a forward-looking, strategic study to facilitate decision-making by governments, focussing on those areas likely to generate the most significant benefits.

Without limiting the conduct or scope of the review, priority issues for consideration are:

1. Identifying any impediments to the full realisation of the benefits of energy market reform;
2. Identifying strategic directions for further energy market reform;

3. Examining regulatory approaches that effectively balance incentives for new supply investment, demand responses and benefits to consumers;
4. Assessing the potential for regions and small business to benefit from energy market development;
5. Assessing the relative efficiency and cost effectiveness of options within the energy market to reduce greenhouse gas emissions from the electricity and gas sectors, including the feasibility of a phased introduction of a national system of greenhouse emission reduction benchmarks; and
6. Identifying means of encouraging the wider penetration of natural gas including increased upstream gas competition, value adding processes for natural gas and potential other uses such as distributed generation, because it is an abundant, domestically available and clean energy resource.

1.1.3 Membership of the Panel

A four-member panel of experts has been appointed to conduct the Review.

The Panel is chaired by the Hon Warwick Parer, a former Senator, Minister for Resources and senior executive in the energy minerals sector.

The other members are:

- Mr David Agostini, a former engineer and senior executive in the oil and gas industry;
- Mr Paul Breslin, a consultant with extensive energy market development and senior public service experience at both Commonwealth and State levels, and
- Mr Rod Sims, a consultant providing advice on commercial strategy and organisation issues.

1.2 Review process and consultation

1.2.1 Timeframe for the review

The Review is to be an open and consultative process. The views of stakeholders are being actively sought and the following process is being followed to afford stakeholders appropriate opportunities to input to the Panel's considerations.

Following release of this Issues Paper, the key subsequent stages in the conduct of the review and their expected timings are:

Written submissions close	19 April 2002
Personal presentations to Panel to amplify submissions (various locations)	May/June 2002
Release Draft Report and invite written submissions	November/December 2002
Final report to the MCE	February 2003

1.2.2 About this issues paper

This Issues Paper is designed to provide a broad framework to guide stakeholders in making submissions. It identifies some examples of issues which are potential matters for consideration, and are within the scope of the review. Due to the close relationships between the first and third terms of reference, this Issues Paper deals with them together in Part 2. The second term of reference is dealt with at Part 5. This has been done as the future strategic directions for energy market reform in Australia need to be considered in the light of the various considerations of the other, more specific terms of reference.

Stakeholders are invited to provide comments, including identifying any strategic issues they believe fit within the framework but may not be identified in this Issues Paper. Respondents should not feel obliged to comment on every aspect of the Issues Paper. However, it should be recognised that the Review is focussed on domestic stationary energy markets. Stakeholders may also provide input to the Review outside the exercise of commenting on this Issues Paper. The Secretariat is able to receive written material at any stage of the Review process, and will provide any additional information to the Panel as it is received.

Stakeholders submitting comments should note that the Review outcomes:

- must be forward looking, taking account of past experience but not limited to this;
- must provide strategic directions; and
- must seek to integrate issues from other relevant energy market related reviews, and, in particular, to develop strategies that are focussed on energy market development.

1.2.3 How to make a submission

Anyone can make a submission to the Review and all submissions will be acknowledged upon receipt. A submission can be anything from a note outlining views on one matter to a substantial document covering a wide range of issues. Where possible, respondents should provide material which supports their submission. This may take the form of data, statistical or other analysis, or consultants reports.

Submissions should be received at the Secretariat by the close of business on 19 April 2002. Wherever possible, submissions will be published on the Review web site. To facilitate this, submissions should be provided in electronic format (in Microsoft Word or similar) and e-mailed to the address below. In addition, one original signed document should also be mailed to the postal address below. Where submissions exceed 10 pages in length, an additional four hard copies should be provided with the original signed document.

Submissions that contain commercially sensitive or confidential material should have this material clearly marked as 'confidential'. If possible, material of this nature should be provided as an attachment to the main submission document, to enable the body of the submission to be published. Confidential material will not be published without the author's consent.

1.2.4 Secretariat contact details

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2. Realising the full benefits of energy market reform, including an examination of the regulatory arrangements

2.1 The Australian energy market reform context

During the 1990s, Australian governments agreed to develop competitive energy markets, to achieve more efficient, market based arrangements for the production, trade and consumption of energy.

Specific objectives included:

- restructuring government-owned utilities;
- removing barriers to inter-state and intra-state trade of energy;
- establishing a transparent, wholesale spot market for electricity to enable competition among generators and retailers in the eastern states;
- establishing open access to electricity networks and third-party access to natural gas networks, and economic regulation of transmission and distribution networks to ensure efficient and transparent pricing of network services;
- enabling customer choice down to the smallest retail customer; and
- achieving competitive neutrality in relation to fuel sources, between incumbents and new entrants and between government-owned and privately owned businesses.

Once fully implemented, these reforms were expected to deliver considerable economy-wide efficiency benefits, principally resulting from more cost effective energy production and distribution, and from improved capital utilisation. In 1995, the Industry Commission (IC) estimated efficiency benefits from the full implementation of the proposed reforms at around \$5.8 billion per annum.

2.2 Achievements and challenges

To date, competition reform in the electricity sector has delivered structural reform of publicly owned utilities, creation of generation and retail markets in the eastern states, a competitive wholesale spot market for electricity, a separate financial contract market, open access and economic regulation of network services. Similarly, competition reform in natural gas has delivered structural reform of publicly owned pipeline and retail businesses, third-party access to transmission and distribution services and established arrangements to encourage greater competition in the upstream sector.

Together these reforms have already delivered some considerable economic benefits. These include: economy-wide benefits from electricity reform estimated at around \$1.5 billion per annum by 2000, with the potential to rise to around \$2.4 billion per annum by 2010¹; improved productivity, particularly labour productivity and capital utilisation; internationally competitive electricity prices for some contestable customers; and significant new generation and network investment.

The reform process is far from complete. Electricity and gas markets have entered a period of transition towards a more fully integrated and competitive national energy market. Significant scope for further energy market reform remains. A number of critical issues are likely to affect the development of competitive energy markets and realisation of benefits from reform, including those identified in the sections below.

¹ Short C., Swan A., Graham B., & Mackey-Smith W., Electricity Reform: The Benefits and Cost to Australia, presented at Outlook 2001, March 2001.

2.3 Wholesale markets

2.3.1 Wholesale market arrangements

The establishment of a competitive wholesale spot market for electricity represents a fundamental element of the electricity reforms implemented to date. Key features of the NEM include:

- a process, whereby generators submit offers to the independent market and system operator (the National Electricity Market Management Company – NEMMCO) along with provision for demand side bidding
- dispatch and system balancing undertaken by NEMMCO on a five minute, real time basis, with settlement on the basis of 30 minute trading intervals;
- gross pooling, where generators with rated capacity of 30MW or greater must trade through the NEM;
- separation of physical and financial markets, providing flexibility to manage financial risks;
- creation of a separate ancillary services market; and
- creation of a single market, with wholesale spot prices determined on a regional basis.

Wholesale spot price volatility in the NEM has raised concerns about its relative competitiveness, particularly during periods of peak demand or extreme events. It has been argued that high wholesale spot prices during these periods may reflect structural flaws in the NEM architecture. An International Energy Agency (IEA) review of Australian energy policies conducted in 2001 claimed that gross pool structures have the potential to magnify generator market power, and suggested that a net pooling arrangement with bilateral contracts may provide a more effective means of addressing these concerns. The IEA report noted the recent decision by the United Kingdom to replace a similar structure with a net pooling regime to help address market power concerns.

One advantage of the NEM's gross pool regime, however, is the greater transparency of pool price information, which can support efficient price discovery, underpins efficient negotiation of bilateral financial contracts, and enables new entrants to make informed investment decisions. Recent evidence of new investment in response to high peak prices in SA may suggest that the NEM wholesale arrangements are operating reasonably effectively in this respect.

Other concerns have been raised about the effectiveness of pricing signals under the present regional market arrangements in the NEM. In particular, it has been suggested that current arrangements mute signals for efficiently timed and located new investment, and that consideration could be given to refining the present regional structure, with a view to possibly moving toward a nodal pricing structure in the future.

In natural gas, some have noted the potential for differences in wholesale market and transportation regimes between interconnected jurisdictions to hinder or distort the development of interstate trade in natural gas and more integrated market development.

Questions

To what extent do existing wholesale market arrangements create impediments to the emergence of competitive and sustainable wholesale energy markets?

What can be done to improve wholesale market structures to encourage the development of more mature energy markets?

2.3.2 Investment incentives

Competition reform has changed the paradigm for new investment in energy infrastructure. Investment in the electricity industry, for example, was centrally planned by each state's electricity commission, which built new generation and transmission capacity to meet its forecast load. There was little censure in over-investing; consumers' tariffs were simply set at a level to pay for the capital investment that the electricity commission had undertaken. There was considerable censure in under-investing, however, as load shedding was, and still is, seen as a significant failure at both the industry and political level. As a consequence, the levels of reserve in some states when they entered the national electricity market were very high and initial low NEM prices reflected this over-supply.

This point illuminates one of the clearest differences between the pre and post NEM electricity industry. All generation industry investment, good and bad, cannot now be simply bundled into the tariff. If a new project fails to justify itself in terms of a market return then the investors lose, not the consumers.

Some uncertainty remains over whether market signals will elicit appropriately sized, timed and efficiently located new energy investment, particularly during the transition toward a more mature energy market. Some concerns have been expressed about the combination of inherently volatile wholesale energy markets and the capital-intensive nature of energy investment, particularly in electricity, which may encourage more conservative investment decisions and have implications for energy markets ability to deliver reliable and affordable energy services on a timely and sustainable basis.

Of course, it might also be said that if the very rare occasions when prices are very high (at VoLL) are not enough to provide an incentive for investment, then the administered price ceiling is too low and should be removed. This might allow an economic signal to be transmitted much more clearly but it gives rise to

concerns about open ended (and at times very high) prices and the consequent high levels of capital-at-risk (which needs to earn a return) that may be required by many market participants.

Australian experience has been somewhat mixed to date. In electricity, there is evidence of new base load generation investment being brought on in some states but perhaps not in others in response to market signals within the NEM. Despite considerable new natural gas pipeline investment in recent years, industry is expressing concerns about the investment environment for future projects.

Investment responses could reflect a combination of factors including: uncertainty during the transition toward more mature energy markets; muting of signals under the existing regional market arrangements in electricity; inability to secure timely development approvals; incumbent strategies to maximise revenues as supply and demand conditions tighten; and other broader issues, including taxation and depreciation arrangements. Market structures and rules may also have an impact on investment responses, particularly for new investment in embedded electricity generation.

Questions

To what extent does Australia have efficiently operating wholesale energy markets that deliver reliable, affordable and sustainable outcomes?

What further action is required, if any, to deliver more effective signals for new investment in wholesale energy markets?

2.3.3 Reliability

In competitive energy markets, generation equipment used only on very rare occasions to maintain system reliability may struggle to show a commercial return, and reserve levels may fall. Concerns have been raised that the market may not be providing 'sufficient' (ie, similar to before) investment in reserve.

There are similar issues arising in the gas industry although the difference in the industry structures before and after recent reform is less stark. The provision of additional – mostly redundant – pipeline and processing capacity to provide for relatively rare failure events can be difficult to justify commercially. In the end, however, the gas industry reserve question is usually somewhat easier to solve than the electricity one. Gas can at least be stored in pipelines, as LNG in tanks and in underground storages. In many (but certainly not all) cases the industry economics provide an incentive for one or more of these solutions to be applied to the reliability problem.

In considering the electricity industry's changing reserve incentives it is important to know whether this represents a failure of the market (not providing the reserve levels many would like) or whether this is an efficient response. There may be much cheaper ways of enhancing system reliability including demand side responses and increased network capacity. Issues associated with enhancing network capacity and demand side participation are discussed further in this Issues Paper.

Australian experience with investment in reserve has been somewhat mixed to date. In electricity, there has been a considerable investment response to high peak prices in SA, but the response in Victoria is considered to be subdued by some. However, several successive hot summers appear to have been followed in 2002 by a milder one and reserve levels so far appear adequate.

It is possible that in time the NEM will provide an efficient mix of reserve generation plant, network capacity and demand side response such that reliability requirements are met at the least cost. Market structures and regulatory arrangements including price caps, network investment rules and the degree of contestability in retail markets, may have an impact on the nature and timing of reliability responses.

Questions

To what extent have wholesale markets delivered appropriate levels of supply reliability?

What could be done to strengthen the wholesale market's capacity to efficiently deliver reliable energy services? Is a regulatory solution required?

2.3.4 Competitive neutrality and ownership

Competitive neutrality is a fundamental tenet of energy market reform, enshrined in Clause 3 of the Competition Principles Agreement 1995 (CPA). The essential objective was to ensure that significant government-owned business activities do not enjoy any net competitive advantage as a consequence of being publicly owned. In order to address these requirements, government-owned utilities were corporatised and vertically and horizontally disaggregated. The CPA did not require jurisdictions to privatise these businesses and ownership remains a state government issue.

Concerns about concentration of ownership have been raised, particularly in relation to electricity generation and retail businesses in NSW, Queensland and WA, and natural gas production supplying South East Australian markets. Claims have also been made that the structure of the privatised South Australian electricity generation sector has the potential to enable systemic abuse of market power within the South Australian region under certain conditions.



These concerns have been linked with the potential for conflict of interest and risk of intervention where government bodies determine the rules and administer regulations affecting markets in which their own businesses operate. The risk of inappropriate control being exercised by governments could be magnified where they own both the generators and retailers operating within a particular regional market.

Recent experience from the United Kingdom and the United States suggests that concentration of ownership can create the preconditions for systemic abuse of market power, which has the potential to erode competitive drivers for the creation and transfer of benefits through the supply chain. Recent changes to electricity market trading arrangements in the United Kingdom, designed among other things to address abuse of generator market power, have reportedly met with limited success as they did not effectively address the underlying structural problems.

Questions

How important is diversification of ownership and control in the development of efficient and innovative energy markets?

Are current ownership and control arrangements preventing the full realisation of energy market reform benefits?

How should this be addressed?

2.3.5 Transitional arrangements

Transitional arrangements can include specific derogations from the various laws and codes that give effect to energy markets, and other arrangements, such as vesting contracts in electricity. They can have an important practical role of enabling governments and market participants to implement energy market reforms in a smooth and orderly manner, strengthening public acceptance and confidence in the reform process and outcomes. Transitional arrangements can also provide a mechanism for governments to recognise and manage pre-existing contractual arrangements.

However, there is potential for transitional arrangements to hinder or distort efficient energy market development. This is particularly the case where they are excessively long, or where they unduly shield market participants, or market activities, from provisions fundamental to the effective operation of competitive energy markets.

Concerns have been raised about the period and nature of some current derogations and the potential for governments to replace expiring transitional arrangements with less appropriate arrangements.

Examples cited include the period of derogations for certain gas pipelines and replacement regimes for vesting contracts in electricity.

Questions

To what extent are existing transitional arrangements influencing the timely development of competitive and sustainable energy markets?

How could transitional issues be more effectively managed?

2.3.6 Financial markets

Innovative and sophisticated financial markets are crucial to the development of energy markets as they enhance market participants' capacity to effectively manage the new commercial risks associated with these markets, particularly exposure to volatile wholesale electricity markets.

To date, an over-the-counter market has emerged for wholesale electricity trading in the NEM, while bilateral physical contracts remain the standard for natural gas trading. However, neither market is particularly transparent, liquid or deep. More sophisticated financial market arrangements, such as trading hubs or sustainable derivative product exchanges, are yet to emerge.

Concerns have been raised about the relatively slow pace of financial market development. Anecdotal reports have emerged recently suggesting that some retailers have been unable to secure sufficient competitively priced contract cover to manage their exposure to summer peaks in Victoria and SA, and that this has driven them to consider physical hedges through development of new peak generation.

Government ownership of both electricity generation and retail businesses appears to provide a natural physical hedging opportunity, alleviating the need to maintain substantial financial contract positions to manage risk exposure. This may restrict the volume of trading on financial markets and has the potential to hinder or distort the efficient and timely development of deep and liquid financial markets.

Questions

What barriers exist to the development of innovative and sophisticated financial markets?

What could be done to accelerate the development of these markets?

Has common ownership of contestable generation and retail businesses hindered or distorted the timely development of financial markets?

2.4 Networks

2.4.1 Network services and competitive markets

Originally, policy makers considered there was little scope for the delivery of competitive network services. Networks have typically been viewed as natural monopolies that should be regulated separately from contestable energy markets. However, the principal reform benefits from network services are derived from their interaction with contestable energy markets, through strengthening competition and capital productivity both within and across interconnected markets.

Alternative views have materialised recently that challenge the existing role of networks in competitive energy markets. Proponents argue that exposing network services to a degree of contestability or commercial incentives can deliver additional economic benefits, including more efficient network operation that is more responsive to the needs of contestable energy markets, and enhances efficient market outcomes.

In electricity, market network service providers (i.e. unregulated interconnectors) have emerged to take advantage of commercial opportunities to deliver contestable network services. However, concerns have been raised about the implications of including market network service providers within a largely regulated framework including: encouraging the development of less integrated regional markets; the 'crowding out' of market based investments by regulated interconnectors; the potential for abuse of market power; and distorting and delaying efficient development of the network.

Questions

What incentives exist, or could be developed, to improve the effectiveness of network services provided to competitive energy markets?

How should this be pursued?

Does the coexistence of market and regulated network services in the National Electricity Market promote efficient network investment and development?

2.4.2 Network pricing

Network pricing arrangements have stimulated considerable public debate since the market started, particularly in electricity. Issues have included the appropriate degree of cost reflectivity, identifying who should pay, and strengthening price signals for the efficient operation and augmentation of networks.

An extensive review of network pricing has been undertaken by the National Electricity Code

Administrator (NECA) and the Australian Competition and Consumer Commission (ACCC). This work has raised several potential approaches to improving the cost-reflectivity of network pricing and efficient operation of networks, including application of a more refined beneficiary/causer pays model through to a congestion management regime. Work is continuing to develop the beneficiary pays model, with some more technical modifications being implemented, including pass-through of transmission use of system savings resulting from the operation of embedded generators.

Proposals have received a mixed reception. Concerns have included: the practicality and complexity of proposed changes; implications for price stability and cost of network services, particularly during extreme events or peak periods when networks are likely to be physically constrained; and implications for exposure to risk.

A particular concern has been raised about the lack of appropriate financial instruments to manage these risks. Reference has been made to the need for more sophisticated settlement residue instruments incorporating firm financial transmission rights and deeper and more liquid financial markets as pre-requisites for the development of more effective competitive network services. However, some network operators suggest that it would be inappropriate to expose networks to such energy market-related price signals given their inability to effectively manage these risks under existing regulatory regimes that prescribe many facets of their business operations.

The Victorian Government has introduced a congestion management regime for natural gas to, among other things, create price incentives for more efficient operation of Victoria's gas network, particularly during periods of physical constraint.

Questions

Should network pricing arrangements be refined to encourage more efficient use and development of networks?

If so, how should this be done?

2.4.3 Network investment and planning

The National Competition Council (NCC) has expressed concern about the lack of new investment in regulated transmission networks since the market started in electricity. By contrast, several new unregulated interconnect projects have been progressed and developed during this period.

Weaknesses in the rules and approval processes applying to regulated interconnectors have been alleged including: the nature and application of the

regulatory test for new regulated interconnectors; potential for conflict of interest within the Inter-Regional Planning Committee (which assesses and advises NEMMCO on aspects of new proposals); unduly long administrative processes; and potential for competitors to game the process. Concerns have also been raised about the inability to access the information required to develop new network augmentation proposals. Some of the issues raised to date will be addressed through recent Code changes.

Concerns have also been raised by the pipeline industry over delays in obtaining approvals for new pipeline investments, particularly where they cross jurisdictional boundaries, and more generally over the alleged climate of uncertainty for investment in regulated pipelines. These issues are outlined in the regulation section below.

A recent report prepared for the NEMMCO has suggested that interconnector development in the NEM may benefit from a revised national network planning process, with planning undertaken on the basis of a single, integrated network, rather than on the basis of individual regional networks.

Questions

Are network planning processes an impediment to efficient network development?

If so, what should be done to address current deficiencies?

2.5 Retail markets

2.5.1 Full and effective customer choice

Full retail contestability (FRC) represents the final plank of the original COAG competition reform package and involves enabling small businesses and householders to choose their own retailer.

The NCC considers implementation of FRC an essential component of energy market reform, critical to ensuring the successful delivery of reform benefits through the supply chain to consumers. Efficient and dynamic competition between retailers will facilitate the development of effective customer choice.

In electricity, FRC was introduced in NSW and Victoria from January 2002, while SA is planning to introduce FRC from 2003 and WA from 2005. However, Queensland has recently announced it has indefinitely postponed introducing FRC for all residential consumers, citing concerns over the potential net public benefit. The ACT has referred finalising FRC to its Independent Competition and Regulatory Commission (ICRC) for advice on the likely public benefit.

In natural gas, NSW and the ACT have implemented contestability for all customers, while gas retailing is unregulated in the NT. Gas FRC is scheduled to be introduced in WA from July 2002, in SA from September 2002, in Victoria from October 2002 and in Queensland from January 2003.

Key issues associated with the development of market arrangements that promote sustainable competition between retailers and effective customer choice are likely to include:

- ensuring sufficient flexibility to accommodate the development of innovative and sustainable competition between retailers;
- minimising compliance costs and promoting development of vigorous and sustainable competition between retailers across jurisdictions, and between gas and electricity, through transparent market operation and appropriate levels of consistency between jurisdictions (eg. timetables for FRC introduction, information and operational requirements, etc.);
- consumer protection and education; and
- managing tariff rebalancing and impacts on vulnerable small consumers, particularly those located in regional and remote areas.

Questions

To what extent have contestable customers benefited from customer choice?

Are there any impediments to consumers exercising effective choice?

What broader energy market benefits may be denied if effective customer choice is not introduced for all energy consumers?

Who might be adversely affected and how should their interests be addressed?

2.5.2 Demand side participation

Innovative and efficient demand side participation has the potential to improve significantly the energy market's capacity to manage peak demand and extreme events. Other potential benefits may include: reduced average energy costs, particularly within the NEM; improved reliability; deferral of new investment; and moderating the potential for abuse of generator market power.

However, little demand side participation has emerged in energy markets to date. Various reasons have been advanced to explain this limited response, including:

- immaturity of energy-related financial markets in terms of access to innovative interruptible or cost-sharing products;

- impediments to an effective embedded generation response;
- relative inelasticity of end user demand to needle peak prices;
- lack of commercial incentives for users to make a demand side response, possibly reflecting the relatively small proportion of operating costs attributable to energy and production rigidities;
- lack of incentive for retailers, possibly reflecting the masking of revenue signals associated with small, profiled consumers and their inability to obtain a full commercial return on the positive externalities associated with demand side responses, including improving network reliability; and
- contract enforcement difficulties.

Recent inquiries including the Victorian Government's Security of Electricity Supply Taskforce and the South Australian Electricity Taskforce have recognised the potential for demand side participation and endorsed better use of demand side instruments to maintain the stability of the market and improve responsiveness to price volatility.

Some work has been undertaken, or is proceeding, to help identify and address impediments to the efficient development of demand side responses within the NEM. This includes work undertaken by NECA and work currently being progressed by VENCORP in Victoria and IPART in NSW. The NEM Ministers' Forum has also initiated a work program to develop a more comprehensive understanding of demand side participation in the NEM to identify potential impediments and determine priorities for further action.

Questions

Is effective demand side participation important for the development of efficient and sustainable energy markets?

What more, if anything, should be done at this stage to improve demand side participation in energy markets?

2.6 Regulation

Regulatory activities extend from economic regulation, such as approving access and tariff arrangements for natural monopoly infrastructure, through to licensing and approvals for safety, environmental and operational matters. A number of these issues have been considered as part of the Productivity Commission's (PC) recent inquiry into the National Access Regime. The PC delivered its final report to the Commonwealth Government on 3 October 2001, but it has yet to be released. Following its release, the Panel will consider the report in the context of this Review.

2.6.1 Economic regulation

Effective regulation is crucial in ensuring that monopoly service providers are prevented from exercising market power to extract excessive profits while providing a level of return that appropriately rewards good performance and encourages the rational development of energy infrastructure.

Given the high compliance costs regulation imposes, it is important that regulation is properly targeted. Services subject to effective competition should not be regulated. There has been debate over whether the 'coverage' criteria in the various regulatory regimes are appropriate.

On 4 May 2001, the Australian Competition Tribunal handed down its decision that the Eastern Gas Pipeline (EGP) should not be covered. It considered that the EGP will not have sufficient market power to hinder competition based on the commercial imperatives it faces, the countervailing power of other market participants, the existence of spare pipeline capacity and the competition it faces from the Moomba to Sydney pipeline (MSP) and the Interconnect pipeline (which joins the Victorian gas transmission system with the MSP).

This decision, when taken with the Tribunal's earlier decision on a Sydney Airports declaration application, has clarified that under Australian law, coverage is available only:

- in relation to the services of natural monopoly infrastructure; and
- where that infrastructure exerts market power in another (upstream or downstream) market so that access regulation will demonstrably promote competition.

Questions

Do the current 'coverage' criteria in the various regimes result in all services that should be regulated being caught and excluding those that shouldn't?

If not, how can the criteria be improved?

Is the current economic regulatory approach appropriate for developing a competitive energy market?

The current regulatory frameworks and the application of them by regulators have been criticised by some as prescriptive rate of return regulation. There have been calls for a greater role for commercial negotiation in regulated tariff setting – 'market based tariffs' – particularly with respect to 'greenfields' pipelines. Others argue that the current regimes do not prescribe rates of return, but rather cap prices or revenues and provide incentives for service providers to increase profits by reducing costs or increasing volumes beyond those forecast.

Opinions on the effectiveness of the current economic regulatory regimes and their application vary considerably from general support to outright criticism. Gas pipeline companies, for example, have been voicing concern that the rates of return underlying regulatory decisions are too low and are threatening proposed new pipeline investment.

There have been concerns voiced around the world that access regulation has had a short term consumer focus and has not provided sufficient incentives for further investment as demand grows.

Questions

To what extent are the current regulatory frameworks providing an appropriate balance between protecting the interests of consumers, providing appropriate returns to regulated businesses and incentives for new investment consistent with market objectives?

Is there scope for greater flexibility and innovation in regulatory approaches?

What opportunities exist to achieve the desired balanced outcome?

2.6.2 Governance and institutional arrangements

The key regulatory frameworks governing Australia's energy markets are the National Electricity Code, the National Third Party Access Code for Natural Gas Pipeline Systems and the Trade Practices Act 1974. Jurisdictions have additional legislative regimes that also impact on the operation of energy markets.

Economic regulation is applied by a variety of agencies at the Commonwealth and State/Territory levels. The ACCC, NECA, the NCC and individual regulators in every State and Territory have significant roles. There are at least ten different economic regulatory agencies with a role in the operation of Australian energy markets.

Some have argued that the current arrangements allow for 'forum shopping', whereby prospective service providers seek out the most favourable regulatory regime. Others have raised concerns that regulators can interpret the Codes differently, creating greater uncertainty and imposing additional risks and costs, particularly for companies operating in more than one jurisdiction. In this regard, the requirements of regulators for information in different formats and using different data handling systems is a persistent issue.

Some have suggested that these issues could be addressed through a single national regulator. However, others have suggested that such a body would not have the necessary understanding of local issues, and it is often argued that industry-specific regulators have a

greater risk of being 'captured' by industry participants at the expense of customers.

Concerns have also been raised regarding overlap in regulatory responsibilities, particularly in the electricity industry, causing unnecessary delays and costs.

Questions

What scope is there for rationalisation of the current regulatory arrangements?

What are the advantages and disadvantages of having a single national regulator?

2.6.3 Responsiveness of regimes to the market

Concerns have been raised at the time it takes for individual access arrangements to be approved by regulators. In some cases matters have taken in excess of two years. Similar concerns have been expressed at the length of time it takes for proposed code changes to work their way through the system.

Questions

Have regulatory decision-making processes been unnecessarily lengthy? If so, what were the causes of delay and how can these processes be made more timely?

Are the market frameworks sufficiently responsive to the concerns of participants? If not, how could they be made more responsive?

2.6.4 Licensing and approvals processes

Energy service providers are also subject to 'technical' regulation and complex approvals processes, including meeting a range of safety requirements, environmental and native title obligations, and minimum engineering standards in construction and operation of infrastructure. Operators must typically also obtain a retail licence before marketing in a new jurisdiction.

These can differ significantly from jurisdiction to jurisdiction. This has been an area of ongoing concern to industry due to the costs it can impose on entities operating or seeking to operate in more than one jurisdiction.

Questions

How significant a cost is imposed by the various licensing and approvals processes?

Are the costs of differences within or between jurisdictions in licensing and approvals processes significant?

How could licensing and approvals costs be reduced?

3. Energy market reform – potential benefits for regional areas and small business

3.1 Regional Australia

Regional Australia ranges from remote settlements to rural towns and regional cities – basically all locations outside of the major capital cities. Seven million people, 36 per cent of the population, live outside of capital cities. They work in agriculture, small business, the services sector and in regionally-based industries. In the last year, regional Australia contributed \$65 billion of the nation's export revenue – almost 70 per cent of the total.

Two major inquiries have been undertaken recently that have touched on the impacts of energy market reform on regional Australia:

- the PC was tasked in 1998 by the Commonwealth to conduct a public inquiry into the impact of Competition Policy Reforms on Rural and Regional Australia; and
- the Commonwealth House of Representatives Standing Committee on Primary Industries and Regional Services conducted an inquiry into infrastructure and the development of Australia's regional areas which reported in March 2000. The report was titled: Time Running Out: Shaping Regional Australia's Future.

3.1.1 Benefits achieved

Amongst other things, these reports found that large users of electricity in regional Australia had benefited from significant reductions in usage charges. It was expected that as access to the contestable market became available, direct price benefits for other businesses and households would also occur.

There have been recent press reports, however, of regional electricity users coming to the end of their previous contract period and facing significant increases in prices.

With respect to the impact of gas reform on regional Australia, it was found that while there had been price reductions in urban areas, the main benefit in regional areas had been the additional incentives to extend gas networks and the new business opportunities that are created as a result.

Questions

To what extent has regional Australia benefited from energy market reform?

Have benefits been universally enjoyed or have there been differences due to location or customer size?

To what extent do the benefits achieved appear durable?

3.1.2 Opportunities for improvement

A number of issues were also raised in the inquiry processes, alleging deficiencies in power supplies to regional locations. The key concerns raised were:

- lower service quality – lower energy prices are being offset by lower service quality;
- inadequate capacity – there wasn't the physical ability to deliver the quantities of power that a potential new project would demand;
- access to three phase power – some regional areas only have access to single phase power. This is a significant deterrent for development of new industrial projects, which typically require three phase power supplies;
- connection costs – the cost of connection can exceed \$30 000 a kilometre, which quickly becomes prohibitive as the distance from the nearest substation increases;
- unreliability – outages and power surges cause problems, particularly for primary producers who rely on power for irrigation or refrigerating produce.

Questions

What are the outstanding energy issues for regional Australia?

What options are available to address them in a manner that is consistent with a competitive energy market?

Are there impediments to people in remote areas making rational choices between network extension or alternative sources of electricity?

If so, what options can be pursued to address them?

3.1.3 Full retail contestability

FRC is scheduled to commence in most jurisdictions from 2002. This means that small commercial and household customers are now able or will soon be able to choose their gas or electricity supplier for the first time.

The Time Running Out report documented concerns from regional Australia that full retail contestability may not, for them, result in lower prices. This was primarily due to concerns that increases in transmission costs would exceed any reductions in generation costs.

Questions

What effects will the introduction of FRC most likely have in regional Australia?

If the price effects are negative, should regional customers be protected from facing full costs of energy supply?

If so, what options are available to achieve this that do not unduly distort market operation?

3.1.4 Promoting regional development

Clearly the provision of low-cost, reliable power to a region can promote regional development – attracting both the establishment of new businesses and the expansion of existing ones.

A new low-cost energy source can attract major new investments, with associated employment and spin-off benefits for a region. For example, the Townsville City Council estimated that the Carpentaria Gas Pipeline to Mt Isa, triggered \$4.5 billion worth of investment in Queensland's North West Minerals Province.

Access to energy is obviously only one component in attracting new business to a region. Access to markets for its products (which is likely to include cost-effective transport options) and the availability of raw materials are also critical to most businesses.

While electricity is generally regarded as an essential service, access to natural gas is still quite scarce in regional Australia.

The majority of gas reserves developed in Australia have been a long way from the large demand centres. This has typically led to long gas transmission pipelines from gas fields to capital cities. As a result, regional areas that happen to be adjacent to these transmission pipelines have a much greater likelihood of being able to economically access gas supplies. Cooma and Bombala in NSW and Berri in SA, for example, have benefited from gas supplies that became possible because of a major transmission pipeline passing close enough to make gas supply economic.

Questions

Have regions with access to gas experienced greater development than those without?

Are there aspects of the current market or regulatory arrangements that impede rational investment in new pipelines that could supply gas to regional Australia?

If so, what options are available to address them?

Are there alternatives to pipeline gas for regional Australia e.g. LNG and remote area power systems?

3.2 Small business

3.2.1 What is small business?

The Australian Bureau of Statistics defines small business as businesses employing fewer than 20 employees. This definition is expanded by the Australian Chamber of Commerce and Industry (ACCI) to include businesses in the manufacturing sector employing 100 or fewer staff.

Small businesses typically have the following management or organisational characteristics:

- they are independently owned and operated;
- they are closely controlled by owners/managers who also contribute most, if not all, of the operating capital; and
- the principal decision-making functions rest with the owners/managers.

According to the Council of Small Business Organisations Australia, small firms generate 40% of GNP, account for 55% of private sector employment, and employ between 5 and 7 employees.

In electricity terms, small business is generally regarded as using less than 100 MWh per annum and more often falls well below 40 MWh per annum.

Small businesses are involved in all sectors of the economy and are difficult to characterise in terms of their energy use. Some are more intensive users than others, while physical attributes (such as reliability and quality of supply) may be as important to some as price.

3.2.2 Small business and energy market reform to date

Energy market reform and development has the potential to affect small businesses in a variety of ways. To date, evidence indicates that electricity market reform has delivered real reductions in electricity prices for all sectors, including the price regulated (tariff) sectors.

An ACCI survey of businesses in the final quarter of 2001 resulted in energy costs being rated by small business as the 8th most important issue. Comparatively, it rated 12th for medium size enterprises and 9th for larger businesses. While petrol price increases were understood to be a large driver for this ranking, rising electricity prices were also identified as a key component.

There is anecdotal evidence that the staged introduction of FRC may have disadvantaged small business in some instances. Larger businesses with the capacity to negotiate lower rates for energy supply may have been able to use this ability to further their competitive advantage over smaller competitors who remained tied to franchise prices. There have been other suggestions that some businesses whose power consumption placed them on the borderline between being contestable and not, may have increased their usage in order to reach the contestable level and achieve a price reduction. This may have implications for demand side responses and energy efficiency issues.

Questions

What effects has the introduction of the competitive wholesale electricity market and network access/pricing had on small business?

What effect has the introduction of natural gas reforms, including pipeline access arrangements and transportation tariff setting mechanisms, had on small business?

What new opportunities have arisen to enable small business to share in the benefits of energy market development?

3.2.3 Future developments

Most small businesses are yet to experience choice of energy supplier. FRC is scheduled to be introduced from 2002.

The process of choice, however, can involve additional effort and cost that is currently not required, such as negotiating energy contracts with competing retailers. Many small business operators openly talk of their lack of time for engaging in activities that are not central to running their business.

There may be an opportunity here for energy brokers to provide a valuable service to small business as choice of energy suppliers becomes a possibility. There is also potential for aggregating supply needs as a way to reduce costs through bulk buying power. The Bread Research Institute Australia, for example, offers such a service to its members.

Rising wholesale electricity prices and the potential for smaller users (by volume) to face significantly greater electricity costs has been identified by some governments as issues that could warrant the maintenance of regulated tariffs for these low volume sectors, rather than providing choice of supplier and removal of regulated pricing.

As the services industry continues to grow rapidly, it is likely to become a more and more significant participant in the small business sector. Fluctuating supply can cause major headaches for businesses reliant on electronic technology, including computers, e-commerce and EFTPOS facilities. In this sector, reliability of service may be the key aspect of energy supply, outranking energy costs as the most significant business driver.

Questions

To what extent is the ability to choose energy supplier(s) important to achieving positive energy market outcomes for small business?

What are the opportunities for small businesses to take advantage of energy market development?

What measures and/or initiatives are needed to realise these opportunities?

What are the most important outcomes of energy market reform for small business — lower prices, greater reliability, increased flexibility, or more tailored services?



4. Options within the energy market to reduce greenhouse gas emissions

4.1 Australia's greenhouse response

The impetus for international action to examine policies and measures to reduce greenhouse gas emissions arose from contentions by some scientists that global warming was having an increasing environmental impact. In 1992, following the Rio Earth Summit, Australia ratified the United Nations Framework Convention on Climate Change (UNFCCC).

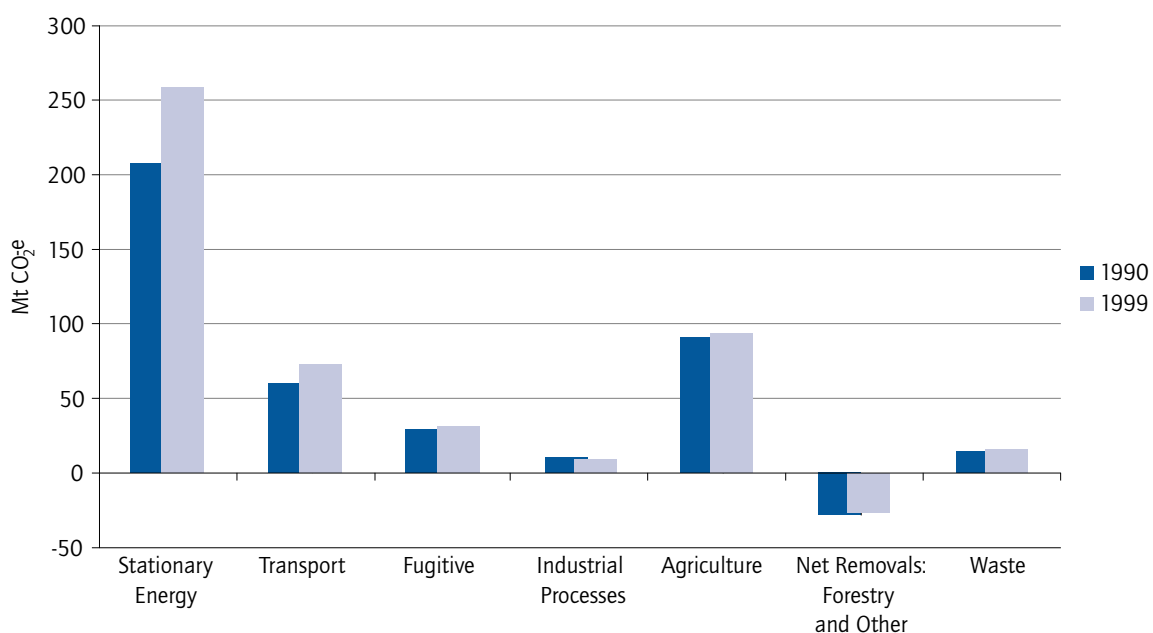
Following this commitment, the first national action plan to address greenhouse gas emissions, the National Greenhouse Response Strategy (NGRS), was implemented. The National Greenhouse Strategy (NGS), released in 1998, extended the program of action launched through the NGRS and took account of factors that had emerged since 1992. These included the Prime Minister's Statement *'Safeguarding the Future: Australia's Response to Climate Change'* and the negotiation of the Kyoto Protocol.

The NGS details both existing action and additional measures to abate greenhouse gas emissions in the transport, industrial processes, waste, community, land management and energy sectors. Specific measures to address emissions from energy use and supply include the Generator Efficiency Standards (GES) and the Mandatory Renewable Energy Target (MRET). The NGS also contains other measures to promote the delivery of greenhouse gas abatement from this sector.

4.2 Stationary energy greenhouse gas emissions

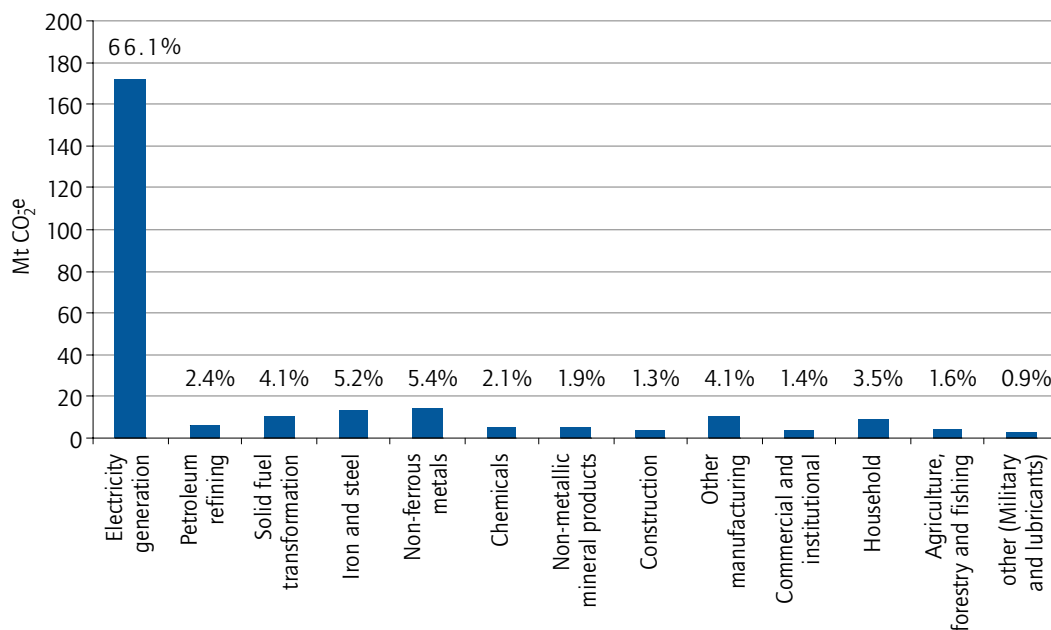
Greenhouse gas emissions from the stationary energy sector have grown strongly in comparison to other sectors since 1990 and the share of this attributable to electricity generation dominates, as displayed in the following graphs.

Figure 1: Net National CO₂-e Emissions by Sector, 1990 and 1999



Source: National Greenhouse Gas Inventory: Analysis of Trends and Indicators 1990-1999

Figure 2: Stationary Energy Emissions by Subsector 1999



Source: National Greenhouse Gas Inventory: Analysis of Trends and Indicators 1990-1999

Given that the recent ABARE projection of domestic energy use to 2020 suggests that there will be continued strong growth in energy demand, without a shift to less greenhouse gas intense sources of capacity, emissions are likely to continue to increase.

Australia's second national communication to the UNFCCC indicated that micro economic reform of the energy sector would achieve an estimated 14 Mt reduction in CO₂ emissions by 2010 and a 20 Mt reduction by 2020. However, as the preceding diagrams show, emissions growth has trended upwards.

4.3 Energy market reform

Energy market reform has been pursued to deliver economically efficient, market-based arrangements for the production, trade and consumption of energy. Social policy objectives and environmental impacts, including greenhouse gas emissions, have not been explicitly included in the market design. Despite this, the authors of the NGS included the acceleration of energy market reform as a greenhouse gas reduction measure, expecting that a competitive energy market would result in a lowering of the average greenhouse gas intensity of energy.

As Figure 2 indicates electricity generation is the largest single contributor to stationary energy emissions. Since the introduction of energy market arrangements in this sub-sector, the proportion of electricity sourced from coal-fired generation, particularly brown coal, has increased and although the installed capacity of gas-fired generation has increased, as a percentage of total capacity, electricity sourced from natural gas fired generators has not increased significantly. This outcome, reflected in the following graph, has had an impact on electricity generation emissions.

Question

Will a fully competitive energy market lead to a reduction in greenhouse gas emissions?

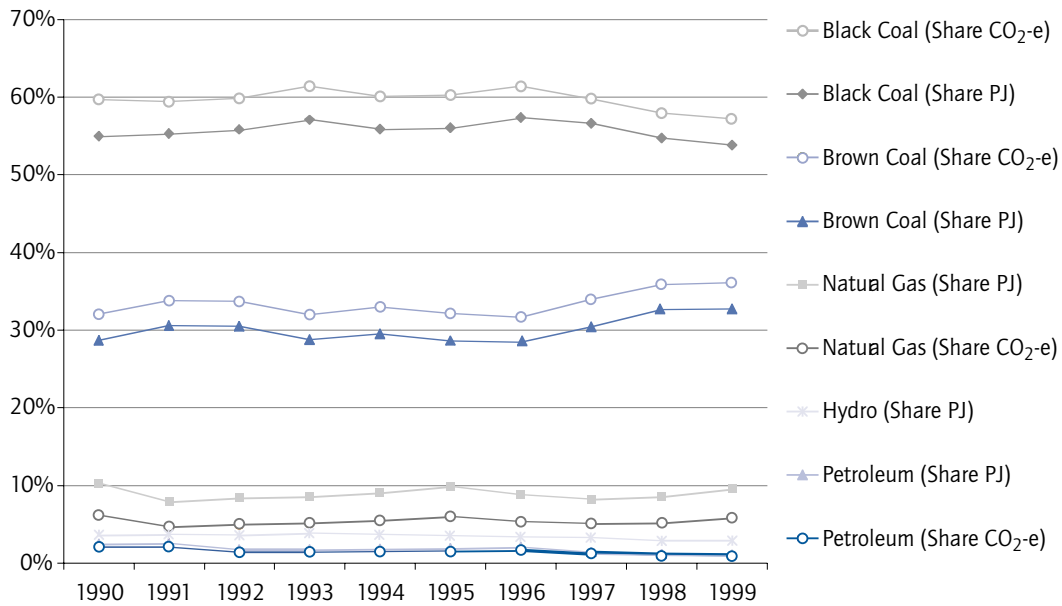
4.4 Energy market based options to reduce greenhouse gas emissions

At its 8 June 2001 meeting COAG agreed to an Energy Policy Framework that included the objective of mitigating local and global environmental impacts, notably greenhouse impacts of energy production, transformation, supply and end use.

Although measures such as the GES and MRET have been implemented to slow the rate of growth of greenhouse gas emissions in the stationary energy sector, a significant reduction in the level of emissions will likely require the introduction of further measures.

In pursuing energy market based options to reduce these emissions, a range of mechanisms is potentially available. These mechanisms include, for example, carbon emissions trading regimes, carbon taxes, and regulatory measures. Regulatory measures could include

Figure 3: Share of electricity generation and emissions by energy form 1990-1999



Source: National Greenhouse Gas Inventory: Analysis of Trends and Indicators 1990-1999

the amendment of the electricity and gas pipeline governing codes to reduce greenhouse gas emissions and the use of greenhouse gas emission benchmarks. The NSW Government has implemented greenhouse gas emission reduction benchmarks by incorporating requirements into NSW electricity retailer licence conditions.

Questions

What options are available to reduce greenhouse gas emissions within the energy market?

What are their likely costs and benefits?

Can greenhouse gas emission benchmarks be incorporated into the energy market arrangements in a compatible manner? What are the costs and benefits?



5. Increasing the penetration of natural gas

The wider penetration of natural gas involves both greater geographical (and therefore consumer) availability of natural gas as well as increased intensity of use of natural gas in existing markets, or through the development of new industries and markets.

Without separate and targeted measures, achieving a wider penetration of natural gas over the longer term will logically, at least, require:

- exploitation of potential growth sectors, both new and existing, including uptake of new technologies
- the price of gas to be competitive with alternative energy sources, particularly coal for electricity generation; and
- physical access to gas by new, previously unserved consumers.

5.1 Potential growth sectors

Key industry bodies contend that future growth in global consumption of gas is likely to be influenced by emerging and maturing trends in technologies such as distributed generation, the further development of international markets in liquefied natural gas, the use of gas for feedstock for specialised industrial processes, the expansion of gas to liquids production and the use of compressed natural gas (CNG) in transport applications. In addition to these developments gas fired power generation is increasingly being adopted for incremental power generation, based on highly efficient combined-cycle gas turbine technology. These issues all appear relevant to Australia.

Potential new opportunities appear to be afforded by the emerging hydrogen industry and new applications such as gas-powered air conditioning. Additionally, the level of natural gas usage in the residential sector is not high by comparison to other countries, although there is large variation across Australia, principally related to the need for heating.

Questions

Will current market arrangements ensure that new opportunities for natural gas uptake will be created and developed? If not, what measures are needed to ensure that this occurs?

What are the impediments to Australia exploiting new opportunities for natural gas, both at home and overseas?

To what extent does the residential sector offer an attractive opportunity for further natural gas penetration?

Are there lessons that could be learnt from those States with higher rates of uptake of natural gas that could be applied across other jurisdictions?

What role, if any, should governments play in encouraging greater penetration of gas?

5.2 Price of natural gas

Australia's price for natural gas in both the residential and industry sectors compares favourably with prices in OECD countries. Data for the last quarter of 2000 shows that for the major OECD countries Australia had the second cheapest natural gas household prices (second only to Canada) and the cheapest prices for industry.

Nonetheless, natural gas remained at a price disadvantage to black and brown coal for electricity generation purposes. Generally, where recent new generation investment using natural gas has occurred, it has been in areas without economic supplies of coal (SA) or where a fast start is required in terms of getting a project completed quickly and/or where generation is designed to meet peak electricity needs.

Clearly lower gas prices would encourage greater gas use, but they may also act as a disincentive to further gas exploration and development – which could affect the medium to long term gas price.

Question

What impediments exist to achieving prices that will encourage greater penetration of natural gas in Australia?

5.3 Upstream competition

For most energy intensive users, upstream production costs can represent a substantial proportion of the delivered cost of gas. To date, significant new transmission pipeline investments have facilitated the development of inter-basin competition between gas producers.

Questions about competition in the upstream sector are not new. In 1998 the Upstream Issues Working Group (UIWG) reported to COAG on issues in the upstream petroleum sector impacting on the growth, diversity and level of competition in downstream natural gas markets².

The UIWG identified three areas where governments might examine a more pro-competitive framework for the upstream gas industry and encourage greater intra-basin competition:

- the allocation and management of exploration and production acreage (acreage management)
- marketing arrangements used by gas producers, in particular the issue of joint or separate marketing by joint venture producers; and
- third party access to upstream processing facilities.

While jurisdictions have implemented a range of changes in the acreage management area, change in either the joint marketing arrangements or in terms of third party access to upstream processing facilities are not as obvious.

² http://www.industry.gov.au/resources/gas_reform/upstream/UIWGReportFinalDec1998pw.pdf

Questions

Since the UIWG report, has the level of competition in the upstream sector increased and what are the reasons for the changes?

To what extent are the issues that UIWG reported on resolved?

What further reforms, if any, relating to the upstream sector are needed to achieve appropriately competitive outcomes?

5.4 Expanding the network reach

The location of major fields and major consuming markets in Australia require very large investment in pipeline infrastructure. Significant new transmission pipeline developments have been undertaken in the past 10 years. In addition, it is estimated that about \$9 billion in gas pipeline infrastructure investment is presently under consideration across Australia.

Recently the pipeline industry has indicated its view that further new projects are in doubt due to concerns with the application of the economic regulatory regimes and uncertainty about the future depreciation treatment of pipelines for taxation purposes.

Questions

To what extent do the current market arrangements for natural gas produce the right long term and short term investment signals?

What evidence is there that the uncertainty around the current and proposed taxation arrangements is impeding natural gas infrastructure development?

What other impediments are there to expanding the natural gas network in Australia? What can be done to address these impediments?

What is the appropriate role for governments in the further development of the natural gas network?

6. Identifying strategic directions for further energy market reform

The form that Australia's energy market takes in the future will undoubtedly help shape the country's economy, prosperity and environment. Conversely, it seems equally true that the circumstances in which Australia finds itself will influence the development of the energy market.

6.1 A world perspective on energy market reform

Energy market reform is globally topical. It has been pursued throughout much of the developed world over the past decade with varying degrees of success. Experiences overseas are informative as Australia considers the shape its energy market should take into the future.

There is currently a vigorous debate internationally about the problems that have emerged from energy market reform and prospects for further reform. Certain issues touch on matters that may not have been sufficiently understood in the early years of energy market reform. Others appear to be a response to perceived failings of market reform.

6.1.1 Issues in maturing markets

Many of the issues raised internationally are also topical in Australia. It is now clear that energy market reform is far more complex than it previously appeared. Much reform activity to date has focused on introducing competition to the energy supply sector, to encourage efficient and cost-effective production and delivery of energy. This, coupled with economic regulation of the natural monopoly sectors, has brought customer benefit. However, some of these initial efficiency benefits may have been appropriated. The issues now facing the increasing number of maturing markets are more complex.

6.1.2 Security and reliability of supply

There is increased interest in the means by which competitive energy markets respond in a timely fashion to emerging needs for new infrastructure investment. The matter is increasingly topical as previous supply overhangs are resolved and there is evidence that energy markets may require relatively sustained periods of high prices and/or supply stress before new investments occur. Australia has relevant recent experiences in this regard, as described in Part 2.

6.1.3 The role of governments in energy market reform

Internationally, the role of governments is coming under closer scrutiny.

There appears to be wide community expectation that governments have some continuing role to play in overseeing adequacy of supply, although the definition of this role, the mechanisms that governments should employ in performing it, and the implications for private sector investment are not well understood. Governments' responsibility for progressing environmental agendas in energy markets also appears widely accepted.

It has been further suggested that governments may also have a role in sponsoring or otherwise fostering innovative technologies that may have the potential to advance reform but which may not be progressed if left solely to the market.

6.1.4 Energy industry structure is changing rapidly

The model that was adopted in some energy markets, including Australia, under which vertically integrated utilities were split into separate generation/production, transportation/network and retailing businesses, is now under challenge. Aggressively competitive markets combined with the economies of scale and scope

appear to be leading to significant pressure for some form of vertical re-integration and/or broadening of utility businesses to include matters as diverse as other energy sources, telecommunications, financial services and household services. Internationally, merger, disposal and acquisition activity is accelerating. These trends are forcing re-evaluations of market structures.

6.1.5 Economic regulation

Regulation of monopoly businesses, typically networks, remains generally tight and relatively intrusive. As in Australia (see Part 2) it would appear that no form of economic regulation has emerged that all parties assess as satisfactory. Whether the right incentives are in place for regulated businesses to invest for future needs and to ensure their responsiveness to their customers, both upstream and downstream, is contentious.

6.1.6 Environmental objectives

The increasing importance of environmental implications, particularly in terms of greenhouse gas emissions, in the development of energy policy is apparent. However, the difficulties associated with incorporating environmental objectives, particularly relating to the growth of renewable electricity generation, into pre-existing market structures that focus on providing energy at the lowest cost are presenting governments with challenges in framing their measures.

6.1.7 The implications of technological change for energy reform

There is increasing interest in the role that technology may play in promoting and maximising the benefits of competitive energy markets.

In telecommunications markets, major breakthroughs, both in telecommunications technology and through the use of IT to develop new services, have facilitated the entry of new players into markets, ongoing competition and consistently falling prices to consumers. In energy markets, enhancement of existing technologies and the potential of new technologies, such as the possible use of fuel cells in electricity generation, offer promise. E-business may also, by reducing transaction costs, change retail business. Observers, however, see nothing of the scale of the telecommunications technological breakthroughs in prospect for electricity or gas that will lead to significantly downward spiralling prices and increases in new services and facilities.

Nonetheless, it appears important to ensure that market structures or government regulation does not work against technological innovation that can promote energy market reform. As noted earlier, some have also suggested that governments may have a role in 'kick-

starting' innovative technologies although governments' attempts at picking technological winners have not been encouraging to date.

6.2 The issues for Australia

6.2.1 ABARE's projections of Australia's future energy use patterns

Recent ABARE projections of domestic energy demand and use to 2020 suggest:

- continued strong growth in energy demand;
- declining intensity of energy use reflecting a range of end-use efficiency improvements;
- strong growth in the domestic production of natural gas;
- coal to remain the dominant fuel source for electricity generation.

6.2.2 Identifying strategic issues for further energy market development

Recent Australian debate and commentary has highlighted that many of the global issues noted above have special relevance for Australia. In addition, other issues in relation to Australia's present reform program that have been discussed under other Chapters of this Issues Paper are also important for the next phase of energy market development.

Identifying the new policy directions for the next stages of energy market reform will involve being informed by the problems of current arrangements but also looking further forward to arrangements that will maximise the benefits to the broader Australian community into the coming decades. In this regard, the energy policy framework and principles that COAG has agreed (see Part 1) provide the basis for developing the strategic directions.

Against this background, the Review will seek to identify those characteristics that a successful Australian energy market should display at some future time and seek to establish transition strategies to moving to such a market.

A basic task, in this context, is identifying the timeframe under consideration. Generally, the longer the timeframe, the less specific the directions can necessarily be. Contemplating directions for further reform leading to a view of Australia's energy market in 2020 seems the maximum that can be sensibly used. Some twenty years ahead represents double the period of energy market reform that has been experienced so far. It also coincides with the latest available ABARE projections (see below), but goes beyond the current horizons for issues such as the first greenhouse commitment period under the Kyoto Protocol.

In identifying the characteristics of a successful future energy market, some of the more major issues that will affect these considerations are set out below. This is not an exhaustive list. It is possible that other issues may emerge as priorities in the course of the Review.

6.2.3 Security and reliability of supply

The ABARE work indicates a continuing strong growth in energy demand. Australia will be an energy intensive economy for the foreseeable future. Drivers of this increasing demand include the growth in information technology use, on-going strong economic growth, and, as has been clearly demonstrated in the domestic sector, the growth in home air conditioning.

This continued strong growth in energy demand implies that energy supply investments, potentially of significant proportions, will be required during the next 10 to 20 years. Some stakeholders contend that initial investment decisions will be required in a shorter period if the likely demand increases are to be met in a timely and least cost manner.

Centrally planned energy networks have been shown to result in economically sub-optimal outcomes. An efficiently operating energy market will provide the appropriate price signals to support new investment decisions. However, for these signals to occur in an accurate and timely manner, the energy market must operate without distortion.

A range of challenges needs to be addressed if the energy market is to be enabled to provide these signals. Key among these challenges are to ensure that the market operates predictably, that any policy role of governments is understood and defined and that the sovereign risk faced by investors is both acceptable and manageable.

Consumers will also be expecting that energy supply and security is assured at an affordable price. Environmental impacts of new supply capability and the deployment of appropriate energy technologies will also increasingly impact on investment decisions.

The future Australian energy market will need to be sufficiently flexible and robust to meet all of these seemingly competing needs.

6.2.4 Market balance

Debate continues on the weak response to date from the demand side in Australia's energy markets. The supply side, by any reasonable assessment has dominated the market to date. As is noted in the discussion in Part 2, such domination has serious implications for energy market flexibility. In addition, it appears to present a significant threat to the sustained success of Australian energy markets.

Few, if any, successful and competitive markets exist over time if the relative bargaining power of the demand and supply sides does not approach equilibrium. Imbalance may result in unexpected or unacceptable market volatility that may, over time, prompt calls for government intervention. The future sustained success of Australia's energy market will, to some extent, likely be dependent on achieving greater involvement from the demand side.

6.2.5 Energy industry structure is changing rapidly

Australian energy businesses are, at present, undergoing significant change. Financial risk management in trading activities has emerged as a major issue. Some commentators have suggested that the responses of energy businesses might include:

- mergers and acquisitions to achieve economies of scale and scope with concomitant reduction in the number of utility companies operating in Australia;
- increasing sophistication at identifying, valuing and developing innovative energy services;
- growth in strategic corporate alliances and investments, including beyond the current utility sector into retailing of non-energy products; and
- new retailing forms, such as resellers and aggregators.

6.2.6 The status of networks within Australian markets remains problematic

As discussed elsewhere in this Issues Paper, achieving the right regulatory structures and processes for energy markets remains problematic.

Especially in the electricity sector, networks and their economic regulatory arrangements have profound impacts on the nature of the physical infrastructure and consequently the features that the markets, both wholesale and retail, display.

Under current arrangements, the right of access, regulated economic return treatment of transmission networks, in both gas and electricity, arguably may not place the full range of incentives on these operators to deliver the requisite services and associated quality to their customers. Australian networks also appear to face some challenges in creating value, growing, and innovating.

Clarifying the role that networks should play in the future in the overall supply chain is also important. In electricity at least, the interaction of regulated 'common carriers' with entrepreneurial network capacity and with the other competitive parts of the market remains problematic. Governments' original decisions on network access may not sit easily with the apparent trend towards entrepreneurial interconnectors noted under Part 2.



In addition, it is unclear whether all network activities at present regulated ought to be so indefinitely. Other approaches are available and in use elsewhere in the world. There appears to be value in considering whether there are viable alternatives to strict economic regulation that might both reduce the overall regulatory burden, improve responsiveness to customers, and result in greater market flexibility. In relation to investment decisions, it has been argued more efficient network investment decisions would occur where the market, rather than a regulator, determines the most effective opportunities for delivering energy services to consumers.

These matters go to the heart of current energy market design and structures.

6.2.7 The role of Australian governments in future energy market reform

Governments can play an important role in the development of competitive energy markets. Not only can they establish the market structures, regulatory arrangements and rules governing the nature and scope of some energy markets, as in other markets, but they may also have a role providing the strategic policy guidance and leadership required to address the challenges that can emerge.

Australia's governments may also be expected by their electorates to ensure that energy supply remains secure, affordable and reliable. Governments also have an appropriate role to intervene where instances of market or regulatory failure are occurring.

How governments in the future deliver on their responsibilities while maintaining the integrity of a competitive market is likely to be one of the keys to achieving competitive and sustainable energy markets.

Some criticism has been levelled at the way Australian governments have, to date, sought to manage the various competing interests and public policy tensions that have emerged during the transition period. It has been suggested by some that governments have provided insufficient direction and leadership during the crucial early stages of the transition, and that this has hindered the timely emergence of mature energy markets. Others point to policies they claim have been driven by short-term and narrow considerations, which have been pursued at the expense of efficient development of an integrated energy market, and have already distorted market outcomes and reduced potential benefits.

The influence of such perceptions even if they are overstated, can not be dismissed lightly. Such perceptions have the potential to undermine confidence in the

reform process and in energy markets more generally, creating uncertainty, instability and magnifying potential sovereign risk. Together these have the potential to discourage critical investment and possibly place the benefits achieved through reform to date in jeopardy.

A clearly articulated understanding of governments' ongoing role may be a prerequisite for sustainable energy market reform. This would not only clarify governments' strategic responsibilities, of the types discussed above and elsewhere in this Issues Paper, but also provide greater certainty on why, when and how governments might consider it necessary to intervene in energy markets.

As noted in Part 2, possible conflict of interest between governments' various roles, in particular the potential for conflict of interest because of governments' continuing ownership role, has been viewed by some as a serious impediment to achieving fully effective energy market reform. It cannot, however, be assumed that this issue will be easily resolved. This highlights the importance of developing new strategies and approaches for avoiding and/or managing any potential conflicts of interest that might emerge in the future.

A further strategic issue for governments is ensuring that government decision makers have the best possible understanding of the nature and operation of competitive markets. While a challenging task in times of rapid change, it appears essential if government interaction with such markets is to be soundly based.

Questions

What should be the characteristics of a successful energy market in, say, 2020? How will these differ from what Australia has now?

What range of benefits is such a market likely to deliver? How different are these from the benefits being delivered now?

What is the appropriate role for governments in future energy market arrangements? How is this different from current or past roles?

In particular, do governments have a role in relation to innovative technologies that may promote or maximise the benefits of competitive energy markets?

How might national, state/territory and local concerns be best accommodated in energy policy?

What are the key milestones that will demonstrate that Australia is proceeding appropriately to achieve a successful energy market in 2020?

7. Glossary

ABARE	Australian Bureau of Agricultural and Resource Economics
ACCC	Australian Competition and Consumer Commission
ACCI	Australian Chamber of Commerce and Industry
CNG	Compressed Natural Gas
COAG	Council of Australian Governments
CPA	Competition Principles Agreement
EFTPOS	Electronic Funds Transfer/Point of Sale
EGP	Eastern Gas Pipeline
FRC	Full Retail Contestability
GES	Generator Efficiency Standards
IC	Industry Commission
ICRC	Independent Competition and Regulatory Commission (ACT Regulatory body)
IEA	International Energy Agency
IPART	Independent Pricing and Regulatory Tribunal (NSW Regulatory body)
IT	Information Technology
MCE	Ministerial Council on Energy
MRET	Mandatory Renewable Energy Target
MSP	Moomba to Sydney Gas Pipeline
NAR	National Access Regime
NCC	National Competition Council
NECA	National Electricity Code Administrator Ltd
NEM	National Electricity Market
NEMMCO	National Electricity Market Management Company Ltd
NGPAC	Natural Gas Pipelines Advisory Committee
NGRS	National Greenhouse Response Strategy
NGS	National Greenhouse Strategy
OECD	Organisation for Economic Cooperation and Development
PC	Productivity Commission
UNFCCC	United Nations Framework Convention on Climate Change
UIWG	Upstream Issues Working Group (natural gas)
VENCorp	Victorian Energy Networks Corporation
VoLL	Value of Lost Load





