



Street: Level 6, 60 Marcus Clarke St
Postal: GPO Box 1301 Canberra ACT 2601
ABN 83 113 331 623

Tel: 02 6243 5120
Fax: 02 6243 5143
www.ngf.com.au

Professor Ross Garnaut AO
c/- Garnaut Climate Change Review Secretariat
Level 2, 1 Treasury Place
Melbourne 3002 VIC
Email: contactus@garnautreview.org.au

7 March 2008

Dear Professor Garnaut

The National Generators Forum (NGF) welcomes the opportunity to provide the following submission to the Garnaut Climate Change Review.

The attached submission complements my letter to you of 23 January 2008, by providing further information and details of the NGF's views with regard to climate change policy and the development of a national emissions trading scheme.

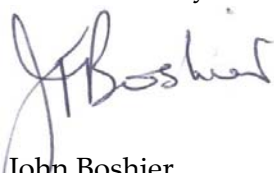
The NGF has built up significant knowledge of the potential impact of such a scheme. Like the National Emissions Trading Taskforce, the NGF believes investor certainty is a design objective for the scheme and with over \$40B of debt and equity funding, the NGF is well placed to give guidance on this topic.

To maintain investor certainty in the electricity industry, the NGF recommends that the Review should appraise and carefully consider its position on economic assistance to assets disproportionately affected by the introduction of emissions trading.

We look forward to contributing to this review and subsequent policy developments in establishing a national emissions trading scheme, and in designing complementary policy measures to meet future climate change challenges.

Please do not hesitate contact me on 02 6243 5120 should you wish to discuss the issues raised in this submission further.

Yours sincerely



John Boshier
Executive Director

NATIONAL GENERATORS FORUM

Submission to the Garnaut Climate Change Review

7 March 2008

1. Overview

The National Generators Forum (NGF) welcomes the opportunity to contribute to the Garnaut Climate Change Review.

Australia enjoys some of the world's lowest electricity prices. Competitively priced electricity is due largely to coal-based generation that represents over 80 per cent of national production. This means, however, that the electricity generation sector contributes approximately one third of Australia's greenhouse emissions. Energy demand is also increasing, particularly in the commercial and domestic sectors.

The NGF supports the development of a national climate change policy that recognises and underpins the long-term, capital-intensive investments that will be required to transition the Australian economy to a lower emissions path.

Central to this policy should be a comprehensive, and competitive national emissions trading scheme with long-term targets and trajectories delivered within a flexible market-based framework. The scheme should incorporate as many sectors as possible from the outset to ensure stability, and inspire investor confidence through certainty, depth and liquidity in the carbon permit trading market.

It is essential to address adjustment issues in the transition to a carbon-constrained economy. In particular, the electricity generation sector is likely to face unrecoverable asset value losses from the introduction of a carbon trading regime that are disproportionate to losses suffered elsewhere in the economy.

This outcome would likely undermine the ability and confidence of the generation sector to finance the significant new investment required in low and no emission generation technologies, putting at risk the environmental policy aims of an emission trading regime to stimulate a transition to low and no emissions technologies and approaches at least cost.

Recognising this issue, the National Emissions Trading Taskforce (NETT) and the Task Group on Emissions Trading (TGET) both supported a structural adjustment mechanism that would provide economic assistance to maintain asset values for disproportionately affected assets. The NGF advocates adopting this approach to ensure investor certainty in the electricity sector is maintained with the introduction of emissions trading.

To complement an emissions trading regime, the NGF also advocates measures that support low and no emission technology research and development. This would

increase the opportunities Australia has to develop world leading emission abatement technologies and approaches and to allow Australia to access new, least cost technologies as they emerge.

2. Background

About the National Generators Forum

The National Generators Forum (NGF) welcomes the opportunity to make a submission to the Garnaut Climate Change Review.

The NGF directly represents the 21 major power generators operating in Australia's National Electricity Market (NEM). Verve Energy and Griffin Energy in Western Australia are associate members.

The installed capacity of NGF members operating in the NEM approaches 45 000MW, which is more than 95 per cent of the total Australian market. These generation assets are valued at more than \$40 billion, with annual sales of over 192 000 GWh and an annual wholesale value of \$11.9 billion. The NGF is fuel neutral, and its membership encompasses coal, gas, diesel, wind, biomass and hydro electricity generators.

Submission Outline

This submission responds generally to issues associated with the Garnaut Climate Change Review, and in particular to design issues associated with a National emissions trading scheme.

Section 3 introduces climate change policy issues and the current and future role of the electricity sector in delivering reliable and competitively-priced electricity to serve the needs of the Australian community.

Section 4 discusses design objectives and features for an effective National Emission Trading Scheme, including addressing the disproportionate losses in asset value suffered by generators.

Section 5 discusses complementary measures to support the development of low and no emissions technologies and carbon sequestration options.

Section 6 provides some concluding comments.

3. Climate change policy and the electricity sector

Need for a long term climate change policy

Climate change is a long term challenge, requiring concerted activities over coming decades. A policy framework providing long term investment certainty and incentives for greenhouse gas abatement is crucial to meet the challenges of climate change. The centerpiece of an effective climate change policy is an emissions trading scheme, which if appropriately designed will provide investment certainty and an incentive for abatement.

Other complementary policies are required to address market failures that will not be solved through the introduction of emissions trading. In particular, public funding for Research, Development and Demonstration will be necessary to support these high risk 'public good' activities.

The role of the electricity sector and policies addressing climate change in the sector will be discussed further below.

Long term policy providing investment certainty and an incentive for abatement is needed to address climate change.

Australia's electricity industry

Electricity plays a pivotal role in the Australian economy with a direct contribution of around 1.3 percent of GDP, and as the primary energy source for industry, commerce and households.

Australia enjoys some of the world's lowest electricity prices. Competitively priced electricity is largely due to coal-based generation that represents over 80 per cent of national production.

The availability of competitively priced and reliable electricity is based on Australia's abundant fossil fuel and renewable energy resources. This energy has been delivered within a clear market structure that is characterised by low sovereign risk, and has been central to Australia's economic prosperity. Continuing this stable model within a carbon-constrained Australian economy will be central to our future prosperity.

The availability of reliable, low cost energy has underpinned the development of significant energy-intensive industries in Australia, which are highly exposed to international competitive markets.¹ Over 40 per cent of electricity produced is consumed in the manufacturing sector, including the economically important export sectors, and in particular sectors involved in minerals processing and in manufacturing, such as vehicles and fabricated components.

¹ International Energy Agency, *Energy Policies of IEA Countries: Australia 2005 Review*, pg. 116.

A key strength of the Australian economy, and in particular the electricity sector, has been stable political and regulatory structures with comparatively low sovereign risk. The move to a carbon-constrained economy must not undermine this strength.

Addressing climate change will require large investments in electricity

Electricity generation contributes approximately one third of Australia's total greenhouse gases. The move to a carbon-constrained economy will have a significant impact on the generation sector in the coming decades, which will have far reaching flow-on effects in the Australian economy as a whole.

In Australia electricity generation involves long-term, capital-intensive investment by both Government and private sector. Investment decisions made 30 to 40 years ago, before greenhouse issues were universally recognised, fundamentally influence the structure and operation of today's generation sector, and contribute to today's low-cost, reliable supply of electricity.

The transition from current high emissions generation technologies to low and no emission technologies will take decades. Large scale investments in low and no emission technologies, as well as upgrades to existing plant, are required to meet future energy demand and address the climate change challenge.

Between 2010 and 2050, the resource cost of meeting the Federal Government's long term target of 60 per cent of year 2000 emissions by 2050 would be approximately \$150 billion (undiscounted). This represents a near doubling of the estimated \$78 billion of investment that would be required without any constraint on carbon emissions.²

This funding will rely on accessing national and international debt and equity markets, and returns must be competitive to attract capital required. Investors will include national and international capital firms, but will also include the wider Australian community through direct shareholdings, and indirectly through government ownership of generation assets and superannuation investments. This investment will fundamentally rely on perceptions of the stability of that investment and its vulnerability to political and sovereign risk.

The required large scale generation investments will only be made in response to clear policy and market signals. Ongoing uncertainty over climate change policy and market approaches, and the possibility of future policy changes disrupting responses made in light of new market signals, will hamper investment, and potentially impose an additional investment risk, and consequently a cost on the community.

A clear, long-term climate change policy that complements international approaches is needed to support future energy sector investment, and to ensure that it is based

² Charles River Associates International, Analysis of Greenhouse Gas Policies for the Australian Electricity Sector: Report for the National Generators Forum, September 2006, pp. 49-50. Available at www.ngf.com.au.

on efficient market signals unencumbered by sovereign risk costs, and which include a clear price for emissions.

Such an approach must also be flexible enough to minimise the economic impact of the adjustment to new carbon-constraints in the Australian economy, while also meeting environmental emissions abatement objectives.

Significant generation sector investment is required to meet the climate change challenge. Long-term stable policy and regulatory structures including economic adjustment measures, will reduce the risks, and therefore costs, of this investment.

Global and national trends in electricity generation

According to the International Energy Agency and APEC, coal-based electricity generation will increase rapidly in many countries, and in particular in China and India. The USA is on the cusp of significant increases in base-load coal-fired power, and even the EU economies are considering coal-based generation on grounds of economics and energy security.

Although there is a trend to improved generation efficiency through the use of super critical and ultra-super critical cycles, commercially viable very low carbon intensity plants, using gasification and combined cycle technology with carbon capture and storage, are likely to be at least 15 to 20 years away.

In many countries, nuclear power provides cost-effective base-load electricity and the use of nuclear power is growing significantly globally. Nuclear power has the advantage of virtually zero greenhouse gas emissions, however nuclear power does not appear to be an acceptable option in Australia at present, meaning that other generation options will need to be considered.

Gas-based generation has been popular in countries where coal is expensive. Combined cycle gas-based generation produces less than half the greenhouse gas emissions of a similar size coal-based plant. However, natural gas and LNG prices have escalated rapidly in overseas economies in response to tight supplies, increasing production costs, and high demand. Supply security has also become an important issue.

Whilst Australia has large sources of natural gas, gas-fired base-load electricity has not been cost-effective in most jurisdictions in Australia. It is likely that a significant carbon price signal is needed for gas to be competitive with coal-based generation in Australia.

Large-scale hydro generation has provided base-load power in Tasmania for many years, and the Snowy and other smaller schemes are an important source of peaking power. Large-scale hydro in Australia is essentially resource constrained, unlike in some countries with abundant water resources, such as parts of Scandinavia, Canada, the USA, New Zealand, Brazil and China.

In the Australian context, most other renewables are significantly more expensive than coal or gas-based generation and large hydro, and require a very high carbon price signal or a regulated mandate to be viable. This position is unlikely to change significantly in the next 20 years unless there is significant technology development.

Also, any significant expansion of renewables, in particular intermittent generation types such as wind, creates electricity network issues that are yet to be resolved. Resolution of these issues is required to ensure security of supply is maintained.

Australia's reliance on low cost coal-based generation, and the high costs of alternatives, will mean the introduction of a carbon price signal will lead to higher electricity prices.

Relevant electricity sector policies

A number of current and recently announced energy sector policies have relevance to the development of a comprehensive climate change policy for Australia. The first, and most significant, is the number of state and territory greenhouse trading schemes and investment targets currently in operation.

Maintaining a number of regimes, which may have conflicting objectives with a national policy approach, will likely undermine the long term policy objectives of least cost carbon abatement. The status of efficiency-related policies such as the Generator Efficiency Scheme (GES) developed by the Australian Greenhouse Office (AGO) and the *Energy Efficiency Opportunities Act 2006* must also be resolved. The move to a national climate change policy must include transitioning this and state-based arrangements into a single national approach in a way that does not undermine the significant investments that have already taken place in response to these regimes. This may involve some grandfathering arrangements, to ensure that businesses are not unfairly penalised for investments made in response to state and territory legislative requirements that have been replaced by a national regime.

A second area of policy relevance is the Government commitment to substantially increase the Mandatory Renewable Energy Target to 45 000 GWh by 2020, increasing renewable generation to 20 per cent of expected electricity demand. This decision will mean an additional 35 500 GWh/year of renewable energy by 2020, approximately 60 per cent of all new energy supply requirements for this period.

This policy has clear implications for future investment in the energy supply and transmission sector, and for the cost of energy. It will also have significant implications for any carbon targets set for 2020, and therefore the price of carbon in this period.

Another potentially significant policy is the Council of Australian Governments decision on a national rollout of 'smart' meters for all customers where the benefits exceed the costs. This policy may facilitate more cost-reflective prices for domestic and small business energy consumers, with pricing signals used to increase awareness of energy use, efficiency, and greenhouse gas emissions. Such demand-

side responses are currently being researched and developed in a number of jurisdictions.

There has also been a considerable national focus on appliance and industrial energy efficiency, with the development of a significant reporting regime in recent years. This, alongside metering and pricing reforms, is aimed at development a significant electricity demand-side change, to work in concert with supply side measures such as the MRET scheme.

The final area of relevant policy is the current and recent commitments to low and no emission technology research and development, including research into clean coal technologies, solar generation and solar-thermal energy technologies, geothermal generation and carbon sequestration. Many of these policies focus on development of new approaches and technologies that are not yet commercialised, and complement the already significant private sector investments in these approaches. This type of support is essential to ensure that 'next generation' technologies are available as a new carbon-constrained economy emerges. This issue is discussed further in section 5 below on complementary policy measures.

A new national climate change policy will replace some current state-based arrangements, but will also operate alongside other industry development mechanisms and sectoral reforms. The impact of these policies on carbon prices and trading must be considered and addressed in the final approach adopted.

4. Design of a National Emissions Trading Scheme

Design principles

The NGF supports the introduction of a comprehensive and competitive national emissions trading scheme that is designed to allow the market to identify and adopt least cost emissions abatement opportunities. In designing the scheme, the NGF supports and recommends utilizing the design work undertaken in the two major governmental studies regarding a national emissions trading scheme, these being the work of the inter-jurisdictional National Emissions Trading Taskforce and the PM's Task Group on Emissions Trading.

These studies recognized the need to develop an emissions trading scheme with the objectives of³:

- environmental integrity
- investor certainty
- minimizing impacts on the economy
- flexibility, and
- equity.

The NGF supports these objectives. Given the NGF represents generation assets financed by over \$40B of debt and equity, the NGF is well placed to comment on the means of achieving investor certainty under a national emissions trading scheme. Shareholders and lenders to members of the NGF invest in long term assets (20 – 40 year). These assets will become difficult to finance without a structural adjustment mechanism that delivers investment certainty to existing assets.

Australia's National emissions trading scheme should be designed with the objectives of environmental integrity, investor certainty, minimizing impacts on the economy, flexibility and equity.

Design features

Building on the work of the NETT and the TGET, the NGF supports a national emissions trading scheme that includes:

- a cap and trade style structure
- clear and long term emissions caps that set the trajectory for emissions reductions across the Australian economy
- comprehensive coverage of the sources and sinks of greenhouse gases from the start of the scheme, with inclusion of non-covered sectors through offsets wherever possible

³ National Emissions Trading Taskforce, *Possible Design for a National Greenhouse Gas Emissions Trading Scheme*, August 2006.

- linkages with international emissions trading schemes that provide lowest cost abatement
- a publicly transparent structural transition mechanism to maintain the value of assets disproportionately affected by the introduction of a national emissions trading scheme, possibly delivered through a one off administrative allocation of permits equal to the value loss suffered by these assets
- publicly transparent administrative permit allocation sufficient to maintain the competitiveness of trade exposed emissions intensive industries with competitors not facing carbon price signals
- auctioning all permits not administratively allocated, with revenues used to support development and deployment of low emissions technologies and to support low income households facing price changes associated with a national emissions trading scheme
- clear and transparent legislation and regulation designed to provide long term policy stability on emissions trading, in the interests of developing a stable long-term emissions scheme that does not require frequent government intervention

Australia's national emissions trading scheme should be a cap and trade scheme with clear greenhouse gas emission targets, cover the bulk of the economy, provide linkages with the rest of the world and provide structural assistance to disproportionately affected assets, trade exposed industries and low income households.

The electricity sector will be disproportionately affected under national emissions trading scheme

The National Electricity Market is a competitive market in which generation is dispatched on the basis of price and availability through a competitive wholesale pool. Similar competitive arrangements also exist in the Western Australian electricity market.

Under the minimum cost dispatch model of the National Electricity Market, it will not be possible for most generators to pass on the incremental costs incurred as a result of introducing a national emissions trading scheme. For example, a coal fired power station may have a cost increase of, for example, \$28 per MWh from a \$20 carbon price owing to its carbon intensity. However, the marginal generator that sets the price in the NEM will have a lower carbon intensity that leads to a cost increase of, for example, \$10 per MWh. This marginal generator will have the ability to recover increase costs as it sets the clearing price, but the coal generators will not have this ability - in this example only recovering \$10 of its \$28 increase in costs.

Over 80% of Australia's electricity production is currently produced from coal. A large part of the generation sector faces a significant increase in costs without the ability to pass on these costs. In general, the sector will then have the two choices as

identified in the Interim Garnaut Report – accept a cost increase or a volume decrease. However, both of these decisions lead to a significant loss in asset value.

The shareholders of and lenders to the generation sector will be disproportionately affected by the introduction of a national emissions trading scheme.

The Australian electricity sector will be disproportionately affected by the introduction of an emissions trading scheme because the market structure will not allow effect carbon price pass through.

Effects of disproportionate losses in asset values from national emissions trading scheme

An unmitigated loss of asset value in Australia’s generation fleet will have direct economic costs for Australia. Investors and lenders will consider their past returns in determining the costs of capital for future investment. Write downs in asset value mean higher costs of capital for the sector, and potential delays in providing this capital. Delays in providing capital that is higher in cost than historic norms mean higher energy costs for the economy, and potentially perverse environmental outcomes as Australia finds it difficult to economically finance low emission generation technologies. Such an environment is not conducive to least cost abatement.

Delays in providing capital are likely to have a direct effect on the security of the electric power system. The reserve capacity of supply by generators over demand by consumers is presently around 15%. This is world’s best practice and is a direct result of government’s competition policy over the past decade.

However a result is that a contingency (such as a drought) which removes generating capacity from the system means volatile prices or disruptions to supply. This effect will be greatly magnified if the provision of fresh capital to generators is delayed.

Without a structural adjustment mechanism to maintain asset values, the cost of debt and equity will rise, increasing the cost of addressing climate change, delaying abatement activities, and being likely to cause disruption in the wholesale electricity market.

Role of a structural adjustment mechanism for disproportionately affected assets

Australia seeks to deliver least cost abatement solutions to meet our carbon dioxide emissions targets. The NGF, like NETT and TGET, recognizes that a national emissions trading scheme is the centrepiece of a system to meet any targets. NETT and TGET both acknowledged that a structural adjustment mechanism to maintain the asset value of disproportionately affected assets was a necessary component of a

national emissions trading scheme to maintain the investor certainty needed to drive long term environmental outcomes.

The NGF supports this position. Since the 1990s, all investment in generation – whether by acquisition or brown and green field development – has been made in response to artificial market mechanisms designed specifically at the direction of the Council of Australian Governments. A key objective of these market mechanisms is to deliver Australians least cost electricity generation. This goal has been achieved admirably by driving investment in coal-fired generation to supply demand for base-load energy. Under these government set conditions investment in other technologies to meet that demand are not economic.

The only impact of implementing a structural adjustment mechanism (through for example administrative permit allocation) is to reduce the economic impact on disproportionately impacted shareholders and debt holders, thereby reducing sovereign risk and minimizing the future costs of meeting the climate change investment challenge.

As noted by the National Emissions Trading Taskforce and the PM's Task Group on Emissions Trading, a structural adjustment mechanism that maintain asset values upon introduction of an emissions trading scheme will deliver investor certainty and minimise costs on the Australian economy.

5. Complementary policy measures

The NGF notes the work commissioned by the Garnaut Climate Change review on research, development and deployment of low emission technologies. The NGF supports the direction of this work.

The introduction of a comprehensive greenhouse gas emissions trading scheme, aimed at establishing credible long-term emission price paths, will provide the 'market pull' for the adoption of least-cost low emission technologies.

Australia will need a similarly efficient and effective 'technology push' strategy jointly funded by Government and the private sector to fund the innovations necessary to meet the climate change challenge. This will increase the opportunities Australia has to develop world-leading emission abatement technologies and approaches.

A carbon price is unlikely to support the degree of investment required in low and no emission technologies, as well as carbon sequestration opportunities, or be distributed to all those that may usefully contribute to developing low emission technologies. Montgomery and Smith argue that trade in emissions rights will never enable the recovery of the costs of research and development of these new technologies because of the competitive forces operating in the emissions market. Cost recovery would be limited to the forward costs of installing and operating the new technologies.⁴

This will mean that without Government assistance, investment in research and development, particular in areas where technologies and approaches are very immature, is likely to be below the socially optimum level.

The NGF therefore supports the continuation (and further provision) of funding support for low emission technology research and development. This funding must be broad-based and not attempt to pick 'technology winners', but instead allocate funding on an independent basis in accordance with merit.

Unlike the MRET, which is a more direct industry development mechanism, this approach would directly assist in the development of pre-commercial technologies that may take years or even decades to mature. This funding can be derived from the emissions trading permit auctions.

Government support for research, development and deployment of low and no emissions technologies, as well as carbon sequestration opportunities, would complement an emissions trading scheme and increase opportunities for Australia to develop world-leading approaches.

⁴ Montgomery, W. David, and Smith, Anne E, *Price Quantity and Technology Strategies for Climate Change Policy*, Charles Rivers Associations, October 11, 2005. Is this reference to Charles River correct?

5. Conclusions

Australia faces opportunities and risks in its development of an effective climate change policy. The NGF supports the development of a comprehensive national emissions trading scheme as providing the best opportunity for Australia to meet the climate change challenge at least cost.

Like the National Emissions Trading Taskforce and the Task Group on Emissions Trading, the NGF believes an emissions trading scheme should be designed with the objectives of environmental integrity, investor certainty, minimizing impacts on the economy, flexibility and equity.

To meet these objectives, the national emissions trading scheme should be a cap and trade scheme with clear greenhouse gas emission targets, cover the bulk of the economy, provide linkages with the rest of the world and provide structural assistance to both disproportionately affected assets and trade exposed industries. Structural assistance should be provided to disproportionately affected assets to maintain asset values and thereby ensure investor confidence and investment certainty.

The policy focus needs to be on achieving the environmental aims of emissions reduction by stimulating a transition to low and no emissions technologies and approaches at least cost. This will only be achieved in an investment environment that represents low sovereign and investment risk, and supports the development of new technologies and approaches.