CHAPTER 6

ELECTRICITY CONSUMPTION AND GREENHOUSE

Term of Reference (1) (c) the likely impact of the power line on overall levels of electricity consumption, with reference to Australia's obligations and commitment to reduce greenhouse gas emissions.

Introduction

6.1 The Australian Government is a signatory to the international Climate Change Convention which aims to stabilise greenhouse gas emissions at 1990 levels by the year 2000. Under the terms of the National Greenhouse Response Strategy, all Australian states and territories are to limit greenhouse gas emissions to 1988 levels by the year 2000, with a further reduction of 20% by 2005.

6.2 Although Australia's total contribution to global greenhouse gas emissions is small, emissions per capita are the third highest among advanced industrial countries. With the exceptions of Tasmania and the Northern Territory, more than 80% of electricity is generated in Australia by burning coal and electricity accounts for approximately half of Australia's greenhouse gas emissions**.**

6.3 Paradoxically, it is possible that Eastlink may, in different ways, result in both a reduction and an increase in power generation. Because of the very high component of coal-fired electricity generation, any change in electricity generation will have a significant impact of the level of greenhouse gas emissions.

6.4 A decrease in electricity generation may occur through more efficient demand management, as Queensland and NSW could share the responsibility for maintaining spinning reserve (reserve sharing). This may delay the need in Queensland for an increase in generation capacity. In addition, NSW may be able to use its excess capacity more efficiently. Any decrease in the requirement for spinning reserve is likely to result in a decrease in greenhouse gas emissions.

6.5 On the other hand, the Eastlink proposal does in no way contribute to increasing efficiency of electricity use at the consumer level (energy conservation). Instead of working towards increased savings in electricity consumption, Eastlink encourages a philosophy that increased demand will be automatically provided for through increased supply.

Power Authority Position

6.6 Although *Transgrid* claimed that it is not in a position to quantify the impact Eastlink will have on greenhouse gas emissions, it maintained that the proposal will offer opportunities for reducing emissions. These reasons were as follows:

- Interconnection and the associated electricity market that it *will* facilitate will provide greater scope for application of renewable energy sources and low greenhouse impact sources across eastern Australia. There will be greater scope for these potential sources to gain access to a wider market enabling them to more easily compete. ...
- Renewable energy sources in one state may be able to be more easily shown to have cost advantages against the construction of new coalfired power stations in another State.
- Dispatch of generation across a larger interconnected system provides a greater opportunity for priority dispatch of greenhouse friendly sources.
- A larger interconnected system allows consideration of a greater diversity of potential sources and access to, for example, gas fields in States that would otherwise be inaccessible.

6.7 In its own Greenhouse Response Strategy paper, the Queensland Government has recognised the importance of lowering greenhouse gas emissions and its first objective is to reduce them in the energy sector. A further objective is to increase the proportion of energy supplied by alternative energy technologies that have lower rates of emission than fossil fuels.

6.8 The Commonwealth Department of Primary Industries and Energy also claimed that there will be the opportunity for reduced greenhouse gas emissions through interconnection, although the statement is qualified with the proviso that the degree of saving 'is difficult to quantify' at this stage. The submission noted the UK experience where the introduction of a more competitive electricity market resulted in a shift away from coal powered electricity generation to gas, and the fact that ABARE has forecast an increase in the use of gas for electricity generation in Australia.

6.9 While giving evidence to the Committee, the First Assistant Secretary of the Department's Electricity and Gas Reform Task Force, Mr Michael Todd, reiterated: 'We assess that the greenhouse impact of Eastlink in the context of a competitive electricity market is one in which the emissions are lower than otherwise would have been the case, but we are not in a position at this stage to quantify the impact' .

6. 10 On behalf of the two State Governments involved in Eastlink, Mr Todd stated:

> ... New South Wales and Queensland have both recently announced significant initiatives towards improving energy efficiency and encouraging renewable greenhouse friendly technologies. Queensland has committed some $35 million to demand management and renewable energy technologies, In the case of New South Wales, the New South Wales government has recently announced the creation of an energy service company to assist New South Wales companies in meeting greenhouse gas emission reduction targets set in the national greenhouse response strategy. Other initiatives, for example, include a joint project between Pacific Power and the University of New South Wales to develop low cost, high efficiency solar cells.

6.11 In supporting the view that Eastlink would help reduce greenhouse gas emissions, Mr Anthony Davis, who represented Global Energy Network International, also noted that with interconnection would come the infrastructure to make fuller use of renewable alternatives which had lower rates of greenhouse gas emissions.

Community Concerns

Depth of Community Concern

6.12 While few submissions to the Committee addressed in detail the subject of greenhouse gas emissions and global warming, many submissions made brief mention of it, indicating a high level of community awareness of Australia's international responsibilities in this matter. As noted in the submission made by the Northern Rivers Energy Action Network, 'There is increasing sensitivity in the community about the environmental impact of coal generated electricity, in particular the emission of greenhouse gasses'.

6.13 In these submissions, there was a high level of concern expressed that Australia was not meeting its target of reducing greenhouse gas emissions and the opinion frequently expressed that Australia should do more to reduce the use of energy sources that contributed to these emissions.

Implications Of Interconnection

6.14 Many submissions argued that if Australia seriously wanted to reduce greenhouse gas emissions there was no choice but to reduce electricity production from coal fired generators. But they believed that Eastlink would serve only to encourage an increase in the use of coal by transporting electricity generated in the coal-fired power stations of the Hunter Valley to Queensland, thus increasing the consumption of highly polluting energy sources and increasing dependence on fossil fuels.

6.15 The Lockyer Against Eastlink Group noted that ironically, since Australia became a signatory to the Climate Change Convention in 1992, five new coal fired power stations have been commissioned: Mount Piper and Redbank in NSW, Loy Yang B in Victoria, Stanwell B in Queensland and Collie in Western Australia. The submission concluded: 'Eastlink appears another in this series of energy decisions that will continue to increase our potential CO_2 emissions'.

6.16 Another submission suggested that: 'large independent generators of power will produce power to maximum production and will then absorb this production. Often this absorption will be encouraged with "dumping" prices. A far more desirable aim would be the efficient use of limited resources producing the lowest amount of greenhouse gases'.

6.17 And a submission from the Australian Democrats argued that although Queensland had signed an agreement to reduce its greenhouse gas emissions to 20% below its 1990 level by 2005, it was in fact on track to increase emissions by 38%.

6.18 The Armidale Branch of the National Parks Association commented that since the advent of the Hilmer reforms in energy industries, both Federal and State governments appear to be neglecting their responsibilities to the National Greenhouse Strategy. As evidence of this, the Branch points out that nowhere in any of the Eastlink documentation is there any reference to power authorities seeking alternative, less polluting forms of electricity generation. The Branch submission argued that in fact Eastlink was a 'prime example of Commonwealth and States ignoring these responsibilities and combining to create a national competitive market in electricity generated from non-benign resources'. Further, the submission noted: 'The [Eastlink] Project Concept Report on page 2 admits that "Under present trading arrangements savings from interchange of power would arise through substitution of coal based generation for higher cost peaking generation over short periods, and may be quite modest for the foreseeable future. However, emerging national markets may change this…

6.19 The Branch submission then argued that if Queensland took its obligations on greenhouse gas emissions seriously, and developed gas-based and other options available for peak generation, it would have little need for power from NSW. Queensland has good reserves of gas as well as coal, but gas has much lower production Of CO_2 than coal (in the ratio of 15 to 25). Gas turbines are cheaper and quicker to install than coal fired generators, and can be turned on and off quickly, although some cost more to run. They are invaluable for peak generating capacity and are therefore a good option for reserve.

6.20 Gas fired generators, co-generation, combined-cycle generations renewable energy resources and a sustained effort in demand side management, could reduce greenhouse gas emissions and supply additional energy for the next 15 years. While electricity generated by other forms of energy than co could be transferred along Eastlink, the funding that is going into Eastlink lessens the opportunity for finding to be out into alternative, sustainable form of electricity generation. The submission concluded that Eastlink would remove all incentive for demand side management:

> To the extent that the State and Federal Governments set the agenda for electricity supply reform solely on an economic rationalist basis there is no hope for true reform of the industry or for Australia to fulfil its international commitments regarding Greenhouse Gas reduction.

6.21 Finally, the joint submission by ACI` and Greenpeace presents a analysis of possible changes in greenhouse gas emissions as a result (Eastlink. Two scenarios are considered: (1) that Eastlink is intended to provide Queensland with access to NSW generators for use as reserve plant and to supply spinning reserve; and (2) that existing Queensland generators are use as reserve plant and to provide the spinning reserve, while electricity imported from NSW. Because both States have a heavy reliance of fossil fuel the two scenarios are similar in terms of level of greenhouse emissions and an alteration in emissions would occur as a result of transmission losses through the interconnection. The analysis concluded that 'there is potential for very small increase in greenhouse emissions, attributable to Eastlink Stage 1'.

Lack of Strategy for Demand Management

6.22 Criticism was made of *Powerlink* that it lacked an overall strategy to reduce levels of electricity consumption, that it had a 'meet the market' philosophy which encouraged consumption. The Allora State School P&C noted in its submission that because power authorities require a minimum payment, regardless of how much electricity is consumed, there is no incentive for small consumers to save.

Transmission Losses

6.23 Many submissions to the Committee expressed the concern that transmission losses from Eastlink would be high. These submissions noted that power generated in the Hunter Valley and sent to Queensland would result in losses much greater than if the electricity was generated closer to where it was to be used. These submissions argued that when electricity is taken from coal fired power stations and sent long distances, high transmission losses meant that a higher proportion of the coal used is wasted, contributing to pollution and, more specifically, to greenhouse gasses.

6.24 One submission pointed out that the nearest generator in NSW is 650 kin from Brisbane. In calculating the losses incurred, the author accepted the Power Authority position that Eastlink would be 'super efficient' and that losses would only be 2% per 100 kilometres, and concluded that total transmission losses for electricity transferred from NSW to Brisbane would be 13%. If the Eastlink line, or any other part of the transmission route was not 'super efficient', then this level of loss should be considered to be a minimum.

6.25 Yet the *Transgrid* submission claimed that; 'The interconnection does not inherently cause additional losses on the system. Losses are caused by the dispatch of generation across the system affecting the power flows throughout the network. The interconnection offers the opportunity to share reserve capacity and dispatch generation in an "environmentally friendly" manner taking into account potential losses'.

Conclusions

6.26 The question of impact on greenhouse gas emissions hinges on whether Eastlink will increase the use of coal fired power stations.

6.27 Opponents of Eastlink have argued that if Queensland is to buy electricity from NSW, there would be an increase in the use of coal fired power stations in NSW. This would not only be inefficient in terms of line losses but would result in an increase in the burning of coal and consequently greater production of greenhouse gases.

6.28 Proponents of Eastlink have claimed that it would allow for a more efficient use of resources in both NSW and Queensland by allowing reserve sharing. This would postpone the need for new power generating capacity to be constructed.

6.29 Because there is almost no data available which relates specifically to Eastlink, the Committee is unable to make a decision as to which is the more likely outcome. However, the Committee notes that the potential does exist for greenhouse gas emissions to increase. The Committee therefore recommends that the Commonwealth Government investigate in detail the likely impact of Eastlink on coal consumption and the implications of any change in that consumption for greenhouse gas emissions having regard to its international obligations.