AGL SUBMISSION ON THE SCIENCE AND APPLICATION OF GEOSEQUESTRATION

1. Introduction

AGL is a leading energy company, with significant electricity and gas customer bases in South Australia, Victoria and New South Wales. AGL is also a significant producer of energy with interests in upstream gas developments and power stations. AGL generation assets include Loy Yang Power (minority investment), a number of hydro assets in Victoria and NSW, the Wattle Point wind farm, the Hallett peaking power station in South Australia and the Somerton peaking power station in Victoria.

AGL understands that there are two potential uses for geosequestration technology: the permanent storage of carbon dioxide underground; and the extraction of oil and gas reserves (enhanced oil recovery). This submission focuses on the potential environmental and economic benefits of geosequestration technology. As AGL does not have any specific expertise in geosequestration technology, the submission focuses on the policy settings required to ensure that geosequestration can be successfully deployed.

2. Direct Economic Benefits of Geosequestration

Australia has significant reserves of gas and coal. According to the 2005 BP World Statistical Review, Australia has:

- 2.46 trillion cubic metres of natural gas reserves. This is approximately 1.4% of world reserves. At current production, these reserves would last around 70 years.

- 78,500 million tonnes of coal reserves (roughly half of which is Anthracite and bituminous with the other half being sub-bituminous and lignite). This is approximately 8.6% of world reserves. At current production, these reserves would last around 215 years.

Traditionally, geosequestration has been used as a method of extracting additional volumes of oil and gas from uneconomic reservoirs. This technology involves injecting carbon dioxide into these fields which allows additional reserves to be recovered. As Australia has vast reserves of coal and natural gas, geosequestration may offer significant opportunities for extracting reserves which are currently thought to be uneconomic.

There are potential synergies where geosequestration is deployed to extract additional gas from coal seams. Removing gas from coal seams often makes it easier for mining to proceed and also provides additional gas for electricity generation or general consumption. Consideration of geosequestration to extract additional gas from coal seams could therefore provide significant benefits to coal miners and the community more broadly.

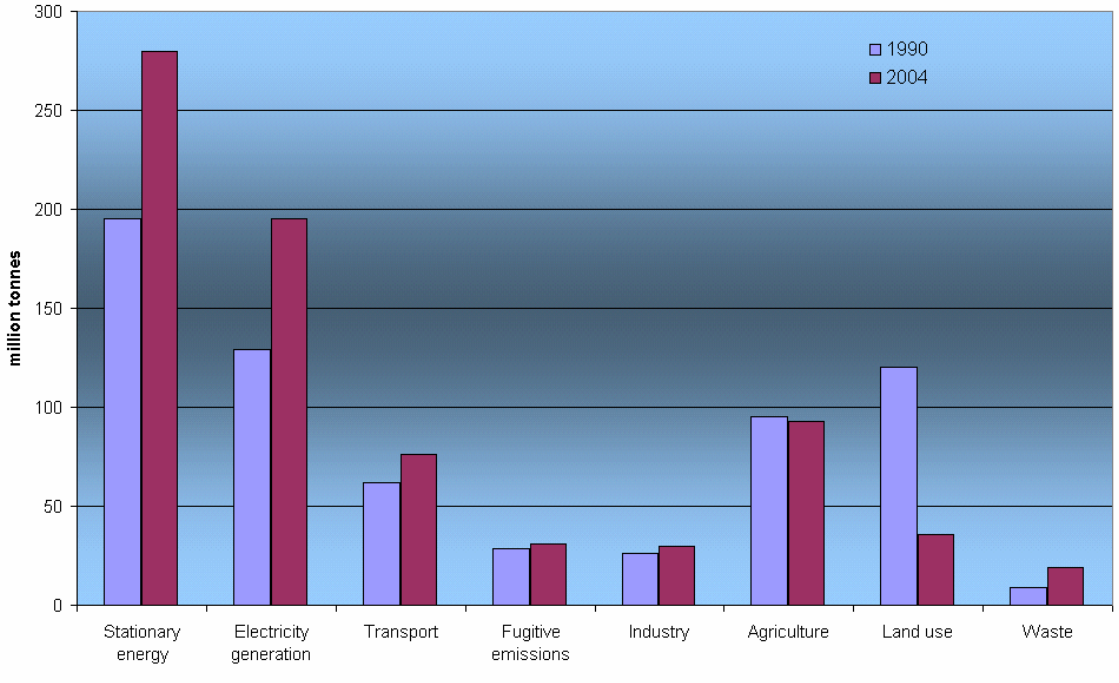
The Government has recently announced significant measures designed to increase the level of oil and gas exploration activity in Australia. AGL believes that consideration of enhanced oil and gas recovery techniques should be included in this expansion.

3. Greenhouse Gas Emission Benefits of Geosequestration

In analysing the potential of geosequestration to reduce greenhouse gas emissions, it is necessary to consider the profile of Australian sectoral emissions. In 1990, Australian greenhouse gas emissions were 542 million tonnes of carbon dioxide equivalent. The Australian Greenhouse Office has forecast that by 2012, emissions will be 585 million tonnes of carbon dioxide equivalent. This is equivalent to around 108% of 1990 emissions.

In the stationary energy sector (which includes electricity generation), emissions have increased significantly since 1990. In 2004, stationary energy emissions were 279.9 million tonnes. This is 43% higher than 1990 levels. In the electricity generation sector, emissions in 2004 were 195.2 million tonnes or 51% higher than 1990 levels. This is demonstrated in Figure 1.

Figure 1: Australian Greenhouse Gas Emissions



It is highly likely that most of the emissions growth in the Australian economy will be in the stationary energy sector (electricity generation). This forecast is largely due to anticipated growth in energy demand. The Australian Greenhouse Office has forecast that emissions in 2020 will be around 665 million tonnes annually. The stationary energy sector is forecast to comprise almost half of these emissions (333 million tonnes).

This analysis highlights how reducing overall greenhouse gas emissions will require significant reductions in the stationary energy sector. There are two aspects of the electricity generation sector which require consideration in this context:

- New power stations: There is significant scope for reducing emissions produced by power stations built now or in the future. The use of combined cycle natural gas or renewable technologies has the potential to significantly reduce the forecast growth in electricity sector emissions.

- Existing power stations: Most power stations currently in operation are likely to be in operation for several decades if they are to be fully utilised. To achieve significant cuts in greenhouse gas emissions, it will be necessary to apply new technologies to these power stations. The use of carbon capture and storage (geosequestration) is a key technology for these facilities.

AGL understands that there are three elements to successful capture and storage of carbon dioxide emissions from fossil fuelled power stations: the separation of carbon dioxide from the flue gas exhaust stream; the transportation of carbon dioxide to an appropriate injection site; and the subsequent injection of the carbon dioxide into a storage facility such as an aquifer or a depleted gas field.

While new technologies are emerging that separate carbon dioxide from other gases during the energy production process (e.g. Integrated Combined Cycle Gasification), they are not necessarily suitable for retrofit application to existing power stations. This is a significant issue given that many power stations in Australia still have effective remaining asset lives of several decades. AGL believes that the focus of research and development should be on technology that can be applied to existing power generation facilities.

4. Greenhouse Gas Policy

AGL believes that greenhouse gas policy should not be linked to geosequestration or any other specific technology. Furthermore, greenhouse gas policy should not be directly linked to the development of individual technologies. Instead, the focus should be on developing outcomes based policies such as emissions trading which provide a level playing field for all technologies to compete on.

To effectively reduce greenhouse gas emissions it is necessary to continue to develop low emission technologies. However, all low emission technologies (including carbon capture and storage, renewables and nuclear) will not be deployed unless a carbon price signal is established. The most effective way of establishing a carbon signal is through the creation of a national emissions trading scheme.

The AGL Greenhouse Gas Policy provides a comprehensive policy statement on the need to reduce greenhouse gas emissions. The policy calls for the establishment of a long-term greenhouse gas emission reduction target for 2050 and the creation of market-based mechanisms to achieve this goal. This policy approach would ensure that greenhouse emissions are reduced in the most cost effective way possible.

AGL believes that natural gas and renewable energy have a significant role to play in reducing greenhouse emissions. While it is true that gas does produce greenhouse gas emissions, it produces significantly fewer emissions than other fossil fuels like coal and is the cleanest commercially viable energy source available for widespread use.

Recent research undertaken by AGL, Frontier Economics and WWF-Australia has demonstrated that increased uptake of natural gas and renewable energy is one of many measures that will be required if significant emission reductions are to be achieved. Importantly, the cost impacts of significantly reducing emissions can be managed if appropriate policy measures are developed. Copies of this report are available on the AGL website (www.agl.com.au).