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Dr Anna Dacre
Committee Secretary
Standing Committee on Science and Innovation
Parliament House
Canberra ACT 2600

Dear Dr Dacre

The Energy Supply Association of Australia (esaa) welcomes the opportunity to comment on the House of Representatives Standing Committee on Science and Innovation inquiry into geosequestration technology.

esaa is the peak industry body for the stationary energy sector in Australia. It represents the policy positions of the Chief Executives of 46 electricity and downstream gas businesses in Australia. These businesses own and operate some $110 billion in assets, employ over 40,000 people and contribute $13.6 billion dollars to the nation's gross domestic product, or 1.6 per cent.

esaa members employ all current commercially available forms of electricity generation capacity in Australia including fossil fuel and renewable energy sources. The Association's policies and positions are fuel and generation technology neutral and this equally applies to the possible future use of carbon capture and storage (CCS) for electricity generation. Consequently, the Association strongly advocates that in a competitive market environment, investors should be able to select from the widest practical range of generation technology and fuel types and be informed by stable national policy settings that enable least cost investment and operating decisions to be taken.

Electricity supply and demand

Australia has significant, diverse and high quality energy resources. With over 800 years supply of brown coal and 290 years supply of black coal, as well as large natural gas deposits, indigenous reserves of fossil fuels have intrinsically shaped the structure of Australia's electricity supply industry to date.

At present, Australia has approximately 45,000 MW of grid connected electricity generation capacity which produces over 217,000 GWh of electricity per annum. Black

coal fired capacity provides over 58 per cent of this total, brown coal capacity 25.8 per cent, gas 6.6 per cent, hydro 7 per cent and the remainder is met by oil fired and other technologies such as wind and solar cells. The utilisation rates of the different generation types reflect the cost differences between them and the physical limitations that especially the renewable energy sources face.

The demand for electricity is forecast to grow to approximately 360,000 GWh at 2030 reflecting an increase of approximately 70 per cent on 2005 demand. To meet total demand at 2030 will require increasing installed capacity by over 30,000 MW, an increase of 65% on today's capacity. It will cost at least $35 billion to build these new plants using current technology and perhaps as much as $80 billion if technology choices are limited and significant cuts to emission levels are required.

Future generation technologies and costs

In order to comprehend and inform debate as to possible future energy generation technology scenarios, and the possible impacts of a carbon constraint on the stationary energy sector, the Association is progressing a three part stationary energy and emissions study. This work in part contemplates what a least cost fleet of generation would comprise to meet a number of emission reduction scenarios at 2030. The modeling includes scenarios with and without nuclear electricity generation and CCS technologies.

Although a wide range of generation technologies and fuel types, including generation capacity that incorporates CCS, could potentially meet Australia's future demand requirements, many of these energy sources are more expensive than conventional fossil-fuel based plant. For instance, the esaa energy and emissions study is indicating that at 2020 the long run marginal cost of new super critical black coal generation plant is estimated to be $30 per MWh, super critical brown coal is $28 per MWh, whilst low emissions technologies such as integrated gasification combined cycle black coal plant with CCS is $53 MWh. Renewable energy sources are significantly more expensive than this.

Though incomplete at this stage, esaa's work is indicating that the least-cost generation fleet to meet growing demand and deliver moderate to deep greenhouse gas emission reductions requires the broadest possible range of technologies, including CCS. When trying to achieve deep cuts in emissions the modeling suggests that the availability of CCS is relatively more important than nuclear. Preliminary results also indicate that the retro-fitting of post combustion CCS technology to existing black and brown coal generators will be the only means by which large scale early retirement of existing plant will be avoided if a significant carbon constraint is imposed.

Climate change and the future role for geosequestration

It is important to note, that given CCS is at a clear cost disadvantage to existing generation technologies, carbon emission constraints are the only reason CCS technologies would be adopted by the electricity supply industry. In the event of a significant carbon constraint, CCS technologies would most likely be utilised for new plant

as well as retrofitting existing plant and would provide a significant opportunity to producers utilising fossil fuels to continue production whilst ensuring that greenhouse gas emissions are mitigated.

However, in view of the additional costs that will be involved with all low and zero emission technologies, their deployment will not occur without a clear, long term national carbon abatement target coupled with rewards for adopting new low emission technologies and a stable regulatory environment for the sequestration of carbon emissions.

Carbon abatement target

Providing a predictable policy environment on future greenhouse gas emission measures in the Australian economy is crucial for timely investment in new electricity generation capacity. esaa contends that a long term carbon emission target for the Australian economy is necessary to provide the necessary investor confidence.

The implementation of such an approach would remove the ambiguity that currently surrounds Australia's domestic climate change response and provide clear signals to investors ensuring the most efficient deployment of low emission technologies. In this environment, provided all regulatory frameworks are in place, the uptake of technologies such as CCS would become a commercial matter for industry participants.

Effective regulatory structure

If this technology option is to form part of an available suite of low emission technologies then it is important that its development be supported by an appropriate, stable, regulatory framework that is explicitly funded by government.

The Cooperative Research Centre for Greenhouse Gas Technologies (CO2CRC) has previously argued that the regulatory regime supporting geosequestration should be focussed on facilitating the application of this technology as a mitigation option. In particular, CO2CRC has argued that although monitoring and verification of carbon dioxide sequestration are important it must not be unduly onerous and that any authorisation and compliance regime should not be over-zealous[1]. The Association considers that there is merit in the arguments made by CO2CRC as, in order for this technology to develop effectively, it must not be stymied by unnecessary regulatory transaction costs.

It is also important that clear legal rights and responsibilities, including the responsibility for permanence, be defined as early as possible and any legal regime will also need to ensure that the legal rights created are able to be readily exchanged between both existing and possible future schemes. The capacity to exchange rights is critical if parties are to secure the maximum possible benefit of investing in this technology.

Conclusion

Geosequestration of carbon emissions through carbon capture and storage has the potential to contribute very significantly to a least cost solution to constraining greenhouse gas emissions. However, the uptake of this technology will be dependent on the application of a greenhouse gas emission constraint and clear financial reward for adopting low emission technologies.

Yours sincerely

Brad Page
Chief Executive Officer

[1] Cooperative Research Centre for Greenhouse Gas Technologies *Council of Australian Government Submission on Draft Regulatory Impact Statement on Carbon Dioxide Geosequestration* available at: http://www.industry.gov.au/assets/documents/itrinternet/CO2CRCSubmission20041213173308.pdf