



Independent Pricing and Regulatory Tribunal

Progress with GGAS & ESS and implications for electricity pricing

James P Cox, PSM
CEO and Tribunal Member, IPART
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1 Introduction

Thank you for inviting me to give this presentation today. The impact of “green schemes” on electricity prices is a topic of much debate right now. The discussion ranges from the implications of a carbon pricing regime, through to who should really pay for rooftop solar.

Today I am going to share with you some insights into the Greenhouse Gas Reduction Scheme and the Energy Savings Scheme. Both of these schemes operate predominantly in New South Wales and are based on specific legislation, regulations and rules that are enforceable in the State. IPART is administrator and compliance regulator for both of these schemes.

I will also touch very briefly on the recent Draft Report on changes in regulated electricity prices in New South Wales, which was released on the 14th of April.

2 Where do GGAS & ESS fit in the broader picture?

GGAS commenced operation in mid-2003. Bob Carr has called it the first ever government mandated carbon trading scheme. It commenced before the European Union got started with their system. And it initiated the project-based approach to reducing emissions. The project-based approach is the one used in the Clean Development Mechanism and for voluntary carbon offsets.

It is pleasing that some of the approaches and frameworks which have been developed here in New South Wales under GGAS have now being adopted by other schemes, including the international systems which operate under the Kyoto Protocol.

For those of you who don't know how GGAS works, here is a brief outline...

GGAS establishes annual state-wide greenhouse gas reduction targets. It then requires individual electricity retailers and certain other parties who buy or sell electricity in NSW to meet mandatory benchmarks based on their share of the electricity market.

If these parties, known as benchmark participants, fail to meet their targets, then a penalty is payable. To meet their benchmarks, the retailers must either meet the targets through their own activities or purchase certificates which they then surrender. They need to acquire certificates year after year at fairly predictable volumes.

The compliance obligation on electricity retailers results in a price for GGAS certificates and hence a price on the emissions reductions which they represent.

The price of GGAS certificates depends on supply and demand in the market. The level of the penalty (after allowing for tax considerations) sets the maximum price for certificates.

After 8 years the scheme has reached a certain level of maturity. A large range of abatement activities have been supported under the scheme and compliance outcomes have been strong.

The future of GGAS depends on whether a national carbon pricing system is introduced. The discussions about transitioning to a national scheme began in 2005 when the States first got together to examine the potential design for a National Emissions Trading Scheme. They have continued as both sides of federal politics have considered the most appropriate approach to reducing Australia's greenhouse gas emissions.

In 2009, the New South Wales Government changed some of the legislation surrounding GGAS. They "carved out" the energy efficiency aspects of the scheme to create a new mechanism called the Energy Savings Scheme – the ESS.

The ESS is a scheme which is complementary to a carbon pricing mechanism.

The barriers to the take up of energy efficiency in the Australian economy are not just about the price of energy. There are also a variety of other barriers (such as capital constraints, technical capabilities, risk appetites, and prioritisation of growth over efficiency) which mean that a carbon pricing mechanism by itself is unlikely to achieve all the improvements in energy efficiency that are cost effective.

There is good evidence to support that a market mechanism is capable of achieving cost effective improvements in energy efficiency.

For those of you who aren't familiar with the ESS, here is a brief description...

The Energy Savings Scheme is designed to improve energy efficiency by rewarding companies who undertake eligible projects that either reduce electricity consumption or improve the efficiency of energy use.

The scheme works by setting a target for energy savings for electricity retailers and other liable parties. The retailers meet their energy savings target by obtaining and surrendering Energy Saving Certificates – called "Eskys". Each Esky represents 1 tonne of carbon dioxide equivalent of energy savings, just like the certificates in GGAS.

Companies that participate in the ESS are able to create Eskys when they undertake specific actions to improve energy efficiency in a variety of residential, commercial or industrial settings. This is a key difference compared to the schemes that are running in Victoria and South Australia, which have so far focused just on the residential sector.

The ESS commenced with an energy savings target of 0.4% of total electricity sales in NSW. The energy efficiency target increases each year over 5 years to reach 4% total electricity sales by 2014. The target will continue at that level until the ESS ends in 2020 or is replaced by a national energy efficiency trading scheme.

Given that the ESS is less than 2 years old, it is still going through process of development and refinement.

Both GGAS and ESS are examples of market mechanisms which use a compliance obligation to encourage activities which will reduce emissions. They provide an incentive for the use of energy efficient technologies, more efficient production methods, and improved controls on energy intensive processes.

The costs of these abatement activities are borne by the NSW electricity retailers, through their purchases of certificates. They then pass those compliance costs through to their customers. There are real costs that are paid for by customers and it is important periodically to investigate the schemes to ensure that they provide benefits to society that exceed these costs.

3 How have GGAS & ESS performed so far?

GGAS commenced in New South Wales on 1 January 2003 and in the Australian Capital Territory on 1 January 2005. The schemes will operate until either a national scheme is introduced or until 2021.

Many activities are eligible to create certificates under GGAS. These include:

- ▼ Improvements to the efficiency of existing power stations.
- ▼ Increasing the amount of power which is generated from low carbon technologies, such as gas-fired power stations or renewable energy technologies.
- ▼ Destruction of the methane which comes from landfills, manure management systems, sewage treatment plants, and coal mines.
- ▼ Changes to industrial processes so that they produce fewer emissions for the same level of industrial output.
- ▼ Carbon sequestration in forests planted after 1990.

The GGAS approach to carbon sequestration broke new ground it was established in late 2004. It has provided a valuable guide for the work now being done on the Carbon Farming Initiative.

A total of just over 120 million NGACs has been created in the 8 years since GGAS commenced. Most of these certificates have been surrendered to meet compliance obligations. But it is expected that supply of NGACs now and in the coming years will exceed the demand based on existing targets.

When the scheme first commenced, the supply and demand situation meant that prices were quite close to the level of the penalty. NGACs were being purchased at well over \$10 each.

Since then the number of certificates has increased more rapidly than was expected in 2003. One example of an unexpected activity was the many projects to distribute and install compact fluorescent lighting that were accredited in 2006 and 2007. I think this demonstrates that market mechanisms lead to the discovery of additional, low cost abatement opportunities that were not anticipated in advance.

Prices have reduced substantially because of the abundance of certificates. In recent years prices in the spot market have continued at around \$5 per NGAC but the trading volumes have been small. There have been a few ups and downs, mostly driven by policy speculation at the national level.

Very often the prices paid for NGACs are not spot prices. Prices are included in longer term purchasing contracts which are struck between the project developer and the compliance buyer.

The decision to go ahead with an abatement project is usually based on the price that is negotiated in a multi-year purchase agreement with a buyer. The prices in these contracts are rarely disclosed. This makes it hard to be definitive about the price of certificates.

The ESS commenced on 1 July 2009 but normally operates on a calendar year basis. So 2010 was the first full year of operations for the ESS. So far a total of just over 1.1 million Eskys have been created.

The framework for the design and administration of the ESS was taken directly from GGAS, so it was straight forward to get the scheme started.

At present, the demand and supply of certificates is finely balanced. As a consequence the price for ESCs is close to the penalty level. The compliance obligation will heighten in future. However, the high price for ESCs may encourage additional activities to be developed and brought to market.

There is a wide variety of activities which are eligible for creating certificates under the ESS. These include:

- ▼ Commercial lighting upgrades.
- ▼ Whole of building performance improvements, using the well-established NABERS system for measuring building energy performance.
- ▼ Upgrades to chillers and other centralised plant and equipment.
- ▼ Power factor correction.
- ▼ Use of variable speed drives and more efficient electric motors.
- ▼ Upgrades to compressors, pumps and refrigeration systems.

- ▼ Installing more efficient traffic lights.
- ▼ Use of advanced control systems in industrial facilities.
- ▼ Improvements in boiler performance.
- ▼ And of course the installation of a very broad range of energy efficient devices which are used in households and businesses, including halogen lighting, low flow shower heads, efficient hot water systems, more efficient washing machines, and many others.

The scheme can therefore be expected to encourage a wide range of energy efficiency activities in the residential, commercial and industrial sectors.

Information about prices in the ESS market is limited. Many of the transactions occur via negotiated purchase agreements rather than the Esky spot market.

In the 2 years (to date) that the ESS has been in place, the Esky spot price has climbed significantly from \$16.75 in August 2009 (shortly after ESS commencement) to \$32.00 in March 2011. More recent trades suggest that, although softening slightly, levels above \$30 are being maintained.

As noted, the price in future will depend on the balance between heightening compliance obligations and the increasing supply of certificates as new activities are developed.

4 Some real examples of what is happening under these schemes

I wanted to share with you today 3 short case studies from these schemes. This is, I think, the best way of demonstrating the effectiveness of schemes.

So, I will talk about what is going on in the commercial sector, then the industrial sector, and then I will discuss some interesting developments and challenges in the residential sector.

Computer data centres are major users of electricity. Not only do they consume quite large volumes of energy, but they also have very high power density levels.

There have been substantial reductions in energy consumption in a couple of these data centres around Sydney. This is based on the decommissioning of devices and the associated energy savings as a result of the implementation of server virtualisation.

Virtualisation occurs when the server administrator uses a software application to divide one physical server into multiple isolated virtual environments. This provides an increase in the efficiency of server utilisation, and hence an improvement in

overall energy performance of the data centre. There is also a reduction in air conditioning demand within the data centres, based on reduced levels of total heat coming from the devices.

This project was put forward by an aggregator, rather than the actual owner of the data centres. An aggregator is someone who helps a facility owner to navigate the requirements of the scheme, prepare all of the documentation, and then make sure that the project continues to comply and create the right number of certificates.

Aggregators play an important role in both GGAS & ESS. The aggregator business model often makes the most sense when pursuing take up of energy efficiency opportunities. Aggregators usually act as the middle man between the physical activity which is reducing energy consumption, and the administrative tasks which are required to create and sell certificates.

One of the most energy intensive parts of the **industrial sector** is the manufacture of paper. One particular paper manufacturing company has been an active participant in GGAS and ESS. They have undertaken a variety of projects within their major industrial facility located in the south of New South Wales. These projects include:

- ▼ recovery of waste heat to reduce the amount of natural gas that is burned to create steam for the pulping process
- ▼ changes to the piping systems and manufacturing process to reduce the amount of pumping required, and hence the amount of electricity consumed
- ▼ optimisation of the energy used in the vacuum system which is used during forming and pressing of the paper, thereby reducing electricity consumption without impacting on production.

This is an interesting example because it demonstrates that within large industrial facilities there are multiple opportunities to make energy savings. GGAS and ESS allow for this type of project development in the industrial sector. The schemes provide an incentive for extra efforts to be made in discovering and exploiting quite large energy savings.

In the **residential sector**, it is quite a different picture in terms of project size and the approaches which are used to find energy savings and create certificates. As with the commercial sector, the role of aggregators in the residential sector is very important.

We have seen a significant number of new businesses which have been created to participate in GGAS and ESS. This has translated into some impressive results in terms of the volume of certificates created and the number of energy efficient devices which have been distributed and installed in households.

However, this growth has also created some challenges in terms of record keeping, compliance, and ensuring that these new businesses establish the systems and procedures which are critical to the successful administration of market mechanisms like GGAS and ESS.

We expect to see quite a lot of innovation in developing new abatement activities and bringing them to market. Under ESS we are seeing a large number of efficient shower heads being distributed, followed by an increasing number of halogen lamps. Soon we expect to see a growing number of LED devices being included in the range of advanced lighting options which are viable under the scheme. There is also the potential for the ESS to further expand the list of eligible activities to cover insulation, weather stripping, window treatments, and standby power management.

5 What about the cost of operating the schemes?

The costs of administering GGAS and ESS are low in relation to the value of the certificates issued. This is important given the strong focus on maintaining the high levels of scheme integrity.

The total cost of IPART's activities with GGAS & ESS comes to just over 2% of the total value of all the certificates issued. This includes the cost of setting up the ESS as well as the continuing costs of administering GGAS.

In addition, there are compliance costs for retailers. These are made up of the cost of abatement (or what they pay for certificates) as well as the administrative costs which they face to successfully participate in the scheme. We understand that the administrative costs experienced by the retailers are low in relation to the cost of certificates.

Compliance and enforcement is a key part of IPART's role as the administrator and regulator for GGAS & ESS. We use risk-based approaches to ensure that we are managing the overall integrity of the schemes while continuing to focus on ensuring that costs of participation are kept at reasonable levels.

Based on our experience there are a number of approaches that are particularly important.

First, we have a strong focus on record keeping by participants. If a participant doesn't have appropriate record keeping and internal controls over how data are managed, they quite simply can't create any certificates.

Second, we also use independent auditors to examine very specific issues. The auditors supplement the work done by our analysts. This ensures that we get the expert assistance we need but we don't outsource the entire assessment process. This helps to minimise costs of participation while ensuring the integrity of the scheme is maintained.

And third, we take an active approach to managing compliance. We have regular contact with scheme participants through phone, email and in person meetings. This

ensures that we understand what they are doing, and that they clearly understand what they need to do to maintain compliance with scheme requirements.

6 What are the implications for regulated electricity prices?

You may have seen the draft report released by IPART on the 14th of April. This looked at updating the regulated prices for electricity in NSW and included a revisiting of the Green Energy Cost Allowances for the 3 main suppliers; EnergyAustralia, Integral Energy and Country Energy.

The result of that analysis is that the combined impact of GGAS & ESS is less than 1% of the regulated retail electricity price. This is a very small impact on regulated prices, and provides a useful insight into how well designed market mechanisms can drive substantial outcomes while having only minor impacts on prices.

Having said this, we have estimated that the cost of complying with the ESS scheme will increase from around \$1 in 2011/12 to around \$1.50 in 2012/13 to account for the increased liability on retailers.

7 Summing up

GGAS & ESS provide good examples of how market mechanisms can drive substantial emissions reductions and bring forward innovative and low cost opportunities for emissions reductions.

The 2 schemes have been administered cost effectively and the costs of participation have been kept low. At the same time the levels of compliance have been high, and the schemes' integrity has been well maintained.

A wide variety of abatement activities have been credited and funded by the mechanism. The lists are long, and only getting longer.

While over 120 million certificates have been created under GGAS & ESS, the impact on electricity prices for the combined schemes is less than 1% of the regulated retail price.

The costs of ESS in particular may grow as the retailers obligations increase. Unless new sources of certificates become available at lower cost, these increasing obligations will increase the overall cost of the scheme. Schemes such as ESS and GGAS will only survive if they are seen to be well administered and provide good value for money in terms of cost per unit of abatement.

The success of ESS in particular will depend on whether the current high price of certificates will, over the medium term, lead to more energy savings and new sources of certificates.

Thank you for your attention, and I am happy to take any questions.