

Compliance and Operation of the NSW Greenhouse Gas Reduction Scheme Vuring 2009

Report to Minister

Greenhouse Gas Reduction Scheme
July 2010

Compliance and Operation of the NSW Greenhouse Gas Reduction Scheme during 2009

Report to Minister

Greenhouse Gas Reduction Scheme
July 2010

© Independent Pricing and Regulatory Tribunal of New South Wales 2010

This work is copyright. The *Copyright Act 1968* permits fair dealing for study, research, news reporting, criticism and review. Selected passages, tables or diagrams may be reproduced for such purposes provided acknowledgement of the source is included.

ISBN 978-1-921628-59-7

CP53

Inquiries regarding this document should be directed to a staff member:

Margaret Sniffin

(02) 9290 8486

Independent Pricing and Regulatory Tribunal of New South Wales

PO Box Q290, QVB Post Office NSW 1230

Level 8, 1 Market Street, Sydney NSW 2000

T (02) 9290 8400 F (02) 9290 2061

www.ipart.nsw.gov.au

Contents

1	Executive summary	1
2	Overview of GGAS	5
2.1	Legislative framework	8
2.2	Structure of GGAS	9
2.3	Greenhouse gas benchmarks	9
2.4	NSW benchmark participants	10
2.5	Abatement Certificate Providers	11
3	Benchmark participants	12
3.1	Abatement and Renewable Energy Certificates surrendered	15
3.2	Types of abatement certificates surrendered	20
3.3	Greenhouse Gas penalty paid in 2009	21
3.4	Cessation of benchmark participants	21
4	Abatement certificate providers	22
4.1	Accreditations and cancellations of accreditations	22
4.2	Generation Rule	24
4.3	Demand Side Abatement Rule	31
4.4	Large User Abatement Certificates Rule	33
4.5	Carbon Sequestration Rule	36
4.6	Accreditation of future projects	38
4.7	Compliance outcomes	38
5	Audit and compliance framework	41
5.1	Audit and technical services panel	41
5.2	Selection and management of auditors	42
5.4	Benchmark participant audits	44
5.5	Audits initiated by the Scheme Administrator	45
5.6	Audits initiated by Abatement Certificate Providers	45
5.7	Audit activity	45
6	Registry	47
6.1	Register of abatement certificates	48
6.2	Certificate creation trends	48
6.3	Certificate surrender trends	57
6.4	Voluntary surrenders	58

6.5	Certificate transfer trends	58
7	Demand and supply of abatement certificates	61
7.1	Developments in 2009	61
7.2	Assumptions for projection	65
7.3	Projection scenarios	67
7.4	Projection results	68
7.5	Increase in the NSW Pool Coefficient	70
8	Links with other schemes	74
8.1	Carbon Pollution Reduction Scheme	74
8.2	NSW Energy Savings Scheme	75
8.3	Renewable Energy Target	76
8.4	Prime Minister’s Task Group on Energy Efficiency	77
8.5	Queensland Gas Scheme	77
8.6	Generator Efficiency Standards	78
8.7	GreenPower	78
8.8	Climate Change Fund	78
8.9	Voluntary carbon products	79
	Appendices	81
A	IPART’s functions under GGAS	83
B	Categories of the Generation Rule	84
C	Registry data	86
	Glossary	116

1 Executive summary

This report covers the 2009 calendar year, the 7th year of operation of the Greenhouse Gas Reduction Scheme (GGAS).

The 2009 year saw 3 important changes to GGAS to prepare participants for the planned introduction of the national Carbon Pollution Reduction Scheme (CPRS) in mid 2011. These changes:

- ▼ closed GGAS to new applications for accreditation after 31 December 2009
- ▼ ceased certificate creation from Category A generation projects after 30 June 2010, and
- ▼ removed the eligibility of end-use energy efficiency activities from GGAS after 30 June 2009.

The *Electricity Supply Act 1995* (the Act) was amended on 5 June 2009 to effect these changes and on 29 June 2009 the Demand Side Abatement (DSA) Rule was amended to remove energy efficiency with the commencement of the Energy Savings Scheme (ESS) on 1 July 2009.

The closure of applications to GGAS at the end of 2009 was based on the then imminent termination of GGAS coinciding with the scheduled introduction of the CPRS. This change to the Act brought with it a number of last minute applications to GGAS, primarily large scale generation projects.

The amendments to the legislation also removed the eligibility to create NGACs of a class of generator defined in the Generation Rule as 'Category A' generators. Category A generators earn their classification because of Power Purchase Agreements entered into between electricity retailers and the generator whereby the retailer is entitled to the benefit derived from sourcing electricity from low emission generation. To provide sufficient notice of this change, the change was delayed until 30 June 2010, allowing Category A projects to claim the first 6 months of certificate creation in 2010.

The final important change to GGAS in 2009 involved removing the eligibility of energy efficiency activities under the DSA Rule prior to the introduction of the ESS on 1 July 2009. The ESS was introduced with the intention of being complementary to the CPRS, and accordingly has the effect of continuing the greenhouse gas reduction theme that has been pioneered in NSW since the mid-1990s.

In preparation for the ESS, companies accredited under GGAS to carry out energy efficiency projects were offered the opportunity to transition into the ESS if their projects remained eligible. Of a total of 72 energy efficiency accreditations in GGAS at 30 June 2009, 31 transitioned to the ESS. Sixteen accreditations were no longer eligible due to gas and other activities being excluded under the ESS. 18 projects did not transition because of commercial decisions by the companies involved and the remaining 5 are undergoing assessment for accreditation in the ESS¹.

While end-use energy efficiency was removed from GGAS, on-site generating systems in NSW can still create NGACs under the DSA Rule. These are generation projects supplying electricity to an on-site end-user via an unregistered network. There are currently 8 on-site generation accreditations.

The net effect of the changes described above was to position GGAS, and participants in GGAS, for the commencement of the CPRS. As part of the preparation for transition to the CPRS, in September 2009 the Commonwealth Government announced a financial transition package to compensate businesses for the early termination of GGAS. Considerable effort was spent during 2009 on planning activities relevant to the closure of GGAS and the compensation arrangements for ACPs who could not transition in some way to the CPRS.

However, in late April 2010 the Prime Minister announced that the implementation of the CPRS would be delayed until at least the end of the Kyoto period, in other words after the end of 2012. As a result of this delay, it is anticipated that the NSW Government will review the operation of GGAS to ensure its continued viability until commencement of the CPRS.

Compliance with GGAS remained acceptable during 2009 with 29 instances of minor contraventions to conditions of accreditation out of a total of 225 accreditations. Only 6 of these events involved the over-creation of certificates. The use of audits under GGAS remained an effective tool for monitoring compliance and as a verification mechanism. Non-compliance instances were dealt with by the companies involved agreeing to voluntarily forfeit the required number of certificates, thus ensuring the abatement claimed under GGAS remained valid.

There were 40 benchmark participants during 2009 including Jackgreen International who entered into voluntary administration in December of 2009. The administrators have been advised of Jackgreen's liability under GGAS. Of the remaining benchmark participants, all met their compliance obligations except for 2 who opted to pay a small penalty rather than surrender the appropriate number of certificates to meet their obligations. The combined greenhouse gas liabilities of these 2 retailers represented 0.0005% of the total annual greenhouse gas benchmark obligation. Around 1.8% of the allowable greenhouse shortfall for 2009 has been carried forward to 2010.

¹ These are projects accredited under the Australian Building Greenhouse Rating Scheme which is now the National Australian Built Environment Rating System.

The Scheme Administrator managed 62 certificate creation audits during 2009 covering a total of 120 accreditations. Two pre-accreditation audits were conducted and 3 project implementation audits were conducted on generating systems where future projects had been completed and commissioned.

There were 14 new accreditations approved during 2009. At the same time, 10 projects were cancelled. Cancellations occur because of corporate restructures, projects finishing, or a change in circumstances for the project.

Certificates created from generation projects totalled over 15 million in 2009, a 26% increase over 2008 creation.

The Performance Improvement Testing Regime (PITR) recognises gains made by generators from the improvements to the greenhouse intensity of their operations. Two additional generators were approved to use the PITR for 2009 certificate creation. Given the complexity of base-load coal fired generating systems, and the anticipated termination of GGAS with the commencement of the CPRS, the Scheme Administrator continued to not require any adjustment in NGAC creation for uncertainty surrounding measured improvements for these generating systems. Nonetheless generators are still required to include consideration of uncertainty in their ongoing PITR related calculations.

The Methane Energy Uncertainty Methodology was adopted in early 2009 to provide a more accurate measure of greenhouse gas reduction. In fact, it has proved to be beneficial to companies who have employed this methodology. On average it has allowed companies to claim around 10% more certificates than the number they would have claimed using default values, principally through the installation of specialist measuring equipment to measure the methane content of waste gases. To benefit from the use of this methodology, companies must employ a calibration regime that ensures the equipment operates within defined uncertainty limits. Eighteen generating systems installed the appropriate equipment and had their systems audited to ensure the methodology was correctly applied in order to create 2009 certificates. The methodology has been universally adopted and recognised as a ground breaking approach to more accurately measuring the energy content of waste gas from landfills.

Large electricity users in GGAS, ie, those businesses who have elected into GGAS based on meeting threshold electricity consumption requirements, were able to reduce their non-electricity related emissions by implementing a wide variety of projects. The percentage of certificates from projects carried out by large users in GGAS has steadily increased, primarily from projects creating LUACs from the flaring of waste methane from mining operations. Over 1.5 million LUACs were created in 2009. These certificates cannot be traded and can only be used to satisfy the compliance obligations of the large electricity user who created them.

There were no new accreditations under the Carbon Sequestration Rule during 2009 and only 5 amendments were made to add to existing carbon sequestration pools. This may be partly explained by uncertainty around the way that GGAS projects would transition into the CPRS, and whether existing forests would be eligible to transition into the national scheme. The total number of certificates created under the Carbon Sequestration Rule did not change materially from 2008, decreasing by 3.6% to 645,433 certificates created in 2009.

Voluntary surrenders of certificates continued in 2009 with 254,597 certificates surrendered in this way. Voluntary surrenders are a means whereby individuals or companies can choose to offset the emissions from their operations by purchasing and then surrendering certificates. This represented a 48% decrease from 2008, which may reflect the growth of other recognised measures for offsetting emissions.

The total supply of certificates created during 2009 slowed marginally for the 2009 compliance year with 18,410,242 certificates created and 24,852,164 required to meet the 2009 target.

With the removal of end-use energy efficiency from GGAS during 2009, the character of GGAS became more dominated by generation activities as a source of certificate creation. While the cessation of applications at the end of 2009 means that the number of new accreditations will not grow significantly in 2010, there remains a small number of applications to process that were submitted prior to 31 December 2009, and existing accreditations may still apply to amend their projects. For Generation Rule projects, this is primarily as a result of the addition or expansion of generating systems, resulting in increases to certificate creation.

The transfer of an accreditation is not allowed under GGAS. If due to a company restructure the company is no longer eligible to create certificates, then the accreditation must be cancelled, permanently removing the project from GGAS. If another company takes over the greenhouse gas reduction activity, then that company must seek a new accreditation in order for NGACs to be created from those activities. In December 2009 the Act was amended to prevent any new applications being approved by the Scheme Administrator. This amendment applies to those situations where a change in company structure occurs and prevents the new owner from reapplying for accreditation of the project. The overall impact on certificate creation due to this change to GGAS is expected to be small.

Under the relevant provisions of the the Act, the Tribunal may, with the approval of the Minister, delegate the exercise of its functions as Scheme Administrator to another person or body. The Tribunal has delegated these functions to a Committee. For the 2009 calendar year, the Committee comprised Mr James Cox as Full Time Tribunal Member and Mr Peter Egger and Mr Eric Groom as Committee Members. The Committee met 12 times in 2009.

2 Overview of GGAS

GGAS was one of the world's first mandatory greenhouse gas emissions trading schemes when it commenced in 2003. Its objectives are to reduce greenhouse gas emissions associated with the production and use of electricity, and to develop and encourage the reduction of greenhouse gas emissions from non-electricity related activities.

GGAS commenced under the *Electricity Supply Act 1995* on 1 January 2003 in NSW and operates on a calendar year cycle. Following passage of complementary legislation in the Australian Capital Territory Legislative Assembly, GGAS commenced in the ACT on 1 January 2005. Originally called the *Greenhouse Gas Abatement Scheme*, the Scheme was renamed in NSW in early 2007 by the then Minister for Energy as the *Greenhouse Gas Reduction Scheme*, but continues to be known as GGAS.

GGAS requires NSW and ACT electricity retailers and certain other parties, collectively referred to as benchmark participants, to meet mandatory targets for reducing or offsetting the emission of greenhouse gases from the production of the electricity they supply or use. Benchmark participants must reduce the emissions of the electricity they supply or use to the level of their greenhouse gas benchmark each year.

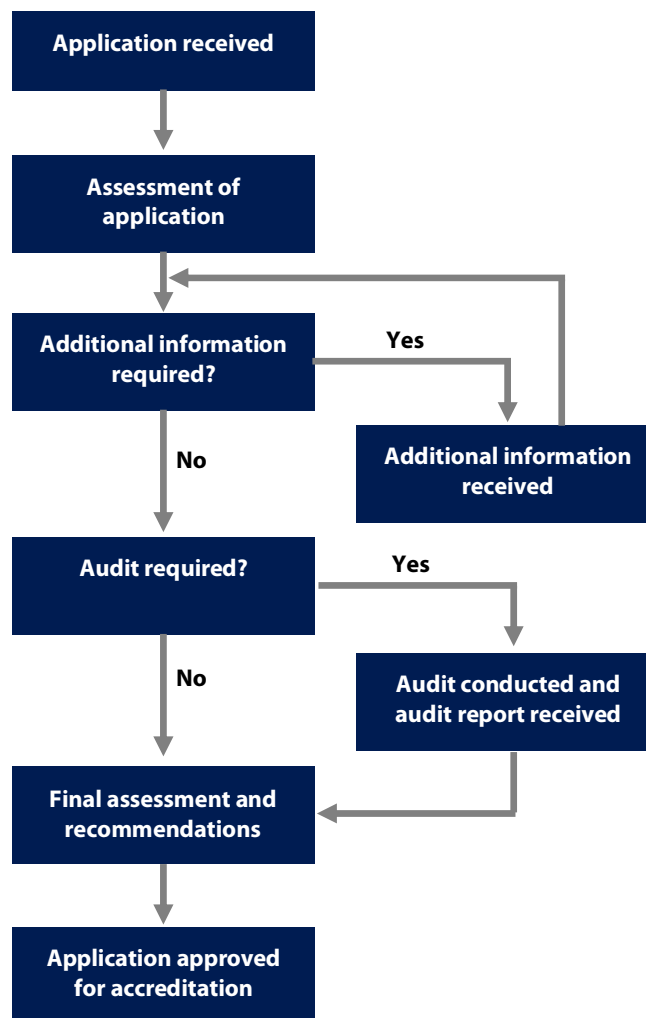
Benchmark participants meet their targets by surrendering certificates that are created through activities that reduce or offset emissions. Each certificate, known as a NSW Greenhouse Abatement Certificate (NGAC) or Large User Abatement Certificate (LUAC), represents 1 tonne of carbon dioxide equivalent emissions reduction or sequestration. Benchmark participants can also claim credit for a limited number of Renewable Energy Certificates (RECs) surrendered under the Commonwealth's Mandatory Renewable Energy Target (MRET) in relation to electricity purchases associated with NSW.²

GGAS can be characterised as a 'baseline and credit' form of emissions trading. This means that credit is given where current greenhouse performance improves below prior practice, business as usual or, in some cases, current industry practice. Consequently, GGAS requires a comprehensive understanding of past performance from which the baseline can be formed.

² A renewable energy certificate may be counted towards meeting the greenhouse gas benchmark, or to abate a greenhouse gas shortfall, if certain criteria are satisfied pursuant to clauses 73DA and 73DB of the Regulations.

The Scheme Administrator accredits organisations undertaking abatement of greenhouse gas emissions as Abatement Certificate Providers (ACPs) under one of the GGAS Rules. In assessing a project, the Scheme Administrator first considers the information provided in the application form. If the information provided is not comprehensive, the Scheme Administrator may request further information from the company. At times, several requests are necessary in order for a comprehensive view to emerge. Where projects are technically complex, the Scheme Administrator may decide to audit the project to confirm certain aspects of the application. Figure 2.1 illustrates the assessment process conducted by the Scheme Administrator when assessing applications for accreditation.

Figure 2.1 Flow diagram of application process



The Scheme Administrator has established an audit panel which assists in ensuring the integrity and validity of the certificates registered within GGAS. The Registry manages the creation, transfer of ownership and ultimate surrender of abatement certificates. Once surrendered, certificates cannot be reused. The Registry does not provide a trading function. Trading of certificates occurs through bilateral trades

between companies, or through registered brokers who offer their services in providing access to the environmental certificates market.

GGAS was designed to recover its administrative costs over the life of the Scheme through fees paid by participants. In the early years of GGAS there were considerable costs in establishing the systems and arrangements for managing GGAS. Since the 2006 calendar year, revenue earned annually through the registration of certificates and application fees charged to applicants exceeded the operating expenses for managing and operating GGAS. In 2009, the cost of administering both GGAS and ESS represented 2.2% of the total value of all certificates registered under both GGAS and ESS during the year, based on an average spot price of \$4.34 for GGAS and \$16.98 for ESS during 2009.

Carbon Pollution Reduction Scheme

The Commonwealth Government committed to the implementation of a national emissions trading scheme in 2008. The national scheme is known as the Carbon Pollution Reduction Scheme (CPRS). In defining the coverage of the CPRS, it was recognised that certain sectors, in particular methane generators in GGAS, would be adversely impacted by the introduction of the national scheme. This resulted in the Commonwealth announcing a financial assistance package to assist these GGAS participants given the early termination of GGAS.

The current design of the CPRS is a 'cap and trade' scheme rather than the GGAS 'baseline and credit' scheme. This means that organisations that emit greenhouse gases will be required to surrender one permit for each tonne of carbon dioxide equivalent of emissions above a certain threshold. The CPRS will cover emissions from stationary energy, transport, industrial processes, waste, and fugitive emissions from oil and gas production. The sectors covered account for around 75% of Australia's emissions and will involve mandatory obligations for around 1,000 entities.

In May 2010, the Commonwealth Government announced that the implementation of the CPRS was to be delayed until at least the conclusion of the Kyoto Protocol Commitment period at the end of 2012. Current NSW legislation provides for GGAS to operate until the commencement of a national scheme, or in the absence of a national scheme, until 2020 and beyond.

NSW Energy Savings Scheme

The NSW Energy Savings Scheme (ESS) is a NSW-based mandatory energy efficiency scheme which commenced on 1 July 2009. The principal objective of the ESS is to create a financial incentive to reduce the consumption of electricity by encouraging energy savings activities. It is designed to increase opportunities to improve energy efficiency by rewarding companies who undertake eligible projects that either reduce electricity consumption or improve the efficiency of energy use.

The ESS was developed as a complementary measure to the proposed CPRS and is modelled on the end-use energy efficiency component of the DSA Rule. It replaces the majority of the DSA component of GGAS, and this component of the DSA Rule ceased with the commencement of the ESS.

2.1 Legislative framework

In NSW, GGAS is created by a legal and technical framework through Part 8A of the *Electricity Supply Act 1995* (the Act), the *Electricity Supply (General) Regulation 2001* (the Regulation), and 5 Greenhouse Gas Benchmark Rules³ (the Rules) made by the Minister for Energy.

The ACT Government introduced a Greenhouse Gas Abatement Scheme by passing the *Electricity (Greenhouse Gas Emissions) Act 2004* (ACT). This legislation mirrors the equivalent NSW legislative provisions and facilitates the operation of what is, in many respects, a single Scheme across both jurisdictions.

IPART undertakes the functions of Scheme Administrator for both NSW and the ACT. This means that a single Registry operated by IPART as Scheme Administrator tracks creation, ownership and surrender of certificates. All applications for accreditation as an ACP are considered by IPART as Scheme Administrator and are assessed against the relevant Rules made under the Act.

The relevant ACT and NSW legislation specifies the functions of the Compliance Regulator for GGAS (the Independent Competition and Regulatory Commission (ICRC) in the ACT and IPART in NSW). These include ensuring that electricity retailers in the ACT and NSW meet legislated targets by surrendering certificates to offset emissions, and reporting on compliance outcomes to the relevant jurisdictional Ministers.

In NSW, the Department of Industry and Investment (DII) has responsibility for developing the policy framework for GGAS and consulting on proposed changes to the Rules. IPART then applies those Rules in its roles as Scheme Administrator and Compliance Regulator.

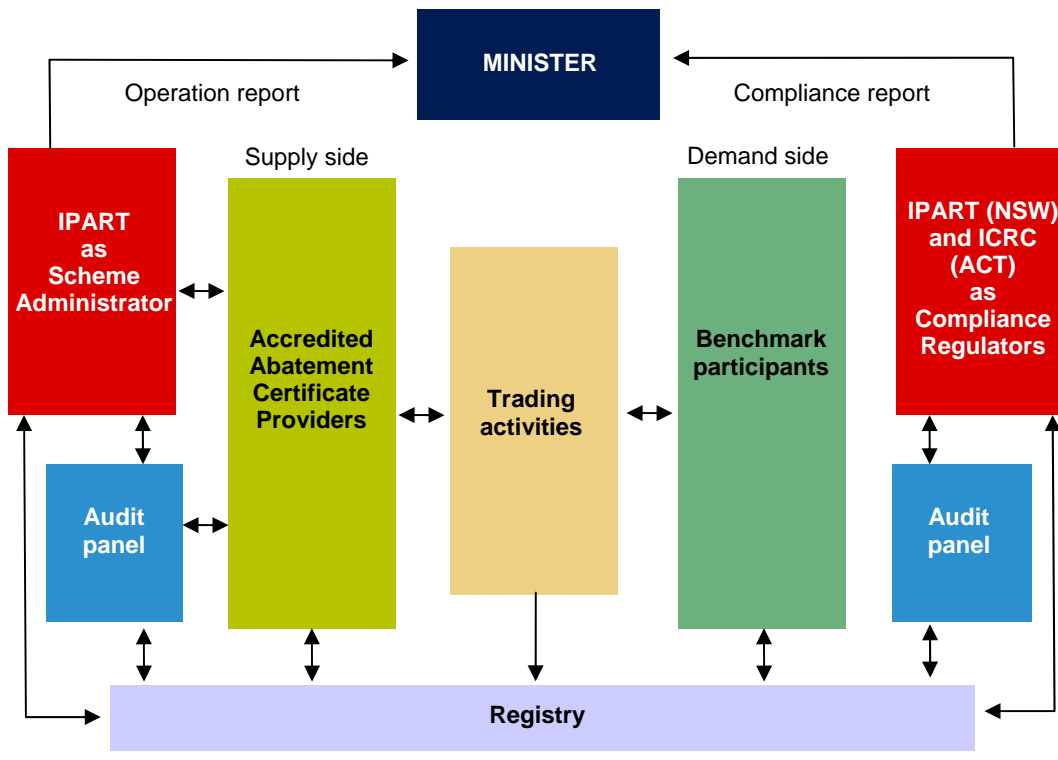
From its experience with administering GGAS, IPART may suggest changes to the Rules. The suggestions are independently assessed by DII and if a suggestion is considered to have merit DII will assume responsibility for its incorporation in the relevant Rule, including industry wide consultation and Ministerial approval.

³ The 5 Rules are: No. 1 – Compliance, No. 2 – Generation, No. 3 – Demand Side Abatement, No. 4 – Large User Abatement Certificates, No. 5 – Carbon Sequestration.

2.2 Structure of GGAS

The figure below illustrates the structure of GGAS and its key participants.

Figure 2.2 Structure of GGAS and key participants



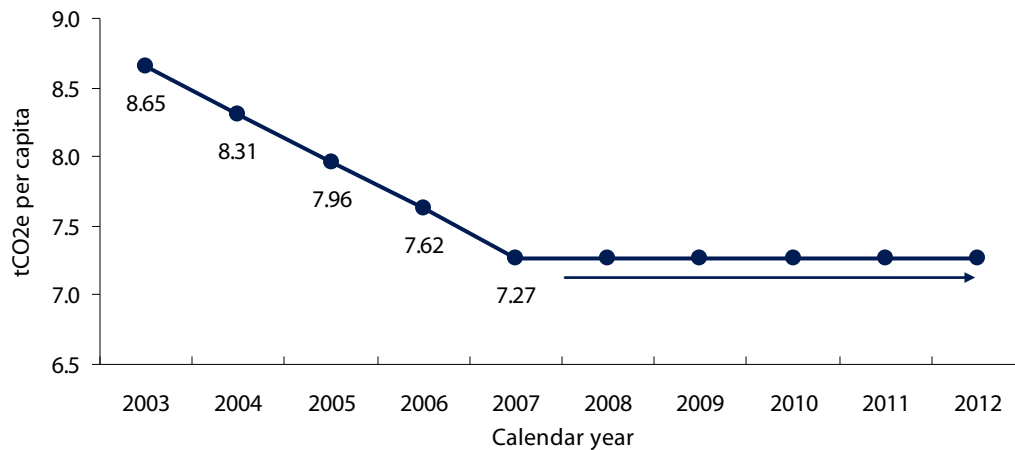
Note: IPART's role is shown in the red boxes.

2.3 Greenhouse gas benchmarks

GGAS sets annual per capita benchmarks for greenhouse gas emission reductions by the NSW electricity sector as a whole (the Electricity Sector Benchmarks). The Compliance Rule⁴ also establishes a framework for converting these electricity sector benchmarks into annual benchmarks for each benchmark participant.

Since 2007, the benchmark has been constant at 7.27 tonnes of carbon dioxide equivalent (tCO₂-e) of greenhouse gas emissions per capita in NSW. The benchmark progressively decreased to this per capita level from 8.65 tonnes when GGAS commenced in 2003. Unless amendments are made to reduce the target, it will remain at this level until GGAS terminates. In response to the Commonwealth's decision to delay the implementation of the CPRS, it is anticipated that the NSW Government will review the operation of GGAS to ensure its continued viability in the event of any further delays to commencing the CPRS. Figure 2.3 illustrates how the benchmark has changed since GGAS commenced in 2003.

⁴ Greenhouse Gas Benchmark Rule (Compliance) No. 1 of 2003.

Figure 2.3 NSW Benchmark targets (2003-12)

2.4 NSW benchmark participants

The Act imposes benchmark targets on all NSW electricity retail suppliers, certain generators and all market customers⁵. These companies are known as benchmark participants. In addition, large electricity customers⁶ with electricity loads greater than 100GWh and those carrying out State Significant Developments⁷ can elect to manage their own greenhouse gas benchmarks. These are called elective benchmark participants.

Electricity retailers have an incentive to restructure their electricity purchasing arrangements or to reduce the energy consumption of their customers to minimise the costs of meeting abatement obligations imposed by GGAS legislation. Large electricity customers that elect into GGAS may be able to minimise the abatement costs incurred by finding other more competitive sources for meeting their obligations. Elective participants can become accredited for reductions of on-site emissions from industrial processes at their sites and by so doing offset abatement and other operating costs. See Section 4.4 for further details.

Each benchmark participant is responsible for its contribution to reducing the NSW electricity sector benchmark. For example, if an electricity retailer sells 5% of total electricity sales in NSW, it is responsible for meeting 5% of the required reduction applied to the NSW electricity sector benchmark. Elective participants, having

⁵ A market customer is a customer who takes electricity supply in NSW directly from the national grid and is registered with AEMO as a 'market customer'.

⁶ A large electricity customer is defined as a customer other than a retail supplier, that on its own or together with certain related entities has an electricity load within NSW of over 100GWh per annum at one site or multiple sites owned or occupied by the customers, as long as one of the sites uses over 50GWh per annum.

⁷ State significant development has the same meaning as it has in the *Environmental Planning and Assessment Act 1979*. At this stage, no State significant developments have elected under the Scheme.

nominated which company sites are part of GGAS, must meet the benchmark reduction targets associated with electricity consumption at those sites.

Benchmark participants meet their obligation primarily by purchasing NGACs and surrendering them to IPART or to the ICRC when they lodge their compliance reports. These compliance reports, or benchmark statements, must be submitted to the Compliance Regulator by 18 March each year for the previous calendar year's activities.

2.5 Abatement Certificate Providers

ACPs carry out greenhouse gas abatement projects that are accredited under the GGAS Rules and create abatement certificates. The Rules set out the eligibility criteria and greenhouse gas accounting methods that ACPs must use to determine the value of abatement, and hence the number of abatement certificates each project can create.

GGAS also allows some large electricity customers to claim credit for reducing on-site emissions of greenhouse gases from (non-electricity related) industrial processes at sites which they own and control. Large User Abatement Certificates (LUACs) can be created for these activities. These certificates are not tradeable, but can be used by these participants to meet their elected benchmarks, thereby reducing their costs of compliance. In accordance with the LUAC Rule⁸, creation of LUACs is not directly related to electricity use.

Under the Rules, ACPs must specify the location of their project. Eligible DSA projects can only be undertaken in NSW or the ACT. Carbon sequestration activities can only be undertaken in NSW. Generation projects located in any jurisdiction interconnected with the national electricity grid supply into the common pool from which NSW consumers draw power. Therefore, interstate generation projects that are connected to the national electricity grid may apply for accreditation.

ACPs accredited to carry out eligible energy efficiency projects under the DSA Rule were transitioned into the Energy Savings Scheme which commenced on 1 July 2009. The original GGAS accreditations were then cancelled following a review, any final certificate creation and audit requirements. Since July 2009, ACPs can only use the DSA Rule for on-site generation that is used to reduce the electricity taken from the national electricity grid.

Applications for accreditation closed for GGAS on 31 December 2009 for all Rules following an amendment to the Act and in anticipation of the CPRS. The Act was also amended to end the eligibility of Category A generation projects to create NGACs from 30 June 2010.

Further detail about the activities of ACPs is provided in Section 4.

⁸ *Greenhouse Gas Benchmark (Large User Abatement Certificate) Rule No.4 of 2003.*

3 Benchmark participants

There were 40 benchmark participants for the 2009 compliance year in NSW; 26 licensed electricity retailers, 2 market customers, 1 generator⁹ and 11 large users of electricity who have voluntarily elected into GGAS (refer to Table 3.1 for the full list of all mandatory and elective benchmark participants). No State Significant Developments have elected into GGAS. One electricity retailer entered voluntary administration during 2009 and ceased to be a benchmark participant.

All benchmark participants are required to lodge an Annual Greenhouse Gas Benchmark Statement (benchmark statement) for a calendar year with IPART by no later than 18 March of the following year. In the majority of cases, IPART requires benchmark statements to be accompanied by an independent audit report. Benchmark participants submitting nil returns complete a simplified benchmark statement which does not require an audit. Additionally, audit exemptions are granted where benchmark participants have very low electricity purchases for the year.

The benchmark statement sets out the greenhouse gas benchmark for the individual benchmark participant and the number of abatement certificates surrendered to meet the participant's abatement obligation. An excess of emissions remaining after the surrender of abatement certificates is called a greenhouse shortfall. With the exception of the 2007 compliance year, benchmark participants can choose to carry forward to the following year a greenhouse shortfall of up to 10% of their benchmark without having to pay a penalty. Any shortfall carried forward must be abated the following year. For the 2009 compliance year, benchmark participants are liable to incur a financial penalty of \$12.50 per tonne of carbon dioxide equivalent for any shortfall¹⁰ (other than that carried forward).

Table 3.1 shows benchmark participants' performance against compliance requirements in 2009. The table separately shows mandatory and elective participants involved in GGAS and how each met its individual benchmark.

⁹ Delta Electricity is a prescribed generator under s73(B) of the Electricity Supply (General) Regulation 2001. However, Delta Electricity is also a licensed NSW electricity retailer. To avoid double-counting, Delta Electricity is counted only once as a benchmark participant in the total figure.

¹⁰ The calculation of the penalty and CPI adjustment is made pursuant to section 97CA of the Act and section 73C of the Regulation. The penalty is adjusted annually in line with CPI movements. However, during periods of low inflation the penalty is not adjusted due to a rounding mechanism in the formula. For the 2009 compliance year, the penalty rate of \$12.50 per tCO₂-e increased from the 2008 level of \$12.00.

Table 3.1 NSW benchmark participants compliance status in 2009

MANDATORY PARTICIPANTS		
Surrendered sufficient certificates to meet 2009 benchmark^d	Did not directly purchase or sell enough electricity in NSW to require the surrender of certificates for 2009	Opted to pay the greenhouse gas penalty for 2009
AGL Sales (Queensland Electricity)	ActewAGL Retail ^b	Independent Electricity Retail Solutions
AGL Sales	BBP Energy Markets ^a	Sanctuary Energy Pty Ltd
Aurora Energy	Dodo Power & Gas ^a	
Australian Power & Gas	Eraring Energy ^{a,c}	
Cogent Energy	GridX Power ^a	
Country Energy	Tarong Energy Corporation ^a	
Delta Electricity		
EnergyAustralia		
ERM Power Retail		
Integral Energy		
Macquarie Generation		
Momentum Energy Limited		
New South Wales Electricity		
Origin Energy Electricity		
Powerdirect		
Red Energy		
Sun Retail		
Tomago Aluminium ^c		
TRUenergy		
TRUenergy Yallourn		
ELECTIVE PARTICIPANTS		
Amcor Packaging (Australia)	N/A	N/A
BlueScope Steel (AIS)		
Boral Limited		
Carter Holt Harvey Australia		
Centennial Coal Company		
Hydro Aluminium Kurri Kurri		
Norske Skog Paper Mills (Aust)		
OneSteel Manufacturing		
Orica Australia		
Visy Industries Holdings		
Xstrata Coal NSW		
TOTAL: 31	TOTAL: 6	TOTAL: 2

a These participants did not purchase or supply electricity (directly under their licenses) in NSW during the compliance year.

b This participant did not purchase electricity directly from the national electricity grid. Its electricity purchases were included in the return of the benchmark participants who purchased electricity from the national electricity grid on its behalf.

c Registered with AEMO as a market customer, that is, an electricity customer taking supply directly from the national electricity grid.

d This list does not include Jackgreen International which entered administration in 2009.

Box 3.1 Determination of GGAS abatement obligations for each compliance year

This explanation outlines, at a conceptual level, how the total GGAS abatement obligation for each compliance year is determined, and the key factors that result in it changing from year to year.

The total GGAS abatement obligation for each year is a function of the difference between the calculated emissions intensity of NSW electricity sales (based on the NSW Pool Coefficient) and the benchmark emissions intensity for that year. The Pool Coefficient establishes the combined emissions intensity tCO₂-e/MWh of the pool of NSW Category B generators, as explained in Section 7.5. The benchmark emissions intensity is a function of the NSW Greenhouse Gas Benchmark (see Section 2.3) which is based on an acceptable level of emissions for persons in NSW and an adjustment to account for previous abatement claimed under the DSA Rule for energy efficiency activities to avoid a 'double benefit'.

The annual NSW Greenhouse Gas Benchmark progressively reduced from 2003 to 2007, and this is the primary reason for the GGAS abatement obligation increasing year by year during this period^a. As outlined in Figure 2.2, the NSW Greenhouse Gas Benchmark for 2009 is the same as it was for 2008. The resulting GGAS abatement obligation for 2009 is approximately 24.8 million certificates (see Figure 7.2), compared with 24.1 million certificates for 2008 and 18.4 million in 2007. This is a significant reduction in the rate of increase in abatement obligation, from 30% from 2007 to 2008, to 3% from 2008 to 2009. The reason for this change is primarily due to the time lag in adjustments for previous energy efficiency DSA certificate creation.

A reduction in energy usage from energy efficiency activities yields 2 benefits for benchmark participants:

1. certificates are created that can be surrendered to meet targets, and
2. future electricity demand is reduced, thus making future emissions targets easier to achieve.

To avoid a double benefit, an adjustment is made to account for previous year's energy efficiency DSA certificate creation in calculating the GGAS abatement obligation. A 2 year lag is introduced simply by the mechanics of the adjustment.

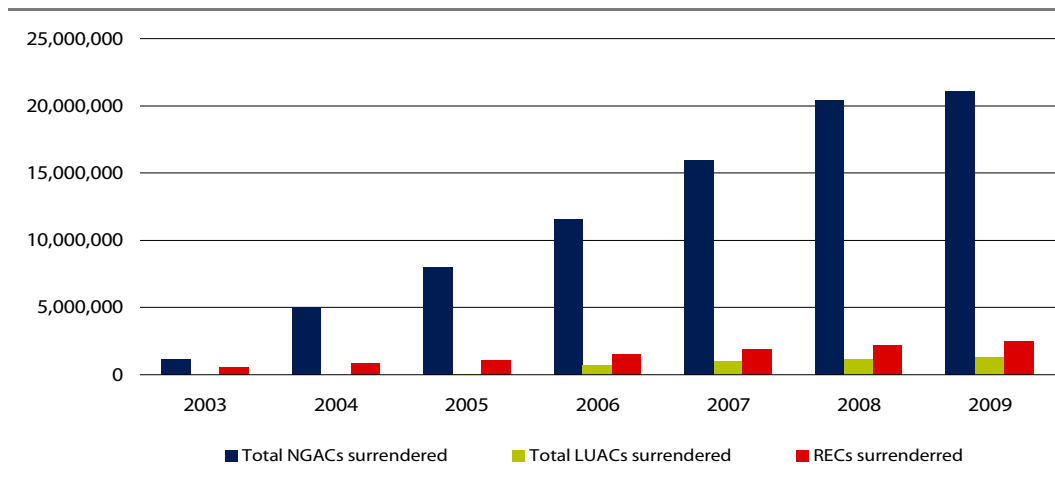
This adjustment is equal to the electricity savings associated with the energy efficiency DSA certificate creation 2 years previously (referred to as the '2 year DSA lag adjustment'). To calculate the 2009 abatement obligations, the 2 year DSA lag adjustment references the 2007 energy efficiency DSA certificate creation figure (9.9 million NGACs), a slight increase from the figure for 2006 (8.9 million NGACs), but still substantial when compared with the 1.5 million NGACs in 2005 or the 2003 to 2007 average of 4.3 million NGACs. The 2006 and 2007 creation results are the primary reason for the substantial increase in the total GGAS abatement obligation for 2008 and 2009, as shown in Figure 7.2.

^a The small annual increases in the NSW Pool Coefficient (see Section 7.5) and in electricity sales were also minor contributing factors to the year by year increase in GGAS abatement obligations.

3.1 Abatement and Renewable Energy Certificates surrendered

For the 2009 compliance year, approximately 21.1 million NGACs were offered for surrender, representing an increase of 3% compared to the 2008 compliance year. As depicted in Figure 3.1, NGACs continue to make up the largest percentage of abatement certificates surrendered to meet required compliance obligations.¹¹

Figure 3.1 Abatement and Renewable Energy Certificates surrendered



Since GGAS began in 2003, almost 83 million NGACs have been surrendered. This figure increases to approximately 87 million certificates when LUACs are added and just over 97 million certificates when equivalent RECs are also taken into account. Yearly surrenders are set out in Table 3.2.

Table 3.2 shows the number of certificates required to completely meet the greenhouse abatement obligations in each year. Note that the allowed carried forward shortfall (see Section 3.1.1) has been included in the years that the obligation has been incurred rather than when the certificates were actually surrendered. For example, the 2006 shortfall has been added to the 2006 total obligation rather than included in the 2007 return when they were actually surrendered (see Table 3.2, footnote b).

Table 3.2 has also been prepared on the basis that no greenhouse penalties have been incurred. Based on this methodology, the 2009 greenhouse abatement obligation totals 24,852,164 abatement certificates. In Table 3.3, surrenders are presented in terms of percentages of each type of certificate, including any shortfall amounts carried forward to the next compliance year.

It should be noted that Jackgreen International's 2009 liability of approximately 109,201 certificates has not been included in the following tables or calculations because it is an estimate only. See Section 3.4 for further information.

¹¹ Total Abatement/Equivalent Renewable Energy Certificates required for compliance is a total of NGACs/LUACs required to meet obligations and RECs counted toward compliance expressed as an equivalent number of NGACs.

Table 3.2 NSW Total Abatement and Renewable Energy Certificates offered for surrender and accepted since GGAS began

	Compliance Year						
	2003	2004	2005	2006	2007	2008	2009
Total NGACs surrendered	1,166,866	5,037,847	7,982,204	11,592,583	15,922,727	20,456,449	21,104,475
Total LUACs surrendered	0	0	64,401	686,560	1,040,462	1,141,096	1,295,496
RECs counted toward compliance	544,518	841,194	1,117,907	1,512,006	1,878,514	2,205,601	2,535,679
NGAC equivalent ^a	488,432	762,122	1,020,649	1,404,653	1,767,682	2,104,143	2,452,002
Actual Total Certificates surrendered to meet compliance obligations for the year	1,655,298	5,799,969	9,067,254	13,683,796	18,730,871	23,701,687	24,851,973
Total Certificates required to meet compliance obligations for the year ^b	1,699,941	5,897,234	9,150,547	13,802,181	18,387,285	24,148,452	24,852,164
Total shortfalls carried forward to next compliance year	44,643	141,908	225,201	343,586	0	446,765 ^c	446,956

^a RECs are not directly equivalent to NGACs. To calculate the NGAC equivalent the number of RECs is multiplied by the pool coefficient for that year (for 2009 that number is 0.967 (tCO₂-e/MWh)).

^b Total Certificates required to meet compliance obligations for the year is a total of NGACs and LUACs required to meet obligations plus RECs counted toward compliance expressed as NGAC equivalents plus shortfalls carried forward to the following year minus the shortfall carried forward from the previous year. Total = NGACs + LUACs + RECs + shortfall current year – shortfall previous year.

^c This is a corrected figure. The 2,526 reported in the *Compliance and Operation of the NSW Greenhouse Gas Reduction Scheme during 2008* was incorrect.

Note: Some of the data in this table differs slightly from data published in tables in previous *Compliance and Operation of the NSW Greenhouse Gas Reduction Scheme* reports. Adjustments have been made to correct inconsistencies in calculations and reporting that have been identified in quality assurance reviews.

Table 3.3 Components of Abatement since GGAS began (expressed as total surrenders plus carry forward to following year)

Compliance Year	2003	2004	2005	2006	2007	2008	2009	TOTAL
NGACs surrendered	68.6%	84.8%	85.9%	82.6%	85.0%	84.7%	83.4%	84.0%
LUACs surrendered	0.0%	0.0%	0.7%	4.9%	5.6%	4.7%	5.1%	4.3%
RECs taken into account (NGAC equivalent)	28.7%	12.8%	11.0%	10.0%	9.4%	8.7%	9.7%	10.1%
Greenhouse shortfall ^a	2.6%	2.4%	2.4%	2.4%	0.0%	1.9%	1.8%	1.7%
Total abatement obligations	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

^a In 2007, no shortfall was allowed to be carried forward to ensure that NSW met its target in line with the Kyoto protocol.

Note: Some of the data in this table differs slightly from data published in tables in previous *Compliance and Operation of the NSW Greenhouse Gas Reduction Scheme* reports. Previous components have generally been expressed as a percentage of total abatement which includes any obligation carried forward from the previous year. These figures are now expressed as a percentage of surrenders plus obligations elected to be carried forwards to the following year. Total abatement obligations = NGACs surrendered + LUACs surrendered + RECs accounted + shortfall obligations.

Almost 1.3 million LUACs were surrendered by 8 elective benchmark participants for the 2009 compliance year. LUACs represented approximately 6% of total abatement certificates surrendered to meet required compliance obligations. The number of LUACs surrendered was approximately 14% higher than in 2008, but the proportion of LUACs surrendered as a part of the total certificate surrender remained steady.

Table 3.4 shows that Boral Limited, Orica Australia and Xstrata Coal NSW met their benchmark obligation in full from the surrender of LUACs. Five elective benchmark participants used a combination of both LUACs and NGACs to meet their respective benchmarks. Overall the percentage of benchmark obligation met through the surrender of LUACs remained constant at 5%, although most of these participants increased their proportion of LUACs surrendered in 2008. Only one large user met their obligation by surrendering a smaller proportion of LUACs than in 2008.

Carter Holt Harvey Australia, Centennial Coal Australia, OneSteel Manufacturing, and Visy Industries did not surrender any LUACs to meet their abatement obligation in this compliance year.

Table 3.4 Percentage of Large User Abatement certificates surrendered in 2008 and 2009 by individual large users^a

Large Users (that surrendered LUACs)	2008 LUACs surrendered (as a % of total abatement)	2009 LUACs surrendered (as a % of total abatement)
Amcor Packaging (Australia)	48%	66%
BlueScope Steel	20%	22%
Boral Limited	91%	100%
Carter Holt Harvey Australia	7%	0%
Centennial Coal (Aust.)	0%	0%
Hydro Aluminium Kurri Kurri	75%	86%
Norske Skog Paper Mills (Australia)	8%	11%
Onesteel Manufacturing	0%	0%
Orica Australia	91%	100%
Tomago Aluminium	52%	59%
Visy Industries Holdings	0%	0%
Xstrata Coal NSW	29%	100%
Total	5%	6%

^a Individual total abatement for the year is calculated by the number of certificates required to attain a zero shortfall including any shortfall carried forward from the previous year.

In addition to abatement certificates, GGAS allows benchmark participants to count RECs associated with electricity purchases in NSW to meet individual benchmarks. RECs are surrendered under the *Renewable Energy (Electricity) Act 2000 (Cth)* which is administered by the Office of the Renewable Energy Regulator.

The total number of RECs counted for abatement increased by 15% compared to the 2008 compliance year. The percentage of RECs counted in relation to the total number of abatement certificates required for compliance has increased marginally to be 9.7% of total abatement, compared with 8.7% in 2008. Since GGAS began, the usage of RECs has declined steadily from 28.7% to 8.7%. The increase to 9.7% for 2009 suggests that this decline has been arrested.

3.1.1 Allowable carry forward of greenhouse shortfalls

With the exception of the 2007 compliance year, the legislation allows for benchmark participants to carry forward to the next year a greenhouse shortfall of up to 10% of their benchmark without having to pay a penalty.¹² Any shortfall carried forward must be abated the following year.

The total amount of allowable greenhouse shortfalls being carried forward to 2010 is 446,956t CO₂-e. This represents around 1.8% of the total abatement in 2009.

Table 3.5 Benchmark participants carrying forward a greenhouse shortfall to 2010

Benchmark participant	Greenhouse shortfall (as % of benchmark)
Carter Holt Harvey Australia	9.1%
Independent Electricity Retail Solutions	10.3% ^a
Macquarie Generation	10.0%
Sanctuary Energy	9.2%

^a This exceeds 10% due to rounding of penalty calculations.

¹² s97BE of the Act states that a greenhouse shortfall in any year (other than the year commencing 1 January 2007) may, subject to the greenhouse gas benchmark rules, be carried forward to the next year.

3.2 Types of abatement certificates surrendered

Table 3.6 provides a detailed breakdown of types of certificates (NGACs/LUACs) offered for surrender and accepted for each year of GGAS operation.

Table 3.6 Types of certificates (NGACs/LUACs) offered for surrender and accepted

	Generation Rule	DSA Rule	CS Rule	Total NGACs	LUAC Rule	Total
2003	1,114,174 95.5%	52,692 4.5%	0 0.0%	1,166,866 100.0%	0 0.0%	1,166,866 100.0%
2004	4,432,113 88.0%	605,734 12.0%	0 0.0%	5,037,847 100.0%	0 0.0%	5,037,847 100.0%
2005	7,599,850 94.4%	382,354 4.8%	0 0.0%	7,982,204 99.2%	64,401 0.8%	8,046,605 100.0%
2006	9,291,261 75.7%	2,251,272 18.3%	50,050 0.4%	11,592,583 94.4%	686,560 5.6%	12,279,143 100.0%
2007	9,739,237 57.4%	6,158,491 36.3%	24,999 0.1%	15,922,727 93.9%	1,040,462 6.1%	16,963,189 100.0%
2008	10,866,268 50.3%	9,407,377 43.6%	182,803 0.9%	20,456,448 94.8%	1,141,096 5.2%	21,597,544 100.0%
2009	12,860,969 57.4%	7,536,584 33.6%	706,922 3.2%	21,104,475 94.2%	1,295,496 5.8%	22,399,971 100%

Note: Percentage totals may not add due to rounding.

The mix of the types of certificates surrendered and accepted in 2009 differed from the previous year, ie:

- ▼ Generation Rule certificates comprised the greatest proportion of the total number of certificates surrendered and accepted (57.4% for 2009) compared to the previous year (50.3% for 2008).
- ▼ DSA Rule certificates comprised a smaller proportion of the total number of certificates surrendered and accepted (33.6% for 2009) compared to the previous year (43.6% for 2008).
- ▼ LUACs comprised a slightly larger proportion of the total number of certificates surrendered and accepted (5.8% for 2009) compared to the previous year (5.2% for 2008).
- ▼ CS Rule certificates represented a larger proportion of total abatement certificates surrendered (3.2% for 2009) compared to the previous year (0.9% for 2008).

3.3 Greenhouse Gas penalty paid in 2009

Section 97 CA(1) of the *Electricity Supply Act 1995* provides that a benchmark participant who fails to comply with its individual greenhouse gas benchmark for that year is liable to pay the greenhouse gas penalty, which is adjusted each year for changes to the Consumer Price Index.¹³ For the 2009 compliance year, the greenhouse penalty was set at \$12.50 for each tonne of CO₂-e by which a benchmark participant's attributable emissions exceeds its benchmark and any allowable shortfall.¹⁴

Independent Electricity Retail Solution (IERS) and Sanctuary Energy opted to pay the greenhouse gas penalty in respect of their excess emissions (\$1,000 and \$14,287.50 respectively). The GGAS liability for IERS was 80 tCO₂-e and for Sanctuary Energy 1,143t CO₂-e. The combined greenhouse gas liabilities represented 0.00005% of the total annual greenhouse gas benchmark obligation. These benchmark participants submitted their benchmark statements and paid the greenhouse gas penalty by the surrender deadline of 18 March. The Compliance Regulator is satisfied that both benchmark participants have met their greenhouse gas obligations.

3.4 Cessation of benchmark participants

Jackgreen International entered voluntary administration on 18 December 2009. At the time, its greenhouse liability was estimated to be 109,201 NGACs for the 2009 compliance year, on the assumption that the company would meet its GGAS compliance obligation solely from NGACs. This corresponds to a financial penalty of \$1,365,012 based on the 2009 penalty rate of \$12.50/tCO₂-e. This information was provided to Jackgreen International's administrator.

¹³ Refer to section 73C of the Regulation for the CPI adjustment formula.

¹⁴ The penalty may be adjusted annually in line with CPI movements. However, during periods of low inflation the penalty is not adjusted due to a rounding mechanism in the formula. For the 2009 compliance year, the GGAS penalty increased from the 2008 level of \$12.00 to a rate of \$12.50 tCO₂e.

4 Abatement certificate providers

Abatement Certificate Providers (ACPs) are accredited by the Scheme Administrator to undertake eligible abatement projects. They create NGACs and/or LUACs (depending on their accreditation), each of which represents the abatement of one tonne of carbon dioxide equivalent emissions.

The Scheme Administrator is responsible for approving applications for accreditation from potential ACPs. Applicants must demonstrate that they meet the criteria for accreditation according to the Act, Regulation and Rules. These criteria are well documented on the GGAS website and in other publicly available material. Following accreditation, the Scheme Administrator monitors the ongoing compliance of ACPs with the GGAS Rules and specific conditions of accreditation.

At the end of 2009 there were 225 ACPs eligible to create certificates for abatement activity, an increase from the 221 providers accredited at the end of 2008. The Tribunal committee sitting as Scheme Administrator met 12 times during 2009 and approved a total of 14 accreditation applications and 10 cancellations. For the life of GGAS, 326 applications have been accredited, and 101 accreditations cancelled.

In establishing the framework for accreditation and ongoing monitoring of ACPs, IPART as the Scheme Administrator, has continued to be guided by the need to ensure the integrity of GGAS through robust assessment and quantification of abatement and the ongoing monitoring of ACPs' compliance with obligations arising from accreditation.

During 2009, the compliance performance by GGAS ACPs was acceptable (see Section 4.7 for further details). Compliance is monitored through the use of audits. Unlike previous years, the majority of contraventions in 2009 related to contraventions of specified conditions of accreditation, rather than the improper creation of certificates (ie over-creation).

4.1 Accreditations and cancellations of accreditations

Table 4.1 sets out the number of accreditations granted and cancelled for each year GGAS has been operating, categorised by Rule. Sections 4.2 - 4.5 provide an overview of the types of activities that have been accredited under each of the Rules and provide more detail about accreditation activity during 2009.

Table 4.1 Number of GGAS accreditations granted each year by Rule

	Generation Rule	DSA Rule	LUAC Rule	CS Rule	Total
Accredited in 2003 ^a	14	3	1	0	18
Cancelled in 2003	0	0	0	0	0
Accredited in 2004 ^a	67	48	0	1	116
Cancelled in 2004	7	34	0	0	41
Accredited in 2005 ^a	25	43	1	3	72
Cancelled in 2005	7	12	0	0	19
Accredited in 2006 ^a	9	17	2	1	29
Cancelled in 2006	4	4	0	0	8
Accredited in 2007 ^a	24	19	4	1	48
Cancelled in 2007	6	5	0	0	11
Accredited in 2008 ^a	17	10	1	1	29
Cancelled in 2008	5	7	0	0	12
Accredited in 2009^a	12	1	1	0	14
Cancelled in 2009	6	4	0	0	10
Current total^b	133	75	10	7	225

a This represents the number of accreditations approved by the Scheme Administrator in the calendar year.

b This represents accreditations still entitled to create certificates as at 31 December 2009.

Note: An accreditation may cover several 'accredited projects' with similar activity taking place. For example, activities in the commercial and residential sectors may be counted as separate projects but one DSA accreditation.

As can be seen in Table 4.1, the number of new accreditations declined significantly during 2009. The greatest decline (which was to be expected) was in DSA Rule applications due to the transition of the energy efficiency component of GGAS to the ESS.

Accreditations are cancelled for a variety of reasons. Most commonly, cancellation follows a corporate restructure or sale, often resulting in a fresh accreditation for the same project but with a different accreditation owner. In other cases, the accreditation is completed, and for a small number of accreditations cancellation occurs because a project ceases to be eligible.

As accreditations are not transferrable, the opportunity for a takeover company to reapply for accreditation is no longer available due to the amendment to the Act from 1 January 2010 which closed off new applications.

4.2 Generation Rule

The *Greenhouse Gas Benchmark (Generation) Rule No. 2 of 2003* (Generation Rule) provides for the creation and calculation of certificates through a range of different power generation activities (in NSW and interstate). Such activities include small and large scale fossil fuel fired systems as well as renewable generation and cogeneration.

The Generation Rule enables electricity generators to create certificates for:

- ▼ producing electricity that has a lower emission intensity than the NSW Pool Coefficient (the Relative Intensity Approach), or
- ▼ improving the efficiency of electricity production by a generating system that is generally operating at an emissions intensity above the NSW pool coefficient (the Efficiency Improvement Approach).

The extent to which abatement certificates are created under either, or both, of these approaches is determined by the generating system's assigned Category (A, B, C or D) and its assigned NSW Production Baseline. Box 4.1 outlines generation system categories.

Box 4.1 Categories of Generating System under the Generation Rule

- ▼ **Category A** – those generating systems which entered into power purchase agreements (PPAs) with electricity retailers under the previous NSW voluntary benchmarks scheme where these contracts are still on foot. These generators are listed in Schedule C of the Generation Rule. This category of generation will no longer be eligible under the Scheme, effective 1 July 2010.
- ▼ **Category B** – Base-load generating systems located in NSW (the 'NSW pool generators'). These are listed in Schedule B of the Generation Rule.
- ▼ **Category C** – These are generating systems that generally pre-date the announcement of GGAS, on 1 January 2002, and are not classified as Category A, B or D.
- ▼ **Category D** – Effectively 'new generation' plant, in that their operation commenced after announcement of GGAS. Also includes fossil fuel plant <30 MW that started operation after 30 June 1997; and all renewable generation plant established after 1 January 1997.

For further explanation of these categories see Appendix B.

The Generation Rule allows abatement certificates to be created from activities outside NSW and the ACT provided that the generating system's output is exported to a registered distribution or transmission system connected to the national grid and is thus interconnected with the NSW grid. As a result, generators in Victoria, Tasmania, South Australia and Queensland have been accredited under GGAS. In each case, generators must have adequate metering and record-keeping procedures to support the calculation of certificates under the Generation Rule and can only

create abatement certificates for that portion of electricity that is exported into the national electricity grid.

Within the generation activities satisfying the requirements listed above, eligible generation fuels (other than the traditional fuels of coal and natural gas) include the use of landfill gas, sewage gas, manufactured methane gas (biogas), and other eligible waste methane as fuel for generation. These types of generation can create RECS as well as abatement certificates because GGAS recognises the avoidance of methane emissions via combustion of these fuels (methane having a global warming potential 21 times that of carbon dioxide) in addition to the zero emissions associated with the fuel source. See Box 4.2 for an example of a landfill gas project.

The use of waste heat from generating activities (cogeneration) is also recognised within GGAS. The total greenhouse gas emissions of a generating system (which impacts its emissions intensity) may be adjusted downwards in recognition of the notional greenhouse gas emissions avoided through the beneficial capture and use of the waste heat.

Box 4.2 Case study: Woodlawn Bioreactor Energy Pty Ltd

The Woodlawn Bioreactor is a landfill, operated by Veolia Environmental Services (Australia) Pty Ltd, and located in Tarago NSW, on the site of the former Woodlawn open cut mine. Woodlawn Bioreactor Energy (WBE) Pty Ltd, the company accredited to create NGACs from the landfill, is a subsidiary company of Veolia.

After initially being accredited as a future project in January 2006, the accreditation changed status from a future project to a fully implemented project in late 2008. As part of the implementation process, the Secretariat accompanied auditors from Connell Wagner on a site visit to the Woodlawn Bioreactor in late October 2008. Following positive audit assurance, the site was accredited to create NGACs.

As waste is added to a landfill, landfill gas (LFG) begins to be created in the form of Carbon Dioxide (CO₂) and methane (CH₄) as part of the decomposition of the waste. The difference between a 'bioreactor landfill' (such as the Woodlawn Bioreactor) and a traditional landfill is that waste is carefully placed into 'cells', so as to both maximise the amount of methane created and minimise the loss of methane to atmosphere. This is achieved through re-use of leachate, by spraying it onto active 'cells' to enhance decomposition, and by covering those 'cells' with semi permeable paper-mache like coverings in an attempt to prevent the LFG from escaping to atmosphere.

The LFG is extracted directly from the floor of the landfill and then used as a fuel for use in internal combustion engines that produce electricity for export to the grid.

At present, the site produces enough waste methane to support approximately 2.5MW of electricity generation, through the use of 3 x 1MW generating units. As the mine fills and more LFG becomes available, the generation capacity will be scaled to accommodate the gas flows, with generation capacity planned to peak at around 20MW by 2025.

4.2.1 Applications and accreditations

In 2009, 12 new projects were accredited to create certificates under the Generation Rule including 5 future projects (refer to Section 4.6 for further information on future projects). Of the 12 new projects, 6 were in NSW, 3 in Queensland and 3 in Victoria.

In 2009, the Scheme Administrator also assessed 34 amendments to existing accreditations. Three of these were in regard to the commissioning of accredited future projects (also see Section 4.6), 2 related to changes associated with an accredited party's approved Performance Improvement Testing Regime (PITR) document (see Section 4.2.3) and 13 related to use of the Methane Energy Uncertainty Methodology for ongoing NGAC creation (see Section 4.2.4). The remainder of amendments related to adjustments to audit regimes, updating of Rule defined default factors, changes reflecting generating system performance, and amendments to the nominated number of NGACs a generating system may create.

Table 4.2 provides a breakdown of Generation Rule accreditations for each year.

4.2.2 Cancellations of Generation Rule accreditations

During 2009, 6 Generation Rule accreditations were cancelled at the request of the accredited parties. The cancellations involved:

- ▼ four cases (in Victoria) where the power purchase agreements, in respect of Category A generation, had expired, thus making them ineligible under the Scheme, and
- ▼ two cases (1 in Victoria and 1 in Tasmania) where the ACP ceased to be the owner of the generating system (with subsequent applications for accreditation received from the new owner).

Table 4.2 Generation Rule – Accreditation applications approved by year, location, and category of Generating System**New South Wales**

Category	Fuel Type	2003	2004	2005	2006	2007	2008	2009
Category A	Biomass		3					
	Hydro		6					
	Landfill gas		3					
	Natural gas		1					
	Waste coal mine gas		2					
Category B	Coal		6	1				
Category C	Landfill gas	1						
Category D	Biomass		2					
	Coal Seam Methane					1		
	Landfill gas	2	2		1	4	2	4
	Natural gas			1		1	1	1
	Sewage gas			1				
	Waste coal mine gas		2		1		1	1
Total accreditations accredited		3	27	3	2	6	4	6
Total accreditations cancelled		0	1	0	4	1	0	0

Australian Capital Territory

Category	Fuel Type	2003	2004	2005	2006	2007	2008	2009
Category D	Biomass					1		
	Landfill gas	2						
Total accreditations accredited		2	0	0	0	1	0	0
Total accreditations cancelled		0	0	0	0	0	1	0

Queensland

Category	Fuel Type	2003	2004	2005	2006	2007	2008	2009
Category A	Landfill gas		1					
Category C	Biomass						1	
	Coal		1				1	
	Natural gas			2			1	
Category D	Coal		1	1	1		1	
	Biomass				1			
	Landfill gas		8					2
	Natural gas		1	1	1	1	2	1
	Waste coal mine gas		2			1	2	
Total accreditations accredited		0	14	4	4	3	6	3
Total accreditations cancelled		0	1	0	0	3	2	0

South Australia

Category	Fuel Type	2003	2004	2005	2006	2007	2008	2009
Category A	Landfill gas	4	2					
Category C	Coal					1		
	Natural gas		1	3		1	3	
Category D	Landfill gas						1	
	Natural gas		2					
Total accreditations accredited		4	5	3	0	2	4	0
Total accreditations cancelled		0	0	0	0	0	2	0

Victoria

Category	Fuel Type	2003	2004	2005	2006	2007	2008	2009
Category A	Hydro		7	6				1
	Landfill gas	5	6	1		1		
	Natural gas		1	3				
Category C	Coal		1		2	1		
	Natural gas		1	1				
	Sewage gas		1					
Category D	Biomass			2				
	Landfill gas		4	1		1	1	2
	Natural gas			1	1	2	1	
Total accreditations accredited		5	21	15	3	5	2	3
Total accreditations cancelled		0	5	7	0	1	0	5

Tasmania

Category	Fuel Type	2003	2004	2005	2006	2007	2008	2009
Category C	Hydro					2		
	Natural gas					1		
Category D	Landfill gas					3		
	Natural gas					1	1	
Total accreditations accredited		0	0	0	0	7	1	0
Total accreditations cancelled		0	0	0	0	1	0	1

All Jurisdictions

	2003	2004	2005	2006	2007	2008	2009
Total accreditations accredited	14	67	25	9	24	17	12
Total accreditations cancelled	0	7	7	4	6	5	6
Total accreditations at the end of the year	14	74	92	97	115	127	133

Note: Refer to Appendix B for further information on Categories of the Generation Rule.

4.2.3 Performance Improvement Testing Regime

Generators using the Efficiency Improvement Approach (Method 2) are required to develop and implement a Performance Improvement Testing Regime (PITR).

The primary purpose of the PITR is to establish a methodology by which the baseline performance of the generating system (prior to undertaking performance improvements) can be compared to the post-improvement performance of the generating system (for the purposes of calculating abatement activity for ongoing measurement periods).

During 2009, 7 generators created NGACs using the PITR methodology. To do so requires that each generator's PITR document be accepted by the Scheme Administrator, following prior technical review by industry experts. All 7 generators had their PITR's accepted in 2007. However one of these generators was subsequently required to provide a revised PITR prior to creating 2009 calendar year NGACs. Following further technical review this latter generator had its revised PITR accepted in mid-2010.

4.2.4 Methane Metering

During the course of 2008, the Scheme Administrator developed a methodology, in consultation with industry and experts, for determining the uncertainty associated with the direct metering of waste methane fuel, known as the Methane Energy Uncertainty Methodology (MEUM), where the fuel is very 'dirty' and interferes with the ongoing accuracy of the measurement instruments.

The MEUM is a pioneering approach to applying uncertainty in a practical way and represents a major piece of innovative work in what is a very difficult and complex subject area. With the MEUM, generators using Equations 13 or 16 of the Rule are able to move away from the use of conservative default factors for the estimation of energy content of waste methane fuels used (such as landfill gas, sewage gas or waste coal mine gas). Using the MEUM approach they can instead use the actual gas energy content of waste methane fuel consumed by their generating systems, and thereby realise a better reflection of true abatement, and increased NGAC numbers.

The MEUM provides ACPs with a mechanism to determine the uncertainty associated with the measurement of the actual energy content. It has been developed in accordance with the ISO Standard – Guide to Uncertainty Measurement.

At a minimum, 3 components are required to determine actual energy content. These comprise:

- ▼ a flow meter
- ▼ a gas (methane) analyser, and
- ▼ a flow computer (the flow computer integrating volumetric flow over time).

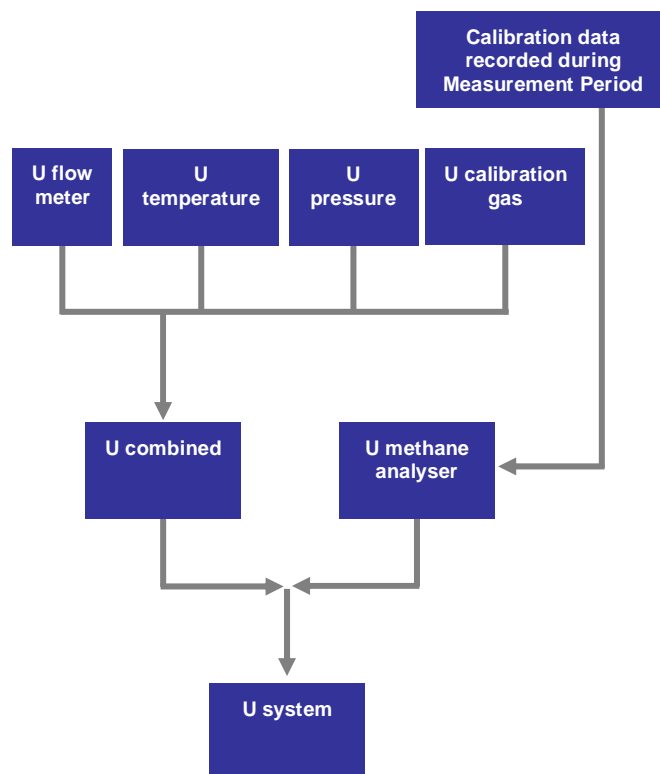
Of these components, it is the methane analyser which returns the largest source of error. This is due to the analyser's sensitivity to other hydrocarbons, temperature, pressure and moisture. While the MEUM does consider the performance of the other components, the principal focus is the methane analyser. This is because landfill gas is not a clean gas, rather it is a gas which has no consistent chemical composition, and one that has been shown to consistently foul instrumentation. Accordingly, the analyser's performance requires a great deal of monitoring, and this is invariably achieved through site maintenance and testing regimes.

The MEUM utilises the results of methane analyser calibrations recorded on a weekly (or other agreed periodic) basis by maintenance staff of the ACP. The calibration results provide a snapshot of how the analyser is performing in reference to a NATA-certified test gas of known methane concentration.

These calibration results are then statistically assessed using an expanded uncertainty (95% confidence limit). The influence of the flow meter, pressure and temperature are also considered, yielding the overall uncertainty in the measurement of actual energy content over the Measurement Period.

This uncertainty is then incorporated into the ACP's calculation of NGACs, where the number of NGACs to be created are adjusted by the uncertainty determined under the MEUM. The different elements of uncertainty are illustrated in Figure 4.1

Figure 4.1 Uncertainty calculation process



Note: U = uncertainty.

The MEUM approach was endorsed by the Scheme Administrator in early 2009, and 13 landfill gas generating systems were subsequently accredited during 2009 to utilise the MEUM in their ongoing NGAC calculations. Further information regarding development of the MEUM can be found in Section 4.2.5 of the *Compliance and Operation of the NSW Greenhouse Gas Reduction Scheme during 2008*.

4.3 Demand Side Abatement Rule

The *Greenhouse Gas Benchmark (Demand Side Abatement) Rule No. 3 of 2003* (DSA Rule) is defined as a reduction in greenhouse gas emissions resulting from actions taken on the customer side of an electricity meter (ie, the 'demand side'). The DSA Rule was amended on 1 July 2009 with the implementation of the new ESS. On this date, the end-use energy efficiency component of the DSA Rule ceased, leaving only the on-site generation element of the DSA Rule active.

The amended DSA Rule now only provides for the creation and calculation of certificates where greenhouse gas emissions are reduced through eligible on-site electricity generation. Under the amended DSA Rule, project proponents undertake on-site generation (DSA activities) to create certificates. The on-site electricity generation essentially replaces supply from the National Electricity Market leading to demand side energy efficiencies.

The amended DSA Rule continues to exclude certain activities from creating certificates, such as:

- ▼ those which can create certificates under another Rule
- ▼ activities which reduce electricity consumption by reducing the economic benefit from the use of the electricity
- ▼ Green Power purchases (or purchases of similar products)
- ▼ activities to reduce losses in electricity transmission or distribution networks, and
- ▼ installation of solar water heaters for which Renewable Energy Certificates can be created.

DSA on-site generation projects vary greatly depending on the technologies used and the size of the project. The abator must apply the Generation Emissions Method of the Generation Rule in calculating how many certificates their DSA project will create.

4.3.1 Applications and accreditations

There was 1 new accreditation approved under the DSA Rule in 2009, under the on-site generation component.

Box 4.3 Case study: Sydney Water – North Head Cogeneration Plant

The North Head Cogeneration Plant is located on the site of Sydney Water's North Head Sewage Treatment Plant, in Manly NSW, and was accredited by the Scheme Administrator on 3 June 2009.

The cogeneration plant consists of one 1416kW engine, which uses methane generated from sewage gas as its sole fuel source and provides electricity. The sewage gas is generated onsite, using an anaerobic biosolids digestion system, and is pre-treated in a scrubber system prior to being transferred to the cogeneration unit. Waste heat from the production of electricity is used to heat incoming sludge, to maintain the temperature of the biosolids plant and promote the sludge digestion process, while the electricity generation is used onsite thereby reducing the need for grid supply.

Sydney Water is entitled to create NGACs for combusting methane in the sewage gas (Clause 12 of the DSA Rule and Equation 6 of the Generation Rule) which would have otherwise have been emitted to the atmosphere.

In addition to assessing new DSA Rule applications during 2009, the Scheme Administrator also assessed 13 amendments to accreditations. All of these amendments were for projects accredited for the distribution of compact fluorescent lamps (CFL) under the Default Abatement Factors (DAF) Method. The amendments all result from the change to the DSA Rule in December 2008 which reduced the DAFs for CFLs.

At 30 June 2009 there remained 79 accreditations able to create certificates under the DSA Rule.¹⁵ Of these, 72 were projects that will be transitioned into the ESS or cancelled. Projects that transition into the ESS will be cancelled under GGAS after final audit and reporting is completed.

Table 4.3 provides a complete breakdown of all DSA Rule accreditations (under both the old and amended Rule) for each year of GGAS operation.

¹⁵ Certificates can only be created for abatement that occurred between 1 January 2009 and 30 June 2009, however ACPs have until 30 June 2010 to create certificates for this abatement period.

Table 4.3 DSA Rule – Accreditation applications approved by year

Type	2003	2004	2005	2006	2007	2008	2009
Default Abatement Factors Method	0	7	8	14	11	7	0
Project Impact Assessment Method	2	36	31	2	4	1	0
Metered Baseline Method - baseline per unit of output	1	0	1	0	1	0	0
Metered Baseline Method - baseline unaffected by output	0	0	1	1	0	0	0
Metered Baseline Method - normalised by ABGR scheme	0	1	1	0	1	1	0
Generation Emissions Method	0	4	1	0	2	1	1
Total accreditations accredited	3	48	43	17	19	10	1
Total accreditations cancelled	0	34	12	4	5	7	4
Total accreditations at the end of the year	3	17	48	61	75	78	75

4.3.2 Cancellations of DSA accreditations

There were 4 DSA Rule accreditations cancelled in 2009 at the request of the accredited parties. The cancellations involved:

- ▼ 3 cases where limited term residential sector DAF Method projects were completed
- ▼ 1 case where the accreditation was transitioned into the ESS.

4.4 Large User Abatement Certificates Rule

The *Greenhouse Gas Benchmark (Large User Abatement Certificates) Rule No. 4 of 2003* (LUAC Rule) provides for the creation and calculation of non-tradable abatement certificates (LUACs)¹⁶ through the abatement of on-site greenhouse gas emissions (from industrial processes) not directly related to the consumption of electricity. Under the LUAC Rule, the entity entitled to create abatement certificates is called a 'large user'. Entities who qualify as large users are:

- ▼ market customers and large electricity customers who have elected to manage a greenhouse gas benchmark (elective benchmark participant) whose electricity usage levels are greater than 100GWh per year at one or more sites that they own or occupy in NSW with at least one using more than 50GWh per year

¹⁶ The 'non-tradeable' rule was introduced as an opportunity for energy intensive industries to reduce their emissions from industrial activities unrelated to national electricity grid generation. There are limitations to how LUACs can be created, for example the project must occur at the location which is the subject of the election by the large user.

- ▼ persons carrying out State Significant Development (now referred to as 'Major Projects' - State Environmental Planning Policy (Major Projects) 2005) as determined by the Minister for Planning in accordance with *Environmental Planning and Assessment Act 1979* who have elected to manage a greenhouse gas benchmark.

By electing to become a benchmark participant, a large electricity customer takes on the obligation of managing the greenhouse gas emissions associated with its electricity purchases. This obligation would otherwise be managed on its behalf by an electricity retailer. The principle reason for allowing elective participants to create LUACs, and to surrender these towards their own benchmark, was to shield large electricity users from any pass through of costs from their electricity retailer (see Section 3 on Benchmark Participants for further information).

Eligibility to become an elective benchmark participant is assessed by IPART as the Compliance Regulator. Accreditation to create LUACs is assessed by IPART as the Scheme Administrator.

Once eligibility and usage levels have been accepted, activities that can be carried out by a large user to create LUACs include on-site reduction in greenhouse gasses through:

- ▼ increasing the efficiency of fuel use
- ▼ switching to lower emission intensity fuels
- ▼ abating emissions from industrial processes
- ▼ abating fugitive emissions.

These activities are not related to the reduction of electricity taken from the national grid.

These activities must occur in NSW at those sites where the large user has elected to manage its own greenhouse gas benchmark. Emissions reductions accounted for by the activity must be within a category reported in the National Greenhouse Gas Inventory (NGGI)¹⁷ and must not be as a result of compliance with statutory requirements, although emissions reductions beyond the statutory requirements may be claimed.

¹⁷ www.climatechange.gov.au/en/publications/greenhouse-acctg/national-greenhouse-gas-inventory-2008.aspx

A LUAC Rule accreditation may be for a single emissions reduction activity or a mixture of activities. Activities may be implemented as a one-off action or as part of an ongoing program. To accommodate this variety, the large user can choose between 3 different methods for calculating how many LUACs may be created from its project:

- ▼ Project Impact Assessment Method.
- ▼ Baseline Method for an Existing Plant.
- ▼ Baseline Method for Plant Extensions or New Plant.

The Project Impact Assessment Method is generally more appropriate where a single activity is undertaken as a one-off project while the Baseline Method is applicable where multiple activities are undertaken as part of an ongoing program to reduce the greenhouse intensity of the industrial output of the plant.

4.4.1 Applications and accreditations

During 2009, the Scheme Administrator accredited Xstrata Coal NSW Pty Ltd as an ACP under the LUAC Rule. This brought the total number of LUAC accreditations to 10:

- ▼ Amcor Packaging Australia Pty Ltd - improvements in the efficiency of on-site fuel use at its Botany paper mill.
- ▼ BlueScope Steel (AIS) Pty Ltd - improvements in the efficiency of on-site fuel use and replacing high emission fuels with lower emission fuels at its Port Kembla steelworks.
- ▼ Boral Ltd - improvements in the efficiency of on-site fuel use at the Blue Circle Southern Cement Berrima cement works.
- ▼ Carter Holt Harvey Pty Ltd - upgrade of its Tumut particleboard plant (replacing high emission fuels with lower emission fuels).
- ▼ Hydro Aluminium Kurri Kurri Pty Ltd - upgrade of its Kurri Kurri aluminium smelter (abating on-site greenhouse gas emissions from industrial processes).
- ▼ Norske Skog Paper Mills Pty Ltd - improvements in the efficiency of on-site fuel use at its Albury paper mill.
- ▼ Orica Australia Pty Ltd - improvements in the efficiency of on-site fuel use at its Kooragang Island Ammonia Plant.
- ▼ Tomago Aluminium Company Ltd - upgrade of its Tomago aluminium smelter (abating on-site greenhouse gas emissions from industrial processes).
- ▼ Xstrata Coal NSW Pty Ltd - capture and combustion of coal mine gas otherwise vented (abatement of on-site fugitive emissions) - 2 accreditations.

Table 4.4 provides a complete breakdown of LUAC Rule accreditations for each year of GGAS operation.

Table 4.4 LUAC Rule - Accreditation applications approved by year

Industry : Abatement Activity	2003	2004	2005	2006	2007	2008	2009
Aluminium: Industrial Process	1	0	0	0	1	0	0
Cement: Increased Fuel Efficiency	0	0	0	1	0	0	0
Chemicals: Increased Fuel Efficiency	0	0	0	0	0	1	0
Mining: Reduced Fugitive Emissions	0	0	0	0	1	0	1
Paper & Pulp: Increased Fuel Efficiency	0	0	1	1	0	0	0
Paper & Wood: Fuel Switching	0	0	0	0	1	0	0
Steel: Fuel Switching	0	0	0	0	1	0	0
Total accreditations accredited	1	0	1	2	4	1	1
Total accreditations cancelled	0	0	0	0	0	0	0
Total accreditations at the end of the year	1	1	2	4	8	9	10

4.5 Carbon Sequestration Rule

The *Greenhouse Gas Benchmark (Carbon Sequestration) Rule No. 5 of 2003* (CS Rule) makes provision for organisations to create certificates for carbon sequestered in eligible forests in NSW. Carbon sequestration (for the purpose of the CS Rule) is based on the principle of photosynthesis, a chemical reaction that naturally occurs in plant life. Photosynthesis removes carbon dioxide from the atmosphere. The CS Rule is consistent with Article 3.3 of the Kyoto Protocol, and recognises carbon sequestration through 'afforestation' and 'reforestation' activities.

4.5.1 Eligibility requirements

Under the CS Rule, there are 3 key eligibility criteria/requirements which the Scheme Administrator assesses in applications:

- ▼ capability of the organisation to account for carbon sequestered through forestry activities, and to maintain the long-term commitments involved
- ▼ eligibility of the actual forest, including the land's status as at 31 December 1989, and the forest's physical characteristics including height and crown cover (key criteria for consistency with the Kyoto Protocol)
- ▼ demonstration that the applicant has the ownership or control of registered carbon sequestration rights on the title of the eligible land.

In order for a sequestration pool manager to establish eligibility of a project, or to add forested land to an accreditation, a number of specific documents are required. These include:

- ▼ Evidence that the forest was planted on non-forested land after 1 January 1990. There are varying means used to establish this, including satellite imagery, aerial photographs, and planting records.
- ▼ Evidence that a carbon sequestration right is registered on the title of each portion of land in the forest and that the pool manager controls these rights through the provision of a copy of the certificate of title.
- ▼ A Restriction of Use must be registered on the title with IPART as the Prescribed Authority to provide security that the forest will be maintained even if the land is sold.
- ▼ Risk management procedures with respect to hazards and risks such as, but not limited to, fire, disease or pests.
- ▼ Maintenance procedures for record keeping and ongoing compliance.

Some applicants and accredited parties have had difficulty in providing these documents to a sufficient level of accuracy, particularly given the length of time since some forests were planted.

4.5.2 Applications and accreditations

In 2009 no new organisations were accredited as a sequestration pool manager, therefore the total number of accreditations under the CS Rule remains at 7. The forestry activities currently accredited range from permanent, conservation-style forestry to commercial, rotational harvest forestry. Table 4.5 provides a breakdown of CS Rule accreditations for each year of GGAS operation.

In 2009, the Scheme Administrator also assessed 5 amendments to existing accreditations. Three of these were in regard to incorporating additional eligible forests into accredited sequestration pools. Once an organisation is accredited as a sequestration pool manager, it can bring additional forests into its sequestration pool by submitting updated details regarding approved carbon accounting practices, and information addressing the eligibility of the additional forests.

Table 4.5 CS Rule – Accreditation applications approved by year

Grouping	2003	2004	2005	2006	2007	2008	2009
Total accreditations accredited	0	1	3	1	1	1	0
Total accreditations cancelled	0	0	0	0	0	0	0
Total accreditations at the end of the year	0	1	4	5	6	7	7

4.5.3 Carbon accounting

Creation of certificates is only permitted for sequestration once it has been assessed for a given period. The CS Rule does not allow certificates to be created for future or expected sequestration from tree planting. The number of certificates that a sequestration pool manager is able to create is calculated using the approved carbon accounting methodology. The methodology is dependent on the sequestration pool manager's business model.

Further information on carbon accounting can be found in Section 4.5.3 of *Compliance and Operation of the NSW Greenhouse Gas Reduction Scheme during 2008*.

4.6 Accreditation of future projects

In 2009, 5 projects were accredited as future projects. One project was Envirogen's proposed 24MW generation plant which will use waste coal mine gas from the Bulga colliery operation in NSW to generate electricity. The other 4 future projects are in relation to LMS Generation's proposed renewable energy facilities in NSW (1), Victoria (2) and Queensland (1). All 4 projects will use landfill gas as fuel for generation, with a combined output of 3.73MW.

All future projects are accredited with an approved business plan and include agreed milestones and reporting arrangements. The Scheme Administrator must be informed if there are any changes to these arrangements, such as delays to the timing of completion of the project, or variations to the project specification. A project accredited as a future project cannot create NGACs until it is commissioned and the project details reassessed by the Scheme Administrator.

Of the future projects accredited in previous years, 3 were commissioned and subsequently approved by the Scheme Administrator for NGAC creation during 2009. The smallest of these is Diamond Energy's 1.08MW Shepparton Biogas plant in Victoria. The other 2 accreditations are TRUenergy's 435MW Tallawarra Power Station at Yallah in NSW, which uses natural gas as fuel, and Energy Development's (EDL) 45MW Moranbah North Power Station in south-central Queensland, which uses coal seam gas as fuel.

4.7 Compliance outcomes

In 2009, overall compliance by ACPs with the GGAS Act, Regulations, Rules and accreditation conditions remained acceptable. Of 225 accreditations (as of 31 December 2009), there were 29 instances of contraventions of conditions of accreditation (compared with 26 in the previous year). The majority of contraventions related to a failure to either submit an Annual Report Statement (19 of 29) or engage an auditor (4 of 29) by the required deadline for accreditation compliance. Six contraventions however involved the over-creation of certificates (compared to 10 in 2008). These latter events were discovered either through

voluntary declaration by the accredited party (3 of 6), discovery by the Scheme Administrator (1 of 6), or through the compliance audit process (2 of 6).

The possible areas of contravention are set out in the *Electricity Supply Act 1995* and are:

- ▼ contravening the conditions of accreditation (section 97DD)
- ▼ improper creation of certificates (section 97J)
- ▼ obstructing the Scheme Administrator (section 97JA)
- ▼ supplying false or misleading information (section 97JB).

Unlike previous years, the majority of contraventions in 2009 related to contraventions of specified conditions of accreditation, rather than the improper creation of certificates (ie, over-creation).

4.7.1 Over-creation of certificates

As in previous years, instances of over-creation resulted from various forms of administrative error or lack of attention to detail on the part of the accredited organisation, rather than systematic errors in creation methodology. This is illustrated by the specific reasons and number of instances for over-creation which were:

- ▼ calculation error (rounding) (1)
- ▼ transcription errors (1), and
- ▼ use of incorrect data (eg, Rule default factor, or other related data inputs) (4).

During 2009, the contraventions resulted in a total of 92,697 certificates (of both 2007 and 2008 certificate vintage) being over-created (compared to 39,124 in 2008). The companies involved were notified and subsequently agreed to forfeit the incorrectly created certificates. By forfeiting the certificates, GGAS can ensure that the number of certificates created represents valid abatement.

Another type of improper creation occurs when an ACP attempts to register more than 110% of the nominated number of certificates without previously notifying the Scheme Administrator. The use of a cap based on expected certificate creation is an important means of managing the risks of over-creation of certificates. These caps are specific to each project and reflect the technical characteristics of the projects. In 2009, there were no instances of this type of contravention (compared to 1 in 2008), as all ACPs had appropriately notified the Scheme Administrator in advance that, for various reasons, they expected to exceed their nominated number of certificate creation. The Scheme Administrator assesses all requests to increase an ACP's nominated number of NGACs, and adjusts accreditation conditions accordingly.

4.7.2 Contravening the conditions of accreditation

Of the 19 instances where ACPs contravened their Annual Report requirements, all ACPs, with 1 exception (see Section 4.7.3 below), immediately completed their outstanding compliance obligations when the Scheme Administrator advised them of the breach.

4.7.3 Other accreditation condition related compliance issues

One ACP who failed to engage an auditor by the time-frame specified in its accreditation notice, subsequently volunteered to forfeit its unverified certificates, rather than complete its outstanding audit requirement and requested the cancellation of its accreditation. This outcome followed discussions between the ACP and the Scheme Administrator. The ACP's accreditation was subsequently cancelled.

Eight other compliance issues related to accreditation conditions arose in 2009, however these were not considered contraventions of conditions of accreditation because either:

- ▼ the ACPs voluntarily declared the issue, such as a delay in audit completion, and co-operated with the Scheme Administrator, or
- ▼ the compliance issue was in regard to a lapsed DSA Rule accreditation for which no certificates had been created in 2008 or 2009. These accreditations were subsequently cancelled following review of any outstanding compliance requirements.

5 Audit and compliance framework

The Act provides IPART with wide auditing powers to assist it in exercising its functions of Scheme Administrator and Compliance Regulator. To guide it in exercising this power, the Tribunal has established an audit and compliance framework which includes use of independent third party audits to confirm specific elements of GGAS participants' compliance with GGAS. The audit and compliance framework helps provide assurance that GGAS is operating in accordance with the relevant legislation and that information provided by GGAS participants is reliable.

In general, the Scheme Administrator applies a risk-based approach when deciding an audit regime for a particular ACP. Factors taken into account include the size of the company, the complexity of the project, the calculation methodology used, the number of certificates to be created from the project and prior compliance history.

For audits of benchmark participants, there are fewer variables within the risk assessment, and the Compliance Regulator has adopted a stringent approach of requiring audits of all benchmark statements, with exemptions given on a case-by-case basis. This approach has been adopted to ensure that targets required by the legislation are met. Exemptions have generally been granted only where the risk to GGAS is extremely low.

The Regulation states that GGAS participants bear the cost of audits, even in the circumstance where the Scheme Administrator selects and engages the auditor.

5.1 Audit and technical services panel

The Tribunal established the Audit and Technical Services Panel (the Panel) to undertake audit activities for GGAS participants, the Compliance Regulator and the Scheme Administrator, and to provide technical services to the Tribunal as required. As shown in Table 5.1, there are 2 classifications of firms on the panel:

- ▼ Audit and Technical Service Providers (15 firms): these firms have been approved by the Tribunal to perform audits under GGAS, and can also provide technical services.
- ▼ Technical Services (10 firms): these firms can provide technical services only.

Firms may apply to become a member of the panel at any time and their applications will be assessed against specific selection criteria.¹⁸ Once appointed to the panel all services are undertaken in accordance with an Audit and Technical Services Panel Agreement (the panel agreement).

During 2009, no new firms were added to the Panel, however one firm changed from performing only technical services to also performing audits in 2009. A list of all members of the panel is available from the GGAS website.¹⁹

Table 5.1 Membership of the Audit and Technical Services Panel as at December 2009

	No. of firms
Audit and Technical Services (able to perform audits)	15
Technical Services	10
Total	25

5.2 Selection and management of auditors

Depending on the type of audit being conducted, the Scheme Administrator, ACP or benchmark participant may be responsible for selecting and engaging the auditor.

The Scheme Administrator will normally select and engage the auditor for audits associated with applications for accreditation (pre-accreditation audit), where a significant change to an accreditation has been requested by an ACP, or where a non-compliance event has resulted in a tightening of audit requirements (for instance where an audit is required before NGACs can be registered).

In most cases where the Scheme Administrator engages the auditor, selection of the auditor is undertaken on a competitive basis (with detailed scope of works and fixed quote being sought from up to 3 panel members). Although the Scheme Administrator engages the panel member to perform these audits, the ACP or applicant is required to pay the agreed audit fee upfront to the Scheme Administrator for the costs of the audit services.

For audits of the creation of abatement certificates and the annual greenhouse gas benchmark statements, the auditor is generally selected and engaged by the GGAS participant. In this case, the detailed scope of works for the audit and the appointment of the auditor are subject to approval by the Scheme Administrator or the Compliance Regulator, as appropriate.

¹⁸ A Panel Application Form and a Guide to Applying are available from the Scheme website at www.greenhousegas.nsw.gov.au/audit/joining.asp

¹⁹ www.greenhousegas.nsw.gov.au/audit/members.asp

The panel agreement establishes a unique arrangement for the conduct of audits whereby, regardless of whether an auditor is engaged by the Scheme Administrator or a GGAS participant, the auditor's primary duty of care is always to conduct the audit on behalf of the Scheme Administrator or the Compliance Regulator. While this is significantly different from usual contractual arrangements where duty of care is owed to the engaging party, where audits are engaged by the ACP, a deed poll is signed by the ACP and auditor nominating the Scheme Administrator as the primary client. All audits are undertaken on behalf of the Scheme Administrator and the Compliance Regulator to assure that GGAS is operating in accordance with the relevant legislation and that information provided by GGAS participants is verified. Experience to date has shown that this contractual arrangement has been a highly effective mechanism for ensuring the integrity of the audit framework and the quality of abatement in GGAS.

5.3 Compliance and performance monitoring strategy

The Scheme Administrator has developed the *Compliance and Performance Monitoring Strategy for Abatement Certificate Providers*²⁰ which aims to:

- ▼ provide transparency in the administration of GGAS
- ▼ assist participants to understand their obligations under GGAS
- ▼ minimise the incidence of invalid creation of abatement certificates
- ▼ provide cost effective compliance options
- ▼ encourage a culture of compliance among participants
- ▼ provide for credible enforcement options in the event of non-compliance.

The strategy sets out how the Scheme Administrator monitors the performance of ACPs, through a combination of annual reports and audit requirements tailored to the individual ACP's circumstances. In addition, the strategy includes factors considered by the Scheme Administrator when determining whether a pre-accreditation audit of an applicant is required. The strategy is designed to be risk-based and flexible so that over time the Scheme Administrator can recognise good compliance performance and, if appropriate, relax an ACP's compliance monitoring regime.

Pre-accreditation audits are performed prior to an applicant becoming accredited, and the audit findings and recommendations are often relevant to determining the appropriate regime for ongoing compliance monitoring after accreditation.

Once accredited, ACPs are subject to an ongoing auditing regime as a means of ensuring compliance under GGAS. The audit requirements vary between ACPs and are detailed in the conditions of accreditation. When an applicant becomes accredited, they are informed of any Special Conditions of Accreditation, including

²⁰ www.greenhousegas.nsw.gov.au/documents/syn70.asp

the requirement for on-going audits of GGAS related information and certificate creation.

All ACPs are required to submit annual reports, regardless of the type of project involved. Templates have been developed to assist ACPs fulfil their reporting requirements. Annual Reports are signed by a person authorised to sign on behalf of the company. The provision of false and misleading information in Annual Reports is subject to a penalty.

A range of auditing regimes are used to monitor ongoing compliance under GGAS including:

- ▼ pre-registration audits, where prior to any NGAC creation, an ACP must have received reasonable assurance that the NGAC claim is reasonable
- ▼ annual audits, which are generally conducted after registration of certificates
- ▼ periodic audits (bi-ennial, tri-ennial or volumetric)
- ▼ spot audits.

A spot audit regime is applied where the accreditation is considered to represent a low risk to GGAS. Alternatively, spot audits can be imposed by the Scheme Administrator at any time regardless of any other specified audit requirement in the conditions of accreditation. These spot audits can be implemented for varying reasons, for example:

- ▼ to revisit an accreditation and establish that the ACP continues to meet the original eligibility criteria for the accreditation (typically a random audit of an ACP on a spot audit regime)
- ▼ to investigate a potential or suspected non-compliance with GGAS
- ▼ to determine whether a proposed change in methodology proposed by an ACP complies with the requirements of the Act, Regulation and Rules.

The requirement for a spot audit is usually implemented through a change to an ACP's conditions of accreditation, or by using the Scheme Administrator's powers under the Regulation and general accreditation conditions to conduct audits at any time.

5.4 Benchmark participant audits

The audits of benchmark statements covered compliance for the 2009 year, but were conducted in March 2010 to meet the reporting timeframe for benchmark participants. These audits need to be carried out in 2010 in order to capture all electricity sales or purchases by benchmark participants for the 2009 calendar year. All benchmark statements were audited with the exception of benchmark statements with a nil return or very low electricity sales.

5.5 Audits initiated by the Scheme Administrator

The Scheme Administrator initiated 5 audits in 2009, comprising 2 pre-accreditation audits and 3 project implementation audits and no spot audits. Future project implementation audits have the same function as pre-accreditation audits, but are undertaken after a project has been accredited, prior to being approved by the Scheme Administrator for NGAC creation.

The total cost of audits initiated by the Scheme Administrator in 2009 was \$59,681.60.

5.6 Audits initiated by Abatement Certificate Providers

As GGAS has matured and the number of accreditations has increased, an increasing proportion of the Scheme Administrator's focus has been on monitoring compliance with existing accreditations. During 2009, 62 audits covering a total of 120 accreditations were initiated by ACPs to meet their accreditation conditions.

The Scheme Administrator's role in these types of audits is to confirm the scope of the audit before it commences. In most cases no changes are required, but sometimes an additional scope item may be added if the Scheme Administrator is aware of something that requires an audit opinion. Where possible the Scheme Administrator allows ACPs with multiple accredited projects to conduct a single audit covering the entire portfolio of accreditations to help reduce transaction costs.

5.7 Audit activity

Table 5.2 provides summary data on audit activity across the 3 broad audit types: audits of benchmark statements, audits of accreditations initiated by the Scheme Administrator (eg, pre-accreditation audits or spot audits) and audits initiated by ACPs to comply with conditions of accreditation.

Table 5.2 Audit activity

	2008	2009
Benchmark statement audits^a		
Number of audits	26	26
Number of benchmark statements covered	27	28
Accreditation audits initiated by the Scheme Administrator		
Number of audits	20	5
Number of accreditations covered	34	5
Accreditation audits initiated by ACPs		
Number of audits	70	62
Number of accreditations covered	105	120
Total number of audits	116	90
Total benchmark statements or accreditations covered	166	153

^a Conducted in the first quarter of the year covering compliance for the previous calendar year.

As shown in Table 5.2, there was a substantial reduction in the total number of audits in 2009, with only a small reduction in the total number of audited sites. This reflects the Scheme Administrator's commitment to decrease compliance costs by bundling audits together across company portfolios where possible. The large reduction in audits initiated by the Scheme Administrator can be seen to correspond with a decrease in the number of new applications in GGAS and a shift toward ACP initiated audits of ongoing compliance with accreditation conditions.

6 Registry

The Scheme Administrator maintains an online Registry to support GGAS. In accordance with legislative requirements, the Scheme Administrator maintains the registers of accredited ACPs and abatement certificates. The content of the registers is prescribed by the *Electricity Supply Act 1995* (sections 97GA and 97GB of the Act).

The Registry has now been in operation for over 6 years and has become an important tool for GGAS. The Registry was originally designed by Logica in 2003 who were appointed under a contract to IPART to operate the Registry. Logica have continued to work with IPART over the last 6 years, operating and managing numerous upgrades to the Registry. The current contract with Logica expires in September 2010.

The internet address of the Registry is: www.ggas-registry.nsw.gov.au.

ACPs, benchmark participants and members of the public may access the Registry. Members of the public may either log in as a 'guest' or may register, either as an organisation or as an individual, to own certificates.

The Registry is not a trading platform. It tracks the ownership and status of a certificate at any point in time. When a trade in certificates has occurred - whether bilaterally, through brokers or through other trading platforms - the Registry records only the change in ownership details for those certificates.

There is currently no charge for the transfer of certificates on the Registry. There is, however, a \$0.15 charge imposed on the registration of each abatement certificate at the time of creation, payable prior to the certificate being released for transfer or surrender. Funds received from this charge totalled approximately \$2.8 million for 2009 vintage certificate creation and were paid to Consolidated Revenue. This charge is intended to cover the cost of establishing, operating and maintaining the Registry over the life of GGAS, as well as to partially and indirectly fund some of the activities of the Scheme Administrator.

During 2009, the Registry was upgraded to incorporate the ESS. This project was initiated by the Scheme Administrator following amendments to GGAS legislation. Enhancements to the Registry included:

- ▼ ESS Rule and energy savings certificates incorporated into the Registry
- ▼ organisations accredited under both GGAS and ESS are able to view all accreditations on the one screen
- ▼ all Registry accounts can own and surrender all types of certificates
- ▼ all Registry users and guests have the ability to search for accreditation and certificate information across both GGAS and ESS.

6.1 Register of abatement certificates

The Registry provides a valuable source of information for market participants. Outlined below are some key statistics showing some trends in NGAC creation since GGAS commenced. See Appendix C for a detailed breakdown of certificate creation by each project.

Data in this chapter are current as at 30 June 2010 and includes all vintages of certificates, up to and including the 2009 vintage (that is certificates created for abatement that occurred during 2009). It should be noted that totals for certificate creation in prior years may be less than previously reported because some certificates created have subsequently been forfeited.

6.2 Certificate creation trends

When a certificate is created, the Registry records information about each certificate including entity, Rule, project, project type, vintage and creation date. The Registry also tracks the certificate status (live, surrendered, forfeited) and ownership history. Although there are various types of certificates, all certificates represent one tonne of carbon dioxide equivalent emissions. All certificates count equally towards meeting a benchmark participant's obligation and once surrendered, cannot be reused.

Table 6.1 shows the total number of 2003-09 vintage certificates registered (which reflect abatement activity undertaken in these years) separated by Rule.

Table 6.1 Certificates created to date

Vintage	Generation Rule	DSA Rule	CS Rule	LUAC Rule	Total
2003	6,317,835	345,141	0	0	6,662,976
2004	6,744,232	742,233	166,005	0	7,652,470
2005	7,879,171	1,509,199	538,471	94,277	10,021,118
2006	9,548,179	8,932,172	587,601	790,460	19,858,412
2007	12,813,473	9,925,197	638,320	1,285,645	24,662,635
2008	12,333,141	8,127,628	669,279	1,298,075	22,428,123
2009	15,498,867	748,705	645,433	1,517,237	18,410,242
Total	71,134,898	30,330,275	3,245,109	4,985,694	109,695,976

These figures clearly show that the Generation Rule dominates certificates registered over the life of GGAS, accounting for 64.9% of total certificates created and remains the primary source of certificates created since 2003. Following a peak in 2007, creation under the DSA Rule has decreased, with a significant decrease in 2009.

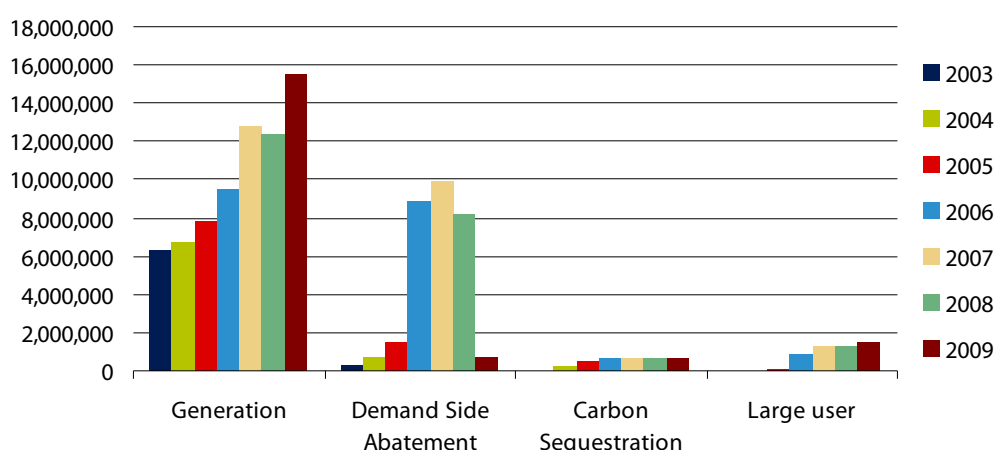
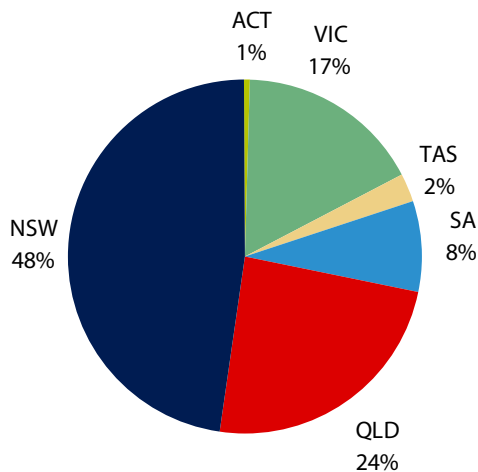
Figure 6.1 Certificates created to date by certificate type

Figure 6.1 depicts certificates created by certificate type. Generation Rule certificates accounted for 84.2% of 2009 certificates. The proportion of DSA Rule certificates decreased significantly from 36.2% in 2008 to 4.1% in 2009. This change was due to the reduction of DAFs for CFLs (see Section 4.3.1) and reduced creation from energy efficiency projects with the commencement of the ESS. There was little change in the number of CS Rule and LUAC Rule certificates created during 2009 when compared to previous years.

Figure 6.2 depicts the source of 2009 certificates on a jurisdictional basis. Certificates can only be created outside of NSW and the ACT from electricity generation activities where the generating system is connected to the NSW and ACT electricity grids via the national electricity grid.

Figure 6.2 Source of 2009 certificates created



The information in Figure 6.2 is expanded in Table 6.2 where the source of certificates per jurisdiction is detailed.

Figures 6.3 and 6.4 graphically depicts certificate creation under the Generation Rule by category of generator and fuel type.

Figure 6.3 Source of Generation Rule certificates by category

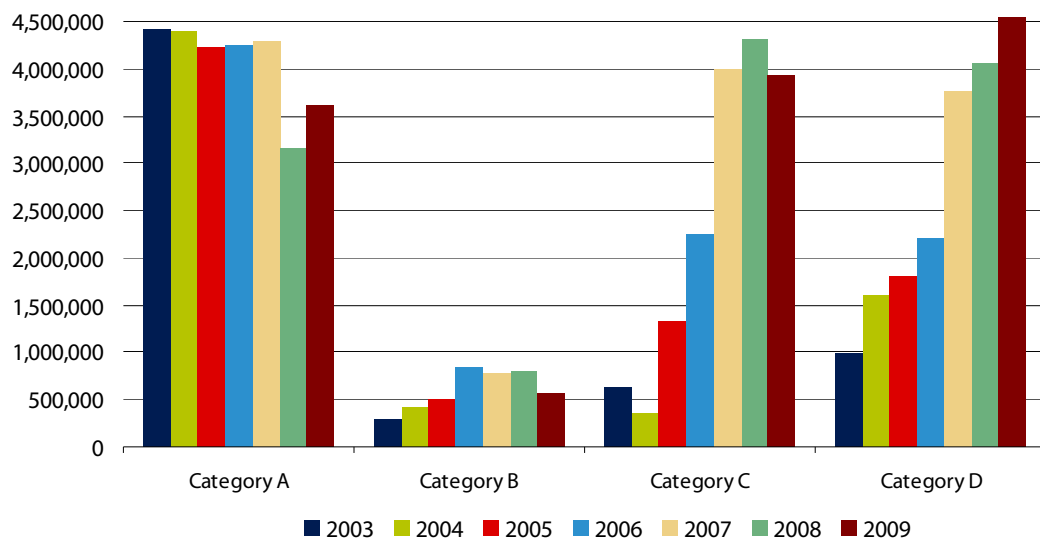


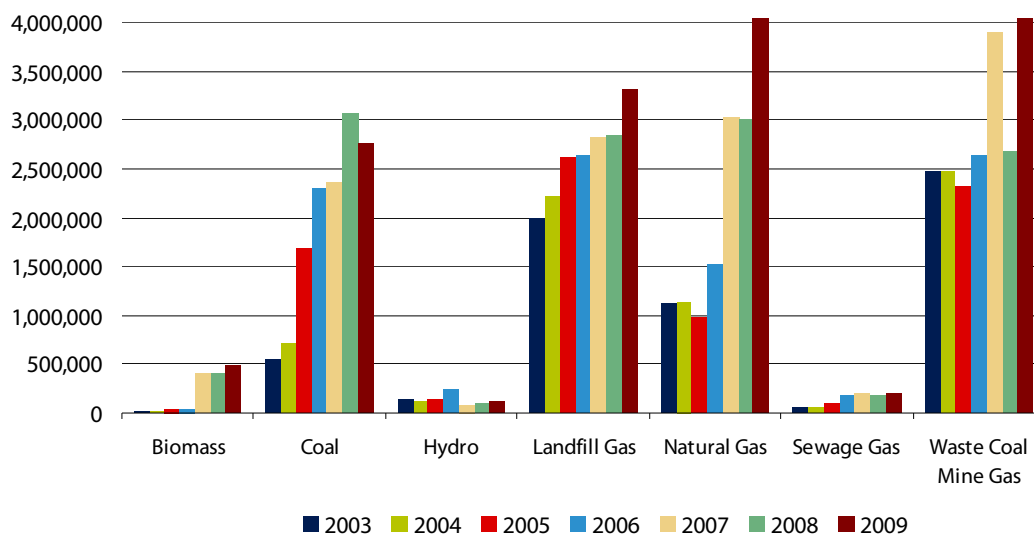
Figure 6.4 Source of Generation Rule certificates by fuel type

Table 6.2 Source of certificates by jurisdiction**Source of certificates by jurisdiction – Australian Capital Territory**

Rule, Grouping & Sector	2003	2004	2005	2006	2007	2008	2009	Totals
Generation Rule: Category D	94,198	99,268	110,062	126,431	120,976	123,250	122,471	796,656
DSA Rule	0	0	0	186,354	441,498	149,288	3,524	780,664
Total	94,198	99,268	110,062	312,785	562,474	272,538	125,995	1,577,320

Source of certificates by jurisdiction – New South Wales

Rule, Grouping & Sector	2003	2004	2005	2006	2007	2008	2009	Totals
Generation Rule: Category A	3,272,785	3,129,409	2,911,523	2,992,008	3,134,325	2,062,179	2,543,517	20,045,746
Generation Rule: Category B	286,985	418,581	498,952	831,451	784,624	794,859	569,016	4,184,468
Generation Rule: Category C	31,571	0	0	0	0	0	0	31,571
Generation Rule: Category D	517,184	775,677	1,060,731	1,003,320	1,101,578	1,295,840	2,768,948	8,523,278
DSA Rule	345,141	742,233	1,509,199	8,745,818	9,483,699	7,978,340	745,181	29,549,611
CS Rule	0	166,005	538,471	587,601	638,320	669,279	645,433	3,245,109
LUAC Rule	0	0	94,277	790,460	1,285,645	1,298,075	1,517,237	4,985,694
Total	4,453,666	5,231,905	6,613,153	14,950,658	16,428,191	14,098,572	8,789,332	70,565,477

Source of certificates by jurisdiction – Queensland

Rule, Grouping & Sector	2003	2004	2005	2006	2007	2008	2009	Totals
Generation Rule: Category A	36,569	41,765	47,291	46,857	42,830	36,700	38,106	290,118
Generation Rule: Category B	0	0	0	0	0	0	0	0
Generation Rule: Category C	0	48,351	86,290	198,094	704,017	716,997	747,332	2,501,081
Generation Rule: Category D	297,748	612,219	509,741	824,476	1,977,587	2,162,444	3,630,465	10,014,680
Total	334,317	702,335	643,322	1,069,427	2,724,434	2,916,141	4,415,903	12,805,879

Source of certificates by jurisdiction – South Australia

Rule, Grouping & Sector	2003	2004	2005	2006	2007	2008	2009	Totals
Generation Rule: Category A	334,162	372,471	410,540	392,389	354,894	310,464	298,255	2,473,175
Generation Rule: Category B	0	0	0	0	0	0	0	0
Generation Rule: Category C	284,984	70,642	198,116	607,911	1,143,658	1,313,939	1,162,541	4,781,791
Generation Rule: Category D	12,135	17,524	17,780	32,480	22,819	27,024	60,380	190,142
Total	631,281	460,637	626,436	1,032,780	1,521,371	1,651,427	1,521,176	7,445,108

Source of certificates by jurisdiction – Tasmania

Rule, Grouping & Sector	2003	2004	2005	2006	2007	2008	2009	Totals
Generation Rule: Category A	0	0	0	0	0	0	0	0
Generation Rule: Category B	0	0	0	0	0	0	0	0
Generation Rule: Category C	0	0	0	220,271	355,276	369,298	84,925	1,029,770
Generation Rule: Category D	0	0	0	45,121	103,810	41,909	356,436	547,276
Total	0	0	0	265,392	459,086	411,207	441,361	1,577,046

Source of certificates by jurisdiction – Victoria

Rule, Grouping & Sector	2003	2004	2005	2006	2007	2008	2009	Totals
Generation Rule: Category A	775,132	844,619	864,075	819,445	750,389	752,840	744,164	5,550,664
Generation Rule: Category B	0	0	0	0	0	0	0	0
Generation Rule: Category C	311,873	229,332	1,047,722	1,228,772	1,783,503	1,912,008	1,939,310	8,452,520
Generation Rule: Category D	62,509	84,374	116,348	179,153	433,187	413,390	433,001	1,721,962
Total	1,149,514	1,158,325	2,028,145	2,227,370	2,967,079	3,078,238	3,116,475	15,725,146

Table 6.3 Source of certificates by category
Source of certificates by category and fuel – Generation Rule

Grouping & Sector	2003	2004	2005	2006	2007	2008	2009	Totals
Category A: Biomass	10,895	14,901	0	0	0	0	0	25,796
Category A: Hydro	132,869	123,844	148,176	160,941	77,148	94,977	120,164	858,119
Category A: Landfill Gas	1,216,141	1,327,350	1,379,695	1,319,360	1,284,691	1,228,279	1,222,469	8,977,985
Category A: Natural Gas	590,324	621,065	675,775	673,645	685,432	681,992	670,017	4,598,250
Category A: Waste Coal Mine Gas	2,468,419	2,301,104	2,029,783	2,096,753	2,235,167	1,156,935	1,611,392	13,899,553
Category B: Coal	286,985	418,581	498,952	831,451	784,624	794,859	569,016	4,184,468
Category C: Biomass	0	0	0	0	364,190	377,617	443,488	1,185,295
Category C: Coal	251,199	167,243	1,025,219	1,268,198	1,476,814	1,862,951	1,897,178	7,948,802
Category C: Hydro	0	0	0	80,000	0	0	0	80,000
Category C: Landfill Gas	31,571	0	0	0	0	0	0	31,571
Category C: Natural Gas	286,277	122,154	206,331	721,861	1,949,269	1,892,165	1,400,168	6,578,225
Category C: Sewage Gas	59,381	58,928	100,578	184,989	196,181	179,509	193,274	972,840
Category D: Biomass	542	10,976	30,521	35,165	40,716	38,496	42,557	198,973
Category D: Coal	0	130,665	159,493	191,641	94,889	409,428	304,311	1,290,427
Category D: Coal Seam Methane	0	0	0	0	12,978	29,744	16,575	59,297
Category D: Landfill Gas	732,187	889,934	1,241,413	1,329,685	1,545,181	1,612,264	2,080,422	9,431,086
Category D: Natural Gas	240,853	388,725	101,803	117,268	399,105	440,951	2,194,537	3,883,242
Category D: Sewage Gas	0	0	0	0	0	0	4,173	4,173
Category D: Waste Coal Mine Gas	10,192	168,762	281,432	537,222	1,667,088	1,532,974	2,729,126	6,926,796
Total	6,317,835	6,744,232	7,879,171	9,548,179	12,813,473	12,333,141	15,498,867	71,134,898

Source of certificates by category and sector – DSA Rule

Grouping & Sector	2003	2004	2005	2006	2007	2008	2009	Totals
Energy Efficiency: Commercial	22,720	40,249	47,924	67,755	868,049	809,682	32,509	1,888,888
Energy Efficiency: Industrial	35,572	32,867	36,814	66,818	99,709	103,155	77,328	452,263
Energy Efficiency: Residential	8,387	315,425	953,879	8,306,259	8,344,475	6,588,078	98,952	24,615,455
Energy Source Subs: Commercial	65	65	0	0	0	0	0	130
Energy Source Subs: Residential	0	21,406	35,366	49,900	48,760	52,940	21,320	229,692
On-site Generation: Commercial	0	0	0	0	0	0	135	135
On-site Generation: Industrial	278,397	332,221	435,216	441,440	564,195	573,763	518,461	3,143,693
On-site Generation: Residential	0	0	0	0	9	10	0	19
Total	345,141	742,233	1,509,199	8,932,172	9,925,197	8,127,628	748,705	30,330,275

Source of certificates by category – CS Rule

Grouping & Sector	2003	2004	2005	2006	2007	2008	2009	Total
Carbon Sequestration	0	166,005	538,471	587,601	638,320	669,279	645,433	3,245,109

Source of certificates by category and industry – LUAC Rule

Grouping & Sector	2003	2004	2005	2006	2007	2008	2009	Total
Aluminium: Industrial Process	0	0	0	516,146	746,893	809,023	854,825	2,926,887
Cement: Increased Fuel Efficiency	0	0	78,690	157,082	232,563	163,172	0	631,507
Chemicals: Increased Fuel Efficiency	0	0	0	0	122,155	106,220	104,096	332,471
Mining: Reduced Fugitive Emissions	0	0	0	16,500	52,899	94,140	481,601	645,140
Paper & Wood: Fuel Switching	0	0	0	3,432	4,418	2,832	1,319	12,001
Paper & Wood: Increased Fuel Efficiency	0	0	15,587	19,726	33,450	41,539	42,663	152,965
Steel: Fuel Switching	0	0	0	77,574	93,267	81,149	32,733	284,723
Total	0	0	94,277	790,460	1,285,645	1,298,075	1,517,237	4,985,694

6.3 Certificate surrender trends

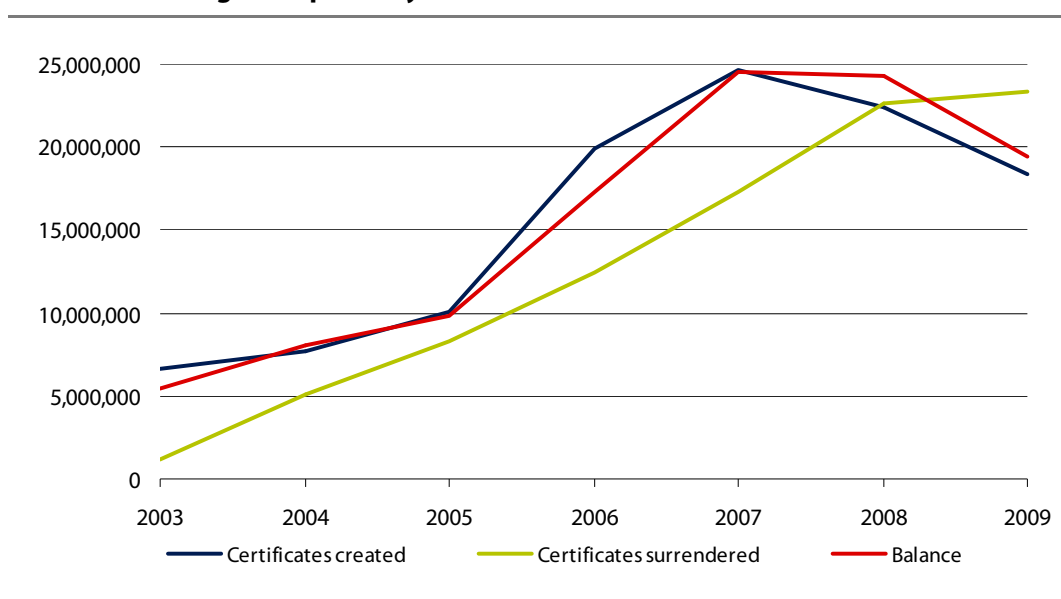
Table 6.4 and Figure 6.5 details certificates surrendered and the balance of certificates that remain 'live' and available for trade.

Table 6.4 Total certificates surrendered & balance to be surrendered by vintage/compliance year^a

Certificate vintage/ Compliance Year	Certificates created	Certificates surrendered	Balance to be surrendered
2003	6,664,979	1,166,866	5,498,113
2004	7,654,474	5,037,847	8,114,740
2005	10,023,123	8,322,356	9,815,507
2006	19,860,418	12,424,062	17,251,863
2007	24,664,642	17,336,184	24,580,321
2008	22,430,131	22,671,606	24,338,846
2009	18,412,251	23,297,876	19,453,221

^a Includes surrenders to ACT Compliance Regulator and voluntary surrenders as shown in Table 6.5.

Figure 6.5 Total certificates surrendered & balance to be surrendered by vintage/compliance year^a



^a Includes surrenders to ACT Compliance Regulator and voluntary surrenders as shown in Table 6.5.

6.4 Voluntary surrenders

As interest in carbon markets and knowledge of climate change becomes more widespread, individuals and companies are becoming interested in offsetting their emissions through the purchase and surrender of GGAS certificates. The Registry allows any member of the public to own abatement certificates which can be surrendered to offset emissions – this process is regarded as voluntary surrender.

For 2009, a total of 254,597 certificates were voluntarily surrendered by 115 organisations and individuals. This is a decrease on 2008 in both the number of certificates and the number of organisations and individuals surrendering. Many factors are thought to have affected this trend such as the impact of the global financial crisis on corporate profitability from late 2008 and the debate about the effectiveness of voluntary actions in the context of the CPRS.

Table 6.5 Total certificates voluntarily surrendered

Compliance year	Generation Rule	DSA Rule	CS Rule	Total
2005	5,000	100	0	5,100
2006	0	1,397	1,263	2,660
2007	10,853	32,593	6,452	49,898
2008	383,469	72,701	31,920	488,090
2009	120,211	130,585	3,801	254,597
Total	519,533	237,376	43,436	800,345

For 2009, organisations that voluntarily surrendered more than 5,000 certificates include:

- ▼ Climate Positive Ltd
- ▼ Melbourne Water Corporation
- ▼ Simply Energy
- ▼ Sydney Water Corporation.

6.5 Certificate transfer trends

The Registry also tracks the ownership of each certificate over time. It provides a summary to the public of transfer activity undertaken in any month, reporting the total number of transfers and the total number of certificates transferred. It should be noted that the Registry records a transfer as the change in ownership of certificates between any 2 owners, irrespective of any other relationship that may exist between the parties. Thus, it includes transactions such as a subsidiary company transferring certificates to its parent entity.

Since GGAS commenced in 2003, there have been 6,187 transfers of certificates between parties, involving more than 121.8 million certificates (some of which have been transferred on multiple occasions). Of these transfers, 70.7 million Generation Rule certificates were transferred in 2,042 trades, compared to 48.3 million DSA Rule certificates in 1,085 trades and 2.7 million CS Rule certificates in 3,060 trades.

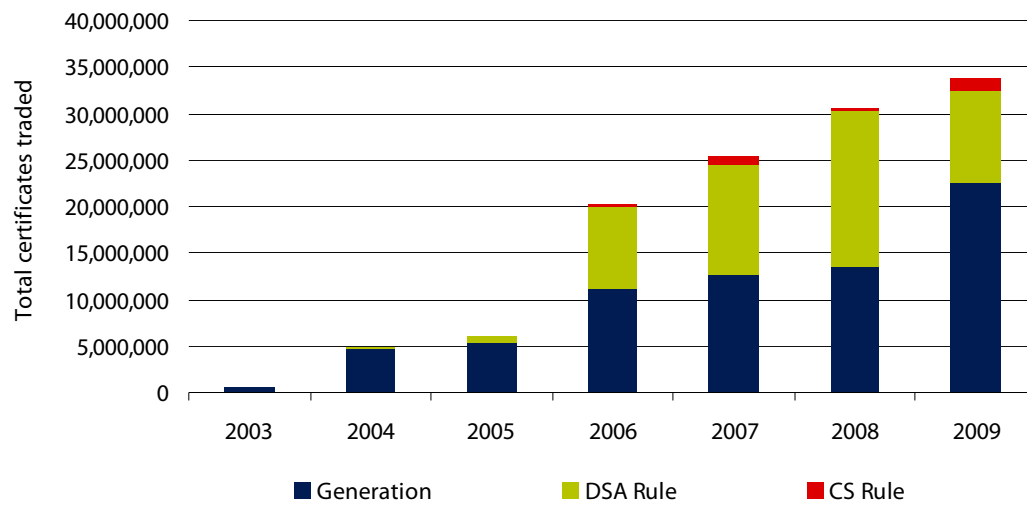
Table 6.6 and Figure 6.6 provide information about the number of certificates traded per year and shows an increase in volume each year. Overall, Generation Rule certificates dominate trades, however, trades of DSA Rule certificates increased sharply in 2006, 2007 and 2008 followed by a decrease in 2009, following the trend of DSA certificate creation. Volumes of CS Rule certificates traded changes significantly from year to year.

Table 6.7 details the number of trades that have occurred each year by Rule group and indicates that there has been a greater number of trades of CS Rule certificates (although typically in small parcels) than for other certificate types. It is noted that a certificate may be traded a number of times and each trade is reported separately here.

Figures in Section 6.5 represent all trades within a calendar year, not by vintage.

Table 6.6 Number of certificates traded by Rule

	Generation Rule	DSA Rule	CS Rule	Total
2003	707,774	18,001	0	725,775
2004	4,795,183	220,506	0	5,015,689
2005	5,296,564	667,992	142,320	6,106,876
2006	11,106,265	8,877,153	178,046	20,161,464
2007	12,792,636	11,648,409	986,884	25,427,929
2008	13,552,555	16,875,483	167,559	30,595,597
2009	22,502,617	10,031,705	1,260,683	33,795,005
Total	70,753,594	48,339,249	2,735,492	121,828,335

Figure 6.6 Number of certificates traded each calendar year by Rule**Table 6.7** Number of trades by Rule

	Generation Rule	DSA Rule	CS Rule	Total
2003	7	2	0	9
2004	92	16	0	108
2005	145	48	32	225
2006	227	164	294	685
2007	344	286	1,149	1,779
2008	469	406	905	1,780
2009	758	163	680	1,601
Total	2,042	1,085	3,060	6,187

7 Demand and supply of abatement certificates

The Scheme Administrator monitors and annually publishes information about the supply of and demand for certificates. The Scheme Administrator does not undertake forecast modelling, but projects supply of certificates based upon knowledge of existing participants, future project accreditations, applications for accreditation, and where necessary, some conservative assumptions.

Base data for certificate supply is derived from the expected creations nominated by accredited parties, future projects and remaining applicants²¹. The modelling does not account for growth in demand for certificates from voluntary carbon markets.

Demand is calculated using the Key Factors published each year by the Scheme Administrator, and the best available published data on expected electricity consumption and population growth. However, it should be noted that this publicly available data is a year out of date at time of this report's publication. Hence, given the substantially changed economic outlook since last year, the demand projections may be somewhat lower than will be subsequently realised.

Historical creation of certificates by all accredited ACPs is publicly accessible on the GGAS & ESS Registry. The availability of this data should assist market participants to undertake their own projections of supply and demand.

7.1 Developments in 2009

In the *Compliance and Operation of the NSW Greenhouse Gas Reduction Scheme during 2008* report, it was projected that NGAC supply, which peaked in 2007, would decline during 2008 and dip slightly below demand in 2009, before again exceeding demand in 2010 and future years. However the existing surplus of supply from 2003-2007 would assist in meeting projected demand in 2008 and 2009.

Twelve months on, this prediction was largely realised although there were a number of developments that have impacted upon 2009 certificate creation. The most significant of these being the cessation of all energy efficiency related activities under the DSA Rule on 30 June 2009 leading to a decrease in certificate creation. On the other hand, Australia's recovery from the global slowdown has increased coal

²¹ Due to legislative changes introduced in December 2009, the Scheme is no longer accepting applications for accreditation after 1 January 2010.

mining operations and steel production, and hence associated levels of waste gas and methane capture have increased leading to an increase in certificate creation. Both of these impacts on certificate creation largely balanced themselves out, although there was a slight overall decrease in 2009 supply from that originally forecast.

The following is a non-exhaustive list of other events and developments that affected 2009 creation and future year projections of both supply and demand for certificates.

Supply

- ▼ Fourteen projects and future projects were accredited in 2009 and 10 projects were cancelled.
- ▼ Fifty-four accreditations were amended resulting in both increases and decreases in potential certificate creation for individual accreditations, but with an overall increase in supply.
- ▼ The majority of projects accredited in 2009 will create NGACs under the Generation Rule. As in previous years, the Generation Rule provided the largest share of NGACs in 2009 and with the cessation of energy efficiency related project activities under the DSA Rule in mid-2009, this trend will continue into the future.
- ▼ Development and implementation of some future projects has been delayed, accelerated or in some cases abandoned. This has impacted the timing of certificate creation in 2009 and in some cases influences the projections of certificate supply in future years.
- ▼ The removal of Category A generators on 1 July 2010 will reduce the number of Generation Rule NGACs created.
- ▼ No further applications from 1 January 2010 will reduce the supply of possible certificates from new projects.

Demand

- ▼ The TransGrid Annual Planning Report 2009 has again revised downwards future electricity demand,²² which in turn has decreased projected NGAC demand through lowering of the total greenhouse benchmarks.

The projections for electricity demand in TransGrid's 2009 report may be conservative, as they are likely to reflect assumptions about the impact of the anticipated global economic slowdown on electricity consumption. As this global slowdown and its effect on electricity consumption has been smaller than expected, the projections in the TransGrid Annual Planning Report for 2010 may be higher than those used for the demand projections. (The TransGrid report for 2010 was not available when this report was prepared.)

²² See Table A3.1 of the TransGrid 2009 Annual Planning Report, available at www.transgrid.com.au/aboutus/pr/Pages/AnnualReports.aspx

- ▼ The NSW Pool Coefficient is projected to continue to increase but at a slightly slower rate for a period into the future (see Section 7.5).
- ▼ Due to the 2-year DSA lag adjustment used in the calculation of the annual GGAS compliance obligations (see Box 3.1) and the high level of DSA NGAC creation in 2008, NGAC demand for the 2010 compliance year is forecast to remain comparatively high, but not at the levels of the 2 previous years. Similarly, the major reduction in DSA NGAC creation from 1 July 2009 (due to the cessation of energy efficiency DSA programs under GGAS) is expected to significantly reduce 2011 and 2012 compliance year demand in comparison to previous years.

NGAC price

The spot price for NGACs declined to a record low in early 2009, before a period of relative stability at a slightly higher level for the rest of the year (see Figure 7.1). The relatively low NGAC price may have directly impacted the number of NGACs created by some ACPs.

The price decline of the past few years is in contrast to the early years of GGAS (until mid-2006), when the NGAC spot price tended to track towards the greenhouse gas penalty price. However, in recent years a number of factors appear to have impacted the price:

- ▼ the initial announcement of a national emissions trading scheme to commence in 2010, the subsequent announcement of a proposed mid-2011 commencement date, and continued uncertainty over ongoing Commonwealth intentions
- ▼ uncertainty around the date, and manner, in which existing projects in GGAS might transition into a national scheme
- ▼ market perceptions of a continuing surplus of NGACs in later years following the creation of large volumes of DSA NGACs in 2007 and 2008.

The Scheme Administrator does not have responsibility for regulating the trading of certificates. However, Box 7.1 details market commentary from The Green Room, a weekly report of spot trades published by Next Generation Energy Solutions.

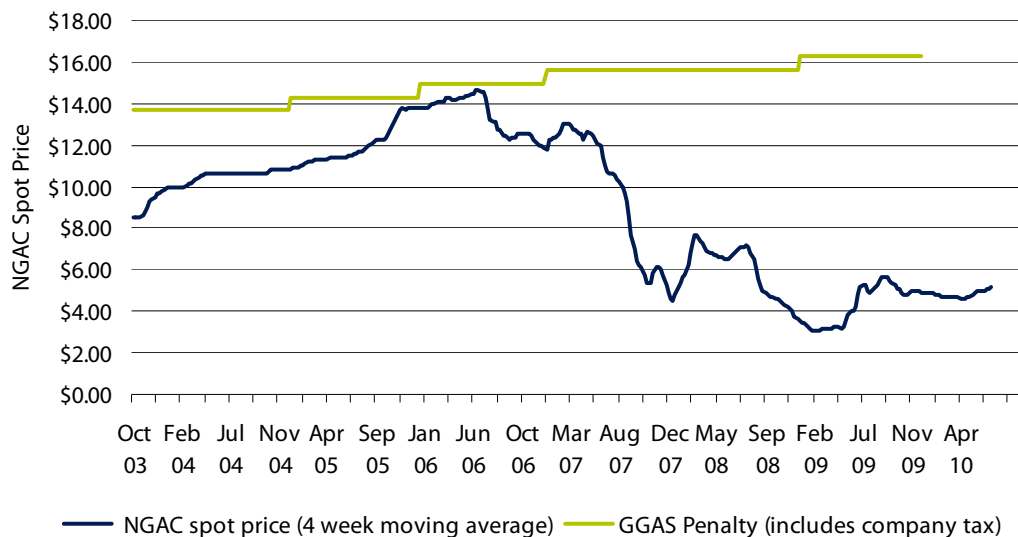
Box 7.1 Market commentary from Next Generation Energy Solutions, The Green Room, Editions 187-235

January 2009 – February 2009: During this period, the cloud of uncertainty which loomed over much of 2008 remained. As a result of the continued uncertainty regarding the proposed CPRS commencement (and cessation of GGAS) date of 1 July 2010, the spot NGAC price continued to decline to a record low of \$2.95 in early February.

March 2009 – June 2009: Following an extended period in which the spot NGAC price had stagnated just above the \$3 mark, the May 2009 announcement of a one year delay in commencement of the CPRS resulted in a bounce in both price and trading activity. In late June 2009 the NGAC spot price reached a peak of \$6.50 for the 2009 year (to date) as profit takers entered the market following the Minister's proposed Category 'A' Generation Rule change to GGAS.

August 2009 – December 2009: The spot NGAC price declined sharply (to \$4.50) in early July following continued uncertainty on the proposed Category A changes, before peaking again at \$5.85, reportedly due to market speculation that a decision had been made to remove Category A generation effective on 1 July 2010. From this minor peak in early August the NGAC spot price continued to steadily decline over the remainder of the 2009 period (\$4.90 in late December), reportedly due to continued uncertainty surrounding proposed GGAS transitional arrangements, related to the commencement of a CPRS in July 2011.

Figure 7.1 illustrates the trends in the NGAC spot price from the inception of GGAS to 30 June 2010. It should be noted that the price recorded for spot trades constitutes only a small proportion of total NGAC transactions. Most NGAC transactions are bilateral trades, where the price may be agreed in advance for an extended period. The NGAC prices for such transactions are not disclosed and may differ significantly from the prevailing spot price. Nevertheless, the spot price provides a useful publicly-available guide to broad movements in the NGAC price over time.

Figure 7.1 Trends in the NGAC spot price 2003-10

Note: This figure shows a 4 week rolling average of the last market spot price. This data accounts only for NGACs traded through NGES and may not reflect the price paid by NGAC buyers at the times shown. The Scheme Administrator recommends that persons seek independent advice before buying or selling NGACs, and cautions against making decisions based solely on this chart.

Data source: The Green Room, published by NGES (see www.nges.com.au)

7.2 Assumptions for projection

Supply

Base data for the supply of certificates is based on GGAS participants' calculations of the expected number of NGACs to be created in future years (to 31 December 2012). For accredited projects, this number generally reflects either the Nominated Number of NGACs shown in the Accreditation Notice or the latest forecasts provided in ACP annual reports to the Scheme Administrator. Once registered, actual numbers are used. For future projects and remaining applicants, this number is an expected creation pattern based on the participant's own calculations. The expected numbers of certificates are then adjusted in line with the following conservative assumptions:

- ▼ There will be no new applications for accreditation after 1 January 2010.

Generation Rule

- ▼ **Queensland Gas Electricity Scheme:** Queensland Generators eligible to create Gas Electricity Certificates (GECs) under the Queensland Gas Scheme will no longer prioritise GEC creation over NGACs. Historically GECs traded at a higher value than NGACs, but this no longer appears to be the case. Those using waste coal mine gas (WCMG) as fuel, in particular, will therefore prioritise NGACs over GECs (as WCMG attracts an additional NGAC benefit, in recognition of waste methane emissions avoided), and natural gas fuelled plant may increasingly prioritise NGACs over GECs as well.
- ▼ **Mandatory Renewable Energy Target:** A number of projects accredited to create NGACs are also accredited to create RECs. These Generators must choose between creating an NGAC or REC, for each eligible MWh of generation. It is assumed that these generators will claim the maximum REC entitlement due to the significant price differential between RECs and NGACs.
- ▼ **Deemed retailers:** Some accredited generation projects that satisfied the criteria for 'Category A' under the previous NSW voluntary benchmark scheme allow for a deemed retailer to create NGACs up to a baseline amount, provided that a power purchase agreement (PPA) is in place, with some generators also being accredited to create NGACs above the baseline amount. The generation system owner may then claim NGACs for any generation above the baseline. Recent legislative changes to the Act have resulted in all Category A generators ceasing to be eligible as of 1 July 2010. The projections account for this future reduction in NGAC supply (from both the deemed retailer and generator, in respect of the Category A plant).

DSA Rule

- ▼ The volume of certificates created from a number of similar energy efficiency projects peaked during 2008 and was significantly reduced in the first half of 2009, with no further NGAC creation from these projects after 1 July 2009 (due to the changes to the DSA Rule (see Section 4.3)).
- ▼ After the ESS commenced, the only NGACs created under the DSA Rule within GGAS will come from on-site power generation, a small proportion of total DSA creation.

LUAC & CS Rules

- ▼ Despite not being tradeable, LUACs are treated as equivalent to NGACs for the purposes of projections. No further assumptions are made and projections are based on existing accreditations.
- ▼ No assumptions are made for CS Rule certificates. Projections are based on existing accreditations.

Demand

- ▼ **Population:** Mid-range estimates of the NSW and ACT population, as published by the Australian Bureau of Statistics²³.
- ▼ **Electricity Demand:** Mid range estimates of electricity demand for NSW and the ACT, as published by TransGrid²⁴. These do not take account of the impact of ESS on electricity demand.
- ▼ **NSW/ACT pool coefficient:** Mid-range estimate of the NSW pool co-efficient (see Section 7.5).
- ▼ **Distribution Loss Factors:** Projection of distribution loss factors is based on the actual weighted average from the returns of 2009 benchmark statements.
- ▼ **Mandatory Renewable Energy Target:** The number of RECs²⁵ counted is anticipated to rise incrementally based on expected increases in electricity demand and the renewable power percentage.²⁶

The projection of supply and demand is sensitive to small movements in some of the key factors used in determining the NSW and ACT greenhouse gas benchmarks. The Scheme Administrator cautions persons against making decisions based upon the demand/supply projections depicted in Figure 7.2.

7.3 Projection scenarios

The Scheme Administrator's projection for future years depicts 3 different scenarios on the supply side, while retaining a single demand projection. The scenarios are current as at 30 June 2010.

The annual supply scenarios have been prepared based on the Scheme Administrator's knowledge of the potentially variable sources of supply for certificates. The following is a brief description of each. More discussion follows in Section 7.4.

- ▼ **Scenario 1:** The projected supply of certificates in this scenario is based on the abatement expected to be achieved by existing accreditations only, and excludes all future projects. This scenario is the low-range projection.

²³ ABS Catalogue Number 3222.0, Population Projections Australia 2006 to 2101, latest issue 4 September 2008.

²⁴ TransGrid Annual Planning Report 2009, see www.transgrid.com.au/aboutus/pr/Pages/AnnualReports.aspx

²⁵ In addition to surrendering NGACs or LUACs, benchmark participants are permitted to account for RECs surrendered under the *Commonwealth Scheme (Renewable Energy (Electricity) Act 2000* (Cth)). Only RECs associated with electricity purchases in NSW and the ACT can be counted.

²⁶ This is the process for determining the actual number of RECs which must be surrendered each year to discharge a liability, as specified in the *Renewable Energy (Electricity) Regulations 2001* (Cth).

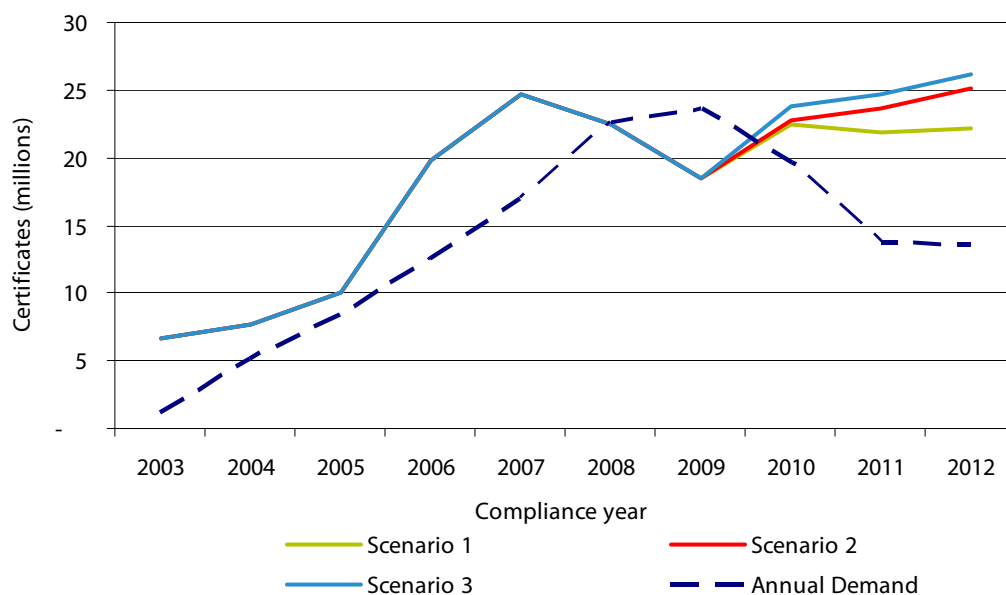
- ▼ **Scenario 2:** The projected supply of certificates in this scenario is based upon the abatement expected to be achieved by existing accreditations, including all accredited future projects. It is assumed that accredited future projects will commence abatement activities as anticipated by the project proponent. This scenario is the mid-range projection.
- ▼ **Scenario 3:** The projected supply of certificates in this scenario includes all accredited ACPs, accredited future projects (including the assumption that commencement of operation will be achieved as scheduled by the project proponent) and all current applications for accreditation. This scenario is the upper-range projection.

While the legislative amendments to the Act in 2006 allow GGAS to continue operation beyond 2012, given the likelihood of implementation of a national emissions trading scheme, the Scheme Administrator has chosen a projection timeframe that extends to and is inclusive of the 2012 compliance year only.

7.4 Projection results

Figure 7.2 shows the latest projections, for the NSW and ACT Schemes combined, current at 30 June 2010.

Figure 7.2 Projected annual demand and supply of certificates



Note: As at 30 June 2010.

All 3 supply scenarios depict a supply that peaked in 2007 declining through to 2009, after which supply shows a small increase to 2012 in scenarios 2 and 3, but reduces slightly after 2010 in scenario 1. This peak in 2007 was created by the strong growth in abatement from energy efficiency project activity accredited under the DSA Rule in the years 2005 to 2007, particularly those relating to CFLs. This growth fell significantly in late 2008 following an amendment to the DSA Rule, with little activity occurring in the first 6 months of 2009 (prior to commencement of the ESS). However, underlying this significant reduction in supply is an expectation of continued steady growth in abatement activity under the Generation Rule, with seven future projects proposed to commence operation in the 2010-2012 period (including three large scale power stations).

Scenario 1 shows a marked decline in annual supply from 2007 to 2009 primarily due to progressive reduction in CFL related NGAC supply and commencement of ESS in July 2009, with supply increasing to 2010 but declining in future years as Category A generation projects cease to create NGACs after 1 July 2010. This decline is counter-balanced to some extent by supply increases from other generation projects via continued efficiency improvements or increased generation capacity.

Scenario 2 shows a similar decline in supply from 2007 to 2009, however supply then increases to 2012, due to implementation and commissioning of currently accredited future projects. Assuming these future projects commence as scheduled, they will offset any reduction in supply resulting from the removal of Category A generation.

Scenario 3, differs from Scenario 2 in that it includes all current applications for accreditation up to the cut-off of 1 January 2010. Scenario 3 suggests that reduced supply from Category A generation expiry and DSA Rule changes will be largely offset by an expected increase in certificate creation by new generation projects under the Generation Rule (and DSA Rule to a lesser extent). However, this supply curve assumes that all existing accreditations (aside from energy efficiency) will continue largely unchanged until at least 2010, all current applications will be accredited (with no more being accepted after 1 January 2010), and all future projects, whether accredited or still in application assessment stage, will commence as scheduled.

The demand for abatement certificates is expected to have peaked during calendar year 2009, and to decline in future years. The decline can primarily be attributed to:

- ▼ the NSW Greenhouse Gas Benchmark holding steady at 7.27t CO₂-e per capita, despite population and electricity demand increases
- ▼ a steadying out of the NSW Pool Coefficient (average intensity of emissions in CO₂-e gases per MWh of electricity, see Section 7.5) which is expected to remain relatively static to 2012
- ▼ the effective cessation of the previous 2 year lag adjustment effect on demand in calendar year 2010 and onwards, as a direct result of the decreasing level of DSA Rule NGAC creation during late 2008 and early 2009, and the subsequent cessation of all energy efficiency related DSA activity after 1 July 2009 (see Box 3.1).

Demand is therefore projected to markedly decline after 2009 before a plateau from 2011 onwards. Although the per capita benchmark remains steady after this time, population is predicted to rise faster than demand for energy; and the Renewable Power Percentage will continue to rise (meaning benchmark participants can surrender a greater number of RECs in place of NGACs).

Under all Scenarios (as shown in Figure 7.2), annual supply of certificates is expected to exceed annual demand from 2010 onwards. As certificates do not expire, with a certificate created for a particular vintage able to be surrendered against a compliance obligation for any year thereafter (for example, a certificate of 2004 vintage may be surrendered against a compliance obligation in any year from 2004 onwards) the surplus of supply experienced in the first 6 years will continue to assist in meeting the projected demand from 2010 onwards. The number of certificates that are available for surrender (approximately 19.5 million, see Table 6.4) will satisfy approximately 100% of the annual surrender obligation placed on Benchmark Participants for the forthcoming CY2010 compliance year).

However it should be noted, the nature of the assumptions around transition to a national scheme illustrates the uncertainty of these supply scenarios.

7.5 Increase in the NSW Pool Coefficient

The NSW Pool Coefficient is an indicator of the average emissions intensity of electricity sourced from the National Electricity Market in NSW. It represents the emissions of greenhouse gases (in tonnes of carbon dioxide equivalent) per MWh of electricity supplied from the 'pool' of major power stations serving the NSW electricity grid (Category B Generators).

GGAS uses the NSW Pool Coefficient when calculating benchmark participants' greenhouse obligations or 'Attributable Emissions' under GGAS. Greenhouse gas emissions for which a benchmark participant is responsible under GGAS are calculated by multiplying the benchmark participant's electricity purchases by the NSW Pool Coefficient.

The NSW Pool Coefficient is also used in the calculation of the number of certificates that an accredited ACP can create. The NSW Pool Coefficient for each compliance year is announced by IPART in November of the previous year.²⁷ The NSW Pool Coefficient for a year is the simple average of the 5 'Annual Pool Values' from previous years, lagged by 2 years.

For example, the NSW Pool Coefficient for 2010 is the simple average of the Annual Pool Values for the years 2004 to 2008, which represents a 2 year lag. The averaging smooths the impact of any one-off highs or lows in the Annual Pool Value in a particular year and thus makes it more stable and predictable. The 2 year time lag

²⁷ The NSW Pool Coefficient is determined pursuant to clause 9.1 of the Compliance Rule.

reflects the practicalities of obtaining data and calculating and publishing the NSW Pool Coefficient in advance of the year to which it applies.

An adjustment is also made to the calculation of the NSW Pool Coefficient to add back emissions for which abatement certificates have been created. This is necessary to avoid double counting this abatement benefit.

The Annual Pool Value is calculated by Method 1 of the Compliance Rule. The Pool Value is the average rate of emissions of greenhouse gasses per unit of electricity sent to the NSW grid by Category B generators, and via the interconnectors to Queensland, Victoria and South Australia. Emissions data is supplied by the generators and electricity sold data is supplied by AEMO.

The total emissions attributable to the NSW pool in 2008 increased by 2.3%, as did the net sent out energy, leading to no change in Pool Value for that year. The Pool Value for 2008 was determined by IPART as 0.983t CO₂-e/MWh resulting in a NSW Pool Coefficient of 0.973t CO₂-e/MWh for 2010.²⁸

There were a number of other factors that influenced the Annual Pool Value in 2008.

- ▼ There was a 0.9% increase in combustion emissions due to an increase in the total energy content of coal burned in power stations of 1.0% which was partially offset by a decrease in the tonnes of coal burned of 0.8%.
- ▼ Fugitive emissions increased by 9.2%, due to a 10.0% increase in the average fugitive methane intensity of coal. This was due in part to a rise in the share of coal sourced from gassy underground mines.
- ▼ The creation of NGACs by Category B generators fell by approximately 6.1% in 2007.
- ▼ The quantity of electricity imported from outside NSW increased by 18.5% but the emissions attributed to these imports increased by only 15.1%. This is because the share of imports from SA/Vic fell slightly, so lowering the average emissions intensity of imports by 2.9%.
- ▼ Hydro contributed 3.0% of NSW electricity sent out, up from 2.8% in 2007 but still well below the share in 2006 (5.5%) and in 2005 (7.8%). The electricity from the Snowy Mountains hydro-electricity scheme in 2008 was slightly lower than in 2007, and well short of the long term average.

²⁸ For comparative purposes, in 2008 the Pool Coefficient was determined to be 0.967t CO₂-e/MWh for 2009, and the Pool Value was 0.983t CO₂-e/MWh for 2007.

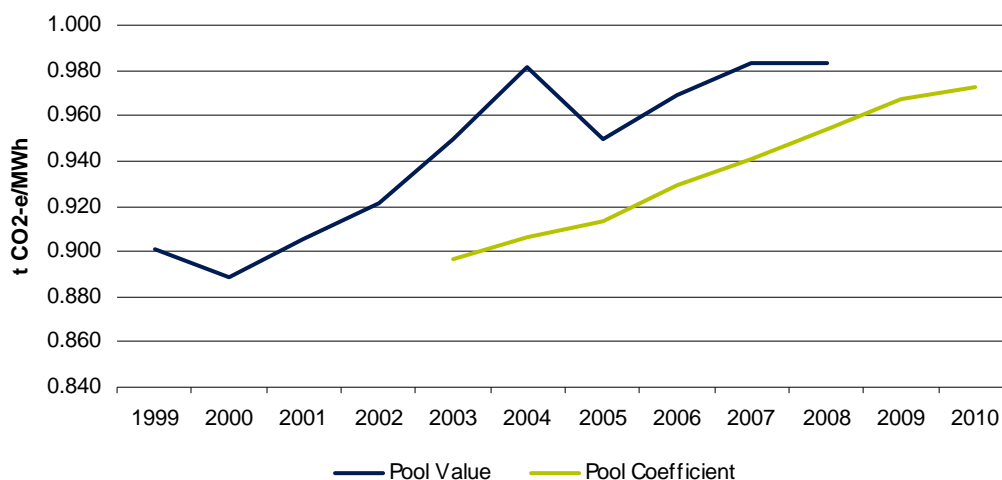
Figure 7.3 Historical NSW Annual Pool Value and Pool Coefficient 1999-2010

Figure 7.3 above illustrates the trend in Annual Pool Values and Pool Coefficients. The NSW 2010 Pool Coefficient has increased by approximately 0.6% from 2009. This relatively modest increase is partly due to the damping effect of the 5 year rolling average.

Refer to Box 3.1 for discussion on how the NSW Pool Coefficient factors into the determination for GGAS abatement obligations for each compliance year.

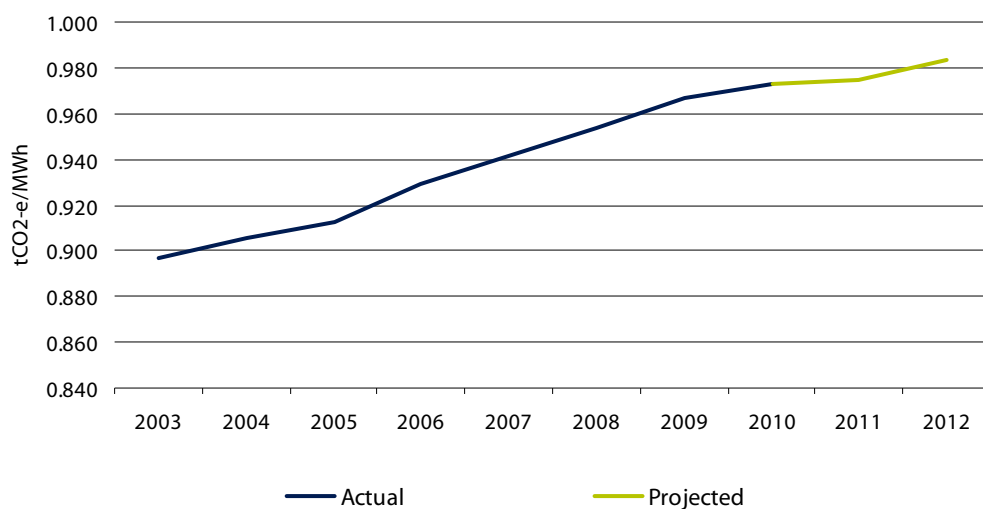
7.5.1 NSW Pool Coefficient forecast to 2012

IPART has made a forecast of the NSW Pool Coefficient until 2012 as shown in Figure 7.4. The forecasts of the NSW Pool Coefficient in 2011-12 are estimates and IPART cautions persons against making decisions based upon the projections depicted. The purpose of these estimates is to give an indication of the possible trend in the Pool Coefficient.

The 2011/12 projections are based on the assumption that the existing Category B generators continue to supply a similar level of Net Sent Out Generation. Under the Generation Rule, if a major new base-load power station is built (whether in NSW or elsewhere), it would be a Category D generator, and would only impact on the Annual Pool Value if it reduced the energy sent out from Category B generators. The actual effect would depend on the timing and size of any new power station constructed.

The projections are most sensitive to assumptions about Snowy Hydro output²⁹ and the source of imports³⁰, but less sensitive to assumptions about rates of growth in Net Sent Out Generation and to assumptions about Category B power station generation intensity. An upward trend in the NSW Pool Coefficient is already locked in for the next 12 months because of the historical rising trend in the Annual Pool Values from 2004 to 2008, with each new Annual Pool Value added to the series being higher than the value removed. The rate of rise will be slightly lower because the Pool Value for 2007 was the same as for 2008.

Figure 7.4 Forecast of the NSW Pool Coefficient until 2012



The Projected Pool Coefficient forecast shown in Figure 7.4 indicates it will increase marginally in 2011, before exceeding 0.98t CO₂-e/MWh in 2012. The projections are based on the following key assumptions:

- ▼ Snowy output remains below the long term average,
- ▼ future increases in inter-State imports of electricity, specifically a higher level of net imports from Victoria. Victoria has significantly higher greenhouse gas intensity than NSW which would in turn put upward pressure on the Pool Value.

²⁹ The recent reductions in Snowy Hydro electricity output due to the drought will have an upward pressure on the NSW Pool Coefficient.

³⁰ Electricity generated in other states generally has an average emissions intensity that is higher than NSW.

8 Links with other schemes

The following schemes have an impact in some way on GGAS.

8.1 Carbon Pollution Reduction Scheme

In July 2008, the Commonwealth Government released a Green Paper which canvassed options for the design of a national emissions trading scheme, to be called the Carbon Pollution Reduction Scheme (CPRS). A White Paper was subsequently released in December 2008. The paper outlined the final design of the CPRS and the medium-term target range for reducing carbon pollution, with the proposed commencement date being originally mid-2010. Commencement was initially delayed until mid-2011, but on 27 April 2010 the Commonwealth announced it would delay the implementation of the CPRS until the end of 2012.

The architecture of the CPRS is very different to the architecture of GGAS and more closely reflects the structure and operation of the European Union Emissions Trading Scheme. It is designed as a 'cap and trade' scheme rather than the GGAS-type 'baseline and credit' scheme.

A 'cap and trade' scheme essentially means that organisations above a certain threshold³¹ that emit greenhouse gases will be required to surrender 1 permit for each tonne of carbon dioxide equivalent of emissions. The primary unit of trading will be a 'permit to emit'.

Where there are large numbers of small emitters, it is more practical to cover emissions by applying CPRS obligations at another point along the supply chain. For example, to cover emissions from fuel use, the Government proposes to apply CPRS obligations 'upstream' on fuel suppliers.

³¹ The CPRS is to generally apply directly to large emitters. That is, to those facilities that have direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more.

Impact on GGAS

The proposed CPRS and GGAS both seek to establish a price on carbon to create strong incentives for business to reduce emissions and to this extent are compatible. The legislation that extended GGAS in 2006 did so until the end of 2020 or until the establishment of a national emissions trading scheme. Effectively this means that when the national scheme comes into operation, GGAS will cease to operate.

The New South Wales Government continued negotiations during 2009 with the Commonwealth Government on appropriate transition arrangements to a national emissions trading scheme. Part of this assessment was to identify those ACPs that might be adversely impacted by the early termination of GGAS. For the most part, these were ACPs creating certificates from methane gas. ACPs with forests eligible under the Carbon Sequestration Rule are eligible to transition directly to the CPRS. Those large users accredited under the LUAC Rule are eligible for exemptions under the CPRS.

The announced delay to the introduction of the CPRS, and the on-going uncertainty around the form that any future national scheme might take, has increased the level of market uncertainty for participants in GGAS. Decisions around investment towards continuing participation in GGAS, and the ability to create certificates, is an example of how delays to introducing a national scheme could have a direct impact on the future operation of GGAS.

8.2 NSW Energy Savings Scheme

The ESS commenced on 1 July 2009 and works by setting an energy savings target for electricity retailers. ESS is expected to continue operation beyond the end of GGAS until 2021 or a comprehensive national energy efficiency scheme is established. It will be subject to 5-yearly reviews to ensure that it continues to deliver net benefits and is complementary to the CPRS. IPART is the Scheme Administrator and Scheme Regulator for the ESS. A separate Operation and Compliance Report, discussing developments in the ESS, will be delivered to the Minister for Energy by 31 July every year.

The ESS will ensure that cost-effective energy savings continue to be implemented in NSW, and will complement the proposed CPRS by overcoming obstacles to the take-up of energy efficiency.

The ESS is modelled on the end-use energy efficiency aspects of the DSA component of GGAS and similar energy saving schemes in Victoria, South Australia, the UK and Europe. Transition measures were put in place to allow all businesses accredited to undertake eligible end-use energy efficiency activities under GGAS to be accredited under the ESS without reapplying. This is subject to IPART being satisfied that the activity meets the requirements of the amended Act, Regulation and ESS Rule.

ACPs under the ESS create energy savings certificates which are not tradeable with certificates created under GGAS. The removal of the energy efficiency component of the DSA Rule from GGAS does not have a significant impact on the overall amount of certificate creation as most of the certificates in GGAS come from Generation Rule activities.

8.3 Renewable Energy Target

In August 2009, the Commonwealth Government implemented the Renewable Energy Target (RET) Scheme, which is designed to deliver on the Government's commitment to ensure that 20% of Australia's electricity supply will come from renewable sources by 2020.

The RET expands on the previous Mandatory Renewable Energy Target (MRET), which began in 2001.

This is a national scheme that places a legal liability on wholesale purchasers of electricity to proportionately contribute towards the generation of an additional 45,000 GWh of renewable energy by 2020. RET uses Renewable Energy Certificates (RECs) to provide incentives for the development of renewable energy sources. RECs are denominated in MWh of electricity output (rather than emissions of CO₂-e) and trade at significantly higher prices than NGACs in the market.

A REC and an NGAC cannot be created for the same activity (ie, if a REC is created for a MWh of output, an NGAC cannot be created with respect to that output); however, where a renewable energy project is also reducing methane emissions, it is possible to create NGACs for the methane emissions avoided, in addition to the RECs.

Benchmark participants can use RECs to assist in their annual compliance obligations under GGAS (see Section 3 for further information on accounting for RECs for compliance purposes).

On 26 February 2010, the Government announced changes to be made to the RET scheme to provide greater certainty for households, large-scale renewable energy projects and installers of small-scale renewable energy systems like solar panels and solar water heaters.

From January 2011, the existing RET scheme will be separated into 2 parts - the Small-scale Renewable Energy Scheme (SRES) and the Large-scale Renewable Energy Target (LRET). Combined, the new LRET and SRES are expected to deliver more renewable energy than the existing 45,000 GWh target in 2020. Existing banked RECs from the current RET will be eligible for use in the LRET - including RECs created for small-scale technologies up until 31 December 2010.

If the RET target is increased as a result of changes to the RET scheme, this is likely to impact the Renewable Power Percentage by increasing the amount required to be surrendered to ORER. This will have a direct impact on GGAS by allowing a larger number of RECs to be surrendered against a Benchmark Participant's compliance obligation.

8.4 Prime Minister's Task Group on Energy Efficiency

The Commonwealth Government established a Task Group on Energy Efficiency in early 2010 to report to the Prime Minister by mid-2010 on options to deliver a "step change improvement" in Australia's energy efficiency by 2020. The Government has identified energy efficiency as a key plank in its suite of policies to reduce emissions and to guide Australia to a low carbon economy.

The Task Group builds on the Council of Australian Governments (COAG) agreement in July 2009 for a National Strategy on Energy Efficiency. The national strategy is aimed at achieving a coordinated approach to energy efficiency.

8.5 Queensland Gas Scheme

This scheme commenced on 1 January 2005 and requires Queensland electricity retailers and other liable parties to source at least 13% of their electricity from gas-fired generation. It uses Gas Electricity Certificates (GECs) to mandate a proportion of Queensland's electricity consumption to be gas-fired and thereby reduce greenhouse gas emissions in the State. The mandatory target for gas-fired generation will increase from 13% to 15% in 2010, with the option to increase the target to 18% by 2020.

GECs are denominated in electricity output (MWh, rather than emissions of CO₂-e for NGACs). A generation project located in Queensland may seek accreditation under both the Qld Gas Scheme and GGAS, although the prohibition on double counting means that certificates cannot be created under both Schemes for the same unit of generation. For example, a low emission Queensland gas generator that creates GECs in relation to 50% of its output may only create NGACs in relation to the remaining 50%. In 2009 there was a shift by Queensland generators to create NGACs instead of GECs as the GEC spot price declined from a high of \$11.30 at the start of the year to a low of \$2.20 towards the end of 2009. The Scheme Administrator will conduct a careful review of the creation activities of these generators to ensure that no double counting has occurred.

The Queensland Gas Scheme will transition into the national emissions trading scheme (CPRS) when it commences.

8.6 Generator Efficiency Standards

The GES is a long-standing program developed by the Australian Greenhouse Office. The objective is to provide an approach for power generators to voluntarily work towards achieving best practice in terms of efficiency and greenhouse gas emissions intensity. The calculation methodologies and testing procedures prescribed in the GES are used within the GGAS Generation Rule.

8.7 GreenPower

GreenPower is a national accreditation program that sets stringent environmental and reporting standards for renewable energy products offered by electricity retailers to households and businesses across Australia.

GreenPower provides Australian consumers with a certification mechanism for zero emissions electricity from prescribed renewable energy sources. Organisations which purchase GreenPower (usually as a given percentage of their total electricity consumption) cannot claim that initiative as an emissions reduction under GGAS. GreenPower is administered by the NSW Department of Industry and Investment.

8.8 Climate Change Fund

The NSW Climate Change Fund was established in July 2007 under the *Energy and Utilities Administration Act 1987* and is administered by the NSW Department of Environment, Climate Change and Water (DECCW). The Fund incorporates the previous Water and Energy Savings Funds (aimed at industry), as well as the Climate Action Grants Program and funding from the Environmental Trust.

\$150 million has been allocated to funding the NSW Energy Efficiency Strategy to help families and businesses to save money by reducing energy use and emissions. The Energy Savings Fund supports many projects around NSW which are aimed at improving energy efficiency, alternative energy generation and education. Programs include:

- ▼ the Low Income Household Refit program, which provides home energy assessments for more than 50,000 low-income households, and
- ▼ energy audits and retrofits provided for up to 2,500 small businesses.

8.9 Voluntary carbon products

Over the past few years there has been significant growth in interest in climate change, carbon offsets and voluntary carbon products. Voluntary carbon products include all carbon trades that are not required by regulation. These products have been driven by companies, organisations and individuals committed to efficiency, profitability and rapid action on climate change. Almost all carbon used as an offset originates from project based transactions, for example credits created by accredited parties under GGAS. Where not required to meet a liability, the purchase and surrender of carbon credits by individuals and institutions is done as a means to offset their emissions.

The Voluntary Carbon Markets Association (VCMA) assists individuals who wish to participate in the voluntary carbon products.

Delay of the CPRS is likely to have significant implications for voluntary carbon products. At this stage it is uncertain whether voluntary offset products are likely to continue in the absence of a price signal coming from the CPRS. However, entities that are still interested in demonstrating their green credentials may still use the surrender of voluntary carbon products as a recognised means of demonstrating their commitment to taking action on climate change. These surrenders occur through the GGAS & ESS Registry and once surrendered, the product is not available for further trade.

See Section 6.4 for details about voluntary surrenders in GGAS.



Appendices

A IPART's functions under GGAS

The Tribunal has 2 main functions under GGAS. The first of these, Compliance Regulator, relates to IPART's current role as Licence Regulator for energy licence holders in NSW. The second, Scheme Administrator, relates to IPART's role administering GGAS as a whole. These functions are set out in Sections 97H to 97I of the Act.

Compliance Regulator functions

The Tribunal conducts certain core functions of GGAS, such as:

- ▼ determining the NSW Pool Coefficient, which is the average emissions intensity of all electricity supplied to NSW customers in a particular year
- ▼ monitoring and reporting to the Minister on benchmark participants' compliance
- ▼ imposing penalties on benchmark participants if they fail to meet their benchmarks.

Scheme Administrator functions

The Scheme Administrator is appointed by the Minister for Energy to oversee the:

- ▼ accreditation of ACPs
- ▼ administration of the Registry
- ▼ auditing of greenhouse gas abatement activities which ACPs wish to have (or have already) reflected in abatement certificates
- ▼ monitoring and reporting to the Minister on ACP's compliance with GGAS Rules and their conditions of accreditation.

The Tribunal is currently the Scheme Administrator, but the Minister may appoint an alternate organisation to perform some or all of the Scheme Administrator's functions.

B Categories of the Generation Rule

Under GGAS, generating systems are assigned to certain Categories, which dictate the approach to NGAC creation and the accordant NSW Production Baseline.

Category A

Category A generating systems are those which pro-actively entered into power purchase agreements (PPAs) with electricity retailers under the previous NSW voluntary benchmarks scheme, and have a respective NSW Production Baseline as determined by the Generation Rule. In the case of Category A generating systems, the Deemed Retailer to the PPA (ie, the electricity retailer) is eligible for abatement for generation below the resultant baseline figure, while the generator (counter-signatory to the PPA) is eligible for abatement associated with generation above this baseline figure.

Category B

A Category B generating system is essentially an existing and prescribed NSW 'base-load' generating system, which in the case of a coal fired power station, effectively operates at an emissions intensity equal to, or greater than, the NSW Pool Coefficient. As such, it is unable to use the Relative Intensity Approach to create certificates, but may instead undertake efficiency improvements such as turbine upgrades or fuel switching, to improve the emissions intensity at which it operates. The extent to which the efficiency improvement is demonstrated (confirmed via testing) determines the eventual numbers of abatement certificates created.

Category C

A Category C generating system on the other hand, is generally one that commenced operations prior to the announcement of GGAS and in the case of fossil fuel fired generating systems, has a NSW Production Baseline equal to its average annual output during the years 1997-2001. Under the Relative Intensity Approach, this category of generation creates abatement certificates on the basis of each MWh (of lower emissions intensity generation) above its respective NSW Production Baseline Figure.

Category D

Category D generating systems (broadly, those commissioned after GGAS was first announced by the NSW Government in January 2002) are generally representative of newer and 'cleaner' technologies and have a designated NSW Production Baseline of zero MWh. This effectively means that using the Relative Intensity Approach, a generator for this category of power station may create abatement certificates for each MWh (of lower emissions intensity generation) above its zero MWh baseline, reflecting the difference in emission intensity between the generation and the NSW Pool Coefficient.

C Registry data

This section includes information on projects of all current and cancelled accreditations, including future projects that have not yet been implemented. Certificates are created for projects rather than accreditations and an accreditation may include multiple projects. An asterisk (*) beside the project name indicates that the accreditation has been cancelled.

Data in this chapter are current as at 30 June 2010.

Table C.1 breaks down the types of generating systems by category and fuel source. Fuels used in generating systems range from biomass (including bagasse), hydropower, natural gas, coal and methane derived from coal mines.

Table C.1 Generating systems by fuel and source

Category	Fuel source
Category A: Biomass	This type of plant burns biomass, including bagasse (sugar cane waste) and sawmill waste
Category A: Natural Gas	Natural gas (fossil fuel)
Category A: Waste Coal Mine Gas	Coal seam gas drained from mines for the purpose of coal mining operations (regardless of the period of time between draining the gas from the coal mine and use of the mine for coal mining operations) and includes coal seam gas drained from closed coal mines (fossil fuel)
Category A: Hydro	Hydropower
Category A: Landfill Gas	Gas derived from degradation of waste in landfills
Category B: Coal	Coal (fossil fuel)
Category C: Coal	Coal (fossil fuel)
Category C: Landfill Gas	Gas derived from degradation of waste in landfills
Category C: Natural Gas	Natural gas (fossil fuel)
Category C: Sewage Gas	Generation based on gas derived from sewage
Category D: Biomass	This type of plant burns biomass, including bagasse (sugar cane waste) and sawmill waste
Category D: Coal	Coal (fossil fuel)
Category D: Coal Seam Methane	Methane drained from (unmined) coal seams for the purposes of power generation (fossil fuel)
Category D: Landfill Gas	Gas derived from degradation of waste in landfills

Category	Fuel source
Category D: Natural Gas	Natural gas (fossil fuel)
Category D: Waste Coal Mine Gas	Methane drained from mines as a result of coal mining operations (regardless of the period of time between draining the gas from the coal mine and use of the mine for coal mining operations) and includes coal seam gas drained from closed coal mines (fossil fuel)

Generation Rule certificate creations by project type

Table C.2 Category A: Biomass

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Country Energy: Broadwater Cogeneration Plant*	NSW	10,895	13,178	0	0	0	0	0	24,073
Country Energy: Condong Cogeneration Plant*	NSW	0	628	0	0	0	0	0	628
Country Energy: Harwood Cogeneration Plant*	NSW	0	1,095	0	0	0	0	0	1,095
Total		10,895	14,901	0	0	0	0	0	25,796

Table C.3 Category A: Natural gas

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
AGL Sales: Varnsdorf Cogeneration Generating System*	VIC	9,863	10,650	11,046	12,029	11,861	11,993	0	67,442
Integral Energy Australia: Category A Gas Fired Cogeneration Plant	NSW	580,461	594,623	632,616	625,175	646,520	646,791	670,017	4,396,203
Origin Energy Electricity: Alfred Hospital*	VIC	0	3,973	8,514	9,340	9,302	8,404	0	39,533
Origin Energy Electricity: Royal Melbourne Hospital*	VIC	0	8,282	17,179	19,415	17,749	14,804	0	77,429
Origin Energy Electricity: St Vincents Hospital*	VIC	0	3,537	6,420	7,686	0	0	0	17,643
Total		590,324	621,065	675,775	673,645	685,432	681,992	670,017	4,598,250

Table C.4 Category A: Waste coal mine gas

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Integral Energy Australia: Category A Waste Mine Gas-Fuelled Power Plant	NSW	1,731,215	1,462,384	1,473,011	1,553,810	1,373,685	530,423	1,011,062	9,135,590
Integral Energy Australia: Category A Waste Mine Gas-Fuelled Power Plant	NSW	737,204	838,720	556,772	542,943	861,482	626,512	600,330	4,763,963
Total		2,468,419	2,301,104	2,029,783	2,096,753	2,235,167	1,156,935	1,611,392	13,899,553

Table C.5 Category A: Hydro

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Country Energy: Burrendong Hydro Power Station	NSW	8,731	6,488	13,448	22,779	2,269	2,307	6,828	62,850
Country Energy: Copeton Hydro Power Station	NSW	20,206	1,538	12,054	18,971	14,360	15,683	16,066	98,878
Country Energy: Nymboida Hydro Power Station	NSW	6,255	9,020	8,887	10,224	7,895	10,504	9,098	61,883
Country Energy: Oaky Hydro Power Station	NSW	2,700	2,346	2,366	6,778	5,402	12,008	12,172	43,772
Country Energy: Wyangala Hydro Power Station*	NSW	3,934	0	448	0	0	0	0	4,382
EDL LFG (Vic): Clayton and Springvale LFG Power Plants	VIC	0	0	0	0	0	0	5,820	5,820
Energy Australia: Glenbawn Hydro Power Station	NSW	10,735	10,843	10,926	11,114	1,243	1,326	9,497	55,684
Origin Energy Electricity: Yarrawonga Power Station	VIC	37,487	40,934	44,727	45,511	28,892	23,862	31,088	252,501
TRUenergy: Blue Rock Dam Hydro Generating System	VIC	0	0	6,717	4,433	2,025	4,093	4,234	21,502
TRUenergy: Cardinia Dam Hydro Generating System	VIC	0	0	8,563	10,276	6,372	8,086	8,324	41,621
TRUenergy: Eildon Pondage Hydro Generating System	VIC	0	0	2,357	12,424	3,998	6,883	6,721	32,383
TRUenergy: Lake Glenmaggie Dam Hydro Generating System	VIC	0	0	2,972	2,315	714	6,289	6,278	18,568
TRUenergy: Lake William Hovell Dam Hydro Generating System	VIC	0	0	3,107	266	3,971	3,567	4,038	14,949
TRUenergy: Thomson Dam Hydro Generating System	VIC	0	0	7,786	15,850	7	369	0	24,012
TXU Electricity: Blue Rock Dam Hydro Generating System*	VIC	2,798	7,649	3,849	0	0	0	0	14,296
TXU Electricity: Cardinia Dam Hydro Generating System*	VIC	15,012	13,345	4,444	0	0	0	0	32,801
TXU Electricity: Eildon Pondage Hydro Generating System*	VIC	5,478	11,555	7,135	0	0	0	0	24,168
TXU Electricity: Lake Glenmaggie Dam Hydro Generating System*	VIC	5,913	5,401	3,047	0	0	0	0	14,361
TXU Electricity: Lake William Hovell Generating System*	VIC	3,785	3,823	746	0	0	0	0	8,354
TXU Electricity: Thomson Dam Hydro Generating System*	VIC	9,835	10,902	4,597	0	0	0	0	25,334
Total		132,869	123,844	148,176	160,941	77,148	94,977	120,164	858,119

Table C.6 Category A: Landfill gas

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
AGL Electricity: Broadmeadows Landfill Gas Power Plant*	VIC	132,165	132,387	132,559	112,453	0	0	0	509,564
AGL Sales: Broadmeadows LFG Generating System	VIC	0	0	0	17,669	114,898	115,218	115,538	363,323
AGL Sales: Clayton & Springvale Landfill Gas Generation	VIC	347,713	386,035	408,065	389,938	370,801	373,618	374,655	2,650,825
AGL South Australia: Highbury Landfill Gas Power Plant	SA	37,020	32,340	32,188	28,032	23,508	16,028	17,655	186,771
AGL South Australia: Pedler Creek Landfill Gas Power Plant	SA	60,630	60,731	60,810	60,991	61,126	52,855	53,002	410,145
AGL South Australia: Tea Tree Gully Landfill Gas Power Plant	SA	31,587	28,033	22,421	18,136	17,472	13,504	13,023	144,176
AGL South Australia: Wingfield 1 & Wingfield 2 Landfill Gas Power Plant	SA	115,162	115,355	115,505	115,848	116,105	100,395	100,674	779,044
EDL LFG (NSW): Lucas Heights 1 LFG Generating System	NSW	0	46,414	56,675	59,728	66,117	76,332	67,801	373,067
EDL LFG (Qld): Brown Plains LFG Generating System	QLD	36,569	41,765	47,291	46,857	42,830	36,700	38,106	290,118
EDL LFG (SA): Wingfield 1 & 2 LFG Generating System	SA	88,631	127,501	166,071	153,465	123,845	108,233	96,853	864,599
EDL LFG (Vic): Berwick LFG Generating System	VIC	0	31,293	28,760	19,591	40,136	40,797	52,317	212,894
EDL LFG (Vic): Broadmeadows LFG Generating System	VIC	0	26,957	11,527	7,294	11,648	9,136	6,063	72,625
EDL LFG (Vic): Corio LFG Generating System	VIC	0	13,246	13,536	12,820	7,634	8,331	11,433	67,000
EDL LFG (Vic): Corio LFG Generating System - Deemed Retailer	VIC	0	888	24,892	24,892	24,892	21,635	21,635	118,834
EDL Operations (Berwick): Berwick LFG Generating System*	VIC	33,893	0	0	0	0	0	0	33,893
EDL Operations (Broadmeadows): Broadmeadows LFG Generating System*	VIC	24,209	0	0	0	0	0	0	24,209
EDL Operations (Corio): Corio LFG Generating System*	VIC	12,324	0	0	0	0	0	0	12,324
EDL Operations (Corio): Corio LFG Generating System - Deemed Retailer*	VIC	24,818	23,723	0	0	0	0	0	48,541
EDL Operations (Pedler Creek): Pedler Creek LFG Generating System	SA	1,132	8,511	13,545	15,917	12,838	19,449	17,048	88,440
Energy Australia: Belrose Power Station	NSW	43,539	25,026	27,049	22,859	37,455	38,355	38,420	232,703
Energy Australia: Lucas Heights I Power Station	NSW	116,910	117,106	117,271	117,627	117,897	101,938	102,226	790,975

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
TRUenergy: Berwick LFG Generating System	VIC	0	0	53,650	95,243	95,489	95,755	96,020	436,157
TXU Electricity: Berwick Power Plant*	VIC	109,839	110,039	47,880	0	0	0	0	267,758
Total		1,216,141	1,327,350	1,379,695	1,319,360	1,284,691	1,228,279	1,222,469	8,977,985

Table C.7 Category B: Coal

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Delta Electricity: Mt Piper Power Station	NSW	11,050	19,777	52,097	187,838	116,886	85,469	0	473,117
Delta Electricity: Munmorah Power Station	NSW	0	3,500	1,016	0	0	0	0	4,516
Delta Electricity: Vales Point Power Station	NSW	66,894	65,431	46,329	102,252	20,072	3,104	3,625	307,707
Delta Electricity: Wallerawang Power Station	NSW	16,593	15,458	52,308	23,773	8,930	60,951	54,940	232,953
Eraring Energy: Eraring Power Station	NSW	129,086	115,291	72,120	70,711	67,264	97,987	96,502	648,961
Macquarie Generation: Liddell Power Station	NSW	63,362	199,124	275,082	446,877	571,472	547,348	413,949	2,517,214
Redbank Project: Redbank Power Greenhouse Gas Abatement Program	NSW	0	0	0	0	0	0	0	0
Total		286,985	418,581	498,952	831,451	784,624	794,859	569,016	4,184,468

Table C.8 Category C: Biomass

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Rocky Point Power Project: Rocky Point Cogeneration Plant	QLD	0	0	0	0	364,190	377,617	443,488	1,185,295
Total		0	0	0	0	364,190	377,617	443,488	1,185,295

Table C.12 Category C: Natural gas

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
AGL Hydro Partnership: Oakey Power Station	QLD	0	0	0	0	0	0	0	0
AGL Hydro Partnership: Torrens Island A Power Station	SA	0	0	0	0	1,287	12,893	0	14,180
AGL Hydro Partnership: Torrens Island B Power Station	SA	0	0	0	0	40,701	0	0	40,701
Alinta DEBO: Bairnsdale Power Station*	VIC	1,293	14,603	8,215	5,578	125,309	69,314	0	224,312
Aurora Energy (Tamar Valley): Bairnsdale Power Station	VIC	0	0	0	0	0	0	12,466	12,466
Bell Bay Power: Bell Bay Power Station Units 1 and 2	TAS	0	0	0	140,271	355,276	369,298	84,925	949,770
Enertrade: Oakey Power Station*	QLD	0	3,563	0	0	0	0	0	3,563
Enertrade: Townsville Power Station*	QLD	0	8,451	0	0	0	0	0	8,451
OneSteel Manufacturing: OneSteel Whyalla Steelworks - By-product Turbines	SA	0	0	0	0	58,834	62,047	38,381	159,262
OneSteel Manufacturing: OneSteel Whyalla Steelworks - Cogeneration	SA	0	0	0	0	0	0	0	0
Origin Energy Electricity: Ladbroke Grove Power Station	SA	0	0	3,182	30,015	33,954	55,372	59,861	182,384
Pelican Point Power: Pelican Point Power Station	SA	284,984	0	194,934	545,997	986,020	1,114,978	1,064,299	4,191,212
TRUenergy: Newport Power Station	VIC	0	24,895	0	0	347,888	208,263	140,236	721,282
TRUenergy: Torrens Island A Power Station*	SA	0	0	0	0	0	0	0	0
TRUenergy: Torrens Island B Power Station*	SA	0	70,642	0	0	0	0	0	70,642
Total		286,277	122,154	206,331	721,861	1,949,269	1,892,165	1,400,168	6,578,225

Table C.13 Category C: Sewage gas

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
AGL Energy Sales & Marketing: Werribee Sewage Gas Generating System	VIC	59,381	58,928	100,578	184,989	196,181	179,509	193,274	972,840
Total		59,381	58,928	100,578	184,989	196,181	179,509	193,274	972,840

Table C.14 Category D: Biomass

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Diamond Energy: Shepparton Biogas Generating System	VIC	0	0	0	0	0	563	11,795	12,358
Diamond Energy: Tatura Biogas Generating System	VIC	0	0	0	0	11,885	14,670	8,220	34,775
EarthPower Technologies Sydney: Camellia Biodigester Generating System	NSW	0	10,623	24,619	34,543	28,242	21,621	21,981	141,629
Green Pacific Energy Stapylton No.1: Stapylton No.1 Generating System	QLD	0	0	5,370	0	0	0	0	5,370
Integrated Forest Products: Hume ACT Cogeneration Plant (Future Project)*	ACT	0	0	0	0	0	0	0	0
Visy Pulp & Paper: Tumut Cogeneration Generating System	NSW	542	353	532	622	589	1,642	561	4,841
Total		542	10,976	30,521	35,165	40,716	38,496	42,557	198,973

Table C.15 Category D: Coal

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
CS Energy: Kogan Creek Power Station	QLD	0	0	0	0	0	70,001	7,026	77,027
Millmerran Energy Trader: Millmerran Power Station	QLD	0	92,553	78,624	74,368	94,889	163,269	166,457	670,160
Queensland Alumina: Additional Steam from Cogeneration	QLD	0	0	0	0	0	0	0	0
Tarong Energy Corporation: Tarong North Power Station	QLD	0	38,112	80,869	117,273	0	176,158	130,828	543,240
Total		0	130,665	159,493	191,641	94,889	409,428	304,311	1,290,427

Table C.16 Category C: Coal seam methane

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Arrow (Generation): Daandine Power Station	NSW	0	0	0	0	12,978	29,744	16,575	59,297
Total		0	0	0	0	12,978	29,744	16,575	59,297

Table C.17 Category D: Landfill gas

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
AGL Energy Services: Glenorchy LFG Generating System	TAS	0	0	0	18,333	39,992	0	31,259	89,584
AGL Energy Services: Hobart LFG Generating System	TAS	0	0	0	23,423	29,308	0	21,924	74,655
AGL Energy Services: Kincumber LFG Generating System	NSW	0	0	0	0	0	0	27,630	27,630
AGL Energy Services: West Nowra Landfill Gas Power Generation	NSW	16,595	23,896	23,892	27,414	33,791	0	19,291	144,879
AGL Energy Services: Woy Woy LFG Generating System	NSW	0	0	0	0	0	0	26,291	26,291
Boral Recycling: Landfill Gas to Energy Facility, Deer Park	VIC	0	0	0	25,243	26,258	54,653	74,447	180,601
EDL LFG (ACT): Belconnen LFG Generating System	ACT	33,656	30,541	29,973	27,870	25,256	21,008	21,373	189,677
EDL LFG (ACT): Mugga Lane LFG Generating System	ACT	60,542	68,727	80,089	98,561	95,720	102,242	101,098	606,979
EDL LFG (NSW): Grange Avenue LFG Generating System	NSW	0	0	0	1,953	34,633	35,935	33,196	105,717
EDL LFG (NSW): Lucas Heights 2 LFG Generating System	NSW	382,599	396,207	535,048	506,381	501,786	442,028	499,224	3,263,273
EDL LFG (Qld): Roghan Road LFG Generating System	QLD	0	12,001	27,315	22,196	14,230	16,618	17,851	110,211
EDL LFG (Vic): Brooklyn LFG Generating System	VIC	0	29,267	78,294	75,166	78,728	87,477	76,720	425,652
EDL Operations (Brooklyn): Brooklyn LFG Generating System*	VIC	37,733	23,529	0	0	0	0	0	61,262
EDL Operations (Eastern Creek): Eastern Creek LFG Generating System	NSW	73,215	130,164	142,918	147,433	146,542	138,996	154,642	933,910
EDL Operations (Eastern Creek): Jacks Gully LFG Generating System	NSW	34,041	35,115	36,529	41,971	70,141	75,309	77,533	370,639
Energy Impact: LFG Cogeneration Generating System	QLD	0	0	0	0	0	9,789	7,160	16,949
Energy Impact: Molendinar LFG Generator	QLD	15,203	11,501	10,955	8,707	7,562	5,200	3,026	62,154
Energy Impact: Mornington LFG Generator	VIC	10,157	8,801	18,109	16,929	18,210	12,804	11,372	96,382
Energy Impact: Reedy Creek LFG Generator*	QLD	6,446	811	0	0	0	0	0	7,257
Energy Impact: Stapylton LFG Generator	QLD	20,361	23,250	26,701	21,297	31,578	18,488	37,324	178,999
Energy Impact: Suntown LFG Generator	QLD	27,020	45,309	50,551	36,089	29,853	20,429	8,513	217,764
Energy Impact: Wyndham LFG Generator	VIC	14,619	22,777	19,945	27,247	21,926	17,515	10,932	134,961
LMS Generation: Albury Renewable Energy Facility (Future project)	NSW	0	0	0	0	0	0	0	0

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
LMS Generation: Awaba Renewable Energy Facility	NSW	0	0	0	0	30,061	34,745	34,104	98,910
LMS Generation: Ballarat Renewable Energy Facility	VIC	0	0	0	0	0	14,525	16,148	30,673
LMS Generation: Bendigo Renewable Energy Facility	VIC	0	0	0	0	0	8,293	19,041	27,334
LMS Generation: Birkdale Renewable Energy Facility	QLD	0	0	0	0	0	0	0	0
LMS Generation: Drysdale Renewable Energy Facility (Future project)	VIC	0	0	0	0	0	0	0	0
LMS Generation: Eastern Creek 2 Gas Utilisation Facility	NSW	0	0	0	0	0	129,429	238,451	367,880
LMS Generation: Hallam Road Renewable Energy Facility	NSW	0	0	0	0	29,241	53,354	83,921	166,516
LMS Generation: Remount Renewable Energy Facility	TAS	0	0	0	0	34,074	35,409	39,794	109,277
LMS Generation: Rochedale Renewable Energy Facility	QLD	0	14,311	121,597	123,592	123,800	104,050	106,048	593,398
LMS Generation: Shepparton Renewable Energy Facility	VIC	0	0	0	0	0	0	11,538	11,538
LMS Generation: Summer Hill Renewable Energy Facility	NSW	0	0	0	0	0	0	26,288	26,288
LMS Generation: Tweed Renewable Energy Facility	NSW	0	0	0	7,861	11,355	11,631	11,668	42,515
LMS Generation: Whitwood Road Renewable Energy Facility	QLD	0	13,727	39,497	40,459	40,616	34,260	33,973	202,532
LMS Generation: Wollert Renewable Energy Facility	VIC	0	0	0	31,560	70,520	110,322	123,583	335,985
LMS Generation: Wyong Renewable Energy Facility (Future project)	NSW	0	0	0	0	0	0	0	0
Veolia Environmental Services (Australia): Ti-Tree Landfill Gas Generation Willowbank	QLD	0	0	0	0	0	0	26,942	26,942
Woodlawn Bioreactor Energy: Woodlawn Bioreactor	NSW	0	0	0	0	0	17,755	48,117	65,872
Total		732,187	889,934	1,241,413	1,329,685	1,545,181	1,612,264	2,080,422	9,431,086

Table C.18 Category D: Natural gas

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
AGL Energy Services (Queensland): Moranbah Generation Project	QLD	0	970	0	0	0	0	0	970
AGL Energy Services: Symex Cogeneration System	VIC	0	0	0	2,907	12,267	13,181	13,850	42,205
AGL Hydro Partnership: Somerton Power Station	VIC	0	0	0	0	882	25,074	15,444	41,400
AGL South Australia: Coopers Brewery Cogeneration Generating System	SA	6,593	6,106	6,421	6,711	6,457	6,812	8,550	47,650
Alinta EATM: Tamar Valley Power Station*	TAS	0	0	0	0	436	6,500	0	6,936
Aurora Energy (Tamar Valley): Bell Bay Three Power Station	TAS	0	0	0	0	0	0	14,381	14,381
Aurora Energy (Tamar Valley): Tamar Valley Combined Cycle Power Station	TAS	0	0	0	0	0	0	218,278	218,278
Aurora Energy (Tamar Valley): Tamar Valley Peaking Power Station	TAS	0	0	0	0	0	0	30,800	30,800
Bell Bay Power: Bell Bay Three*	TAS	0	0	0	3,365	0	0	0	3,365
Braemar Power Project: Braemar Power Station	QLD	0	0	0	0	0	68,099	105,262	173,361
CS Energy: Combined Cycle Gas Turbine	QLD	228,718	359,674	68,262	73,598	84,336	121,715	530,568	1,466,871
Delta Electricity: Colongra Power Station	NSW	0	0	0	0	0	0	3,763	3,763
GridX Power: GridX MiniGrid Cogeneration - Glenfield GEN	NSW	0	0	0	0	3	0	0	3
Narrabri Power: Wilga Park Power Station	NSW	0	10,557	15,761	4,817	1,689	1,243	552	34,619
NewGen Braemar 2 Partnership: Braemar 2 Power Station	QLD	0	0	0	0	0	0	37,520	37,520
NewGen Power: Braemar Power Station*	QLD	0	0	0	0	84,162	62,809	0	146,971
Origin Energy Electricity: Darling Downs Power Station	QLD	0	0	0	0	0	0	0	0
Origin Energy Electricity: Mortlake Power Station	VIC	0	0	0	0	0	0	0	0
Origin Energy Electricity: Quarantine Power Station	SA	5,542	11,418	11,359	25,769	16,362	20,212	51,830	142,492
Origin Energy Electricity: Spring Gully Power Station	QLD	0	0	0	0	0	0	0	0
Origin Energy Electricity: Uranquinty Power Station	NSW	0	0	0	0	0	8,773	71,829	80,602
Snowy Hydro: Laverton North Gas Generating	VIC	0	0	0	101	139,280	41,537	30,600	211,518
Snowy Hydro: Valley Power Gas Generating System	VIC	0	0	0	0	53,231	12,776	9,311	75,318

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
TRUenergy Tallawarra: Tallawarra Power Station Unit 1	NSW	0	0	0	0	0	52,220	1,051,999	1,104,219
Waste Recycling and Processing Corporation (WSN): WSN Ecolibrium Mixed Waste Facility (Generation)	NSW	0	0	0	0	0	0	0	0
Total		240,853	388,725	101,803	117,268	399,105	440,951	2,194,537	3,883,242

Table C.19 Category D: Sewage gas

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Energy Australia: QAF Power Project - Generating System*	NSW	0	0	0	0	0	0	0	0
Sydney Water Corporation: Bondi STP Cogeneration Plant (Generation)	NSW	0	0	0	0	0	0	4,173	4,173
Total		0	0	0	0	0	0	4,173	4,173

Table C.20 Category D: Waste coal mine gas

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
BlueScope Steel (AIS): Steelworks Generation Project (Future Project)	NSW	0	0	0	0	0	0	0	0
Country Energy: Tahmoor Generating System	NSW	10,192	10,428	22,728	7,368	3,073	47	500	54,336
Country Energy: Teralba Power Station	NSW	0	158,334	258,704	222,957	179,111	137,033	113,210	1,069,349
EDL CSM (Qld): German Creek CMM Generating System	QLD	0	0	0	125,535	995,634	721,693	827,021	2,669,883
EDL Projects (Australia): Moranbah North CMM Generating System	QLD	0	0	0	0	0	128,205	1,104,273	1,232,478
Enertrade: Moranbah Power Generation Facility*	QLD	0	0	0	0	0	0	0	0
Envirogen (Oak): Bulga Waste Coal Mine Gas Power Station - FP	NSW	0	0	0	0	0	0	0	0
Envirogen (Oak): Glennies Creek WCMG Generating System	NSW	0	0	0	0	18,343	104,335	203,449	326,127
Envirogen: Oak Creek CSM Generating System	QLD	0	0	0	181,362	470,927	441,661	480,673	1,574,623
Transfield Services (Australia): Picardy Power Station*	QLD	0	0	0	0	0	0	0	0
Total		10,192	168,762	281,432	537,222	1,667,088	1,532,974	2,729,126	6,926,796

DSA Rule certificate creations by project type

Table C.21 Energy Efficiency: Commercial

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Alliance Network Int'l: Commercial installations in ACT	ACT	0	0	0	0	0	7,089	0	7,089
Alliance Network Int'l: Commercial installations in NSW	NSW	0	0	0	0	150,731	163,178	0	313,909
AMRS (Aust): Energy Efficiency Refit Program - Commercial ACT*	ACT	0	0	0	0	0	0	0	0
AMRS (Aust): Energy Efficiency Refit Program - Commercial NSW*	NSW	0	0	0	0	0	0	0	0
Australian Heating Solutions: Installation of CFLs & flow restrictors - ACT Comm	ACT	0	0	0	0	0	0	0	0
Australian Heating Solutions: Installation of CFLs & flow restrictors - NSW Comm	NSW	0	0	0	0	22,103	8,145	0	30,248
Carbon Reduction Institute: Installation of CFLs - ACT Commercial	ACT	0	0	0	0	0	0	0	0
Carbon Reduction Institute: Installation of CFLs - NSW Commercial	NSW	0	0	0	0	11,147	0	0	11,147
Charter Hall Asset Services: Building Energy Consumption Reduction	NSW	0	0	190	4,544	6,223	7,501	4,504	22,962
Commonwealth Bank of Australia: Branch network BMS upgrade	NSW	0	263	511	510	544	523	259	2,610
Commonwealth Bank of Australia: Lighting controls	NSW	0	252	510	518	524	533	270	2,607
Commonwealth Bank of Australia: Voltage reduction in branch network lighting	NSW	0	315	624	633	607	548	268	2,995
Commonwealth Bank of Australia: VSD upgrade on cooling fans & condenser pump	NSW	0	53	106	108	109	110	56	542
Demand Manager: ACT Commercial PFC 1	ACT	0	0	0	0	0	0	0	0
Demand Manager: Lighting Aggregation Project	NSW	0	0	0	8,024	12,590	14,022	7,315	41,951
Demand Manager: NSW Commercial PFC 1	NSW	0	0	0	0	1,650	325	0	1,975
Demand Manager: NSW Commercial PFC 2	NSW	0	0	0	0	0	359	0	359

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Easy Being Green: Lighten Your Load NSW - ACT Commercial	ACT	0	0	0	0	700	0	0	700
Easy Being Green: Lighten Your Load NSW - NSW Commercial	NSW	0	0	0	0	95,496	0	0	95,496
EnergyAustralia: Commercial Premises in ACT	ACT	0	0	0	0	0	0	0	0
EnergyAustralia: Commercial Premises in NSW	NSW	0	0	0	0	0	0	0	0
EnergyAustralia: Power Factor Correction	NSW	2,140	2,898	0	0	0	0	0	5,038
Eureka Funds Management: Eureka ABGR Energy Efficiency Program	NSW	0	0	0	0	0	0	0	0
Fieldforce Services: Retrofit Program - Commercial ACT*	ACT	0	0	0	0	20,299	2,388	0	22,687
Fieldforce Services: Retrofit Program - Commercial NSW*	NSW	0	0	0	0	314,501	425,876	0	740,377
Illum-a-Lite: Fluorescent Lighting Energy Efficiency Project	NSW	0	713	1,991	0	0	0	0	2,704
Investa Properties: Office Buildings assessed using the ABGR - ACT	ACT	0	0	0	133	121	84	44	382
Investa Properties: Office Buildings assessed using the ABGR - NSW	NSW	0	10,337	8,011	7,914	11,237	10,393	6,109	54,001
Koala Lamps: Compact Lamp Supply to end users	NSW	0	0	13,747	21,423	19,982	18,762	0	73,914
Low Energy Supplies and Services: Direct Sales and Giveaways - ACT Commercial	ACT	0	0	0	0	7,042	0	0	7,042
Low Energy Supplies and Services: Direct Sales and Giveaways - NSW Commercial	NSW	0	0	0	0	144,258	45,499	0	189,757
Neco Group: Showerheads and CFL Globe Sales - ACT Commercial*	ACT	0	0	0	0	0	0	0	0
Neco Group: Showerheads and CFL Globe Sales - NSW Commercial*	NSW	0	0	0	0	0	0	0	0
Neco Hardware: Showerheads & CFL Globe Sales - ACT Commercial*	ACT	0	0	0	0	14,836	0	0	14,836
Neco Hardware: Showerheads & CFL Globe Sales - NSW Commercial*	NSW	0	0	0	0	5,938	0	0	5,938
Neco Holdings: Showerheads and CFL Globe Sales - ACT Commercial*	ACT	0	0	0	0	0	0	0	0

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Neco Holdings: Showerheads and CFL Globe Sales - NSW Commercial*	NSW	0	0	0	0	0	0	0	0
Panthers Rugby League Club: Lighting upgrade at Panthers*	NSW	0	1,048	0	0	0	0	0	1,048
Rheem Australia : Air compressor PLC control	NSW	0	671	0	0	0	0	0	671
SkyNet Systems: Installation of CFLs - ACT Commercial	ACT	0	0	0	0	0	0	0	0
SkyNet Systems: Installation of CFLs - NSW Commercial	NSW	0	0	0	0	0	1,179	0	1,179
South Tweed Bowls Club: Upgrade of lighting at South Tweed Bowls Club	NSW	0	348	0	348	0	0	91	787
Stamford Hotels and Resorts: Airport Lamp Replacement*	NSW	0	254	0	0	0	0	0	254
Stamford Hotels and Resorts: Carbon Monoxide Monitor*	NSW	0	220	0	0	0	0	0	220
Stamford Hotels and Resorts: Circular Quay lighting upgrade*	NSW	0	169	0	0	0	0	0	169
Stamford Hotels and Resorts: Double Bay lamp replacement*	NSW	0	147	0	0	0	0	0	147
Stamford Hotels and Resorts: Lighting voltage reduction (Airport)*	NSW	0	99	0	0	0	0	0	99
Stamford Hotels and Resorts: North Ryde lighting upgrade*	NSW	0	108	0	0	0	0	0	108
State Records of New South Wales: Stage 2 lighting upgrade*	NSW	0	41	0	0	0	0	0	41
Stockland Property Management: ABGR Energy Monitoring and Modification - ACT	ACT	0	0	0	4	38	436	0	478
Stockland Property Management: ABGR Energy Monitoring and Modification - NSW	NSW	0	0	0	165	3,073	2,838	0	6,076
Sutherland Shire Council: Sutherland Leisure Centre Energy Performance Contr*	NSW	0	0	393	0	0	0	0	393
Sydney Harbour Marriott Hotel: Dimming control at Sydney Harbour Marriott Hotel*	NSW	0	31	0	0	0	0	0	31
Sydney West Area Health Service: EPC and GEEIP	NSW	0	1,615	3,794	5,910	6,111	5,997	4,122	27,549
The Sustainable Energy Dev Auth: Big W lighting project*	NSW	1,298	249	0	0	0	0	0	1,547

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
The Sustainable Energy Dev Auth: Building Management System Upgrade Set 1*	NSW	328	164	0	0	0	0	0	492
The Sustainable Energy Dev Auth: Building Management System Upgrade Set 2*	NSW	191	96	0	0	0	0	0	287
The Sustainable Energy Dev Auth: Decommissioning of 50W Lights*	NSW	99	50	0	0	0	0	0	149
The Sustainable Energy Dev Auth: Installing a Computerised Dimming System*	NSW	35	35	0	0	0	0	0	70
The Sustainable Energy Dev Auth: Installing LightEco Dimmer Units*	NSW	281	192	0	0	0	0	0	473
The Sustainable Energy Dev Auth: Installing LightEco Dimmer Units Stage 1 Set 2*	NSW	256	128	0	0	0	0	0	384
The Sustainable Energy Dev Auth: Installing LightEco Dimmer Units Stage 1 Set 3*	NSW	177	89	0	0	0	0	0	266
The Sustainable Energy Dev Auth: Lighting Controls 52 Martin Place*	NSW	43	86	0	0	0	0	0	129
The Sustainable Energy Dev Auth: Lighting Controls George St, Parramatta*	NSW	147	147	0	0	0	0	0	294
The Sustainable Energy Dev Auth: Lighting Upgrade*	NSW	92	46	0	0	0	0	0	138
The Sustainable Energy Dev Auth: Lighting Upgrade*	NSW	588	294	0	0	0	0	0	882
The Sustainable Energy Dev Auth: Lighting Upgrade Stage 1*	NSW	322	161	0	0	0	0	0	483
The Sustainable Energy Dev Auth: Lighting Upgrade Stage 2*	NSW	207	178	0	0	0	0	0	385
The Sustainable Energy Dev Auth: Replacement of 50W Lights with 35W*	NSW	41	42	0	0	0	0	0	83
The Sustainable Energy Dev Auth: Replacement of Exhaust Fan with VSD Unit*	NSW	112	56	0	0	0	0	0	168
The Sustainable Energy Dev Auth: Replacement of Supply Fan with VSD Unit*	NSW	74	37	0	0	0	0	0	111
The Sustainable Energy Dev Auth: Replacing Electric Heating with Natural Gas Boiler*	NSW	154	132	0	0	0	0	0	286

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
The Sustainable Energy Dev Auth: Stage 1 Lighting Upgrade*	NSW	207	125	0	0	0	0	0	332
The Sustainable Energy Dev Auth: Stage 2 Lighting Upgrade*	NSW	319	274	0	0	0	0	0	593
The Sustainable Energy Dev Auth: Telstra outside air economy cycle project*	NSW	0	0	0	0	0	0	0	0
The Sustainable Energy Dev Auth: VSD Units on Cooling Tower Fans and Water Pump*	NSW	92	46	0	0	0	0	0	138
University of Technology Sydney: Building 2 Lighting Upgrade	NSW	0	0	0	543	0	0	0	543
University of Wollongong: Occupancy sensors for lighting controls	NSW	0	771	777	0	777	464	226	3,015
University of Wollongong: Voltage reduction for lighting control	NSW	0	149	150	0	150	157	105	711
Watts Green: AAA Energy Efficiency Refit Program - ACT Commercial	ACT	0	0	0	0	0	0	0	0
Watts Green: AAA Energy Efficiency Refit Program - NSW Commercial	NSW	0	0	0	0	0	75,055	0	75,055
Woolworths: Supermarket After Hours Lighting Controls	NSW	15,517	17,120	17,120	16,978	17,262	18,221	9,140	111,358
Total		22,720	40,249	47,924	67,755	868,049	809,682	32,509	1,888,888

Table C.22 Energy Efficiency: Industrial

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Amcor: Air conditioning timers (Regents Park)	NSW	0	125	753	0	0	262	133	1,273
Amcor: Botany Mill Efficiency Initiatives	NSW	0	0	0	709	0	3,420	1,655	5,784
Amcor: Lighting voltage reduction (Botany & Smithfield)	NSW	0	104	627	0	0	217	110	1,058
Amcor: Skylight upgrade (Revesby)*	NSW	0	54	0	0	0	0	0	54
Amcor: Upgrade of blowers with conveyors (Revesby)	NSW	0	207	1,251	0	0	436	220	2,114
Amcor: Upgrade of blowers with VSD conveyors (Revesby)	NSW	0	58	390	0	0	121	61	630
Amcor: Upgrade of pumps with VSD units (Matraville)	NSW	0	289	1,749	0	0	608	308	2,954
BOC: Port Kembla LMPC	NSW	0	0	3,288	1,358	0	4,369	0	9,015
Boral: Berrima Kiln 6 Upgrade	NSW	0	0	0	6,589	14,818	7,884	8,651	37,942
Carter Holt Harvey Australia: Refiner Control	NSW	0	0	0	8,065	14,249	16,007	6,231	44,552
Continental Carbon Australia: Installation of VSD on boiler fan	NSW	0	123	0	252	0	259	0	634
Demand Manager: ACT Industrial PFC 1	ACT	0	0	0	0	0	0	0	0
Demand Manager: NSW Industrial PFC 1*	NSW	0	0	0	0	1,865	0	0	1,865
Demand Manager: NSW Industrial PFC 2	NSW	0	0	0	0	0	709	0	709
Hydro Aluminium Kurri Kurri: Smelter upgrade and retrofit	NSW	0	0	0	22,623	40,439	40,038	44,260	147,360
Manildra Starches: Spray dryer exhaust fan replacement at Manildra	NSW	0	284	286	291	0	299	151	1,311
Merck Sharp & Dohme (Australia): Lighting voltage reduction	NSW	0	193	1,170	0	0	0	0	1,363
Norske Skog Paper Mills (Aust): Deckers Feed Pump Bypass	NSW	0	0	0	0	0	2,297	2,017	4,314
NSW Roads and Traffic Authority: Upgrade of Traffic Lights	NSW	0	0	193	1,753	0	389	349	2,684
Orica Australia: Botany Chlorine Plant	NSW	23,668	20,667	19,322	20,637	25,335	23,614	12,082	145,325
Rema Industries and Services: New air compressor installation	NSW	0	356	789	0	789	0	0	1,934

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Riverina Wool Combing: Air conditioning timers*	NSW	0	222	0	0	0	0	0	222
The Sustainable Energy Dev Auth: BOC - Port Kembla LMPC*	NSW	3,375	2,095	0	0	0	0	0	5,470
The Sustainable Energy Dev Auth: Installation of Air Conditioner Timer*	NSW	235	124	0	0	0	0	0	359
The Sustainable Energy Dev Auth: Installation of VSD on Boiler*	NSW	183	122	0	0	0	0	0	305
The Sustainable Energy Dev Auth: Installing LightEco Dimmer Units*	NSW	108	54	0	0	0	0	0	162
The Sustainable Energy Dev Auth: Installing LightEco Dimmer Units*	NSW	53	38	0	0	0	0	0	91
The Sustainable Energy Dev Auth: Replacing Air Compressors with VSD Units*	NSW	568	434	0	0	0	0	0	1,002
The Sustainable Energy Dev Auth: Replacing Blower with Conveyor on Necking Line*	NSW	410	205	0	0	0	0	0	615
The Sustainable Energy Dev Auth: Replacing Effluent Pump with VSD Unit*	NSW	135	116	0	0	0	0	0	251
The Sustainable Energy Dev Auth: Replacing Pneumatic Blowers with VSD Conveyor*	NSW	67	57	0	0	0	0	0	124
The Sustainable Energy Dev Auth: Replacing Water Pumps with VSD Unit*	NSW	277	139	0	0	0	0	0	416
The Sustainable Energy Dev Auth: Skylight Upgrade*	NSW	107	54	0	0	0	0	0	161
Tomago Aluminium Company: Fume Treatment Centre VSD Project	NSW	6,386	6,747	6,996	4,016	1,585	385	780	26,895
Visy Pulp & Paper: Cooling Water Pumps Efficiency Project	NSW	0	0	0	525	629	1,841	320	3,315
Total		35,572	32,867	36,814	66,818	99,709	103,155	77,328	452,263

Table C.23 Energy Efficiency: Residential

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Alliance Network International: DRIP - ACT	ACT	0	0	0	0	1,758	6,762	0	8,520
Alliance Network International: DRIP - NSW	NSW	0	0	0	0	525,146	2,520,371	0	3,045,517
AMRS (Aust): Energy Efficiency Refit Program - Residential ACT*	ACT	0	0	0	0	0	0	0	0
AMRS (Aust): Energy Efficiency Refit Program - Residential NSW*	NSW	0	0	0	0	0	0	0	0
APP Corporation: Pilot DOH Residential Energy Efficiency Program	NSW	0	0	0	0	0	0	0	0
Australian Heating Solutions: Installation of CFLs & flow restrictors - ACT Res	ACT	0	0	0	0	0	0	0	0
Australian Heating Solutions: Installation of CFLs & flow restrictors - NSW Res	NSW	0	0	0	9,728	144,884	56,712	0	211,324
Big Switch Projects: Installation of CFLs - NSW Residential*	NSW	0	0	0	0	0	0	0	0
Big Switch Projects: Sales of CFLs and Showerheads - NSW Res*	NSW	0	0	0	0	0	0	0	0
Carbon Reduction Institute: Giveaway/Sale of CFLs and Showerheads - ACT	ACT	0	0	0	0	0	0	0	0
Carbon Reduction Institute: Giveaway/Sale of CFLs and Showerheads - NSW	NSW	0	0	0	0	29	0	0	29
Carbon Reduction Institute: Installation of CFLs - ACT Residential	ACT	0	0	0	0	248	46	0	294
Carbon Reduction Institute: Installation of CFLs - NSW Residential	NSW	0	0	0	0	7,914	63,593	0	71,507
Country Energy: Countrygreen Town Energy Efficiency Program*	NSW	0	0	0	0	0	0	0	0
Demand Manager: Carbon Saver Project - ACT	ACT	0	0	0	0	0	0	0	0
Demand Manager: Carbon Saver Project - NSW	NSW	0	0	0	0	0	9,534	0	9,534
Easy Being Green Holdings: Lighten Your Load*	NSW	0	0	38,400	278,754	0	0	0	317,154
Easy Being Green: Lighten Your Load NSW - ACT Residential	ACT	0	0	0	43,198	0	0	0	43,198

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Easy Being Green: Lighten Your Load NSW - NSW Residential	NSW	0	0	0	2,694,658	1,112,399	434,565	0	4,241,622
EcoSmart Programs: EcoSmart Living Program Pilot - Western Sydney	NSW	0	0	0	2,348	5,864	0	0	8,212
EnergyAustralia: Compact Fluorescent Lamp Promotion – ACT	ACT	0	0	0	29,755	5,835	271	0	35,861
EnergyAustralia: Compact Fluorescent Lamp Promotion – NSW	NSW	0	182,295	3,016	1,256,576	47,258	47,569	0	1,536,714
EnergyAustralia: EnergySave On Line Shop - ACT*	ACT	0	0	0	0	0	0	0	0
EnergyAustralia: EnergySave On Line Shop - NSW*	NSW	0	0	0	3,798	212	0	0	4,010
EnergyAustralia: Residential Energy Efficiency Refit Pilot Program	NSW	646	2,269	0	0	0	0	0	2,915
EnergyAustralia: Residential Households in ACT	ACT	0	0	0	0	0	0	0	0
EnergyAustralia: Residential Households in NSW	NSW	0	34,010	28,928	12,718	25,215	91,421	0	192,292
EnergyAustralia: Spare Fridge Retirement Program*	NSW	0	0	0	8,016	0	0	0	8,016
Envirocare & Savers t/a Wellbeinggreen: Light Bulb & Flow Restrictor Installation program	NSW	0	0	0	0	0	0	20,447	20,447
Fieldforce Services: Give Away to Reduce Demand Program – ACT*	ACT	0	0	0	79,964	34,658	0	0	114,622
Fieldforce Services: Give Away to Reduce Demand Program – NSW*	NSW	0	0	0	1,331,288	305,815	0	0	1,637,103
Fieldforce Services: Retrofit Program - Residential ACT*	ACT	0	0	0	0	262,340	123,885	0	386,225
Fieldforce Services: Retrofit Program - Residential NSW*	NSW	0	0	0	0	4,609,421	1,926,587	0	6,536,008
Go Green Today: Free Energy Saving Offer*	NSW	0	0	0	0	0	0	0	0
Integral Energy Australia: Give-Away of CFLs and Showerheads	NSW	0	0	0	0	5,195	0	813	6,008
Integral Energy Australia: Home Lighting Efficiency Program*	NSW	0	0	0	113,297	0	0	0	113,297
Integral Energy Australia: Installation of CFLs	NSW	0	0	0	0	4,687	0	105	4,792
Low Energy Supplies and Services: Direct Sales and Giveaways - ACT Residential	ACT	0	0	0	3,506	275	0	0	3,781

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Low Energy Supplies and Services: Direct Sales and Giveaways - NSW Residential	NSW	0	0	23,748	1,329,144	486,465	953,246	0	2,792,603
Low Energy Supplies and Services: Project #1/2003*	NSW	7,741	5,747	10,545	6,422	0	0	0	30,455
Macquarie Generation: Staff CFL Issue Scheme*	NSW	0	0	0	1,310	0	0	0	1,310
Murray Regional Development Board: Murray Energy Savings Program	NSW	0	0	0	0	5,148	31,328	10,661	47,137
Neco Group: Showerheads and CFL Globe Sales - ACT Residential*	ACT	0	0	0	0	0	0	0	0
Neco Group: Showerheads and CFL Globe Sales - NSW Residential*	NSW	0	0	0	0	0	0	0	0
Neco Hardware: Showerheads & CFL Globe Sales - ACT Residential*	ACT	0	0	0	22,788	75,402	0	0	98,190
Neco Hardware: Showerheads & CFL Globe Sales - NSW Residential*	NSW	0	0	311,200	310,416	250,484	0	0	872,100
Neco Holdings: Showerheads and CFL Globe Sales - ACT Residential*	ACT	0	0	0	0	0	0	0	0
Neco Holdings: Showerheads and CFL Globe Sales - NSW Residential*	NSW	0	0	0	0	0	113	0	113
Neco Lifestyles: Showerheads & CFL Globes web sales*	NSW	0	2	53,638	0	0	0	0	53,640
Next Energy: Fridge Buyback Program	NSW	0	0	0	11,743	21,400	17,256	29,685	80,084
Origin Energy Electricity: CFL Giveaway*	NSW	0	0	287,101	403,859	0	0	0	690,960
Philips Electronics Australia: Light Globe Replacement - ACT	ACT	0	0	0	26	10,366	0	0	10,392
Philips Electronics Australia: Light Globe Replacement - NSW	NSW	0	0	0	63,550	116,058	0	0	179,608
SkyNet Systems: Installation of CFLs - ACT Residential	ACT	0	0	0	0	0	327	0	327
SkyNet Systems: Installation of CFLs - NSW Residential	NSW	0	0	0	0	0	28,106	0	28,106
Sydney Water Corporation: DIY Water Saving Kit Program	NSW	0	0	0	58,628	57,401	20,561	3,054	139,644
Sydney Water Corporation: Residential Shower Retrofit Programme	NSW	0	91,102	197,303	191,532	126,104	40,148	6,572	652,761
Sydney Water Corporation: Washing Machine Rebate Program	NSW	0	0	0	39,237	91,494	103,051	27,615	261,397

Table C.25 Energy Source Substitution: Residential

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
AGL Electricity: Gas Hot Water Systems – ACT*	ACT	0	0	0	1,460	0	0	0	1,460
AGL Electricity: Gas Hot Water Systems – NSW*	NSW	0	17,146	28,926	5,560	0	0	0	51,632
AGL Hydro Partnership: Gas Hot Water Systems - ACT	ACT	0	0	0	5,400	7,320	7,940	3,460	24,120
AGL Hydro Partnership: Gas Hot Water Systems - NSW	NSW	0	0	0	24,340	21,900	31,960	15,060	93,260
Australian Heating Solutions: NSW Electric to Gas Hotwater Upgrade Scheme	NSW	0	0	0	4,480	2,280	2,040	180	8,980
Big Switch Projects: Installation of Gas Hot Water Systems - NSW Res*	NSW	0	0	0	0	0	0	0	0
Biogy: Electricity to Gas Hot Water Initiative	NSW	0	4,260	6,380	6,260	9,600	2,760	0	29,260
BTU Holdings Australia: Replacing electric with gas hot water systems*	NSW	0	0	60	0	0	0	0	60
Carbon Reduction Institute: Installation of Gas Boosted Solar HWS - NSW Res	NSW	0	0	0	0	0	0	0	0
Carbon Reduction Institute: Installation of Gas Boosted Solar HWS - ACT Res	ACT	0	0	0	0	0	0	0	0
Carbon Reduction Institute: Installation of Gas Hot Water Systems - ACT Res	ACT	0	0	0	0	0	0	0	0
Carbon Reduction Institute: Installation of Gas Hot Water Systems - NSW Res	NSW	0	0	0	0	0	0	0	0
Country Energy: Countrygreen Gas Hot Water Replacement	NSW	0	0	0	0	0	0	0	0
EnergyAustralia: Electric to Gas Hot Water Conversion - ACT Res	ACT	0	0	0	0	0	0	0	0
EnergyAustralia: Electric to Gas Hot Water Conversion - NSW Res	NSW	0	0	0	160	2,980	100	460	3,700
Origin Energy Electricity: LPG Boosted Hot Water Systems - ACT	ACT	0	0	0	0	0	0	0	0
Origin Energy Electricity: LPG Boosted Hot Water Systems - NSW	NSW	0	0	0	0	0	0	0	0
Rheem Australia : Rheem Gas Hot Water - ACT	ACT	0	0	0	120	260	60	20	460

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Rheem Australia : Rheem Gas Hot Water - NSW	NSW	0	0	0	2,120	4,420	8,080	2,140	16,760
Total		0	21,406	35,366	49,900	48,760	52,940	21,320	229,692

Table C.26 On-site Generation: Commercial

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Macquarie University: Macquarie University Library Cogeneration Plant	NSW	0	0	0	0	0	0	135	135
Total		0	0	0	0	0	0	135	135

Table C.27 On-site Generation: Residential

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
GridX Power: GridX MiniGrid Cogeneration - Glenfield DSA	NSW	0	0	0	0	9	10	0	19
Total		0	0	0	0	9	10	0	19

Table C.28 On-site Generation: Industrial

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
BlueScope Steel (AIS): Steelworks Generation Project (Future Project)	NSW	0	0	0	0	0	0	0	0
Country Energy: Tahmoor Power Station	NSW	110,751	151,468	209,648	130,991	148,960	61,039	65,584	878,441
Endeavour Coal Pty.: WestVAMP	NSW	0	0	0	0	168,755	210,643	144,042	523,440
EnergyAustralia: QAF Power Project*	NSW	0	0	0	0	0	0	0	0
Sydney Water Corporation: Bondi STP Cogeneration Plant (DSA)	NSW	0	0	0	0	0	0	12,201	12,201
Sydney Water Corporation: Cronulla STP - Cogeneration Plant	NSW	3,542	937	4,044	5,882	926	5,349	6,337	27,017
Sydney Water Corporation: Glenfield STP Cogeneration Plant	NSW	0	0	0	0	0	0	724	724
Sydney Water Corporation: Liverpool STP Cogeneration Plant	NSW	0	0	0	0	0	0	1,577	1,577
Sydney Water Corporation: Malabar STP - Cogeneration Plant	NSW	51,157	55,834	49,654	55,121	41,063	62,938	60,072	375,839
Sydney Water Corporation: North Head Cogeneration Plant	NSW	0	0	0	0	0	20,804	19,506	40,310
Sydney Water Corporation: North Head STP Hydro Generating System	NSW	0	0	0	0	0	0	0	0
Sydney Water Corporation: Warriewood STP Cogeneration Plant	NSW	0	0	0	0	0	0	474	474
Sydney Water Corporation: Wollongong STP Cogeneration Plant	NSW	0	0	0	0	0	0	3,702	3,702
Visy Pulp & Paper: Tumut On-site Cogeneration Plant	NSW	112,947	123,982	171,870	249,446	204,491	212,990	204,242	1,279,968
Waste Recycling and Processing Corporation (WSN): WSN Ecolibrium Mixed Waste Facility (DSA)	NSW	0	0	0	0	0	0	0	0
Total		278,397	332,221	435,216	441,440	564,195	573,763	518,461	3,143,693

CS Rule certificate creations

Table C.29 Carbon Sequestration Rule

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Australian Forest Corporation: The Rainforest Carbon Sink	NSW	0	0	0	0	0	0	0	0
Blue-Leafed Mallee: Project 2007	NSW	0	0	0	0	32	250	850	1,132
CO2 Australia: CO2 Australia Carbon Sequestration Pool	NSW	0	0	0	146	759	2,842	11,230	14,977
Forestry Commission of NSW: Forests NSW Carbon Pool	NSW	0	166,005	538,471	587,231	635,992	660,382	622,567	3,210,648
Go-Gen Australia: Go-Gen Australia	NSW	0	0	0	0	0	0	0	0
Landcare CarbonSMART: NSW Pool	NSW	0	0	0	0	70	87	110	267
Mallee Carbon: Project 2005	NSW	0	0	0	224	1,467	5,718	10,676	18,085
Total		0	166,005	538,471	587,601	638,320	669,279	645,433	3,245,109

LUAC Rule certificate creations

Table C.30 LUAC Rule

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	2009	Total
Amcorg Packaging (Australia): Botany Mill Whole of Site Emissions Reduction	NSW	0	0	3,631	13,175	18,128	22,992	23,423	81,349
BlueScope Steel (AIS): Modifications to #25 Boiler	NSW	0	0	0	77,574	93,267	81,149	32,733	284,723
Boral: Berrima Works Clinker Production Upgrade Kiln 6	NSW	0	0	78,690	157,082	232,563	163,172	0	631,507
Carter Holt Harvey Australia: Fossil Fuel Replacement Project	NSW	0	0	0	3,432	4,418	2,832	1,319	12,001
Hydro Aluminium Kurri Kurri: Kurri Kurri Primary Aluminium Smelter	NSW	0	0	0	516,146	644,404	662,220	708,038	2,530,808
Norske Skog Paper Mills (Aust): TMP Heat Recovery	NSW	0	0	11,956	6,551	15,322	18,547	19,240	71,616
Orica Australia: Kooragang Island Ammonia Plant	NSW	0	0	0	0	122,155	106,220	104,096	332,471
Tomago Aluminium Company: Greenhouse Gas Reduction	NSW	0	0	0	0	102,489	146,803	146,787	396,079
Xstrata Coal NSW: Bulga Coal Flaring Project	NSW	0	0	0	0	0	46,989	420,965	467,954
Xstrata Coal NSW: Flaring Project	NSW	0	0	0	16,500	52,899	47,151	60,636	177,186
Total		0	0	94,277	790,460	1,285,645	1,298,075	1,517,237	4,985,694

Glossary

This glossary provides a general guide to the terminology used in GGAS. It is designed to be read in conjunction with the Act, Regulation and Greenhouse Gas Benchmark Rules. This glossary should not be relied upon as a substitute for legal advice, and does not override the true definitions of these terms in the Act, Regulations or Greenhouse Gas Benchmark Rules.

Term	Meaning
Abatement Certificate	A certificate represents one tonne of carbon dioxide equivalent (tCO ₂ -e) of greenhouse gas emissions, the release of which into the atmosphere was avoided, or which was removed from the atmosphere by the activity in respect of which it was created.
Abator	The person contractually liable for the energy consumed in the installation or site that is the subject of a greenhouse abatement activity, or the person nominated to be the abator in respect of greenhouse abatement activity by written agreement. This particularly applies for demand side abatement activities.
Abatement Certificate Provider	A person accredited by the Scheme Administrator under one of the Greenhouse Gas Abatement Rules in respect of an abatement activity.
Accreditation	Authorisation given by the Scheme Administrator to an abatement certificate provider to create abatement certificates in respect of a specified activity, once eligibility against the Greenhouse Gas Benchmark Rules is satisfied.
Attributable Emissions	Determined for each benchmark participant each year by multiplying the total electricity purchased (at the transmission node ie, from NEMMCO plus any other purchases adjusted to the transmission node) by the NSW pool coefficient, less any abatement certificates (ie, NGACs and, if appropriate, LUACs) surrendered and RECs taken into account.
Australian Building Greenhouse Rating Scheme	The Australian Building Greenhouse Rating (ABGR) Scheme is one acceptable methodology to use to normalise baselines for new or existing office buildings, after adjusting for any Green Power purchases. Generally a new office building must exceed a minimum 4 star rating before any NGACs may be created.
Baselines	The required level of activity undertaken, or the degree of greenhouse intensity which must be bettered, by an accredited abatement certificate provider before it is permitted to create abatement certificates.

Term	Meaning
Benchmark participant	A person who is required or has elected to comply with a greenhouse gas benchmark.
Carbon Dioxide Equivalent (CO ₂ -e)	Carbon dioxide equivalent of greenhouse gas emissions means the mass of carbon dioxide measured in tonnes that has the same global warming potential as the unit mass of the gas emissions. Each abatement certificate represents one tonne of carbon dioxide equivalent abated.
Carbon Sequestration	The process of removing carbon from the atmosphere and storing it within an eligible planted forest in NSW.
Carbon Sequestration Rule	<i>Greenhouse Gas Benchmark (Carbon Sequestration) Rule No. 5 of 2003</i>
Compliance Rule	<i>Greenhouse Gas Benchmark (Compliance) Rule No. 1 of 2003</i>
Compliance Year	The period 1 January to 31 December of each year, for which benchmark participants must report compliance by 18 March in the following year.
Confidence Factor	Under the DSA Rule and the Large User Rule, the type of engineering assessment of reduced energy consumption undertaken determines the level of accuracy for the calculation of abatement certificates and hence the confidence factor. The more accurate the calculation, the higher the confidence factor, and the more NGACs that can be created for a given level of estimated abatement.
Consumer Price Index (CPI)	Under GGAS, the greenhouse penalty is adjusted each year by the consumer price index (CPI – All Groups Index), on and from 1 July in each year.
Deemed End User Purchases	The total of the <i>exempt sales</i> of a mandatory benchmark participant to an elective benchmark participant multiplied by the DLF listed in Table 7 of the Compliance Rule.
Deemed Retailer	An accredited abatement certificate provider that is an electricity retailer to which the electrical output of a Category A generating system is allocated pursuant to a Power Purchase Agreement to which the retailer is a party (see definition for Emissions Workbook).
Default Abatement Factor	Used to calculate the number of abatement certificates that may be created from the installation of common equipment such as compact fluorescent lamps, AAA rated showerheads, refrigerators and certain electric motors.
Demand Side Abatement	Activities that reduce emissions by reducing electricity consumption through increased efficiency of electricity consumption, eligible on-site electricity generation, and substitution of sources of energy for electricity or substitution of electricity for other sources of energy.
Distribution Loss Factor (DLF)	The distribution loss factor is the value of the electrical losses calculated for various points in the electricity distribution network.

Term	Meaning
DSA Rule	<i>Greenhouse Gas Benchmark (Demand Side Abatement) Rule No. 3 of 2003</i>
Efficiency Improvement Approach	A method used under the Generation Rule to measure greenhouse gas emission reductions. Can be used by certain types of generators that make improvements in the efficiency of electricity production (and thereby reduce their emission intensity).
Elective benchmark participant	An eligible large customer or a person engaged in carrying out a State significant project, who has chosen to manage its own greenhouse gas benchmark, and whose election is in force.
Electricity Sector Benchmark	Total allowable greenhouse gas emissions from the electricity sector in NSW calculated by multiplying the Total State Population by the State Greenhouse Gas Benchmark per head of population for that compliance year. The Electricity Sector Benchmark is announced by the Tribunal prior to each compliance year (by 30 November each year).
Embedded Generator	An embedded generator or an embedded generating system means a generating system that is connected to the distribution network as defined in the National Electricity Code.
Emissions Workbook	The document entitled <i>Greenhouse Gas Emissions from Electricity Supplied in NSW: Emissions Workbook</i> published by the Ministry of Energy & Utilities in October 2000.
Exempt Sales	The total electricity sold to an elective benchmark participant by another mandatory benchmark participant during the Compliance Year.
Fugitive Emissions	Greenhouse gases that are discharged into the air as a result of the extraction, transport or production of fossil fuels. Fugitive emissions also include greenhouse gas emissions from landfill sites, sewage treatment works and some industrial processes.
Generation Rule	<i>Greenhouse Gas Benchmark (Generation) Rule No. 2 of 2003</i>
Greenhouse Gas	A generic term for gases such as carbon dioxide, methane, nitrous oxide, perfluorocarbon or sulphur hexafluoride, as defined in the Act and the Regulation.
Greenhouse Gas Abatement Program (GGAP)	An environmental initiative administered by the Commonwealth Government's Australian Greenhouse Office to reduce Australia's net greenhouse gas emissions by supporting activities that are likely to result in substantial emission reductions or substantial sink enhancement.
Greenhouse Gas Benchmark	This is the individual target which must be met by benchmark participants each compliance year and represents their individual share of the overall emissions target for NSW (the Electricity Sector Benchmark).

Term	Meaning
Greenhouse Gas Benchmark Rules	These set out how benchmark participants will measure their compliance and how accredited abatement certificate providers are to calculate the number of certificates that they are entitled to create. The Rules are amended from time to time by the Minister for Energy. The most current version of the Rule should be used when calculating entitlements or for compliance.
Greenhouse Penalty	The amount a benchmark participant is liable to pay (subject to CPI adjustments) per tonne of carbon dioxide equivalent in respect of excess emissions if they fail to comply with their greenhouse gas benchmark.
Greenhouse Shortfall	The difference between a benchmark participant's attributable emissions and its individual greenhouse gas benchmark; if the greenhouse shortfall does not exceed 10% of a benchmark participant's greenhouse gas benchmark for that year, it may be carried forward to the following year (except in 2007) and a penalty will not apply.
Large Customer	A customer under an electricity supply contract, other than a retail supplier, who uses 100 GWh or more of electricity at a single site or uses 100 GWh or more of electricity at more than one site, at least one of which uses 50 GWh or more of electricity in NSW.
Large User Rule	<i>Greenhouse Gas Abatement (Large User Abatement Certificate) Rule No. 4 of 2003</i>
Loss Factor	The value of electrical energy losses incurred in the conveyance of electricity over a distribution or transmission system.
LUAC	A Large User Abatement Certificate; a non-tradeable certificate in the NSW Greenhouse Gas Reduction Scheme.
MRET	The Mandatory Renewable Energy Target (MRET) Scheme. Introduced by the Commonwealth government through the <i>Renewable Energy (Electricity) Act 2000</i> , the MRET places a legal liability on wholesale purchasers of electricity to proportionately contribute towards the generation of an additional 9,500GWh of renewable energy per year by 2010.
National Electricity Market Management Company (NEMMCO)	The body corporate responsible for the administration and operation of the wholesale national electricity market in accordance with the National Electricity Code.
National Greenhouse Gas Inventory (NGGI)	As part of commitments under the United Nations Framework Convention on Climate Change (UNFCCC), Australia, through the Australian Greenhouse Office, has produced an annual listing of national greenhouse gas emissions since 1990 known as the National Greenhouse Gas Inventory.
NGAC	A Greenhouse Abatement Certificate; a tradeable certificate in the Greenhouse Gas Reduction Scheme.

Term	Meaning
Office of the Renewable Energy Regulator (ORER)	The Commonwealth Regulator of the Mandatory Renewable Energy Target Scheme.
Penalty Unit	Each unit is currently \$110; it is defined in Section 17 of the <i>Crimes (Sentencing Procedure) Act 1999</i> .
Pool Coefficient	The average emissions per unit of electricity delivered at transmission nodes for all generating systems supplying the notional NSW pool, as determined in accordance with the Compliance Rule; this factor is announced by the Tribunal by 30 November each year.
Relative Intensity Approach	A method used under the Generation Rule to measure greenhouse gas emission reductions. Can be used by generators that produce electricity of lower emission intensity than the pool coefficient.
Renewable Energy Certificate (REC)	A Commonwealth certificate surrendered under the Mandatory Renewable Energy Target (MRET) Scheme that may be brought to account against a benchmark participant's benchmark in the NSW Greenhouse Gas Reduction Scheme, based on NSW sales.
Renewable Power Percentage (RPP)	The percentage of electricity sold which NSW retailers must surrender equivalent RECS to ORER each year, under the MRET scheme.
Retail Supplier	A mandatory benchmark participant under the Greenhouse Gas Reduction Scheme. Includes all holders of an electricity retail licence in NSW.
Scheme Administrator	The body administering functions such as accrediting abatement certificate providers, verifying abatement activity and maintaining a registry of certificates; this is IPART, in the first instance.
Scheme Registry	An online registry of Abatement Certificate Providers and Abatement Certificates.
Sequestration Pool	One or more Eligible Forests which are planted on Eligible Land on which Carbon Sequestration Rights are registered, and which are managed to provide carbon sequestration pursuant to those Carbon Sequestration Rights. The Eligible Forests, the Eligible Lands, and the Carbon Sequestration Rights over the Eligible Lands, may be owned or controlled by more than one entity.
Sequestration Pool Manager	A person who manages a Sequestration Pool, and exercises sufficient control over it to be able to enforce the Carbon Sequestration Rights registered on the Eligible Land on which the Eligible Forests in that pool are planted.
Specific Abatement Project (SAP)	A specific project in which a change to an industrial process results in an identifiable and measurable reduction in greenhouse gas emissions, as defined under the Large User Rule.
State Significant Development	A development that the Minister for Planning has determined is of State or regional significance.

Term	Meaning
Total Electricity Purchased	This is the total amount of electricity purchased from NEMMCO, measured at transmission nodes, and embedded generators, measured at the point of generation, by all benchmark participants for use in NSW through the compliance year. For a detailed description of the calculations, see Clause 7 of the Compliance Rule.
Total State Electricity Demand	The projected electricity consumption in NSW, as determined in accordance with the Compliance Rule; this factor is announced by IPART by 30 November each year.
Total State Population	The projected total number of persons in NSW, as determined in accordance with the Compliance Rule, this factor is announced by IPART by 30 November each year.
