

Compliance and Operation of the NSW Greenhouse Gas Reduction Scheme during 2008

Report to Minister

July 2009

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1 Executive summary

During 2008, the Greenhouse Gas Reduction Scheme (GGAS) entered into a period of maturity, with the number of new accreditations tapering off at the same time as existing projects expanded their operations. During the same period, the Commonwealth Government developed and finalised its' proposal for a national emissions trading scheme. This development followed the election of a Labor Federal Government in late-2007 and a decision to commence a national emissions trading scheme by July 2010. This development raised questions about the termination of GGAS, the transition from GGAS to a national scheme, and the timing for that transition. As this information was not readily available to GGAS participants, the Scheme Administrator noted that the degree of uncertainty with GGAS increased during the year.

This report covers the 2008 calendar year, the sixth year of operation of GGAS.

Under the relevant provisions of the *Electricity Supply Act 1995*, 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 2008 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 16 times in 2008.

Compliance with GGAS remained high during 2008 with a small number of minor contraventions to conditions of accreditation identified resulting in 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 agreeing with the companies involved to forfeit the required number of certificates, thus ensuring the abatement claimed under GGAS remained valid.

There were 41 benchmark participants during 2008, of which two opted to pay a small penalty rather than surrender the appropriate number of certificates to meet their obligations under the scheme. Unlike 2007, benchmark participants were allowed to carry forward a shortfall into the 2009 compliance period and three decided to do so.

The Green Room report, published by Next Generation Energy Solutions, has followed the emergence of environmental markets in Australia and has regularly published information on the price of certificates trading on the spot market.

According to these reports, the price of NGACs was variable during 2008. While the percentage of spot trades compared to bilateral trades is thought to be small, the performance of the spot market can be taken as an indicator of interest in GGAS. At the beginning of 2008 certificates were trading at around \$4.50, and rapidly rose to a high of \$8.05 in late February as the GGAS compliance period approached and following the release of the interim Garnaut Climate Change Review Report to Government. By December 2008, trades had fallen to around \$3.75. Overall, during 2008 limited parcels of certificates were traded on the spot market.

The release of the Commonwealth Government's White Paper in December 2008 setting out the arrangements for the Carbon Pollution Reduction Scheme confirmed that the design of the national scheme would be fundamentally different to GGAS. GGAS is a baseline and credit scheme where participants earn certificates in recognition of activities to reduce greenhouse gas emissions from eligible projects; the Carbon Pollution Reduction Scheme is designed as a cap and trade scheme where permits, not certificates, are allocated to businesses against an agreed level. If emissions from their activities exceed that cap, they must purchase additional permits and surrender these to the Government. The two schemes are not complementary, so when the Commonwealth scheme commences, GGAS will terminate.

The Carbon Pollution Reduction Scheme has been designed to achieve the same objectives as GGAS of reducing greenhouse gas emissions. It has been designed to link with other international emissions trading schemes and will provide access to markets outside of Australia. The lessons learned from participating in GGAS have been invaluable for preparing for the national scheme. Generating systems, especially black and brown coal fired systems, have benefited from participation in GGAS in terms of improving the monitoring and measurement of their greenhouse gas emissions. In addition, large electricity users in the Scheme, ie, those businesses who have elected into GGAS based on meeting threshold electricity consumption requirements, have been able to identify opportunities to reduce their emissions by implementing a wide variety of projects. The percentage of certificates from projects carried out by large users in GGAS has steadily increased, with over 1.29 million LUACs created in 2008.

At the outset, it was understood that energy efficiency projects which are recognised under GGAS under the Demand Side Abatement Rule would not be recognised under the Carbon Pollution Reduction Scheme. To ensure a future for these activities, the NSW Government announced in March 2008 that it would continue the energy efficiency activities of GGAS when the Carbon Pollution Reduction Scheme commences. The new scheme, to start on 1 July 2009, is to be called the NSW Energy Savings Scheme and draws its design and features from the DSA component of GGAS.

The Energy Savings Scheme is aimed at revitalising the energy efficiency component of GGAS. It adopts a new target and penalty regime, and will require scheme participants, who are the benchmark participants under GGAS, to reduce their consumption of electricity by 0.5 per cent of their liable acquisitions in the first year. The scheme will adopt many of the methodologies already in place under GGAS. In addition, new methodologies and new factors will be introduced to expand the opportunities to undertake projects. The intention is that this new scheme will carry on after GGAS ends and will run until 2020, or until a national scheme is introduced to take its place.

Over 8.1 million certificates were created under the Demand Side Abatement Rule for 2008, with rapid growth in businesses carrying out energy efficiency projects under the Default Abatement Factor Method making up the bulk of these certificates. Over 7.3 million certificates were created from Default Abatement Factor projects, primarily because of the simplicity and low transaction costs to implement them. However, the rapid growth in these projects also created challenges for the Scheme Administrator in monitoring the activities of accredited participants to ensure that all claims for certificate creation remained valid.

The Scheme Administrator managed 69 certificate creation audits during 2008, many of which involved audits of Default Abatement Factor projects. While this helped to ensure that validation and verification standards remained high, in late 2008 the Scheme Administrator also initiated spot audits of four of the largest companies carrying out large scale Default Abatement Factor project activities because of a number of complaints it received from members of the public concerning the activities of these companies. The results of that audit uncovered a statistically significant degree of invalid creation which was rectified through successful negotiations with the businesses involved. Each of the businesses involved agreed to both forego creation and voluntarily forfeit certificates as a means to address the audit findings.

In December 2008, the Minister for Energy amended the Demand Side Abatement Rule to reduce the maximum amount (based on published default abatement factors) that a participant could claim from the replacement of incandescent light bulbs with compact fluorescent lamps by 83 per cent. This change arose because the introduction of new national lighting performance standards will ban the sale of incandescent lamps from November 2009 and it is likely that all remaining incandescent bulbs will be replaced by mid-2010.

Projects carrying out generation activities in GGAS continued to grow and 17 new accreditations were added during 2008. Certificates created from generation projects totalled over 12.3 million in 2008, a 3.7 per cent decrease over 2007 creation. Generating systems using the Performance Improvement Testing Regime continued to recognise benefits from the improvements to the greenhouse intensity of their operations. The Scheme Administrator extended the uncertainty holiday for these generating systems given the complexity of assessing uncertainty for base-load coal

fired generating systems, and the foreseen termination of GGAS with the commencement of the Carbon Pollution Reduction Scheme.

The Scheme Administrator also concluded its development of the methodology for assessing the energy content of waste methane during 2008 and published the Methane Energy Uncertainty Methodology in early 2009. This methodology is a pioneering approach to applying uncertainty to the measurement of the methane content of waste gases. It involves the installation of specialist measuring equipment at a site and the application of a calibration regime that ensures the equipment operates within a defined uncertainty regime. Fourteen generating systems installed the appropriate equipment and had their systems audited to ensure the methodology was correctly applied in order to create 2008 certificates. The accurate measurement of waste methane being abated allowed these companies to create approximately 20 per cent more certificates than they would have done using default values, thus improving the financial returns for these projects.

Carbon Sequestration activities in 2008 levelled off with only one additional company being accredited under the Carbon Sequestration Rule. Again, the development of arrangements for carbon sequestration under the national scheme and the uncertainty around how GGAS projects would transition into the Carbon Pollution Reduction Scheme may have impacted decisions to participate in this area of GGAS. The total number of certificates created under the Carbon Sequestration Rule did not change much from 2007, decreasing by 3.4 per cent to 675,197 certificates created in 2008.

The supply of certificates created during 2008 continued to outstrip demand for the 2008 compliance year with 22,443,139 certificates created and 20,456,448 required to meet the 2008 target. In addition, the 2008 year saw a dramatic increase in the rate of voluntary surrenders of certificates. Voluntary surrenders are a means whereby individuals or companies can choose to offset the emissions from their operations by purchasing and then surrendering certificates. In 2008, 488,090 certificates were surrendered in this way, increasing from less than 50,000 certificates in 2007. However, there continues to be a surplus of certificates available in the market as GGAS moves into its final years.

The 2008 calendar year marks the last year that GGAS operates in its entirety. The 2009 year will reflect the introduction of the Energy Savings Scheme and the removal of demand side activities from GGAS. While future projects will continue to transition to existing projects as they are commissioned, it is anticipated that the number of new applications to GGAS will decline. The likelihood is that the remaining years of GGAS will be of consolidation and preparation for the transition to the national Carbon Pollution Reduction Scheme.

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 activities to offset the production of greenhouse gas emissions.

GGAS commenced 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.

In 2006, the NSW Government extended GGAS to 2021 or until the establishment of a national emissions trading scheme. In 2008, the Commonwealth Government committed to the implementation of a national emissions trading scheme, to be called the Carbon Pollution Reduction Scheme (CPRS), from 2010¹. In accordance with legislation, GGAS is intended to end on the commencement of the CPRS.

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 a 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

¹ In May 2009, the Commonwealth announced that commencement of the CPRS would be delayed until mid-2011.

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.

GGAS can be characterised as a 'baseline and credit' form of emissions trading. This means that credit is given where current greenhouse performance falls below prior practice, business as usual or, in some cases, current industry practice.

As Scheme Administrator, IPART accredits organisations undertaking abatement of greenhouse gas emissions as Abatement Certificate Providers (ACPs) under one of the GGAS Rules. IPART has established an audit panel which assists in ensuring the integrity and validity of the certificates registered within GGAS. The GGAS 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.

GGAS was designed to be cost neutral over the life of the Scheme. 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 through the registration of certificates and application fees charged to applicants exceeded the operating expenses for managing and operating GGAS. In 2008, the cost of administering GGAS represented 1.6 per cent of the total value of certificates registered during the year, based on an average spot price of \$5.85 during 2008.

Carbon Pollution Reduction Scheme

The Commonwealth Government committed to the implementation of a national emissions trading scheme in 2008. The architecture of the scheme, the CPRS, was released the same year. The CPRS will be a 'cap and trade' scheme rather than the GGAS 'baseline and credit' scheme.

Essentially this means that organisations above a certain threshold that emit greenhouse gases will be required to surrender one permit for each tonne of carbon dioxide equivalent of emissions. 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 per cent of Australia's emissions and will involve mandatory obligations for around 1,000 entities.

NSW Energy Savings Scheme

In 2008, the NSW Government announced that the Energy Savings Scheme (ESS) will commence on 1 July 2009. ESS will be separate from GGAS and will place an energy savings obligation on electricity retailers additional to the GGAS obligation.

ESS will promote energy efficiency activities in NSW and will be complementary to the CPRS. Accordingly, it will continue beyond the cessation of GGAS. Once ESS commences, the Demand Side Abatement (DSA) component of GGAS will no longer operate and from 1 July 2009, GGAS will no longer allow the creation of NGACs for DSA activities (with the exception of on-site power generation). IPART will be the Scheme Administrator and compliance regulator for ESS. See Section 8.1.2 for further details.

2.2 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 five 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 Water and Energy (DWE) 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.

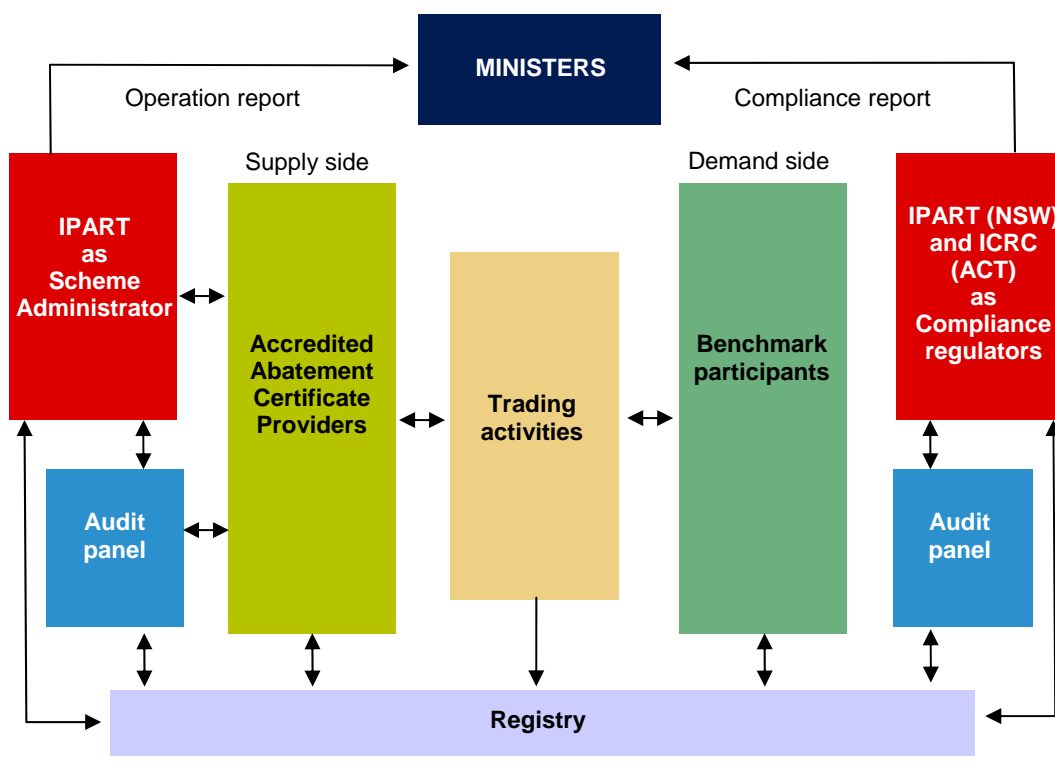
Under GGAS Rules, accreditations are not transferable between different entities. Hence, an accreditation must be cancelled and an application submitted for a new accreditation if there is a change in corporate identity. Section 97DC of the Act and clause 73HC(b) of the Regulation allow for an accreditation to be cancelled. To date accreditations have only been cancelled following a request from the relevant corporate entity, or when a fundamental eligibility requirement has ceased or expired. An example of the latter is the termination of a power purchase agreement in respect of a Category A generating system.

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

2.3 Structure of GGAS

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

Figure 2.1 Structure of GGAS and key participants

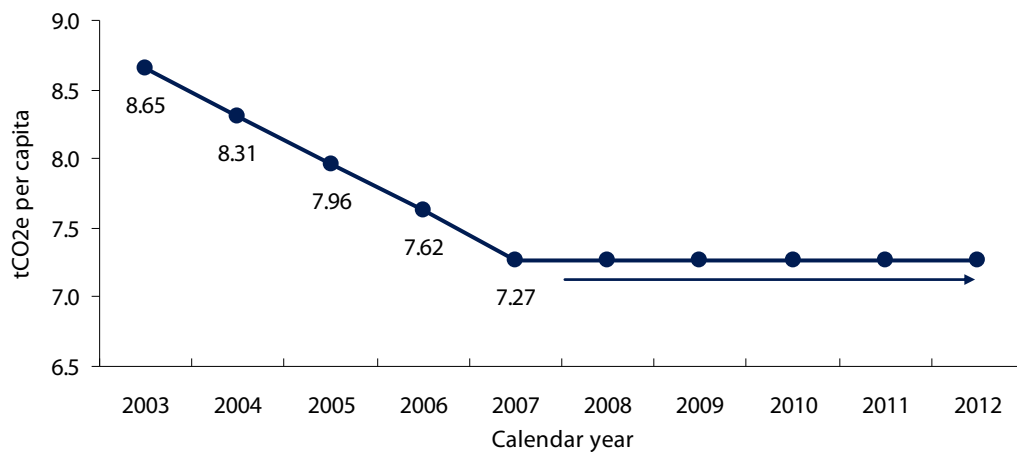


2.4 Greenhouse gas benchmarks

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.

For the 2007 and 2008 compliance year, GGAS imposed a benchmark of 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 since GGAS commenced in 2003 and will remain at that level until GGAS terminates (unless the legislation is amended to reduce the benchmark). The Government has not considered revising these targets. To do so would have a direct impact on the demand for certificates. Figure 2.2 illustrates how the benchmark has changed since GGAS commenced in 2003.

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

Figure 2.2 NSW Benchmark targets (2003-12)

2.5 NSW benchmark participants

The Act imposes benchmark targets on all NSW electricity retail suppliers, certain generators and all market customers that take electricity supply in NSW directly from the National Electricity Market (NEM). These companies are known as benchmark participants. In addition, large electricity customers⁵ with electricity loads greater than 100GWh and those carrying out State Significant Developments⁶ can elect to manage their own greenhouse gas benchmarks. These are called elective benchmark participants.

Electricity retailers seek to pass onto their customers 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 five per cent of total electricity sales in NSW, it is responsible for meeting five per cent of the required reduction applied to the NSW electricity sector benchmark. Elective participants, having nominated which company sites are part of GGAS, must meet the benchmark reduction targets associated with electricity consumption at those sites.

⁵ 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.

⁶ 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.

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.

2.6 Abatement Certificate Providers

Abatement Certificate Providers (ACPs) carry out greenhouse gas abatement projects that are accredited under the GGAS Rules and create abatement certificates. Parties are eligible to seek accreditation for demand side abatement activities (energy efficiency), reduced or low emission generation or for carbon sequestration through forestry. Further detail about the activities of ACPs is provided in Section 4.

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. These large users can create LUACs for these activities. These certificates are not tradeable. In accordance with the LUAC Rule⁷, creation of LUACs is not directly related to electricity use.

Under the Rules, eligible DSA projects must be undertaken in NSW or the ACT and carbon sequestration activities can only be undertaken in NSW. As NSW and the ACT are part of the NEM, interstate generators also provide electricity to NSW and ACT customers. Therefore, interstate generation projects that are connected to the NEM may apply for accreditation.

The Rules set out the eligibility criteria and greenhouse gas accounting methods that participants must use to determine the value of abatement, and hence the number of abatement certificates each project can create. The policy maker (DWE) has responsibility for amending the Rules from time to time to ensure that the methodologies remain up to date with any new developments or technologies.

The DSA Rule⁸ was amended in December 2008 to reduce the maximum Default Emissions Abatement Factor (DAF) for CFLs from 0.9 to 0.15. The change was as a result of the introduction of new Minimum Energy Performance Standards (MEPS) for lighting, which will result in incandescent lamps being removed from sale by November 2009.

After November 2009, it is likely that most incandescent lamps, upon failure, will be replaced by CFLs, regardless of whether CFLs are an eligible activity under GGAS.

⁷ Greenhouse Gas Benchmark (Large User Abatement Certificate) Rule No.4 of 2003.

⁸ Greenhouse Gas Benchmark (Demand Side Abatement) Rule No. 3 of 2003.

3 Benchmark participants

There were 41 benchmark participants for the 2008 compliance year in NSW; 28 licensed electricity retailers⁹, one market customer, three generators 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.

During 2007 IPART approved an application from a large electricity customer (Centennial Coal Company Limited) seeking to manage their own greenhouse gas abatement in the 2008 compliance year.

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. For the 2008 compliance year, this was 18 March 2009.¹⁰ 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 use 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 year¹¹, benchmark participants can choose to carry forward to the following year a greenhouse shortfall of up to 10 per cent of their benchmark without having to pay a penalty. Any shortfall carried forward must be abated the following year. For the 2008 compliance year, benchmark participants are

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 IPART has determined this deadline for submission of benchmark statements pursuant to section 97CB(1) of the Act.

¹¹ Pursuant to section 97BE(1) of the Act, a greenhouse shortfall can be carried forward to the next compliance year (for any year other than the year commencing 1 January 2007). In 2007, no shortfall was allowed to be carried forward to ensure that NSW met the target in line with the Kyoto Protocol (a reduction of 5 per cent below the equivalent NSW levels from 1989/90).

liable to incur a financial penalty of \$12.00 per tonne of carbon dioxide equivalent for any shortfall¹².

3.1 Benchmark participants – compliance status

Table 3.1 shows benchmark participants' performance against compliance requirements in 2008. The table separately shows mandatory and elective participants involved in GGAS and how each met its individual benchmark.

¹² 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 2008 compliance year, the penalty rate of \$12.00 per tCO₂-e of excess emission remained unchanged from the 2007 level.

Table 3.1 NSW benchmark participants Compliance Status

MANDATORY PARTICIPANTS		
Surrendered sufficient certificates to meet 2008 benchmark	Did not directly purchase or sell enough electricity in NSW to require the surrender of certificates for 2008	Opted to pay the greenhouse gas penalty for 2008
AGL Sales (Queensland)	ActewAGL Retail ^b	Independent Electricity Retail Solutions
AGL Sales	BBP Energy Markets ^a	Sanctuary Energy Pty Ltd
Aurora Energy	Citipower ^a	
Australian Power & Gas	Dodo Power & Gas ^a	
Cogent Energy	Eraring Electricity ^a	
Country Energy	GridX Power ^a	
Delta Electricity	NSW Electricity ^a	
EnergyAustralia	Powercor ^a	
ERM Power Retail	Sun Retail ^b	
Integral Energy		
Jackgreen International		
Macquarie Generation		
Momentum Energy Limited		
Origin Energy		
Powerdirect Australia		
Red Energy		
Tomago Aluminium ^c		
TRUenergy		
TRUenergy Yallourn		
ELECTIVE PARTICIPANTS		
Amcor Packaging	N/A	N/A
BlueScope Steel		
Boral Limited		
Carter Holt Harvey Australia		
Centennial Coal		
Hydro Aluminium Kurri Kurri		
Norske Skog Paper Mills		
OneSteel Manufacturing		
Orica Australia		
Visy Industries Holdings		
Xstrata Coal Australia		
TOTAL: 30	TOTAL: 9	TOTAL: 2

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

b These participants did not purchase electricity directly from the NEM. Their electricity purchases were included in the returns of benchmark participants who purchased electricity from the NEM on their behalf.

c Registered with NEMMCO as a market customer, that is, an electricity customer taking supply directly from the NEM.

3.2 Overall compliance

IPART conducts a review and assessment of the benchmark statements in accordance with the *Greenhouse Gas Benchmark Rule (Compliance) No.1 of 2003*.

In the 2008 compliance year:

- ▼ Twenty-seven benchmark participants surrendered sufficient abatement certificates to fully meet their greenhouse gas benchmark for the 2008 compliance year.
- ▼ Nine benchmark participants did not directly purchase or sell electricity in NSW; hence were not required to surrender any abatement certificates. These benchmark participants submitted nil returns in accordance with the Compliance Rule.
- ▼ Three benchmark participants (two retailers and one large user) decided to carry forward a small shortfall which is allowed under Section 97BE of the Act. The total greenhouse shortfall of 2,526 certificates carried forward to the 2009 compliance year represents only 0.01 per cent of the overall 2008 compliance obligation.
- ▼ Two benchmark participants opted to pay a small penalty in lieu of surrendering abatement certificates to meet their annual greenhouse gas benchmark obligation.
- ▼ The total number of abatement and renewable energy certificates required to fully meet 2008 obligations is equivalent to 23.7 million tCO₂-e abated.¹³ This represents a 26.6 per cent increase in the total abatement and renewable energy certificates required compared to the 2007 compliance year (see Box 3.1).
- ▼ Benchmark participants surrendered 20.4 million NGACs and 1.1 million LUACs to meet their greenhouse abatement obligations in 2008.
- ▼ Nearly 2.1 million renewable energy certificates (RECs)¹⁴ associated with electricity purchases in NSW also were counted towards participants' NSW greenhouse gas abatement obligations.

¹³ This represents the total number of certificates required to meet 2008 greenhouse obligations (NGACs, LUACs and RECs taken into account as equivalent abatement certificates and balanced out by the shortfall amounts).

¹⁴ RECs are surrendered under the *Renewable Energy (Electricity) Act 2000 (Cth)* which is administered by the Office of the Renewable Energy Regulator; and, subject to limits, can be counted towards participants' NSW greenhouse gas abatement obligations.

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 essentially 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. Additionally, the benchmark emissions intensity is primarily a function of the NSW Greenhouse Gas Benchmark (see Section 2.4), 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 period¹⁵. As outlined in Section 2.4, the NSW Greenhouse Gas Benchmark for 2008 is the same as it was for 2007, and will remain at the same level for future compliance years. The increase in the GGAS abatement obligation for 2008 compared to 2007 is therefore primarily due to adjustment for previous energy efficiency DSA certificate creation, as outlined below.

Energy efficiency activities under the DSA Rule yield two benefits:

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 energy efficiency DSA certificate creation in calculating the GGAS abatement obligation.

This adjustment is equal to the electricity savings associated with the energy efficiency DSA certificate creation two years previously (referred to as the 'two year DSA lag adjustment'). To calculate the 2008 abatement obligations, the two year DSA lag adjustment references the 2006 energy efficiency DSA certificate creation figure. In 2006, 8.8 million NGACs were created for energy efficiency activities, compared to only 1.5 million NGACs in 2005. The large jump in the number of DSA NGACs created in 2006 is the primary reason for the substantial increase in the total GGAS abatement obligation for 2008 in comparison to 2007.

3.3 Abatement and Renewable Energy Certificates surrendered since GGAS began

Since GGAS began in 2003, approximately 62 million NGACs have been surrendered. This figure increases to approximately 65 million certificates when LUACs are added and 73 million certificates when equivalent RECs are also taken into account. Yearly surrenders are set out in Table 3.2. 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.

¹⁵ 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.

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
Total NGACs surrendered for the compliance year	1,166,866	5,037,847	7,982,204	11,592,583	15,922,727	20,456,449
Total LUACs surrendered for the compliance year	0	0	64,401	686,560	1,040,462	1,141,096
RECs counted towards compliance (converted to an equivalent number of NGACs as tCO ₂ -e/MWh) ^a	544,518 (488,432)	841,194 (762,122)	1,117,907 (1,020,649)	1,512,006 (1,404,653)	1,878,514 (1,767,682)	2,205,601 (2,104,143)
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
Total Certificates required to meet compliance obligations for the year ^b	1,699,941	5,897,236	9,150,547	13,802,181	18,730,871	23,704,309
Total shortfalls carried forward to next compliance year	44,643	141,908	225,201	343,586	0	2,526

a RECs are not directly equivalent to NGACs. To calculate the equivalent number of NGACs, the RECs counted figure is multiplied by the pool coefficient for that year (for 2008 that number is 0.954 (tCO₂-e/MWh)).

b 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 and then balanced out by the shortfall carry forward amounts.

Table 3.3 Components of Abatement since GGAS began (expressed as % of total abatement)

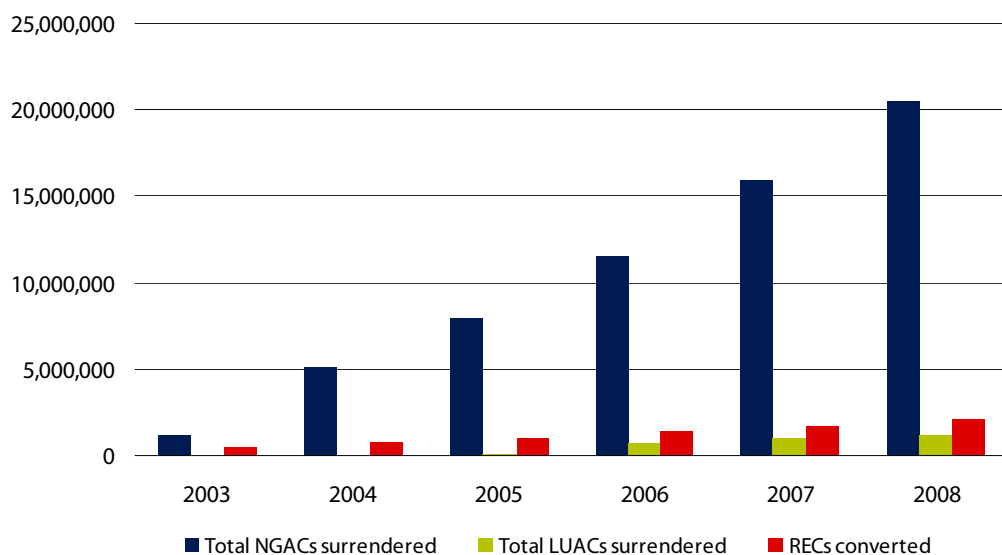
Compliance Year	2003	2004	2005	2006	2007	2008
NGACs surrendered	68.6%	85.4%	87.2%	84.0%	85.1%	86.3%
LUACs surrendered	0.0%	0.0%	0.7%	5.0%	5.5%	4.8%
RECs taken into account	28.7%	12.9%	11.2%	10.2%	9.4%	8.9%
Greenhouse shortfall ^a	2.6%	1.6%	0.9%	0.9%	0.0%	0.01%
Total abatement obligations	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

a In 2007, no shortfall was allowed to be carried forward to ensure that NSW meets the target in line with the Kyoto Protocol.

Figure 3.1 (Abatement and Renewable Energy Certificates surrendered) represents the number of certificates required to completely meet the greenhouse abatement obligations in each year. Note that the allowed carried forward shortfall (see Section 3.3.1) 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.

Figure 3.1 has also been prepared on the basis that no greenhouse penalties have been incurred. Based on this methodology, the 2008 greenhouse abatement obligation totals 23,704,309 abatement certificates.¹⁶

Figure 3.1 Abatement and Renewable Energy Certificates surrendered



For the 2008 compliance year, approximately 20.4 million NGACs were offered for surrender, representing an increase of 28.5 per cent compared to the 2007 compliance year (see Box 3.1). As depicted in Figure 3.1, NGACs continue to make up the largest percentage of abatement certificates surrendered to meet required compliance obligations.

Over one million LUACs were surrendered by eight elective benchmark participants for the 2008 compliance year. LUACs represented approximately 4.8 per cent of total abatement certificates surrendered to meet required compliance obligations surrendered in 2008. The number of LUACs surrendered was 9.7 per cent higher than in 2007.

¹⁶ 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, with no shortfall carry forward amounts from 2007 compliance year.

Table 3.4 shows that some large users came close to meeting their benchmarks through the surrender of LUACs alone. Boral Limited and Orica again did not have to surrender any NGACs to meet their 2008 greenhouse gas benchmark and have a zero shortfall. The rest of the elective benchmark participants used a combination of both LUACs and NGACs to meet their respective benchmarks.

Of all the elective benchmark participants, only OneSteel Manufacturing, Visy Industries and Centennial Coal (a recently approved elective benchmark participant) did not submit any LUACs to meet their abatement obligation in this compliance year.

Table 3.4 Percentage of Large User Abatement certificates surrendered in 2007 and 2008 by individual large users^a

Large Users (that surrendered LUACs)	2007 LUACs surrendered (as a % of total abatement)	2008 LUACs surrendered (as a % of total abatement)
Amcor Packaging	32%	48%
Boral Limited	90%	91%
BlueScope Steel	30%	20%
Carter Holt Harvey Australia	15%	7%
Centennial Coal (Aust.)	0%	0%
Hydro Aluminium Kurri Kurri	89%	75%
Norske Skog	7%	8%
Onesteel Manufacturing	0%	0%
Orica Australia	90%	91%
Tomago	62%	52%
Visy Industries Holdings	0%	0%
Xstrata Coal	39%	29%
Total	6%	5%

^a Individual total abatement for the year is calculated by the number of certificates required to attain a zero shortfall and also account for the carry forward amounts 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 19 per cent compared to the 2007 compliance year, however the percentage of RECs counted in relation to the total number of abatement certificates required for compliance has dropped substantially over the life of GGAS. RECs now represent just below nine per cent of the total abatement obligation in 2008, down from 29 per cent when GGAS first began.

3.3.1 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 per cent of their benchmark without having to pay a penalty.¹⁷ Any shortfall carried forward must be abated the following year.

To ensure that NSW fully meets the electricity sector emissions target of five per cent per capita below the levels in 1989/90, the emission target of 7.27 tCO₂-e per capita will continue at this level until the end of GGAS.

The total amount of allowable greenhouse shortfalls being carried forward to 2009 is 2,526 tCO₂-e. This is exceptionally low in comparison to other years where a shortfall was permitted, representing just 0.01 per cent of the total abatement in 2008.

Table 3.5 Benchmark participants carrying forward a greenhouse shortfall to 2009

Benchmark participant	Greenhouse shortfall (as % of benchmark)
Xstrata Coal Australia	0 < 5%
Independent Electricity Retail Solution, Sanctuary Energy	5 ≤ 10%

3.4 Type of abatement certificates surrendered since GGAS began

GGAS allows the creation of abatement certificates under the following Rules as described further in Section 4:

- ▼ low-emission generation of electricity (Generation Rule)
- ▼ activities that result in reduced consumption of electricity, otherwise known as energy efficiency (DSA Rule)
- ▼ the capture of carbon from the atmosphere in forests (CS Rule)
- ▼ activities carried out by elective participants that reduce on-site emissions not directly related to electricity consumption (LUAC Rule).¹⁸

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

¹⁷ 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.

¹⁸ LUACs are not directly related to electricity use in accordance with the *Greenhouse Gas Benchmark (Large User Abatement Certificate) Rule No. 4 of 2003*.

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

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

Note: Percentage totals may not add due to rounding.

The mix of the types of certificates surrendered and accepted in 2008 continued to follow the trend of the last few years, ie,

- ▼ Generation Rule certificates comprised a smaller proportion of the total number of certificates surrendered and accepted (50.3 per cent for 2008) compared to the previous year (57.4 per cent for 2007).
- ▼ DSA Rule certificates comprised a larger proportion of the total number of certificates surrendered and accepted (43.6 per cent for 2008) compared to the previous year (36.3 per cent for 2007).

In addition:

- ▼ LUACs comprised a slightly smaller proportion of the total number of certificates surrendered and accepted (5.2 per cent for 2008) compared to the previous year (6.1 per cent for 2007).
- ▼ CS Rule certificates represented only a small percentage (0.9 per cent) of total abatement certificates surrendered.

3.5 Greenhouse Gas penalty paid in 2008

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 as determined by a formula provided under that section.¹⁹ For the 2008 compliance year, the greenhouse penalty was set at \$12.00 for each tonne of CO₂-e by which a benchmark participant's attributable emissions exceeds its benchmark and any allowable shortfall.²⁰

Independent Electricity Retail Solution (IERS) and Sanctuary Energy were the only two benchmark participants that opted to pay the greenhouse gas penalty in respect of their excess emissions (\$876 and \$276 respectively). The GGAS liability for IERS was equivalent to 73 tCO₂-e and Sanctuary Energy 23 tCO₂-e. The combined greenhouse gas liabilities represented only 0.0004 per cent of the total annual greenhouse gas benchmark obligation. These benchmark participants submitted their benchmark statements early and have paid the greenhouse gas penalty. The compliance regulator is satisfied that both benchmark participants have met their greenhouse gas obligations.

¹⁹ The calculation of the penalty and CPI adjustment is made pursuant to section 97CA of the Act and section 73C of the Regulation.

²⁰ 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 2008 compliance year, the GGAS penalty remained unchanged from 2007 level, at a rate of \$12.00 tCO₂e.

4 | Abatement certificate providers

Abatement Certificate Providers (ACPs) are accredited by the Scheme Administrator to undertake eligible abatement projects. They create NGACs and LUACs, 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 2008 there were 221 ACPs eligible to create certificates for abatement activity, an increase from the 204 providers accredited at the end of 2007. The Tribunal committee sitting as Scheme Administrator met 16 times during 2008 and approved a total of 29 accreditation applications. For the life of GGAS, 312 applications have been accredited, and 91 accreditations cancelled for reasons outlined in the following sections.

While in 2008 there were applications accredited under each of the Rules (Generation, DSA, LUAC and CS Rules), there was a significant decline in the number of applications for accreditation received. Some ACPs have suggested that this decline could be due in part to the continuing low price of certificates during 2008, and due to the ongoing uncertainty over the future of GGAS and the introduction of the CPRS. These factors also had an impact on existing ACPs, especially under the DSA Rule, where the reduction in certificate price led to a number of DSA ACPs ceasing their activities by the end of 2008.

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 GGAS integrity through robust assessment and quantification of abatement and the ongoing monitoring of ACPs' compliance with obligations arising from accreditation.

During 2008, the compliance performance by GGAS ACPs was generally strong (see Section 5 for further details). Compliance is monitored through the use of audits. In 2008, non-compliance incidents mainly continued to be minor over-creations of certificates by ACPs. While the number of over-creation incidents was up from last year, the number of NGACs over-created from these incidents was down

(representing less than 0.2 per cent of total NGAC creation). All incidents of over-creation were redressed via voluntary forfeiture of NGACs.

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 2008.

Table 4.1 Number of GGAS accreditations granted by year and by Rule

	Generation Rule	DSA Rule	LUAC Rule	CS Rule	Total
Accredited in 2003 ^a	14	3	1	0	18
Cancelled in 2003 ^b	0	0	0	0	0
Accredited in 2004 ^a	67	48	0	1	116
Cancelled in 2004 ^b	7	34	0	0	41
Accredited in 2005 ^a	25	43	1	3	72
Cancelled in 2005 ^b	7	12	0	0	19
Accredited in 2006 ^a	9	17	2	1	29
Cancelled in 2006 ^b	4	4	0	0	8
Accredited in 2007 ^a	24 ^d	19	4	1	48
Cancelled in 2007 ^b	6	5	0	0	11
Accredited in 2008^a	17	10	1	1	29
Cancelled in 2008^b	5	7	0	0	12
Current total^c	127^d	78	9	7	221

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

b Accreditations may be cancelled due to a number of reasons including corporate restructure, completion of the project or a change in circumstances for the project.

c This represents accreditations still entitled to create certificates as at 31 December 2008.

d Four of these projects are future project accreditations.

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.

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 project owner. In other cases, the project is completed, and for a small number of projects cancellation occurs because a project ceases to be eligible. Accreditations are not transferrable.

4.2 Generation Rule

The *Greenhouse Gas Benchmark (Generation) Rule No. 2 of 2003* (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 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.
- ▼ **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 of the National Electricity Market (NEM) 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 NEM.

In addition to generation activities satisfying the requirements listed above, other areas of eligible generation activity 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 additional 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).

The use of waste heat from 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.

4.2.1 Applications and accreditations

A wide range of projects have been accredited under the Generation Rule since GGAS commenced including:

- ▼ power station efficiency improvements (such as turbine upgrades) that reduce emissions intensity compared to a benchmark or prior measured performance
- ▼ gas fired generation, using natural gas and coal seam methane
- ▼ a high efficiency, supercritical coal fired power station
- ▼ electricity generation using waste methane from landfill sites and underground coal mines
- ▼ cogeneration projects displacing the use of higher emission intensity fuels
- ▼ fuel switch projects where high emission intensity fuels are replaced with lower intensity fuels
- ▼ biodigester type plant using qualifying putrescibles waste as fuel.

In 2008, 17 new projects were accredited to create certificates under the Generation Rule including two future projects. The future projects included a gas turbine combined cycle power plant and a generating system fired on waste gases from steel-making. Refer to Section 4.6 for further information on future projects.

In 2008, the Scheme Administrator also assessed 19 amendments to existing accreditations. Three of these were in regard to the commissioning of accredited future projects (also see Section 4.6) and one related to changes associated with an accredited party's approved Performance Improvement Testing Regime (PITR) document (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.

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
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
	Natural gas			1		1	1
	Sewage gas			1			
	Waste coal mine gas		2		1		1
Total		3	27	3	2	6	4

Australian Capital Territory

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

Queensland

Category	Fuel Type	2003	2004	2005	2006	2007	2008
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				
	Natural gas		1	1	1	1	2
	Waste coal mine gas		2		1	2	
Total		0	14	4	4	3	6

South Australia

Category	Fuel Type	2003	2004	2005	2006	2007	2008
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		4	5	3	0	2	4

Victoria

Category	Fuel Type	2003	2004	2005	2006	2007	2008
Category A	Hydro		7	6			
	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
	Natural gas			1	1	2	1
Total		5	21	15	3	5	2

Tasmania

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

All Jurisdictions

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

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

4.2.2 Cancellations of Generation Rule accreditations

During 2008, five Generation Rule accreditations were cancelled at the request of the accredited parties. The cancellations involved:

- ▼ two cases where the development of a future project generating system was suspended due to unsuccessful negotiations with other parties
- ▼ two cases where the ACP ceased to be the owner of the generating system (with immediate applications for accreditation from the new company), and
- ▼ one case where a new company within a corporate group took over the ownership of generation activities, requiring cancellation of the previous company's accreditation (and an immediate re-accreditation under the new company).

4.2.3 Managing applications for accreditation

Developing and assessing applications for accreditation under the Generation Rule provides some significant challenges for both applicants and the Scheme Administrator. These arise mainly from the scale and complexity of the projects, and the volume of data required to substantiate emissions, emissions abatement and therefore NGAC calculations.

The highly technical nature of the projects also poses challenges for undertaking ongoing monitoring of projects. Where projects are particularly complex, the Scheme Administrator has the ability to appoint expert consultants from the audit and technical services panel (see Section 5) to provide an assessment of the technical aspects of the project. The results of the assessment can then be incorporated into the Scheme Administrator's consideration of the application and ongoing performance monitoring.

Examples of technical reviews previously commissioned by the Scheme Administrator include reviews of Performance Improvement Testing Regime (PITR) submissions and of methane metering from landfill gas sites, both of which were undertaken in 2007 and 2008.

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. Known as the Methane Energy Uncertainty Methodology, or MEUM, the development of this methodology followed the review of landfill gas metering in the previous calendar year. Refer to Section 4.2.5 for further detail.

4.2.4 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 reference 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).

There are currently seven generators using PITRs accepted by the Scheme Administrator, following technical review by industry experts. These PITRs were generally accepted by the Scheme Administrator for ongoing use. However, one of the generators had its PITR accepted for a defined period of one year as further refinement of its PITR was required. This generator is now required to submit a revised PITR prior to creating any further NGACs and did not create NGACs for 2008.

As part of the PITR, each of the generators is required to include an assessment of uncertainty when determining the Percentage Performance Improvement (PPI) of their Generating System. The *PITR Guidance Document* version 1.0 (dated June 2006) suggests that using best available station instrumentation, performance testing, ongoing monitoring and robust calibration regimes, the industry best practice relative uncertainty is considered to be around 1.5 per cent. The intention of the PITR is to reduce any calculated uncertainty by this best practice margin and to adjust the subsequent NGAC claim by the residual amount.

At the time the PITRs were being developed, the Scheme Administrator advised PITR proponents that for the purposes of 2006 calendar year NGAC creation, no adjustment for uncertainty would be required. This decision was based on the fact that the process of uncertainty assessment was a new paradigm for base-load coal fired generators and that it is an inherently complex process (given the large number of station instrumentation, calibration and data inputs).

The uncertainty calculations provided with each of the PITRs ranged from 0.68-1.15 per cent, well below the best practice guideline. As a result, the Scheme Administrator allowed for the PITR documents to stand and be used for NGAC creation through until 31 December 2008 without a requirement for uncertainty adjustment.

In October 2008, with the understanding that the CPRS would commence in 2010, the Scheme Administrator further notified PITR users that no adjustment for uncertainty would be required for 2009 calendar year NGAC creation. However, PITR users are still required to consider uncertainty in their overall NGAC calculations (as per their respective PITR documents). Given that commencement of the CPRS has now been delayed, the Scheme Administrator will shortly advise PITR users on ongoing treatment of uncertainty for 2010 and subsequent calendar years.

The ACP's Special Accreditation Conditions require them to notify the Scheme Administrator of any change to their accepted Pitr approach, and to undertake annual audits of NGAC creation. Some minor changes to the Pitr methodology have been identified via these two mechanisms, and the Pitr's have been updated accordingly.

4.2.5 Methane Metering

Electricity generators utilising waste methane gas for electricity generation can create additional NGACs for methane destruction under the Generation Rule. This recognises the prevention of the release of fugitive methane to the atmosphere as additional to the generation of electricity from methane combustion. Examples of the types of waste gas that are eligible under this approach include waste coal mine gas (WCMG), landfill gas (LFG) and sewage gas (SG).

In order to calculate the additional NGAC entitlement due to avoided methane release, the generator applies either Equation 13 or Equation 16 of the Generation Rule (depending on the source of the gas). As part of the calculation process, the generator can choose to use a default factor²¹ for the efficiency of methane destruction by the generating system or it can determine the actual energy content of the gas through use of a method approved by the Scheme Administrator.

As of 1 January 2008, the default factor used in Equations 13 and 16 changed to 36 per cent for all ACPs, where previously those generators accredited before 31 December 2004 were able to use a default factor of 30 per cent. The change in default factor reduced possible NGAC creation by approximately 13 per cent.

In preparation for these changes, the Scheme Administrator received two requests from ACPs in 2007, to amend the calculation methodology at a number of sites so that direct measurement of methane energy could be used in their NGAC calculations. In assessing these amendment requests, the Scheme Administrator identified the potential for a high degree of uncertainty in methane energy measurements and so set out to develop a methodology for accounting for methane energy uncertainty in the creation of NGACs.

As a result, in 2008 the Scheme Administrator proposed a new *Methane Energy Uncertainty Methodology* (MEUM) for ACPs seeking to use the actual energy content of waste methane for the purposes of Equations 13 or 16 of the Generation Rule. The MEUM was developed to be in accordance with the ISO Standard – Guide to Uncertainty Measurement (GUM) with the expert assistance of SKM Pty Ltd and was peer-reviewed by Connell Wagner Pty Ltd.

²¹ Under clause 1.5 of the Generation Rule, ACPs with methane projects must use either the 36 per cent default factor, or a methodology approved by the Scheme administrator, in respect of NGAC calculations on, or after, 1 January 2008.

The MEUM is a pioneering approach to applying uncertainty in a practical way and as such represents a major piece of innovative work in what is a very difficult and complex subject area. Using this approach, generators are able to move away from the use of conservative default factors and are able to create more NGACs in a way that also better reflects the actual performance of their generating systems.

The MEUM was developed in consultation with industry and provides ACPs with a standardised methodology to determine the uncertainty associated with the measurement of the actual energy content of waste methane for the creation of NGACs.

The Scheme Administrator has advised participants that proposals to use actual energy content should follow the MEUM and that methodologies will be approved following confirmation that the metering system components are appropriate and the requirements detailed in the MEUM Guidance Document have been met. A MEUM calculation spreadsheet has also been provided along with the MEUM Guidance Document to provide a template for ACPs to use when developing the MEUM approach.

At a minimum, three components are required to determine the actual energy content of waste methane. These are 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 (as opposed to WCMG or sewage gas) is a relatively 'unclean' gas in that it is a gas which has no consistent chemical composition, and one that can contain contaminants which can 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 calculates uncertainty based on a defined Measurement Period as proposed by the ACP and uses the results of methane analyser calibrations, recorded by the ACP on a weekly (or other agreed) schedule, as the ongoing inputs used to determine uncertainty. Before each analyser calibration is performed, the 'as found' state is recorded after passing a NATA-certified test gas of known methane concentration through the methane analyser and recording the methane reading. The difference between the reading and the methane concentration of the test gas is input into the MEUM spreadsheets.

These calibration results are then statistically assessed using an expanded uncertainty (95 per cent 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. The uncertainty is then incorporated into the ACP's calculation of NGACs, where the number of NGACs to be created is adjusted by the uncertainty determined under the MEUM.

The application of the MEUM allows a generator to use both the default factor to calculate the 'base' number of NGACs they may create through the destruction of methane, and then depending on the performance of the equipment which measures the actual content of the gas, apply the MEUM to 'add' to their eligible creation. The MEUM approach provides an added incentive to the generator to actively monitor and control the performance of their generating system.

Preliminary data suggest that, on average, generating systems approved to use the MEUM approach have created approximately 20 per cent more NGACs than they would have otherwise claimed using the 36 per cent default factor approach only.

The first Generating System to use the MEUM approach was approved in early 2009. At time of printing, there were 14 generating systems accredited to utilise the new MEUM approach.

4.3 Demand Side Abatement Rule

The *Greenhouse Gas Benchmark (Demand Side Abatement) Rule No. 3 of 2003* (DSA Rule) covers activities that reduce the consumption of electricity from the grid and hence result in fewer greenhouse gas emissions being produced. These actions are taken on sites belonging to electricity customers, rather than by the supplier of electricity, and are therefore referred to as demand side abatement activities.

The DSA Rule defines five main types of eligible projects:

- ▼ projects that modify existing energy consuming equipment, processes or systems (called 'Installations' in the DSA Rule), or which modify the usage of Installations and result in a reduction in consumption of electricity
- ▼ projects that replace existing Installations, with other Installations that consume less electricity
- ▼ projects that install new Installations that consume less electricity than other Installations of the same type
- ▼ projects that substitute one source of energy for electricity
- ▼ on-site electricity generation that replaces supply from the National Electricity Market.

The Rule allows an organisation to create certificates from their own eligible DSA projects, or to nominate a third party to create certificates on their behalf. For example, a business that installs energy efficient lighting in residential households may apply to the Scheme Administrator to become accredited to create certificates, as long as the individual householders nominate that business to create certificates for abatement at their household. The form and content of the nomination is critical to the eligibility of these types of projects and must be approved by the Scheme Administrator before it can be used.

4.3.1 Approved calculation methods

There are three types of calculation methods that can be used for energy efficiency projects under the DSA Rule:

- ▼ the Default Abatement Factors (DAF) Method
- ▼ the Project Impact Assessment (PIA) Method
- ▼ the Metered Baseline Method.

If the project involves the on-site generation of electricity, the Generation Emissions Method (utilising equations from the Generation Rule) is the applicable calculation method.

Of the energy efficiency calculation methods, the DAF Method is the most straightforward, but is limited to certain types of projects, as outlined below. The other two energy efficiency calculation methods require an engineering assessment of energy savings. The PIA Method is most appropriate where the energy saving of the project is small in comparison to the energy consumption of the total site, while the Metered Baseline Method is most appropriate when the project results in a substantial reduction to the energy consumption of the total site. The Metered Baseline Method includes the Australian Building Greenhouse Rating (ABGR) Scheme, which uses a nationally recognised tool for rating the energy efficiency of office buildings.

The DAF Method prescribes default emissions abatement factors (DAFs) for common Installations (such as compact fluorescent lamps (CFLs) and the replacement of electric hot water systems with gas systems). Under the DAF Method, the lifetime abatement for the Installation is accounted for or 'deemed' to have occurred at the time of installation. All the DAFs for various Installations are listed in Schedule A, Table 1 of the DSA Rule. To date, there have been a number of different DAFs for CFLs depending on the rated life of the CFL. However, due to regulatory changes, the DAFs for CFLs were changed when the Minister for Energy amended the DSA Rule in December 2008 (see Section 4.3.5).

Prior to being accredited, an applicant must specify the types of products or Installations they intend to use from those listed in the Schedule to the Rule.

In calculating abatement under the DAF Method, an Installation Discount Factor (IDF) is applied to account for the possibility that some products sold or given away are not actually installed. The default IDF for products sold or given away is 0.4. Where a product is directly installed by a representative of the ACP, no discount is applied and an IDF of 1.0 is applicable. The DSA Rule also gives the Scheme Administrator discretion to approve a different IDF value. Some ACPs are approved for different IDFs for different activities under the same accreditation.

The default IDF of 0.4 for sales and giveaways has applied from 1 October 2006, following an amendment to the DSA Rule in August 2006. Prior to this amendment, the default IDFs were 0.9 for sales and 0.8 for giveaways. However, rapid growth of these activities and analysis of market saturation made an adjustment to the IDFs necessary to remain a valid measurement of greenhouse gas abatement.

4.3.2 Applications and accreditations

There were 10 new accreditations approved under the DSA Rule in 2008. These projects involved activities in the residential, industrial and commercial sectors, with seven of the 10 accreditations using the Default Abatement Factors (DAF) Method. The accreditations covered a range of DSA activities, including:

- ▼ the distribution of energy efficient light globes, water efficient showerheads and flow restrictors for showerheads (DAF Method)
- ▼ lighting and heating, ventilation and air conditioning (HVAC) upgrades in buildings (Metered Baseline-ABGR Method)
- ▼ process improvements at industrial facilities (PIA Method)
- ▼ on-site electricity generation using waste gases from an industrial process (Generation Emissions Method).

In addition to assessing new DSA Rule applications during 2008, the Scheme Administrator also assessed 30 amendments to accreditations. Most of these amendments were for projects accredited for the distribution of CFLs and water-efficient showerheads under the DAF Method. The amendments were generally as a result of:

- ▼ ACPs expanding or modifying the size and scope of their energy efficiency activities, such as expanding residential sector CFL projects to also include the distribution of flow restrictors for showerheads
- ▼ the change to the DSA Rule in December 2008 which altered the DAFs for CFLs (see Section 4.3.5)

- ▼ the introduction of the Minimum Requirements for DAF Installation Projects²², which now apply to all projects involving the installation of CFLs, showerheads and/or flow restrictors.

At the end of 2008 there remained 78 accreditations able to create certificates under the DSA Rule. Table 4.3 provides a complete breakdown of DSA Rule accreditations for each year of GGAS operation.

Table 4.3 DSA Rule – Accreditation applications approved by year

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

4.3.3 Cancellations of DSA accreditations

There were seven DSA accreditations cancelled in 2008 at the request of the accredited parties. The cancellations involved:

- ▼ four cases where limited term residential sector DAF Method projects were completed
- ▼ two cases where the energy efficiency activities for which the project was originally accredited are continuing, but under a different company (and accreditation)
- ▼ one case where an ACP requested cancellation of its accreditation due to its inability to comply with GGAS requirements.

²² From 1 December 2007, all projects involving the installation of CFLs, showerheads and/or flow restrictors have been required to comply with the Minimum Requirements for DAF Installation Projects (see Section 4.3.4 of the *Compliance and Operation of the NSW Greenhouse Gas Reduction Scheme during 2007 Report*). The Minimum Requirements detail the Scheme Administrator's expectations of an ACP in managing and controlling its project(s), including the management of the activities of its Installers.

4.3.4 Management of DSA project accreditations in 2008

In 2008, most ACPs accredited for CFLs and/or showerhead projects installed these products rather than giving them away. The Scheme Administrator estimates that, up to the end of 2008, more than 800,000 households had received lighting and/or showerhead upgrades through these Installation programs.

During 2008, the Scheme Administrator became aware of allegations of improper activity by some Installers engaged by some ACPs using the DAF Method. In order to investigate these allegations, the Scheme Administrator commissioned independent spot audits of the four largest DAF Method ACPs with a view to confirming the integrity of abatement claimed under the DSA Rule by these projects. See Section 4.7.3 for further detail.

4.3.5 Amendment to DSA Rule due to regulatory changes

On 5 December 2008 the Minister for Energy, the Hon Ian MacDonald MP amended the *Greenhouse Gas Benchmark Rule (Demand Side Abatement) No. 3 of 2003*. The amendments reduced the Default Abatement Factor (DAF) which may be claimed for the replacement of incandescent light bulbs with compact fluorescent lamps (CFLs) to 0.15, effective from 1 January 2009. The new DAF applies regardless of CFL life, provided the CFL's rated life exceeds 5,000 hours²³.

This change was driven by the introduction of new national lighting performance standards, which will ban the sale of standard incandescent light bulbs from November 2009. As a result of this ban, it is expected that, regardless of any GGAS incentive, most incandescent light bulbs will be replaced with a CFL by mid-2010 (as incandescent light bulbs have an average life of only 1-2 years).

Consistent with this timing, the DAF for CFLs was revised to allow energy savings to be claimed for a 2.5 year period going forward from 1 January 2009, beyond which it is believed that these energy savings would have occurred anyway due to the new lighting standards. The previous maximum DAF for CFLs of 0.9 allowed the energy savings over the full life of a CFL to be claimed, which may have been up to 15 years.

As only 2.5 years of abatement is being recognised in the revised DAF, the rated life of the CFL is no longer relevant in determining CFL abatement factors and has also been removed from the DSA Rule. This is in recognition that even those CFLs with a low rated life (eg, 6,000 hours) will last for longer than 2.5 years in typical service. This change, which better reflects greenhouse gas abatement, resulted in the substantial curtailment of the CFL replacement program.

²³ Prior to this amendment, DAFs for CFLs ranged from 0.9 (for a 15,000 hour CFL) to 0.3 (for a 5,000 hour CFL).

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) 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:

- ▼ large electricity customers, who have elected to manage a greenhouse gas benchmark (elective benchmark participant) and use more 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
- ▼ 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
- ▼ market customers 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.

By electing to become a benchmark participant, a large user 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 (see Section 3 for further information).

Eligibility to become an elective benchmark participant is assessed by IPART as the compliance regulator (market customers are mandatory benchmark participants). 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 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) and must not be as a result of compliance with statutory requirements, although emissions reductions beyond the statutory requirements may be claimed.

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, a large electricity customer can choose between three 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 2008, the Scheme Administrator accredited Orica Australia Pty Ltd as an ACP under the LUAC Rule. This brought the total number of LUAC accreditations to nine, including:

- ▼ 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).

LUAC creation in 2008 equalled 1,298,075 certificates which was a small increase over 2007 creation.

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
Aluminium	Industrial Process	1	0	0	0	1	0
Cement	Increased Fuel Efficiency	0	0	0	1	0	0
Chemicals	Increased Fuel Efficiency	0	0	0	0	0	1
Mining	Reduced Fugitive Emissions	0	0	0	0	1	0
Paper & Pulp	Increased Fuel Efficiency	0	0	1	1	0	0
Paper & Wood	Fuel Switching	0	0	0	0	1	0
Steel	Fuel Switching	0	0	0	0	1	0
Total accreditations accredited per year		1	0	1	2	4	1
Total accreditations cancelled per year		0	0	0	0	0	0
Net accreditations at the end of year		1	1	2	4	8	9

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 three 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 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, and
- ▼ 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 2008 one new organisation was accredited as a sequestration pool manager, bringing the total accreditations under the CS Rule to seven. The forestry activities 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.

Table 4.5 CS Rule – Accreditation applications approved by year

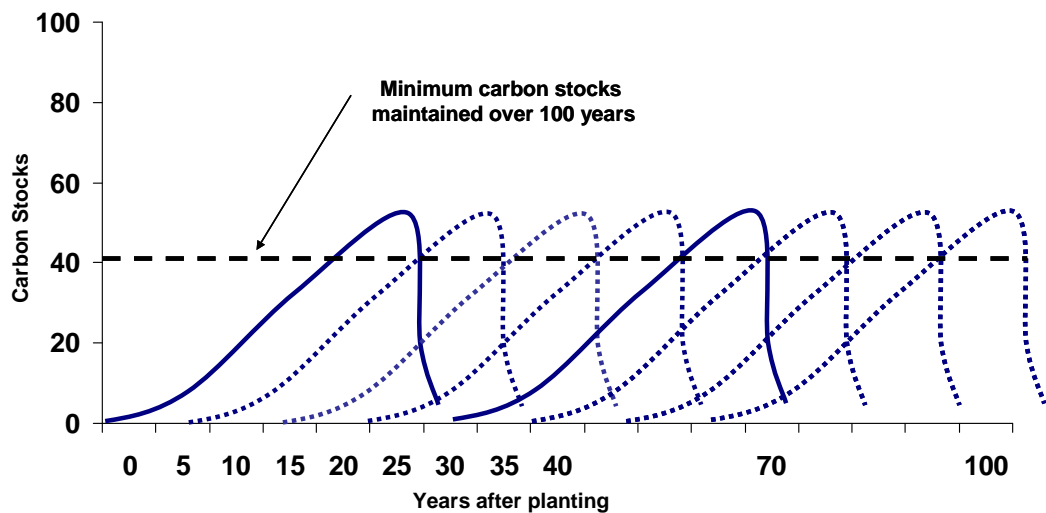
Grouping	2003	2004	2005	2006	2007	2008
Total accreditations accredited per year	0	1	3	1	1	1
Total accreditations cancelled per year	0	0	0	0	0	0
Net accreditations at the end year	0	1	4	5	6	7

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.

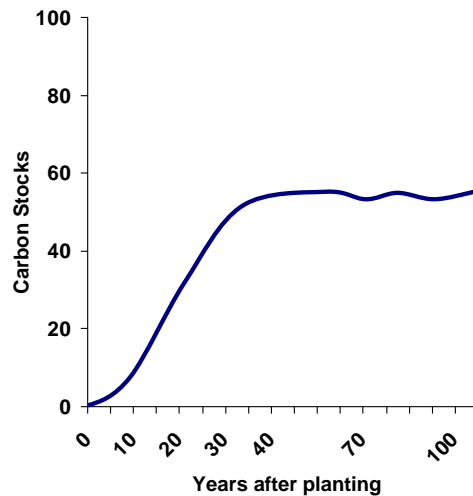
Commercial forestry that will be harvested on a rotational basis requires a significant portfolio of forests and a more sophisticated accounting system that ensures carbon sequestration stocks never decrease below the threshold of certificates created. Figure 4.1 depicts the stocks of carbon that can be achieved through a series of forest plantings and harvests on a rotational basis.

Figure 4.1 Plant-grow-harvest carbon storage



Each line on the figure represents the growth of a forest that is included in the Sequestration Pool. By staggering the planting and harvest times of the forests, it is possible to maintain a permanent volume of carbon storage, depicted by the horizontal dashed line in Figure 4.1.

Forestry that is planted for permanency or conservation purposes will be able to use a simpler carbon accounting methodology. As shown in Figure 4.2, carbon stocks in permanent forests can be more easily accounted for.

Figure 4.2 Permanent forest carbon storage

The single line on the graph could represent one forest or numerous forests in the sequestration pool. Accumulation of carbon stocks would continue on a trajectory until flattening at maturity, assuming there are no depletion events such as fire.

4.5.4 Expansion of an accreditation

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. In 2008, two accreditations were amended to bring additional forests into their sequestration pool. In each case, the additional forests significantly added to the amount of eligible forest in each of the sequestration pool managers' accreditations.

4.6 Accreditation of future projects

Amendments to GGAS legislation in October 2004 provided for projects in the planning and development phase (future projects) to be considered for accreditation by the Scheme Administrator prior to completion.

4.6.1 Future project application process

In 2008 two projects were accredited as future projects. One project was BlueScope Steel's proposed 225MW cogeneration plant which will use waste gas from the steelmaking process to generate electricity. Part of the electricity will be exported with the remainder to be used on site. As a result, this future project is accredited under both the Generation and DSA Rules, in respect of the split between on-site generation and exported generation. The other project from TRUenergy involves the

construction of a 400MW gas turbine combined cycle power plant, using natural gas as fuel. Both of these future projects are located in NSW.

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.

Of the future projects accredited in previous years, three were commissioned and subsequently approved by the Scheme Administrator for NGAC creation during 2008. The smallest of the three projects is Energy Impact's 0.77MW Sleeman Sports Centre LFG cogeneration project in Queensland. The other two projects, located in NSW, are the 2.13MW Woodlawn Bioreactor at Tarago, which uses landfill gas as fuel, and Envirogen's 10MW Glennies Creek waste coal mine gas generating system.

4.7 Compliance outcomes

In 2008, overall compliance by ACPs with the GGAS Act, Regulations, Rules and accreditation conditions remained good. Of 221 accreditations (as of 31 December 2008), there were 26 instances of contraventions of conditions of accreditation (compared with 22 in the previous year). These events were discovered either through voluntary declaration by the accredited party (eight of 26), discovery by the Scheme Administrator (eight of 26), or through the compliance audit process (10 of 26).

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).

Similar to previous years, the majority of contraventions in 2008 related to the improper creation of certificates, in particular over-creation, with the remainder relating to contraventions of specified conditions of accreditation.

4.7.1 Over-creation of certificates

During 'standard' compliance audits in 2008, six ACPs were found to have over-created certificates (from a total of 10 projects), thus contravening their conditions of accreditation. As in previous years, these 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:

- ▼ use of ineligible nomination forms (6)
- ▼ transcription errors (1) and
- ▼ use of incorrect data (eg, Rule default factor, or other related data inputs) (3).

During 2008, the 10 instances outlined above resulted in a total of 39,124 certificates (of both 2007 and 2008 certificate vintage) being over-created. 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 per cent of the nominated number of certificates without previously notifying the Scheme Administrator. In 2008, there was only one instance of this type of contravention, as most ACPs notify the Scheme Administrator in advance that, for various reasons, they expect 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

There were several other instances of contraventions by ACPs during 2008, however unlike those discovered during the audit process, these were identified by the Scheme Administrator during internal reviews. In each case, the Scheme Administrator resolved the issue after a thorough investigation process. The outcome of each investigation was clearly communicated to the ACPs concerned.

One ACP contravened its conditions of accreditation by registering its certificates incorrectly. The certificates were created in respect of 2008 calendar year abatement activity, but were registered as 2007 vintage certificates. Following Scheme Administrator investigation and a subsequent internal review by the ACP, a total of 167 invalidly created certificates were voluntarily forfeited by the ACP and were created as 2008 vintage certificates.

Another ACP, accredited in respect of five projects, failed to submit its Annual Report Statements to the Scheme Administrator by the deadline prescribed in its conditions of accreditation. After the Scheme Administrator investigated the circumstances, the ACP submitted the outstanding annual reports and agreed to make changes to its record keeping arrangements to ensure the oversight would not occur again.

A third ACP was found to have contravened Part 1 of the *Minimum Requirements for DAF Installation Projects* by failing to maintain a direct contractual relationship with any installer that is not their employee. Following investigation by the Scheme Administrator, the ACP provided a detailed response as to how it would meet the minimum requirements for DAF Installation projects in the future. While satisfactorily demonstrating that they now meet the DAF minimum requirements, the ACP's ongoing contractual arrangements will form part of the scope of its next scheduled audit.

4.7.3 Spot audits of large DAF Method projects

In addition to the compliance audits discussed above, the Scheme Administrator also conducted 'one off' spot audits of ACPs accredited under the DAF Method and creating a high volume of NGACs by installing CFLs, showerheads and/or flow restrictors.

The spot audit process was initiated because the Scheme Administrator became aware of an increasing number of allegations of improper activity by ACPs (or more specifically Installers acting on behalf of ACPs) conducting CFL Installation projects. This suggested that a number of ACPs' abatement claims might not match what was occurring at recipients' premises.

ACPs accredited under the DAF Method for CFL Installation projects are approved to apply an Installation Discount Factor (IDF) of 1.0 provided they obtain appropriate evidence (ie, a signed nomination form for each Installation location) to show that the CFLs were installed at that location, and replaced incandescent lamps. The ACPs collect the nomination forms from their Installers (who are generally contractors or sub-contractors) who conduct the Installations on the ACP's behalf. Hence, the integrity of the ACPs' abatement claim rests on the integrity of their Installers, and the ACPs' ability to manage and validate the activities of their Installers.

The standard GGAS audit process is designed to examine an ACP's record keeping and quality assurance processes and confirm that the number of NGACs created is supported by the records examined. However, these audits do not require the auditor to investigate the veracity of the abatement claim beyond the 'paper trail' i.e. check whether the nomination forms obtained accurately represent what occurred at an ACP's customer's premises. Audits of DAF Method ACPs during 2008 generally resulted in auditors identifying few, if any, issues despite an increase in the number of allegations of improper practices.

As a result of allegations of improper conduct, the Scheme Administrator commissioned an auditor to conduct spot audits of the four largest ACPs in September 2008. These four ACPs accounted for approximately 90 per cent of NGACs registered under energy efficiency projects in 2008. Through the use of a phone survey, the auditor was required to contact a sample of each ACP's customers to verify whether the abatement claimed and the Installer's activities at each customer's premises matched the customer's recollection.

As the spot audit process was reliant on the recollections of the ACPs' customers just prior to the audit, it was decided that the scope would only include recent Installations conducted between July 2008 and September 2008, for which ACPs had already created certificates. The auditor confirmed that the survey sample was statistically valid. However, the Scheme Administrator recognised that the accuracy of the spot audit process was potentially less than for 'standard' GGAS audits involving the examination of physical records (see below).

The audit results indicated there was a large variation in the rate of total invalid NGAC creation, ranging from 7.6 per cent to 21.8 per cent.

GGAS Response

On receipt of the survey results, the Scheme Administrator met with each ACP in order to give the ACP an opportunity to dispute the findings, present an alternative view or make other representations. Each ACP was requested to voluntarily 'make good' the certificates indicated by the audit to have been improperly created.

Three of the four ACPs concerned broadly accepted the survey outcomes while a fourth was unhappy with the manner in which the audit results were being used. The Scheme Administrator acknowledged the ACPs' concern that this was a survey involving a relatively small sample. It indicated that if any ACP wished, the exercise could be re-run with a much larger sample size, but that this would be at the ACP's expense. None of the ACPs chose to pursue this option.

Agreements reached

All of the four ACPs agreed to forfeit certificates or forego certificate creation. Table 4.6 sets out the estimated improper certificate creation for the survey period, along with the certificates forfeited and the agreed foregone creation of certificates to which the ACPs were otherwise entitled. The total number of certificates forfeited and not created differs slightly from the estimated improper certificate creation amount due to the potentially less accurate nature of the spot audit process, which was based on a sample survey, compared to 'standard' GGAS audits (see above).

In all cases the companies concerned agreed to confirm in writing that they had forfeited/foregone the agreed number of certificates as a voluntary action in recompense for the alleged improper creation identified by the spot audit. Each company also advised in writing that they had decided to cease their CFL installation program for commercial reasons and would not recommence without formal notification to the Scheme Administrator.

As all companies advised that they were ceasing activity due to the DSA Rule change which changed the DAF for CFLs, the Scheme Administrator agreed that the next ordinary audit due for each company could be a final audit, incorporating the standard periodic audit plus an audit of final certificate creation. These audits were important to confirm that foregone certificate creation represented a real rather than illusory restitution by the companies.

Table 4.6 Spot audit results and outcomes

	Four targeted ACPs
NGAC creation in survey period	2,154,099
Invalid rate	14.9%
Estimated ineligible NGACs during the period	321,003
NGACs voluntarily not created	201,910
NGACs forfeited/ agreed to be forfeited	97,384
Total NGACs not created and forfeited	299,294

4.7.4 Other accreditation condition related compliance issues

Seven other compliance issues related to accreditation conditions arose in 2008. They were not considered contraventions of conditions of accreditation because the ACPs voluntarily declared the issue and co-operated with the Scheme Administrator.

Five of these compliance issues related to a single ACP who identified in advance that it had inadvertently used an incorrect default factor from a previous version of the Rule. This resulted in over-creation of a total of 1,386 certificates from five project sites. Following investigation of the matter by the Scheme Administrator, the ACP voluntarily forfeited the over-creation amount, with no further action required of the ACP.

Another ACP's conditions of accreditation required them to undertake a reconciliation of previous certificate creation upon completion of maintenance testing of their generating system output, and to notify the Scheme Administrator of its findings. This particular ACP fully complied with its conditions of accreditation; however in doing so it identified an over-creation of 3,693 certificates (of 2006, 2007 and 2008 vintages). Following investigation of the matter by the Scheme Administrator, the ACP voluntarily forfeited the over-creation amount, with no further action required of the ACP.

A third ACP notified the Scheme Administrator that it had created 469 NGACs from nomination forms related to a mail order give-away project, but had subsequently found that the products were never delivered by its registered delivery agent. Following investigation of the matter by the Scheme Administrator, the ACP voluntarily forfeited the over-creation amount, and no further action was required of the ACP.

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, complete and fairly represented.

The key objectives of the audit framework are to:

- ▼ support the policy objectives of the legislative framework and GGAS Rules
- ▼ minimise the risk of:
 - inappropriate accreditation of ACPs
 - invalid creation of abatement certificates
 - incorrect calculation of liabilities by benchmark participants
- ▼ assist the compliance regulator and the Scheme Administrator in monitoring GGAS participants' compliance with relevant legislation and the Rules
- ▼ ensure that information provided by GGAS participants is reliable, complete and fairly represented
- ▼ support the general transparency and integrity of GGAS.

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.

All audits are undertaken by members of the audit and technical services panel. The Panel has 25 members who are appointed by the Scheme Administrator. A list of all members of the panel is available from the GGAS website.²⁴

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 to undertake audit activities for GGAS participants, the compliance regulator and the Scheme Administrator; and to provide technical services to the Tribunal as required. There are two classifications of firms on the panel:

- ▼ Audit and Technical Service Providers (14 firms): these firms have been approved by the Tribunal to perform audits under GGAS, and can also provide technical services
- ▼ Technical Services (11 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.²⁵ Once appointed to the panel all services are undertaken in accordance with an audit and technical services panel agreement ('the panel agreement').

5.2 Selection and management of auditors

The Scheme Administrator selects and engages the auditor who undertakes audits associated with accreditation of ACPs. In most cases, selection of the auditor is a competitive process (involving up to three panel members), undertaken in consultation with the project proponent. Although the Scheme Administrator engages the panel member to perform these audits, the project proponent is required to reimburse 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. However, 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.

²⁴ www.greenhousegas.nsw.gov.au/audit/members.asp

²⁵ A Panel Application Form and a Guide to Applying are available from the Scheme website at www.greenhousegas.nsw.gov.au/audit/joining.asp

The panel agreement establishes a unique arrangement for the conduct of audits. 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 Growth of the panel

No new firms were added to the panel for either audit services or technical services in 2008. However, one application for inclusion on the panel for audit services was received and was still being assessed at the end of 2008.

When the Scheme Administrator reviews applications from firms for inclusion on the panel, it assesses whether nominated personnel have the necessary skills and experience to perform audits under GGAS. Should the nominated auditor have the appropriate skills and experience, the auditor is required to attend an auditor training induction session conducted by the Scheme Administrator and the compliance regulator. The aim of these induction training sessions is to provide a background to GGAS; it is not to train auditors how to conduct audits. The sessions are held approximately every six months depending on demand and cover fundamental aspects of GGAS and the audit framework including:

- ▼ scope and conduct of audits
- ▼ engagement of auditors
- ▼ case studies of the audit framework at work
- ▼ expectations of the Scheme Administrator and compliance regulator.

Two sessions were held during 2008 which trained an additional 55 personnel (including one who attended as refresher training) to perform audits under GGAS.

In order for an existing audit panel member to add new personnel to the audit panel, the member must request an amendment to their panel agreement after the personnel have attended one of the scheduled auditor training sessions. Table 5.1 shows that by the end of 2008, there were 156 auditors from 14 audit firms on the panel trained to conduct GGAS audits. Total membership of the panel (including technical services firms) was 187 people from 25 firms.

Table 5.1 Membership of the Audit and Technical Services Panel as at December 2008

	No. of firms	No. of personnel
Audit and Technical Services (able to perform audits)	14	156
Technical Services	11	31
Total	25	187

The Scheme Administrator has the power to remove a panel member from the Audit and Technical Services Panel if the panel member fails to meet the terms of the panel agreement or if their performance is considered to be unsatisfactory. Where there is concern about a panel member's performance, the Scheme Administrator will first discuss its concerns with the panel member. To date, no company has been removed from the Audit and Technical Services Panel.

In 2008, the Scheme Administrator identified several instances where an audit panel member's performance was unsatisfactory. The Scheme Administrator's concerns were communicated to the panel member involved and the panel member was requested to implement corrective actions prior to the Scheme Administrator approving any further work under the Panel Agreement. The panel member provided a written submission with details of implemented corrective actions and as a result was approved to continue performing audits under GGAS.

5.4 Compliance and performance monitoring strategy

The Scheme Administrator has developed the *Compliance and Performance Monitoring Strategy for Abatement Certificate Providers*²⁶ 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

²⁶ www.greenhousegas.nsw.gov.au/documents/syn70.asp

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 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.

Volumetric audits are employed where an ACP is creating very large volumes of certificates, primarily under the DSA Rule. This is a modified approach to the periodic audit regime where an audit is triggered by a threshold quantum of certificate creation (eg, 200,000 certificates) and results in more frequent auditing for these types of projects. This audit regime is warranted because the risk to GGAS due to invalid certificate creation is high and it is considered the best method to manage compliance.

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.

5.5 Audit activity

Table 5.2 provides summary data on audit activity across the three audit types in 2007 and 2008.

Table 5.2 Audit activity

Type of audit	2007		2008	
	Audits	Benchmark statements and accreditations covered	Audits	Benchmark statements and accreditations covered
Benchmark participant audits ^a	25	29	26	27
Audits initiated by the Scheme Administrator	16	19	20	34
Audits initiated by ACPs	75	95	70	105
Totals	116	143	116	166

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

As shown in Table 5.2, there was no change in the total number of audits in 2008, however there was an increase in the number of audits that were initiated by the Scheme Administrator. More accreditations were grouped into audits, thereby reducing compliance costs to ACPs. Fewer audits were undertaken by ACPs and benchmark participant audits increased by one.

5.6 Benchmark participant audits

The audits of benchmark statements covered compliance for the 2008 year, but were conducted in March 2009 to meet the reporting timeframe for benchmark participants. These audits need to be carried out in 2009 in order to capture all electricity sales or purchases by benchmark participants for the 2008 calendar year. All benchmark statements were audited with the exception of benchmark statements with a nil return or very low electricity sales.

5.7 Audits initiated by the Scheme Administrator

The Scheme Administrator commissions audits for one or more of the following purposes:

- ▼ to assess the eligibility for accreditation of an applicant (pre-accreditation audits or validation audits). This also includes assessing the eligibility for a proposed change to the calculation methodology of an existing accreditation
- ▼ to determine whether ACPs are complying with the requirements of the Act, Regulation and Rules governing creation of abatement certificates
- ▼ to confirm the level of compliance with any conditions of accreditation (performance audits or verification audits)
- ▼ to assess the conditions of a future project when it is commissioned (implementation audits).

Of the 29 new accreditations in 2008 (see Table 4.1), nine were subject to a pre-accreditation audit. In addition, during 2008, the Scheme Administrator took a more active role in audits that were not related to pre-accreditation or project implementation by initiating:

- ▼ Two spot audits required to validate new methodologies being proposed under existing accreditations following Rule changes. The audits were primarily focussed on implementation of the MEUM (see Section 4.2.5).
- ▼ Four spot audits arising from concerns regarding the performance of ACPs using the Default Abatement Factors Method of the DSA Rule (see Section 4.7.3).
- ▼ Two future project implementation audits.
- ▼ Two non compliance investigation audits to investigate previous audit findings.
- ▼ Three compliance audits of existing ACPs.

The total cost of audits initiated by the Scheme Administrator in 2008 was \$234,032; an average of approximately \$11,702 for each audit or \$6,883²⁷ for each of the accreditations audited.

In 2008, pre-accreditation audits remained the largest group of audits commissioned by the Scheme Administrator, although they represented a smaller proportion than in previous years.

Implementation audits in 2008 were conducted as more projects accredited as future projects came online. 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.

²⁷ In several cases, one audit covered several accreditations for an ACP.

Non-compliance investigation audits were conducted to follow up from two audits where an initial qualified audit opinion was provided as a result of material errors being found in the number of NGACs proposed to be created.

The first of these audits was to re-assess an over creation of NGACs found in a pre-registration audit only days prior to 30 June 2007 deadline for 2006 calendar year NGAC creation. The second of these audits was a 'before and after' examination of significant changes to the operating conditions of an accreditation, where there were significant issues with the verification of NGAC claims in the 'before' case as a result of contracts in place with a third party for program delivery.

In both instances, the Scheme Administrator worked with the ACP to clarify the scheme requirements prior to commencing the investigation audit. The investigation audit confirmed that the ACP had rectified the errors leading to the overcreation and was willing to voluntarily forfeit those NGACs originally found to have been overcreated.

The three compliance audits were commissioned because:

- ▼ the audit was connected to a pending cancellation of accreditation and the associated application for accreditation of a new entity
- ▼ the ACP had previously suspended activities for a period of time
- ▼ the ACP had significant outstanding audit findings from a previous pre-accreditation audit.

For all audits commissioned by the Scheme Administrator, auditees are advised of the audit costs prior to the conduct of audit activity and they must lodge the fees with the Scheme Administrator before the audit commences. Auditees are offered the choice to proceed with the audit at that time, ask for another auditor to be selected, or in the case of a pre-accreditation audit, withdraw their application without prejudice or penalty.

5.8 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 2008, the Scheme Administrator managed 70 certificate creation audits covering a total of 193 accreditations to verify abatement activities. 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. While the ACP determines the timing for these types of audits, in all circumstances, the Scheme Administrator attends both the opening and closing audit meetings.

In 2008, one Future Project Implementation Audit was commissioned by the ACP rather than the Scheme Administrator. In this case, the Scheme Administrator specified the scope of the audit required and the ACP led the auditor selection process. This represents a slight shift in management of project implementation, where an ACP with a good compliance record worked with the Scheme Administrator to facilitate a smooth transition from a future to an existing Project accreditation.

5.8.1 PITR Audits

Following acceptance of seven PITRs under Method 2 of the Generation Rule, audits of projects using Method 2 for 2008 NGAC creation included the requirement to check the NGAC calculations against the methodology presented in the approved PITR. Six of the seven ACPs with approved PITRs commissioned audits of 2008 vintage NGAC creation based on their approved PITR. The seventh ACP is required to submit a revised PITR prior to creating any further NGACs, and to date has not yet done so. No 2008 NGACs were created by this ACP.

5.8.2 DAF audits

During 2008 projects carrying out abatement activity through the use of the Default Abatement Factors (DAF) Method of the DSA Rule continued to reach their nominated NGAC targets, triggering volume-based creation audits, rather than being triggered by the passage of time. Although there was a decrease in the number of these audits compared with 2007, these volume-based audit regimes continued to represent a large proportion of compliance audits performed under GGAS. Of the 69 certificate creation audits in 2008, 31 were audits of DAF projects with many proponents audited on multiple occasions as successive volume thresholds were reached.

Audits of all DAF Method accreditations performing installations of energy efficient products were also required to examine whether the projects were complying with the *Minimum Requirements for DAF Installation Projects* (Minimum Requirements), which were introduced in 2007. The Minimum Requirements specify four key criteria must be in place:

- ▼ contractual relationship between the ACP and its Installers
- ▼ formal, documented training of Installers
- ▼ maintenance of a Register of Installers
- ▼ documented customer service procedures and processes.

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).

Following a competitive tender process, Logica was appointed under a contract to IPART to operate the Registry for an initial period of three years, until September 2006. This contract was extended in September 2006 for a further two years, and in September 2008 extended for an additional two years to September 2010. The Registry is functioning effectively and efficiently under this arrangement. 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 \$3.4 million for 2008 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.

In April 2008, the Registry was upgraded to allow broader online searching of certificate creation on the Registry. Any user can now search for certificate creation information by accreditation. This project was initiated by the Scheme Administrator following amendments to GGAS legislation to allow greater release of information.

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 is current as at 30 June 2009 and includes all vintages of certificates, up to and including the 2008 vintage (that is certificates created for abatement that occurred during 2008). 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 and Figure 6.1 show the total number of 2003-08 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	8,934,236	587,853	790,460	19,860,728
2007	12,814,488	9,927,640	698,765	1,285,645	24,726,538
2008	12,339,645	8,130,222	675,197	1,298,075	22,443,139
Total	55,643,550	29,588,671	2,666,291	3,468,457	91,366,969

These figures clearly show that the Generation Rule dominates certificates registered over the life of GGAS, accounting for 60.9 per cent of total certificates created and remains the primary source of certificates created since 2003. However, creation under the DSA Rule has increased significantly since 2003 to a peak in 2007.

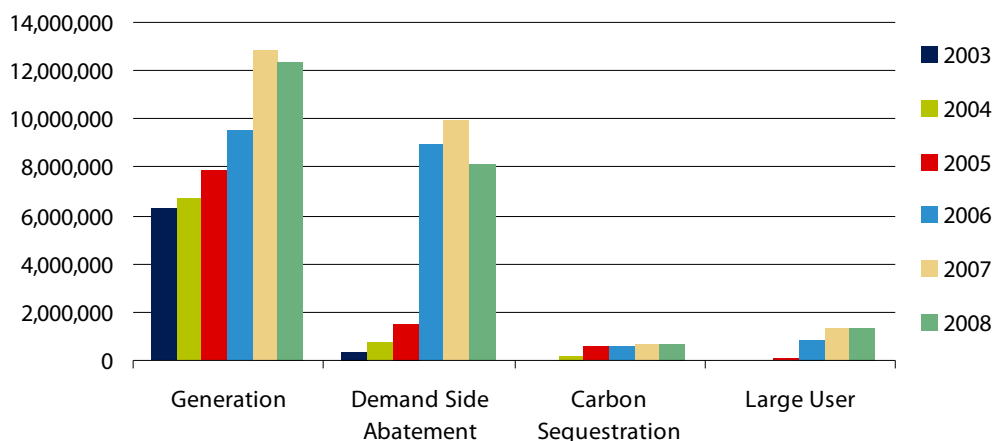
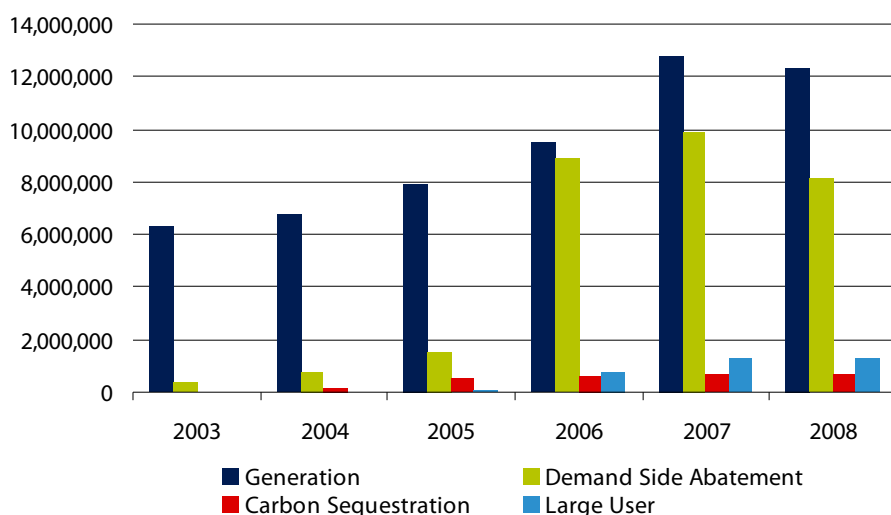
Figure 6.1 Certificates created to date by certificate type**Figure 6.2 Certificates created to date by vintage**

Figure 6.2 depicts certificates created by vintage. Generation Rule certificates accounted for 55 per cent of 2008 certificates. There was little change in the number of CS Rule certificates created, with the proportion increasing slightly from 2.8 per cent of the total in 2007 to 3.0 per cent in 2008. LUAC Rule certificates increased slightly from 5.2 per cent in 2007 to 5.8 per cent in 2008.

Figure 6.3 depicts the source of 2008 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 Market (NEM).

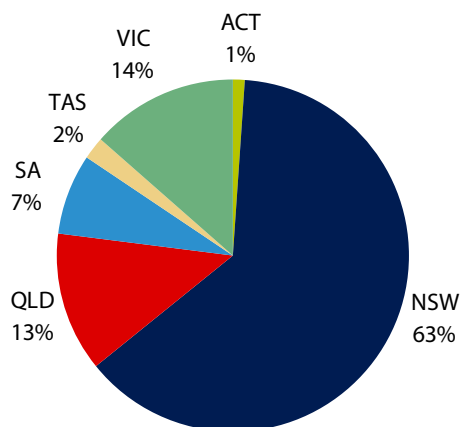
Figure 6.3 Source of 2008 certificates created

Table 6.2 provides a greater level of detail on the types of activities that led to certificate creation in each jurisdiction, while Table 6.3 provides detail of the source of certificates by category. These tables provide an insight into the main areas of growth in GGAS. Certificates created from residential energy efficiency projects increased significantly during 2006 and 2007 but decreased in 2008. Of these, the majority are sourced from projects using the DAF Method of the DSA Rule. Certificates created from LUAC Rule projects increased significantly during 2006 and 2007 but have now plateaued. There has also been steady growth in certificate creation from various categories of Generation Rule activities, particularly those projects using methane as a fuel.

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	Totals
Generation Rule: Category D	94,198	99,268	110,062	126,431	120,976	123,250	674,185
DSA Rule	0	0	0	186,354	441,498	149,288	777,140
Total	94,198	99,268	110,062	312,785	562,474	272,538	1,451,325

Source of certificates by jurisdiction – New South Wales

Rule, Grouping & Sector	2003	2004	2005	2006	2007	2008	Totals
Generation Rule: Category A	3,272,785	3,129,409	2,911,523	2,992,008	3,134,325	2,062,179	17,502,229
Generation Rule: Category B	286,985	418,581	498,952	831,451	784,624	794,859	3,615,452
Generation Rule: Category C	31,571	0	0	0	0	0	31,571
Generation Rule: Category D	517,184	775,677	1,060,731	1,003,320	1,101,578	1,296,075	5,754,565
DSA Rule	345,141	742,233	1,509,199	8,747,882	9,486,142	7,980,934	28,811,531
CS Rule	0	166,005	538,471	587,853	698,765	675,197	2,666,291
LUAC Rule	0	0	94,277	790,460	1,285,645	1,298,075	3,468,457
Total	4,453,666	5,231,905	6,613,153	14,952,974	16,491,079	14,107,319	61,850,096

Source of certificates by jurisdiction – Queensland

Rule, Grouping & Sector	2003	2004	2005	2006	2007	2008	Totals
Generation Rule: Category A	36,569	41,765	47,291	46,857	42,830	36,700	252,012
Generation Rule: Category B	0	0	0	0	0	0	0
Generation Rule: Category C	0	48,351	86,290	198,094	704,017	717,055	1,753,807
Generation Rule: Category D	297,748	612,219	509,741	824,476	1,977,587	2,162,444	6,384,215
Total	334,317	702,335	643,322	1,069,427	2,724,434	2,916,199	8,390,034

Source of certificates by jurisdiction – South Australia

Rule, Grouping & Sector	2003	2004	2005	2006	2007	2008	Totals
Generation Rule: Category A	334,162	372,471	410,540	392,389	354,894	310,464	2,174,920
Generation Rule: Category B	0	0	0	0	0	0	0
Generation Rule: Category C	284,984	70,642	198,116	607,911	1,144,672	1,315,582	3,621,907
Generation Rule: Category D	12,135	17,524	17,780	32,480	22,819	41,549	144,287
Total	631,281	460,637	626,436	1,032,780	1,522,385	1,667,595	5,941,114

Source of certificates by jurisdiction – Tasmania

Rule, Grouping & Sector	2003	2004	2005	2006	2007	2008	Totals
Generation Rule: Category A	0	0	0	0	0	0	0
Generation Rule: Category B	0	0	0	0	0	0	0
Generation Rule: Category C	0	0	0	220,271	355,277	371,467	947,015
Generation Rule: Category D	0	0	0	45,121	103,810	41,909	190,840
Total	0	0	0	265,392	459,087	413,376	1,137,855

Source of certificates by jurisdiction – Victoria

Rule, Grouping & Sector	2003	2004	2005	2006	2007	2008	Totals
Generation Rule: Category A	775,132	844,619	864,075	819,445	750,389	752,840	4,806,500
Generation Rule: Category B	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	6,513,210
Generation Rule: Category D	62,509	84,374	116,348	179,153	433,187	401,264	1,276,835
Total	1,149,514	1,158,325	2,028,145	2,227,370	2,967,079	3,066,112	12,596,545

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	Totals
Category A: Biomass	10,895	14,901	0	0	0	0	25,796
Category A: Hydro	132,869	123,844	148,176	160,941	77,148	94,977	737,955
Category A: Landfill Gas	1,216,141	1,327,350	1,379,695	1,319,360	1,284,691	1,228,279	7,755,516
Category A: Natural Gas	590,324	621,065	675,775	673,645	685,432	681,992	3,928,233
Category A: Waste Coal Mine Gas	2,468,419	2,301,104	2,029,783	2,096,753	2,235,167	1,156,935	12,288,161
Category B: Coal	286,985	418,581	498,952	831,451	784,624	794,859	3,615,452
Category C: Biomass	0	0	0	0	364,190	377,675	741,865
Category C: Coal	251,199	167,243	1,025,219	1,268,198	1,476,814	1,862,951	6,051,624
Category C: Hydro	0	0	0	80,000	0	0	80,000
Category C: Landfill Gas	31,571	0	0	0	0	0	31,571
Category C: Natural Gas	286,277	122,154	206,331	721,861	1,950,284	1,895,977	5,182,884
Category C: Sewage Gas	59,381	58,928	100,578	184,989	196,181	179,509	779,566
Category D: Biomass	542	10,976	30,521	35,165	40,716	38,731	156,651
Category D: Coal	0	130,665	159,493	191,641	94,889	409,428	986,116
Category D: Coal Seam Methane	0	0	0	0	12,978	29,744	42,722
Category D: Landfill Gas	732,187	889,934	1,241,413	1,329,685	1,545,181	1,612,264	7,350,664
Category D: Natural Gas	240,853	388,725	101,803	117,268	399,105	443,350	1,691,104
Category D: Waste Coal Mine Gas	10,192	168,762	281,432	537,222	1,667,088	1,532,974	4,197,670
Total	6,317,835	6,744,232	7,879,171	9,548,179	12,814,488	12,339,645	55,643,550

Source of certificates by category and sector – DSA Rule

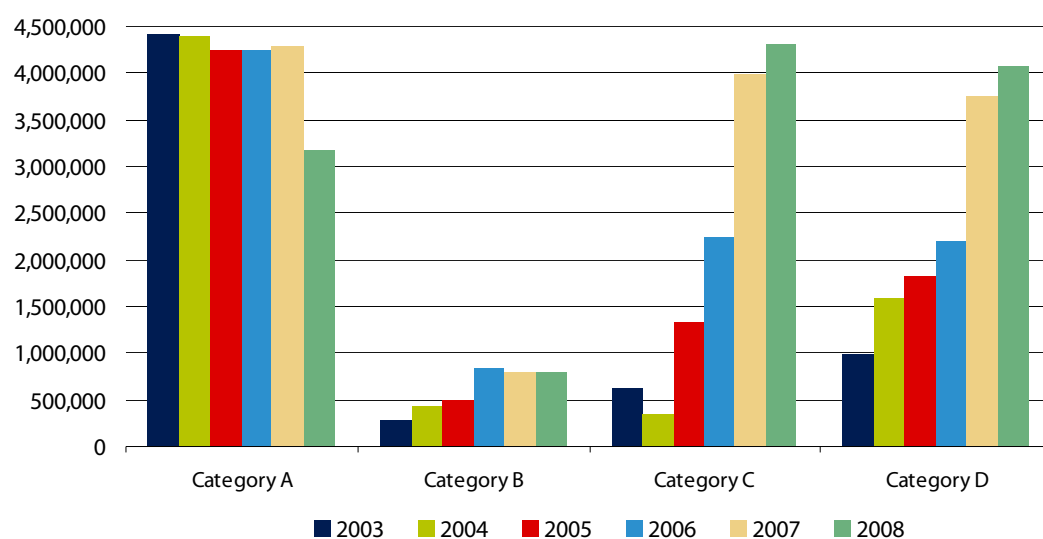
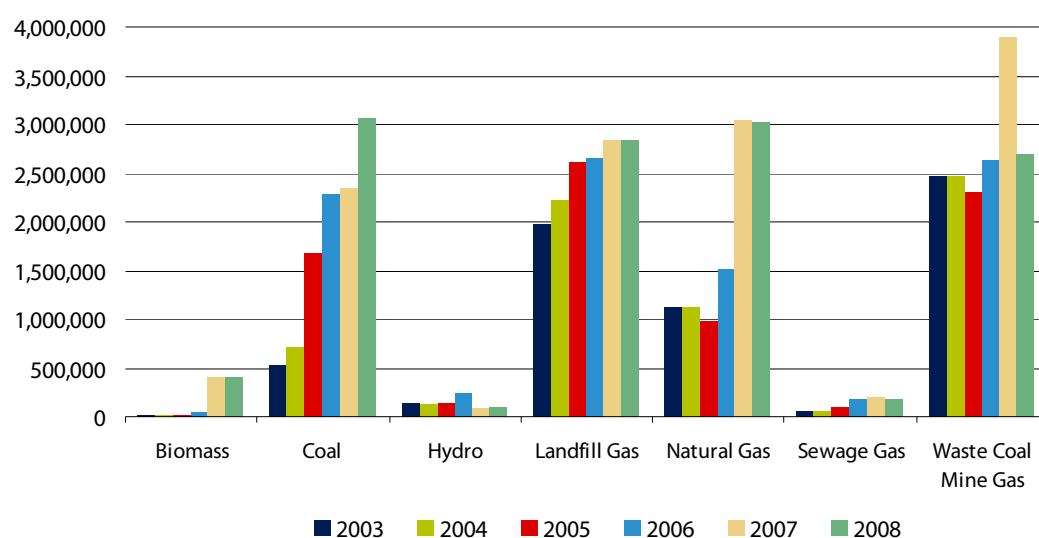
Grouping & Sector	2003	2004	2005	2006	2007	2008	Totals
Energy Efficiency: Commercial	22,720	40,249	47,924	69,819	870,492	812,276	1,863,480
Energy Efficiency: Industrial	35,572	32,867	36,814	66,818	99,709	103,155	374,935
Energy Efficiency: Residential	8,387	315,425	953,879	8,306,259	8,344,475	6,588,078	24,516,503
Energy Source Subs: Commercial	65	65	0	0	0	0	130
Energy Source Subs: Residential	0	21,406	35,366	49,900	48,760	52,940	208,372
On-site Generation: Industrial	278,397	332,221	435,216	441,440	564,195	573,763	2,625,232
On-site Generation: Residential	0	0	0	0	9	10	19
Total	345,141	742,233	1,509,199	8,934,236	9,927,640	8,130,222	29,588,671

Source of certificates by category – CS Rule

Grouping & Sector	2003	2004	2005	2006	2007	2008	Total
Carbon Sequestration	0	166,005	538,471	587,853	698,765	675,197	2,666,291

Source of certificates by category and industry – LUAC Rule

Grouping & Sector	2003	2004	2005	2006	2007	2008	Total
Aluminium: Industrial Process	0	0	0	516,146	746,893	809,023	2,072,062
Cement: Increased Fuel Efficiency	0	0	78,690	157,082	232,563	163,172	631,507
Chemicals: Increased Fuel Efficiency	0	0	0	0	122,155	106,220	228,375
Mining: Reduced Fugitive Emissions	0	0	0	16,500	52,899	94,140	163,539
Paper & Wood: Fuel Switching	0	0	0	3,432	4,418	2,832	10,682
Paper & Wood: Increased Fuel Efficiency	0	0	15,587	19,726	33,450	41,539	110,302
Steel: Fuel Switching	0	0	0	77,574	93,267	81,149	251,990
Total	0	0	94,277	790,460	1,285,645	1,298,075	3,468,457

Figure 6.4 Source of Generation Rule certificates by category**Figure 6.5 Source of Generation Rule certificates by fuel source**

Figures 6.4 and 6.5 graphically depict certificate creation under the Generation Rule by category of generator and fuel type. Overall creation has remained steady for Generation Rule certificates; however, within each category and fuel type, some variations have occurred. Notably, an increase in certificate creation from Categories C and D, coal and natural gas. Waste coal mine gas also had a marked increase in creation in 2007 but declined in 2008 as a result of decreased coal mining activity.

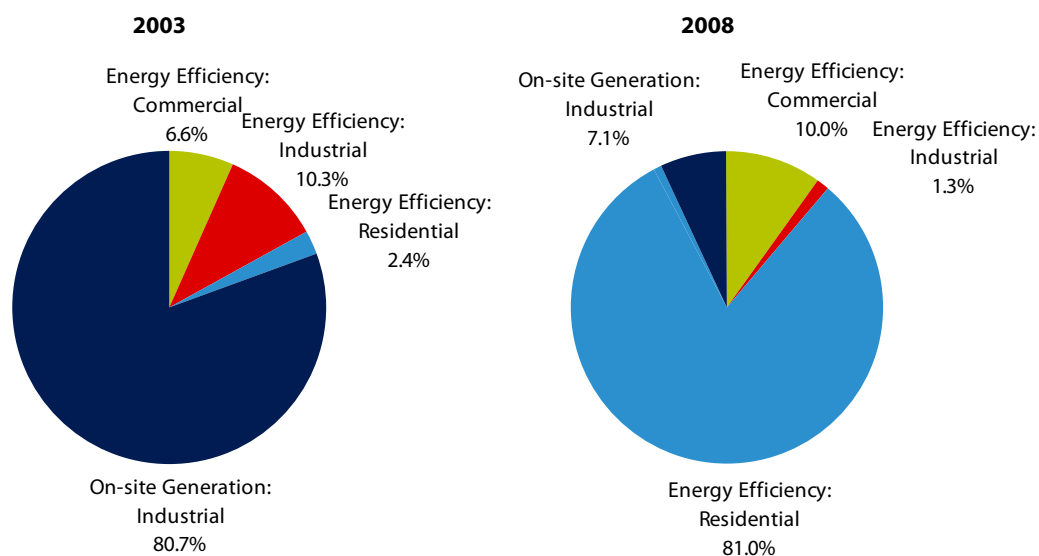
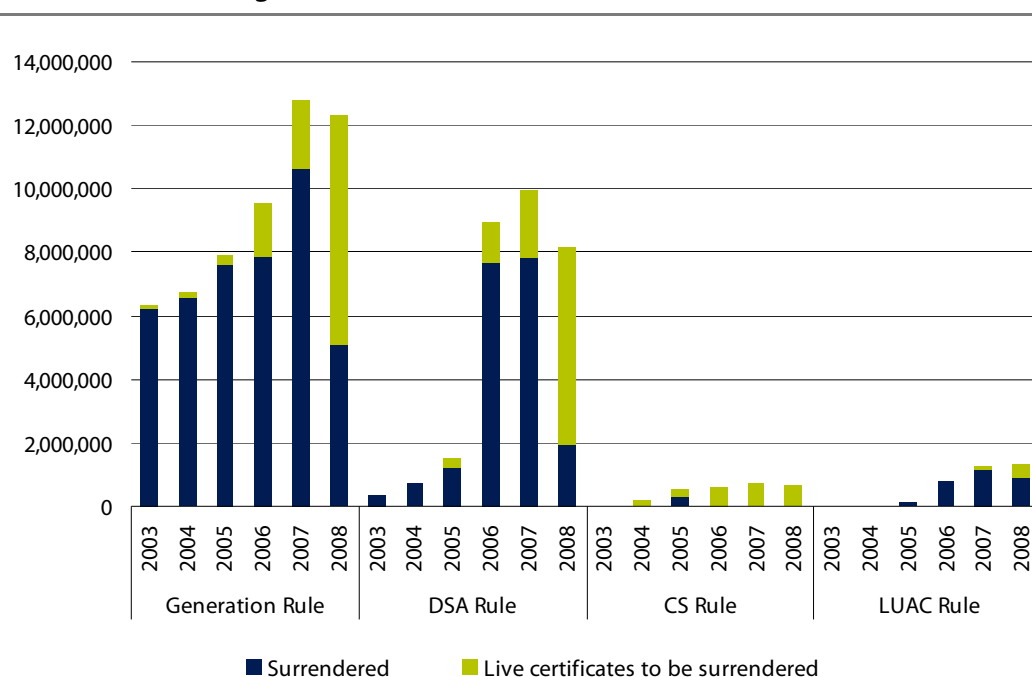
Figure 6.6 Source of DSA Rule certificates by category, 2003 and 2008

Figure 6.6 shows that residential energy efficiency has been the key area of growth within DSA Rule certificates since 2003. As discussed previously, most of these residential certificates were created using the DAF Method of the DSA Rule. While dominated by the residential sector, there was also a significant increase in energy efficiency activity in the commercial sector. The small proportion of certificate creation in Energy Source Substitution Residential (equivalent to 52,940 certificates in 2008) is not included in Figure 6.6.

6.3 Certificate surrender trends

Figure 6.7 details certificates surrendered by Rule and vintage as well as the balance of certificates that remain 'live' and available for trade.

Figure 6.7 Total certificates surrendered & balance to be surrendered by Rule group and vintage^a

^a Includes voluntary surrenders as shown in Table 6.5.

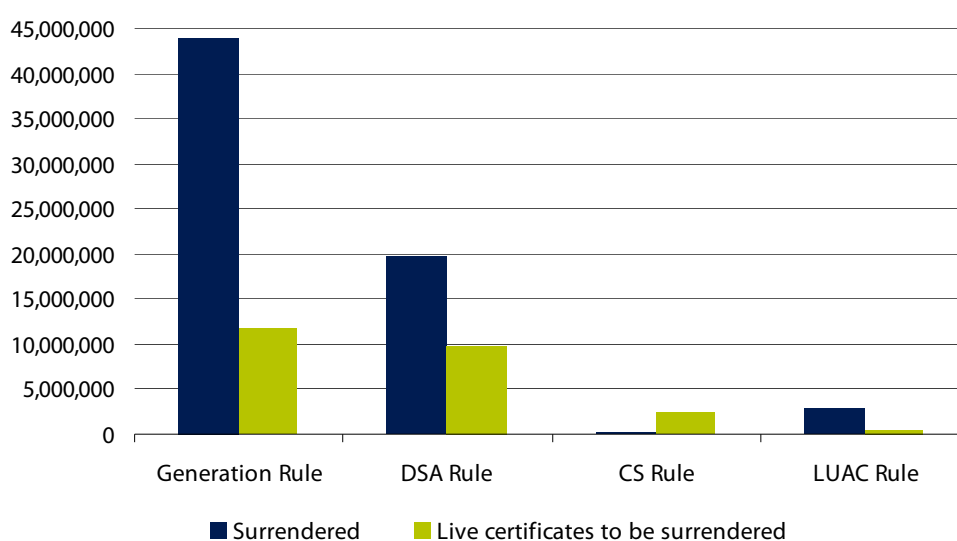
Table 6.4 and Figure 6.7 show the total certificates surrendered and the balance of live certificates yet to be surrendered by Rule group total. The balance varies across Rule groups. Of the Generation Rule certificates, 79.1 per cent have been surrendered and of the LUAC Rule certificates 84.5 per cent have been surrendered. For certificates created under the DSA Rule 66.7 per cent have been surrendered and only 11.2 per cent of CS Rule certificates have been surrendered.

These figures show that some older vintage certificates have not yet been surrendered. This could be for various reasons including the way the Registry functionality manages surrenders. The surrender process on the Registry is a two step process. The Registry will calculate certificate bundles that can fulfil the quantity requirement and will then surrender certificates on a first in/first out basis (which includes certificates that have been created or transferred into an account). Certificate vintage is not a consideration in the surrender process and it is therefore not uncommon for younger vintage certificates to be surrendered before older vintage certificates.

Table 6.4 Total certificates surrendered & balance to be surrendered by Rule group^a

	Generation Rule	DSA Rule	CS Rule	LUAC Rule	Total
Total created	55,643,550	29,588,671	2,666,291	3,468,457	91,366,969
Total surrendered	43,988,529	19,742,168	297,487	2,932,519	66,960,703
Balance to be surrendered	11,655,021	9,846,503	2,368,804	535,938	24,406,266

^a Includes voluntary surrenders as shown in Table 6.5.

Figure 6.8 Total certificates surrendered & balance to be surrendered by Rule group^a

^a Includes 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 2008, a total of 488,090 certificates were voluntarily surrendered by 566 organisations and individuals. This is a significant increase on previous years in both the number of certificates and the number of organisations and individuals surrendering.

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
Total	399,322	106,791	39,635	545,748

For 2008, a number of organisations voluntarily surrendered a significant number of certificates. Organisations that voluntarily surrendered more than 5,000 certificates include:

- ▼ Balance Carbon Pty Ltd
- ▼ Brisbane City Council
- ▼ Origin Energy Electricity Ltd
- ▼ Sydney Water Corporation
- ▼ The South Australia Water Corporation
- ▼ TRUenergy Pty Ltd
- ▼ Optus.

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 two 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 5,472 transfers of certificates between parties, involving more than 110.9 million certificates (some of which have clearly been transferred on multiple occasions). Of these transfers, 61.9 million Generation Rule certificates were transferred in 1,662 trades, compared to 47.3 million DSA Rule certificates in 1,045 trades and 1.8 million CS Rule certificates in 2,765 trades.

Table 6.6 and Figure 6.9 provide information about the number of certificates traded per year and illustrates the change in volumes for each certificate type from year to year. In the early years of GGAS, Generation Rule certificates dominated trades, however, trades of both DSA Rule and CS Rule certificates increased with CS Rule certificates being the most actively traded over the life of GGAS.

Table 6.7 details the number of trades that have occurred per 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.

Figure 6.10 shows the number of certificates traded on a monthly basis each year and highlights the variable nature of trading activity, with the most activity occurring just prior to the compliance deadline in March. It is noted that a certificate may be traded a number of times and each trade is reported separately here.

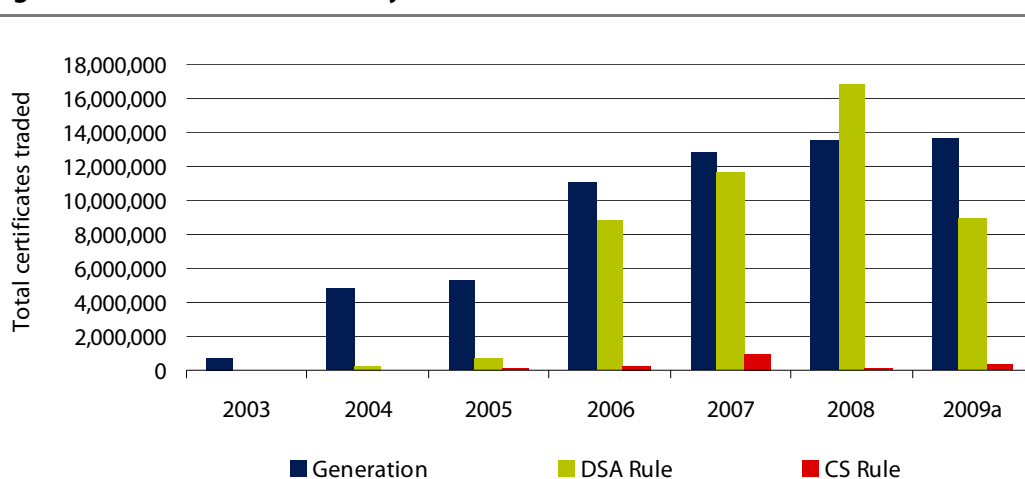
Figures in Section 6.5 represent all trades within a calendar year, not by vintage.

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 ^a	13,667,018	8,945,280	313,362	22,925,660
Total	61,917,995	47,252,824	1,788,171	110,958,990

^a From 1 January to 30 June 2009.

Figure 6.9 Certificates traded by Rule

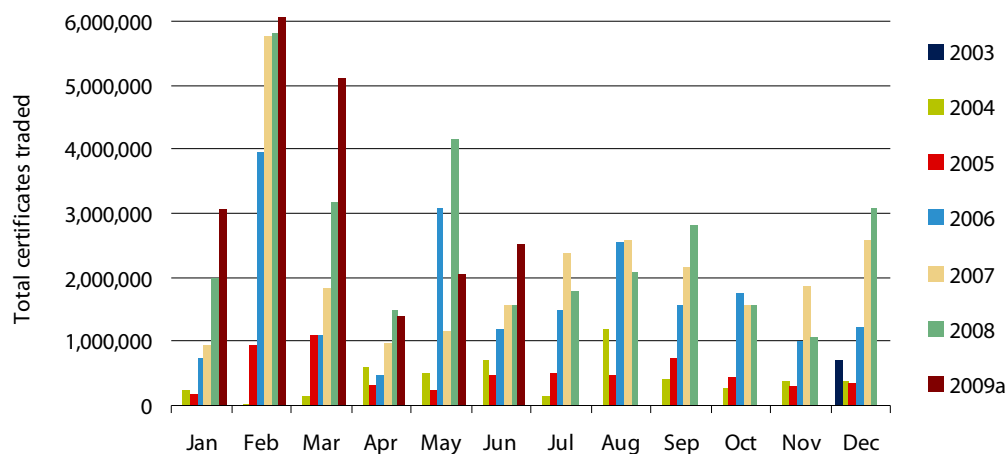


^a From 1 January to 30 June 2009.

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 ^a	378	123	385	886
Total	1,662	1,045	2,765	5,472

^a From 1 January to 30 June 2009.

Figure 6.10 Certificates traded per month

^a From 1 January to 30 June 2009.

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 current applicants. Demand is calculated using the Key Factors published each year by the Scheme Administrator, and publicly available data on expected electricity consumption and population growth. The modelling does not account for growth in demand for certificates from voluntary carbon markets.

Following legislative amendments made by the *Electricity Supply Amendment (Greenhouse Gas Abatement Scheme) Act 2006*, the historical creation of certificates by all accredited ACPs is now publicly accessible on the GGAS Registry. The availability of this data should assist market participants to undertake their own projections of supply and demand.

7.1 Developments in 2008

In the Annual Report for 2007, it was projected that NGAC supply, peaking in 2007 and remaining high during 2008, would continue to exceed the annual demand (as it did in earlier years), and that this surplus of supply would assist in meeting projected demand in 2008 and 2009.

Twelve months on, there have been a number of developments that have impacted the 2008 certificate creation, including increased market-saturation for CFL related DSA project activities and the global slowdown which has affected coal mining operations and associated levels of waste methane capture. The following is a non-exhaustive list of other events and developments that affected 2008 creation and future year projections of both supply and demand for certificates.

Supply

- ▼ Twenty-nine projects and future projects were accredited in 2008 and 12 projects were cancelled.
- ▼ Fifty-six accreditations were amended resulting in both increases and decreases in potential certificate creation with an overall increase in supply.
- ▼ Many of the projects accredited in 2008 will create NGACs under the Generation Rule. As in previous years, the Generation Rule has provided the largest share of NGACs in 2008 and this trend is expected to continue.
- ▼ 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 2008 and in some cases influences the projections of certificate supply in future years.

Demand

- ▼ The TransGrid Annual Planning Report 2008 has again revised downwards future electricity demand,²⁸ which in turn has decreased projected NGAC demand through lowering of the total greenhouse benchmarks.
- ▼ The NSW Pool Coefficient is projected to continue to increase for a period into the future because of drought conditions in NSW over the past six years.
- ▼ Due to the two 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 2007 and 2008, NGAC demand for the 2009 and 2010 compliance years is forecast to remain at comparatively high levels (as per 2008). Similarly, the anticipated reduction in DSA NGAC creation in 2009 is expected to reduce the 2011 compliance year demand in comparison to previous years.

NGAC price

The continued decline in the spot price for NGACs during 2008 (see Figure 7.1) is believed to have directly impacted the number of NGACs created by some ACPs and may continue to have an effect on other ACPs into the future. The price decline 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 announcement of a national emissions trading scheme and subsequent uncertainty over the Commonwealth's intentions
- ▼ uncertainty around the manner in which existing projects in GGAS might transition into a national scheme

²⁸ See Table A3.1 of the TransGrid 2008 Annual Planning Report, available at www.transgrid.com.au/Annual_Planning_Reports.htm

- ▼ a perceived surplus for NGACs in later years following the creation of large volumes of DSA NGACs
- ▼ the publication of projections for future supply of and demand for certificates.

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.

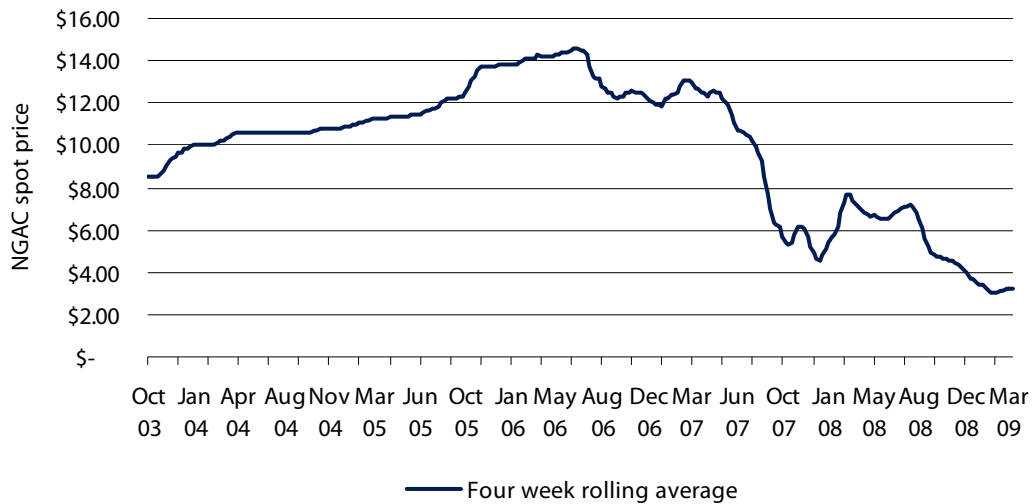
Box 7.1 Market commentary from Next Generation Energy Solutions, The Green Room, Editions 136-186

January 2008 – February 2008: After reaching a record low spot price of \$4.50 in December 2007, the spot NGAC price increased to approximately \$8 by the end of February, its highest level in five months. The increase was reported to be influenced by the demand for NGACs leading up to the compliance deadline for benchmark participants.

March 2008 – July 2008: The spot NGAC price reduced slightly, remaining around \$6-7 during this period. The small decline was reported to be influenced by reduced demand following the satisfaction of 2007 calendar year compliance requirements, and by the ongoing uncertainty regarding transition arrangements into a national scheme.

August 2008 – December 2008: The spot NGAC price declined sharply during this period, reaching a record low of \$3.10 by December 2008. The release of the GGAS Annual Report on 23 September 2008, which included supply and demand projections showing a projected surplus of NGACs until 2012, was reported to be a significant influence on the NGAC spot price. The continuing uncertainty regarding transition arrangements into a national scheme was also reported to be a contributing factor.

It should be noted that Figure 7.1 is concerned with the spot price recorded for spot trades, which constitute only a small proportion of total NGAC transactions. However, most NGAC transactions are bilateral trades, where the price may be agreed in advance for an extended period. The NGAC prices for such transactions may differ significantly from the prevailing spot price. Nevertheless, the spot price provides a useful guide to broad movements in the NGAC price over time.

Figure 7.1 Trends in the NGAC spot price 2003-09

Note: This figure shows a four 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 in 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 the Nominated Number of NGACs shown in the Accreditation Notice and once registered, actual numbers are used. For future projects and 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.

▼ Generation Rule:

- **Queensland Gas Electricity Scheme:** Queensland Generators eligible to create Gas Electricity Certificates (GECs) under the Queensland Gas Scheme will prioritise GEC creation over NGACs, with the exception of those using waste coal mine gas (WCMG) as fuel. This assumption is based on the price differential between GECs and NGACs. Historically GECs are believed to have consistently traded at a higher value than NGACs. However, those using WCMG attract an additional NGAC benefit, in recognition of waste methane emissions avoided, hence these generators will prioritise NGACs over GECs.

- **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 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. The generation system owner may then claim NGACs for any generation above the baseline. The Generation Rule states that, on expiration of the PPA, the deemed retailer will no longer be able to create NGACs for that project, and the generator owner may only claim NGACs above the baseline. The model therefore assumes that when known PPAs for deemed retailer expire, no further NGACs can be created by that deemed retailer with respect to that generating system. The Government is considering the removal of Category A generation from GGAS, however the projections do not account for any proposed changes at this time. To remove the entitlement of Category A generators requires an amendment to the Act.
- ▼ **DSA Rule:**
 - The volume of certificates created from a number of similar energy efficiency projects peaked during 2008 and will be significantly reduced in the first half of 2009 due to the continued low price for certificates and changes to the DSA Rule (see Section 4.3.5).
 - **NSW Energy Savings Scheme:** Following the NSW Government's confirmation on 27 February 2009²⁹ of ESS to replace the DSA component of GGAS, it is assumed that from 1 July 2009, the only NGACs created under the DSA Rule within GGAS will come from on-site generation.
 - ▼ **LUAC Rule:** Despite not being tradeable, LUACs are treated as equivalent to NGACs for the purposes of projections.
 - ▼ **CS Rule:** No assumptions. Projections based on existing accreditations.

²⁹ On 18 June 2008, the Premier of NSW announced the NSW Government would set an energy efficiency target to be met using tradable certificates, to commence 1 January 2009, however the starting date for the scheme was delayed until 1 July 2009. See www.greenhousegas.nsw.gov.au/Documents/Media-EnergyEfficiency-June08.pdf

Demand

- ▼ **Population:** Mid-range estimates of the NSW and ACT population, as published by the Australian Bureau of Statistics³⁰.
- ▼ **Electricity Demand:** Mid range estimates of electricity demand for NSW and the ACT, as published by Transgrid³¹. 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 2008 benchmark statements.
- ▼ **Mandatory Renewable Energy Target:** The number of RECs³² counted is anticipated to rise incrementally based on expected increases in electricity demand and the renewable power percentage.³³

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 three different scenarios on the supply side, while retaining a single demand projection. The scenarios are current as at 1 July 2009.

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 One:** 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.

³⁰ ABS Catalogue Number 3222.0, Population Projections Australia 2006 to 2101, reissue 4 September 2008.

³¹ Transgrid Annual Planning Report 2008, see www.transgrid.com.au/trim/trim327374.pdf

³² 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.

³³ 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)*.

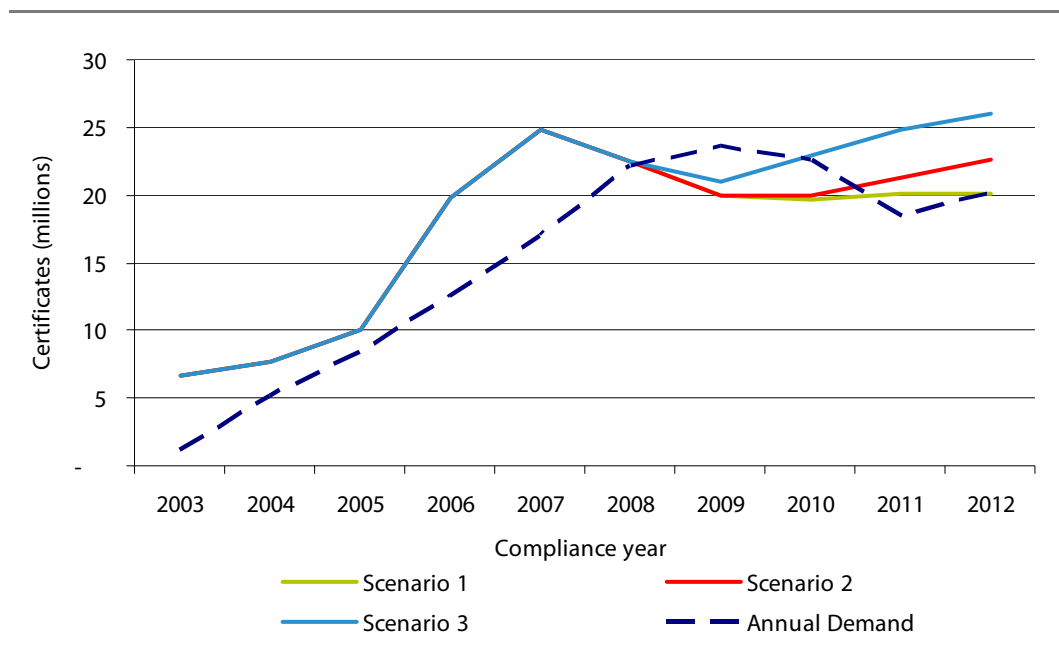
- ▼ **Scenario Two:** The projected supply of certificates in this scenario is based upon the abatement expected to be achieved by existing accreditations, including all accredited future projects. It is assumed that accredited future projects will commence abatement activities as anticipated by the project proponent. This scenario is the mid-range projection.
- ▼ **Scenario Three:** 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 between the years of 2011 and 2012, 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 2009.

Figure 7.2 Projected annual demand and supply of certificates



Note: As at 30 June 2009.

All three supply scenarios depict a supply that peaked in 2007 declining through to 2009, after which supply increases to 2012 in scenarios two and three, but remains static in scenario one. 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 very minor or no activity expected in the first six months of 2009 (prior to commencement of ESS). However, underlying this significant reduction in supply, due to commencement of ESS on 1 July 2009, is an expectation of continued steady growth in abatement under the Generation Rule, with several large scale future projects beginning operation from 2010 onwards.

Scenario One shows a marked decline in annual supply from 2007 onwards due primarily to progressive reduction in CFL related NGAC supply and commencement of ESS in July 2009, with supply remaining static after this date. Marginal decline in supply from 2010 onwards is also attributable to a number of generation projects ceasing to create NGACs due to expiry of power purchase agreements (PPA). This marginal decline however is counter-balanced by marginal supply increases from other generation projects via efficiency improvements or increased capacity.

Scenario Two also shows a similar decline in supply from 2007 to 2009, however supply then increases from 2010, due to implementation of currently accredited future projects being commissioned. Assuming these future projects commence as scheduled, they will offset any reduction in supply resulting from the expiry of PPAs.

Scenario Three, differs from Scenario Two in that it includes all current applications for accreditation. Scenario Three suggests that reduced supply from energy efficiency, PPA expiry and DSA Rule changes will be largely offset by an expected increase in certificate creation by new projects under the Generation Rule. 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, and all future projects, whether accredited or in application stage, will commence as scheduled.

The demand for abatement certificates is expected to rise to a peak during the calendar year 2009 compliance period, after which it is expected to decline. The rise can primarily be attributed to:

- ▼ the NSW Greenhouse Gas Benchmark holding steady at 7.27t CO₂-e per capita, while population and electricity demand increase
- ▼ a steady increase in the NSW Pool Coefficient is expected (average intensity of emissions in CO₂-e gases per MWh of electricity, see Section 7.5)
- ▼ the two year lag adjustment on demand in calendar years 2009 and 2010, as a direct result of the high level of DSA NGAC creation during 2007 and 2008 (see Box 3.1)

Demand is projected to decline after 2009. While 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 Scenario One, (as shown in Figure 7.2), annual supply of certificates is generally less than, or close to, annual demand from 2009 onwards. However, certificates do not expire, and a certificate created with a particular vintage may 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). It is likely therefore, that in Scenario One the surplus of supply experienced in the first six years will assist in meeting the projected demand from 2009 onwards. The number of certificates that are available for surrender can be found in Table 6.4.

Under Scenario Two, supply is less than annual demand in 2009 and 2010, but has risen above demand in 2011 and 2012.

Under Scenario Three, supply is less than annual demand for 2009 only, after which supply climbs sharply above demand.

However, 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.

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.³⁴ The NSW Pool Coefficient for a year is the simple average of the five 'Annual Pool Values' from previous years, lagged by two years.

For example, the NSW Pool Coefficient for 2009 is the simple average of the Annual Pool Values for the years 2003 to 2007, which represents a two 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 two year time lag 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 applying equations from the Generation Rule to the Net Sent Out Generation of Category B Generators; and adjusting for electricity imports from and exports to other States.

The total emissions attributable to the NSW pool in 2007 fell by 0.3 per cent, but the net energy sent out fell even more (by 1.7 per cent), leading to the rise in Pool Value for that year. **The Pool Value for 2007 was determined by IPART as 0.983t CO₂-e/MWh resulting in a NSW Pool Coefficient of 0.967t CO₂-e/MWh for 2009.**

There were a number of other factors that led to the increase in the Annual Pool Value in 2007.

- ▼ The energy generated from the Snowy Mountains Hydro-electricity Scheme supplied to NSW continued to be significantly below the long term average supply level.
- ▼ Combustion emissions increased by 2.4 per cent. There was a small decrease in the combustion CO₂-intensity of coal used in NSW power stations of 0.8 per cent, as a consequence of normal variation in the chemical composition of coal mined. However, this was more than offset by an increase of 1.4 per cent in total tonnes of coal burned.
- ▼ Fugitive emissions were 3.2 per cent lower than in 2007 (although there was an increase in coal use as outlined above, this was offset by a 4.7 per cent decrease in the average fugitive methane intensity of coal).
- ▼ The creation of NGACs by Category B generators fell by approximately 6.1 per cent in 2007.

³⁴ The NSW Pool Coefficient is determined pursuant to clause 9.1 of the Compliance Rule.

- ▼ Pool emissions fell due to an increase in combustion emissions from thermal power stations in NSW which more than outweighed a 25 per cent reduction in imports of electricity for other States and their associated higher emissions.

Figure 7.3 Historical NSW Annual Pool Value and Pool Coefficient 1999-2009

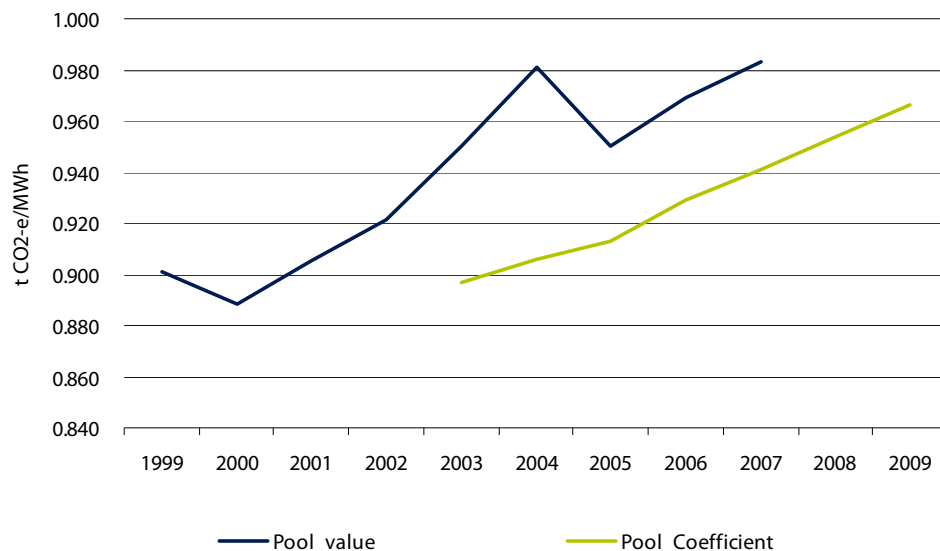


Figure 7.3 above illustrates the trend in Annual Pool Values and Pool Coefficients. The NSW 2009 Pool Coefficient has increased by approximately 1.36 per cent from 2008. This relatively modest increase is partly due to the damping effect of the five year rolling average.

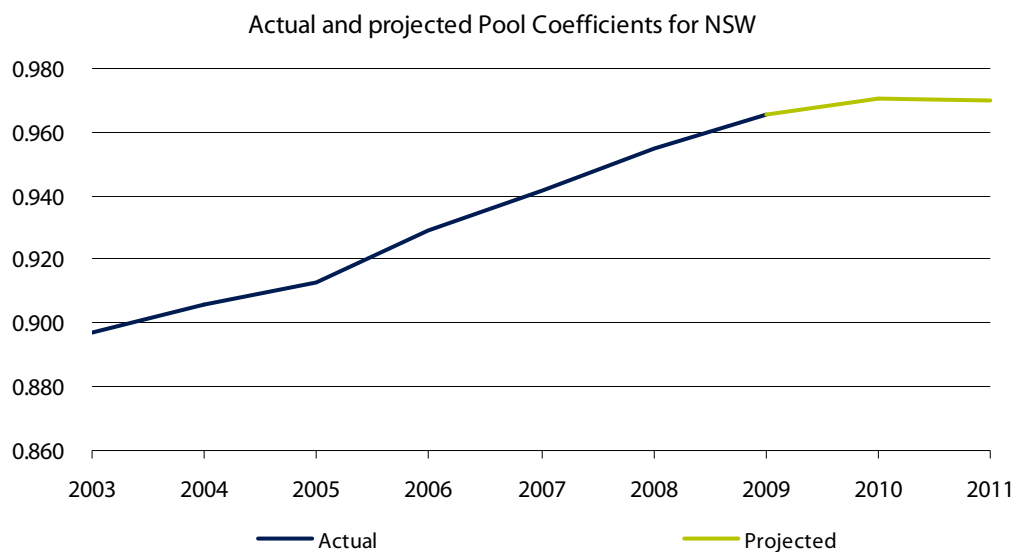
7.5.1 NSW Pool Coefficient forecast to 2010

IPART has made a forecast of the NSW Pool Coefficient until 2011. The forecast of the NSW Pool Coefficient in 2010-11 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 2010-11 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 baseload 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 output³⁵ and the source of imports³⁶, 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 2003 to 2007, with each new Annual Pool Value added to the series being higher than the value removed.

Figure 7.4 Forecast of the NSW Pool Coefficient until 2011



The Projected Pool Coefficient forecast shown in Figure 7.4 levels out at around 0.971 t CO₂-e/MWh, and is based on the following key assumptions:

- ▼ A low level of Snowy output at 2,000 GWh/yr.
- ▼ 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 puts upward pressure on the Pool Value.

³⁵ The recent reduction in Snowy Hydro electricity output due to the drought will have an upward pressure on the NSW Pool Coefficient.

³⁶ Electricity generated in other states generally has an average emissions intensity that is higher than NSW.

8 Policy development and links with other schemes

When GGAS was launched it was one of the earliest mandatory greenhouse gas emissions trading schemes to become operational worldwide and, while a 'first generation' form of emissions trading, its operation has contributed significantly to the intellectual capital around emissions trading in Australia.

GGAS is now a small fraction of the size of other schemes, including the European Union ETS³⁷, in terms of tonnes traded. The growth of the Clean Development Mechanism, which is essentially an offset mechanism, now also overshadows the scale of offset projects implemented under GGAS (see Section 8.2).

In Australia, the number of carbon schemes and companies participating in some form of carbon market grew significantly during 2008. In addition, companies grappled with the impact of the global financial crisis and its impact on this developing market.

8.1 Australian developments

Work continued at both State and Commonwealth levels on a range of emissions trading proposals, including the Commonwealth's CPRS, NSW's ESS, South Australia's Residential Energy Efficiency Scheme and Victoria's Energy Efficiency Target.

In December 2007, the Council of Australian Governments (COAG) agreed to a work program to 'ensure an effective national response to climate change', encompassing, inter alia, a single national emissions trading scheme incorporating State schemes and a nationally-consistent set of climate change measures to support the ETS.

As part of this work program, COAG has agreed on the design of a single, expanded national Renewable Energy Target (RET) scheme, which is proposed to be implemented in 2009, and to accelerate the uptake of energy efficiency measures.

³⁷ As reported in 'State and Trends of the Carbon Market 2008' World Bank, p 7.

8.1.1 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 outlines 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 but recently delayed until mid-2011.

The architecture of the CPRS will be very different to the architecture of GGAS and will more closely reflect the structure and operation of the EU ETS. It will be a 'cap and trade' scheme rather than the GGAS-type 'baseline and credit' scheme.

Essentially, this means that organisations above a certain threshold that emit greenhouse gases will be required to surrender one permit for each tonne of carbon dioxide equivalent of emissions. The primary unit of trading will be a 'permit to emit'.

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 per cent of Australia's emissions and involve mandatory obligations for around 1,000 entities.

The Government will include reforestation in the scheme from commencement on a voluntary basis. Reforestation differs from other activities covered by the scheme because growing forests are likely to sequester more carbon than they emit. Where other entities covered by the scheme would have to surrender permits for their emissions, forest owners will be eligible to receive permits for net sequestration. At this time, it is not proposed to cover agricultural emissions earlier than 2015.

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

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

Offset credits will not be considered for inclusion in the CPRS before 2015.

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 incompatible. The legislation that extended GGAS in 2006 did so until 2021 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 commenced negotiations during 2008 with the Commonwealth Government on appropriate transition arrangements to a national emissions trading scheme.

8.1.2 NSW Energy Savings Scheme

In 2008, the NSW Government announced plans for ESS in NSW. ESS is intended to assist in reducing electricity use in NSW and thereby reduce the impact of rising electricity prices on electricity customers. It will be based on the existing GGAS DSA Rule.

ESS commenced on 1 July 2009 and works by setting an energy savings target for electricity retailers. It will initially run concurrently with GGAS, which will be modified to remove the eligibility of DSA activities from 1 July 2009. 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 five-yearly reviews to ensure that it continues to deliver net benefits and is complementary to the CPRS. The Scheme Administrator and compliance regulator for ESS will be IPART.

Liable parties under ESS, known as 'Scheme Participants', and including retailers in NSW, will meet their targets by obtaining and surrendering energy saving certificates (ESCs) which represent delivered energy efficiencies in two ways:

- ▼ by delivering energy efficiency upgrades directly, or
- ▼ by purchasing them from specialist companies accredited to conduct energy saving projects.

Householders will be able to participate directly in ESS if an energy retailer or specialist energy efficiency company approaches them to participate in a program accredited under ESS. Such programs could include:

- ▼ discounts to households for upgrades to high-efficiency fridges, washing machines, clothes dryers, dishwashers, shower heads and down-lighting, and for floor and wall insulation, and
- ▼ installation of high-efficiency lighting, air-conditioning and motors in office buildings, factories, schools and hospitals.

Energy Savings Scheme target and operation

The ESS target will start from 0.4 per cent and increase to four per cent of total annual NSW electricity sales over four-and-a-half years, to allow time for the market to develop the new business models required to deliver these savings.

The target will be allocated each year to electricity retailers in proportion to their liable electricity sales, which are total sales less sales to exempt companies engaged in emissions-intensive trade-exposed activities. The list of activities which are

exempt under ESS will take into account the national approach to exemptions for the Renewable Energy Target.

The ESS target was chosen as the energy savings that could deliver optimal levels of both electricity bill savings and net economic benefits. It is expected that these energy savings can be delivered for less than \$35 per MWh.

Energy Savings Legislation and Rule

The Electricity Supply Act and its subordinate legislation will be modified to provide a rule based mechanism for managing ESS. The Rule will allow for adjusting the target while giving stakeholders sufficient notice of any changes.

The ESS Rule will also define the energy efficiency activities eligible to create ESCs and how the number of ESCs is calculated. The Rule will:

- ▼ build on the existing DSA Rule of GGAS
- ▼ increase the number of activities that are eligible
- ▼ make it simpler for businesses to create ESCs.

The NSW Government sought stakeholder input on the ESS Rule in early 2009 before the Rule and legislative changes were finalised.

Penalty

Retailers who do not surrender sufficient ESCs will be subject to a penalty for the shortfall. The penalty rate will be \$24.50 per MWh to provide an incentive for compliance. This is equivalent to an after-tax price for energy savings of \$35 per MWh and caps ESS costs at this level.

Impact on GGAS

GGAS will end when the CPRS starts. 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.

ESS is modelled on the end-use energy efficiency parts of the DSA component of GGAS and similar energy saving schemes in Victoria, South Australia, the UK and Europe. All businesses currently accredited to undertake eligible end-use energy efficiency activities under GGAS will be accredited under ESS without reapplying. This is subject to IPART being satisfied that the activity meets the requirements of the amended Act, Regulation and ESS Rule.

Businesses engaged in lower emissions generation, large user emissions reduction and forestry sequestration under GGAS will find these components of GGAS will be covered by the proposed CPRS. On-site generation, currently part of the DSA Rule, will continue under GGAS until it ends and will not be eligible under ESS.

There will be a clear separation of ESS from GGAS from 1 July 2009. Existing energy efficiency projects under GGAS will be able to create NGACs under the DSA Rule from activity taking place until 30 June 2009. For activity taking place from 1 July 2009, existing and new energy efficiency projects will only be able to create ESCs under ESS and the new Rule.

NGACs created from DSA activities taking place up to 30 June 2009 can be used to comply with GGAS benchmarks but cannot be used to comply with the new ESS target. ESCs can only be used to comply with the new target and cannot be used to comply with existing GGAS benchmarks.

The Scheme Administrator actively contributed to the development of ESS, applying the lessons learned and experience gained from administering GGAS to the overall design for ESS. While the architecture is based on GGAS, the aim has been to streamline and simplify some of the systems and procedures for ESS in order to encourage a high level of participation in the Scheme.

8.1.3 Mandatory Renewable Energy Target (MRET)

This is a national scheme that 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. MRET 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.

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).

The Commonwealth Government has committed to increasing the renewable energy target to 45,000 GWh or 20 per cent by 2020. The Government undertook consultation on the scheme design and has released draft legislation for the expanded Renewable Energy Target Scheme.

8.1.4 Queensland Gas Scheme

This scheme commenced on 1 January 2005 and requires Queensland electricity retailers and other liable parties to source at least 13 per cent 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.

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 GEC Scheme and GGAS, although certificates cannot be created under both Schemes for the same unit of generation. This may mean for example that a low emission Queensland gas generator creates GECs in relation to 50 per cent of its output and NGACs in relation to the other 50 per cent.

In mid-2007, the Queensland Government announced its intention to transition the Queensland Gas Scheme into the national emissions trading scheme (CPRS) as soon as practicable, subject to broadly equivalent benefits under the CPRS. Now that emission targets for the CPRS have been set, the Queensland Government has indicated it will provide details regarding the transition arrangements as soon as possible to provide certainty to gas scheme participants as to the future of the scheme.

8.1.5 Generator Efficiency Standards (GES)

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.

8.1.6 NABERS – the National Australian Built Environment Rating System (formerly the Australian Building Greenhouse Rating (ABGR) Scheme)

NABERS is managed by the NSW Government and is a performance-based rating system for existing buildings. It provides a consistent approach to evaluating the greenhouse performance of commercial office buildings, hotels, or residential buildings and employs a 'star rating' to allow differentiation within the industry.

The DSA Rule refers to the ABGR in one of its methodologies. With the introduction of ESS, the new Rule governing activities under ESS will refer to the NABERS scheme, which goes beyond the ABGR.

GGAS currently integrates the required NGAC calculations into templates that are used by ABGR assessors, making it possible to provide valid NGAC calculations without the need for further analysis. There are currently 46 buildings included in accredited projects under the ABGR and there has been increasing interest in this methodology from property developers, building managers and tenants.

NABERS uses and extends the star rating system to rate buildings on the basis of measured operational impacts - including energy, refrigerants (greenhouse and ozone depletion potential), water, stormwater runoff and pollution, sewage, landscape diversity, transport, indoor air quality, occupant satisfaction, waste and toxic materials. Currently NABERS rating tools are available for homes, office buildings, and hotels; and are planned for retail centres, schools and hospitals in the future.

It is proposed that the NABERS methodology will be incorporated into ESS in a simplified manner to broaden the base of buildings which are rated and to accelerate participation by companies to further enhance energy savings.

8.1.7 Building Sustainability Index (BASIX)

In NSW, from 1 July 2007, planning requirements mandated that all new residential dwellings and alterations to existing residential dwellings must meet minimum energy and water efficiency criteria. The projected energy and water consumption of the dwelling is determined by using the online BASIX modelling tool, which incorporates the design of the dwelling, its land and lawn area, and its geographic location.

In practice, the requirements specify that a BASIX Certificate must be lodged with all development approval applications for new residential dwellings and alterations to existing residential dwellings. The present criteria for obtaining a BASIX Certificate requires that the dwelling's projected greenhouse gas emissions from its energy use be 40 per cent less than a typical similar dwelling in that geographic location.

The BASIX requirements do not specify what energy and water efficiency initiatives must be included. However, in order to obtain a BASIX Certificate, the dwelling's design will usually need to include some or all of the following – compact fluorescent lamps, water-efficient showerheads and taps, insulation, rainwater tanks, double glazed windows, high efficiency gas, solar or heat pump hot water systems.

8.1.8 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. This has particular relevance to accreditations using the ABGR methodology in GGAS. GreenPower is administered by the NSW Department of Water and Energy.

8.1.9 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 and Climate Change (DECC). 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. Programs covered by the fund include:

- ▼ The Residential Rebate Program, providing rebates for hot water systems, insulation and rainwater tanks
- ▼ The NSW Green Business Program
- ▼ The Public Facilities Program
- ▼ The Renewable Energy Development Fund
- ▼ The School Energy Efficiency Program
- ▼ The Recycling and Stormwater Harvesting Program
- ▼ The Rainwater Tanks in Schools Program.³⁸

8.1.10 Voluntary Carbon Markets

A new association has been developed called the Voluntary Carbon Markets Association (VCMA) to assist individuals who wish to participate in the voluntary carbon market.

Most cap and trade schemes have decided not to recognise the voluntary emission reduction activities such as investment in energy efficiency, carbon offsets, and GreenPower.

Over the past few years there has been significant growth in interest in climate change, carbon offsets and voluntary carbon markets. Voluntary carbon markets include all carbon trades that are not required by regulation. These markets 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

³⁸ Some changes will be made to these programs in response to IPART's review of complementary measures.

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.

Sydney Water Corporation, IAG, ANZ Bank and News Limited are but a few of the many companies that have declared targets to become carbon neutral and are now offsetting their greenhouse gas emissions, fuelling a growing voluntary carbon market. NGACs represent verified emissions and have been used by several organisations as a means to reduce their carbon footprint.

In 2008, 488,090 certificates were voluntarily surrendered compared with 49,898 in 2007. While the number of certificates voluntarily surrendered jumped dramatically in 2008, it is not possible to make any projections on how this may continue for the period 2009 to 2012. It is also not possible to ascertain what proportion of 2008 NGACs were used as voluntary offsets. However, it is understood that because GGAS certificates represent genuine abatement, they are currently a preferred instrument for use as offsets.

The increase in voluntary surrenders was mirrored with the international growth in voluntary carbon markets during 2008, with the volume of traded credits doubling to around 123 million tonnes of carbon³⁹.

8.2 International developments

Internationally the market in carbon has grown, and while there has been a slowdown in the industrial sector, the development of cap and trade schemes has continued. The largest scheme by tonnes of emissions traded continues to be the European Union Emissions Trading Scheme (EU ETS), a mandatory cap and trade scheme that commenced in 2005.

Under the Kyoto Protocol, the Clean Development Mechanism (CDM), has been created and allows developed countries (Annex 1 countries) with emission caps to undertake greenhouse gas emission reduction projects in developing countries where there are no emission caps, in exchange for emissions credits. Article 12.2 of the Kyoto Protocol to the UNFCCC states that the aim of CDM is to assist non-Annex I countries (developing countries) to attain sustainable development through low-carbon technology transfer, while assisting Annex I countries (developed countries) in achieving their reduction commitments.

CDM projects generate emission credits called Certified Emissions Reduction (CER) units, where one CER is equivalent to one tonne of carbon dioxide (CO₂) or its equivalent for the other greenhouse gases. CER units are used to offset emissions in the industrialised countries. They can also be traded or sold between countries. To date, more than 252 million CER units have been issued globally, and to the end of

³⁹ Ecosystem Marketplace and New Carbon Finance Limited: 'Carbon Markets: The Business Case for Carbon Offsetting' May 2009.

2012, a further 1.5 billion credits are expected to be issued from registered CDM projects.

The Australian Government's policy position is to allow an unlimited number of eligible international units to be accepted for CPRS compliance. The Government considers that accepting international emissions credits will help to control domestic costs, provide support for the Kyoto Protocol, promote technology transfer and facilitate Australia's involvement in international carbon markets.

In North America, the Regional Greenhouse Gas Initiative (RGGI) is the first mandatory, market-based effort in the United States to reduce greenhouse gas emissions. Ten North-eastern and Mid-Atlantic states will cap and then reduce CO₂ emissions from the power sector 10 per cent by 2018. In addition, the Western Climate Initiative (WCI), launched in February 2007, is a collaboration of seven U.S. governors and four Canadian Premiers which plans a market-based cap-and-trade system. The details of the WCI are yet to be finalised.

Governments around the world continue to work towards meeting their Kyoto targets, with the introduction of trading schemes, legislation and other initiatives. Looking beyond the end of the Kyoto Protocol commitment period (2012), the 14th Conference of Parties (COP14) was held in Poznan in 2008. At this conference the work towards a new global climate agreement continued ahead of the 2009 Copenhagen COP. The change of government in the US set its mark on the conference. The parties reached an agreement on the work programme and meeting plan towards the Copenhagen conference.



Appendices

A IPART's functions under GGAS

The Tribunal has two 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.

Category and fuel source

Table B.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 B.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: Hydro	Hydropower
Category A: Landfill Gas	Gas derived from degradation of waste in landfills
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 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 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)

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 is current as at 30 June 2009.

Generation Rule certificate creations by project type

Category A: Biomass

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

Category A: Natural gas

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
AGL Sales: Varnsdorf Cogeneration Generating System	VIC	9,863	10,650	11,046	12,029	11,861	11,993	67,442
Integral Energy Australia: Category A Gas Fired Cogeneration Plant	NSW	580,461	594,623	632,616	625,175	646,520	646,791	3,726,186
Origin Energy Electricity: Alfred Hospital	VIC	0	3,973	8,514	9,340	9,302	8,404	39,533
Origin Energy Electricity: Royal Melbourne Hospital	VIC	0	8,282	17,179	19,415	17,749	14,804	77,429
Origin Energy Electricity: St Vincents Hospital	VIC	0	3,537	6,420	7,686	0	0	17,643
Total		590,324	621,065	675,775	673,645	685,432	681,992	3,928,233

Category A: Waste coal mine gas

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
Integral Energy Australia: WCMG Power Plant - A	NSW	1,731,215	1,462,384	1,473,011	1,553,810	1,373,685	530,423	8,124,528
Integral Energy Australia: WCMG Power Plant - T	NSW	737,204	838,720	556,772	542,943	861,482	626,512	4,163,633
Total		2,468,419	2,301,104	2,029,783	2,096,753	2,235,167	1,156,935	12,288,161

Category A: Hydro

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
TXU Electricity: Blue Rock Dam Hydro Generating System*	VIC	2,798	7,649	3,849	0	0	0	14,296
TXU Electricity: Cardinia Dam Hydro Generating System*	VIC	15,012	13,345	4,444	0	0	0	32,801
TXU Electricity: Eildon Pondage Hydro Generating System*	VIC	5,478	11,555	7,135	0	0	0	24,168
TXU Electricity: Lake Glenmaggie Dam Hydro Generating System*	VIC	5,913	5,401	3,047	0	0	0	14,361
TXU Electricity: Lake William Hovell Generating System*	VIC	3,785	3,823	746	0	0	0	8,354
TXU Electricity: Thomson Dam Hydro Generating System*	VIC	9,835	10,902	4,597	0	0	0	25,334
Country Energy: Wyangala Hydro Power Station*	NSW	3,934	0	448	0	0	0	4,382
Country Energy: Burrendong Hydro Power Station	NSW	8,731	6,488	13,448	22,779	2,269	2,307	56,022
Country Energy: Copeton Hydro Power Station	NSW	20,206	1,538	12,054	18,971	14,360	15,683	82,812
Country Energy: Nymboida Hydro Power Station	NSW	6,255	9,020	8,887	10,224	7,895	10,504	52,785
Country Energy: Oaky Hydro Power Station	NSW	2,700	2,346	2,366	6,778	5,402	12,008	31,600
Energy Australia: Glenbawn Hydro Power Station	NSW	10,735	10,843	10,926	11,114	1,243	1,326	46,187
Origin Energy Electricity: Yarrawonga Power Station	VIC	37,487	40,934	44,727	45,511	28,892	23,862	221,413
TRUenergy: Blue Rock Dam Hydro Generating System	VIC	0	0	6,717	4,433	2,025	4,093	17,268
TRUenergy: Cardinia Dam Hydro Generating System	VIC	0	0	8,563	10,276	6,372	8,086	33,297
TRUenergy: Eildon Pondage Hydro Generating System	VIC	0	0	2,357	12,424	3,998	6,883	25,662
TRUenergy: Lake Glenmaggie Dam Hydro Generating System	VIC	0	0	2,972	2,315	714	6,289	12,290
TRUenergy: Lake William Hovell Dam Hydro Generating System	VIC	0	0	3,107	266	3,971	3,567	10,911
TRUenergy: Thomson Dam Hydro Generating System	VIC	0	0	7,786	15,850	7	369	24,012
Total		132,869	123,844	148,176	160,941	77,148	94,977	737,955

Category A: Landfill gas

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
EDL Operations (Berwick): Berwick LFG Generating System*	VIC	33,893	0	0	0	0	0	33,893
EDL Operations (Broadmeadows): Broadmeadows LFG Generating System*	VIC	24,209	0	0	0	0	0	24,209
EDL Operations (Corio): Corio LFG Generating System - Deemed Retailer*	VIC	24,818	23,723	0	0	0	0	48,541
EDL Operations (Corio): Corio LFG Generating System*	VIC	12,324	0	0	0	0	0	12,324
TXU Electricity: Berwick Power Plant*	VIC	109,839	110,039	47,880	0	0	0	267,758
AGL Electricity: Broadmeadows Landfill Gas Power Plant*	VIC	132,165	132,387	132,559	112,453	0	0	509,564
AGL Sales: Broadmeadows LFG Generating System	VIC	0	0	0	17,669	114,898	115,218	247,785
AGL Sales: Clayton & Springvale Landfill Gas Generation	VIC	347,713	386,035	408,065	389,938	370,801	373,618	2,276,170
AGL South Australia: Highbury Landfill Gas Power Plant	SA	37,020	32,340	32,188	28,032	23,508	16,028	169,116
AGL South Australia: Pedler Creek Landfill Gas Power Plant	SA	60,630	60,731	60,810	60,991	61,126	52,855	357,143
AGL South Australia: Tea Tree Gully Landfill Gas Power Plant	SA	31,587	28,033	22,421	18,136	17,472	13,504	131,153
AGL South Australia: Wingfield 1 & Wingfield 2 Landfill Gas Power Plant	SA	115,162	115,355	115,505	115,848	116,105	100,395	678,370
EDL LFG (NSW): Lucas Heights 1 LFG Generating System	NSW	0	46,414	56,675	59,728	66,117	76,332	305,266
EDL LFG (Qld): Brown Plains LFG Generating System	QLD	36,569	41,765	47,291	46,857	42,830	36,700	252,012
EDL LFG (SA): Wingfield 1 & 2 LFG Generating System	SA	88,631	127,501	166,071	153,465	123,845	108,233	767,746
EDL LFG (Vic): Berwick LFG Generating System	VIC	0	31,293	28,760	19,591	40,136	40,797	160,577
EDL LFG (Vic): Broadmeadows LFG Generating System	VIC	0	26,957	11,527	7,294	11,648	9,136	66,562
EDL LFG (Vic): Corio LFG Generating System - Deemed Retailer	VIC	0	888	24,892	24,892	24,892	21,635	97,199
EDL LFG (Vic): Corio LFG Generating System	VIC	0	13,246	13,536	12,820	7,634	8,331	55,567
EDL Operations (Pedler Creek): Pedler Creek LFG Generating System	SA	1,132	8,511	13,545	15,917	12,838	19,449	71,392
Energy Australia: Belrose Power Station	NSW	43,539	25,026	27,049	22,859	37,455	38,355	194,283
Energy Australia: Lucas Heights I Power Station	NSW	116,910	117,106	117,271	117,627	117,897	101,938	688,749
TRUenergy: Berwick LFG Generating System	VIC	0	0	53,650	95,243	95,489	95,755	340,137
Total		1,216,141	1,327,350	1,379,695	1,319,360	1,284,691	1,228,279	7,755,516

Category B: Coal

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
Delta Electricity: Mt Piper Power Station	NSW	11,050	19,777	52,097	187,838	116,886	85,469	473,117
Delta Electricity: Munmorah Power Station	NSW	0	3,500	1,016	0	0	0	4,516
Delta Electricity: Vales Point Power Station	NSW	66,894	65,431	46,329	102,252	20,072	3,104	304,082
Delta Electricity: Wallerawang Power Station	NSW	16,593	15,458	52,308	23,773	8,930	60,951	178,013
Eraring Energy: Eraring Power Station	NSW	129,086	115,291	72,120	70,711	67,264	97,987	552,459
Macquarie Generation: Liddell Power Station	NSW	63,362	199,124	275,082	446,877	571,472	547,348	2,103,265
Redbank Project: Redbank Power Greenhouse Gas Abatement Program	NSW	0	0	0	0	0	0	0
Total		286,985	418,581	498,952	831,451	784,624	794,859	3,615,452

Category C: Biomass

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
Rocky Point Power Project: Rocky Point Cogeneration Plant	QLD	0	0	0	0	364,190	377,675	741,865
Total		0	0	0	0	364,190	377,675	741,865

Category C: Coal

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
CS Energy: Swanbank B3 Landfill Gas Co-firing project	QLD	0	0	0	0	145,162	145,437	290,599
Flinders Operating Services: Unit 1 Turbine Upgrade	SA	0	0	0	31,899	22,862	68,649	123,410
Hazelwood Power: Hazelwood Power Station	VIC	251,199	130,906	675,881	780,462	879,398	1,025,716	3,743,562
IPM Australia: Loy Yang B Power Station	VIC	0	0	0	6,775	216,723	286,826	510,324
Loy Yang Marketing Management Company: Loy Yang A Power Station	VIC	0	0	254,015	86,545	0	0	340,560
Stanwell Corporation: HIP Turbine Upgrades Units 1, 2, 3, 4	QLD	0	36,337	86,290	198,094	194,665	193,943	709,329
TRUenergy Yallourn: Units 1 - 4 Improvements	VIC	0	0	9,033	164,423	18,004	142,380	333,840
Total		251,199	167,243	1,025,219	1,268,198	1,476,814	1,862,951	6,051,624

Category C: Hydro

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
Hydro Electric Corporation: Gordon Hydro Generating System	TAS	0	0	0	80,000	0	0	80,000
Hydro Electric Corporation: Poatina Hydro Generating System	TAS	0	0	0	0	0	0	0
Total		0	0	0	80,000	0	0	80,000

Category C: Landfill gas

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
EDL Operations (Lucas Heights): Lucas Heights 1 LFG Generating System*	NSW	31,571	0	0	0	0	0	31,571
Total		31,571	0	0	0	0	0	31,571

Category C: Natural gas

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
Enertrade: Oakey Power Station*	QLD	0	3,563	0	0	0	0	3,563
Enertrade: Townsville Power Station*	QLD	0	8,451	0	0	0	0	8,451
TRUenergy: Torrens Island A Power Station*	SA	0	0	0	0	0	0	0
TRUenergy: Torrens Island B Power Station*	SA	0	70,642	0	0	0	0	70,642
AGL Hydro Partnership: Oakey Power Station	QLD	0	0	0	0	0	0	0
AGL Hydro Partnership: Torrens Island A Power Station	SA	0	0	0	0	1,287	12,893	14,180
AGL Hydro Partnership: Torrens Island B Power Station	SA	0	0	0	0	40,701	0	40,701
Alinta DEBO: Bairnsdale Power Station	VIC	1,293	14,603	8,215	5,578	125,309	69,314	224,312
Bell Bay Power: Bell Bay Power Station Units 1 and 2	TAS	0	0	0	140,271	355,277	371,467	867,015
OneSteel Manufacturing: OneSteel Whyalla Steelworks - By-product Turbines	SA	0	0	0	0	58,834	62,047	120,881
OneSteel Manufacturing: OneSteel Whyalla Steelworks - Cogeneration	SA	0	0	0	0	0	0	0
Origin Energy Electricity: Ladbroke Grove Power Station	SA	0	0	3,182	30,015	34,968	57,015	125,180
Pelican Point Power: Pelican Point Power Station	SA	284,984	0	194,934	545,997	986,020	1,114,978	3,126,913
TRUenergy: Newport Power Station	VIC	0	24,895	0	0	347,888	208,263	581,046
Total		286,277	122,154	206,331	721,861	1,950,284	1,895,977	5,182,884

Category C: Sewage gas

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
AGL Energy Sales & Marketing: Werribee Sewage Gas Generating System	VIC	59,381	58,928	100,578	184,989	196,181	179,509	779,566
Total		59,381	58,928	100,578	184,989	196,181	179,509	779,566

Category D: Biomass

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
Integrated Forest Products: Hume ACT Cogeneration Plant (Future Project)*	ACT	0	0	0	0	0	0	0
Diamond Energy: Shepparton Biogas Generating System	VIC	0	0	0	0	0	563	563
Diamond Energy: Tatura Biogas Generating System	VIC	0	0	0	0	11,885	14,670	26,555
EarthPower Technologies Sydney: Camellia Biodigester Generating System	NSW	0	10,623	24,619	34,543	28,242	21,856	119,883
Green Pacific Energy Stapylton No.1: Stapylton No.1 Generating System	QLD	0	0	5,370	0	0	0	5,370
Visy Pulp & Paper: Tumut Cogeneration Generating System	NSW	542	353	532	622	589	1,642	4,280
Total		542	10,976	30,521	35,165	40,716	38,731	156,651

Category D: Coal

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
CS Energy: Kogan Creek Power Station	QLD	0	0	0	0	0	70,001	70,001
Millmerran Energy Trader: Millmerran Power Station	QLD	0	92,553	78,624	74,368	94,889	163,269	503,703
Queensland Alumina: Additional Steam from Cogeneration	QLD	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	412,412
Total		0	130,665	159,493	191,641	94,889	409,428	986,116

Category D: Coal seam methane

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
Arrow (Generation): Daandine Power Station	NSW	0	0	0	0	12,978	29,744	42,722
Total		0	0	0	0	12,978	29,744	42,722

Category D: Landfill gas

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
EDL Operations (Brooklyn): Brooklyn LFG Generating System*	VIC	37,733	23,529	0	0	0	0	61,262
Energy Impact: Reedy Creek LFG Generator*	QLD	6,446	811	0	0	0	0	7,257
AGL Energy Services: Glenorchy LFG Generating System	TAS	0	0	0	18,333	39,992	0	58,325
AGL Energy Services: Hobart LFG Generating System	TAS	0	0	0	23,423	29,308	0	52,731
AGL Energy Services: Kincumber LFG Generating System	NSW	0	0	0	0	0	0	0
AGL Energy Services: West Nowra Landfill Gas Power Generation	NSW	16,595	23,896	23,892	27,414	33,791	0	125,588
AGL Energy Services: Woy Woy LFG Generating System	NSW	0	0	0	0	0	0	0
Boral Recycling: Landfill Gas to Energy Facility, Deer Park	VIC	0	0	0	25,243	26,258	54,653	106,154
EDL LFG (ACT): Belconnen LFG Generating System	ACT	33,656	30,541	29,973	27,870	25,256	21,008	168,304
EDL LFG (ACT): Mugga Lane LFG Generating System	ACT	60,542	68,727	80,089	98,561	95,720	102,242	505,881
EDL LFG (NSW): Grange Avenue LFG Generating System	NSW	0	0	0	1,953	34,633	35,935	72,521
EDL LFG (NSW): Lucas Heights 2 LFG Generating System	NSW	382,599	396,207	535,048	506,381	501,786	442,028	2,764,049
EDL LFG (Qld): Roghan Road LFG Generating System	QLD	0	12,001	27,315	22,196	14,230	16,618	92,360
EDL LFG (Vic): Brooklyn LFG Generating System	VIC	0	29,267	78,294	75,166	78,728	87,477	348,932
EDL Operations (Eastern Creek): Eastern Creek LFG Generating System	NSW	73,215	130,164	142,918	147,433	146,542	138,996	779,268
EDL Operations (Eastern Creek): Jacks Gully LFG Generating System	NSW	34,041	35,115	36,529	41,971	70,141	75,309	293,106
Energy Impact: Molendinar LFG Generator	QLD	15,203	11,501	10,955	8,707	7,562	5,200	59,128
Energy Impact: Mornington LFG Generator	VIC	10,157	8,801	18,109	16,929	18,210	12,804	85,010
Energy Impact: LFG Cogeneration Generating System	QLD	0	0	0	0	0	9,789	9,789
Energy Impact: Stapylton LFG Generator	QLD	20,361	23,250	26,701	21,297	31,578	18,488	141,675
Energy Impact: Suntown LFG Generator	QLD	27,020	45,309	50,551	36,089	29,853	20,429	209,251
Energy Impact: Wyndham LFG Generator	VIC	14,619	22,777	19,945	27,247	21,926	17,515	124,029
LMS Generation: Awaba Renewable Energy Facility	NSW	0	0	0	0	30,061	34,745	64,806
LMS Generation: Ballarat Renewable Energy Facility	SA	0	0	0	0	0	14,525	14,525
LMS Generation: Bendigo Renewable Energy Facility	VIC	0	0	0	0	0	8,293	8,293
LMS Generation: Eastern Creek 2 Gas Utilisation Facility	NSW	0	0	0	0	0	129,429	129,429
LMS Generation: Hallam Road Renewable Energy Facility	NSW	0	0	0	0	29,241	53,354	82,595
LMS Generation: Remount Renewable Energy Facility	TAS	0	0	0	0	34,074	35,409	69,483
LMS Generation: Rochedale Renewable Energy Facility	QLD	0	14,311	121,597	123,592	123,800	104,050	487,350
LMS Generation: Tweed Renewable Energy Facility	NSW	0	0	0	7,861	11,355	11,631	30,847
LMS Generation: Whitwood Road Renewable Energy Facility	QLD	0	13,727	39,497	40,459	40,616	34,260	168,559

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
LMS Generation: Wollert Renewable Energy Facility	VIC	0	0	0	31,560	70,520	110,322	212,402
Woodlawn Bioreactor Energy: Woodlawn Bioreactor	NSW	0	0	0	0	0	17,755	17,755
Total		732,187	889,934	1,241,413	1,329,685	1,545,181	1,612,264	7,350,664

Category D: Natural gas

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
Bell Bay Power: Bell Bay Three*	TAS	0	0	0	3,365	0	0	3,365
NewGen Power: Braemar Power Station*	QLD	0	0	0	0	84,162	62,809	146,971
AGL Energy Services (Queensland): Moranbah Generation Project	QLD	0	970	0	0	0	0	970
AGL Energy Services: Symex Cogeneration System	VIC	0	0	0	2,907	12,267	13,181	28,355
AGL Hydro Partnership: Somerton Power Station	VIC	0	0	0	0	882	27,473	28,355
AGL South Australia: Coopers Brewery Cogeneration Generating System	SA	6,593	6,106	6,421	6,711	6,457	6,812	39,100
Alinta EATM: Tamar Valley Power Station	TAS	0	0	0	0	436	6,500	6,936
Braemar Power Project: Braemar Power Station	QLD	0	0	0	0	0	68,099	68,099
CS Energy: Combined Cycle Gas Turbine	QLD	228,718	359,674	68,262	73,598	84,336	121,715	936,303
GridX Power: GridX MiniGrid Cogeneration - Glenfield GEN	NSW	0	0	0	0	3	0	3
Narrabri Power: Wilga Park Power Station	NSW	0	10,557	15,761	4,817	1,689	1,243	34,067
NewGen Braemar 2 Partnership: Braemar 2 Power Station	QLD	0	0	0	0	0	0	0
Origin Energy Electricity: Darling Downs Power Station (future project)	QLD	0	0	0	0	0	0	0
Origin Energy Electricity: Mortlake Power Station	VIC	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	90,662
Origin Energy Electricity: Spring Gully Power Station	QLD	0	0	0	0	0	0	0
Origin Energy Electricity: Uranquinty Power Station	NSW	0	0	0	0	0	8,773	8,773
Snowy Hydro: Laverton North Gas Generating	VIC	0	0	0	101	139,280	41,537	180,918
Snowy Hydro: Valley Power Gas Generating System	VIC	0	0	0	0	53,231	12,776	66,007
TRUenergy Tallawarra: Tallawarra Power Station Unit 1	NSW	0	0	0	0	0	52,220	52,220
Total		240,853	388,725	101,803	117,268	399,105	443,350	1,691,104

Category D: Sewage gas

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
Energy Australia: QAF Power Project - Generating System*	NSW	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	0

Category D: Waste coal mine gas

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
Enertrade: Moranbah Power Generation Facility*	QLD	0	0	0	0	0	0	0
Transfield Services (Australia): Picardy Power Station*	QLD	0	0	0	0	0	0	0
BlueScope Steel (AIS): Steelworks Generation Project (Future Project)	NSW	0	0	0	0	0	0	0
Country Energy: Tahmoor Generating System	NSW	10,192	10,428	22,728	7,368	3,073	47	53,836
Country Energy: Teralba Power Station	NSW	0	158,334	258,704	222,957	179,111	137,033	956,139
EDL CSM (Qld): German Creek CMM Generating System	QLD	0	0	0	125,535	995,634	721,693	1,842,862
EDL Projects (Australia): Moranbah North CMM Generating System	QLD	0	0	0	0	0	128,205	128,205
Envirogen (Oak): Glennies Creek WCMG Generating System	NSW	0	0	0	0	18,343	104,335	122,678
Envirogen: Oaky Creek CSM Generating System	QLD	0	0	0	181,362	470,927	441,661	1,093,950
Total		10,192	168,762	281,432	537,222	1,667,088	1,532,974	4,197,670

DSA Rule certificate creations by project type

Energy Efficiency: Commercial

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
The Sustainable Energy Dev Auth: VSD Units on Cooling Tower Fans & Water Pump*	NSW	92	46	0	0	0	0	138
The Sustainable Energy Dev Auth: Lighting Controls George St, Parramatta*	NSW	147	147	0	0	0	0	294
The Sustainable Energy Dev Auth: Installing LightEco Dimmer Units Stage 1 Set 3*	NSW	177	89	0	0	0	0	266
The Sustainable Energy Dev Auth: Installing LightEco Dimmer Units Stage 1 Set 2*	NSW	256	128	0	0	0	0	384
The Sustainable Energy Dev Auth: Building Management System Upgrade Set 2*	NSW	191	96	0	0	0	0	287
The Sustainable Energy Dev Auth: Building Management System Upgrade Set 1*	NSW	328	164	0	0	0	0	492
The Sustainable Energy Dev Auth: Lighting Controls 52 Martin Place*	NSW	43	86	0	0	0	0	129
The Sustainable Energy Dev Auth: Stage 1 Lighting Upgrade*	NSW	207	125	0	0	0	0	332
The Sustainable Energy Dev Auth: Stage 2 Lighting Upgrade*	NSW	319	274	0	0	0	0	593
The Sustainable Energy Dev Auth: Installing a Computerised Dimming System*	NSW	35	35	0	0	0	0	70
The Sustainable Energy Dev Auth: Installing LightEco Dimmer Units*	NSW	281	192	0	0	0	0	473
The Sustainable Energy Dev Auth: Replacement of 50W Lights with 35W*	NSW	41	42	0	0	0	0	83
The Sustainable Energy Dev Auth: Replacement of Exhaust Fan with VSD Unit*	NSW	112	56	0	0	0	0	168
The Sustainable Energy Dev Auth: Decommissioning of 50W Lights*	NSW	99	50	0	0	0	0	149
The Sustainable Energy Dev Auth: Replacement of Supply Fan with VSD Unit*	NSW	74	37	0	0	0	0	111
The Sustainable Energy Dev Auth: Lighting Upgrade Stage 1*	NSW	322	161	0	0	0	0	483
The Sustainable Energy Dev Auth: Lighting Upgrade Stage 2*	NSW	207	178	0	0	0	0	385
The Sustainable Energy Dev Auth: Big W lighting project*	NSW	1,298	249	0	0	0	0	1,547
The Sustainable Energy Dev Auth: Telstra outside air economy cycle project*	NSW	0	0	0	0	0	0	0
The Sustainable Energy Dev Auth: Lighting Upgrade*	NSW	92	46	0	0	0	0	138
The Sustainable Energy Dev Auth: Replacing Electric Heating with Nat. Gas Boiler*	NSW	154	132	0	0	0	0	286
The Sustainable Energy Dev Auth: Lighting Upgrade*	NSW	588	294	0	0	0	0	882
Panthers Rugby League Club: Lighting upgrade at Panthers*	NSW	0	1,048	0	0	0	0	1,048
State Records of New South Wales: Stage 2 lighting upgrade*	NSW	0	41	0	0	0	0	41
Sydney Harbour Marriott Hotel: Dimming control at Sydney Harbour Marriott Hotel*	NSW	0	31	0	0	0	0	31
Stamford Hotels and Resorts: Airport Lamp Replacement*	NSW	0	254	0	0	0	0	254
Stamford Hotels and Resorts: Carbon Monoxide Monitor*	NSW	0	220	0	0	0	0	220
Stamford Hotels and Resorts: Circular Quay lighting upgrade*	NSW	0	169	0	0	0	0	169
Stamford Hotels and Resorts: Double Bay lamp replacement*	NSW	0	147	0	0	0	0	147

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
Stamford Hotels and Resorts: Lighting voltage reduction (Airport)*	NSW	0	99	0	0	0	0	99
Stamford Hotels and Resorts: North Ryde lighting upgrade*	NSW	0	108	0	0	0	0	108
Neco Hardware: Showerheads & CFL Globe Sales - ACT Commercial*	ACT	0	0	0	0	14,836	0	14,836
Neco Hardware: Showerheads & CFL Globe Sales - NSW Commercial*	NSW	0	0	0	0	5,938	0	5,938
Sutherland Shire Council: Sutherland Leisure Centre Energy Performance Contr*	NSW	0	0	393	0	0	0	393
Neco Group: Showerheads and CFL Globe Sales - ACT Commercial*	ACT	0	0	0	0	0	0	0
Neco Group: Showerheads and CFL Globe Sales - NSW Commercial*	NSW	0	0	0	0	0	0	0
Neco Holdings: Showerheads and CFL Globe Sales - ACT Commercial*	ACT	0	0	0	0	0	0	0
Neco Holdings: Showerheads and CFL Globe Sales - NSW Commercial*	NSW	0	0	0	0	0	0	0
Alliance Network International: Commercial installations in ACT	ACT	0	0	0	0	0	7,089	7,089
Alliance Network International: Commercial installations in NSW	NSW	0	0	0	0	150,731	163,178	313,909
AMRS (Aust): Energy Efficiency Refit Program - Commercial ACT	ACT	0	0	0	0	0	0	0
AMRS (Aust): Energy Efficiency Refit Program - Commercial NSW	NSW	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
Australian Heating Solutions: Installation of CFLs & flow restrictors - NSW Comm	NSW	0	0	0	0	22,103	8,145	30,248
Carbon Reduction Institute: Installation of CFLs - ACT Commercial	ACT	0	0	0	0	0	0	0
Carbon Reduction Institute: Installation of CFLs - NSW Commercial	NSW	0	0	0	0	11,147	0	11,147
Commonwealth Bank of Australia: Branch network BMS upgrade	NSW	0	263	511	510	544	523	2,351
Commonwealth Bank of Australia: Lighting controls	NSW	0	252	510	518	524	533	2,337
Commonwealth Bank of Australia: Voltage reduction in branch network lighting	NSW	0	315	624	633	607	548	2,727
Commonwealth Bank of Australia: VSD upgrade on cooling fans & condenser pump	NSW	0	53	106	108	109	110	486
Demand Manager: Lighting Aggregation Project	NSW	0	0	0	8,024	12,590	14,022	34,636
Demand Manager: ACT Commercial PFC 1	ACT	0	0	0	0	0	0	0
Demand Manager: NSW Commercial PFC 1	NSW	0	0	0	0	1,650	325	1,975
Demand Manager: NSW Commercial PFC 2	NSW	0	0	0	0	0	359	359
Easy Being Green: Lighten Your Load NSW - ACT Commercial	ACT	0	0	0	0	700	0	700
Easy Being Green: Lighten Your Load NSW - NSW Commercial	NSW	0	0	0	0	95,496	0	95,496
Energy Australia: Commercial Premises in ACT	ACT	0	0	0	0	0	0	0
Energy Australia: Commercial Premises in NSW	NSW	0	0	0	0	0	0	0
Energy Australia: Power Factor Correction	NSW	2,140	2,898	0	0	0	0	5,038
Eureka Funds Management: Eureka ABGR Energy Efficiency Program	NSW	0	0	0	0	0	0	0
Fieldforce Services: Retrofit Program - Commercial ACT	ACT	0	0	0	0	20,299	2,388	22,687

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
Fieldforce Services: Retrofit Program - Commercial NSW	NSW	0	0	0	0	314,501	425,876	740,377
Illum-a-Lite: Light Eco Energy Efficient Project	NSW	0	713	1,991	2,064	2,443	2,594	9,805
Investa Properties: Office Buildings assessed using the ABGR - ACT	ACT	0	0	0	133	121	84	338
Investa Properties: Office Buildings assessed using the ABGR - NSW	NSW	0	10,337	8,011	7,914	11,237	10,393	47,892
Koala Lamps: Compact Lamp Supply to end users	NSW	0	0	13,747	21,423	19,982	18,762	73,914
Low Energy Supplies and Services: Direct Sales and Giveaways - ACT Commercial	ACT	0	0	0	0	7,042	0	7,042
Low Energy Supplies and Services: Direct Sales and Giveaways - NSW Commercial	NSW	0	0	0	0	144,258	45,499	189,757
Macquarie Asset Services: Building Energy Consumption Reduction	NSW	0	0	190	4,544	6,223	7,501	18,458
Rheem Australia: Air compressor PLC control	NSW	0	671	0	0	0	0	671
SkyNet Systems: Installation of CFLs - ACT Commercial	ACT	0	0	0	0	0	0	0
SkyNet Systems: Installation of CFLs - NSW Commercial	NSW	0	0	0	0	0	1,179	1,179
South Tweed Bowls Club: Upgrade of lighting at South Tweed Bowls Club	NSW	0	348	0	348	0	0	696
Stockland Property Management: ABGR Energy Monitoring and Modification - ACT	ACT	0	0	0	4	38	436	478
Stockland Property Management: ABGR Energy Monitoring and Modification - NSW	NSW	0	0	0	165	3,073	2,838	6,076
Sydney West Area Health Service: EPC and GEEIP	NSW	0	1,615	3,794	5,910	6,111	5,997	23,427
University of Technology Sydney: Building 2 Lighting Upgrade	NSW	0	0	0	543	0	0	543
University of Wollongong: Occupancy sensors for lighting controls	NSW	0	771	777	0	777	464	2,789
University of Wollongong: Voltage reduction for lighting control	NSW	0	149	150	0	150	157	606
Watts Green: AAA Energy Efficiency Refit Program - ACT Commerci	ACT	0	0	0	0	0	0	0
Watts Green: AAA Energy Efficiency Refit Program - NSW Commerci	NSW	0	0	0	0	0	75,055	75,055
Woolworths: Supermarket After Hours Lighting Controls	NSW	15,517	17,120	17,120	16,978	17,262	18,221	102,218
Total		22,720	40,249	47,924	69,819	870,492	812,276	1,863,480

Energy Efficiency: Industrial

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
The Sustainable Energy Dev Auth: Installing LightEco Dimmer Units*	NSW	108	54	0	0	0	0	162
The Sustainable Energy Dev Auth: Replacing Water Pumps with VSD Unit*	NSW	277	139	0	0	0	0	416
The Sustainable Energy Dev Auth: Replacing Effluent Pump with VSD Unit*	NSW	135	116	0	0	0	0	251
The Sustainable Energy Dev Auth: Installation of Air Conditioner Timer*	NSW	235	124	0	0	0	0	359
The Sustainable Energy Dev Auth: Skylight Upgrade*	NSW	107	54	0	0	0	0	161
The Sustainable Energy Dev Auth: Replace Pneumatic Blowers with VSD Conveyor*	NSW	67	57	0	0	0	0	124

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
The Sustainable Energy Dev Auth: Replace Blower with Conveyor on Necking Line*	NSW	410	205	0	0	0	0	615
The Sustainable Energy Dev Auth: Installing LightEco Dimmer Units*	NSW	53	38	0	0	0	0	91
The Sustainable Energy Dev Auth: BOC - Port Kembla LMPC*	NSW	3,375	2,095	0	0	0	0	5,470
The Sustainable Energy Dev Auth: Installation of VSD on Boiler*	NSW	183	122	0	0	0	0	305
The Sustainable Energy Dev Auth: Replacing Air Compressors with VSD Units*	NSW	568	434	0	0	0	0	1,002
Amcor: Skylight upgrade (Revesby)*	NSW	0	54	0	0	0	0	54
Riverina Wool Combing: Air conditioning timers*	NSW	0	222	0	0	0	0	222
Demand Manager: NSW Industrial PFC 1*	NSW	0	0	0	0	1,865	0	1,865
Amcor: Air conditioning timers (Regents Park)	NSW	0	125	753	0	0	262	1,140
Amcor: Botany Mill Efficiency Initiatives	NSW	0	0	0	709	0	3,420	4,129
Amcor: Lighting voltage reduction (Botany & Smithfield)	NSW	0	104	627	0	0	217	948
Amcor: Upgrade of blowers with conveyors (Revesby)	NSW	0	207	1,251	0	0	436	1,894
Amcor: Upgrade of blowers with VSD conveyors (Revesby)	NSW	0	58	390	0	0	121	569
Amcor: Upgrade of pumps with VSD units (Matrville)	NSW	0	289	1,749	0	0	608	2,646
BOC: Port Kembla LMPC	NSW	0	0	3,288	1,358	0	4,369	9,015
Boral: Berrima Kiln 6 Upgrade	NSW	0	0	0	6,589	14,818	7,884	29,291
Carter Holt Harvey Australia: Refiner Control	NSW	0	0	0	8,065	14,249	16,007	38,321
Continental Carbon Australia: Installation of VSD on boiler fan	NSW	0	123	0	252	0	259	634
Demand Manager: ACT Industrial PFC 1	ACT	0	0	0	0	0	0	0
Demand Manager: NSW Industrial PFC 2	NSW	0	0	0	0	0	709	709
Hydro Aluminium Kurri Kurri: Smelter upgrade and retrofit	NSW	0	0	0	22,623	40,439	40,038	103,100
Manildra Starches: Spray dryer exhaust fan replacement at Manildra	NSW	0	284	286	291	0	299	1,160
Merck Sharp & Dohme (Australia): Lighting voltage reduction	NSW	0	193	1,170	0	0	0	1,363
Norske Skog Paper Mills (Aust): Deckers Feed Pump Bypass	NSW	0	0	0	0	0	2,297	2,297
NSW Roads and Traffic Authority: Upgrade of Traffic Lights	NSW	0	0	193	1,753	0	389	2,335
Orica Australia: Botany Chlorine Plant	NSW	23,668	20,667	19,322	20,637	25,335	23,614	133,243
Rema Industries and Services: New air compressor installation	NSW	0	356	789	0	789	0	1,934
Tomago Aluminium Company: Fume Treatment Centre VSD Project	NSW	6,386	6,747	6,996	4,016	1,585	385	26,115
Visy Pulp & Paper: Cooling Water Pumps Efficiency Project	NSW	0	0	0	525	629	1,841	2,995
Total		35,572	32,867	36,814	66,818	99,709	103,155	374,935

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
Demand Manager: Carbon Saver Project - NSW	NSW	0	0	0	0	0	9,534	9,534
Easy Being Green: Lighten Your Load NSW - ACT Residential	ACT	0	0	0	43,198	0	0	43,198
Easy Being Green: Lighten Your Load NSW - NSW Residential	NSW	0	0	0	2,694,658	1,112,399	434,565	4,241,622
EcoSmart Programs: EcoSmart Living Program Pilot - Western Sydney	NSW	0	0	0	2,348	5,864	0	8,212
Energy Australia: Compact Fluorescent Lamp Promotion - ACT	ACT	0	0	0	29,755	5,835	271	35,861
Energy Australia: Compact Fluorescent Lamp Promotion - NSW	NSW	0	182,295	3,016	1,256,576	47,258	47,569	1,536,714
Energy Australia: Residential Households in ACT	ACT	0	0	0	0	0	0	0
Energy Australia: Residential Households in NSW	NSW	0	34,010	28,928	12,718	25,215	91,421	192,292
Energy Australia: Residential Energy Efficiency Refit Pilot Program	NSW	646	2,269	0	0	0	0	2,915
Envirocare & Savers t/a Wellbeingreen: Light Bulb & Flow Restrictor Instal. program	NSW	0	0	0	0	0	0	0
Fieldforce Services: Retrofit Program - Residential ACT	ACT	0	0	0	0	262,340	123,885	386,225
Fieldforce Services: Retrofit Program - Residential NSW	NSW	0	0	0	0	4,609,421	1,926,587	6,536,008
Fieldforce Services: Give Away to Reduce Demand Program - ACT	ACT	0	0	0	79,964	34,658	0	114,622
Fieldforce Services: Give Away to Reduce Demand Program - NSW	NSW	0	0	0	1,331,288	305,815	0	1,637,103
Go Green Today: Free Energy Saving Offer	NSW	0	0	0	0	0	0	0
Integral Energy Australia: Give-Away of CFLs and Showerheads	NSW	0	0	0	0	5,195	0	5,195
Integral Energy Australia: Installation of CFLs	NSW	0	0	0	0	4,687	0	4,687
Low Energy Supplies and Services: Direct Sales and Giveaways - ACT Residential	ACT	0	0	0	3,506	275	0	3,781
Low Energy Supplies and Services: Direct Sales and Giveaways - NSW Residential	NSW	0	0	23,748	1,329,144	486,465	953,246	2,792,603
Murray Regional Development Board: Murray Energy Savings Program	NSW	0	0	0	0	5,148	31,328	36,476
Next Energy: Fridge Buyback Program	NSW	0	0	0	11,743	21,400	17,256	50,399
Philips Electronics Australia: Light Globe Replacement - ACT	ACT	0	0	0	26	10,366	0	10,392
Philips Electronics Australia: Light Globe Replacement - NSW	NSW	0	0	0	63,550	116,058	0	179,608
SkyNet Systems: Installation of CFLs - ACT Residential	ACT	0	0	0	0	0	327	327
SkyNet Systems: Installation of CFLs - NSW Residential	NSW	0	0	0	0	0	28,106	28,106
Sydney Water Corporation: DIY Water Saving Kit Program	NSW	0	0	0	58,628	57,401	20,561	136,590
Sydney Water Corporation: Residential Shower Retrofit Programme	NSW	0	91,102	197,303	191,532	126,104	40,148	646,189
Sydney Water Corporation: Washing Machine Rebate Program	NSW	0	0	0	39,237	91,494	103,051	233,782
Watts Green: AAA Energy Efficiency Refit Program - ACT Resident	ACT	0	0	0	0	0	0	0
Watts Green: AAA Energy Efficiency Refit Program - NSW Resident	NSW	0	0	0	0	5,000	112,626	117,626
Total		8,387	315,425	953,879	8,306,259	8,344,475	6,588,078	24,516,503

Energy Source Substitution: Commercial

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
The Sustainable Energy Dev Auth: Air Conditioner Chiller Compressor Upgrade*	NSW	65	65	0	0	0	0	130
Carbon Reduction Institute: Installation of Gas Boosted Solar HWS - NSW Com	NSW	0	0	0	0	0	0	0
Carbon Reduction Institute: Installation of Gas Boosted Solar HWS - ACT Com	ACT	0	0	0	0	0	0	0
Carbon Reduction Institute: Installation of Gas Hot Water Systems - ACT Com	ACT	0	0	0	0	0	0	0
Carbon Reduction Institute: Installation of Gas Hot Water Systems - NSW Com	NSW	0	0	0	0	0	0	0
Energy Australia: Electric to Gas Hot Water Conversion - ACT Com	ACT	0	0	0	0	0	0	0
Energy Australia: Electric to Gas Hot Water Conversion - NSW Com	NSW	0	0	0	0	0	0	0
Total		65	65	0	0	0	0	130

Energy Source Substitution: Residential

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
AGL Electricity: Gas Hot Water Systems - ACT*	ACT	0	0	0	1,460	0	0	1,460
AGL Electricity: Gas Hot Water Systems - NSW*	NSW	0	17,146	28,926	5,560	0	0	51,632
Big Switch Projects: Installation of Gas Hot Water Systems - NSW Res*	NSW	0	0	0	0	0	0	0
BTU Holdings Australia: Replacing electric with gas hot water systems*	NSW	0	0	60	0	0	0	60
AGL Hydro Partnership: Gas Hot Water Systems - ACT	ACT	0	0	0	5,400	7,320	7,940	20,660
AGL Hydro Partnership: Gas Hot Water Systems - NSW	NSW	0	0	0	24,340	21,900	31,960	78,200
Australian Heating Solutions: NSW Electric to Gas Hotwater Upgrade Scheme	NSW	0	0	0	4,480	2,280	2,040	8,800
Biogy: Electricity to Gas Hot Water Initiative	NSW	0	4,260	6,380	6,260	9,600	2,760	29,260
Carbon Reduction Institute: Installation of Gas Boosted Solar HWS - NSW Res	NSW	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
Carbon Reduction Institute: Installation of Gas Hot Water Systems - ACT Res	ACT	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
Country Energy: Countrygreen Gas Hot Water Replacement	NSW	0	0	0	0	0	0	0
Energy Australia: Electric to Gas Hot Water Conversion - ACT Res	ACT	0	0	0	0	0	0	0
Energy Australia: Electric to Gas Hot Water Conversion - NSW Res	NSW	0	0	0	160	2,980	100	3,240
Origin Energy Electricity: LPG Boosted Hot Water Systems - ACT	ACT	0	0	0	0	0	0	0
Origin Energy Electricity: LPG Boosted Hot Water Systems - NSW	NSW	0	0	0	0	0	0	0
Rheem Australia: Rheem Gas Hot Water - ACT	ACT	0	0	0	120	260	60	440
Rheem Australia: Rheem Gas Hot Water - NSW	NSW	0	0	0	2,120	4,420	8,080	14,620
Total		0	21,406	35,366	49,900	48,760	52,940	208,372

On-site Generation: Industrial

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
Energy Australia: QAF Power Project*	NSW	0	0	0	0	0	0	0
BlueScope Steel (AIS): Steelworks Generation Project (Future Project)	NSW	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	812,857
Endeavour Coal: WestVAMP	NSW	0	0	0	0	168,755	210,643	379,398
Sydney Water Corporation: Cronulla STP - Cogeneration Plant	NSW	3,542	937	4,044	5,882	926	5,349	20,680
Sydney Water Corporation: Malabar STP - Cogeneration Plant	NSW	51,157	55,834	49,654	55,121	41,063	62,938	315,767
Sydney Water Corporation: North Head Cogeneration Plant	NSW	0	0	0	0	0	20,804	20,804
Visy Pulp & Paper: Tumut On-site Cogeneration Plant	NSW	112,947	123,982	171,870	249,446	204,491	212,990	1,075,726
Total		278,397	332,221	435,216	441,440	564,195	573,763	2,625,232

On-site Generation: Residential

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

CS Rule certificate creations by project type

Name: Project name	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
Australian Forest Corporation: The Rainforest Carbon Sink	NSW	0	0	0	0	0	0	0
Blue-Leafed Mallee: Project 2007	NSW	0	0	0	0	40	307	347
CO2 Australia: CO2 Australia Carbon Sequestration Pool	NSW	0	0	0	198	1,032	3,863	5,093
Forestry Commission of NSW: Forests NSW Carbon Pool	NSW	0	166,005	538,471	587,231	694,935	660,382	2,647,024
Go-Gen Australia: Go-Gen Australia	NSW	0	0	0	0	0	0	0
Landcare CarbonSMART: NSW Pool	NSW	0	0	0	0	70	87	157
Mallee Carbon: Project 2005	NSW	0	0	0	424	2,688	10,558	13,670
Total		0	166,005	538,471	587,853	698,765	675,197	2,666,291

Large User Abatement Certificate Rule certificate creations by project type

Name: Project name	Project type	Jurisdiction	2003	2004	2005	2006	2007	2008	Total
Amcor Packaging (Australia): Botany Mill Whole of Site Emissions Reduction	Increased Fuel Efficiency Paper & Wood	NSW	0	0	3,631	13,175	18,128	22,992	57,926
BlueScope Steel (AIS): Modifications to #25 Boiler	Fuel Switching Steel	NSW	0	0	0	77,574	93,267	81,149	251,990
Boral: Berrima Works Clinker Production Upgrade Kiln 6	Increased Fuel Efficiency Cement	NSW	0	0	78,690	157,082	232,563	163,172	631,507
Carter Holt Harvey Australia: Fossil Fuel Replacement Project	Fuel Switching Paper & Wood	NSW	0	0	0	3,432	4,418	2,832	10,682
Hydro Aluminium Kurri Kurri: Kurri Kurri Primary Aluminium Smelter	Industrial Process Aluminium	NSW	0	0	0	516,146	644,404	662,220	1,822,770
Norske Skog Paper Mills (Aust): TMP Heat Recovery	Increased Fuel Efficiency Paper & Wood	NSW	0	0	11,956	6,551	15,322	18,547	52,376
Orica Australia: Kooragang Island Ammonia Plant	Increased Fuel Efficiency Chemicals	NSW	0	0	0	0	122,155	106,220	228,375
Tomago Aluminium Company: Greenhouse Gas Reduction	Industrial Process Aluminium	NSW	0	0	0	0	102,489	146,803	249,292
Xstrata Coal NSW: Bulga Coal Flaring Project	Reduced Fugitive Emissions Mining	NSW	0	0	0	0	0	46,989	46,989
Xstrata Coal NSW: Flaring Project	Reduced Fugitive Emissions Mining	NSW	0	0	0	16,500	52,899	47,151	116,550
Total			0	0	94,277	790,460	1,285,645	1,298,075	3,468,457

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 ten per cent 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.
