

Compliance and Operation of the NSW Greenhouse Gas Reduction Scheme during 2007

Report to Minister

July 2008

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1 Executive summary

The Greenhouse Gas Reduction Scheme, also referred to as GGAS, commenced in January 2003. GGAS pioneered emissions trading in Australia and was one of the first emissions trading schemes in the world. It continues to be the world's second largest mandatory emissions trading scheme, second only to the European Union Emissions Trading Scheme.

This report covers the 2007 calendar year, the fifth year of operation of GGAS.

During 2007 the level of debate on climate change and emissions trading in particular, escalated significantly with Commonwealth consideration of, and subsequent commitment to, the introduction of a national emissions trading scheme. This is proposed to commence in 2010.

The enabling legislation for GGAS was amended in 2006 with the effect that GGAS can terminate on the commencement of a national scheme. This reflects the fact that both emissions trading schemes would cover similar sectors with both seeking to put a price on carbon emissions, albeit by different approaches.

GGAS will continue to operate until the commencement of a national emissions trading scheme. Liable parties such as electricity retailers will continue to have an obligation to surrender certificates each year to partially offset the emissions associated with electricity sales. Abatement certificate providers will continue to be able to create abatement certificates for approved emissions reductions projects.

The Independent Pricing and Regulatory Tribunal (IPART) will continue its two key GGAS roles. IPART is Scheme Administrator for NSW and the ACT (accreditation and monitoring of abatement projects). IPART also ensures that NSW benchmark participants comply with Scheme obligations (compliance regulator). The functions of compliance regulator for the ACT are exercised by the ACT Independent Competition and Regulatory Commission (ICRC).

The NSW Government has also recently announced the creation of a NSW Energy Efficiency Target Scheme which will commence on 1 January 2009 and will replace and extend the current energy efficiency initiatives currently in place under the GGAS DSA Rule. The details and arrangements for this new scheme will be developed during 2008.

GGAS has continued to grow during 2007; there are now 40 benchmark participants who surrendered approximately 17 million certificates in 2007; representing a 38 per cent increase in the number of certificates surrendered from 2006.

With the exception of only one retail supplier, all benchmark participants fully met their greenhouse gas abatement obligations in 2007. This is a high level of compliance given that the benchmark target has continued to tighten during the period 2003 to 2007 to ensure that NSW met the electricity sector emission target of 7.27 tCO₂-e per capita.

The benchmark participant that failed to meet its benchmark target was Momentum Energy. This company is a new entrant to the NSW electricity market and it accrued a small greenhouse gas shortfall which required the surrender of 17 certificates for full compliance. However, the company failed to lodge a benchmark statement. As a result IPART made a default assessment and imposed a penalty of \$204.

The number of companies undertaking accredited projects to reduce greenhouse gas emissions also increased during the reporting year. At the end of 2007, there were 204 accreditations held by 111 companies eligible to create abatement certificates. This was a significant increase from the 167 accreditations current at the end of 2006.¹

In 2007 there were 24,790,179 certificates created, an increase of 25 per cent above 2006 creation. Of this, 1,288,383 were created by large energy users which increased in 2007 by over 63 per cent from 2006 levels.

During 2006 there was a significant increase in the number of abatement certificates created through energy efficiency projects, predominantly through use of the Default Abatement Factors (DAF) Method. Changes to the relevant GGAS Rule at the end of 2006 to better reflect actual installation rates, made giving away items such as compact fluorescent lamps and efficient showerheads less attractive to participating companies than it had previously been.

Throughout 2007 many of the companies that had been giving away these products increased direct installation programs, where a company representative would visit a household or commercial building and directly install these energy efficient products. Some GGAS accredited companies increased this activity to a very high level across NSW and the ACT during the year, although a falling certificate price in the second half of 2007 saw some withdraw from the market and others scale back activity. Although the pace of certificate creations slowed in the second half of the year, the number of certificates created under the Demand Side Abatement Rule increased overall in 2007.

¹ 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 accreditation.

Similarly the number of certificates created under the Generation Rule increased in 2007 compared to 2006, reflecting in part a net increase of 18 accreditations over the year, predominantly from various forms of gas generation. Seven of these were generation projects located in Tasmania which became interconnected with the national electricity grid in April 2006. As a result, Tasmanian generators became eligible to participate in GGAS.

The past year also saw the submission of performance improvement testing regimes by coal fired generators accredited under the Efficiency Improvement approach of the Generation Rule. The preparation of these detailed testing regimes by GGAS participants and their subsequent analysis and review were substantial tasks. However, it is anticipated that the refinement of emissions data gathering required by these regimes will be of lasting benefit to the generators under future emissions reporting and trading frameworks.

The compliance and monitoring of performance by participants occupied a significant part of the Scheme Administrator's activities in 2007. Overall compliance by companies accredited to create certificates was high. There were some minor instances of over-creation, but consultation and cooperation by all parties resulted in these certificates being voluntarily forfeited without the need for any compliance action on behalf of the Scheme Administrator.

The Audit and Technical Services Panel continued to operate effectively during the year, to verify and validate abatement claimed under GGAS. At the end of the year, there were 25 firms appointed to the panel and 192 people in these firms trained to conduct GGAS audits. There were 91 audits conducted during the year. Of the 22 instances of contraventions identified during 2007, 12 (55 per cent) of these were identified through audits.

Once again, as with every year since GGAS commenced, more certificates were created than were needed for benchmark participants to meet compliance obligations. Notwithstanding the transition to a national emissions trading scheme in 2010, the Scheme Administrator's most recent projection indicates that annual certificate supply surplus is likely to remain for at least the next two years.

The transition to a national emissions trading scheme is likely to present challenges to GGAS administrators and participants. Clearly a set of transition arrangements will need to be established by agreement between the New South Wales and Commonwealth Governments. The New South Government is currently undertaking a consultation process on transition arrangements with key stakeholders.

Over the years since GGAS commenced the Scheme Administrator has made a priority of achieving integrity of abatement to ensure confidence in and the credibility of GGAS. This has required significant process development by the Scheme Administrator which has sought to extend to its work the highly consultative and professional approach taken by IPART more generally. It was highly gratifying therefore that in late 2007 IPART received a Silver Premier's Award for its 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 most of the 2007 calendar year the Committee comprised Mr James Cox and Mr Peter Egger with Mr Eric Groom joining the Committee in November 2007. The Committee met 18 times in 2007.

2 Overview of GGAS

The Greenhouse Gas Reduction Scheme (GGAS) was one of the first mandatory greenhouse gas emissions trading schemes established in the world 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. Subsequently, the Commonwealth Government has committed to the implementation of a national emissions trading scheme, most likely to be called the Australian Emissions Trading Scheme (AETS) from 2010. In accordance with legislation, GGAS is intended to end on the commencement of the AETS.

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 GGAS certificates that are created through activities that reduce or offset emissions. 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

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

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.

manages the creation, transfer of ownership and ultimate surrender of the abatement certificates. Once surrendered, the 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. In the past two years of operation, revenue earned through the registration of certificates and application fees charged to applicants has exceeded the operating expenses for managing and operating GGAS. In 2007, the cost of administering GGAS represented 1.4% of the total value of certificates registered during the year, based on an end of year spot price of \$7.00.

GGAS can be characterised as a “baseline and credit” form of emissions trading compared to prior practice, business as usual or, in some cases, current industry practice. Each certificate represents a tonne of emissions reduction or sequestration.

The proposal for the AETS, the national scheme, is for a “cap and trade” form of emissions trading where total sector emissions are capped and a permit needs to be surrendered for each tonne emitted by a sector participant. Under these proposals there may or may not be provision for offsets, similar in effect to credit certificates, to be created for specified emissions reduction projects, such as forestry sequestration, and for these to be surrendered in lieu of permits.

2.1 Legislative framework

GGAS in NSW 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 abatement certificate provider 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 ICRC in the ACT and IPART in NSW). These include

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.

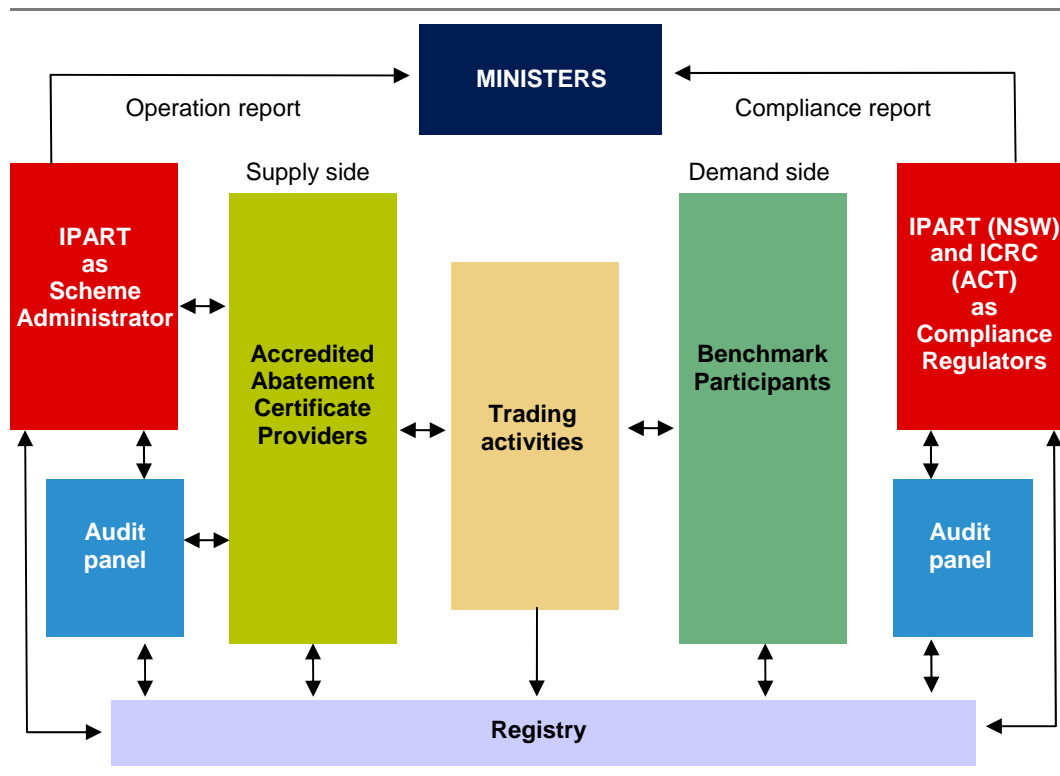
ensuring that electricity retailers in the ACT and NSW meet legislated targets by surrendering certificates to offset emissions and reporting on compliance outcomes to the relevant jurisdictional Ministers.

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.

2.2 Structure of GGAS

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

Figure 2.1 Structure of GGAS and key participants



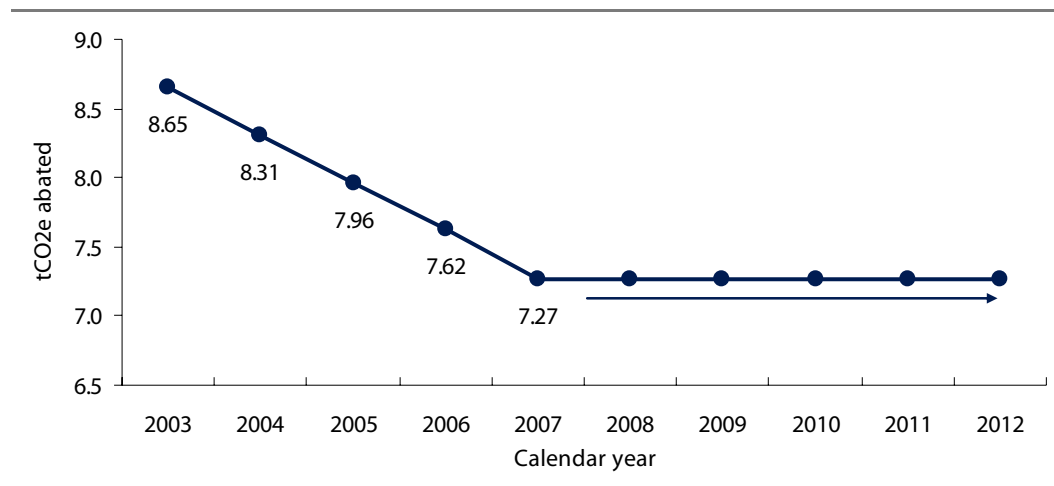
2.3 Greenhouse gas benchmarks

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

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

For the 2007 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 has progressively dropped 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. Figure 2.2 illustrates how the benchmark has changed since GGAS commenced in 2003.

Figure 2.2 NSW Benchmark Targets (2003-2021)



2.4 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. 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. Large customers who have elected into GGAS 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.

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.

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.

Benchmark participants primarily reduce their per capita emissions by purchasing NSW Greenhouse Abatement Certificates (known as abatement certificates or NGACs) and surrendering these to IPART or the ICRC when they lodge their compliance reports.

2.5 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, 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 Large User Abatement Certificates (LUACs) for these activities. These certificates are not tradeable. In accordance with the *Greenhouse Gas Benchmark (Large User Abatement Certificate) Rule No.4 of 2003*, creation of LUACs is not directly related to electricity use.

Eligible demand side abatement projects (energy efficiency) must be undertaken in NSW or the ACT. Carbon sequestration activities can only be undertaken in NSW. As NSW and the ACT are part of the National Electricity Market, interstate generators also provide electricity to NSW and ACT customers. Therefore, interstate generation projects using various fuel sources connected to the National Electricity Market 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. There were no rule amendments required during 2007.

3 Benchmark participants

There were 40 benchmark participants for the 2007 compliance year in NSW; all 26 licensed electricity retailers⁷, 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).

During 2006 IPART approved applications from two large electricity customers seeking to manage their own greenhouse gas abatement in the 2007 compliance year. Currently, no State significant developments have elected into GGAS.

All benchmark participants are required to lodge an Annual Greenhouse Gas Benchmark Statement (benchmark statement) for 2007 with IPART by no later than 18 March 2008.⁸ 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, an audit exemption might be granted in the instance where a benchmark participant has a very low electricity load for the year.

The benchmark statement sets out the greenhouse gas benchmark 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 year⁹, 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.

⁷ 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.

⁸ IPART has determined this deadline for submission of benchmark statements pursuant to section 97CB(1) of the Act.

⁹ Pursuant to section 97BE(1) of the Act, a greenhouse shortfall can be carried forward to the next year (for any year other than the year commencing 1 January 2007). In 2007, no shortfall is allowed to be carried forward to ensure that NSW meets the target in line with the Kyoto Protocol (this represents a reduction of 5 per cent below the equivalent NSW levels from 1989-90).

For the 2007 compliance year, benchmark participants are liable to incur a financial penalty of \$12.00 per tCO₂-e for any shortfall¹⁰.

3.1 Overall compliance

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

In the 2007 compliance year:

- ▼ Twenty-nine benchmark participants surrendered sufficient abatement certificates to fully meet their greenhouse gas benchmark for 2007.
- ▼ Nine benchmark participants did not directly purchase or sell electricity in NSW and did not need to surrender any abatement certificates.
- ▼ Momentum Energy was the only benchmark participant that failed to lodge their benchmark statement for the 2007 compliance year. As a consequence, the company incurred a small penalty for failure to meet its greenhouse gas shortfall of 17 abatement certificates in 2007.
- ▼ Almost 17 million abatement certificates (comprising approximately 16 million NGACs and one million LUACs) were surrendered by participants to meet their 2007 benchmarks.
- ▼ Nearly 1.9 million renewable energy certificates (RECs)¹¹ associated with electricity purchases in NSW also were counted towards participants' NSW greenhouse gas abatement obligations.

Table 3.1 shows benchmark participants' performance against compliance requirements in 2007. The table separately shows mandatory and elective participants involved in GGAS and how each met its individual benchmark.

¹⁰ The calculation of the penalty and CPI adjustment is made pursuant to section 97CA of the Act and section 73C of the Regulation. The penalty is adjusted annually in line with CPI movements. However, during periods of low inflation the penalty is not adjusted due to a rounding mechanism in the formula.

¹¹ 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.

Table 3.1 NSW Benchmark Participants Compliance Status

MANDATORY PARTICIPANTS		
Surrendered sufficient certificates to meet 2007 benchmark	Did not directly purchase or sell enough electricity in NSW to require the surrender of certificates for 2007	Failed to meet their Greenhouse Gas benchmark requirements for 2007
ActewAGL Retail	Citipower ^a	Momentum Energy Limited
AGL Sales (Queensland)	Cogent ^b	
AGL Sales	Dodo Power & Gas ^b	
Aurora Energy	Eraring Electricity ^b	
Australian Power & Gas	ERM Power Retail ^b	
Country Energy	GridX Power ^b	
Delta Electricity	NSW Electricity ^b	
Energy Australia	Powercor ^a	
Energy One Limited	Sun Retail ^a	
Independent Electricity Retail Solutions		
Integral Energy		
Jackgreen International		
Macquarie Generation		
Red Energy		
Tomago Aluminium ^c		
TRUenergy		
TRUenergy Yallourn		
Powerdirect Australia		
Origin Energy		
ELECTIVE PARTICIPANTS		
Amcor Packaging	N/A	N/A
Bluescope Steel		
Boral Limited		
Carter Holt Harvey Australia		
Hydro Aluminium Kurri Kurri		
Norske Skog Paper Mills		
OneSteel NSW		
OneSteel Trading		
Orica Australia		
Visy Industries Holdings		
Xstrata Coal Australia		
TOTAL: 30	TOTAL: 9	TOTAL: 1

^a 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.

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

^c Registered with NEMMCO as a market customer, that is, an electricity customer taking supply directly from the National Electricity Market.

3.2 Abatement and Renewable Energy Certificates surrendered since GGAS began

Since GGAS began in 2003, approximately 42 million NGACs have been surrendered. This figure increases to approximately 49 million certificates when LUACs and 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.

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
Total NGACs surrendered for the compliance year	1,166,866	5,037,847	7,982,204	11,592,583	15,922,727
Total LUACs surrendered for the compliance year	0	0	64,401	686,560	1,040,462
RECs counted towards compliance (converted to an equivalent number of NGACS as tCO ₂ -e) ^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)
Total shortfalls carried forward to next compliance year	44,643	141,908	225,201	343,586	0

^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 2007 that number is 0.941 (tCO₂-e/MWh)).

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

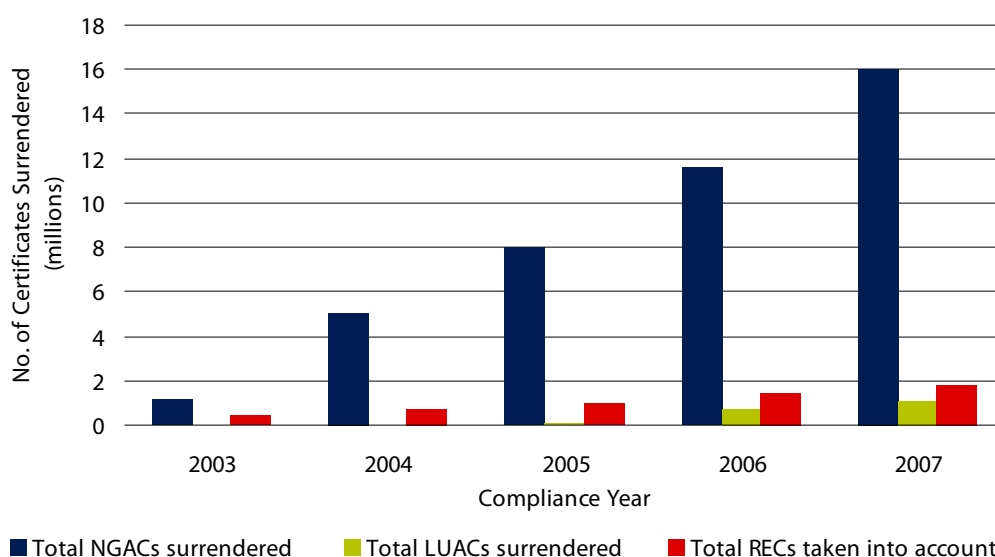
Compliance Year	2003	2004	2005	2006	2007
NGACs surrendered	68.6%	85.4%	87.2%	84.0%	85.1%
LUACs surrendered	0.0%	0.0%	0.7%	5.0%	5.5%
RECs taken into account	28.7%	12.9%	11.2%	10.2%	9.4%
Greenhouse shortfall ^a	2.6%	1.6%	0.9%	0.9%	0.0%
Total abatement	100.0%	100.0%	100.0%	100.0%	100.0%

^a In 2007, no shortfall is 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 totally meet the greenhouse abatement obligations in each year. Note that the allowed carried forward shortfall (see section 3.2.1) 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 2007 greenhouse abatement obligation totals 18,705,620 abatement certificates.¹²

Figure 3.1 Abatement and Renewable Energy Certificates surrendered



For the 2007 compliance year, approximately 16 million NGACs were offered for surrender; representing an increase of 38 per cent compared to the 2006 compliance year. As depicted in Figure 3.1, NGACs continue to make up the largest percentage of abatement certificates surrendered to meet required compliance obligations.

Over one million LUACs were surrendered by eight elective benchmark participants for the 2007 compliance year. LUACs are non-tradable abatement certificates created by large users' eligible abatement activities that reduce on-site greenhouse gas emissions not directly related to the use of electricity.¹³ LUACs now represent approximately 5.5 per cent of total abatement (an increase of 51.5 per cent compared to 2006). Table 3.4 shows that some large users were able to come close to meeting their benchmarks through the surrender of LUACs alone.

¹² 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, excluding the shortfall carry forward amounts from 2006 compliance year.

¹³ The rules governing creation and calculation of Large User Abatement Certificates (LUACs) through the abatement of on-site production-related emissions are set out in *Greenhouse Gas Benchmark Rule (Large User Abatement Certificates) No. 4 of 2003*.

Table 3.4 Large User Abatement Certificates Surrendered in 2006 and 2007 by Individual Large Users ¹⁴

Large Users (That Surrendered LUACs)	2006 LUACs Surrendered (as a % of total abatement)	2007 LUACs Surrendered (as a % of total abatement)
Amcors Packaging	26.1%	31.7%
Boral Limited	100.0%	89.9%
BlueScope Steel	42.6%	30.4%
Carter Holt Harvey Aust.	0.0%	15.0%
Hydro Aluminium Kurri Kurri	87.1%	89.2%
Norske Skog	22.3%	6.9%
Orica Australia	0%	89.9%
Xstrata Coal	40.9%	39.0%

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 and can be counted towards participants' NSW greenhouse gas abatement obligation.

While the number of RECs counted has steadily increased (by approximately 24 per cent for 2007), the percentage of RECs in relation to the total number of certificates surrendered has decreased. This now represents just below 10 per cent of the total abatement obligation in 2007, down from 29 per cent when GGAS first began.

3.2.1 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.¹⁵ Any shortfall carried forward must be abated in the following compliance year.

To ensure that NSW fully meets the electricity sector emissions target of five per cent per capita below the levels in 1989-90, in 2007 there was no greenhouse shortfall allowed to be carried forward to 2008. The emission target of 7.27 tCO₂-e per capita will continue at this level until the end of the NSW scheme.

¹⁴ 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.

¹⁵ Section 97BE of the Act states that a greenhouse shortfall in any year (other than the year commencing 1 January 2007) may, subject to the greenhouse gas benchmark rules, be carried forward to the next year.

3.3 Type of abatement certificates surrendered (NGACs/LUACs) since GGAS began

GGAS allows the creation of abatement certificates for the following abatement activities:

- ▼ low-emission generation of electricity (Generation)
- ▼ activities that result in reduced consumption of electricity (Demand Side Abatement)
- ▼ the capture of carbon from the atmosphere in forests (Carbon Sequestration)
- ▼ activities carried out by elective participants that reduce on-site emissions not directly related to electricity consumption (Large User Abatement).¹⁶

Table 3.5 provides a detailed breakdown of types of certificates (NGACs/LUACs) offered for surrender and accepted for each year of GGAS operation.

Table 3.5 Type of certificates (NGACs/LUACs) offered for surrender and accepted

NGACs/LUACs	2003	2004	2005	2006	2007
Generation	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%
Demand Side Abatement	52,692 4.5%	605,734 12.0%	382,354 4.8%	2,251,272 18.3%	6,158,491 36.3%
Carbon Sequestration	0 0.0%	0 0.0%	0 0.0%	50,050 0.4%	24,999 0.1%
Large User Abatement	0 0.0%	0 0.0%	64,401 0.8%	686,560 5.6%	1,040,462 6.1%
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%

Note: Percentage totals may not add due to rounding.

Generation activities continue to be the main source of abatement certificates surrendered, representing approximately 57 per cent of all abatement certificates offered for surrender for 2007; a decrease of approximately 18 per cent compared to the 2006 compliance year.

The number of Demand Side Abatement certificates surrendered has increased significantly compared to the 2006 compliance year, representing slightly more than 36 per cent of the total abatement certificates surrendered this compliance year.

¹⁶ LUACs are not directly related to electricity use in accordance with the *Greenhouse Gas Benchmark (Large User Abatement Certificate) Rule No. 4 of 2003*.

Surrender of Large User Abatement Certificates increased slightly representing approximately six per cent of total abatement certificates surrendered for 2007. Carbon Sequestration certificates represented only a small percentage, comprising of 0.15 per cent of total abatement certificates surrendered.

3.4 Non-compliant benchmark participants in 2007

Momentum Energy was the only benchmark participant that failed to meet its greenhouse gas obligation for the 2007 compliance year. The company is a new participant in NSW with a small electricity load. Momentum Energy did not submit a completed benchmark statement for the 2007 compliance year despite various reminders. As a consequence, IPART made a default assessment and applied a penalty in respect to Momentum Energy's small greenhouse gas shortfall. The shortfall amounted to 17 NGACs and in the absence of meeting its obligation, Momentum Energy was assigned a penalty of \$204.

4 | Abatement certificate providers

Organisations that are accredited for eligible abatement projects are called Abatement Certificate Providers (ACPs). ACPs are accredited by the Scheme Administrator to create certificates (NGACs and LUACs), each of which represents the abatement of one tonne of carbon dioxide equivalent emissions.

At the end of 2007, there were 204 ACPs eligible to create certificates for abatement activity, an increase from 167 providers accredited at the end of 2006. The Tribunal committee sitting as Scheme Administrator met 18 times during 2007 and approved a total of 48 accreditations. For the life of GGAS, a total of 283 applications have been accredited, and 79 accreditations cancelled for reasons outlined below.

The Scheme Administrator is responsible for assessing applications for accreditation by 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.

The first half of 2007 continued to see strong growth in participation by organisations undertaking abatement. New ACPs were accredited under each of the Rules which cover low or reduced emissions generation, electricity demand side abatement, non electricity abatement by large users and carbon sequestration through forestry. In addition, there were two corporate restructures which necessitated the cancellation and then re-accreditation of projects.

A key factor impacting the number of applications received in the latter half of the year was the significant drop in the price of certificates from September 2007. This especially had an impact on potential projects under the Demand Side Abatement (DSA) Rule.

The drop in certificate price also led to a number of ACPs varying their level of activity under GGAS accreditation. During 2007, one company was placed under voluntary administration and all issues associated with the compliance of that company were carefully managed during the administration period. This company was subsequently sold in early 2008, with its accreditation intact.

During 2007 a number of measures were put in place to strengthen GGAS' compliance monitoring procedures. Compliance performance by GGAS ACPs was generally strong. This is discussed further in Section 5.6.

Compliance is monitored through the use of audits. To date, the minor incidents of non-compliance continue to be primarily 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 0.13 per cent of total NGAC creation). All incidents of over-creation were redressed via voluntary forfeiture of NGACs.

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.

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 set out an overview of the types of activities that have been accredited under each of the Rules and provide more detail about accreditation activity during 2007.

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

	Generation	Demand Side Abatement	Large Users – non-electricity	Carbon Sequestration	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
Current total^c	115	75	8	6	204

^a This represents the number of accreditations approved by IPART 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 2007.

^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.

4.2 Generation Rule

The *Greenhouse Gas Benchmark (Generation) Rule No. 2 of 2003* (“the Generation Rule”) enables electricity generators to create certificates for:

- ▼ producing electricity that has a lower emission intensity than the NSW Pool Coefficient (the Relative Intensity Approach)
- ▼ 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 the Scheme, 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 the Scheme. 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 also attract additional abatement certificate creation 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

During 2007 there were 24 new projects accredited to create certificates under the Generation Rule across a diverse range of activities. Examples of the types of projects accredited under the Rule include:

- ▼ 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 putrescible waste as fuel.

Of the 24 new accreditations, four were for future projects. These projects include a cogeneration generating system, a waste coal mine gas generating system and two generating systems fired on a mixture of natural gas and coal seam methane. Refer to Section 4.6 for further information on future projects.

In addition to assessing new Generation Rule applications during 2007, the Scheme Administrator also assessed 26 amendments to accreditations. Five of these arose as a result of the introduction of the Performance Improvement Testing Regime (PITR) process (see 4.2.4 below), with the remainder including commissioning future projects, adjustments to audit regimes, 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
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
	Natural gas			1		1
	Sewage gas			1		
	Waste coal mine gas		2		1	
Total		3	27	3	2	6

Australian Capital Territory

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

Queensland

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

South Australia

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

Victoria

Category	Fuel Type	2003	2004	2005	2006	2007
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
	Natural gas			1	1	2
Total		5	21	15	3	5

Tasmania

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

All Jurisdictions

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

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

4.2.2 Cancellations of Generation Rule accreditations

During 2007, six Generation Rule accreditations were cancelled at the request of the accredited parties. The cancellations involved:

- ▼ 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 application for accreditation from the new company)
- ▼ two cases where the development of a future project generating system was suspended due to unsuccessful negotiations with other parties
- ▼ three cases where the ACP ceased to be the owner of the generating system (with no new owner application immediately forthcoming).

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 and emissions abatement and therefore NGAC calculations.

The highly technical nature of the projects proposed for accreditation also poses challenges to assessing applications and 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.

Examples of technical reviews commissioned by the Scheme Administrator in 2007 include reviews of:

- ▼ Performance Improvement Testing Regime (PITR) submissions
- ▼ methane metering from landfill gas sites.

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).

During 2007, seven generators submitted PITR's for acceptance by the Scheme Administrator. Each PITR was subject to an independent technical review by industry experts. Following the review process and further development where necessary, all seven PITR's were accepted by the Scheme Administrator.

These PITRs were generally accepted by the Scheme Administrator for use over three calendar years with review required at the end of that period. Some were accepted for lesser periods where further refinement was considered necessary.

4.2.5 Methane Metering

Electricity generators utilising what would otherwise be waste gas for electricity generation can create additional NGACs under the Rule for preventing the release of fugitive methane to the atmosphere. Examples of the types of waste gas that are eligible under this approach include waste coal mine gas (WCMG), landfill gas (LFG), or sewage gas (SG).

In order to calculate the additional NGAC entitlement, the generator applies either Equation 13 or Equation 16 from the Generation Rule (depending on the source of the gas). As part of the calculation process, the generator is required to determine the energy content of the gas being used. To do this, the generator can propose an estimation methodology for acceptance by the Scheme Administrator, or elect to determine the actual energy content of the gas via the use of gas analysis equipment such as flow meters and methane analysers. The generator can also choose to use a 36% default factor¹⁷.

The Scheme Administrator received a proposal from a generator in 2006 which sought to use a methane detector and gas flow meter to determine the actual energy content of the fuel. The Scheme Administrator, following a technical audit of the proposed gas metering equipment, did not consider the proposed metering arrangement to be adequate because of the potential significant inaccuracy of the methane meter selected by the generator. It was found that the methane meter was adversely affected by varying ambient conditions and the presence of other hydrocarbons such as ethane and propane.

During 2007, the Scheme Administrator received another proposal from a different generator seeking to use a different methane analyser in its gas metering arrangement to determine the actual energy content of the gas. The Scheme Administrator engaged a technical auditor to review the arrangement. The auditor found the methane analyser used to be accurate and representative of "current industry best practise economically achievable".

¹⁷ Under clause 1.5 of the Generation Rule, those ACP's with methane projects accredited prior to 1 January 2005 were eligible to use a 30 per cent default factor (instead of the current 36 per cent default factor) for NGAC calculations up to 31 December 2007. However all methane project ACPs must now 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.

On the basis of this finding the Scheme Administrator approved this proposal and advised affected stakeholders. It also introduced an indicative total system accuracy benchmark for gas metering arrangements of ± 2 per cent which Generators should aim to meet or better.

4.3 Demand Side Abatement Rule

The *Greenhouse Gas Benchmark (Demand Side Abatement) Rule No. 3 of 2003* (“the 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
- ▼ 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.

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 Method and the Metered Baseline Methods. If the project involves the on-site generation of electricity, a fourth type of calculation method, 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 Project Impact Assessment Method (PIAM) 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 Methods are most appropriate when the project results in a substantial reduction to the energy consumption of the total site. The Metered Baseline Methods include the Australian Building Greenhouse Rating (ABGR) Scheme, which is a nationally recognised tool for rating the energy efficiency of office buildings. To date, a total of 75 PIAM projects and eight Metered Baseline Method projects have been accredited under GGAS, with four PIAM and two Metered Baseline Method projects accredited during 2007 (see Table 4.3 for further information).

The DAF Method prescribes default emissions abatement factors (DAFs) for common Installations (such as CFLs and the replacement of electric hot water systems with gas systems). All the DAFs for various Installations are listed in Schedule A, Table 1 of the DSA Rule. For CFLs, the DAFs vary depending on the rated life of the CFL. Under the DAF Method, the lifetime abatement for the Installation is accounted for or 'deemed' to have occurred at the time of installation.

Prior to being accredited, an applicant must specify the products or Installations they intend to use from those listed in the Schedule to the Rule. Another important feature of projects using the DAF Method is that, in general and for practical reasons, the abatement is assigned (via an approved nomination form) to a third party who takes on the liability and responsibility for reporting and compliance associated with GGAS.

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.

4.3.2 Applications and accreditations

There were 19 new accreditations approved to create certificates under the DSA Rule in 2007. These projects involved activities in the residential, industrial and commercial sectors, with 11 of the 19 accreditations using the Default Abatement Factors (DAF) Method to calculate their abatement, as outlined below. The accreditations covered a range of demand side abatement activities, including:

- ▼ the distribution of energy efficient light globes and water efficient showerheads (DAF Method)
- ▼ the replacement of electric hot water systems with gas or gas-boosted solar systems (DAF Method)
- ▼ lighting and heating, ventilation and air conditioning (HVAC) upgrades in buildings (PIAM)
- ▼ process improvements at industrial facilities, such as the replacement of fixed speed drive motors with variable speed drive motors, upgrades to process control systems and optimisation of production processes (PIAM & Metered Baseline Methods)
- ▼ power factor correction (PIAM)
- ▼ on-site electricity generation using waste coal mine gas and natural gas (Generation Emissions Method).

In addition to assessing new DSA Rule applications during 2007, the Scheme Administrator also assessed 17 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 and/or showerhead projects to also include the commercial sector
- ▼ ACPs being approved to use higher Installation Discount Factor (IDFs) for the sale and giveaway of products (see Section 4.3.1)
- ▼ ACPs undergoing a major change to their business circumstances, which necessitated a change to the accreditation conditions including changed audit requirements to reflect a changed risk profile.

At the end of 2007 there remained 75 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
Default Abatement Factors Method		7	8	14	11
Project Impact Assessment Method	2	36	31	2	4
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
Generation Emissions Method		4	1		2
Total accreditations accredited each year	3	48	43	17	19
Total accreditations cancelled each year	0	34	12	4	5
Net accreditations at the end of each year	3	17	48	61	75

4.3.3 Cancellations of DSA accreditations

There were five DSA accreditations cancelled in 2007 at the request of the accredited parties. The cancellations involved:

- ▼ three cases where limited term residential sector DAF Method projects had been completed
- ▼ one case where a party accredited for a ‘future project’ decided not to proceed with the project due to a change in commercial circumstances
- ▼ one case where the energy efficiency activities for which the project was originally accredited are continuing, but under a different company (and accreditation).

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. In all cases the cancellation was at the request of the accredited party, as allowed under Section 97DC of the Act and clause 73HC(b) of the Regulation.

4.3.4 Management of DSA project accreditations in 2007

During 2007, most ACPs accredited for CFLs and/or showerhead projects changed their business model to install these products rather than give them away. The Scheme Administrator estimates that more than 350,000 households had lighting and/or showerhead upgrades during 2007 through these Installation programs.

The Scheme Administrator became aware of a small number of allegations of improper activity by some installers employed by some ACPs. As a result, the Scheme Administrator developed and implemented *Minimum Requirements for DAF Installation Projects* (“Minimum Requirements”).

The Minimum Requirements specify the minimum expectation of all Installation projects in order to apply an IDF of 1.0, and comprise four categories:

- ▼ Contractual Relationship between ACP and Installer
- ▼ Training of Installers
- ▼ Register of Installers
- ▼ Customer Service.

The purpose of issuing these guidelines was to ensure ACPs have sufficient controls in place for any installation work done, and that ACPs are fully accountable for any abatement claimed from these types of projects. The requirements have now been included in the scope of works for audits carried out under the Rule.

All ACPs approved for Installation projects, were required to comply with the Minimum Requirements from 1 December 2007. Audits of these projects were required to examine compliance with the Minimum Requirements from this date. The Minimum Requirements are available on the GGAS website.¹⁸

4.3.5 Bundling small scale DSA projects into one accreditation

The Scheme Administrator recognises that on-going reporting and compliance requirements mean that it may not be cost effective for small individual DSA projects to become accredited. During 2007, the Scheme Administrator had discussions with organisations seeking to act as “aggregators”, enabling the bundling of similar small scale DSA projects into one accreditation. The Scheme Administrator accredited one additional “aggregator” project during 2007.

4.4 Large User Abatement Certificates Rule

The *Greenhouse Gas Benchmark (Large User Abatement Certificates) Rule No. 4 of 2003* (“the 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

¹⁸ www.greenhousegas.nsw.gov.au/Documents/DSA-DAF-min-req.pdf

- ▼ 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:

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

There are currently 12 benchmark participants who are eligible to apply for accreditation as an ACP and create certificates under the LUAC Rule (11 large electricity customers and one market customer). By the end of 2007, the Scheme Administrator had accredited eight of these eligible benchmark participants as ACPs:

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

During 2007, the Scheme Administrator received a further application for accreditation as an ACP from Orica Australia for abatement activities occurring in 2007. This application was subsequently accredited in early 2008 with LUACs created from improvements in the efficiency of on-site fuel use at its Kooragang Island Ammonia Plant.

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 Grouping	Abatement Activity	2003	2004	2005	2006	2007
Aluminium	Industrial Process	1	0	0	0	1
Cement	Increased Fuel Efficiency	0	0	0	1	0
Mining	Reduced Fugitive Emissions	0	0	0	0	1
Paper & Pulp	Increased Fuel Efficiency	0	0	1	1	0
Paper & Wood	Fuel Switching	0	0	0	0	1
Steel	Fuel Switching	0	0	0	0	1
Total accreditations accredited each year		1	0	1	2	4
Total accreditations cancelled each year		0	0	0	0	0
Net accreditations at the end of each year		1	1	2	4	8

4.5 Carbon Sequestration Rule

The *Greenhouse Gas Benchmark (Carbon Sequestration) Rule No. 5 of 2003* (“the 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.

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 1990, 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.

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.

4.5.1 Applications and accreditations

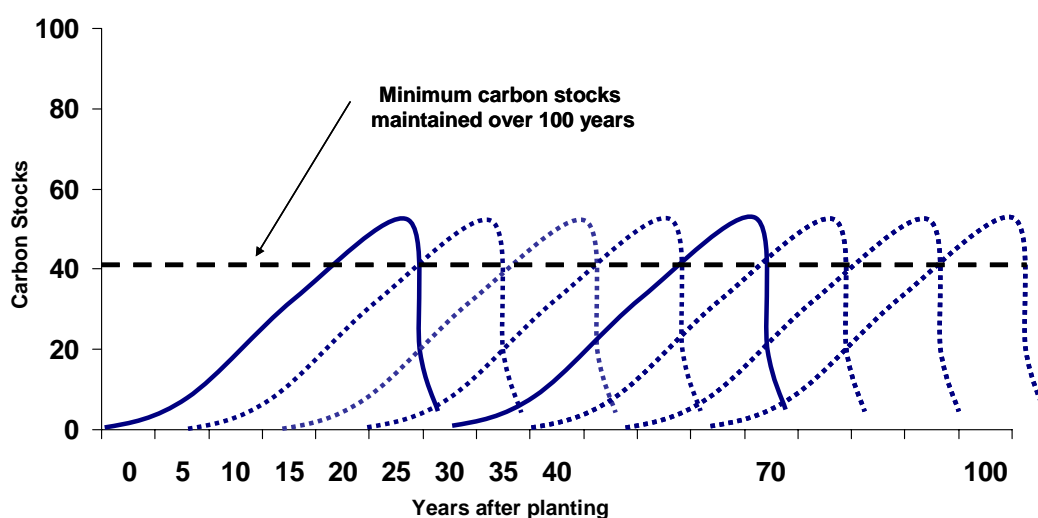
In 2007 one new organisation was accredited as a sequestration pool manager, bringing the total accreditations under the CS Rule to six. The forestry activities accredited range from permanent, conservation-style forestry to commercial, rotational harvest forestry. Table 4.5 provides a breakdown of CS Rule accreditations for each year of GGAS operation.

Table 4.5 Carbon Sequestration Rule – Accreditation applications approved by year

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

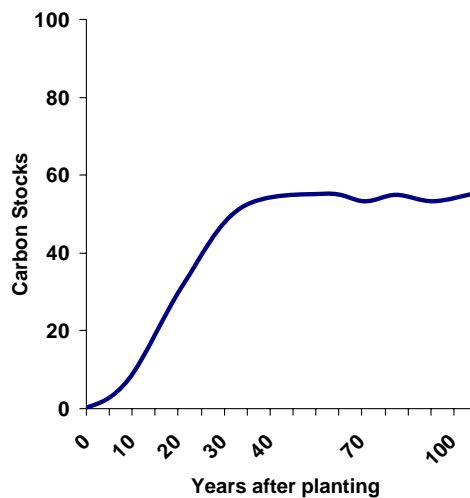
4.5.2 Carbon accounting

The carbon accounting methodology required to calculate eligible certificate creation 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 blue 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.

4.5.3 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 2007, three of the six accredited parties' 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.

4.5.4 Eligibility requirements

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 unforested land after 1 January 1990 – a key eligibility criteria. 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.
- ▼ 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.
- ▼ Procedures for risk management.

- ▼ 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. However, this information is required for accreditation. Organisations intending to apply for accreditation under the CS Rule should carefully consider the amount of information required before deciding to apply.

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 2007 there were four projects accredited as future projects, all under the Generation Rule. One project is a proposed 22MW cogeneration plant which will generate electricity via a fluidised bed boiler and steam turbine generator. The plant will use biomass fuel. Another project involves constructing a 42MW waste coal mine methane power station adjacent to a coal mine. The third project accredited is a proposed 600MW combined cycle gas turbine natural gas plant which will use coal seam methane as its primary fuel. The final future project accredited in 2007 is a 33MW power station which will use waste coal mine gas as its fuel source.

All future projects are accredited with an approved business plan with 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.

With regard to future projects accredited in previous years, two were commissioned and subsequently approved by the Scheme Administrator for NGAC creation during 2007. The larger of the two projects is the 32MW EDL German Creek Coal Seam Methane generating system in Queensland. The second project is the Diamond Energy Tatura Biogas Generating system in Victoria which has a nameplate rating of 1.5MW.

4.7 Compliance outcomes

In 2007 overall compliance by ACPs with the GGAS Act, Rules and accreditation conditions was good. Of 204 accreditations (as of 31 December 2007), there were 22 instances of contraventions of conditions of accreditation (compared with 10 in the previous year). These events were discovered either through voluntary declaration by the accredited party (6 of 22), discovery by the Scheme Administrator (4 of 22), or through the compliance audit process (12 of 22).

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 2006, the majority of contraventions in 2007 related to the improper creation of certificates, with the remainder relating to specified conditions of accreditation.

4.7.1 Over-creation of certificates

During compliance audits in 2007, 12 ACPs were found to have over-created certificates, thus contravening their conditions of accreditation. 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 (4)
- ▼ certificates created under wrong Project ID (1)
- ▼ transcription errors (1)
- ▼ missing records (1)
- ▼ use of incorrect data (eg, fuel, electricity or other related data inputs) (5).

During 2007, the 12 instances outlined above resulted in a total of 65,420 certificates (of both 2006 and 2007 certificate vintage) being over-created. The companies involved were notified of their accreditation contravention, with subsequent agreement by the ACP to forfeit the incorrectly created certificates, thereby ensuring that the number of certificates in GGAS 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 2007, as in 2006, most ACPs notified the Scheme Administrator in advance that, for various reasons, they expected to exceed their nominated number of certificate creation. The Scheme Administrator assesses all requests to increase limits, and adjusts accreditation conditions accordingly.

4.7.2 Contravening the conditions of accreditation

There were several other instances of contraventions of accreditation conditions by ACPs during 2007, 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 that was accredited for several projects contravened its conditions of accreditation by registering 2006 vintage certificates incorrectly. The certificates were created for a project in the ACT rather than for a project in NSW and following investigation of the matter the ACP voluntarily forfeited the 5,879 invalidly created certificates. Importantly, because the ACP failed to identify (or voluntarily declare) the contravention before 30 June, it was unable to create the certificates under the correct project, because the 'window' for creation/cancellation of 2006 vintage certificates had already closed.

Another two ACPs failed to submit Annual Report Statements to the Scheme Administrator by the deadline prescribed in their respective conditions of accreditation. After the Scheme Administrator investigated the circumstances, one ACP subsequently submitted its annual report (and agreed to make changes to its record keeping arrangements to ensure the oversight would not occur again), while the other ACP requested that its accreditation be withdrawn (as no certificates had been created since its previous annual report submission and none would be forthcoming due to internal business decisions). Following further investigation of the ACP's conditions of accreditation and compliance to date, the accreditation was subsequently cancelled by the Scheme Administrator, as requested.

A fourth ACP was found to have used an incorrect Confidence Factor in its certificate creation spreadsheets resulting in an over-creation of 263 certificates of 2006 vintage. The ACP was required to review all of its data, report to the Scheme Administrator on its findings, and to submit a revised record keeping arrangements document to the Scheme Administrator correcting the process failure. The ACP complied with these requirements and following further investigation, the Scheme Administrator was satisfied that the process failure was isolated and had been adequately addressed through the revised record keeping arrangements.

A fifth ACP was found to have improperly created 370 NGACs for its energy efficiency project, as a result of improper conduct by one of its contracted installers. The ACP was asked to investigate the matter and the allegations behind it, and subsequently terminated the services of the installer. The ACP then agreed to forfeit the NGAC over-creation and more closely monitor the activities of its installers.

4.7.3 Other accreditation condition related compliance issues

In addition to the contraventions outlined above, six other compliance issues related to accreditation conditions arose in 2007. These did not amount to contraventions of conditions of accreditation due to voluntary declaration by the accredited parties and cooperation with the Scheme Administrator.

Five of these compliance issues related to a single ACP who identified, in advance, that it would fail to submit its Annual Report Statement in a timely fashion due to leave arrangements of key staff. The ACP subsequently submitted its outstanding annual reports at a later date (as agreed to by the Scheme Administrator).

Another ACP's conditions of accreditation required them to undertake a reconciliation of previous certificate creation upon completion of testing arrangements, 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 1,696 certificates (of both 2005 and 2006 vintage). Following investigation of the matter by the Scheme Administrator, the ACP voluntarily forfeited the over-creation amount, with no further action required by 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 auditing 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' (Benchmark Participants and Abatement Certificate Providers) 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.

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), which has 25 members, who are appointed by the Scheme Administrator. A list of all members of the panel is available from the GGAS website.¹⁹

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 abatement certificate providers
 - ▼ 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

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

- ▼ ensure that information provided by GGAS participants is reliable, complete and fairly represented
- ▼ support the general transparency and integrity of GGAS.

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 has established the panel to undertake audit activities for GGAS participants, the compliance regulator and the Scheme Administrator; and to provide technical services to the Tribunal as required. There are two classifications of firms on the audit and technical services 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.²⁰ 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

Audits associated with the accreditation of ACPs are undertaken by a member of the panel selected and engaged by the Scheme Administrator. In most cases, the auditor is selected through a competitive process (involving up to three panel members), 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.

The panel agreement establishes a unique arrangement for the conduct of audits. Regardless of whether an auditor is selected and 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

²⁰ A Panel Application Form and a Guide to Applying are available from the Scheme website at www.greenhousegas.nsw.gov.au/audit/joining.asp

regulator. While this is significantly different from usual contractual arrangements where duty of care is owed to the engaging party, all audits are undertaken to assure the Scheme Administrator and the compliance regulator 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

During 2007, one firm was added to the panel as a technical service provider; Abatement Solutions – Asia Pacific Pty Ltd. No new firms were added to the panel to provide audit services in 2007.

It is a requirement of GGAS that all personnel performing audits must 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. Part of the review of new panel members is to assess that nominated personnel have the necessary skills and experience to perform audits under the Scheme. The sessions are held 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.

Three sessions were held during 2007 which trained an additional 58 personnel to perform audits under GGAS.

In order to add new personnel to the audit panel, the audit panel 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 2007, there were 161 auditors on the panel trained to conduct GGAS audits from 14 audit firms. Total membership of the panel (including technical services firms) was 192 people from 25 firms.

Table 5.1 Membership of the Audit and Technical Services Panel as at December 2007

	No. of firms	No. of personnel
Audit and Technical Services (able to perform audits)	14	161
Technical Services	11	31
Total	25	192

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.

5.4 Compliance and performance monitoring strategy

The Scheme Administrator has developed the *Compliance and Performance Monitoring Strategy for Abatement Certificate Providers*²¹ 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 also includes factors considered by the Scheme Administrator when determining whether a pre-accreditation audit of an applicant is required. The strategy is designed to be risk-based and flexible so that over time the Scheme Administrator can recognise good compliance performance and, if appropriate, relax an ACP's compliance monitoring regime.

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

Once accredited, ACPs are subject to an ongoing auditing regime as a means of ensuring compliance under GGAS. The audit requirements vary across 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.

The requirement to submit annual reports is consistent across GGAS, regardless of the type of project involved. Templates have been developed to assist ACPs in their reporting requirements. Reports are signed by a person authorised to sign on behalf

²¹ www.greenhousegas.nsw.gov.au/documents/syn70.asp

of the company, with provision of false and misleading information subject to 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
- ▼ annual audits where audits are generally conducted after registration of certificates
- ▼ periodic audits (bi-ennial, tri-ennial or volumetric)
- ▼ spot audits.

Where an ACP is creating very large volumes of certificates, a modified approach to the periodic audit regime has been employed whereby an audit is triggered by a threshold quantum of certificate creation (volumetric audits). This has meant more frequent auditing for these types of projects, although this is warranted because the risk to GGAS is high if there is invalid certificate creation. This type of periodic audit is seen as the best method to manage compliance of these types of projects.

A spot audit regime is applied where the accreditation is considered to represent a low risk to GGAS. In addition, spot audits can also be required by the Scheme Administrator at any time regardless of any other specified audit requirement in the conditions of accreditation. 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. 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 the Scheme
- ▼ to determine whether a proposed change in methodology proposed by an ACP complies with the requirements of the Act, Regulation and Rules.

5.5 Audit activity in 2007

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

Table 5.2 Audit activity in 2007

Type of audit	Number of audits	Number of benchmark statements/accreditations covered
Benchmark participant audits ^a	25	29
Audits initiated by the Scheme Administrator	16	19
Audits initiated by ACPs	75	95
Totals	116	143

^a Conducted in the first quarter of 2008 covering the 2007 compliance year for benchmark participants.

5.6 Benchmark participant audits

The audits of benchmark statements covered compliance for the 2007 year, but were conducted in March 2008 to meet the reporting timeframe for benchmark participants. These audits need to be carried out in 2008 in order to capture all electricity sales or purchases by benchmark participants for the 2007 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 audit).

In 2007, pre-accreditation audits represented the largest group of audits commissioned by the Scheme Administrator.

Future project implementation audits were performed for the first time in 2007. 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.

All spot audits commissioned by the Scheme Administrator in 2007, were used for validation of new methodologies being proposed under existing accreditations following Rule changes. In 2007, the Scheme Administrator did not commission any audits relating to the investigation of non-compliances, which is an improvement from 2006.

As a result of one ACP going into voluntary administration in 2007, the Scheme Administrator also initiated two periodic audits of compliance, which would have normally been the responsibility of the ACP to initiate. These two audits also included a component of qualitative compliance investigation.

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

Of the 48 new accreditations in 2007 (refer to Table 4.1), only nine were subject to a pre-accreditation audit initiated by the Scheme Administrator. Other audits initiated by the Scheme Administrator include one spot audit (due to a methodology change), two implementation audits of future projects and four audits commissioned by the Scheme Administrator arising from concerns of the ACP's performance. The total cost of audits initiated by the Scheme Administrator in 2007 was \$200,775; an average of approximately \$10,500 for each of the accreditations audited.

5.8 Audits initiated by Abatement Certificate Providers

As GGAS matured and the number of accreditations increased, an increasing proportion of the Scheme Administrator's focus has been on monitoring compliance with existing accreditations. During 2007 the Scheme Administrator managed 71 certificate creation audits covering a total of 91 accreditations, to verify abatement activities. For some of these certificate creation audits, the scope was extended to also include investigation of potential compliance issues. This reflects a shift in management of compliance outcomes, where the ACPs worked more actively with the Scheme Administrator to resolve compliance issues.

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.

In 2007, four accreditations were subject to an audit of their record keeping arrangements separately to a certificate creation audit. This occurred due to one of two reasons; either a Special Accreditation Condition requiring an audit of record keeping arrangements only being triggered or imposed by the Scheme Administrator, or the ACP making a decision to undergo an audit of their record keeping arrangements (also required as part of a Special Accreditation Condition) prior to their NGAC creation audit.

5.8.1 PITR Audits

Following acceptance of seven PITRs under Method 2 of the Generation Rule, audits of projects for 2007 using Method 2 included the requirement to check the NGAC calculations against the methodology presented in the approved PITR. Three ACPs commissioned audits of 2007 vintage NGAC creation based on their approved PITR. Due to timing constraints, the remaining four audits of 2007 vintage NGAC creation were commissioned by the Scheme Administrator to facilitate completion prior to the 30 June 2008 deadline.

5.8.2 DAF audits

During 2007 projects carrying out abatement activity through the use of the Default Abatement Factors (“DAF”) Method of the DSA Rule progressively reached their nominated NGAC targets, triggering volume-based creation audits, rather than being triggered by the passage of time. These volume-based audit regimes continued to represent a large proportion of compliance audits performed under GGAS. Of the 71 certificate creation audits in 2007, 44 were audits of DAF projects with many proponents audited on multiple occasions as successive volume thresholds were reached.

Following the implementation of the *Minimum Requirements for DAF Installation Projects* in December 2007 (see Section 4.3.4), DAF audits included procedures to check adherence with these requirements.

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 Abatement Certificate Providers (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, LogicaCMG 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, until September 2008. The Registry is functioning effectively and efficiently under this arrangement. The internet address of the Registry is: www.ggas-registry.nsw.gov.au.

Abatement certificate providers, 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 \$3.7 million for 2007 vintage certificate creation and were paid to the Consolidated Revenue. This charge is intended to cover the cost of establishing, operating and maintaining the Registry over the life of GGAS, as well as to partially and indirectly fund some of the activities of the Scheme Administrator.

During 2007 a project was commenced to allow broader online searching of certificate creation on the Registry. This was finalised and implemented in April 2008 and allows any user to 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 2008 and includes all vintages of certificates, up to and including the 2007 vintage (that is certificates created for abatement that occurred during 2007)²². 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 create 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 and all are priced equally in the market. 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 2003-07 vintage certificates registered (which reflect abatement activity undertaken in these years) separated by Rule.

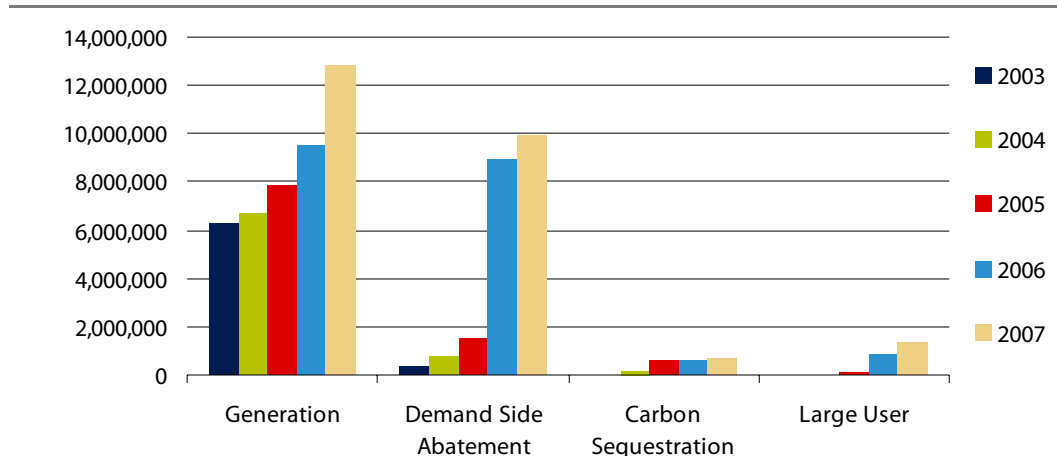
Table 6.1 Certificates created to date

Vintage	Generation	Demand Side Abatement	Carbon Sequestration	Large user	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	12,827,675	9,975,356	698,765	1,288,383	24,790,179
Total	43,317,092	21,506,165	1,991,094	2,173,120	68,987,471

²² On occasion an ACP may need to forfeit certificates as a consequence of over-creation or an administration/user error. A forfeit is the cancellation of certificates and is not the same as surrendering certificates to the compliance regulator. It was discovered that certificate creation totals on the Registry were not accounting for forfeits where the certificates forfeited originated from a different project, accreditation, vintage or even ACP (where certificates have been transferred). The overall certificate creation total (vintage, Rule) and overall certificate creation total for each Rule are not changed. This report reflects the correct certificate creation totals for all vintages and Rule groups as at 30 June 2008.

Figure 6.1 clearly shows that the Generation Rule dominates certificates registered over the life of GGAS accounting for 62.8 per cent of total certificates created and remains the primary source of the total number of certificates created since 2003. However, creation under the Demand Side Abatement Rule has increased significantly since 2003.

Figure 6.1 Certificates created to date



Generation Rule certificates accounted for 51.8 per cent of 2007 certificates. There was little change in the percentage of Carbon Sequestration certificates which was 3.0 per cent of the total in 2006 and 2.8 per cent in 2007. Large User certificates increased from 4.0 per cent in 2006 to 5.2 per cent in 2007.

Figure 6.2 depicts the source of 2007 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 6.2 Source of 2007 certificates created

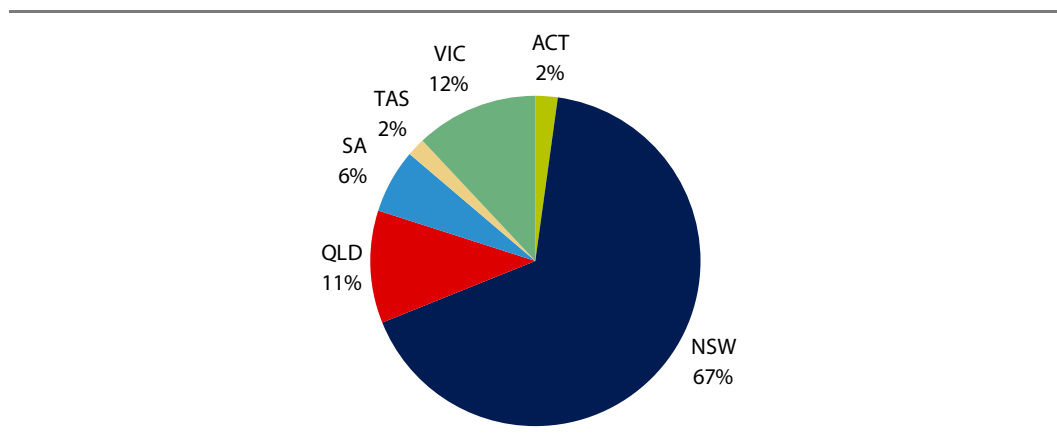


Table 6.2 provides a greater level of detail on the types of activities that led to certificate creation in each jurisdiction, while Table 6.3 provides detail of the source of certificates by category. These tables provide an insight into the main areas of growth in GGAS. Certificates created from residential energy efficiency projects increased significantly during 2006 but have remained steady during 2007. Of these the majority are sourced from projects using the DAF Method of the DSA Rule. Certificates created from the Large User projects increased significantly during 2006 and continued to increase in 2007.

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

Rule, Grouping & Sector	2003	2004	2005	2006	2007	Totals
Generation: Category D	94,198	99,268	110,062	126,431	120,976	550,935
Demand Side Abatement	0	0	0	186,354	441,498	627,852
Total	94,198	99,268	110,062	312,785	562,474	1,178,787

Source of certificates by jurisdiction – New South Wales

Rule, Grouping & Sector	2003	2004	2005	2006	2007	Totals
Generation: Category A	3,272,785	3,129,409	2,911,523	2,992,008	3,134,325	15,440,050
Generation: Category B	286,985	418,581	498,952	831,451	784,624	2,820,593
Generation: Category C	31,571	0	0	0	0	31,571
Generation: Category D	517,184	775,677	1,060,731	1,003,320	1,101,700	4,458,612
Demand Side Abatement	345,141	742,233	1,509,199	8,747,882	9,533,858	20,878,313
Carbon Sequestration	0	166,005	538,471	587,853	698,765	1,991,094
Large User	0	0	94,277	790,460	1,288,383	2,173,120
Total	4,453,666	5,231,905	6,613,153	14,952,974	16,541,655	47,793,353

Source of certificates by jurisdiction – Queensland

Rule, Grouping & Sector	2003	2004	2005	2006	2007	Totals
Generation: Category A	36,569	41,765	47,291	46,857	42,830	215,312
Generation: Category B	0	0	0	0	0	0
Generation: Category C	0	48,351	86,290	198,094	704,017	1,036,752
Generation: Category D	297,748	612,219	509,741	824,476	1,977,587	4,221,771
Total	334,317	702,335	643,322	1,069,427	2,724,434	5,473,835

Source of certificates by jurisdiction – South Australia

Rule, Grouping & Sector	2003	2004	2005	2006	2007	Totals
Generation: Category A	334,162	372,471	410,540	392,389	354,894	1,864,456
Generation: Category B	0	0	0	0	0	0
Generation: Category C	284,984	70,642	198,116	607,911	1,144,672	2,306,325
Generation: Category D	12,135	17,524	17,780	32,480	22,819	102,738
Total	631,281	460,637	626,436	1,032,780	1,522,385	4,273,519

Source of certificates by jurisdiction – Tasmania

Rule, Grouping & Sector	2003	2004	2005	2006	2007	Totals
Generation: Category A	0	0	0	0	0	0
Generation: Category B	0	0	0	0	0	0
Generation: Category C	0	0	0	220,271	355,277	575,548
Generation: Category D	0	0	0	45,121	103,810	148,931
Total	0	0	0	265,392	459,087	724,479

Source of certificates by jurisdiction – Victoria

Rule, Grouping & Sector	2003	2004	2005	2006	2007	Totals
Generation: Category A	775,132	844,619	864,075	819,445	763,454	4,066,725
Generation: Category B	0	0	0	0	0	0
Generation: Category C	311,873	229,332	1,047,722	1,228,772	1,783,503	4,601,202
Generation: Category D	62,509	84,374	116,348	179,153	433,187	875,571
Total	1,149,514	1,158,325	2,028,145	2,227,370	2,980,144	9,543,498

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

Grouping & Sector	2003	2004	2005	2006	2007	Totals
Category A: Biomass	10,895	14,901	0	0	0	25,796
Category A: Hydro	132,869	123,844	148,176	160,941	90,213	656,043
Category A: Landfill Gas	1,216,141	1,327,350	1,379,695	1,319,360	1,284,691	6,527,237
Category A: Natural Gas	590,324	621,065	675,775	673,645	685,432	3,246,241
Category A: Waste Coal Mine Gas	2,468,419	2,301,104	2,029,783	2,096,753	2,235,167	11,131,226
Category B: Coal	286,985	418,581	498,952	831,451	784,624	2,820,593
Category C: Biomass	0	0	0	0	364,190	364,190
Category C: Coal	251,199	167,243	1,025,219	1,268,198	1,476,814	4,188,673
Category C: Hydro	0	0	0	80,000	0	80,000
Category C: Landfill Gas	31,571	0	0	0	0	31,571
Category C: Natural Gas	286,277	122,154	206,331	721,861	1,950,284	3,286,907
Category C: Sewage Gas	59,381	58,928	100,578	184,989	196,181	600,057
Category D: Biomass	542	10,976	30,521	35,165	40,838	118,042
Category D: Coal	0	130,665	159,493	191,641	94,889	576,688
Category D: Coal Seam Methane	0	0	0	0	12,978	12,978
Category D: Landfill Gas	732,187	889,934	1,241,413	1,329,685	1,545,181	5,738,400
Category D: Natural Gas	240,853	388,725	101,803	117,268	399,105	1,247,754
Category D: Waste Coal Mine Gas	10,192	168,762	281,432	537,222	1,667,088	2,664,696
Total	6,317,835	6,744,232	7,879,171	9,548,179	12,827,675	43,317,092

Source of certificates by category – Demand Side Abatement Rule

Grouping & Sector	2003	2004	2005	2006	2007	Totals
Energy Efficiency: Commercial	22,720	40,249	47,924	69,819	870,595	1,051,307
Energy Efficiency: Industrial	35,572	32,867	36,814	66,818	99,761	271,832
Energy Efficiency: Residential	8,387	315,425	953,879	8,306,259	8,354,456	17,938,406
Energy Source Subs: Commercial	65	65	0	0	0	130
Energy Source Subs: Residential	0	21,406	35,366	49,900	48,760	155,432
On-site Generation: Industrial	278,397	332,221	435,216	441,440	601,775	2,089,049
On-site Generation: Residential	0	0	0	0	9	9
Total	345,141	742,233	1,509,199	8,934,236	9,975,356	21,506,165

Source of certificates by category – Carbon Sequestration

Grouping & Sector	2003	2004	2005	2006	2007	Total
Carbon Sequestration	0	166,005	538,471	587,853	698,765	1,991,094

Source of certificates by category – Large User Abatement Certificates

Grouping & Sector	2003	2004	2005	2006	2007	Total
Aluminium: Industrial Process	0	0	0	516,146	746,893	1,263,039
Cement: Increased Fuel Efficiency	0	0	78,690	157,082	232,563	468,335
Chemicals: Increased Fuel Efficiency	0	0	0	0	122,155	122,155
Mining: Reduced Fugitive Emissions	0	0	0	16,500	52,899	69,399
Paper & Wood: Fuel Switching	0	0	0	3,432	4,418	7,850
Paper & Wood: Increased Fuel Efficiency	0	0	15,587	19,726	33,450	68,763
Steel: Fuel Switching	0	0	0	77,574	96,005	173,579
Total	0	0	94,277	790,460	1,288,383	2,173,120

Figure 6.3 Source of Generation Rule certificates by category

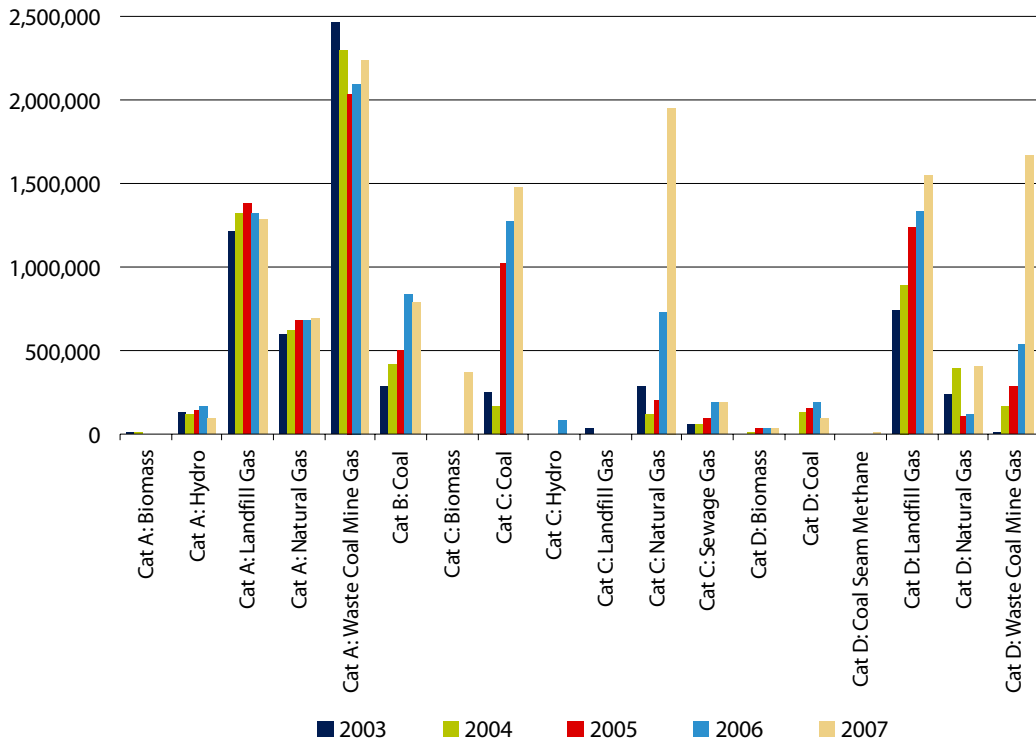
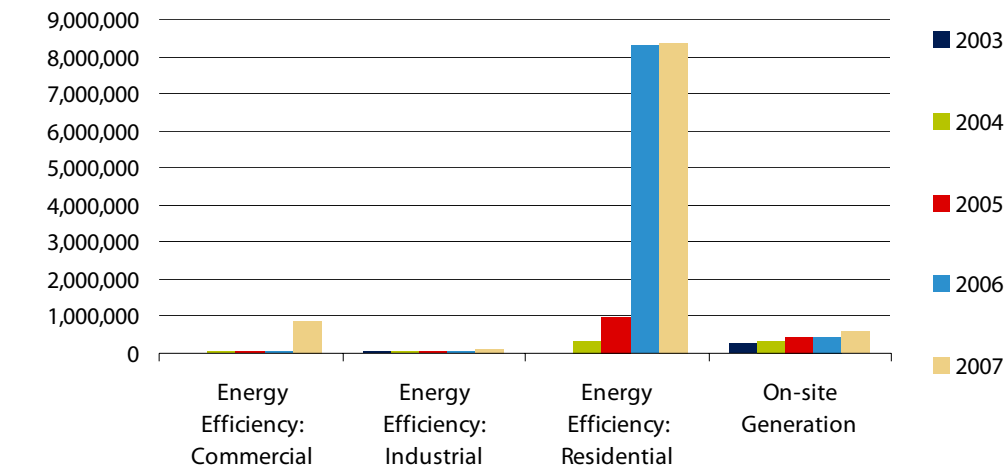


Figure 6.3 graphically depicts the certificate creation under the Generation Rule by category of generator and fuel type. Overall creation has remained steady for Generation Rule certificates; however, within each category and fuel type, some variations have occurred. Notably, certificate creation from natural gas in Category C and waste coal mine gas in Category D has increased significantly. 2007 also saw the first certificates created in Category C Biomass and Category D Coal Seam Methane projects.

Figure 6.4 Source of Demand Side Abatement Rule certificates by category

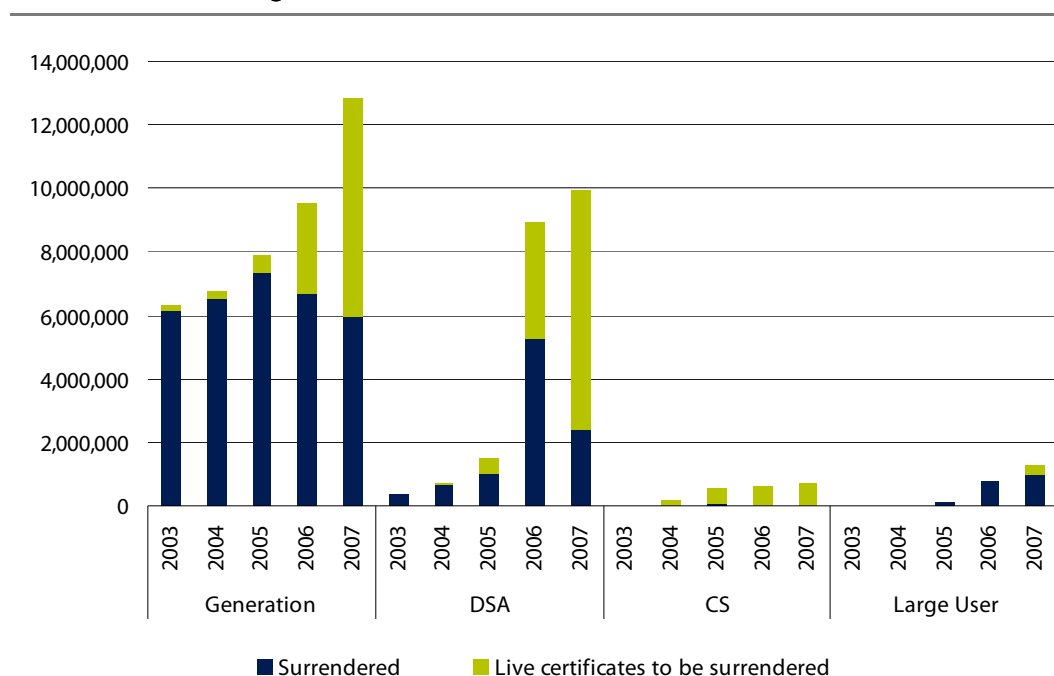


As indicated in Figure 6.4, residential energy efficiency was the key area of growth in 2006 and certificate creation remained steady in 2007. As discussed previously, most of these residential certificates were created using the DAF Method of the DSA Rule. While dominated by the residential sector, there was also an increase in energy efficiency activity in the commercial sector during 2007.

6.3 Certificate surrender trends

Figure 6.5 details certificates surrendered by Rule and vintage as well as the balance of certificates that remain “live” and available for trade.

Figure 6.5 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 6.6 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, 75.5 per cent have been surrendered and of the LUAC Rule certificates 82.4 per cent have been surrendered. For certificates created under the DSA Rule 45.2 per cent have been surrendered and only 4.1 per cent of Carbon Sequestration 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

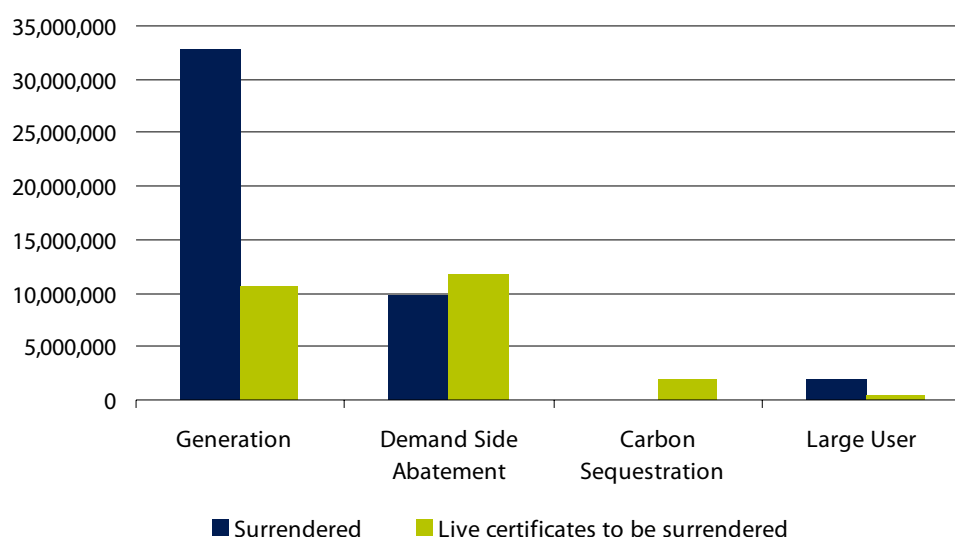
(which includes certificates that have been created or transferred into an account). Certificate vintage is not a consideration in the surrender process and it is therefore not uncommon for younger vintage certificates to be surrendered before older vintage certificates.

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

	Generation	Demand Side Abatement	Carbon Sequestration	Large User	Total
Total created	43,317,092	21,506,165	1,991,094	2,173,120	68,987,471
Total surrendered	32,684,217	9,728,911	82,764	1,791,423	44,287,315
Balance to be surrendered	10,632,875	11,777,254	1,908,330	381,697	24,700,156

^a Includes voluntary surrenders as shown in Table 6.5.

Figure 6.6 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 knowledge of global warming 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 2007 a total of 49,898 certificates were voluntarily surrendered by 28 organisations and individuals. This is a significant increase on previous years with 2,660 certificates voluntarily surrendered in 2006 and 5,100 in 2005.

Table 6.5 Total certificates voluntarily surrendered

	Generation	Demand Side Abatement	Carbon Sequestration	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
Total	15,853	34,090	7,715	57,658

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 3,837 transfers of certificates between parties, involving more than 75.6 million certificates (some of which have clearly been transferred on multiple occasions). Of these transfers, 42.5 million generation certificates were transferred in 1,064 trades, compared to 31.7 million demand side abatement certificates in 782 trades and over 1.4 million carbon sequestration certificates in 1,991 trades.

Table 6.6 and Figure 6.7 provide information about the number of certificates traded per year and illustrate the changes in volumes for each certificate type from year to year. In the early years of GGAS, Generation Rule certificates dominated trades, however, trades of DSA Rule certificates increased in 2007 and were the most traded certificates in the first six months of 2008. Carbon Sequestration certificates were also actively traded in 2007.

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 Carbon Sequestration certificates (although typically in small parcels) than for other certificate types.

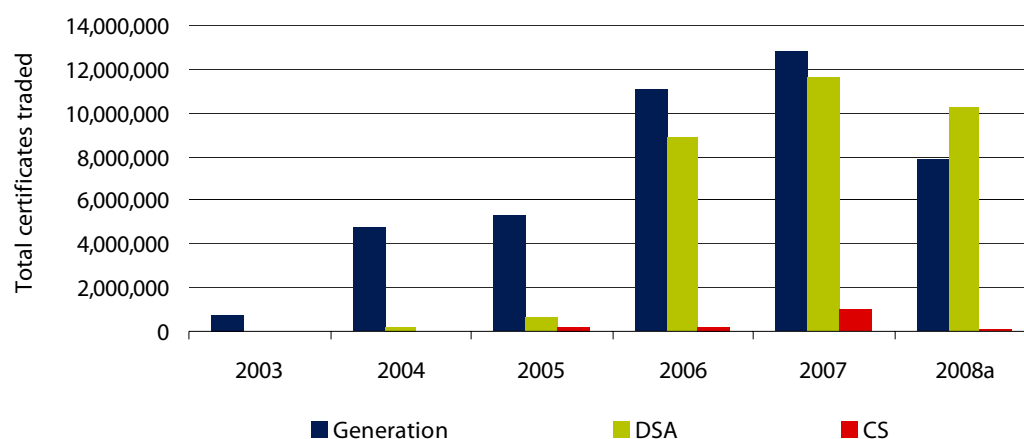
Figure 6.8 shows the numbers of certificates traded on a monthly basis each year and highlights the variable nature of trading activity, with the most activity occurring just prior to the compliance deadline. It is noted that a certificate may be traded a number of times and each trade is reported separately 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	Demand Side Abatement	Carbon Sequestration	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 ^a	7,845,221	10,227,840	135,132	18,208,193
Total	42,543,643	31,659,901	1,442,382	75,645,926

a From 1 January to 30 June 2008.

Figure 6.7 Certificates traded by rule

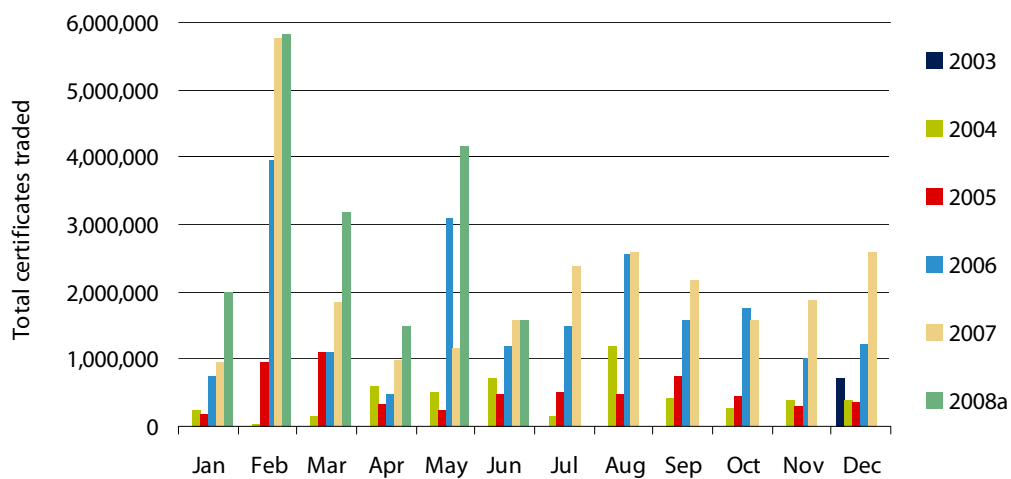
a From 1 January to 30 June 2008.

Table 6.7 Number of trades by rule

	Generation	Demand Side Abatement	Carbon Sequestration	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 ^a	249	266	516	1,031
Total	1,064	782	1,991	3,837

a From 1 January to 30 June 2008.

Figure 6.8 Certificates traded per month



a From 1 January to 30 June 2008.

7 Demand and supply of abatement certificates

The Scheme Administrator monitors and regularly 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 2007

In the 2006 Annual Report, it was projected that NGAC supply for 2007 was likely to exceed the annual demand (as it did in earlier years), and that this surplus of supply would assist in meeting projected demand in 2007 and 2008.

Twelve months on, there have been a number of developments that have impacted the 2007 certificate creation, and these are likely to also affect future years' creation. The following is a non-exhaustive list of events and developments that affected 2007 creation and future year projections of both supply of and demand for certificates.

Supply:

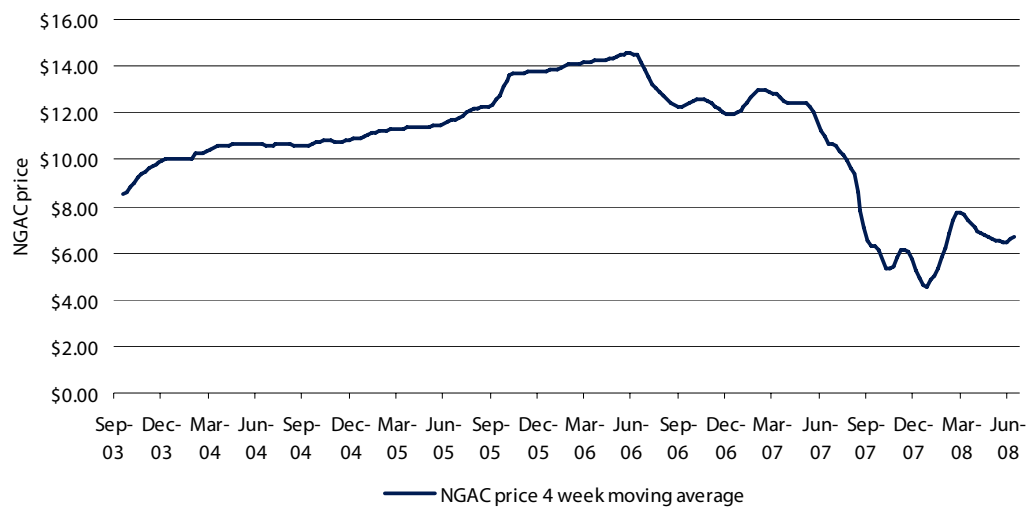
- ▼ 48 projects and future projects were accredited in 2007 and 11 projects were cancelled.
- ▼ Numerous accreditations were amended resulting in both increases and decreases in potential certificate creation.

- ▼ Many of the projects accredited in 2007 will create NGACs under the Generation Rule. As in previous years, the Generation Rule has provided the largest share of NGACs in 2007 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 2007 and in some cases influences the projections of certificate supply in future years.
- ▼ The declining spot price for NGACs in the latter half of 2007 (see Figure 7.1) had an immediate effect on the number of NGACs created by some ACPs and will continue to have an effect on other ACPs into the future.
 - ▼ In the early years of GGAS, the NGAC spot price tended to track towards the penalty price. This continued until mid 2006 when a number of factors 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; and a perceived surplus for NGACs in later years following the creation of large volumes of DSA NGACs and the publication of some projections for future supply of and demand for certificates.
 - ▼ It should be noted that spot trades represent a small proportion of total NGAC trades. Most transactions are done as bilateral trades where there is no market exposure to fluctuations in the spot market price.

Demand:

- ▼ The TransGrid Annual Planning Report 2007 revised downwards future electricity demand,²³ which in turn has decreased projected demand.
- ▼ 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 five years.
- ▼ The Scheme Administrator has changed the methodology used to calculate demand to better account for the effect of demand side abatement NGACs on the calculation of Total State Demand. This change projects a lower demand in 2008 and 2009 than previously published.

²³ See Table A3.1 of the TransGrid 2007 Annual Planning Report, available at www.transgrid.com.au/Annual_Planning_Reports.htm

Figure 7.1 Trends in the NGAC spot price 2005-07

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

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

7.2 Assumptions 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. For accredited projects, this number reflects the Nominated Number of NGACs shown in the accreditation notice. 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. 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.
- ▼ **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 generator 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.
- ▼ **Demand Side Abatement Rule:**
 - ▼ The volume of certificates created from a number of similar energy efficiency projects has peaked and will decline in 2008 due to the continued low price for certificates.
 - ▼ **NSW Energy Efficiency Target:** Following the Premier's announcement on 18 June 2008²⁴ of the NSW Energy Efficiency Target (NEET), additional to GGAS, it is assumed that from 1 January 2009, the only NGACs created under the DSA Rule within GGAS will come from on-site generation.
- ▼ **Large Users Rule:** Despite not being tradeable, LUACs are treated as equivalent to NGACs for the purposes of projections.
- ▼ **Carbon Sequestration Rule:** No assumptions.

Demand:

- ▼ **Population:** Mid-range estimates of the NSW and ACT population, as published by the Australian Bureau of Statistics²⁵.
- ▼ **Electricity Demand:** Mid range estimates of electricity demand for NSW and the ACT, as published by Transgrid²⁶.
- ▼ **NSW/ACT pool coefficient:** Mid-range estimate of the NSW pool co-efficient (see section 7.5.1).
- ▼ **Distribution Loss Factors:** Projection of distribution loss factors is based on the actual weighted average from the returns of 2007 benchmark statement.
- ▼ **Mandatory Renewable Energy Target:** The number of RECs²⁷ counted is anticipated to rise incrementally based on expected increases in electricity demand and the renewable power percentage.²⁸

²⁴ 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. See www.greenhousegas.nsw.gov.au/Documents/Media-EnergyEfficiency-June08.pdf

²⁵ ABS Catalogue Number 3222.0, Population Projections Australia 2005 to 2051, reissue 14 June 2006.

²⁶ Transgrid Annual Planning Report 2007, see www.transgrid.com.au/trim/trim242922.pdf

²⁷ 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.

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 compliance years 2008 to 2012 depicts three different scenarios on the supply side, while retaining a single demand projection. The scenarios are current at 30 June 2008.

The annual supply scenarios have been prepared based upon the Scheme Administrator's knowledge of the potentially variable sources of supply for certificates. The following is a detailed description of each.

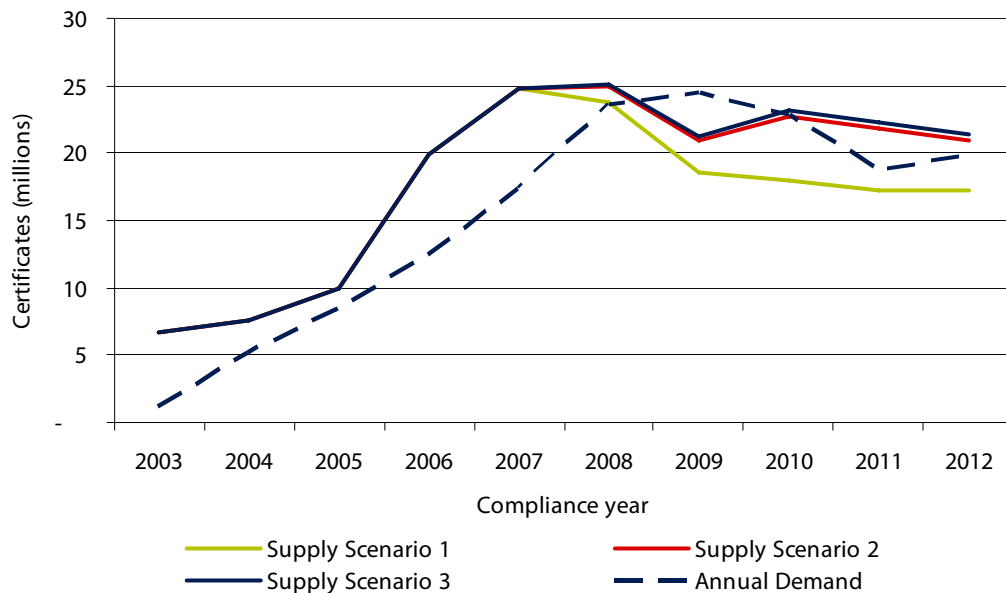
- ▼ **Scenario One:** The projected supply of certificates in this scenario is based on the abatement expected to be achieved by existing accreditations only, and excludes all future projects. This scenario is the low-range projection.
- ▼ **Scenario Two:** The projected supply of certificates in this 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 2010 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 2008.

²⁸ 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)*.

Figure 7.2 Projected annual demand and supply of certificates

Note: As at 30 June 2008. New demand methodology used.

All three supply scenarios depict a supply that peaks in 2007 and remains high in 2008. This peak is created by the strong growth in abatement from energy efficiency projects accredited under the DSA Rule in the years 2005-07. This growth is expected to fall slightly from 2008 due to a declining spot price and cease in mid 2009 as the contribution from compact fluorescent lamps is removed. Underlying this is an expectation of continued steady growth in abatement under the Generation Rule, with several future projects beginning operation from 2009 onwards.

In Scenario One from 2010 onwards, a number of generation projects cease to create NGACs due to expiry of power purchase agreements (PPA), causing a further decline in annual supply.

Scenario Two also shows high levels of supply to the end of 2008 and decline in 2009; however, the implementation of currently accredited future projects commences at approximately the same time. Assuming these future projects commence as scheduled, they will offset any reduction in supply resulting from the expiry of PPAs and changes to the DSA Rule.

Scenario Three, which includes all applications for accreditation (including future project applications), suggests that reduced supply from energy efficiency and from PPA expiry will be largely negated by an expected increase in certificate creation by future 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. Scenario Three (which includes current applications for accreditation) is

very similar to Scenario Two (which does not) because as of 30 June 2008, several generation projects were recently accredited.

The demand for abatement certificates is expected to continue to rise in the compliance period to 2009. This 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).

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 less than annual demand from 2008 onwards. 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 five years will assist in meeting the projected demand from 2008 onwards. The number of certificates that are available for surrender can be found in Table 6.4.

Scenario Two and Scenario Three show that annual supply is slightly larger than annual demand in 2008. As in Scenario One, the annual demand is greater than annual supply in 2009, but by 2010 supply has again risen 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’ responsibilities 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.²⁹ 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 2008 is the average of the annual Pool Values for the years 2002 to 2006. The averaging smoothes 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. There are a number of factors that had an impact on the Annual Pool Value in 2007.

- ▼ The energy generated from the Snowy Mountains Hydro-electricity Scheme fell well short of the long term average due to the drought conditions.
- ▼ Combustion emissions increased by 7.0 per cent. There was a small decrease in the combustion CO₂-intensity of coal used in NSW power stations of 0.1 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 6.8 per cent in total tonnes of coal burned.
- ▼ Fugitive emissions were 19.4 per cent higher than in 2006 due to a 6.8 per cent increase in coal use and a 7.0 per cent increase in the average fugitive methane intensity of coal.
- ▼ The creation of NGACs by Category B generators increased by approximately 68 per cent in 2007.
- ▼ The share of electricity imported from outside NSW declined by 3.9 per cent, and a greater share was imported from Queensland rather than Victoria and South Australia. This reduced the average emissions intensity of electricity imported by 4.1 per cent (although it remained higher than that of locally-generated electricity) and the total emissions contributed by imports fell by 7.9 per cent.

With the exception of the lower emissions from imports (the last point above) all of other factors placed an upward pressure on the Annual Pool Value.

²⁹ The NSW Pool Coefficient is determined pursuant to clause 9.1 of the Compliance Rule.

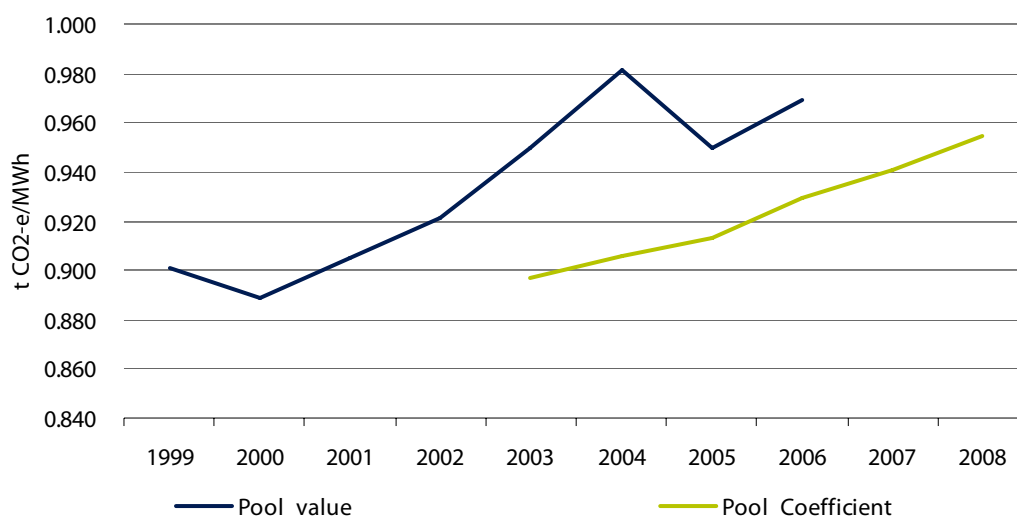
Figure 7.3 Historical NSW Annual Pool Value and Pool Coefficient 1999-2008

Figure 7.3 above illustrates the trend in Annual Pool Values and Pool Coefficients. The NSW 2008 Pool Coefficient has increased by approximately 1.4 per cent from 2007. 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

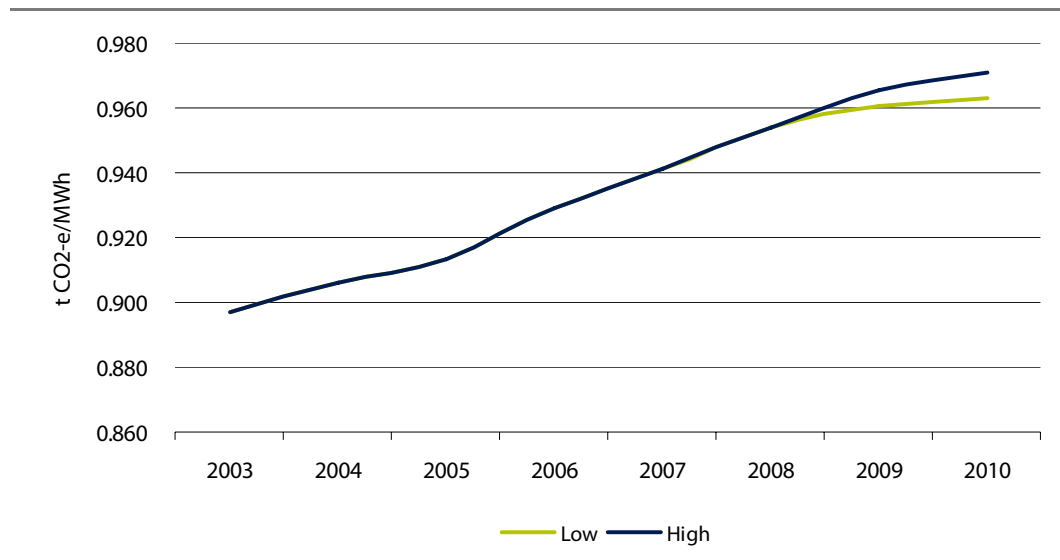
IPART has made some forecasts of the Pool Coefficient until 2010. The purpose of these estimates is to give a broad indication of the possible trends in the Pool Coefficient. The forecasts of the Pool Coefficient are estimates and IPART cautions person against making decisions based upon the projections depicted.

The following 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 output³⁰ and the source of imports³¹, 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 2002 to 2006, with each new Annual Pool Value added to the series being higher than the value removed.

The NSW Pool Coefficient value for 2008 is 0.954. IPART has developed two forward projections for future Pool Coefficient values to 2010; the range of values projected is between 0.960 to 0.966 for 2009 and 0.962 to 0.971 for 2010.

Figure 7.4 Forecast of the NSW Pool Coefficient until 2010



There are a number of factors contributing to the low and high forecasts for the NSW pool coefficient shown in Figure 7.4 including the following.

- ▼ The Pool Coefficient forecasts incorporate various combinations of assumptions about energy growth, Snowy output and trends in the average greenhouse intensity of Category B thermal power stations.
- ▼ The Lower Pool Coefficient forecast levels out at around 0.963 t CO₂-e/MWh, this forecast is based on the following key assumptions:
 - ▼ a medium level of Snowy output at 3,000 GWh/yr (slightly lower than average value recorded for the period 2003-05 (3,260 GWh) to reflect likely declines in water availability

³⁰ The recent reduction in Snowy Hydro electricity output due to the drought will have an upward pressure on the NSW Pool Coefficient.

³¹ Electricity generated in other states generally has an average emissions intensity that is higher than NSW.

- ▼ a steady average greenhouse gas intensity for Category B thermal power stations. It is assumed that the majority of energy continues to come from NSW thermal generators, with any excess energy demand to be met by imports from Queensland, which has a slightly lower greenhouse gas intensity than the average for NSW thermal power stations.
- ▼ The Higher Pool Coefficient forecast levels out at around 0.971 t CO₂-e/MWh, this forecast is based on the following key assumptions:
 - ▼ a low level of Snowy output at 2,000 GWh/yr
 - ▼ an increasing magnitude of inter-State imports of electricity, specifically a higher level of net imports from Victoria. Victoria has a significantly higher greenhouse gas intensity than NSW which would in turn create upward pressure on the pool value.
- ▼ In 2010, the range is from about 0.962 to 0.971 tCO₂-e/MWh, with the most likely values clustered around 0.96 to 0.97 tCO₂-e/MWh.

Both scenarios indicate a steady increase in the pool coefficient up to 2009 before any levelling out; this upward trend in the NSW Pool coefficient will lead to increased demand for abatement certificates.

The value of the final pool coefficients will be set by IPART in November 2008 and 2009 respectively.

8 Policy development and links with other schemes

The last 12 months have seen very significant development of emissions trading in Australia with both the former Commonwealth Government and the Rudd Government committing to implementing a national emissions trading scheme.

Despite the growth of emissions trading worldwide, GGAS remains the world's second largest mandatory scheme after the European Union ETS³², albeit that in terms of tonnes traded, it is now a small fraction of the size of the European scheme. The growth of the Clean Development Mechanism, which is essentially an offset mechanism, now also overshadows the scale of offset projects implemented under GGAS.

When GGAS was launched it was one of the first if not the first 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.

8.1 Australian developments

As indicated above, there was considerable development of emissions trading proposals in Australia through 2007. This was initially led by the joint states and territories taskforce, followed by a taskforce established by the former Commonwealth Government.

This work resulted in a clear commitment to implement a national emissions trading scheme which is scheduled to commence in 2010. The architecture of the proposed national scheme 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 '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 although, depending on the extent of scheme coverage, it may also include offset credits, each of which represents one tonne of emissions reduction compared to a baseline. For example, if the forestry sector is not 'covered' by the new scheme it

³² As reported in "State and Trends of the Carbon Market 2008" World Bank, p 7.

may be able to create credits for carbon sequestration and these may be used by emitters in lieu of permits.

By contrast GGAS works by allowing accredited parties to create certificates or 'credits' each of which represents a reduction in emissions compared to a baseline; such as business as usual, average practice or some other metric. Under GGAS, electricity retailers and certain other large users of electricity have a legislated obligation to offset part of the emissions associated with the electricity they sell or use.

The proposed national scheme 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 is engaged in consultation on appropriate transition arrangements from GGAS to a national emissions trading scheme for participants in GGAS. It is anticipated that ultimately it will negotiate transition arrangements with the Commonwealth Government.

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 (ETS) incorporating State schemes and a nationally-consistent set of climate change measures to support the ETS.

The work program on complementary policy measures to support the ETS includes design of a single, expanded national Mandatory Renewable Energy Target (MRET) scheme, which is to be implemented in 2009, and the development of options to accelerate the uptake of energy efficiency measures. A comprehensive national framework for addressing climate change is to be agreed at COAG's October 2008 meeting.

8.1.1 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. The Commonwealth Government has foreshadowed that this target will be increased to 45,000 GWh or 20 per cent by 2020. MRET uses Renewable Energy Certificates (RECs) to provide incentives for the development of renewable energy sources. RECs are denominated in 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 that are being 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).

8.1.2 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 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.

8.1.3 Generator Efficiency Standards (GES)

The GES is a long-standing Scheme 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.

Along with other Commonwealth greenhouse programs the Generator Efficiency Standards program is understood to be under review.

8.1.4 Australian Building Greenhouse Rating (ABGR) Scheme

The ABGR provides a consistent and robust approach to evaluating the greenhouse performance of commercial office buildings, and employs a "star rating" to allow differentiation within the industry.

The DSA Rule refers to the ABGR in one of its methodologies. Through the integration of the required NGAC calculations for this demand side abatement methodology into the templates that are used by ABGR assessors, it is possible to provide valid NGAC calculations without the need for further analysis. There are currently 37 buildings included in accredited projects and there has been increasing

interest in this methodology from property developers, building managers and tenants.

In May 2008, ABGR was absorbed into the National Australian Built Environment Rating System (NABERS) and is now known as NABERS OFFICE (Energy). NABERS uses and extends the star rating system to rate buildings 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.

The NABERS methodology to calculate greenhouse gas emission reductions is robust and simple, and there is scope for use of NABERS methodologies to extend participation in GGAS through the new NEET Rule to a wide range of buildings.

8.1.5 Building Sustainability Index (BASIX)

In NSW, from 1 July 2007, planning requirements mandate 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.

8.1.6 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 a certification mechanism for the provision of zero emissions electricity from prescribed renewable energy sources to consumers across Australia. Organisations which purchase GreenPower (usually as a given percentage of their total electricity consumption) cannot claim that initiative as an emissions reduction under GGAS. GreenPower is administered by the NSW Department of Water and Energy.

8.1.7 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. While details of the fund are still under development, 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.

8.1.8 Voluntary Carbon Markets

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. Carbon 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 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, KPMG, ANZ Bank, NAB, 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 2007, 49,898 certificates were voluntarily surrendered. While the number of certificates voluntarily surrendered jumped dramatically in 2007, it is not possible to make any projections on how this may continue for the period 2008 to 2010. It is also not possible to ascertain what proportion of 2007 NGACs were used as voluntary offsets. However it is understood that because GGAS certificates represent genuine abatement, they are a preferred instrument for use as offsets.



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

Figure 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 2008.

During 2007, the Registry functionality was upgraded to allow broader online searching of certificate creation on the Registry. This change allows users to view current certificate creation information through the *Find > Search by accreditation* option. This upgrade was initiated by the Scheme Administrator following amendments to GGAS legislation to allow greater release of information.

Generation Rule certificate creations by project type

Category A: Biomass

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

Category A: Natural gas

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
AGL Sales Pty Ltd	Varnsdorf Cogeneration Generating System	VIC	9,863	10,650	11,046	12,029	11,861	55,449
Integral Energy Australia	Category A Gas Fired Cogeneration Plant	NSW	580,461	594,623	632,616	625,175	646,520	3,079,395
Origin Energy Electricity Ltd	Alfred Hospital	VIC	0	3,973	8,514	9,340	9,302	31,129
Origin Energy Electricity Ltd	Royal Melbourne Hospital	VIC	0	8,282	17,179	19,415	17,749	62,625
Origin Energy Electricity Ltd	St Vincents Hospital	VIC	0	3,537	6,420	7,686	0	17,643
Total			590,324	621,065	675,775	673,645	685,432	3,246,241

Category A: Waste coal mine gas

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
Integral Energy Australia	Category A Waste Mine Gas-Fuelled Power Plant	NSW	1,731,215	1,462,384	1,473,011	1,553,810	1,373,685	7,594,105
Integral Energy Australia	Category A Waste Mine Gas-Fuelled Power Plant	NSW	737,204	838,720	556,772	542,943	861,482	3,537,121
Total			2,468,419	2,301,104	2,029,783	2,096,753	2,235,167	11,131,226

Category A: Hydro

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
Country Energy	Burrendong Hydro Power Station	NSW	8,731	6,488	13,448	22,779	2,269	53,715
Country Energy	Copeton Hydro Power Station	NSW	20,206	1,538	12,054	18,971	14,360	67,129
Country Energy	Nymboida Hydro Power Station	NSW	6,255	9,020	8,887	10,224	7,895	42,281
Country Energy	Oaky Hydro Power Station	NSW	2,700	2,346	2,366	6,778	5,402	19,592
Country Energy	Wyangala Hydro Power Station*	NSW	3,934	0	448	0	0	4,382
Energy Australia	Glenbawn Hydro Power Station	NSW	10,735	10,843	10,926	11,114	1,243	44,861
Origin Energy Electricity Ltd	Yarrowonga Power Station	VIC	37,487	40,934	44,727	45,511	41,957	210,616
TRUenergy Pty Ltd	Blue Rock Dam Hydro Generating System	VIC	0	0	6,717	4,433	2,025	13,175
TRUenergy Pty Ltd	Cardinia Dam Hydro Generating System	VIC	0	0	8,563	10,276	6,372	25,211
TRUenergy Pty Ltd	Eildon Pondage Hydro Generating System	VIC	0	0	2,357	12,424	3,998	18,779
TRUenergy Pty Ltd	Lake Glenmaggie Dam Hydro Generating System	VIC	0	0	2,972	2,315	714	6,001
TRUenergy Pty Ltd	Lake William Hovell Dam Hydro Generating System	VIC	0	0	3,107	266	3,971	7,344
TRUenergy Pty Ltd	Thomson Dam Hydro Generating System	VIC	0	0	7,786	15,850	7	23,643
TXU Electricity Ltd	Blue Rock Dam Hydro Generating System*	VIC	2,798	7,649	3,849	0	0	14,296
TXU Electricity Ltd	Cardinia Dam Hydro Generating System*	VIC	15,012	13,345	4,444	0	0	32,801
TXU Electricity Ltd	Eildon Pondage Hydro Generating System*	VIC	5,478	11,555	7,135	0	0	24,168
TXU Electricity Ltd	Lake Glenmaggie Dam Hydro Generating System*	VIC	5,913	5,401	3,047	0	0	14,361
TXU Electricity Ltd	Lake William Hovell Generating System*	VIC	3,785	3,823	746	0	0	8,354
TXU Electricity Ltd	Thomson Dam Hydro Generating System*	VIC	9,835	10,902	4,597	0	0	25,334
Total			132,869	123,844	148,176	160,941	90,213	656,043

Category A: Landfill gas

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
AGL Electricity Ltd	Broadmeadows Landfill Gas Power Plant*	VIC	132,165	132,387	132,559	112,453	0	509,564
AGL Sales Pty Ltd	Broadmeadows LFG Generating System	VIC	0	0	0	17,669	114,898	132,567
AGL Sales Pty Ltd	Clayton & Springvale Landfill Gas Generation	VIC	347,713	386,035	408,065	389,938	370,801	1,902,552
AGL South Australia Pty Ltd	Highbury Landfill Gas Power Plant	SA	37,020	32,340	32,188	28,032	23,508	153,088
AGL South Australia Pty Ltd	Pedler Creek Landfill Gas Power Plant	SA	60,630	60,731	60,810	60,991	61,126	304,288
AGL South Australia Pty Ltd	Tea Tree Gully Landfill Gas Power Plant	SA	31,587	28,033	22,421	18,136	17,472	117,649
AGL South Australia Pty Ltd	Wingfield 1 & Wingfield 2 Landfill Gas Power Plant	SA	115,162	115,355	115,505	115,848	116,105	577,975
EDL LFG (NSW) Pty Ltd	Lucas Heights 1 LFG Generating System	NSW	0	46,414	56,675	59,728	66,117	228,934
EDL LFG (Qld) Pty Ltd	Brown Plains LFG Generating System	QLD	36,569	41,765	47,291	46,857	42,830	215,312
EDL LFG (SA) Pty Ltd	Wingfield 1 & 2 LFG Generating System	SA	88,631	127,501	166,071	153,465	123,845	659,513
EDL LFG (Vic) Pty Ltd	Berwick LFG Generating System	VIC	0	31,293	28,760	19,591	40,136	119,780
EDL LFG (Vic) Pty Ltd	Broadmeadows LFG Generating System	VIC	0	26,957	11,527	7,294	11,648	57,426
EDL LFG (Vic) Pty Ltd	Corio LFG Generating System - Deemed Retailer	VIC	0	888	24,892	24,892	24,892	75,564
EDL LFG (Vic) Pty Ltd	Corio LFG Generating System	VIC	0	13,246	13,536	12,820	7,634	47,236
EDL Operations (Berwick) Pty Ltd	Berwick LFG Generating System*	VIC	33,893	0	0	0	0	33,893
EDL Operations (Broadmeadows)	Broadmeadows LFG Generating System*	VIC	24,209	0	0	0	0	24,209
EDL Operations (Corio) Pty Ltd	Corio LFG Generating System - Deemed Retailer*	VIC	24,818	23,723	0	0	0	48,541
EDL Operations (Corio) Pty Ltd	Corio LFG Generating System*	VIC	12,324	0	0	0	0	12,324
EDL Operations (Pedler Creek) Pty Ltd	Pedler Creek LFG Generating System	SA	1,132	8,511	13,545	15,917	12,838	51,943
Energy Australia	Belrose Power Station	NSW	43,539	25,026	27,049	22,859	37,455	155,928
Energy Australia	Lucas Heights I Power Station	NSW	116,910	117,106	117,271	117,627	117,897	586,811
TRUenergy Pty Ltd	Berwick LFG Generating System	VIC	0	0	53,650	95,243	95,489	244,382
TXU Electricity Ltd	Berwick Power Plant*	VIC	109,839	110,039	47,880	0	0	267,758
Total			1,216,141	1,327,350	1,379,695	1,319,360	1,284,691	6,527,237

Category B: Coal

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
Delta Electricity	Mt Piper Power Station	NSW	11,050	19,777	52,097	187,838	116,886	387,648
Delta Electricity	Munmorah Power Station	NSW	0	3,500	1,016	0	0	4,516
Delta Electricity	Vales Point Power Station	NSW	66,894	65,431	46,329	102,252	20,072	300,978
Delta Electricity	Wallerawang Power Station	NSW	16,593	15,458	52,308	23,773	8,930	117,062
Eraring Energy	Eraring Power Station	NSW	129,086	115,291	72,120	70,711	67,264	454,472
Macquarie Generation	Liddell Power Station	NSW	63,362	199,124	275,082	446,877	571,472	1,555,917
Redbank Project Pty Ltd	Redbank Power Greenhouse Gas Abatement Program	NSW	0	0	0	0	0	0
Total			286,985	418,581	498,952	831,451	784,624	2,820,593

Category C: Biomass

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
Rocky Point Power Project Pty Ltd	Rocky Point Cogeneration Plant	QLD	0	0	0	0	364,190	364,190
Total			0	0	0	0	364,190	364,190

Category C: Coal

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
CS Energy Ltd	Swanbank B3 Landfill Gas Co-firing project	QLD	0	0	0	0	145,162	145,162
Flinders Operating Services Pty Ltd	Unit 1 Turbine Upgrade	SA	0	0	0	31,899	22,862	54,761
Hazelwood Power	Hazelwood Power Station	VIC	251,199	130,906	675,881	780,462	879,398	2,717,846
IPM Australia Ltd	Loy Yang B Power Station	VIC	0	0	0	6,775	216,723	223,498
Loy Yang Marketing Mgmt Company	Loy Yang A Power Station	VIC	0	0	254,015	86,545	0	340,560
Stanwell Corporation Limited	HIP Turbine Upgrades Units 1, 2, 3, 4	QLD	0	36,337	86,290	198,094	194,665	515,386
TRUenergy Yallourn Pty Ltd	Units 1 - 4 Improvements	VIC	0	0	9,033	164,423	18,004	191,460
Total			251,199	167,243	1,025,219	1,268,198	1,476,814	4,188,673

Category C: Hydro

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

Category C: Landfill gas

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

Category C: Natural gas

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
AGL Hydro Partnership	Torrens Island A Power Station	SA	0	0	0	0	1,287	1,287
AGL Hydro Partnership	Torrens Island B Power Station	SA	0	0	0	0	40,701	40,701
Alinta DEBO Pty Ltd	Bairnsdale Power Station	VIC	1,293	14,603	8,215	5,578	125,309	154,998
Bell Bay Power Pty Ltd	Bell Bay Power Station Units 1 and 2	TAS	0	0	0	140,271	355,277	495,548
Enertrade	Oakey Power Station*	QLD	0	3,563	0	0	0	3,563
Enertrade	Townsville Power Station*	QLD	0	8,451	0	0	0	8,451
OneSteel Manufacturing Pty Ltd	OneSteel Whyalla Steelworks - By-product Turbines	SA	0	0	0	0	58,834	58,834
OneSteel Manufacturing Pty Ltd	OneSteel Whyalla Steelworks - Cogeneration	SA	0	0	0	0	0	0
Origin Energy Electricity Ltd	Ladbroke Grove Power Station	SA	0	0	3,182	30,015	34,968	68,165
Pelican Point Power Ltd	Pelican Point Power Station	SA	284,984	0	194,934	545,997	986,020	2,011,935
TRUenergy Pty Ltd	Newport Power Station	VIC	0	24,895	0	0	347,888	372,783
TRUenergy Pty Ltd	Torrens Island A Power Station*	SA	0	0	0	0	0	0
TRUenergy Pty Ltd	Torrens Island B Power Station*	SA	0	70,642	0	0	0	70,642
Total			286,277	122,154	206,331	721,861	1,950,284	3,286,907

Category C: Sewage gas

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
AGL Energy Sales & Marketing Ltd	Werribee Sewage Gas Generating System	VIC	59,381	58,928	100,578	184,989	196,181	600,057
Total			59,381	58,928	100,578	184,989	196,181	600,057

Category D: Biomass

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
Diamond Energy Pty Ltd	Shepparton Biogas Generating System	VIC	0	0	0	0	0	0
Diamond Energy Pty Ltd	Tatura Biogas Generating System	VIC	0	0	0	0	11,885	11,885
EarthPower Technologies Sydney	Camellia Biodigester Generating System	NSW	0	10,623	24,619	34,543	28,242	98,027
Green Pacific Energy Stapylton No.1	Stapylton No.1 Generating System	QLD	0	0	5,370	0	0	5,370
Integrated Forest Products Pty Ltd	Hume ACT Cogeneration Plant (Future Project)*	ACT	0	0	0	0	0	0
Visy Pulp & Paper Pty Ltd	Tumut Cogeneration Generating System	NSW	542	353	532	622	711	2,760
Total			542	10,976	30,521	35,165	40,838	118,042

Category D: Coal

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
CS Energy Ltd	Kogan Creek Power Station	QLD	0	0	0	0	0	0
Millmerran Energy Trader Pty Ltd	Millmerran Power Station	QLD	0	92,553	78,624	74,368	94,889	340,434
Queensland Alumina Limited	Additional Steam from Cogeneration	QLD	0	0	0	0	0	0
Tarong Energy Corporation Ltd	Tarong North Power Station	QLD	0	38,112	80,869	117,273	0	236,254
Total			0	130,665	159,493	191,641	94,889	576,688

Category D: Coal seam methane

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
Arrow (Generation) Pty Ltd	Daandine Power Station	NSW	0	0	0	0	12,978	12,978
Total			0	0	0	0	12,978	12,978

Category D: Landfill gas

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
AGL Energy Services Pty Ltd	Glenorchy LFG Generating System	TAS	0	0	0	18,333	39,992	58,325
AGL Energy Services Pty Ltd	Hobart LFG Generating System	TAS	0	0	0	23,423	29,308	52,731
AGL Energy Services Pty Ltd	West Nowra Landfill Gas Power Generation	NSW	16,595	23,896	23,892	27,414	33,791	125,588
Boral Recycling Pty Ltd	Landfill Gas to Energy Facility, Deer Park	VIC	0	0	0	25,243	26,258	51,501
EDL LFG (ACT) Pty Ltd	Belconnen LFG Generating System	ACT	33,656	30,541	29,973	27,870	25,256	147,296
EDL LFG (ACT) Pty Ltd	Mugga Lane LFG Generating System	ACT	60,542	68,727	80,089	98,561	95,720	403,639
EDL LFG (NSW) Pty Ltd	Grange Avenue LFG Generating System	NSW	0	0	0	1,953	34,633	36,586
EDL LFG (NSW) Pty Ltd	Lucas Heights 2 LFG Generating System	NSW	382,599	396,207	535,048	506,381	501,786	2,322,021
EDL LFG (Qld) Pty Ltd	Roghan Road LFG Generating System	QLD	0	12,001	27,315	22,196	14,230	75,742
EDL LFG (Vic) Pty Ltd	Brooklyn LFG Generating System	VIC	0	29,267	78,294	75,166	78,728	261,455
EDL Operations (Brooklyn) Pty Ltd	Brooklyn LFG Generating System*	VIC	37,733	23,529	0	0	0	61,262
EDL Operations (Eastern Creek) Pty Ltd	Eastern Creek LFG Generating System	NSW	73,215	130,164	142,918	147,433	146,542	640,272
EDL Operations (Eastern Creek) Pty Ltd	Jacks Gully LFG Generating System	NSW	34,041	35,115	36,529	41,971	70,141	217,797
Energy Impact Pty Ltd	Molendinar LFG Generator	QLD	15,203	11,501	10,955	8,707	7,562	53,928
Energy Impact Pty Ltd	Mornington LFG Generator	VIC	10,157	8,801	18,109	16,929	18,210	72,206
Energy Impact Pty Ltd	Reedy Creek LFG Generator*	QLD	6,446	811	0	0	0	7,257
Energy Impact Pty Ltd	LFG Cogeneration Generating System	QLD	0	0	0	0	0	0
Energy Impact Pty Ltd	Stapylton LFG Generator	QLD	20,361	23,250	26,701	21,297	31,578	123,187
Energy Impact Pty Ltd	Suntown LFG Generator	QLD	27,020	45,309	50,551	36,089	29,853	188,822
Energy Impact Pty Ltd	Wyndham LFG Generator	VIC	14,619	22,777	19,945	27,247	21,926	106,514
LMS Generation Pty Ltd	Awaba Renewable Energy Facility	NSW	0	0	0	0	30,061	30,061
LMS Generation Pty Ltd	Ballarat Renewable Energy Facility	SA	0	0	0	0	0	0
LMS Generation Pty Ltd	Hallam Road Renewable Energy Facility	NSW	0	0	0	0	29,241	29,241
LMS Generation Pty Ltd	Remount Renewable Energy Facility	TAS	0	0	0	0	34,074	34,074
LMS Generation Pty Ltd	Rochedale Renewable Energy Facility	QLD	0	14,311	121,597	123,592	123,800	383,300
LMS Generation Pty Ltd	Tweed Renewable Energy Facility	NSW	0	0	0	7,861	11,355	19,216
LMS Generation Pty Ltd	Whitwood Road Renewable Energy Facility	QLD	0	13,727	39,497	40,459	40,616	134,299
LMS Generation Pty Ltd	Wollert Renewable Energy Facility	VIC	0	0	0	31,560	70,520	102,080
Woodlawn Bioreactor Energy Pty Ltd	Woodlawn Bioreactor	NSW	0	0	0	0	0	0
Total			732,187	889,934	1,241,413	1,329,685	1,545,181	5,738,400

Category D: Waste coal mine gas

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
Country Energy	Tahmoor Generating System	NSW	10,192	10,428	22,728	7,368	3,073	53,789
Country Energy	Teralba Power Station	NSW	0	158,334	258,704	222,957	179,111	819,106
EDL CSM (Qld) Pty Ltd	German Creek CMM Generating System	QLD	0	0	0	125,535	995,634	1,121,169
Enertrade	Moranbah Power Generation Facility*	QLD	0	0	0	0	0	0
Envirogen (Oakly) Pty Ltd	Glennies Creek WCMG Generating System	NSW	0	0	0	0	18,343	18,343
Envirogen Pty Ltd	Oaky Creek CSM Generating System	QLD	0	0	0	181,362	470,927	652,289
Lawn Hill Power Pty Ltd	Moranbah North CMM Generating System (future proj)	QLD	0	0	0	0	0	0
Transfield Services (Australia) Pty Ltd	Picardy Power Station	QLD	0	0	0	0	0	0
Total			10,192	168,762	281,432	537,222	1,667,088	2,664,696

Demand Side Abatement Rule certificate creations by project type

Energy Efficiency: Commercial

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
AAA Aardvark	AAA Energy Efficiency Refit Program - ACT Comm	ACT	0	0	0	0	0	0
AAA Aardvark	AAA Energy Efficiency Refit Program - NSW Comm	NSW	0	0	0	0	0	0
Alliance Network International	Commercial installations in ACT	ACT	0	0	0	0	0	0
Alliance Network International	Commercial installations in NSW	NSW	0	0	0	0	150,731	150,731
AMRS (Aust) Pty Ltd	Energy Efficiency Refit Program - Commercial ACT	ACT	0	0	0	0	0	0
AMRS (Aust) Pty Ltd	Energy Efficiency Refit Program - Commercial NSW	NSW	0	0	0	0	0	0
Australian Heating Solutions Pty Ltd	Installation of CFLs & flow restrictors - ACT Comm	ACT	0	0	0	0	0	0
Australian Heating Solutions Pty Ltd	Installation of CFLs & flow restrictors - NSW Comm	NSW	0	0	0	0	22,103	22,103
Carbon Reduction Institute Pty Ltd	Installation of CFLs - ACT Commercial	ACT	0	0	0	0	0	0
Carbon Reduction Institute Pty Ltd	Installation of CFLs - NSW Commercial	NSW	0	0	0	0	11,147	11,147
Commonwealth Bank of Australia	Branch network BMS upgrade	NSW	0	263	511	510	544	1,828
Commonwealth Bank of Australia	Lighting controls	NSW	0	252	510	518	524	1,804
Commonwealth Bank of Australia	Voltage reduction in branch network lighting	NSW	0	315	624	633	607	2,179
Commonwealth Bank of Australia	VSD upgrade on cooling fans & condenser pump	NSW	0	53	106	108	109	376
Demand Manager Pty Ltd	Lighting Aggregation Project	NSW	0	0	0	8,024	12,590	20,614
Demand Manager Pty Ltd	ACT Commercial PFC 1	ACT	0	0	0	0	0	0
Demand Manager Pty Ltd	NSW Commercial PFC 1	NSW	0	0	0	0	1,753	1,753
Easy Being Green Pty Ltd	Lighten Your Load NSW - ACT Commercial	ACT	0	0	0	0	700	700
Easy Being Green Pty Ltd	Lighten Your Load NSW - NSW Commercial	NSW	0	0	0	0	95,496	95,496
Energy Australia	Commercial Premises in ACT	ACT	0	0	0	0	0	0
Energy Australia	Commercial Premises in NSW	NSW	0	0	0	0	0	0
Energy Australia	Power Factor Correction	NSW	2,140	2,898	0	0	0	5,038
Eureka Funds Management	Eureka ABGR Energy Efficiency Program	NSW	0	0	0	0	0	0
Fieldforce Services Pty Ltd	Retrofit Program - Commercial ACT	ACT	0	0	0	0	20,299	20,299
Fieldforce Services Pty Ltd	Retrofit Program - Commercial NSW	NSW	0	0	0	0	314,501	314,501
Ilum-a-Lite Pty Ltd	Light Eco Energy Efficient Project	NSW	0	713	1,991	2,064	2,443	7,211
Investa Properties Ltd	Office Buildings assessed using the ABGR - ACT	ACT	0	0	0	133	121	254
Investa Properties Ltd	Office Buildings assessed using the ABGR - NSW	NSW	0	10,337	8,011	7,914	11,237	37,499
Koala Lamps Pty Ltd	Compact Lamp Supply to end users	NSW	0	0	13,747	21,423	19,982	55,152

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
Low Energy Supplies and Services	Direct Sales and Giveaways - ACT Commercial	ACT	0	0	0	0	7,042	7,042
Low Energy Supplies and Services	Direct Sales and Giveaways - NSW Commercial	NSW	0	0	0	0	144,258	144,258
Macquarie Asset Services Ltd	Building Energy Consumption Reduction	NSW	0	0	190	4,544	6,223	10,957
Neco Group Pty Ltd	Showerheads and CFL Globe Sales - ACT Comm*	ACT	0	0	0	0	0	0
Neco Group Pty Ltd	Showerheads and CFL Globe Sales - NSW Comm*	NSW	0	0	0	0	0	0
Neco Hardware Pty Ltd	Showerheads & CFL Globe Sales - ACT Comm*	ACT	0	0	0	0	14,836	14,836
Neco Hardware Pty Ltd	Showerheads & CFL Globe Sales - NSW Comm*	NSW	0	0	0	0	5,938	5,938
Neco Holdings Pty Ltd	Showerheads and CFL Globe Sales - ACT Comm	ACT	0	0	0	0	0	0
Neco Holdings Pty Ltd	Showerheads and CFL Globe Sales - NSW Comm	NSW	0	0	0	0	0	0
Panthers Rugby League Club Ltd	Lighting upgrade at Panthers*	NSW	0	1,048	0	0	0	1,048
Rheem Australia Pty Ltd	Air compressor PLC control	NSW	0	671	0	0	0	671
South Tweed Bowls Club Pty Ltd	Upgrade of lighting at South Tweed Bowls Club	NSW	0	348	0	348	0	696
Stamford Hotels and Resorts Pty Ltd	Airport Lamp Replacement*	NSW	0	254	0	0	0	254
Stamford Hotels and Resorts Pty Ltd	Carbon Monoxide Monitor*	NSW	0	220	0	0	0	220
Stamford Hotels and Resorts Pty Ltd	Circular Quay lighting upgrade*	NSW	0	169	0	0	0	169
Stamford Hotels and Resorts Pty Ltd	Double Bay lamp replacement*	NSW	0	147	0	0	0	147
Stamford Hotels and Resorts Pty Ltd	Lighting voltage reduction (Airport)*	NSW	0	99	0	0	0	99
Stamford Hotels and Resorts Pty Ltd	North Ryde lighting upgrade*	NSW	0	108	0	0	0	108
State Records of New South Wales	Stage 2 lighting upgrade*	NSW	0	41	0	0	0	41
Stockland Property Management	ABGR Energy Monitoring and Modification - ACT	ACT	0	0	0	4	38	42
Stockland Property Management	ABGR Energy Monitoring and Modification - NSW	NSW	0	0	0	165	3,073	3,238
Sutherland Shire Council	Sutherland Leisure Centre Energy Perform Contr*	NSW	0	0	393	0	0	393
Sydney Harbour Marriott Hotel	Dimming control at Sydney Harbour Marriott Hotel*	NSW	0	31	0	0	0	31
Sydney West Area Health Service	EPC and GEEIP	NSW	0	1,615	3,794	5,910	6,111	17,430
The Sustainable Energy Dev Auth	CFS Prop - VSD Units*	NSW	92	46	0	0	0	138
The Sustainable Energy Dev Auth	CFS Prop - Lighting Controls George St, Parramatta*	NSW	147	147	0	0	0	294
The Sustainable Energy Dev Auth	CFS Prop - LightEco Dimmer Units Stage 1 Set 3*	NSW	177	89	0	0	0	266
The Sustainable Energy Dev Auth	CFS Prop - LightEco Dimmer Units Stage 1 Set 2*	NSW	256	128	0	0	0	384
The Sustainable Energy Dev Auth	CFS Prop - Building Mgmt System Upgrade Set 2*	NSW	191	96	0	0	0	287
The Sustainable Energy Dev Auth	CFS Prop - Building Mgmt System Upgrade Set 1*	NSW	328	164	0	0	0	492
The Sustainable Energy Dev Auth	CFS Prop - Lighting Controls 52 Martin Place*	NSW	43	86	0	0	0	129
The Sustainable Energy Dev Auth	Marriott Hotel - Stage 1 Lighting Upgrade*	NSW	207	125	0	0	0	332

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
The Sustainable Energy Dev Auth	Marriott Hotel - Stage 2 Lighting Upgrade*	NSW	319	274	0	0	0	593
The Sustainable Energy Dev Auth	Marriott Hotel - Computerised Dimming System*	NSW	35	35	0	0	0	70
The Sustainable Energy Dev Auth	Merck Sharp & Dohme - LightEco Dimmer Units*	NSW	281	192	0	0	0	473
The Sustainable Energy Dev Auth	Mercure Hotel - Replace 50W Lights with 35W*	NSW	41	42	0	0	0	83
The Sustainable Energy Dev Auth	Mercure Hotel - Replace exhaust fan with VSD unit*	NSW	112	56	0	0	0	168
The Sustainable Energy Dev Auth	Mercure Hotel - Decommissioning of 50W Lights*	NSW	99	50	0	0	0	149
The Sustainable Energy Dev Auth	Mercure Hotel - Replace Supply Fan with VSD Unit*	NSW	74	37	0	0	0	111
The Sustainable Energy Dev Auth	Phoenix Sports Club - Lighting Upgrade Stage 1*	NSW	322	161	0	0	0	483
The Sustainable Energy Dev Auth	Phoenix Sports Club - Lighting Upgrade Stage 2*	NSW	207	178	0	0	0	385
The Sustainable Energy Dev Auth	SEDA Big W lighting project*	NSW	1,298	249	0	0	0	1,547
The Sustainable Energy Dev Auth	SEDA Telstra outside air economy cycle project*	NSW	0	0	0	0	0	0
The Sustainable Energy Dev Auth	State Records Authority of NSW - Lighting Upgrade*	NSW	92	46	0	0	0	138
The Sustainable Energy Dev Auth	Westcs LC - Replace Elec. Heating with N.Gas Boiler*	NSW	154	132	0	0	0	286
The Sustainable Energy Dev Auth	Westcs LC - Lighting Upgrade*	NSW	588	294	0	0	0	882
University of Technology Sydney	Building 2 Lighting Upgrade	NSW	0	0	0	543	0	543
University of Wollongong	Occupancy sensors for lighting controls	NSW	0	771	777	0	777	2,325
University of Wollongong	Voltage reduction for lighting control	NSW	0	149	150	0	150	449
Woolworths Ltd	Supermarket After Hours Lighting Controls	NSW	15,517	17,120	17,120	16,978	17,262	83,997
Total			22,720	40,249	47,924	69,819	870,595	1,051,307

Energy Efficiency: Industrial

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
Amcor Ltd	Air conditioning timers (Regents Park)	NSW	0	125	753	0	0	878
Amcor Ltd	Botany Mill Efficiency Initiatives	NSW	0	0	0	709	0	709
Amcor Ltd	Lighting voltage reduction (Botany & Smithfield)	NSW	0	104	627	0	0	731
Amcor Ltd	Skylight upgrade (Revesby)*	NSW	0	54	0	0	0	54
Amcor Ltd	Upgrade of blowers with conveyors (Revesby)	NSW	0	207	1,251	0	0	1,458
Amcor Ltd	Upgrade of blowers with VSD conveyors (Revesby)	NSW	0	58	390	0	0	448
Amcor Ltd	Upgrade of pumps with VSD units (Matraville)	NSW	0	289	1,749	0	0	2,038
BOC Ltd	Port Kembla LMPC	NSW	0	0	3,288	1,358	0	4,646
Boral Ltd	Berrima Kiln 6 Upgrade	NSW	0	0	0	6,589	14,818	21,407

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
Carter Holt Harvey Australia Pty Ltd	Refiner Control	NSW	0	0	0	8,065	14,249	22,314
Continental Carbon Australia Pty Ltd	Installation of VSD on boiler fan	NSW	0	123	0	252	0	375
Demand Manager Pty Ltd	ACT Industrial PFC 1	ACT	0	0	0	0	0	0
Demand Manager Pty Ltd	NSW Industrial PFC 1	NSW	0	0	0	0	1,917	1,917
Hydro Aluminium Kurri Kurri Pty Ltd	Smelter upgrade and retrofit	NSW	0	0	0	22,623	40,439	63,062
Manildra Starches Pty Ltd	Spray dryer exhaust fan replacement at Manildra	NSW	0	284	286	291	0	861
Merck Sharp & Dohme (Australia)	Lighting voltage reduction	NSW	0	193	1,170	0	0	1,363
NSW Roads and Traffic Authority	Upgrade of Traffic Lights	NSW	0	0	193	1,753	0	1,946
Orica Australia Pty Ltd	Botany Chlorine Plant	NSW	23,668	20,667	19,322	20,637	25,335	109,629
Rema Industries and Services Pty Ltd	New air compressor installation	NSW	0	356	789	0	789	1,934
Riverina Wool Combing Pty Ltd	Air conditioning timers*	NSW	0	222	0	0	0	222
The Sustainable Energy Dev Auth	AMCOR Botany - Installing LightEco Dimmer Units*	NSW	108	54	0	0	0	162
The Sustainable Energy Dev Auth	AMCOR Matraville - Replace Water Pumps*	NSW	277	139	0	0	0	416
The Sustainable Energy Dev Auth	AMCOR Matraville - Replacing Effluent Pump*	NSW	135	116	0	0	0	251
The Sustainable Energy Dev Auth	AMCOR Regents Park - Air Conditioner Timer*	NSW	235	124	0	0	0	359
The Sustainable Energy Dev Auth	AMCOR Revesby - Skylight Upgrade*	NSW	107	54	0	0	0	161
The Sustainable Energy Dev Auth	AMCOR Revesby - Replace Pneumatic Blowers*	NSW	67	57	0	0	0	124
The Sustainable Energy Dev Auth	AMCOR Revesby - Replace Blower on Necking Line*	NSW	410	205	0	0	0	615
The Sustainable Energy Dev Auth	AMCOR Smithfield - LightEco Dimmer Units*	NSW	53	38	0	0	0	91
The Sustainable Energy Dev Auth	BOC - Port Kembla LMPC*	NSW	3,375	2,095	0	0	0	5,470
The Sustainable Energy Dev Auth	Continental Carbon - Installation of VSD on Boiler*	NSW	183	122	0	0	0	305
The Sustainable Energy Dev Auth	Rema Industries - Replace Air Compressors*	NSW	568	434	0	0	0	1,002
Tomago Aluminium Company Pty Ltd	Fume Treatment Centre VSD Project	NSW	6,386	6,747	6,996	4,016	1,585	25,730
Visy Pulp & Paper Pty Ltd	Cooling Water Pumps Efficiency Project	NSW	0	0	0	525	629	1,154
Total			35,572	32,867	36,814	66,818	99,761	271,832

Energy Efficiency: Residential

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
AAA Aardvark	AAA Energy Efficiency Refit Program - ACT Res	ACT	0	0	0	0	0	0
AAA Aardvark	AAA Energy Efficiency Refit Program - NSW Res	NSW	0	0	0	0	5,000	5,000
Alliance Network International	DRIP - ACT	ACT	0	0	0	0	1,758	1,758
Alliance Network International	DRIP - NSW	NSW	0	0	0	0	525,146	525,146
AMRS (Aust) Pty Ltd	Energy Efficiency Refit Program - Residential ACT	ACT	0	0	0	0	0	0
AMRS (Aust) Pty Ltd	Energy Efficiency Refit Program - Residential NSW	NSW	0	0	0	0	0	0
APP Corporation Pty Ltd	Pilot DOH Residential Energy Efficiency Program	NSW	0	0	0	0	0	0
Australian Heating Solutions Pty Ltd	Installation of CFLs & flow restrictors - ACT Res	ACT	0	0	0	0	0	0
Australian Heating Solutions Pty Ltd	Installation of CFLs & flow restrictors - NSW Res	NSW	0	0	0	9,728	144,884	154,612
Big Switch Projects	Installation of CFLs - NSW Residential*	NSW	0	0	0	0	0	0
Big Switch Projects	Sales of CFLs and Showerheads - NSW Res*	NSW	0	0	0	0	0	0
Carbon Reduction Institute Pty Ltd	Giveaway/Sale of CFLs and Showerheads - ACT	ACT	0	0	0	0	0	0
Carbon Reduction Institute Pty Ltd	Giveaway/Sale of CFLs and Showerheads - NSW	NSW	0	0	0	0	29	29
Carbon Reduction Institute Pty Ltd	Installation of CFLs - ACT Residential	ACT	0	0	0	0	248	248
Carbon Reduction Institute Pty Ltd	Installation of CFLs - NSW Residential	NSW	0	0	0	0	7,914	7,914
Country Energy	Countrygreen Town Energy Efficiency Program*	NSW	0	0	0	0	0	0
Easy Being Green Holdings Pty Ltd	Lighten Your Load*	NSW	0	0	38,400	278,754	0	317,154
Easy Being Green Pty Ltd	Lighten Your Load NSW - ACT Residential	ACT	0	0	0	43,198	0	43,198
Easy Being Green Pty Ltd	Lighten Your Load NSW - NSW Residential	NSW	0	0	0	2,694,658	1,112,399	3,807,057
EcoSmart Programs Pty Ltd	EcoSmart Living Program Pilot - Western Sydney	NSW	0	0	0	2,348	5,864	8,212
Energy Australia	Compact Fluorescent Lamp Promotion - ACT	ACT	0	0	0	29,755	5,835	35,590
Energy Australia	Compact Fluorescent Lamp Promotion - NSW	NSW	0	182,295	3,016	1,256,576	47,258	1,489,145
Energy Australia	Residential Households in ACT	ACT	0	0	0	0	0	0
Energy Australia	Residential Households in NSW	NSW	0	34,010	28,928	12,718	25,215	100,871
Energy Australia	EnergySave On Line Shop - ACT*	ACT	0	0	0	0	0	0
Energy Australia	EnergySave On Line Shop - NSW*	NSW	0	0	0	3,798	212	4,010
Energy Australia	Residential Energy Efficiency Refit Pilot Program	NSW	646	2,269	0	0	0	2,915
Energy Australia	Spare Fridge Retirement Program*	NSW	0	0	0	8,016	0	8,016
Fieldforce Services Pty Ltd	Retrofit Program - Residential ACT	ACT	0	0	0	0	262,340	262,340
Fieldforce Services Pty Ltd	Retrofit Program - Residential NSW	NSW	0	0	0	0	4,609,421	4,609,421

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
Fieldforce Services Pty Ltd	Give Away to Reduce Demand Program - ACT	ACT	0	0	0	79,964	34,658	114,622
Fieldforce Services Pty Ltd	Give Away to Reduce Demand Program - NSW	NSW	0	0	0	1,331,288	305,815	1,637,103
Go Green Today Pty Ltd	Free Energy Saving Offer	NSW	0	0	0	0	0	0
Integral Energy Australia	Give-Away of CFLs and Showerheads	NSW	0	0	0	0	5,195	5,195
Integral Energy Australia	Installation of CFLs	NSW	0	0	0	0	4,687	4,687
Integral Energy Australia	Home Lighting Efficiency Program*	NSW	0	0	0	113,297	0	113,297
Low Energy Supplies and Services	Direct Sales and Giveaways - ACT Residential	ACT	0	0	0	3,506	275	3,781
Low Energy Supplies and Services	Direct Sales and Giveaways - NSW Residential	NSW	0	0	23,748	1,329,144	486,465	1,839,357
Low Energy Supplies and Services	Project #1/2003*	NSW	7,741	5,747	10,545	6,422	0	30,455
Macquarie Generation	Staff CFL Issue Scheme*	NSW	0	0	0	1,310	0	1,310
Murray Regional Development Board	Murray Energy Savings Program	NSW	0	0	0	0	5,148	5,148
Neco Group Pty Ltd	Showerheads and CFL Globe Sales - ACT Res*	ACT	0	0	0	0	0	0
Neco Group Pty Ltd	Showerheads and CFL Globe Sales - NSW Res*	NSW	0	0	0	0	0	0
Neco Hardware Pty Ltd	Showerheads & CFL Globe Sales - ACT Res*	ACT	0	0	0	22,788	75,402	98,190
Neco Hardware Pty Ltd	Showerheads & CFL Globe Sales - NSW Res*	NSW	0	0	311,200	310,416	250,484	872,100
Neco Holdings Pty Ltd	Showerheads and CFL Globe Sales - ACT Res	ACT	0	0	0	0	0	0
Neco Holdings Pty Ltd	Showerheads and CFL Globe Sales - NSW Res	NSW	0	0	0	0	0	0
Neco Lifestyles	Showerheads & CFL Globes web sales*	NSW	0	2	53,638	0	0	53,640
Next Energy Pty Ltd	Fridge Buyback Program	NSW	0	0	0	11,743	21,400	33,143
Origin Energy Electricity Ltd	CFL Giveaway*	NSW	0	0	287,101	403,859	0	690,960
Philips Electronics Australia Limited	Light Globe Replacement - ACT	ACT	0	0	0	26	10,366	10,392
Philips Electronics Australia Limited	Light Globe Replacement - NSW	NSW	0	0	0	63,550	116,058	179,608
Sydney Water Corporation	DIY Water Saving Kit Program	NSW	0	0	0	58,628	67,360	125,988
Sydney Water Corporation	Residential Shower Retrofit Programme	NSW	0	91,102	197,303	191,532	126,120	606,057
Sydney Water Corporation	Washing Machine Rebate Program	NSW	0	0	0	39,237	91,500	130,737
Total			8,387	315,425	953,879	8,306,259	8,354,456	17,938,406

Energy Source Substitution: Commercial

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

Energy Source Substitution: Residential

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
AGL Electricity Ltd	Gas Hot Water Systems - ACT*	ACT	0	0	0	1,460	0	1,460
AGL Electricity Ltd	Gas Hot Water Systems - NSW*	NSW	0	17,146	28,926	5,560	0	51,632
AGL Hydro Partnership	Gas Hot Water Systems - ACT	ACT	0	0	0	5,400	7,320	12,720
AGL Hydro Partnership	Gas Hot Water Systems - NSW	NSW	0	0	0	24,340	21,900	46,240
Australian Heating Solutions Pty Ltd	NSW Electric to Gas Hotwater Upgrade Scheme	NSW	0	0	0	4,480	2,280	6,760
Big Switch Projects	Installation of Gas Hot Water Systems - NSW Res*	NSW	0	0	0	0	0	0
Biogy Pty Ltd	Electricity to Gas Hot Water Initiative	NSW	0	4,260	6,380	6,260	9,600	26,500
BTU Holdings Australia Pty Ltd	Replacing electric with gas hot water systems	NSW	0	0	60	0	0	60
Carbon Reduction Institute Pty Ltd	Installation of Gas Boosted Solar HWS - NSW Res	NSW	0	0	0	0	0	0
Carbon Reduction Institute Pty Ltd	Installation of Gas Boosted Solar HWS - ACT Res	ACT	0	0	0	0	0	0
Carbon Reduction Institute Pty Ltd	Installation of Gas Hot Water Systems - ACT Res	ACT	0	0	0	0	0	0
Carbon Reduction Institute Pty Ltd	Installation of Gas Hot Water Systems - NSW Res	NSW	0	0	0	0	0	0
Country Energy	Countrygreen Gas Hot Water Replacement	NSW	0	0	0	0	0	0
Energy Australia	Electric to Gas Hot Water Conversion - ACT Res	ACT	0	0	0	0	0	0
Energy Australia	Electric to Gas Hot Water Conversion - NSW Res	NSW	0	0	0	160	2,980	3,140
Origin Energy Electricity Ltd	LPG Boosted Hot Water Systems - ACT	ACT	0	0	0	0	0	0
Origin Energy Electricity Ltd	LPG Boosted Hot Water Systems - NSW	NSW	0	0	0	0	0	0
Rheem Australia Pty Ltd	Rheem Gas Hot Water - ACT	ACT	0	0	0	120	260	380
Rheem Australia Pty Ltd	Rheem Gas Hot Water - NSW	NSW	0	0	0	2,120	4,420	6,540
Total			0	21,406	35,366	49,900	48,760	155,432

On-site Generation: Industrial

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
Country Energy	Tahmoor Power Station	NSW	110,751	151,468	209,648	130,991	148,960	751,818
Endeavour Coal Pty. Ltd	WestVAMP	NSW	0	0	0	0	168,755	168,755
Energy Australia	QAF Power Project*	NSW	0	0	0	0	0	0
Sydney Water Corporation	Cronulla STP - Cogeneration Plant	NSW	3,542	937	4,044	5,882	926	15,331
Sydney Water Corporation	Malabar STP - Cogeneration Plant	NSW	51,157	55,834	49,654	55,121	41,063	252,829
Visy Pulp & Paper Pty Ltd	Tumut On-site Cogeneration Plant	NSW	112,947	123,982	171,870	249,446	242,071	900,316
Total			278,397	332,221	435,216	441,440	601,775	2,089,049

On-site Generation: Residential

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
GridX Power Pty Ltd	GridX MiniGrid Cogeneration - Glenfield DSA	NSW	0	0	0	0	9	9
Total			0	0	0	0	9	9

Carbon Sequestration Rule certificate creations by project type

Name	Project name	Jurisdiction	2003	2004	2005	2006	2007	Total
Australian Forest Corporation Pty Ltd	The Rainforest Carbon Sink	NSW	0	0	0	0	0	0
Blue-Leafed Mallee Limited	Project 2007	NSW	0	0	0	0	40	40
CO2 Australia Limited	CO2 Australia Carbon Sequestration Pool	NSW	0	0	0	198	1,032	1,230
Forestry Commission of NSW	Forests NSW Carbon Pool	NSW	0	166,005	538,471	587,231	694,935	1,986,642
Go-Gen Australia Pty Ltd	Go-Gen Australia Pty Ltd	NSW	0	0	0	0	0	0
Landcare CarbonSMART Pty Ltd	NSW Pool	NSW	0	0	0	0	70	70
Mallee Carbon Limited	Project 2005	NSW	0	0	0	424	2,688	3,112
Total			0	166,005	538,471	587,853	698,765	1,991,094

Large User Abatement Certificate Rule certificate creations by project type

Name	Project name	Project type	Jurisdiction	2003	2004	2005	2006	2007	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	34,934
BlueScope Steel (AIS) Pty Ltd	Modifications to #25 Boiler	Fuel Switching Steel	NSW	0	0	0	77,574	96,005	173,579
Boral Ltd	Berrima Works Clinker Production Upgrade Kiln 6	Increased Fuel Efficiency Cement	NSW	0	0	78,690	157,082	232,563	468,335
Carter Holt Harvey Australia	Fossil Fuel Replacement Project	Fuel Switching Paper & Wood	NSW	0	0	0	3,432	4,418	7,850
Hydro Aluminium Kurri Kurri	Kurri Kurri Primary Aluminium Smelter	Industrial Process Aluminium	NSW	0	0	0	516,146	644,404	1,160,550
Norske Skog Paper Mills (Aust)	TMP Heat Recovery	Increased Fuel Efficiency Paper & Wood	NSW	0	0	11,956	6,551	15,322	33,829
Orica Australia Pty Ltd	Kooragang Island Ammonia Plant	Increased Fuel Efficiency Chemicals	NSW	0	0	0	0	122,155	122,155
Tomago Aluminium Company	Greenhouse Gas Reduction	Industrial Process Aluminium	NSW	0	0	0	0	102,489	102,489
Xstrata Coal NSW Pty Ltd	Flaring Project	Reduced Fugitive Emissions Mining	NSW	0	0	0	16,500	52,899	69,399
Total				0	0	94,277	790,460	1,288,383	2,173,120

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 of a 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, or eligibility against the Greenhouse Gas Benchmark Rules is satisfied.
Attributable Emissions	Determined for each benchmark participant each year by multiplying the 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.
Benchmark Participant	A person who is required or has elected to comply with a greenhouse gas benchmark.

Term	Meaning
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.
DSA Rule	<i>Greenhouse Gas Benchmark (Demand Side Abatement) Rule No. 3 of 2003</i>

Term	Meaning
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.
