IPART
New South Wales

Independent Pricing and Regulatory Tribunal

Compliance and Operation of the NSW Energy Savings Scheme during 2010

Report to Minister

NSW Energy Savings Scheme
July 2011

ESS Energy Savings Scheme

ISBN 978-1-921929-27-4 CP62

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

Margaret Sniffin (02) 9290 8486

Independent Pricing and Regulatory Tribunal of New South Wales
PO Box Q290, QVB Post Office NSW 1230
Level 8, 1 Market Street, Sydney NSW 2000

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

www.ipart.nsw.gov.au

Contents

Foreword

This is our second annual report on the Energy Savings Scheme (ESS) which was established in 2009. The ESS is still in its developmental stage but the last year has been a very successful year for the scheme, with a rapid increase in the number of energy savings certificates created from 278,157 in the last 6 months of 2009 to 804,318 in 2010.

The Commonwealth's announcement on 10 July 2011 of its proposals for a national carbon price has raised some concerns among scheme participants on the future of the scheme and the projects it covers. However, energy savings schemes, such as ESS, are widely seen as efficient, complementary policies to a carbon price or other policies to reduce greenhouse gas emissions. This was recognised by the Prime Minister's Task Group on Energy Efficiency, which proposed a national energy efficiency trading scheme that closely matches the ESS closely. While the continuation of the ESS or its transition to a national scheme is a matter for negotiation between governments, this should give some comfort for participants.

The ESS provides valuable lessons for a national scheme, particularly in regard to the measurement and verification of savings. Furthermore in its first 18 months of operation the ESS has shown that markets can deliver innovative and effective solutions. New business models have developed to make it viable to install low-flow showerheads on a mass-market basis. We have seen new and innovative solutions for energy efficient lighting in commercial buildings, particularly in the replacement of halogen downlights and the use of LEDs. Another interesting project installed more advanced control systems at a data centre to use the banks of computers more efficiently. Data centres are particularly intense energy users and, while the project may have been cost-effective even in the absence of ESS, the ability to create and sell certificates helped promote an earlier roll-out of this technology.

However, the ESS is more costly and challenging to administer than the GGAS. It is more difficult to measure energy not used – as we have to do under the ESS – than energy generated. Furthermore, many of the projects are small-scale and produce small quantities of Energy Savings Certificates (ESCs). Hence, for a given target, more projects must be accredited and the compliance and auditing costs may be more significant.

In 2011 we commissioned an independent review of the cost effectiveness of the energy savings under ESS which we expect to publish in the 3rd quarter of 2011. The preliminary results show a net benefit to society of over $20 per MWh of energy

saved, taking into account the participants costs (including compliance costs) and our own administration costs. The consultants concluded that the ESS is cost-effective in its current form, and makes both financial and environmental sense.

Looking ahead, our two key challenges will be to:

- ensure the continued integrity of the ESS, especially in regard to the mass-market residential program such as showerhead sales and installations
- facilitate new commercial and industrial programs where there are significant opportunities and fewer concerns about the potential for invalid creation of ESCs.

The residential showerhead programs took a disproportionate share of our time and effort in 2010. In the first quarter of 2010 we became concerned about the high risk of invalid ESC creation under these programs. The companies installing showerheads adopted highly efficient low-cost business models that relied upon sub-contractors paid on a piece-work basis. However, this made it more difficult to ensure that they complied with the requirements of their accreditations. We informed the Department of Industry and Investment of these concerns and this led to a reduction in the energy savings factor for each showerhead installed from 3.3 to 1.9.

In 2010 we increased the frequency of the audits for showerhead programs, defined the scope of work for the audits more clearly, and required mandatory surveys of participating households to verify the data supplied. However, we remain concerned about the potential for inaccurate, and possibly purposefully manipulated, record-keeping. We are also concerned that the new showerheads are now mostly replacing previously installed low-flow showerheads. In our 2011 determination on retail electricity prices we recommended that showerhead installations be removed from the ESS. The experience with the showerhead programs suggests that the NSW Government should be cautious in expanding the range of residential programs covered under ESS.

Commercial lighting was an area of rapid development in 2010 and we expect this to continue. We developed an electronic tool to facilitate these applications and we will continue to enhance this. The launch of a new ESS website in 2011, aimed at providing information at a more accessible level, should make it easier for potential participants to understand the requirements and to apply for accreditation. We are keen to facilitate greater participation of commercial and industrial projects and this will be easier if we can manage the demands we face from residential programs more effectively.

I would like to thank the GGAS/ESS team, led by Margaret Sniffin (General Manager), for their contribution to the success of ESS in a difficult year. I would also like to thank my colleagues on the Committee, Brian Spalding and Eric Groom, for their counsel and participation in decision making.

James Cox PSM
Acting Chairman

1 Executive summary

As part of our functions as Scheme Regulator and Scheme Administrator for the NSW Energy Savings Scheme (ESS), the Independent Pricing and Regulatory Tribunal of NSW (IPART) monitors and reports annually to the Minister for Energy on the scheme participants' compliance, and other aspects of the scheme's performance and operation. This is the second annual report and covers the 12 months to 31 December 2010.

1.1 What is the ESS?

The ESS is established under Part 9 of the *Electricity Supply Act 1995* (the Act), and commenced operation in July 2009. Its stated objectives are to:

- assist households and businesses to reduce electricity consumption and electricity costs
- complement any national scheme for carbon pollution reduction by making the reduction of greenhouse gas emissions achievable at a lower cost, and
- reduce the cost of, and the need for, additional energy generation, transmission and distribution infrastructure.

To meet these objectives, the Act sets annual energy savings targets. It obliges electricity retailers and certain other parties, known as Scheme Participants, to meet these targets by purchasing and surrendering Energy Savings Certificates (ESCs). It also provides for parties to be accredited to create these certificates from specific energy savings projects. These parties are known as Accredited Certificate Providers.

The annual energy savings targets are expressed as a percentage of the Scheme Participants' annual liable electricity acquisitions, and increase each year until 2014 after which they remain steady until 2020. The energy savings target for 2010 is 1.5% of all liable acquisitions made during the compliance year. This is equivalent to 849,508 MWh of energy saved, or 858,004 certificates.

The framework for the design of the ESS was taken directly from the Greenhouse Gas Reduction Scheme (GGAS) – specifically the energy efficiency component of this scheme, which was governed by the *Greenhouse Gas Benchmark Rule (Demand Side Abatement) No. 3 of 2003* (DSA Rule). When the ESS commenced, GGAS was simultaneously amended to remove the eligibility of energy efficiency projects so that no overlap occurred between the schemes.

1.2 What is IPART's role?

As noted above, IPART is both Scheme Regulator and Scheme Administrator of the ESS. As part of these roles, we:

- monitor and report on Scheme Participants' compliance with their ESS obligations
- assess Accredited Certificate Providers' applications to create certificates in respect of specific energy savings projects, and accredit those we deem eligible under the *Energy Savings Scheme Rule of 2009* (ESS Rule)
- monitor and report on Accredited Certificate Providers' compliance with the conditions of their accreditation and the ESS Rule
- conduct independent audits to assure the integrity of the scheme is maintained
- track the creation, surrender and transfer of certificates through the GGAS & ESS Registry[1]
- monitor and publish annual reports on the supply of and demand for certificates.

We also host the website for the ESS, which can be found at www.ess.nsw.gov.au.

Under the Act, IPART may, with the approval of the Minister, delegate the exercise of our functions as Scheme Administrator and Scheme Regulator to another person or body. We have chosen to delegate these functions to an ESS Committee. For the 2010 calendar year, this Committee comprised Mr James Cox as full-time IPART Member, and Dr Brian Spalding and Mr Eric Groom as Committee Members. The ESS Committee met a total of 20 times in 2010.

1.3 Scheme Participants' performance in 2010

The main parties liable under the ESS are electricity retailers operating in NSW[2]. These parties are known as Scheme Participants. They are required to demonstrate that they have met their compliance obligations under the ESS (including their individual annual energy savings target) in Annual Energy Savings Statements (AESS), which they submit to IPART.

1 See https://www.ggas-registry.nsw.gov.au

2 A small number are electricity generators that directly supply retail customers in NSW, or market customers who purchase electricity directly from the National Electricity Market.

Scheme Participants were required to submit their 2010 AESS on 18 March 2011. The Act makes provisions to allow Scheme Participants who do not have enough certificates to make payments in lieu of surrendering certificates (referred to as a penalty). They may also carry forward an energy savings shortfall of up to 10% of their individual energy savings target to the 2011 compliance year. They are required to make up any shortfall they carry forward by the time they submit their 2011 AESS in March 2012. In the same way, any shortfall carried forward from 2009 is required to be made up as part of 2010 compliance.

During the 2010 compliance year, there were 29 Scheme Participants, which together surrendered 651,655 certificates. This represents 76% of the total number of certificates required to meet the combined compliance obligations for the year. Of the 16 Scheme Participants that recorded an energy savings shortfall, 10 chose to carry forward some or all of their shortfall to 2011. Eight Scheme Participants chose to 'buy out' all or part of their compliance obligation by paying a penalty, which combined, totalled approximately $7.3 million. In contrast, approximately 180,000 certificates were owned by Scheme Participants and available for surrender after the deadline for compliance had passed. Scheme Participants can use these surplus certificates for compliance in future years.

The ESS includes provisions that allow a portion of the Scheme Participants' electricity sales to be excluded in calculating their annual liable electricity acquisitions (from which their individual energy savings targets are calculated in MWh). This portion relates to the electricity they sold to entities that have been granted exemptions for part of the load they use in 'emissions intensive and trade exposed' industries or activities. It represents either 60% or 90% of the whole load supplied to each of these entities, depending on the proportion of this load that is exempt.

In 2010, 9 Scheme Participants supplied electricity to entities with exempt loads. These exempt loads comprised around 20% of the total electricity supplied in NSW during the year.

1.4 Accredited Certificate Providers' performance in 2010

Accredited Certificate Providers are voluntary participants in the ESS. As noted above, to participate they must apply for and receive accreditation to create certificates in respect to specific energy savings projects, known as Recognised Energy Savings Activities (RESAs). Once accredited, they are subject to the conditions of their accreditation, which set out their compliance obligations.

Overall, Accredited Certificate Providers' compliance performance was acceptable with 14 instances of non-compliance discovered during 2010. Most of these related to the improper creation of certificates, and were relatively minor in nature. In addition, most were satisfactorily resolved and where relevant, the providers agreed to voluntarily forfeit the required number of certificates. However, in one case, the

Accredited Certificate Provider, Combined Force, did not accept that a non-compliance event had occurred, and has not yet agreed to forfeit the required certificates (discussed in section 4.1.2). This provider is restricted from creating further certificates until the matter is resolved.

At the end of 2010, 62 RESAs were accredited to create certificates of 2010 vintage, and by 30 June 2011, an additional 11 RESAs were accredited to create certificates of 2010 vintage.

1.5 Auditing activities

To help manage compliance with the ESS, the Act empowers IPART, as Scheme Regulator and Scheme Administrator, to impose audit requirements on the parties that participate in the scheme. We have established a panel of independent third party auditors, known as the ESS Audit Services Panel, to undertake these audits. This panel undertook a total of 34 audits, including:

- 18 audits of Scheme Participants' annual energy savings statements for the 2010 compliance year that were conducted in the first quarter of 2011, and
- 16 audits of Accredited Service Providers' RESAs that were conducted during 2010.

We also finalised our Compliance and Performance Monitoring Strategy, which sets out our risk framework, the methodology for establishing audit regimes, and the means by which we manage compliance under the ESS.

1.6 Creation, ownership and surrender of certificates

As at 30 June 2011, the Registry had recorded the creation of 804,318 certificates for the 2010 calendar year. This brought the total certificates created for 2009 and 2010 activities to 1,082,475.

In general, certificates are created after the energy savings occur; however the ESS Rule also allows certain types of activities to create certificates in advance of the actual savings. Taking into account the number of certificates created in 2010 and the forward creation and deeming associated with these certificates, we estimate that the actual energy savings[3] for 2010 was 309,984 MWh with the remaining energy savings realised across future years.

The Registry also tracks transfers and surrenders of certificates. It recorded a total of 769,011 certificates transferred between parties and 651,655 certificates surrendered by Scheme Participants for the 2010 compliance year.

[3] Section 174 of the Act requires an estimate of the actual energy savings that have been realised with regard to the number of certificates created.

1.7 Projected supply and demand for certificates

We have projected that the demand-supply balance will be tight into the foreseeable future. This is primarily due to the ESS targets, which drive demand, nearly tripling between 2010 and 2012, with the commercial and industrial sectors yet to be fully engaged in terms of certificate supply. Nonetheless there remains an expectation of continued steady growth in certificate supply, particularly from commercial lighting activities, with additional stimulus to other sectors (and technologies) arising from a series of ESS workshops and seminars being held during 2011. It is anticipated that these will lead to further applications for eligible energy savings activities from the commercial and industrial sectors, and assist in ensuring ongoing market liquidity, into the future.

1.8 What does the rest of this report cover?

The rest of this report discusses the compliance with and operation of the ESS during 2010 in detail:

- Chapter 2 outlines developments in ESS, including changes to legislation
- Chapters 3 and 4 focus on the performance of the Scheme Participants and Accredited Certificate Providers
- Chapter 5 discusses our auditing activities and findings
- Chapter 6 provides key statistics on the creation, surrender and transfer of certificates recorded in the Registry, and
- Chapter 7 provides information about the demand for and supply of certificates during 2010 and presents some possible scenarios for demand and supply in the coming years.

The appendices provide an overview of the ESS and its key elements, detailed information on the certificates created since the scheme commenced and the estimated energy savings achieved through those activities, and a glossary of terms.

2 Developments in the ESS during 2010

The 2010 reporting year was the first full year of operation of the ESS. During this year, there were some notable developments in the scheme. These included several changes affecting showerhead replacement programs intended to improve the integrity of the scheme, and activities to promote awareness and understanding of the scheme. The sections below outline these developments.

2.1 Changes affecting showerhead replacement programs accredited under the ESS Rule

In early 2010, we became concerned that Accredited Certificate Providers accredited in respect of showerhead replacement programs were not always meeting the conditions of their accreditation. The number of providers accredited for this type of project had expanded rapidly, and the number of certificates being created from them increased significantly. In addition, the first audit of a showerhead replacement program discovered very high rates invalid certificate creation.

To address these concerns, a number of changes were made to the information requirements and other conditions imposed on Accredited Certificate Providers accredited for these programs, and to the ESS Rule and the administration of showerhead programs.

2.1.1 Changes to information requirements

In March 2010 we reviewed the information requirements for showerhead replacement programs, and decided to impose additional requirements to maintain integrity of the ESS and to minimise the risk of invalid certificate creation. Accredited Certificate Providers were advised by email of the additional requirements in an ESS Notice, published on the ESS website on 24 March 2010.[4] Additional requirements imposed include:

- provide an extract from their installation database at the end of each quarter, and as required by the Scheme Administrator
- provide an electronic copy of the register of installers at the end of every month

4 *ESS Notice 01/2010 – Additional information requirements for shower rose replacement programs* – see www.ess.nsw.gov.au/documents/Notice01-2010-ShowerRose.pdf

- notify the Scheme Administrator of any changes to the accredited RESA
- notify the Scheme Administrator of any proposed changes to the end-user equipment (ie, showerhead specifications)
- conduct an audit following the creation of 10,000 certificates to confirm that the certificates created are consistent with the activities performed
- include requirements for a standardised phone survey conducted by Newspoll for all audits
- the need to be notified by the Scheme Administrator that it is satisfied with the outcome of the audit before creating further certificates.

2.1.2 Amendment to the ESS Rule

Also in March 2010, the then Minister for Energy asked the former Department of Industry and Investment NSW[5] to review showerhead replacement programs accredited under the ESS Rule, in conjunction with IPART and the former NSW Department of Environment, Climate Change and Water.[6]

The Minister released the findings and recommendations of this review in August 2010.[7] The recommendations included several amendments to the ESS Rule to revise the default savings factors for showerhead programs. The recommendations were accepted and the ESS Rule was amended on 24 December 2010. The amendments included:

- narrowing the eligibility criteria, so only ultra low flow (6 litres per minute or less) showerheads are eligible
- establishing that a maximum of 3 showerheads can be replaced per household
- changing the Default Savings Factors for showerhead replacement activities to:
  - 1.9 megawatt hours of electricity savings where a showerhead is replaced with an ultra low flow showerhead that is connected to an electric resistance water heater in residential or commercial premises
  - 1.1 megawatt hours of electricity savings where a showerhead is replaced with an ultra low flow showerhead that is connected to an electric-boosted solar or heat pump water heater in residential or commercial premises
  - 1.3 megawatt hours of electricity savings where an ultra low flow showerhead is sold to the Energy Saver (which assumes that the type of water heater to which the showerhead will be connected to is unknown), with a Sales Discount Factor of 0.9 to apply.

5 Now known as the NSW Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS).

6 Now known as the Office of Environment and Heritage (OEH).

7 *Report to Minister for Energy: Energy Savings Scheme – Showerheads Review.*

The Default Savings Factors were reduced because it is likely that many of the showerheads being replaced are low flow showerheads.

The ESS Rule was also updated for name changes, clarity and consistency, and to make minor typographical corrections. In addition, tables for refrigerators and freezers were updated to reflect changes in star ratings.

For further information, the report on this review can be found on the Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS) website.[8]

2.1.3 Changes to the administration of showerhead sales programs

In early 2011 we reviewed the requirements imposed on showerhead sales programs (as distinct from installation programs) in 2010 and made the following key changes:

- the Installation Discount Factor to be applied will vary depending on the price paid by a customer purchasing the showerhead, and
- energy savings certificates may not be created until after an audit is completed (ie, a pre-registration audit approach will apply).

We also made changes to the documentation and procedures that must be established to support showerhead sales programs for example, tracking financial invoices of showerhead sales.

These changes were introduced on 2 February 2011 and are detailed in our *ESS Notice 01/2011 – Showerhead Sales Programs,* published on the ESS website.[9]

2.2 Amendment to the Exemptions Rule

Commencing 2 December 2010, IPART amended the Exemptions Rule, replacing the previous version that commenced on 10 September 2009. The amendments provide clarity on the values used to calculate the proportion of the load that is exempt (Exempt Proportion) for a Specified Person and the associated deduction for losses. Appendix A, section A.6 provides more information on the Exemptions Rule.

2.3 Amended Ministerial Order

On 24 December 2010, an amended Ministerial Order was published in the Government Gazette for the purposes of the 2011 compliance year. The amendments include the addition of new exemption categories, the re-classification of some existing exemption categories, and the removal of coke production as an exemption category. The amended Ministerial Order applies from 1 January 2011, and governs

8 www.industry.nsw.gov.au/energy/sustainable/efficiency/scheme
9 www.ess.nsw.gov.au/documents/Notice01-2011-ShowerheadSalesPrograms.pdf

the calculation of exempt loads for the 2011 compliance year onwards, until revoked. Appendix A, section A.6 provides more information on the Ministerial Order.

2.4 Compliance and Performance Monitoring Strategy

During 2010, IPART developed a *Compliance and Performance Monitoring Strategy* to help manage the compliance of participants in the ESS. This strategy informs applicants, Accredited Certificate Providers, Scheme Participants, auditors and other stakeholders as to how we (as Scheme Administrator and Scheme Regulator) determine an audit regime and manage ongoing compliance with the ESS.

The Compliance and Performance Monitoring Strategy operates in conjunction with the Audit Guideline, and is available together with this guideline on the ESS website[10]. Chapter 5 provides for more information on this strategy.

2.5 Seminars

The former NSW Department of Environment, Climate Change and Water conducted free seminars, in conjunction with the former Department of Industry and Investment NSW and IPART. These seminars aimed to promote awareness and understanding of the ESS, and encourage further applications for accreditation.

In November 2010, the first series of seminars were held in various locations around Sydney (including Parramatta, Penrith, Chatswood and Sydney CBD). In February 2011, a second series of seminars were held in regional NSW (Gosford, Newcastle, Dubbo and Orange). The seminars were well attended, and the open format allowed attendees to ask questions about particular aspects of the ESS, and seek clarification about the eligibility of their energy efficiency projects.

2.6 Scheme Regulator and Scheme Administrator documentation

We published a range of documents on the ESS website during 2010 which provide information to all participants in the scheme, including forms, guides and notices used by Scheme Participants, Accredited Certificate Providers and applicants. These documents are outlined below.

2.6.1 Annual Energy Savings Statement and Guide

Each year, we release a revised *Annual Energy Savings Statement* and *Guide to Completing the Annual Energy Savings Statement*. These documents are used by Scheme Participants in fulfilling their compliance obligations.

10 www.ess.nsw.gov.au

These documents were updated in late 2010 to improve the way the shortfall is calculated and to remove rounding errors.

2.6.2 Annual Report Statement

All Accredited Certificate Providers are required to lodge annual reports as per the date and requirements specified in their Accreditation Notice. To assist Accredited Certificate Providers in preparing their annual report, we developed a proforma *Annual Report Statement* which was released in early 2010.

2.6.3 Commercial Lighting Calculation Tool

During 2010, we further developed our *Commercial Lighting Calculation Tool*. The tool was updated to incorporate features absent in the original version and to include the ability to calculate the savings from both building and street lighting upgrades.

The latest version of the Commercial Lighting Calculation Tool is Version 2.1.

2.6.4 Scheme Administrator Notices

During 2010, we released 2 Scheme Administrator Notices as follows:

- *Notice (01/2010) - Additional information requirements for shower rose replacement programs*. As discussed above, this notice outlines decisions we made as the Scheme Administrator about the administration of showerhead replacement programs under the previous version of the ESS Rule (1 July 2009 version). The information it contains is still relevant for showerhead programs, except where it has been superseded due to the amendment to the ESS Rule on 24 December 2010.
- *Notice (02/2010) - Supply of ESCs for 2010 Compliance*. This notice provides information about the supply-demand balance of certificates for the purposes of the 2010 compliance year. It includes supply-demand projections and available options for Scheme Participants in respect of mandatory energy savings targets.

2.6.5 Fact Sheets

We released 2 fact sheets as follows:

- *Fact Sheet 7: Minimum Requirements for Sales Programs (Default Savings Factors)*. This fact sheet was prepared for applicants in respect of sales programs. It provides guidance in the use of Default Savings Factors in the Deemed Energy Savings Method of the ESS Rule.
- *Fact Sheet 8: Trading Certificates under the Energy Savings Scheme*. This fact sheet was prepared as a guidance document on trading energy savings certificates and is targeted at Accredited Certificate Providers who have registered certificates, but do not necessarily know how to sell them.

3 Scheme Participants' compliance performance

Scheme Participants include all holders of NSW electricity retail licences, NSW electricity generators that supply directly to retail customers in NSW, and market customers in NSW who purchase their electricity directly from the National Electricity Market.

Each Scheme Participant is required to calculate its individual energy savings target for the year and obtain and surrender sufficient certificates to meet its target. If it does not surrender sufficient certificates, it will have an energy savings shortfall. In this case, it can either choose to carry this shortfall forward to the following year (within the allowable limits) or pay a shortfall penalty.

Each Scheme Participant is also required to lodge an Annual Energy Savings Statement (AESS) for the calendar year with IPART (as Scheme Regulator) by no later than 18 March of the following year. The AESS must include the Scheme Participant's calculation of its individual target for the year, the extent to which it met that target by surrendering certificates, any energy savings shortfall and any penalty it is required to pay. It must also include particulars of the Scheme Participant's liable acquisitions and deductions in respect of any partially exempt loads.

In the majority of cases, IPART requires the AESS to be accompanied by an independent audit report. However, Scheme Participants submitting nil returns can complete a simplified AESS which does not require an audit. In addition, we can grant audit exemptions for Scheme Participants that had very low electricity purchases for the year.

During the 2010 compliance year, there were 29 Scheme Participants – comprising 25 retail suppliers, 2 generators that supply directly to retail customers, and 2 market customers. The sections below summarise these Scheme Participants' compliance performance during 2010, and then discuss their energy savings shortfalls, penalties for energy savings shortfalls and deductions for exempt loads in more detail.

3.1 Summary of Scheme Participants' compliance performance in 2010

Of the 29 Scheme Participants, 13 fully met their 2010 individual energy savings target under the ESS, including any remaining obligations for the 2009 compliance year. Of these, 9 surrendered sufficient certificates to meet their energy savings target, while a further 4 did not directly purchase or sell electricity in NSW and so were not required to surrender any certificates.

The remaining 16 Scheme Participants had an energy savings shortfall. Among these participants, 10 chose to carry forward some or all of this shortfall to 2011, and 8 chose to pay a penalty in respect of some or all of their shortfall in order to meet their 2010 compliance obligations. Only 2 Scheme Participants failed to meet their obligations.

Together, Scheme Participants were required to surrender a total of 968,835 certificates to meet their compliance obligations for 2010, including any remaining compliance obligations for the 2009 compliance period (Table 3.1). Just over three-quarters of this obligation was met by surrendering certificates. The equivalent of 316,952 certificates was paid in penalties as shown in Table 3.1.

Table 3.1 Calendar year 2010 reconciliation of certificates required to certificates surrendered

Certificates required to meet 2010 compliance obligations	858,004	Total certificates surrendered	651,655
Add: Certificates required to meet shortfalls carried forward from 2009	139,843	*Add:* Penalties paid	316,952
Less: Shortfall carried forward to 2011	(29,012)	*Add:* Penalties to be paid	228
Total certificates required to be surrendered	968,835	Total certificates required to be surrendered	968,835

Table 3.2 provides details of the compliance performance of individual Scheme Participants.

Table 3.2 Scheme Participants' compliance for the 2010 compliance year

Compliance performance	Scheme Participant
Surrendered sufficient certificates to meet their individual 2010 energy savings target	Aurora Energy Pty Ltd
	Australian Power & Gas Pty Ltd
	Delta Electricity[a]
	EnergyAustralia
	Eraring Energy[b]
	Macquarie Generation[a]
	Red Energy Pty Ltd
	Tarong Energy Corporation Ltd
	Tomago Aluminium Company Pty Ltd[b]
Did not directly purchase or sell electricity in NSW and therefore was not required to surrender certificates	Actew AGL Retail Ltd
	Diamond Energy Pty Ltd
	Dodo Power & Gas Ltd
	GridXPower Pty Ltd
Surrendered certificates to meet part of their 2010 energy savings target and chose to carry forward their energy savings shortfall to 2011	AGL Sales (Queensland Electricity) Pty Ltd
	ERM Power Retail Pty Ltd
	Origin Energy Electricity Limited (including Cogent Energy and Sun Retail)[c]
	Powerdirect Pty Ltd
Surrendered certificates to meet part of their 2010 energy savings target, chose to carry forward part of their energy savings shortfall to 2011, and paid a penalty to cover any remaining obligations	TRUenergy Pty Ltd
	AGL Sales Pty Ltd
Surrendered certificates to meet part of their 2010 energy savings target and paid a penalty to cover any remaining obligations	Country Energy
	Integral Energy
Met their entire 2010 obligations by paying a penalty	Infigen Energy Markets Pty Ltd
	Momentum Energy Pty Ltd
Chose to carry forward to 2011 a portion of their energy savings shortfall and paid a penalty to meet remaining obligations	Lumo Energy Pty Ltd
	TRUenergy Yallourn Pty Ltd
Failed to meet their obligation	Sanctuary Energy Pty Ltd
	Independent Electricity Retail Solutions Pty Ltd

a A direct supplier of electricity.

b A market customer. Section 101(2) of the Act defines a market customer as: *market customer means a customer that has classified any of its electricity loads as a market load and that is registered with the Market Operator as a market customer under the National Electricity Rules (within the meaning of the National Electricity (NSW) Law)*.

c Origin Energy submitted a single AESS covering Origin Energy Electricity, Cogent Energy and Sun Retail.

Note: In March 2011, Origin purchased Country Energy's electricity and gas retailing business as well as Integral Energy's electricity retailing business; and TRUenergy acquired EnergyAustralia's retail customer base. Accordingly, 2010 benchmark statements for sales attributed to Country Energy and Integral Energy were submitted by their renamed distribution businesses, Essential Energy and Endeavour Energy, respectively.

3.2 Energy savings shortfalls

If a Scheme Participant fails to meet its individual energy savings target for a year, it has an energy savings shortfall for that year. Section 116 of the Act provides that such a participant can elect to carry forward at least some of this energy savings shortfall to the next year. Under the legislation, the maximum amount of an energy savings shortfall that may be carried forward is equivalent to 10% of the Scheme Participant's individual energy savings target. Any shortfall carried forward must be met in the following compliance year.

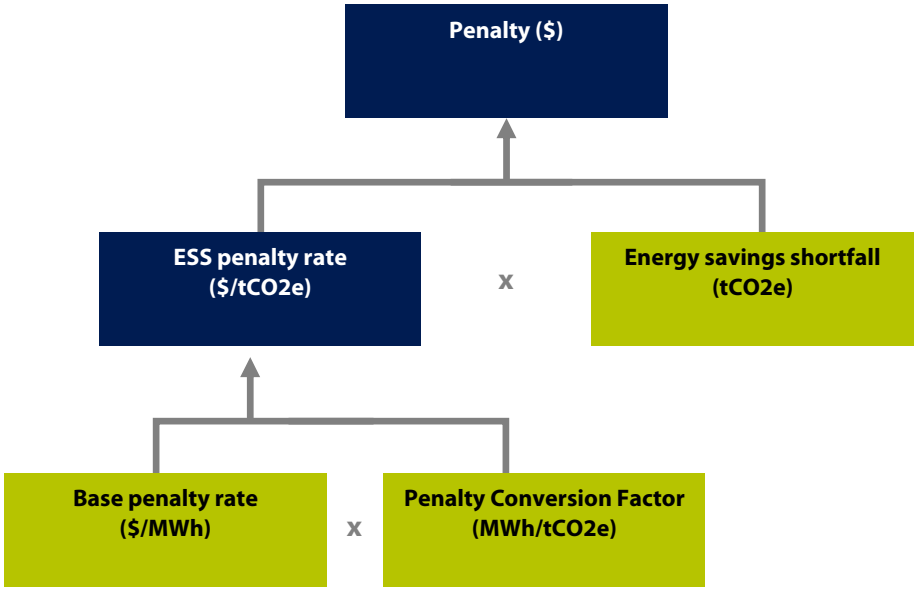
For the 2010 compliance year, 10 Scheme Participants elected to carry forward a total of 29,012 certificates to the 2011 compliance year. This equates to 2.9% of the total compliance obligation for 2010 across all Scheme Participants.

3.3 Penalties for energy savings shortfalls

Section 112 of the Act provides that a Scheme Participant with an energy savings shortfall for a given year is liable to pay a penalty in respect of that year. By paying the penalty amount, Scheme Participants are in fact 'buying out' their compliance obligations for that year. The option to pay a penalty in lieu of surrendering certificates is an integral part of the design of the ESS.

The base penalty rate for the 2010 compliance year was $24.50 per MWh of shortfall. The penalty amount in dollars is calculated by multiplying the amount of the energy savings shortfall by the ESS penalty rate, which is calculated by multiplying the penalty conversion factor (0.94) and the base penalty rate. This converts dollars per MWh into dollars per tonnes of CO_2 equivalent, which is the unit of measurement for determining the energy savings shortfall. This calculation is illustrated in Figure 3.1.

Figure 3.1 Calculating the penalty associated with an energy savings shortfall



As noted above, 8 Scheme Participants elected to 'buy out' their compliance obligation by paying the penalty in respect of their energy savings shortfalls. Penalty payments in 2010, totalled 316,952 certificates at a total value of approximately $7.3 million as shown in Table 3.3.

Table 3.3 Scheme Participants that chose to pay penalties in 2010, and the penalty amount

Scheme Participant	Energy savings shortfall (certificates)	Penalty ($)
AGL Sales Pty Ltd	37,225	$857,291.00
Country Energy	76,918	$1,771,421.54
Infigen Energy Markets Pty Ltd	2,794	$64,345.82
Integral Energy	141,010	$3,247,460.00
Lumo Energy (NSW) Pty Ltd	242	$5,573.26
Momentum Energy Pty Ltd	7,859	$181,015.00
TRUEnergy Pty Ltd	39,135	$901,278.00
TRUenergy Yallourn Pty Ltd	11,769	$271,040.00
Total	**316,952**	**7,299,424.62**

As at 30 June 2011, 2 Scheme Participants failed to pay a penalty or surrender certificates to meet their individual energy saving target. The 2 non-compliant parties were Independent Electricity Retail Solutions (IERS) and Sanctuary Energy.

Together, the liable shortfalls for these 2 participants represented 228 certificates, or 0.02% of the total certificates required to be surrendered in 2010.

The Regulation provides for IPART, as Scheme Regulator, to amend the assessment of the liability of a Scheme Participant. Scheme Participants may apply for an amendment to their assessment and elect to surrender additional certificates in order to reduce their liability for an energy savings shortfall penalty. An application for amendment can be made within a year of the original assessment and if approved, amended penalty amounts refunded.

3.4 Exempt loads

As Chapter 1 discussed, the ESS includes provisions that allow a portion of the Scheme Participants' electricity sales to be excluded in calculating their annual liable electricity acquisitions, from which their individual energy savings targets are calculated in MWh.

In particular, a number of large electricity customers have been granted exemptions for part of the electricity load they use in 'emissions intensive and trade exposed' industries or activities. These entities are set out in a Ministerial Order published by the Minister for Energy in the Government Gazette.[11]

The Ministerial Order lists each exempt entity, the trade exposed activity, the specific location where the activity takes place, and the proportion of the load that is exempt under the ESS (either 60% or 90%). These entities must provide their electricity retailer with details of their exempt load in order to claim the exemption. The retailer may deduct this proportion of the load from its annual liable electricity acquisitions, and thus reduce its annual energy savings target (in MWh).

During the 2010 compliance year, 20 entities were granted exemptions for 29 specified locations. These include:

- Ten locations which were granted exemptions for 60% of the load. The activities undertaken at these locations include petroleum refining, and the production of glass containers, coke, chlorine gas, sodium hydroxide, ammonium nitrate, ethylene/polyethylene, ethanol and hydrogen peroxide.
- Nineteen locations which were granted exemptions for 90% of the load. The activities undertaken at these locations include paper, newsprint and packaging manufacturing, lime and clinker production, steel making, carbon black production, flat glass production and aluminium smelting.

Nine Scheme Participants supplied electricity to these entities at these locations. In total, the exempt loads comprised approximately 19.6% of the total electricity supplied in NSW during the 2010 compliance period.

Appendix A, section A.6 provides further information on the Ministerial Order and the Exemptions Rule.

[11] The most recent Ministerial Order was published on 24 December 2010 which applies for the 2011 year. For the purpose of 2010 compliance, the Ministerial Order published on 18 December 2009 applies.

4 Accredited Certificate Providers' performance

Accredited Certificate Providers are voluntary participants in the ESS. They apply for accreditation in respect of eligible Recognised Energy Savings Activities (RESAs) (see Box 4.1). Once accredited, they can create certificates from implementing these RESAs. One certificate represents the energy savings associated with the abatement of one tonne of carbon dioxide equivalent (tCO_2-e).

To become an Accredited Certificate Provider, an entity must apply to IPART (as Scheme Administrator) for accreditation. Their application must demonstrate that they and their proposed RESA fully meet the criteria for accreditation according to the Act, Regulation and ESS Rule. Once accredited, they are subject to a number of conditions of accreditation which outline their ongoing compliance responsibilities.

In some cases, the Accredited Certificate Provider's RESA may involve activities in multiple sectors – for example:

- providing lighting upgrades in both the commercial and industrial sectors, or
- undertaking different but related activities in one sector, such as recognising sales of high-efficiency refrigerators and destroying refrigerators built before 1996 in the residential sector.

Where this is the case, the activities are considered to be individual projects (even though there is only one accreditation). The Accredited Certificate Provider is required to register the certificates created by each individual project, which we then track separately in the Registry.

To encourage the development of the ESS, we allowed Accredited Certificate Providers that were previously accredited under the energy efficiency component of the GGAS Demand Side Abatement Rule to transition their accreditation to the ESS, subject to our being satisfied that their ongoing energy saving activity meets all the ESS requirements.

There were 47 Accredited Certificate Providers and 74 RESAs accredited to create certificates of 2010 vintage. These RESAs included a total of 119 individual projects. In addition, they included 6 RESAs that were transitioned from GGAS and 68 that were new activities. The sections below summarise the Accredited Certificate Providers' compliance performance during the year, and then discuss their RESAs in more detail.

Box 4.1 What are Recognised Energy Savings Activities?

RESAs are specific activities implemented by an Accredited Certificate Provider that increase the efficiency of electricity consumption, or reduce electricity consumption, without negative effects on production or service levels, by:

- modifying end-user equipment or usage of end-user equipment (including installing additional components)
- replacing end-user equipment with other end-user equipment that consumes less electricity
- installing new end-user equipment that consumes less electricity than other end-user equipment of the same type, function, output or service, or
- removing end-user equipment that results in reduced electricity consumption, where there is no negative effect on production or service levels.

4.1 Accredited Certificate Providers' compliance performance in 2010

All Accredited Certificate Providers are responsible for complying with the conditions of their accreditation. For example, these conditions include that they must submit annual report statements, undertake annual, periodic or 'spot' audits of their RESAs (as prescribed), and notify the Scheme Administrator of any changes to their accredited RESA. Failure to comply with any of these conditions may result in suspension or cancellation of their accreditation.

The possible areas of contravention of conditions of accreditation are set out in the Act and include:

- contravening the conditions of accreditation (s138)
- improperly creating certificates (s133)
- obstructing the Scheme Administrator (s157)
- supplying false or misleading information (s158).

During 2010, there were 14 instances where Accredited Certificate Providers did not comply with their conditions of accreditation. As detailed in Table 4.1, most of these related to improper creation of certificates. All instances were discovered either through our administration processes or through the compliance audit process.

Table 4.1 Contraventions of conditions of accreditation

Contravention	2010
Failure to submit an Annual Report Statement by the required deadline (s138)	3
Improper creation of certificates (s133)	11

4.1.1 Failure to submit an Annual Report Statement

Of the 3 Accredited Certificate Providers who failed to submit an annual report statement, one promptly completed its outstanding compliance obligations when we advised it of the breach. The other 2 satisfactorily completed their outstanding obligations after we advised them of the breach and sent several reminders.

4.1.2 Improper creation of certificates

Of the 11 instances of improper creation of certificates, all except one resulted from some form of administrative error on the part of the Accredited Certificate Provider, rather than systematic errors in creation methodology. For example, the specific reasons for improper certificate creation (and the number of instances involved) were:

- using incorrect input data (1)
- using ineligible nomination forms (9)
- using ineligible nomination forms and having systemic issues in record keeping arrangements (1).

Together, these improper creation events resulted in the over-creation of 61,635 certificates (of predominantly 2010 vintage), and 33,058 certificates where creation of certificates was forgone. We notified each of the Accredited Certificate Providers involved and in all except one case, they agreed to voluntarily forfeit the over-created certificates or forgo creation of certificates not yet registered, ensuring that the number of certificates created represents valid energy savings.

The one instance of improper creation due to incorrect input data was a minor over-creation event, which arose from an isolated error identified during a periodic audit. We notified the Accredited Certificate Provider concerned, who subsequently agreed to voluntarily forfeit 615 certificates

The other 10 instances of improper certificate creation related to RESAs that involved showerhead replacement projects, and were also identified during the audit process. These instances were due to the Accredited Certificate Providers' failure to comply with one or more of the additional requirements we imposed on showerhead replacement programs during 2010 (discussed in section 2.1).

Of note is the additional requirement to conduct an audit after the creation of 10,000 certificates and, as part of this audit, to conduct a phone survey of the premises at which the showerhead replacement activities were undertaken. The purpose of the phone survey is to confirm that the Accredited Certificate Provider's claims for certificate creation are consistent with the activities it carried out at the premises, and check the key eligibility requirements for the claim.

If the phone survey returns a material error rate of invalid certificate creation, then that error rate is applied across the total certificate creation population. The Accredited Certificate Provider is then required to voluntarily forfeit the equivalent number of certificates. If a non-material error rate is identified, the Accredited Certificate Provider is required to voluntarily forfeit only the number of certificates identified in the phone survey.

Of the 10 instances of improper certificate creation in relation to showerhead programs, 2 instances involved non-material error rates, 7 involved material error rates, and 1 involved material error rates as well as systemic issues in record keeping.

Non-material error rates

In 2 instances, (involving 2 Accredited Certificate Providers), the improper creation was below the materiality threshold of 5%. In both these cases, the Accredited Certificate Providers agreed to voluntarily forfeit a combined total of 71 certificates.

Material error rates

In 7 instances (involving 4 Accredited Certificate Providers) the improper certificate creation was discovered through audits which returned material error rates. The Accredited Certificate Providers were requested to voluntarily forfeit certificates equivalent to the error rate applied across the certificate creation population.

In 6 of these cases, the Accredited Certificate Providers agreed to voluntarily forfeit a combined total of 55,558 certificates. This was implemented in the form of a Deed Agreement signed by the Accredited Certificate Provider. The purpose of the Deed Agreement is to allow the Accredited Certificate Provider to continue to operate their RESA, but restricts a certain proportion of certificate creation from trade until the improper creation event is resolved.

In one case, the Accredited Certificate Provider, Combined Force, did not accept the outcome of the audit report, and has not yet agreed to voluntarily forfeit a total of 5,391 certificates. As a result, Combined Force is restricted from further certificate creation until this matter is resolved.

Material error rate and systemic issues

In the remaining case involving Enact Energy, the auditor identified systemic issues in record keeping arrangements in addition to a material error rate. This resulted in an audit finding with several recommendations to improve processes which Enact Energy accepted. Following several meetings and discussions with Enact Energy, and in consideration of extreme circumstances, Enact Energy was allowed to forgo (rather than forfeit) the creation of 33,058 future certificates not yet registered, but against which nomination forms had been collected. Enact Energy was also required to implement record keeping recommendations specified in the audit.

4.2 RESAs accredited to create certificates for 2010

To be accredited, a RESA needs to meet the criteria for one of the 3 broad methods for calculating energy savings set out in the ESS Rule, or one of its sub-methods. These include the Project Impact Assessment Method, the Metered Baseline Method, and the Deemed Energy Savings Method. If the RESA does not meet the relevant criteria, the applicant needs to modify the proposed project so that it does, or apply to have a new methodology incorporated into the ESS Rule. Any requests to add new methodologies must be addressed to the policy agency DTIRIS who are the rule maker.

Most of the RESAs accredited to date use the Project Impact Assessment Method or the default savings factors sub-method of the Deemed Energy Savings Method. These methods are simple to apply, and make use of deeming energy savings at the time of certificate creation, with consequential discounting of those savings. Neither requires technical monitoring and ongoing measurements to determine energy savings which is also an advantage.

Few of the RESAs accredited to date use the Metered Baseline Method, or the other sub-methods of the Deemed Energy Savings Method to claim savings. These methods are more technically complex and are primarily suited to capital-intensive energy efficiency projects in the commercial and industrial sectors.

Table 4.2 shows the number of RESAs accredited to create certificates, by the year in which they were accredited and the method they used to calculate the energy savings claimed. The RESAs accredited in 2011 include those where the application lodgement and project implementation occurred prior to 31 December 2010, but were accredited in the first half of 2011. These RESAs were allowed to claim 2010 vintage certificates.

Appendix A, section A.8 provides more information on the 3 methods and their sub-methods, and on the process for incorporating a new methodology into the ESS Rule.

Boxes 4.2 to 4.6 provide some examples of RESAs accredited under each of the 3 methods that were active during 2010.

Table 4.2 Number of RESAs by year accredited and energy savings calculation method

	2009	2010	2011[a]
Project Impact Assessment Method	15	10	4
Metered Baseline Method			
Baseline per unit of output	4	1	0
Baseline unaffected by output	1	0	0
Normalised baselines	0	0	0
NABERS baseline	0	4	0
Deemed Energy Savings Method			
Default Savings Factors	9	7	2
Commercial Lighting Formula	2	8	5
High Efficiency Motor Formula	0	0	0
Power Factor Correction Energy Savings Formula	1	1	0
Total RESAs accredited	**32**	**31**	**11**

[a] Applications accredited in the first half of 2011 that can claim 2010 vintage certificates.

4.3 RESAs amended and cancelled during 2010

During 2010, we assessed 29 amendments to existing RESAs. The Accredited Certificate Providers sought these amendments for a variety of reasons. However, in general, the amendments included at least one of the following:

- amendment to the nominated number of certificates that can be created
- addition or removal of Special Accreditation Conditions
- amendment to audit and/or reporting requirements
- amendment to the application of equations and/or methods used
- amendment due to changes to the ESS Rule.

During 2010, we also processed one cancellation of a RESA due to the Accredited Certificate Provider's divestment of the property which rendered it ineligible under the ESS. This was the first cancellation of a RESA.

4.4 Case studies

During 2010, the types of energy savings activities were diverse, covering all calculation methods under the ESS Rule. The case studies below, describe a selection of RESAs active during 2010.

4.4.1 Examples of RESAs accredited under the Deemed Energy Savings Method

Box 4.2 EnergyAustralia – Halogen lamp and transformer replacement program

EnergyAustralia is accredited for a halogen lamp and transformer replacement program under the default savings factors sub-method of the Deemed Energy Savings Method. The retailer, in partnership with the former NSW Department of Environment Climate Change and Water, identified lighting as one of the largest costs for hairdressing salons. In particular, the widespread use of inefficient 50W halogen lighting creates the opportunity for significant electricity cost savings by upgrading to high efficiency 35W halogen lighting.

EnergyAustralia developed and gained accreditation for a RESA that offers NSW hairdressing salons free replacement of their existing 50W ELV halogen lighting with more efficient 35W ELV halogen lighting in exchange for the rights to create certificates arising from the eligible energy savings from the upgrade.

Energy savings from this program resulted in the creation of 1,039 certificates during 2010.

Box 4.3 Low Energy Supplies and Services Pty Ltd – Commercial Lighting Halogen Replacement Program

Low Energy Supplies and Services Pty Ltd (LESS) has been active in the ESS since August 2009. In July 2010 it increased the scope of its operations to include a Commercial Lighting Halogen Replacement Program accredited under the commercial lighting formula sub-method of the Deemed Energy Savings Method. Under this program, LESS replaces ELV 50W halogen downlights with more efficient 15W CFL downlights at commercial premises. Energy savings from this program resulted in the creation of 1,090 certificates during 2010. As with the previous case study, we anticipate this program will expand during 2011.

4.4.2 Example of a RESA accredited under the Project Impact Assessment Method

Box 4.4 Norske Skog Paper Mills (Aust) Ltd – Paper machine vacuum system optimisation

Norske Skog paper mills produces paper from recycled paper and wood chips. The production of newsprint paper is an energy-intensive mechanical and thermal process. In 2010, the Paper Mill was accredited for a RESA that involved changes to the operation of its paper machine vacuum system to optimise energy use. This project resulted in reduced energy consumption and enabled the company to permanently shut down 2 vacuum pumps without negative effects on its production levels.

Norske Skog used the Project Impact Assessment Method to calculate the energy savings involved because these savings are relatively small compared to the overall usage of the site. It was able to show (through logged data) that the energy consumption per unit of paper production was reduced and that the total production was not reduced.

Energy savings from this program resulted in the creation of 3,019 certificates during 2010.

4.4.3 Example of RESA accredited under the Metered Baseline Method

Box 4.5 Hydro Aluminium Kurri Kurri Pty Ltd – Kurri Kurri Smelter Upgrade and Retrofit

From 2002, Hydro Aluminium Kurri Kurri undertook extensive equipment modifications of its aluminium smelter to reduce electricity consumption. Because this project was previously accredited under GGAS, Hydro Aluminium was allowed to transition this project into the ESS and retain its existing baseline. It was accredited to create certificates from this project in September 2009. The project creates energy savings through improvements to the thermal and electrical efficiency, which are achieved by a technology upgrade of the oldest potline and improve process control of all 3 potlines. Aluminium smelting is a very energy intensive process and as such small improvements result in significant energy savings.

Hydro Aluminium uses the baseline per unit of output sub-method of the Metered Baseline Method to calculate the energy savings claimed for this project because there is a direct linear links between energy consumption and site production. Through approved calculations and 4 years of measured data, it was able to show a metered baseline that is correlated to production. Energy savings from this program resulted in the creation of 77,638 certificates during 2010.

Box 4.6 Investa Properties Ltd – Office Buildings Assessed using NABERS

Investa Property Group is one of Australia's largest owners and managers of quality real estate, controlling more than AU$9.5 billion worth of assets across the commercial, industrial and residential sectors. Its integrated property platform incorporates funds management, portfolio and asset services, property services and sustainability.

In 2010, Investa was accredited under the NABERS baseline sub-method of the Metered Baseline Method and currently has 14 office buildings under this accreditation. One of these buildings is currently being refurbished and so cannot be rated (or create certificates). However, the baseline rating for this building was approved as part of the accreditation process, and it will be able to create certificates once refurbishment and a NABERS rating are completed.

NABERS is a unique method under the ESS, being the only method where some of the energy savings activity of a particular year, can be claimed as certificates in the following year. This exception has been incorporated in the ESS Rule to accommodate the fixed 12-month measurement period under the NABERS methodology and the difficulty of aligning rating periods with our 30 June cut-off for certificate creation. This has been a benefit to accreditations using the NABERS approach. Often the rating period for buildings is not on a calendar year basis and in the past, energy savings from each NABERS rating needed to be allocated between 2 different vintages of certificates. This created an unnecessary administrative burden as the key issue is to capture the energy savings. Under the ESS, all certificates from the one NABERS rating can be created under a single vintage of certificate, being the year corresponding to the date at which the certificate calculations for that NABERS rating is considered approved.

In 2010, Investa created 10,618 certificates for savings over the 9-month period from 1 July 2009 to 31 March 2010. In 2011, Investa will be eligible to claim 12-months of energy savings under the ESS, which is expected to result in a corresponding increase in the number of certificates created. Investa is also planning to add a further 7 buildings to its accreditation in 2011 which is expected to further increase the energy savings generated each year.

4.4.4 Example of a RESA that uses third parties to aggregate energy savings

Box 4.7 Out Performers

An emerging model for ESS participation is for third parties, or aggregators, to become accredited in order to bring the energy savings of others into the scheme. This is especially relevant in commercial and industrial settings, where the potential exists to make significant energy savings through equipment upgrades and retrofitting.

An aggregator is someone who helps a facility owner to navigate the requirements of the scheme, prepare all of the documentation, and then make sure that the project continues to comply and create the right number of certificates.

During 2010, Out Performers expanded their participation in the ESS as a third party aggregator of energy savings, bringing a number of new commercial and industrial energy savings opportunities in to the scheme through two different business models.

The first, and most ambitious business model, saw Out Performers develop standard processes and methodologies for claiming energy savings from the following accredited activities, delivered at multiple commercial and industrial sites:

- Compressed Air (Project Impact Assessment Method)
- HVAC Chillers (Project Impact Assessment Method)
- Commercial and Industrial Refrigeration (Project Impact Assessment Method), and
- Commercial and Industrial Lighting (Commercial Lighting Energy Savings Formula).

Through partnering with the equipment specialists, Out Performers have been able to develop standard methodologies for determining, recording and verifying energy use before and after implementation of energy efficient equipment in each of these key areas.

Use of the Project Impact Assessment Method and Commercial Lighting Energy Savings Formula allows for the forward creation and deeming of energy savings upfront, increasing the number of Energy Savings Certificates created and providing more incentive for companies to implement additional energy savings measures.

In addition to their activities at multiple sites, Out Performers have also continued to bring more complex energy savings projects into the ESS on a site by site basis. A significant example of this relates to energy efficiency measures undertaken to reduce the energy use of data centres, through the implementation of server virtualization and the associated reduction in air conditioning demand within the data centres, based on reduced levels of total heat coming from the servers.

5 Audit activities

The ESS legislation provides IPART with wide auditing powers to assist us in fulfilling the functions of Scheme Administrator and Scheme Regulator. For example, to ensure the integrity of the ESS is maintained, we are empowered to impose audit requirements on ESS participants and to use those audits to provide assurance that:

- Scheme Participants are meeting their individual energy savings targets, and
- Accredited Certificate Providers are creating certificates in accordance with the Act, Regulation and the ESS Rule.

To assist us and ESS participants in meeting these audit requirements, we have established a panel of eligible independent third party auditors, known as the ESS Audit Services Panel (the Audit Panel). In addition, during 2010 we developed and released a risk-based *Compliance and Performance Monitoring Strategy* to guide us in setting individual participants' audit requirements.

The sections below summarise ESS audit activity in 2010, and provide information on the Audit Panel, the *Compliance and Performance Monitoring Strategy*, and the audit requirements placed on Scheme Participants and Accredited Certificate Providers.

5.1 Summary of audit activity in 2010

For the 2010 compliance year, the Audit Panel undertook 18 Annual Energy Savings Statements (AESS) audits, which covered 20 Scheme Participants' statements. These audits aim to confirm the inputs provided by Scheme Participants when reporting their liable energy acquisitions and any claimed exempt loads. Primarily, they involve the auditor checking the calculations and, if confirmed, signing off on the number of certificates to be surrendered for compliance.

During 2010, the Audit Panel undertook 16 audits covering 18 RESAs as part of the compliance regime imposed on applicants and Accredited Certificate Providers. The scopes of these audits generally cover certificate creation and record keeping arrangements. They aim to validate information supplied during the application phase, to verify an Accredited Certificate Provider's ongoing eligibility, and to verify calculations carried out by an Accredited Certificate Provider in the course of creating certificates. Audit frequencies vary for each RESA.

Of the 16 audits of RESAs, 11 were initiated by the Scheme Administrator to perform audits of high-risk activities, such as showerhead projects. These audits are initiated prior to the registration of certificates or on a volumetric basis after the creation of a set number of certificates, usually 10,000. The total cost of these audits was just under $200,000.

Table 5.1 provides summary data on audit activity in 2010.

Table 5.1 ESS audit activity

	2010
AESS audits[a]	
Number of audits	18
Number of AESSs covered	20
RESA audits initiated by the Scheme Administrator[b]	
Number of audits	11
Number of RESAs covered	11
RESA audits initiated by Accredited Certificate Providers[b]	
Number of audits	5
Number of RESAs covered	7

a Conducted in the first quarter of 2011.

b Conducted during the 2010 calendar year.

5.2 ESS Audit Services Panel

All ESS audits must be undertaken by a member of the Audit Panel with IPART (acting as either the Scheme Administrator or Scheme Regulator) as the principal client. All audits are paid for by the relevant Scheme Participant or Accredited Certificate Provider.

Audit firms are eligible to apply to be members of this panel at any time. We assess applications against specific selection criteria to ensure that each firm on the panel has both the institutional capacity to support the audit process, and appropriate lead auditors with demonstrated skills and experience required to conduct reasonable assurance audits under the ESS.[12]

Panel members provide services in accordance with an Audit Services Panel Agreement. In addition to auditing, they may provide advice or consultancy services to Accredited Certificate Providers or to IPART under this agreement where no conflict of interest exists.

12 A Panel Application Form and a Guide to Applying are available from the Scheme website at www.ess.nsw.gov.au/compliance_audit/compliance_audit.asp

At the end of 2010, 8 firms with a total of 21 lead auditors were appointed to the Audit Panel. A list of panel members is available on the ESS website.[13]

5.3 Compliance and Performance Monitoring Strategy

During 2010, we developed and adopted a *Compliance and Performance Monitoring Strategy* to help manage the compliance of participants in the ESS. We released the draft strategy in September 2010 for stakeholder comment, and the final version in early December 2010.

Our objective in establishing this strategy is to inform all stakeholders how we assess risk, determine audit regimes and manage ongoing compliance with the ESS. Our approach includes:

- using a risk-based approach
- rewarding good compliance performance and allowing a prompt and fair response to poor compliance
- providing an opportunity to reduce audit costs, and
- clearly stating the ESS materiality threshold and describing how errors will be treated.

The *Compliance and Performance Monitoring Strategy* is published on our website,[14] together with the Audit Guideline which provides clear information on our requirements for the conduct of audits.

5.4 Scheme Participant audits

Scheme Participants are required to lodge an audited AESS with us (as the Scheme Regulator) each year in respect of the previous year's compliance period. To date, we have adopted a stringent approach to AESS audits, requiring that all Scheme Participants have their AESS audited prior to submission, with exemptions being considered on a case-by-case basis. We have adopted this approach to increase the probability that Scheme Participants meet the energy savings targets established by the legislation.

AESS audits for the 2010 compliance year were conducted in early 2011 prior to the compliance deadline of 18 March 2011. These audits were carried out after the end of the calendar year, as they are required to capture all electricity sales or purchases made by Scheme Participants for the calendar year.

13 www.ess.nsw.gov.au/compliance_audit/members.asp
14 www.ess.nsw.gov.au/compliance_audit/framework.asp

5.5 Accredited Certificate Provider audits

When we accredit an Accredited Certificate Provider to carry out an eligible RESA, we impose audit requirements on them as part of the conditions of their accreditation. The audits may be required for 1 or more of the following purposes:

- to assess the eligibility for accreditation of an applicant, or a proposed change to the calculation methodology of an existing accreditation
- to establish compliance with the requirements of the Act, Regulation and Rules governing creation of certificates
- to confirm the level of compliance with any conditions of accreditation.

Our decisions to impose audit requirements are based on risk assessments that have regard to the nature of the RESA and the value of certificates to be created annually.

6 ESS Registry – creation, ownership and surrender of certificates

Under the Regulation, IPART (as Scheme Administrator) is required to maintain a register of Accredited Certificate Providers and of certificate creation and ownership. In 2009, the GGAS Registry was upgraded to incorporate the ESS and is now known as the GGAS & ESS Registry. The Registry was originally designed by Logica, which also currently operates the Registry under contract.

The Registry is an online database which can be found at https://www.ggas-registry.nsw.gov.au. It can be accessed by all ESS participants and members of the public. Its basic functions include:

- listing details of accreditations and projects in both GGAS and the ESS
- facilitating the creation and transfer of certificates
- listing details and tracking ownership of certificates
- allowing participants to surrender certificates to meet mandatory obligations or personal offset schemes.

The sections below sets out key statistics regarding the creation, transfer and surrender of certificates recorded in the Registry in 2010. Data in this chapter are current as at 30 June 2011 and include 2009 and 2010 vintages (that is, certificates created for activity performed during the 2009 and 2010 calendar years). Please note that totals for creation of 2009 vintage certificates may be less than previously reported because some certificates created have subsequently been forfeited.

6.1 Creation of certificates

When a certificate is created, the Registry records information about each certificate including the entity, activity and activity type associated with it, and the vintage and creation date. The Registry also tracks the certificate status (live, surrendered, or forfeited) and ownership history. One certificate represents one tonne of carbon dioxide equivalent emissions and once surrendered, cannot be reused.

The Registry imposes a $0.70 charge for the creation of each certificate. This charge is intended to cover the cost of establishing, operating and maintaining the Registry. For the 2010 calendar year, revenue from fees imposed on participants (including application fees and penalty payments) was $463,000. Our total (GGAS & ESS combined) net cost of services for the year was approximately $2.1 million.

6.1.1 Number of certificates created

A total of 804,318 certificates were created for energy savings activities undertaken during 2010. Tables 6.1, 6.2 and 6.3 detail the total number of certificates created since 1 July 2009 by vintage, project type and sector.

Table 6.1 Certificates created to date by calculation method

Calculation method	2009[a]	2010
Project Impact Assessment Method	136,001	101,605
Metered Baseline Method		
Baseline per unit of output	89,497	153,475
Baseline unaffected by output	730	887
Normalised baselines	0	0
NABERS baseline	4,073	14,339
Deemed Energy Savings Method		
Default Savings Factors	37,733	463,466
Commercial Lighting Formula	10,123	70,546
High Efficiency Motor Formula	0	0
Power Factor Correction Energy Savings Formula	0	0
Total certificates created	**278,157**	**804,318**

a For the 6-month period from 1 July 2009 to 31 December 2009.

Table 6.2 Certificates created to date by project type

Project type	2009[a]	2010
End User Equipment - Commercial	61,819	60,985
End User Equipment - Industrial	168,475	209,321
End User Equipment - Residential	7	0
Lighting (CLF) - Commercial	8,282	62,049
Lighting (CLF) - Industrial	1,841	8,497
Lighting (DSF) - Commercial	0	1,039
Lighting (DSF) - Residential	0	0
Refrigerator & freezer removal - Residential	0	0
Showerheads - Commercial	0	55,414
Showerheads - Residential	37,032	406,755
Whitegoods - Residential	701	258
Total certificates created	**278,157**	**804,318**

a For the 6-month period from 1 July 2009 to 31 December 2009.

Table 6.3 Certificates created to date by sector

Sector	2009[a]	2010
Commercial	70,101	179,487
Industrial	170,316	217,818
Residential	37,740	407,013
Total certificates created	**278,157**	**804,318**

a For the 6-month period from 1 July 2009 to 31 December 2009.

Appendix B provides information on certificate creation by individual RESA activity.

6.1.2 Estimated energy savings associated with those certificates

In general, certificates are created after the energy savings occur. Under the Metered Baseline Method certificate creation reflects energy savings which occurred during the calendar year. For the most part, RESAs using this method are large scale, industrial projects with significant annual savings.

However, for some projects where the annual energy savings are small, the ESS Rule allows certificate creation in advance of actual energy savings:

- Under the Project Impact Assessment Method, it is possible to make an up front assessment of estimated future savings and certificates can be forward created in advance of energy savings. Up to 5 years of energy savings can be brought to account at the commencement of the RESA (see section A.8.1 for further information).
- The Deemed Energy Savings Method is a generic approach for measuring the lifetime or 'deemed' energy savings up front before the actual savings occur. The deeming period depends on the type of activity and ranges from 1.5 years to 25 years (see section A.8.3 for further information).

As certificates can be created in advance of energy savings, an estimate of the actual energy savings occurring in future years is calculated by pro-rating the certificates created each year across the forward creation or deeming period, where applicable.

Under the Project Impact Assessment Method, the discount factors listed in Table 16 of the ESS Rule (see Table A.2) are applied across the 5-year forward creation period. The discount factor increases each year, therefore energy savings are highest in the first year and decrease each year thereafter. Accredited Certificate Providers who use this methodology can claim the energy savings above the amount allowed to be forward created at the end of the 5-year forward-creation period[15].

15 Subject to verification by audit and the provision of appropriate evidence that the discounted energy savings have actually occurred.

Under the Deemed Energy Savings Method, energy savings are distributed equally across each year of the deeming period. The deeming period varies depending on the technology.

During 2010, 804,318 certificates were created which is equivalent to 758,791 MWh. However when taking into account the forward creation and deeming associated with this certificate creation, we estimate that the actual energy savings[16] for 2010 was 309,984[17] MWh. The remaining energy savings are realised across future years as shown in Table 6.6.

Appendix C provides the estimated energy savings by individual RESA activity.

6.2 Surrender of certificates

The total number of certificates surrendered by Scheme Participants for 2010 was 651,655 (Table 3.1). The Registry also allows any member of the public to own certificates which can be surrendered to offset emissions – known as voluntary surrender. No certificates have yet been surrendered in this way. It is likely that the public view the ESS as an "energy savings" scheme rather than a greenhouse emissions reduction scheme. Consequently, GGAS has attracted this kind of activity.

Table 6.4 Total certificates surrendered

	Certificates surrendered by Scheme Participants	Certificates voluntarily surrendered
2009 compliance year	148,928	0
2010 compliance year	651,655	0

Table 6.5 details certificates surrendered and the balance of certificates that remain 'live' and available for trade. At 30 June 2011, 281,892 certificates remain available for surrender in future compliance years.

Table 6.5 Total certificates surrendered and balance to be surrendered by vintage/compliance year

Certificate vintage/ compliance year	Certificates created	Certificates surrendered	Balance to be surrendered
2009	278,157	148,928	129,229
2010	804,318	651,655	281,892

16 Section 174 of the Act requires an estimate of the actual energy savings that have been realised with regard to the number of certificates created.

17 Includes energy savings under all calculation methods. Where forward creation or deeming has been applied, only energy savings relevant for the 2010 calendar year are included.

Table 6.6 Estimated energy savings (MWh) by calculation method

Calculation method	2009[a]	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Project Impact Assessment Method	37,932	82,023	42,233	31,174	20,116	9,057	1,622	0	0	0	0	0	224,157
Metered Baseline Method													
Baseline per unit of output	84,431	144,788	–	–	–	–	–	–	–	–	–	–	229,219
Baseline unaffected by output	689	837	–	–	–	–	–	–	–	–	–	–	1,525
Normalised baselines	0	0	–	–	–	–	–	–	–	–	–	–	0
Normalised by NABERS scheme	3,842	13,527	–	–	–	–	–	–	–	–	–	–	17,370
Metered Baseline Method Total	88,962	159,152	–	–	–	–	–	–	–	–	–	–	248,114
Deemed Energy Savings Method													
Default Savings Factors	2,531	65,015	67,753	67,360	67,360	67,359	67,359	64,859	3,015	82	82	52	472,829
Commercial Lighting Formula	471	3,794	7,522	7,522	7,522	7,522	7,522	7,522	7,522	7,522	7,130	4,535	76,103
High Efficiency Motor Formula	0	0	0	0	0	0	0	0	0	0	0	0	0
Power Factor Correction Energy Savings Formula	0	0	0	0	0	0	0	0	0	0	0	0	0
Deemed Energy Savings Method Total	3,001	68,810	75,274	74,882	74,882	74,881	74,881	72,381	10,537	7,604	7,212	4,587	548,932
Total estimated energy savings	129,895	309,984	117,507	106,056	94,998	83,938	76,503	72,381	10,537	7,604	7,212	4,587	1,021,203[b]

a For the 6-month period from 1 July 2009 to 31 December 2009.

b Represents total energy savings achieved under the ESS based on total certificates created.

6.3 Transfer of certificates

Certificates are transferrable and the Registry records all changes in ownership of certificates. However, the Registry is not a trading platform as trading of certificates is expected to occur outside of the Registry whether bilaterally, through brokers or through other trading platforms.

During 2010, a total of 769,011 certificates were transferred in 119 individual transfers. Table 6.7 shows the number of certificates transferred in each month of this year.

Table 6.7 Certificates transferred each calendar month

Year	Number of transfers	Number of certificates transferred
January 2010	9	65,054
February 2010	6	79,873
March 2010	12	100,479
April 2010	12	59,300
May 2010	9	103,831
June 2010	6	32,408
July 2010	10	64,065
August 2010	8	45,143
September 2010	9	31,312
October 2010	15	56,317
November 2010	12	68,821
December 2010	11	62,408
Total	**119**	**769,011**

7 Projected supply and demand

IPART monitors and publishes information about the supply of, and demand for, certificates annually, including our projections of future supply and demand. However, it is important to note that our projections are based on known information about existing participants and applications for accreditation, and where necessary, some conservative assumptions.

Also note that information about historic creation of certificates by Accredited Certificate Providers is publicly available on the GGAS & ESS Registry.[18] This data should assist market participants in making their own projections of supply and demand.

The following sections outline the developments that influenced certificate supply and demand in 2010, trends in the ESC spot price (which may influence supply and demand in the coming years), our approach for projecting future certificate supply and demand to 2012, and our projection results.

7.1 Developments that influenced certificate supply and demand in 2010

In 2010, the total demand for certificates was 858,004. However, as in any year, this figure was not known in advance – rather it was identified after all Scheme Participants had submitted their Annual Energy Savings Statements.

The demand for certificates in a given calendar year is largely determined by the energy savings target for that year, and the number of certificates that Scheme Participants are obliged to surrender to meet their individual targets (based on their liable electricity acquisitions for that year). In recognition of the fact that certificate supply might not be sufficient to meet demand in a given year, especially in the early stages of the ESS, the Government made provisions for Scheme Participants to be able to carry forward up to 10% of their obligation to surrender certificates for a given year.[19]

18 https://www.ggas-registry.nsw.gov.au

19 For the previous calendar year 2009 compliance period this carry forward provision was 50% in recognition of the short lead-time between commencement of the ESS on 1 July 2009 and the subsequent surrender obligation timing of 29 April 2010 (for the period 1 July - 31 December 2009).

Similar to the first compliance period of July to December 2009, the supply of certificates for the 2010 compliance year was close to meeting Scheme Participants' total obligation for that year. This was largely due to the significant number of RESAs accredited during 2010 (including those that transitioned into the ESS from GGAS), in addition to those previously accredited during 2009. In particular:

- During 2010, 20 Accredited Certificate Providers were accredited for 31 RESAs. Six of these providers (with one RESA each) were already accredited under the DSA Rule of GGAS, and transitioned into the ESS under the transition provisions of the ESS Rule. The remaining 14 (with a total of 25 RESAs) were new accreditations.
- During the period 1 January 2011 to 18 March 2011 (ie, the deadline for Scheme Participants' to submit their AESSs), a further 8 new Accredited Certificate Providers[20] and 10 new RESAs were accredited to create 2010 vintage certificates, for immediate supply to the market.

In total, 36 Accredited Certificate Providers, representing 48 RESAs, created 804,318 certificates for eligible energy savings activity in 2010. This represented approximately 94% of the energy savings target for 2010, above the notional 90% figure (which allows for a carry forward of up to 10% of a Scheme Participant's obligation into the next year).

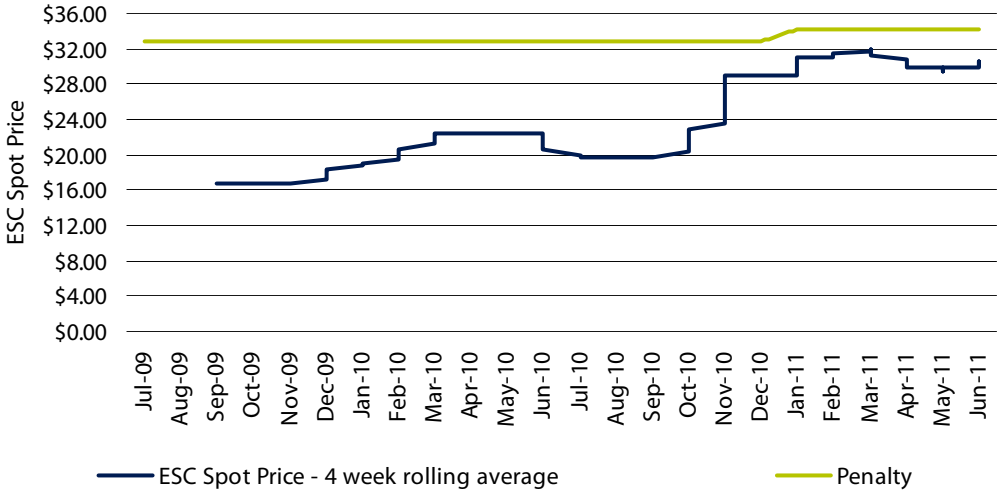
7.2 Trends in the ESC spot price

IPART does not have responsibility for regulating the price or trading of certificates. However, we observe trends in the ESC spot market price, as these can influence supply and demand. For example, if prices go up, more projects will be cost-effective to implement, which may lead to an increase in certificate supply.

Figure 7.1 shows the trend in the spot prices recorded for spot trades (where known). It indicates that in the 2 years since the ESS commenced operation, the ESC spot price has climbed significantly from $16.75 in August 2009 to $32.00 in March 2011 (prior to the 2010 compliance year deadline of 18 March 2011). More recent trades (eg, in June 2011) suggest that, although softening slightly, spot prices continue to oscillate around the $30 mark.

[20] These Accredited Certificate Providers had submitted their applications during 2010 and, subject to meeting all eligibility requirements, create certificates from the date their applications were lodged.

Figure 7.1 Trends in the ESC spot price over the period July 2009 to July 2011



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

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

Please note that spot trades constitute only a small proportion of total certificate transactions. Most transactions are bilateral trades, where the price may be agreed in advance for an extended period. The prices for such transactions may differ significantly from the prevailing spot price. Nevertheless, the spot price provides a useful guide to broad movements in the ESC price over time.

Also note that several factors could influence certificate supply and demand in 2011 and beyond, and so could also influence the certificate price. These include:

- uncertainty about further development of the ESS
- uncertainty about the Australian Government's proposed carbon pricing mechanism and/or possible introduction of a national energy efficiency scheme, and how they may interact with, and/or impact on, the ESS
- the publication of projections for the future certificate supply and demand.

Box 7.1 provides an overview of market commentary from The Green Room, a weekly report of spot market trades published by Next Generation Energy Solutions.

Box 7.1 Market commentary for 2010 from Next Generation Energy Solutions, The Green Room, Editions 236-285

January 2010: It was reported that only a few deals had taken place (between $16.75 and $18.75) but that the ESC market was always expected to start slowly. However it was also reported that the number of accredited participants is expected to increase in the coming months.

May 2010: Following a period of inactivity, trading returned to the market with several spot trade deals transacted at the $19 to $19.70 mark.

June to October 2010: It was reported that the ESC market remained fairly stationary during this period due to an absence of certificate creation, and uncertainty surrounding the Commonwealth Government's proposed energy efficiency target.

November and December 2010: The market sprung back to life late in early November, with a trade of $25.35, rising to $29 in the following week where it stayed for the remainder of 2010. With the ESS nearing the end of its second year of operation, there was some concern reported that there would be insufficient certificate volume for calendar year 2010 compliance requirements.

As Scheme Participants are required to pay a base penalty rate of $24.50 per MWh (equivalent to $23.03 per tCO_2-e) if they fail to meet their annual compliance obligation, the effective certificate price ceiling is up to $32.90. This certificate ceiling price is calculated on the basis of the prescribed penalty conversion factor of 0.94 (as per Schedule 5A of the Act) and is inclusive of company tax (as payment of the penalty may not be tax deductible, unlike the purchase of certificates).

The base penalty rate (which is CPI adjusted each year) is set to increase from $24.50 to $25.52 per MWh for the 2011 compliance year (equivalent to $23.99 per tCO_2-e). This will mean the effective certificate price ceiling for the 2011 compliance year will rise up to approximately $34.30.

7.3 Our approach for projecting certificate supply and demand to 2012

To calculate future certificate demand, we use the methodology prescribed in Section 106 of the Act, which involves making a number of assumptions about some of the inputs for this methodology. To calculate certificate supply, we use the expected certificate creations (as nominated by accredited RESAs and current applicants) as our base data, and 2 supply scenarios.

7.3.1 Projecting certificate demand

Certificate demand under the ESS is driven by the legislated targets for each year, which are met through the surrender of certificates by Scheme Participants (ie, Retailers). The Energy Savings Scheme Target for each year is allocated to Scheme Participants in proportion to their liable acquisitions.

A Scheme Participant's liable acquisitions include all its NSW electricity purchases from AEMO, plus any unregistered generator sales (including rooftop solar photovoltaic) less any exempt load deductions[21] in NSW. This results in an 'effective' target that, for NSW, is approximately 20% lower than the legislated target (20% being the approximate percentage of exempt sales)[22].

We base our calculation of the future demand for certificates on the methodology prescribed in Sections 106 and 107 of the Act. The future demand calculation is primarily based on estimates of future electricity demand in NSW as determined by TransGrid.[23]

In simple terms, we calculated the demand in each year from 2009 to 2012 (inclusive) as follows:

*Demand = Total Liable Acquisitions * Energy Savings Target * Energy Conversion Factor*

where

Total Liable Acquisitions = TransGrid's Total End Use Electricity Sales (for NSW only)[24] *– Total Exempt Load Deductions*

The Energy Savings Target and Energy Conversion Factor are prescribed in Schedule 5 to the Act. To calculate the Total Liable Acquisitions we used:

- TransGrid's mid-range estimates of electricity demand for NSW (excluding the ACT), as published in its Annual Planning Report 2010.[25]
- Our own assumption that Exempt Load Deductions will equal approximately 20% of all electricity purchases in NSW.

Note that the projections for electricity demand in TransGrid's Annual Planning Report 2010 reflect assumptions about the impact of the global economic recovery on electricity consumption, and improved business and consumer sentiments. They also reflect price forecasts intended to take account of the effect of the delayed

21 Refer to Section 3.4 and A.6 for further information on exempt loads.
22 Refer to Appendix A.7 for a table showing the ESS targets and further information.
23 TransGrid is the electricity planning authority for NSW and owns, operates and manages the New South Wales high voltage electricity transmission network.
24 As per Table A3.1 of the New South Wales Annual Planning Report released by TransGrid on 30 June of each year. Note: projected End Use Sales in this report also includes the ACT.
25 TransGrid NSW Annual Planning Report 2010, see www.transgrid.com.au/network/np/Pages/default.aspx

introduction of the Carbon Pollution Reduction Scheme (CPRS) in 1 July 2011, which was proposed at the time the projections were made.[26] The introduction of this scheme was subsequently rejected by the Australian Parliament and the Australian Government has since announced the intention to introduce a carbon pricing mechanism from 1 July 2012.[27]

Also note that our assumption about the Total Exempt Load Deductions in 2011 and beyond is in line with the actual exemptions for the 2009 and 2010 compliance years. In both these years, these deductions were equal to approximately 20% of Scheme Participants' total energy purchases in that year. Therefore, we consider a Total Exempt Load Deduction figure of 20% to be a suitable proxy for estimating demand in future years.

7.3.2 Projecting certificate supply

To derive the base data for calculating future supply of certificates, we use Accredited Certificate Providers' and applicants' calculations of the number of certificates they have created, or expect to create, from their RESAs over the period 1 July 2009 to 31 December 2012. For RESAs already accredited, we generally use the Nominated Number of certificates reported in the Accreditation Notice. However, where annual reports have been submitted (as part of an Accredited Certificate Provider's accreditation compliance obligations) we use the updated forecast figures in these reports. For RESAs still in the application stage, we use forecast numbers that are an expected creation pattern based on the applicant's own calculations.

We projected certificate supply to the end of 2012 under 2 different supply-side scenarios. These scenarios are based on our knowledge of the potentially variable sources of supply for certificates, and include:

- **Scenario 1:** The projected supply of certificates is based on the energy savings expected to be achieved by currently accredited RESAs only (ie, excluding RESAs still in the applicant stage), and with no adjustment for possible changes to the ESS Rule (ie, changes to add newly emerging technologies). This scenario is the low-range projection.
- **Scenario 2:** The projected supply of certificates is based on the energy savings expected to be achieved by all currently accredited RESAs and all RESA applicants (to date) with no adjustment for possible changes to the ESS Rule. Again, it is assumed that applicant RESAs will be accredited and will commence energy saving activities as anticipated by their proponents. This scenario is the high-range projection.

26 Refer section 4.2 of TransGrid's NSW Annual Planning Report 2010 (above).

27 The TransGrid Annual Planning Report for 2011 was not available when this report was prepared, therefore projections may differ.

While the Act allows for the ESS to continue until 2020, we have chosen to project certificate supply and demand to the end of 2012 only. This shortened timeframe reflects the fact that any projection more than 2 years out may be unreliable due to:

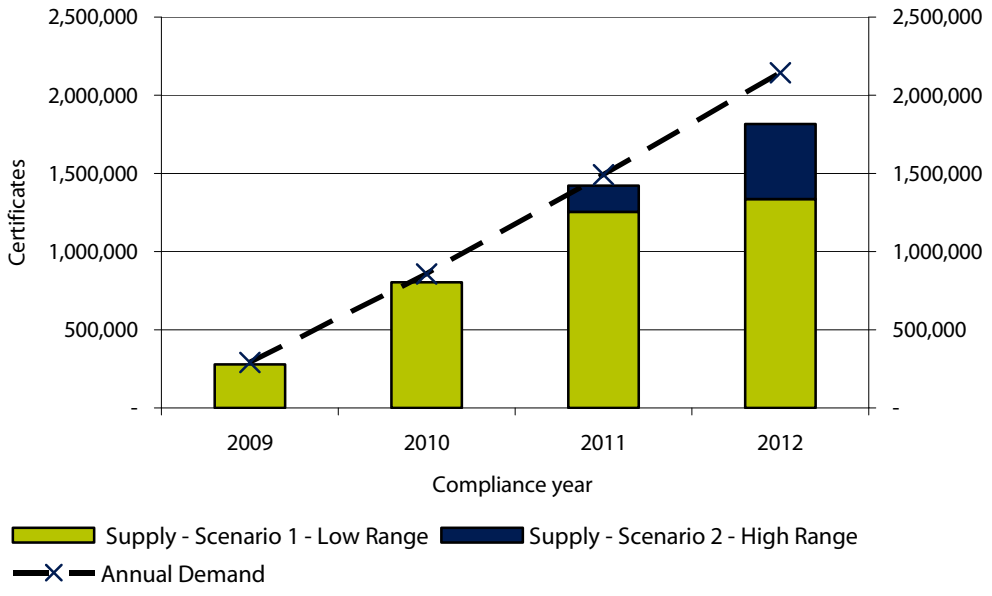
- the relatively short history of the ESS to date (and therefore only limited knowledge on participant behaviour), and
- the effect of forward creation on projections, whereby some project proponents are eligible to forward create certificates for up to 5 years in advance (see section A.8).

Note that the certificate supply scenarios in Figure 7.2 below only include RESAs that are currently accredited and applications that are being assessed. We anticipate that further applications will be received in the future which will add to the certificate supply illustrated below.

7.4 Projection results

Figure 7.2 shows our latest projections for certificate supply and demand to 2012, based on data current at 30 June 2011.

Figure 7.2 IPART's projections for certificate supply and demand, 2009 to 2012



Note: As at 30 June 2011. The projections above are for illustrative purposes only and should not be relied upon.

7.4.1 Outlook for certificate supply

As Figure 7.2 indicates, supply came very close to meeting demand in 2010 (and in 2009) and is anticipated to come reasonably close under both supply-side scenarios in 2011. However, the outlook for supply in 2012 becomes increasingly tighter under both supply-side scenarios. This is primarily because ESS targets will more than double between 2010 and 2012, from around 860,000 tonnes of CO_2-e to over 2.1 million tonnes. The outlook for future supply is affected if applications currently being assessed fail to be either accredited, or to meet the applicant's original certificate creation expectations.

The demand/supply outlook may vary from that presented here if the rule changes or if estimates of future ESC creation by participants are inaccurate. Some types of project activity are established and relatively known, whereas others utilise emerging technologies where uptake rates are yet to be fully established. Estimates of future ESC creation for this second group of project activities are particularly uncertain.

Scenario 1, which represents accredited project forecasts only and is inherently conservative, shows supply increasing in 2011 but then flattening out in 2012, such that supply falls well short of demand for that year. This relative flattening is due to the fact that a number of accreditations forward created certificates in either 2009 or 2010, with no further ability to create certificates until after 2014 (if eligible). However, the remainder of accredited projects will continue to create certificates after 2010, and it is these projects that effectively balance out the 'hiatus' in certificate creation from the aforementioned projects.

Scenario 2 shows supply coming close to meeting demand in 2011, although less so for 2012, despite an anticipated reduction in certificate supply from showerhead replacement activity due to a saturated market. The basis for the significant increase in supply under Scenario 2 is that applications for RESAs involving commercial and residential lighting upgrades become accredited, and that they then meet their program delivery expectations (in terms of certificate creation).

The only real difference in the 2 supply-side scenarios is the level of energy savings achieved in the 2 predominant energy savings activities at present – the declining market for showerhead-related programs and the emerging market for lighting upgrade programs. Recent certificate creation activity suggests that an increase in supply in the latter market will adequately compensate for a reduction in supply from the former, over the coming years. This trend is expected to continue as new and emerging lighting technologies establish themselves as viable, and eligible programs under the ESS Rule.

Despite any potential reduction in certificate supply after 2011, there remains an expectation of continued steady growth in energy savings from the commercial and industrial sectors, as accredited (and proposed) RESA activity in these sectors is yet to be fully engaged. In an effort to highlight the benefits of participation in the ESS (to parties involved in, or with, energy saving services) we held a series of industry workshops and seminars in the first half of 2011. These were held in conjunction with other NSW government agencies (see section 2.5). We anticipate that this will lead to further applications for eligible energy savings activities from participants in the industrial and commercial sectors.

7.4.2 Supply versus demand

Our projections suggest that demand for certificates will steadily rise in the period 2011 to 2012 (and beyond) (Figure 7.2). This rise can be attributed primarily to:

- the steadily increasing ESS target (identified in Table A.1 of Appendix A), which rise in yearly increments to 2014 after which a constant 5% of total electricity sales is maintained, and
- a steady increase in electricity consumption over the next 5 years (as forecast by TransGrid in its 2010 Annual Report).

Under Scenario 1, annual supply of certificates is below annual demand for 2011, representing approximately 84% of demand, this difference being just outside the allowable 10% shortfall for the 2011 compliance year. In 2012, supply drops further below demand, and the difference exceeds the allowable 10% shortfall. However, as certificates do not expire, a certificate created with a particular vintage may be surrendered against a compliance obligation for any year thereafter.[28] (For example, a certificate of 2010 vintage may be surrendered against a compliance obligation in any year from 2010 onwards.) Therefore, it is possible that any cumulative surplus of supply experienced in 2011 may assist in meeting the projected demand for 2012.

Under Scenario 2, cumulative supply largely meets demand for the 2011 compliance year, but again falls below demand for the 2012 compliance year (although not as significantly as under Scenario 1). However, there is more uncertainty about this scenario, due to the nature of the assumptions about the implementation of projects, such as lighting upgrade projects and any changes to showerhead replacement projects. It is likely that, as new methodologies and additional factors for end-user-equipment are added to the ESS Rule, new applications will be submitted to conduct activities in these areas. This will result in changes to the supply projections shown above.

[28] The number of certificates that are available for surrender can be found in Table 6.5.

Appendices

A Overview of the ESS

The ESS is a NSW-based energy efficiency scheme which commenced on 1 July 2009. It is legislated to continue until 2020 or until a national scheme with similar objectives is introduced. Its principal objective is to achieve energy savings and to reduce carbon emissions by creating a financial incentive to reduce the consumption of electricity through energy savings activities. It does not include the use of gas.

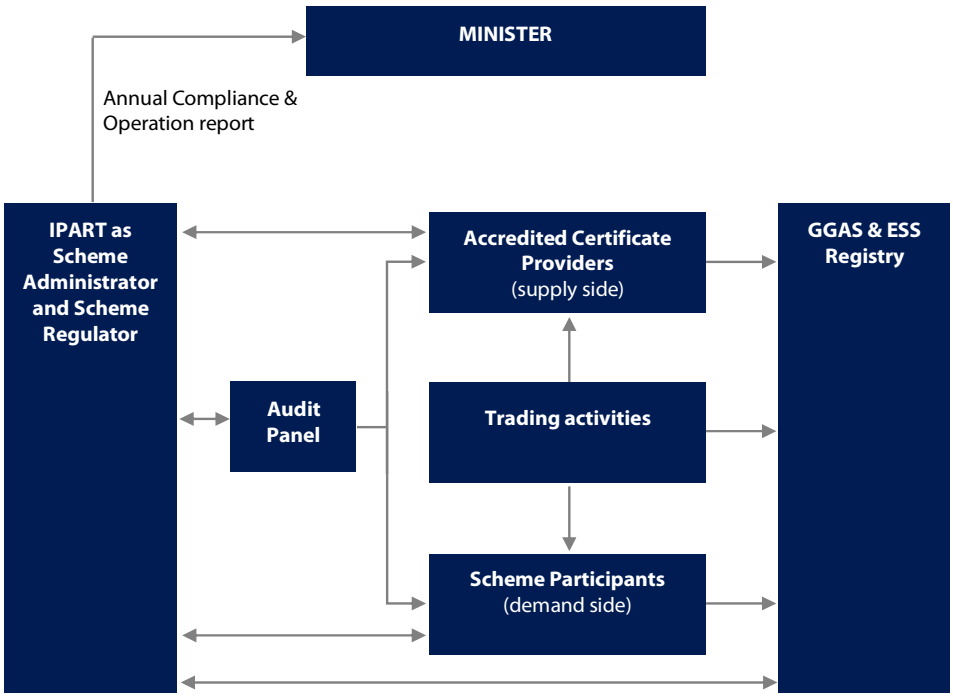
The ESS is designed to increase opportunities to improve energy efficiency by placing obligations on parties to undertake or pay for energy efficiency programs, and rewarding companies that undertake eligible projects that either reduce electricity consumption or improve the efficiency of electricity use. It was developed as a complementary but independent measure to the proposed Carbon Pollution Reduction Scheme (CPRS) and is modelled on the end-use energy efficiency part of the Demand Side Abatement component of GGAS. This part of GGAS ceased with the commencement of the ESS.

The ESS is governed by NSW legislation and places a mandatory obligation on Scheme Participants (electricity retailers and other parties licensed to buy or directly supply electricity in NSW) to obtain and surrender Energy Savings Certificates (ESCs), which represent eligible energy savings under the ESS. Scheme Participants purchase certificates from Accredited Certificate Providers, who create certificates following the implementation of recognised energy savings activities (RESAs). Companies that are Scheme Participants may also apply to become Accredited Certificate Providers.

Figure A.1 provides an overview of the structure of ESS. The sections below provide more information on key elements of the scheme, including the:

- functions of the Scheme Regulator and Scheme Administrator
- Scheme Participants
- Accredited Certificate Providers and RESAs
- ESS Registry
- ESS legislation
- Ministerial Order and Exemptions Rule, and
- ESS targets.

Figure A.1 Structure of the ESS



A.1 Functions of Scheme Regulator and Scheme Administrator

The Scheme Regulator's role is to monitor the Scheme Participants' compliance with the ESS targets, which includes conducting independent audits of this compliance.

The Scheme Administrator's roles include:

- assessing applications for accreditation as an Accredited Certificate Provider
- accrediting these providers to undertake eligible activities and to create certificates from those activities
- monitoring compliance of Accredited Certificate Providers by conducting independent audits
- managing the GGAS & ESS Registry – an online database which records the creation, transfer and ultimate surrender of certificates.

A.2 Scheme Participants

Electricity retailers and certain other parties who buy or directly supply electricity in NSW are mandatory participants in the ESS and are called Scheme Participants. Scheme Participants are required to meet individual energy savings targets based on the size of their share of NSW's liable electricity acquisitions.

Scheme Participants buy certificates from Accredited Certificate Providers. Each Scheme Participant must calculate its individual energy savings target and obtain and surrender certificates in order to meet its target. If a Scheme Participant does not surrender sufficient certificates, it will have an energy savings shortfall and can choose to carry this shortfall forward to the following year (within the allowable limits) or be subject to a shortfall penalty.

To comply with the ESS, Scheme Participants must lodge an Annual Energy Savings Statement (AESS) with the Scheme Regulator each year. The legislation provides for the Scheme Regulator to require that these statements be audited as part of its assessment of Scheme Participants' compliance. Where an audit is required, Scheme Participants are required to engage an auditor from the ESS Audit Services Panel.

A.3 Accredited Certificate Providers and recognised energy savings activities

Companies voluntarily apply for accreditation in the ESS to undertake Recognised Energy Savings Activities (RESAs). Once accredited, they are called Accredited Certificate Providers. They are subject to a number of conditions of accreditation which outline their responsibilities as determined by the Act, Regulation and the *Energy Savings Scheme Rule of 2009* (ESS Rule).

RESAs are the specific activities implemented by Accredited Certificate Providers to reduce the consumption of electricity or increase the efficiency of electricity consumption. A RESA cannot include an activity that has been undertaken to comply with any statutory requirement. In addition, a RESA cannot reduce the scope or quantity of production or service from the use of electricity. For example, closing part of a factory would not qualify as a RESA under the ESS. In addition, a RESA must have been implemented on or after 1 July 2008 to be eligible.

The legislation provides for the Scheme Administrator to require audits of RESAs as part of the assessment of compliance by Accredited Certificate Providers. Where an audit is required, Accredited Certificate Providers are required to engage an auditor from the ESS Audit Services Panel.

A.4 ESS Registry

The ESS Registry is a web-based database that records Accredited Certificate Providers and certificates as required by legislation. The Registry tracks certificate creation, transfer and surrender and can be accessed by all participants and members of the public.

Certificates are transferrable and the Registry records all changes in ownership of certificates. However, the Registry is not a trading platform as trading of certificates is expected to occur outside of the Registry whether bilaterally, through brokers or through other trading platforms.

A.5 The ESS legislation

The ESS is established in NSW through the *Electricity Supply Act 1995* (the Act). The Act sets out the legal and technical framework of the ESS as well as the functions and responsibilities of Scheme Regulator and Scheme Administrator.

The Act is supported by the *Electricity Supply (General) Regulation 2001* (the Regulation) which makes provision for aspects of the operation of the ESS. The Regulation provides further details of the ESS, such as:

- the assessment of compliance of Scheme Participants
- the eligibility requirements for accreditation as an Accredited Certificate Provider
- the conditions of accreditation that are imposed by the Scheme Administrator
- the creation and transfer of certificates
- the conduct of audits
- the requirement to maintain a register of Accredited Certificate Providers and a register of certificate creation and ownership.

The ESS Rule issued by the Minister for Energy provides additional eligibility requirements and calculation methodologies for Accredited Certificate Providers and their accreditations. The ESS Rule sets out:

- the types of eligible and ineligible activities
- the requirements for eligible applicants
- detailed calculation methodologies
- the calculation methods for the creation of certificates.

The former Department of Industry and Investment NSW (now the NSW Department of Trade and Investment, Regional Infrastructure and Services) has responsibility for policy development of the ESS and ultimate responsibility for any legislative changes introduced to the ESS. DTIRIS is responsible for recommending any rule changes to the Minister for Energy.

A.6 Ministerial Order and the Exemptions Rule

Exemptions are allowed under the ESS for electricity loads used in conjunction with emission intensive and trade exposed industries or activities and have been granted by the NSW Minister for Energy in a Ministerial Order[29]. The Ministerial Order lists each exempted person, and each emissions intensive trade exposed activity being carried out, the location and the proportion of electricity load granted exemption (either 60% or 90%). The Ministerial Order also allows a further deduction for

[29] The Ministerial Order can be downloaded from the ESS website at http://www.ess.nsw.gov.au/documents/syn15.asp

network losses and authorises the Scheme Regulator to make rules with respect to the way in which the deduction of the exempt load is applied and the evidence needed in support of these deductions.

The most recent Ministerial Order was published on 24 December 2010 and applies from 1 January 2011 until it is revoked. Any change to the Ministerial Order needs to be gazetted prior to 31 December of the year preceding the year the order is to have its effect. After commencement of the year, any change to the Order will not take effect until the following year.

Scheme Participants that supply electricity to a person specified in the Ministerial Order are entitled to deduct a specified portion of the electricity load from that location from their liable acquisitions using the *Scheme Regulator Exemptions Rule No. 1 of 2009* (Exemptions Rule). The Exemptions Rule outlines the manner in which Scheme Participants calculate and claim deductions from the total value of their liable acquisitions and specifies the evidence Scheme Participants must provide in support of any deductions. The Exemptions Rule was amended in 2010 to more clearly explain how Scheme Participants may deduct exempt loads.

Exemptions under the ESS are designed to align with the approach the Commonwealth Government is taking regarding emissions intensive trade exposed industries and activities in implementing its expanded Renewable Energy Target and any proposed national scheme. It is regularly revised and updated to take account of any changes.

A.7 ESS targets

The ESS has legislated targets for each year that need to be met through the surrender of certificates by Scheme Participants. The ESS target for each year is allocated to Scheme Participants in proportion to their liable acquisitions. A Scheme Participant's liable acquisitions include all its NSW electricity purchases from AEMO, plus any unregistered generator sales (including rooftop solar photovoltaic) less any exempt sales in NSW. This results in an 'effective' target that, for NSW, is approximately 20% less than the legislated target (20% being the approximate percentage of exempt sales).

Table A.1 shows the target (both with and without exemptions) gradually increasing until 2014, after which it remains constant until 2020.

Table A.1 Annual ESS targets over life of scheme

Year	ESS target (% of annual liable electricity sales)	Effective ESS target (% of annual NSW electricity sales)
2009[a]	0.5%	0.4%
2010	1.5%	1.2%
2011	2.5%	2.0%
2012	3.5%	2.8%
2013	4.5%	3.6%
2014-2020	5.0%	4.0%

[a] Half year from 1 July.

The targets were developed following modelling by consultants engaged by the former Department of Environment, Climate Change and Water. The modelling involved estimation of the marginal cost of abatement for various energy efficiency activities, and the amount of energy savings that could be achieved based on differing certificate prices.

Although the targets in the ESS are based on electricity sales (MWh), certificates are measured in tonnes of CO_2 equivalent to be consistent with GGAS and a national scheme. In converting MWh to CO_2 equivalents, a recognised and robust greenhouse emission factor needs to be applied. Drawing on work carried out by the Commonwealth, the value of 1.06 kg CO_2-e/kWh has been approved for use in the ESS. This factor is called the ESS "certificate conversion factor" and is listed in Schedule 5B of the Act.

A.8 Calculation methods

The ESS Rule sets out the type of activities undertaken by Accredited Certificate Providers and the methodologies for calculating the number of certificates. The 3 methodologies are:

- Project Impact Assessment Method
- Metered Baseline Method
- Deemed Energy Savings Method.

This section describes each calculation method in more detail.

A.8.1 Project Impact Assessment Method

The Project Impact Assessment Method calculates savings from one-off energy savings projects. This method is most appropriate when:

- energy savings are small compared to the site's consumption
- baseline energy consumption data for the site is unavailable, or
- the variation in the baseline energy consumption due to other factors is high.

The energy savings can be determined by various means, including by direct measurement or by an engineering assessment. The Project Impact Assessment Method applies a confidence factor which reflects the accuracy and/or reliability of the data used to calculate energy savings.

One of the advantages of the Project Impact Assessment Method is that it is possible to make an up-front assessment of estimated future savings (known as forward creation of certificates). This is considered to be an incentive where projects achieve small annual savings that might be insufficient to warrant accreditation under the ESS.

The ESS Rule allows the forward creation of up to 5 years of certificates from a RESA that has ongoing energy savings as soon as the RESA is commenced. However, discount factors will apply to any forward creation (see Table A.2).

Table A.2 Discount factors for calculating forward creation of certificates under the Project Impact Assessment Method

Year	Discount factor
1	1.00
2	0.80
3	0.60
4	0.40
5	0.20

Source: Schedule 5, Table 16 of the ESS Rule.

The ESS Rule also allows Accredited Certificate Providers who use the forward creation provisions under the Project Impact Assessment Method to revisit the savings claimed at the end of the 5-year period and to 'top up' the savings if a greater level of savings can be verified. But to do this, they need to have maintained adequate records so that any additional savings claimed can be validated by an audit of the project.

A.8.2 Metered Baseline Method

The Metered Baseline Method involves measuring the electricity consumption before the RESA commences to establish a baseline electricity consumption standard for the site, and then measuring this consumption again after the RESA has commenced to establish new levels of electricity consumption. The difference between these measurements represents the impact of the RESA (assuming that the remainder of the site continues to operate as it did before the RESA commenced). This idea of 'before' and 'after' measurements is fundamental to the design of the ESS as the recognition of energy savings is based on being able to confirm savings against a baseline.

The Metered Baseline Method comprises 4 sub-methods for measuring consumption. Which of these is most appropriate depends on the nature of the project. These methods include the baseline per unit of output, baseline unaffected by output, normalised baseline and National Australian Built Environment Rating System (NABERS) methods.

Baseline per unit of output method

This method is most appropriate where consumption is strongly linked to output (eg, aluminium smelting). This method is usually used if:

- the consumption of all energy sources for the site are linear functions of output (that is they directly reflect each other)
- where the energy consumption that is fixed (that is, the proportion of energy consumed at the site does not vary with variations in output), can be measured or estimated, and
- output has not changed by more than 50% from the average output over the period that the baseline was measured.

Baseline unaffected by output method

This method is most appropriate where energy consumption is not linked to output (eg, schools and swimming pools).

Normalised baseline method

This method is most appropriate where the baseline needs to be normalised to remove explainable variation from the baseline. Examples may include changes to ambient conditions or input characteristics.

National Australian Built Environment Rating System baseline method

The NABERS method is based on the normalised baseline approach and consists of 2 methods which are Method 4a for existing NABERS buildings and Method 4b for new NABERS buildings. These methods are used for normalising baseline energy consumption of offices, hotels and shopping centre buildings which use the NABERS Method for measuring building energy performance.

NABERS ratings (administered by the Office of Environment and Heritage) are star based, with more stars indicating a higher level of energy efficiency. The number of buildings with NABERS ratings is expected to increase significantly following the introduction of the national Commercial Building Disclosure (CBD) program[30] which came into effect in November 2010. As part of the CBD program, most building owners or lessors seeking to sell or lease commercial office space with a net lettable

[30] See www.cbd.gov.au

area of 2,000m² or more will be required to have and to disclose to interested parties a current NABERS energy rating for the building.

A.8.3 Deemed Energy Savings Method

The Deemed Energy Savings Method is used for the installation of common end-user equipment, such as refrigerators and more energy efficient lighting. The method comprises 4 sub-methods, which provide robust and easy-to-use equations and factors for specific activities and/or equipment to calculate the energy savings/number of certificates claimed. The method allows certificates to be claimed at the time of implementation of the energy savings activity, for the energy savings that will occur over the deemed lifetime for the activity.

As part of the calculation methodology of each sub-method, there are assumed deeming periods for different activities. The Scheme Administrator also takes account of these deeming periods when determining actual annual energy savings from accredited RESAs.

Table A.3 shows the deeming periods for some of the common activities/equipment. The sections below outline the 4 sub-methods: default savings factors, commercial lighting energy savings formula, high-efficiency motor energy savings formula, and power factor correction energy savings formula.

Table A.3 Deeming periods for certain activities and/or equipment under the Deemed Energy Savings Method

Activity and/or end-user equipment	Deeming period
Replacement of 50W ELV halogen lamp with 35W ELV halogen lamp	4,000-10,000 hours
Replacement of 50W ELV halogen lamp and magnetic transformer with 35W ELV halogen lamp and electronic transformer – Residential & Commercial	4,000-10,000 hours
Replacement of a 50W halogen ELV lamp and transformer with a CFL, CCFL, LED or CMH, which has a Lamp Life of ≥ 10,000 hours	10,000 hours
Shower rose replacement	7 years
Purchase of a new high efficiency Clothes Washer	12 years
Purchase of a new high efficiency Dishwasher	16 years
Destruction of refrigerator or freezer built before 1996	7 years
Purchase of a new high efficiency Refrigerator	16 years
Purchase of a new high efficiency Freezer	20 years
Upgrade of commercial lighting, where the upgrade cannot be easily 'reversed': Other lighting	10 years
Upgrade of commercial lighting, where the upgrade cannot be easily 'reversed': Road lighting	12 years
Installation of high efficiency motor	12-25 years
Power factor correction equipment	10 years

Default savings factors

The default savings factors sub-method is used for projects that involve the installation or supply of end-user equipment types listed in Tables 1 to 8 of Schedule A of the ESS Rule. This includes the replacement of halogen down-lights with energy efficient alternatives; the sale or purchase of energy efficient clothes washers, dishwashers, fridges or freezers; the retirement of old spare fridges and freezers; and the installation of energy efficient shower heads. It does not include the installation of compact fluorescent light globes or water flow restrictors.

Commercial lighting energy savings formula

This sub-method is used for projects that only involve energy savings attributable to commercial lighting upgrades.

An electronic Commercial Lighting Calculation Tool is available on the ESS website for persons to calculate the number of certificates they may create from a commercial lighting upgrade. The tool sets out the correct factors and discounts applicable for all eligible types of commercial lighting installations. As new technologies become available, both the ESS Rule and this tool will be updated to take account of new developments.

The advantage of the Commercial Lighting Calculation Tool is that it simplifies the calculation of energy savings and certificate creation that may be achieved from a lighting upgrade. An applicant can easily determine whether a project is eligible, and whether participation in the ESS is warranted.

High efficiency motor energy savings formula

This sub-method is used for projects that only involve energy savings attributable to the sale or installation of one or more high efficiency motors. Table 12 of the ESS Rule contains an extensive list of default load utilisation factors for high efficiency motors where the end-user equipment and end-use are known. The load utilisation factors are divided into different categories depending on the end-use industry sector (eg, agriculture, mining, construction etc).

Table 13 in the ESS Rule lists a number of default load utilisation factors where the end-user equipment and end-use are not known, and consequently is based on rated output in kW for different sizes of high efficiency motors.

Power factor correction energy savings formula

This sub-method is used for projects that only involve energy savings attributable to the reduced losses from the installation of Power Factor Correction (PFC) equipment.

The Electricity Service and Installation Rules of NSW[31] require the power factor of a site to be a minimum of 0.9 lagging. As such, certificates can be generated only by the implementation of PFC which increases the power factor of a site above 0.9 to a maximum of 0.98.

A.8.4 Process of incorporating new methods into the ESS Rule

As noted above, if a RESA or RESA project is unable to satisfy the criteria in one of the 3 methods listed in the ESS Rule, then the applicant can either modify its project, if possible, or apply to have a new methodology incorporated into the ESS Rule.

For parties seeking to have new methodologies included in the ESS Rule, guidelines have been developed for the process that should be followed in making a request. This information is available from the Office of Environment and Heritage, which has responsibility for investigating areas to develop and expand the ESS Rule. Changes to the ESS Rule, including the addition of new methodologies, are the responsibility of the NSW Department of Trade and Investment, Regional Infrastructure and Services and require approval by the Minister for Energy.

During 2010, the ESS Rule was amended to reflect changes in the market for energy efficient showerheads and to tighten the criteria for creating certificates from their installation (see Section 2.1). Investigations by the Office the Environment and Heritage have identified the opportunity to add some new technologies, the need to update some of the factors, and a small number of changes which will require further amendments of the ESS Rule in 2011.

31 www.industry.nsw.gov.au/energy/electricity/network-connections/rules

B Creation of certificates

The ESS Rule makes provisions for the creation of certificates where an Accredited Certificate Provider is carrying out an eligible RESA. This Appendix provides a detailed breakdown of certificate creation for each vintage year by individual RESA activity.

Both current and cancelled activities are included. An asterisk (*) beside the activity name indicates that it has been cancelled.

Data in this chapter are current as at 30 June 2011.

B.1 Certificates created by calculation method and project

Table B.1 Project Impact Assessment Method

Company and RESA activity name	2009	2010	Total
BOC Ltd: Port Kembla LMPC	0	1,052	1,052
Boral Ltd: Berrima Kiln 6 Upgrade	6,350	8,942	15,292
Commonwealth Bank of Australia: Branch Network BMS Upgrade	271	538	809
Commonwealth Bank of Australia: Lighting Controls	282	560	842
Commonwealth Bank of Australia: Voltage reduction in branch network lighting	275	0	275
Commonwealth Bank of Australia: VSD Upgrades on cooling fans and condenser pump	58	116	174
Continental Carbon Australia Pty Ltd: Installation of VSD on boiler fan	816	0	816
Demand Manager Pty Ltd: Lighting Aggregation Project - PIAM	44,886	0	44,886
GridX Power Pty Ltd: Glenfield MiniGrid Home Space Cooling Project	7	0	7
Merck Sharp & Dohme (Australia) Pty Ltd: Lighting voltage reduction	0	0	0
Norske Skog Paper Mills (Aust) Ltd: Deckers Feed Pump Bypass	2,246	4,456	6,702
Norske Skog Paper Mills (Aust) Ltd: Paper machine vacuum system optimisation	0	3,019	3,019
NSW Roads and Traffic Authority: Upgrade of Traffic Lights	31,180	0	31,180
Out Performers (Griffone Family Trust trading as): Grasso Compressor VSD	517	0	517
Out Performers (Griffone Family Trust trading as): Glycol Heat Exchanger	900	0	900
Out Performers (Griffone Family Trust trading as): Compressor System Upgrade	1,665	0	1,665
Out Performers (Griffone Family Trust trading as): Condenser System Upgrade	1,615	0	1,615
Out Performers (Griffone Family Trust trading as): Heel Procedure	9,335	0	9,335
Out Performers (Griffone Family Trust trading as): Heat Slingers	700	0	700
Out Performers (Griffone Family Trust trading as): Fume Fan VSD	1,618	0	1,618
Out Performers (Griffone Family Trust trading as): EAF Efficiency	17,447	0	17,447
Out Performers (Griffone Family Trust trading as): OP008 Westpac DCD	0	10,592	10,592

Company and RESA activity name	2009	2010	Total
Out Performers (Griffone Family Trust trading as): Eleebana WPS	172	0	172
Out Performers (Griffone Family Trust trading as): Burwood Beach WWTW PPS	0	623	623
Out Performers (Griffone Family Trust trading as): Burwood Beach WWTW SPS	0	2,110	2,110
Out Performers (Griffone Family Trust trading as): Network Leak Detection 2010	0	1,210	1,210
Out Performers (Griffone Family Trust trading as): Swansea 3A WWPS VSD	453	0	453
Out Performers (Griffone Family Trust trading as): Swansea 3A WWPS Sewer Relining	117	0	117
Out Performers (Griffone Family Trust trading as): Kahibah No. 1 WWPS	233	0	233
Out Performers (Griffone Family Trust trading as): Belmont WWTW DO Control	0	2,188	2,188
Out Performers (Griffone Family Trust trading as): Swansea 4 WWPS Relining	0	42	42
Out Performers (Griffone Family Trust trading as): Shortland WWTW DO Reduction	0	370	370
Out Performers (Griffone Family Trust trading as): Berry Park WWPS Rising Main	0	284	284
Out Performers (Griffone Family Trust trading as): Burwood Beach WWTW Blowers	0	398	398
Out Performers (Griffone Family Trust trading as): Compressed Air Projects	2,759	19,200	21,959
Out Performers (Griffone Family Trust trading as): OP011 Nationwide News	0	3,572	3,572
Out Performers (Griffone Family Trust trading as): OP013 Commercial and Industrial Chillers	0	13,124	13,124
Out Performers (Griffone Family Trust trading as): OP015 Commercial and Industrial Refrigeration	0	1,606	1,606
SEE Enterprises Pty Limited: Lurgi and Flakt 2 baghouse flow reduction-OneSteel Waratah	0	5,516	5,516
Sydney West Area Health Service: Installation of variable speed drives on air handling plant	0	0	0
University of Technology Sydney: Building 2 Lighting Upgrade	585	0	585
University of Wollongong: Occupancy Sensor and Voltage Reduction for Lighting	323	643	966
Visy Pulp & Paper Pty Ltd: Cooling Water Pumps Improvement	855	1,258	2,113
Woolworths Ltd: Supermarket After Hours Lighting Controls	10,336	20,186	30,522

Table B.2 Metered Baseline Method – baseline per unit of output

Company and RESA activity name	2009	2010	Total
Amcor Packaging (Australia) Pty Ltd: Botany Paper Mill - Whole of Site	7,090	11,669	18,759
Carter Holt Harvey Australia Pty Ltd: Oberon Refiner Control Improvement*	7,363	1,766	9,129
Hydro Aluminium Kurri Kurri Pty Ltd: Kurri Kurri Smelter Upgrade and Retrofit	44,836	77,638	122,474
Orica Australia Pty Ltd: Botany Chlorine Plant Upgrade	12,129	29,378	41,507
Tomago Aluminium Company Pty Ltd: Smelting Electrical Energy Reduction	18,079	33,024	51,103

Table B.3 Metered Baseline Method – baseline unaffected by output

Company and RESA activity name	2009	2010	Total
Sydney West Area Health Service: EPC and GEEIP	730	887	1,617

Table B.4 Metered Baseline Method – NABERS baseline

Company and RESA activity name	2009	2010	Total
Charter Hall Asset Services Limited: Building Energy Consumption Reduction	4,073	0	4,073
Colonial First State Property: NABERS Energy Efficiency Program	0	2,540	2,540
Investa Properties Ltd: Office Buildings Assessed using NABERS	0	10,618	10,618
Stockland Property Management Pty Ltd: NABERS Energy Monitoring and Modification	0	1,181	1,181

Table B.5 Deemed Energy Savings Method – Commercial Lighting Formula

Company and RESA activity name	2009	2010	Total
AGL Energy Services Pty Ltd: Commercial Lighting Replacement Project	7,622	1,448	9,070
Country Energy: Commercial Lighting Retrofit Program	0	1,199	1,199
Demand Manager Pty Ltd: Commercial Lighting Aggregation Project	0	201	201
Ecovantage Pty Ltd: Commercial Lighting Upgrade Program	0	48	48
Enact Energy Pty Limited: Commercial Lighting Activities	0	0	0
EnergyAustralia: Commercial Lighting Aggregation Program	660	3,416	4,076
Global Sustainability Initiatives Pty Ltd: ABESP Commercial Lighting Replacement	0	3,800	3,800
Green Alliance: T5 Commercial Lighting	0	364	364
Greenearth Energy Efficiency Pty Ltd: HID Lighting Equipment Upgrade and Optimisation	0	100	100
Low Energy Supplies and Services Pty Ltd: Commercial Lighting Halogen Replacement Program	0	1,090	1,090
Low Energy Supplies and Services Pty Ltd: Commercial Lighting Upgrade Projects	0	336	336
NSW Roads and Traffic Authority: Traffic light globe replacement project	1,841	8,497	10,338
Out Performers (Griffone Family Trust trading as): OP012 Commercial and Industrial Lighting	0	50,000	50,000
Robcath Pty Ltd: Commercial Lighting Project	0	47	47
Sydney Markets Limited: Sydney Markets Lighting RESA	0	0	0

Table B.6 Deemed Energy Savings Method – Power Factor Correction Energy Savings Formula

Company and RESA activity name	2009	2010	Total
Demand Manager Pty Ltd: PFC Aggregation Project - Commercial	0	0	0
Demand Manager Pty Ltd: PFC Aggregation Project - Industrial	0	0	0
EnergyAustralia: PFC Aggregation Program	0	0	0

Table B.7 Deemed Energy Savings Method – Default Savings Factors

Company and RESA activity name	2009	2010	Total
Aspect Energy: Residential Showerlite Program (ESS Rule V1)	35,928	105,745	141,673
Aspect Energy: Residential Showerlite Program (2) (ESS Rule V1)	0	0	0
Aspect Energy: Residential Showerlite Program (ESS Rule V2)	0	0	0
Combined Force Pty Ltd: Meters slow with Low H20 - Residential (ESS Rule V1)	0	9,454	9,454
Combined Force Pty Ltd: Meters slow with Low H20 - Commercial (ESS Rule V1)	0	546	546
Combined Force Pty Ltd: Meters slow with Low H20 - Residential (ESS Rule V2)	0	0	0
Combined Force Pty Ltd: Meters slow with Low H20 - Commercial (ESS Rule V2)	0	0	0
Demand Manager Pty Ltd: Carbon Saver Program	0	0	0
Enact Energy Pty Limited: Halogen Replacement - Residential	0	0	0
Enact Energy Pty Limited: Halogen Replacement - Commercial	0	0	0
Enact Energy Pty Limited: Showerhead Replacement - Residential (ESS Rule V1)	0	220,424	220,424
Enact Energy Pty Limited: Showerhead Replacement - Commercial (ESS Rule V1)	0	42,347	42,347
Enact Energy Pty Limited: Halogen and Transformer Replacement - Commercial	0	0	0
Enact Energy Pty Limited: Showerhead Replacement - Residential (ESS Rule V2)	0	0	0
Enact Energy Pty Limited: Showerhead Replacement - Commercial (ESS Rule V2)	0	0	0
Enact Energy Pty Limited: Showerhead Sales - Residential (ESS Rule V2)	0	12,128	12,128
Enact Energy Pty Limited: Showerhead Sales - Commercial (ESS Rule V2)	0	0	0
Enact Energy Pty Limited: NSW Showerhead Sales - Residential	0	0	0
Enact Energy Pty Limited: NSW Showerhead Sales - Commercial	0	0	0
EnergyAustralia: Commercial Lighting - LED replacement of Halogen Downlights	0	0	0
EnergyAustralia: Hairdresser down-light replacement program	0	1,039	1,039
Envirocare & Savers Pty Ltd t/a Wellbeinggreen: Shower Rose Replacement Program - Residential (ESS Rule V1)	0	19,938	19,938
Envirocare & Savers Pty Ltd t/a Wellbeinggreen: Shower Rose Replacement Program - Commercial (ESS Rule V1)	0	794	794
Envirocare & Savers Pty Ltd t/a Wellbeinggreen: Shower Rose Replacement Program - Residential (ESS Rule V2)	0	0	0
Envirocare & Savers Pty Ltd t/a Wellbeinggreen: Shower Rose Replacement Program - Commercial (ESS Rule V2)	0	0	0

Company and RESA activity name	2009	2010	Total
Envirocare & Savers Pty Ltd t/a Wellbeinggreen: Halogen Lamp Replacement Program - Residential (ESS Rule V2	0	0	0
Envirocare & Savers Pty Ltd t/a Wellbeinggreen: Halogen Lamp Replacement Program - Commercial (ESS Rule V2)	0	0	0
Fieldforce Services Pty Ltd: Replacement of showerheads (ESS Rule V1)	0	0	0
Fieldforce Services Pty Ltd: Replacement of halogens	0	0	0
Fieldforce Services Pty Ltd: Replacement of showerheads (ESS Rule V2)	0	0	0
Green Made Easy Pty Ltd: Installation of Raindrop shower heads (ESS Rule V1)	0	0	0
Green Made Easy Pty Ltd: Installation of Raindrop shower heads (ESS Rule V2)	0	0	0
Low Energy Supplies and Services Pty Ltd: Direct Sales and Installations - Showerheads (ESS Rule V1)	0	0	0
Low Energy Supplies and Services Pty Ltd: Direct Sales and Installations - Showerheads (ESS Rule V2)	0	0	0
Lowa Investments Pty Ltd: Lowa Group LED sales program	0	0	0
Next Energy Pty Ltd: Fridge Buyback	0	0	0
Ozzy Fortune Pty Ltd trading as Your Green Planet: Showerheads - Residential (ESS Rule V1)	0	24,022	24,022
Ozzy Fortune Pty Ltd trading as Your Green Planet: Showerheads - Commercial (ESS Rule V1)	0	5,971	5,971
Ozzy Fortune Pty Ltd trading as Your Green Planet: Showerheads - Residential (ESS Rule V2)	0	4	4
Ozzy Fortune Pty Ltd trading as Your Green Planet: Showerheads - Commercial (ESS Rule V2)	0	0	0
Sales Solutions Australia Pty Ltd: Shower Rose Replacement Project	0	0	0
Sydney Water Corporation: Washing Machine Rebate Program	701	258	959
Sydney Water Corporation: Waterfix*	1,104	2,364	3,468
Watts Green Pty Ltd: Energy Efficiency Refit Program - Residential (ESS Rule V1)	0	12,676	12,676
Watts Green Pty Ltd: Energy Efficiency Refit Program - Commercial (ESS Rule V1)	0	5,756	5,756
Watts Green Pty Ltd: Energy Efficiency Refit Program - Residential (ESS Rule V2)	0	0	0
Watts Green Pty Ltd: Energy Efficiency Refit Program - Commercial (ESS Rule V2)	0	0	0

C Estimated energy savings

This Appendix details estimated energy savings where forward creation or deeming applies by individual activity. Refer to Section 6.1.2 for further information on estimated energy savings. Estimated energy savings are reported in MWh.

Data in this chapter are current as at 30 June 2011.

C.1 Estimated energy savings by calculation method and project

Table C.1 Project Impact Assessment Method (MWh savings)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
BOC Ltd: Port Kembla LMPC	0	992	0	0	0	0	0	0	0	0	0	0	992
Boral Ltd: Berrima Kiln 6 Upgrade	5,991	8,436	0	0	0	0	0	0	0	0	0	0	14,426
Commonwealth Bank of Australia: Branch Network BMS Upgrade	256	508	0	0	0	0	0	0	0	0	0	0	763
Commonwealth Bank of Australia: Lighting Controls	266	528	0	0	0	0	0	0	0	0	0	0	794
Commonwealth Bank of Australia: Voltage reduction in branch network lighting	259	0	0	0	0	0	0	0	0	0	0	0	259
Commonwealth Bank of Australia: VSD Upgrades on cooling fans and condenser pump	55	109	0	0	0	0	0	0	0	0	0	0	164
Continental Carbon Australia Pty Ltd: Installation of VSD on boiler fan	129	231	180	128	77	26	0	0	0	0	0	0	770
Demand Manager Pty Ltd: Lighting Aggregation Project - PIAM	7,072	12,701	9,878	7,055	4,232	1,409	0	0	0	0	0	0	42,345
GridX Power Pty Ltd: Glenfield MiniGrid Home Space Cooling Project	7	0	0	0	0	0	0	0	0	0	0	0	7
Merck Sharp & Dohme (Australia) Pty Ltd: Lighting voltage reduction	0	0	0	0	0	0	0	0	0	0	0	0	0
Norske Skog Paper Mills (Aust) Ltd: Deckers Feed Pump Bypass	2,119	4,204	0	0	0	0	0	0	0	0	0	0	6,323
Norske Skog Paper Mills (Aust) Ltd: Paper machine vacuum system optimisation	0	2,848	0	0	0	0	0	0	0	0	0	0	2,848
NSW Roads and Traffic Authority: Upgrade of Traffic Lights	4,912	8,823	6,862	4,901	2,940	979	0	0	0	0	0	0	29,415

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Out Performers (Griffone Family Trust trading as): Grasso Compressor VSD	81	146	114	81	49	16	0	0	0	0	0	0	488
Out Performers (Griffone Family Trust trading as): Glycol Heat Exchanger	142	255	198	141	85	28	0	0	0	0	0	0	849
Out Performers (Griffone Family Trust trading as): Compressor System Upgrade	262	471	366	262	157	52	0	0	0	0	0	0	1,571
Out Performers (Griffone Family Trust trading as): Condenser System Upgrade	254	457	355	254	152	51	0	0	0	0	0	0	1,524
Out Performers (Griffone Family Trust trading as): Heel Procedure	1,471	2,641	2,054	1,467	880	293	0	0	0	0	0	0	8,807
Out Performers (Griffone Family Trust trading as): Heat Slingers	110	198	154	110	66	22	0	0	0	0	0	0	660
Out Performers (Griffone Family Trust trading as): Fume Fan VSD	255	458	356	254	153	51	0	0	0	0	0	0	1,526
Out Performers (Griffone Family Trust trading as): EAF Efficiency	2,749	4,937	3,839	2,742	1,645	548	0	0	0	0	0	0	16,459
Out Performers (Griffone Family Trust trading as): OP008 Westpac DCD	0	0	3,331	2,665	1,998	1,332	666	0	0	0	0	0	9,992
Out Performers (Griffone Family Trust trading as): Eleebana WPS	27	49	38	27	16	5	0	0	0	0	0	0	162
Out Performers (Griffone Family Trust trading as): Burwood Beach WWTW PPS	0	196	157	118	78	39	0	0	0	0	0	0	588
Out Performers (Griffone Family Trust trading as): Burwood Beach WWTW SPS	0	664	531	398	265	133	0	0	0	0	0	0	1,991
Out Performers (Griffone Family Trust trading as): Network Leak Detection 2010	0	381	304	228	152	76	0	0	0	0	0	0	1,142
Out Performers (Griffone Family Trust trading as): Swansea 3A WWPS VSD	71	128	100	71	43	14	0	0	0	0	0	0	427
Out Performers (Griffone Family Trust trading as): Swansea 3A WWPS Sewer Relining	18	33	26	18	11	4	0	0	0	0	0	0	110

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Out Performers (Griffone Family Trust trading as): Kahibah No. 1 WWPS	37	66	51	37	22	7	0	0	0	0	0	0	220
Out Performers (Griffone Family Trust trading as): Belmont WWTW DO Control	0	688	550	413	275	138	0	0	0	0	0	0	2,064
Out Performers (Griffone Family Trust trading as): Swansea 4 WWPS Relining	0	13	11	8	5	3	0	0	0	0	0	0	40
Out Performers (Griffone Family Trust trading as): Shortland WWTW DO Reduction	0	116	93	70	47	23	0	0	0	0	0	0	349
Out Performers (Griffone Family Trust trading as): Berry Park WWPS Rising Main	0	89	71	54	36	18	0	0	0	0	0	0	268
Out Performers (Griffone Family Trust trading as): Burwood Beach WWTW Blowers	0	125	100	75	50	25	0	0	0	0	0	0	375
Out Performers (Griffone Family Trust trading as): Compressed Air Projects	435	6,818	5,437	4,056	2,675	1,294	0	0	0	0	0	0	20,716
Out Performers (Griffone Family Trust trading as): OP011 Nationwide News	0	345	1,054	830	605	380	156	0	0	0	0	0	3,370
Out Performers (Griffone Family Trust trading as): OP013 Commercial and Industrial Chillers	0	1,853	3,756	2,931	2,106	1,280	455	0	0	0	0	0	12,381
Out Performers (Griffone Family Trust trading as): OP015 Commercial and Industrial Refrigeration	0	0	505	404	303	202	101	0	0	0	0	0	1,515
SEE Enterprises Pty Limited: Lurgi and Flakt 2 baghouse flow reduction-OneSteel Waratah	0	513	1,632	1,285	938	591	244	0	0	0	0	0	5,204
Sydney West Area Health Service: Installation of variable speed drives on air handling plant	0	0	0	0	0	0	0	0	0	0	0	0	0
University of Technology Sydney: Building 2 Lighting Upgrade	92	166	129	92	55	18	0	0	0	0	0	0	552

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
University of Wollongong: Occupancy Sensor and Voltage Reduction for Lighting	305	607	0	0	0	0	0	0	0	0	0	0	911
Visy Pulp & Paper Pty Ltd: Cooling Water Pumps Improvement	807	1,187	0	0	0	0	0	0	0	0	0	0	1,993
Woolworths Ltd: Supermarket After Hours Lighting Controls	9,751	19,043	0	0	0	0	0	0	0	0	0	0	28,794

Table C.2 Metered Baseline Method – baseline per unit of output (MWh savings)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Amcor Packaging (Australia) Pty Ltd: Botany Paper Mill - Whole of Site	6,689	11,008	0	0	0	0	0	0	0	0	0	0	17,697
Carter Holt Harvey Australia Pty Ltd: Oberon Refiner Control Improvement	6,946	1,666	0	0	0	0	0	0	0	0	0	0	8,612
Hydro Aluminium Kurri Kurri Pty Ltd: Kurri Kurri Smelter Upgrade and Retrofit	42,298	73,243	0	0	0	0	0	0	0	0	0	0	115,542
Orica Australia Pty Ltd: Botany Chlorine Plant Upgrade	11,442	27,715	0	0	0	0	0	0	0	0	0	0	39,158
Tomago Aluminium Company Pty Ltd: Smelting Electrical Energy Reduction	17,056	31,155	0	0	0	0	0	0	0	0	0	0	48,210

Table C.3 Metered Baseline Method – baseline unaffected by output (MWh savings)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Sydney West Area Health Service: EPC and GEEIP	689	837	0	0	0	0	0	0	0	0	0	0	1,525

Table C.4 Metered Baseline Method – NABERS baseline (MWh savings)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Charter Hall Asset Services Limited: Building Energy Consumption Reduction	3,842	0	0	0	0	0	0	0	0	0	0	0	3,842
Colonial First State Property: NABERS Energy Efficiency Program	0	2,396	0	0	0	0	0	0	0	0	0	0	2,396
Investa Properties Ltd: Office Buildings Assessed using NABERS	0	10,017	0	0	0	0	0	0	0	0	0	0	10,017
Stockland Property Management Pty Ltd: NABERS Energy Monitoring and Modification	0	1,114	0	0	0	0	0	0	0	0	0	0	1,114

Table C.5 Deemed Energy Savings Method – Default Savings Factors (MWh savings)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Aspect Energy: Residential Showerlite Program (ESS Rule V1)	2,426	19,093	19,093	19,093	19,093	19,093	19,093	16,668	0	0	0	0	133,654
Aspect Energy: Residential Showerlite Program (2) (ESS Rule V1)	0	0	0	0	0	0	0	0	0	0	0	0	0
Aspect Energy: Residential Showerlite Program (ESS Rule V2)	0	0	0	0	0	0	0	0	0	0	0	0	0
Combined Force Pty Ltd: Meters slow with Low H20 - Residential (ESS Rule V1)	0	1,204	1,274	1,274	1,274	1,274	1,274	1,274	70	0	0	0	8,919
Combined Force Pty Ltd: Meters slow with Low H20 - Commercial (ESS Rule V1)	0	70	74	74	74	74	74	74	4	0	0	0	515
Combined Force Pty Ltd: Meters slow with Low H20 - Residential (ESS Rule V2)	0	0	0	0	0	0	0	0	0	0	0	0	0
Combined Force Pty Ltd: Meters slow with Low H20 - Commercial (ESS Rule V2)	0	0	0	0	0	0	0	0	0	0	0	0	0
Demand Manager Pty Ltd: Carbon Saver Program	0	0	0	0	0	0	0	0	0	0	0	0	0
Enact Energy Pty Limited: Halogen Replacement - Residential	0	0	0	0	0	0	0	0	0	0	0	0	0
Enact Energy Pty Limited: Halogen Replacement - Commercial	0	0	0	0	0	0	0	0	0	0	0	0	0
Enact Energy Pty Limited: Showerhead Replacement - Residential (ESS Rule V1)	0	29,707	29,707	29,707	29,707	29,707	29,707	29,707	0	0	0	0	207,947
Enact Energy Pty Limited: Showerhead Replacement - Commercial (ESS Rule V1)	0	5,707	5,707	5,707	5,707	5,707	5,707	5,707	0	0	0	0	39,950
Enact Energy Pty Limited: Halogen and Transformer Replacement - Commercial	0	0	0	0	0	0	0	0	0	0	0	0	0
Enact Energy Pty Limited: Showerhead Replacement - Residential (ESS Rule V2)	0	0	0	0	0	0	0	0	0	0	0	0	0

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Enact Energy Pty Limited: Showerhead Replacement - Commercial (ESS Rule V2)	0	0	0	0	0	0	0	0	0	0	0	0	0
Enact Energy Pty Limited: Showerhead Sales - Residential (ESS Rule V2)	0	1,635	1,635	1,635	1,635	1,635	1,635	1,635	0	0	0	0	11,442
Enact Energy Pty Limited: Showerhead Sales - Commercial (ESS Rule V2)	0	0	0	0	0	0	0	0	0	0	0	0	0
Enact Energy Pty Limited: NSW Showerhead Sales - Residential	0	0	0	0	0	0	0	0	0	0	0	0	0
Enact Energy Pty Limited: NSW Showerhead Sales - Commercial	0	0	0	0	0	0	0	0	0	0	0	0	0
EnergyAustralia: Commercial Lighting - LED replacement of Halogen Downlights	0	0	0	0	0	0	0	0	0	0	0	0	0
EnergyAustralia: Hairdresser down-light replacement program	0	588	392	0	0	0	0	0	0	0	0	0	980
Envirocare & Savers Pty Ltd t/a Wellbeinggreen: Shower Rose Replacement Program - Residential (ESS Rule V1)	0	2,687	2,687	2,687	2,687	2,687	2,687	2,687	0	0	0	0	18,809
Envirocare & Savers Pty Ltd t/a Wellbeinggreen: Shower Rose Replacement Program - Commercial (ESS Rule V1)	0	107	107	107	107	107	107	107	0	0	0	0	749
Envirocare & Savers Pty Ltd t/a Wellbeinggreen: Shower Rose Replacement Program - Residential (ESS Rule V2)	0	0	0	0	0	0	0	0	0	0	0	0	0
Envirocare & Savers Pty Ltd t/a Wellbeinggreen: Shower Rose Replacement Program - Commercial (ESS Rule V2)	0	0	0	0	0	0	0	0	0	0	0	0	0

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Envirocare & Savers Pty Ltd t/a Wellbeinggreen: Halogen Lamp Replacement Program - Residential (ESS Rule V2	0	0	0	0	0	0	0	0	0	0	0	0	0
Envirocare & Savers Pty Ltd t/a Wellbeinggreen: Halogen Lamp Replacement Program - Commercial (ESS Rule V2)	0	0	0	0	0	0	0	0	0	0	0	0	0
Fieldforce Services Pty Ltd: Replacement of showerheads (ESS Rule V1)	0	0	0	0	0	0	0	0	0	0	0	0	0
Fieldforce Services Pty Ltd: Replacement of halogens	0	0	0	0	0	0	0	0	0	0	0	0	0
Fieldforce Services Pty Ltd: Replacement of showerheads (ESS Rule V2)	0	0	0	0	0	0	0	0	0	0	0	0	0
Green Made Easy Pty Ltd: Installation of Raindrop shower heads (ESS Rule V1)	0	0	0	0	0	0	0	0	0	0	0	0	0
Green Made Easy Pty Ltd: Installation of Raindrop shower heads (ESS Rule V2)	0	0	0	0	0	0	0	0	0	0	0	0	0
Low Energy Supplies and Services Pty Ltd: Direct Sales and Installations - Showerheads (ESS Rule V1)	0	0	0	0	0	0	0	0	0	0	0	0	0
Low Energy Supplies and Services Pty Ltd: Direct Sales and Installations - Showerheads (ESS Rule V2)	0	0	0	0	0	0	0	0	0	0	0	0	0
Lowa Investments Pty Ltd: Lowa Group LED sales program	0	0	0	0	0	0	0	0	0	0	0	0	0
Next Energy Pty Ltd: Fridge Buyback	0	0	0	0	0	0	0	0	0	0	0	0	0
Ozzy Fortune Pty Ltd trading as Your Green Planet: Showerheads - Residential (ESS Rule V1)	0	2082	3237	3237	3237	3237	3237	3237	1156	0	0	0	22,662
Ozzy Fortune Pty Ltd trading as Your Green Planet: Showerheads - Commercial (ESS Rule V1)	0	517	805	805	805	805	805	805	287	0	0	0	5,633

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Ozzy Fortune Pty Ltd trading as Your Green Planet: Showerheads - Residential (ESS Rule V2)	0	1	1	1	1	0	0	0	0	0	0	0	4
Ozzy Fortune Pty Ltd trading as Your Green Planet: Showerheads - Commercial (ESS Rule V2)	0	0	0	0	0	0	0	0	0	0	0	0	0
Sales Solutions Australia Pty Ltd: Shower Rose Replacement Project	0	0	0	0	0	0	0	0	0	0	0	0	0
Sydney Water Corporation: Washing Machine Rebate Program	30	82	82	82	82	82	82	82	82	82	82	52	905
Sydney Water Corporation: Waterfix	75	467	467	467	467	467	467	393	0	0	0	0	3,272
Watts Green Pty Ltd: Energy Efficiency Refit Program - Residential (ESS Rule V1)	0	735	1,708	1,708	1,708	1,708	1,708	1,708	974	0	0	0	11,958
Watts Green Pty Ltd: Energy Efficiency Refit Program - Commercial (ESS Rule V1)	0	334	776	776	776	776	776	776	442	0	0	0	5,430
Watts Green Pty Ltd: Energy Efficiency Refit Program - Residential (ESS Rule V2)	0	0	0	0	0	0	0	0	0	0	0	0	0
Watts Green Pty Ltd: Energy Efficiency Refit Program - Commercial (ESS Rule V2)	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C.6 Deemed Energy Savings Method – Power Factor Correction Energy Savings Formula (MWh savings)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Demand Manager Pty Ltd: PFC Aggregation Project - Commercial	0	0	0	0	0	0	0	0	0	0	0	0	0
Demand Manager Pty Ltd: PFC Aggregation Project - Industrial	0	0	0	0	0	0	0	0	0	0	0	0	0
EnergyAustralia: PFC Aggregation Program	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C.7 Deemed Energy Savings Method – Commercial Lighting Formula (MWh savings)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
AGL Energy Services Pty Ltd: Commercial Lighting Replacement Project	360	856	856	856	856	856	856	856	856	856	495	0	8,557
Country Energy: Commercial Lighting Retrofit Program	0	40	113	113	113	113	113	113	113	113	113	73	1,131
Demand Manager Pty Ltd: Commercial Lighting Aggregation Project	0	19	19	19	19	19	19	19	19	19	19	0	190
Ecovantage Pty Ltd: Commercial Lighting Upgrade Program	0	1	5	5	5	5	5	5	5	5	5	3	45
Enact Energy Pty Limited: Commercial Lighting Activities	0	0	0	0	0	0	0	0	0	0	0	0	0
EnergyAustralia: Commercial Lighting Aggregation Program	31	385	385	385	385	385	385	385	385	385	353	0	3,845
Global Sustainability Initiatives Pty Ltd: ABESP Commercial Lighting Replacement	0	72	358	358	358	358	358	358	358	358	358	287	3,585

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Green Alliance: T5 Commercial Lighting	0	29	34	34	34	34	34	34	34	34	34	5	343
Greenearth Energy Efficiency Pty Ltd: HID Lighting Equipment Upgrade and Optimisation	0	3	9	9	9	9	9	9	9	9	9	6	94
Low Energy Supplies and Services Pty Ltd: Commercial Lighting Halogen Replacement Program	0	85	103	103	103	103	103	103	103	103	103	18	1,028
Low Energy Supplies and Services Pty Ltd: Commercial Lighting Upgrade Projects	0	21	32	32	32	32	32	32	32	32	32	11	317
NSW Roads and Traffic Authority: Traffic light globe replacement project	79	887	887	887	887	887	887	887	887	887	887	808	9,753
Out Performers (Griffone Family Trust trading as): OP012 Commercial and Industrial Lighting	0	1,396	4,717	4,717	4,717	4,717	4,717	4,717	4,717	4,717	4,717	3,321	47,170
Robcath Pty Ltd: Commercial Lighting Project	0	1	4	4	4	4	4	4	4	4	4	4	44
Sydney Markets Limited: Sydney Markets Lighting RESA	0	0	0	0	0	0	0	0	0	0	0	0	0

Glossary

This glossary provides a general guide to the terminology used in ESS. It is designed to be read in conjunction with the Act, Regulation and ESS Rule. 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, Regulation or ESS Rule.

Term	Meaning
Accredited Certificate Provider	A person accredited by the Scheme Administrator to create Energy Savings Certificates (ESCs) in respect of a Recognised Energy Savings Activity.
Act	The *Electricity Supply Act 1995* which established the Energy Savings Scheme (in particular Part 9 of the Act).
Approved Corresponding Scheme	A scheme in another jurisdiction that the Minister has determined to have similar objectives to the ESS and an equivalent compliance regime to the ESS. Once a scheme is determined to be an Approved Corresponding Scheme, persons may carry out Recognised Energy Savings Activities that are approved under the Approved Corresponding Scheme and create Energy Savings Certificates (ESCs).
Base Penalty Rate	Is listed in Schedule 5A of the Act, and is $24.50 for 2010.
Baselines	The level of energy consumption, or energy intensity against which improvements are measured, and from which the calculation of Energy Savings Certificates are made.
Carbon Dioxide Equivalent(CO_2-e)	The standard unit for the quantification of all greenhouse gases. One Energy Savings Certificate represents the energy savings equivalent to the abatement of one tonne of carbon dioxide equivalent (tCO_2-e).
Certificate Conversion Factor	Is listed in Schedule 5B of the Act as 1.06, and is used to convert the number of MWh of Energy Savings from a Recognised Energy Savings Activity to tonnes of carbon dioxide equivalent. This is done by multiplying the MWh saved by the Certificate Conversion Factor.

Term	Meaning
Confidence Factor	A factor applied, when calculating the number of Energy Savings Certificates using either the Project Impact Assessment Method or the Metered Baseline Methods, that reflects that the accuracy of Accredited Certificate Provider's methodology. A more accurate methodology will generally result in a higher Confidence Factor, and a larger number of certificates.
Consumer Price Index (CPI)	Is the Consumer Price Index (All Groups Index) for Sydney. Under the Energy Savings Scheme, the Scheme Penalty Rate is adjusted, prior to the commencement of each calendar year, by the CPI, to give the adjusted Penalty Rate for that calendar year.
Default Savings Factors	A default figure which may be used to calculate the number of Energy Savings Certificates (ESCs) for each activity listed in Schedule A of the ESS Rule. The use of Default Savings Factors allows all the energy savings associated with the activities listed in Schedule A to be brought forward to the point at which the activity takes place.
End-user equipment	End-user equipment refers to the electricity consuming equipment, processes, or systems, including equipment directly consuming electricity and any other equipment which controls or influences the consumption of electricity.
Energy Saver	The person contractually liable for the energy consumed by the end-user equipment or site that is the subject of a Recognised Energy Savings Activity (RESA), or the person nominated in writing to be the Energy Saver in respect of a RESA.
Energy Savings	Energy Savings refers to the calculated reduction in electricity consumption arising from a Recognised Energy Savings Activity (RESA) and calculated according to the ESS Rule.
Energy Savings Certificate (ESC)	A transferable certificate under Part 9 of the Act, which is created in accordance with the ESS Rule. A certificate represents the Energy Savings associated with the abatement of one tonne of carbon dioxide equivalent (tCO_2-e).
Energy Savings Scheme Rule	The Energy Savings Scheme Rule of 2009 published by the Minister for Energy, sets out the primary eligibility requirements, calculation methodologies and arrangements for the creation of Energy Savings Certificates. This rule is amended from time to time.
Energy Savings Target	The Energy Savings Target refers to a figure, specified in Schedule 5 of the Act, that is applied to the total Liable Acquisitions in NSW to determine each Scheme Participant's Individual Energy Savings Target for each calendar year.
Entitlement Date	The date an ESS application for accreditation is accepted as being lodged in a complete and acceptable form by the Scheme Administrator, and once accredited, the date from which an Accredited Certificate Provider may create certificates.

Term	Meaning
Energy Savings Shortfall	If a Scheme Participant fails to surrender enough Energy Savings Certificates to meet its Individual Energy Savings Target for the year, it has an Energy Savings Shortfall for that year and is liable to pay a penalty for each Energy Savings Certificate it has failed to surrender.
Exempt Electricity Load	An Exempt Electricity Load is the load attributed to a person or class of person which has been granted partial exemption (90% or 60%) from the scheme by the Minister, as specified in the Ministerial Order.
Implementation Date	The Implementation Date is the date on which the Energy Savings from the Recognised Energy Savings Activity (RESA) commences.
Individual Energy Savings Target	The Individual Energy Savings Target is the number of Energy Savings Certificates (ESCs) which a Scheme Participant must surrender each year to meet its obligations under the Energy Savings Scheme. This target is determined by multiplying the Energy Savings Scheme Target for that year by the total liable acquisitions in that year and the certificate conversion factor.
Liable Acquisition	Is any purchase of electricity by a Scheme Participant which is purchased from the Market Operator, or from parties not registered with the Market Operator for supply to end users in NSW whose loads have not been listed as Exempt Electricity Loads.
Market Operator	Is the entity responsible for the administration and operation of the wholesale national electricity market in accordance with the National Electricity Law (currently the Australian Energy Market Operator (AEMO)).
Ministerial Order	The Ministerial Order is published annually, or when required, and lists all emissions intensive trade exposed industries, their location and proportion of electricity load granted an exemption (either 60% or 90%) under the ESS.
National Australian Built Environment Rating System (NABERS)	Is a ratings methodology administered by the NABERS Administrator (currently the Office of Environment and Heritage (OEH)) which can be used to calculate Energy Savings under the Metered Baseline Method. The NABERS Method can be used for new or existing buildings.
Penalty Conversion Factor	Is specified in Schedule 5A of the Act, and is 0.94 for the duration of the Scheme.
Recognised Energy Savings Activity (RESA)	A specific activity, approved by the Scheme Administrator, which is implemented by an Energy Saver and increases the efficiency of electricity consumption or reduces electricity consumption with no negative effect on production or service levels.
Regulation	*Electricity Supply (General) Regulation 2001*.

Term	Meaning
Retail Supplier	A Scheme Participant under the Energy Savings Scheme. Includes all holders of an electricity retail licence in NSW.
Scheme Administrator	The body responsible for administering functions such as accrediting Accredited Certificate Providers, verifying Energy Savings activity and maintaining a registry of certificates. The NSW Independent Pricing and Regulatory Tribunal (IPART) is the Scheme Administrator for the Energy Savings Scheme.
Scheme Participant	A person who is required to comply with an Individual Energy Savings Target. Scheme Participants include all Retail Suppliers of electricity in NSW, any person directly supplying a customer in NSW or any person directly purchasing electricity from the Market Operator (other than a Retail Supplier).
ESS Penalty Rate	Is calculated by multiplying the Base Penalty Rate per MWh by the Penalty Conversion Factor. The ESS Penalty Rate is the amount per certificate that is applied to a Scheme Participant's Energy Savings Shortfall to calculate the monetary penalty as a result of the shortfall. The ESS Penalty Rate is listed in Schedule 5A of the Act.
Scheme Registry	An online registry of Accredited Certificate Providers and Energy Savings Certificates.
Scheme Regulator	The body that monitors the compliance of Scheme Participants with their Individual Energy Savings Targets under the Act. The NSW Independent Pricing and Regulatory Tribunal (IPART) is the Scheme Regulator for the Energy Savings Scheme.
Site	A Site refers to all the End end-user equipment for which the electricity consumed is measured by the same utility meter allocated a National Meter Identifier (NMI) under the National Electricity Law, or by other meters or logging devices approved by the Scheme Administrator.