

FACT SHEET

Overview of the ESS

June 2014

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.

The ESS is established under Part 9 of the NSW *Electricity Supply Act 1995* (the Act), and commenced operation in July 2009. The objectives set out in the Act state that the ESS is to:

- ▼ assist households and businesses to reduce their electricity consumption and electricity costs
- ▼ complement national schemes for reducing carbon pollution 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.¹

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 Carbon Pollution Reduction Scheme (CPRS) proposed at the time by the Commonwealth Government. It is modelled on the end-use energy efficiency part of the Demand Side Abatement component of the Greenhouse Gas Reduction Scheme (GGAS). This part of GGAS ceased with the commencement of the ESS. The ESS does not include the use of gas.

¹ Section 98 of the Act.

The ESS 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.

IPART is both Scheme Regulator and Scheme Administrator of the ESS. In these roles, we:

- ▼ monitor and report on Scheme Participants' compliance with their ESS obligations
- ▼ assess Accredited Certificate Providers' applications to create certificates from specific energy savings projects under the *Energy Savings Scheme Rule of 2009* (ESS Rule), and accredit those we find to be eligible
- ▼ monitor and report on Accredited Certificate Providers' compliance with the conditions of their accreditation and the ESS Rule
- ▼ conduct independent audits to ensure the integrity of the scheme is maintained
- ▼ manage the GGAS & ESS Registry which tracks the creation, transfer and surrender of certificates²
- ▼ monitor and publish annual reports on the supply of and demand for certificates.

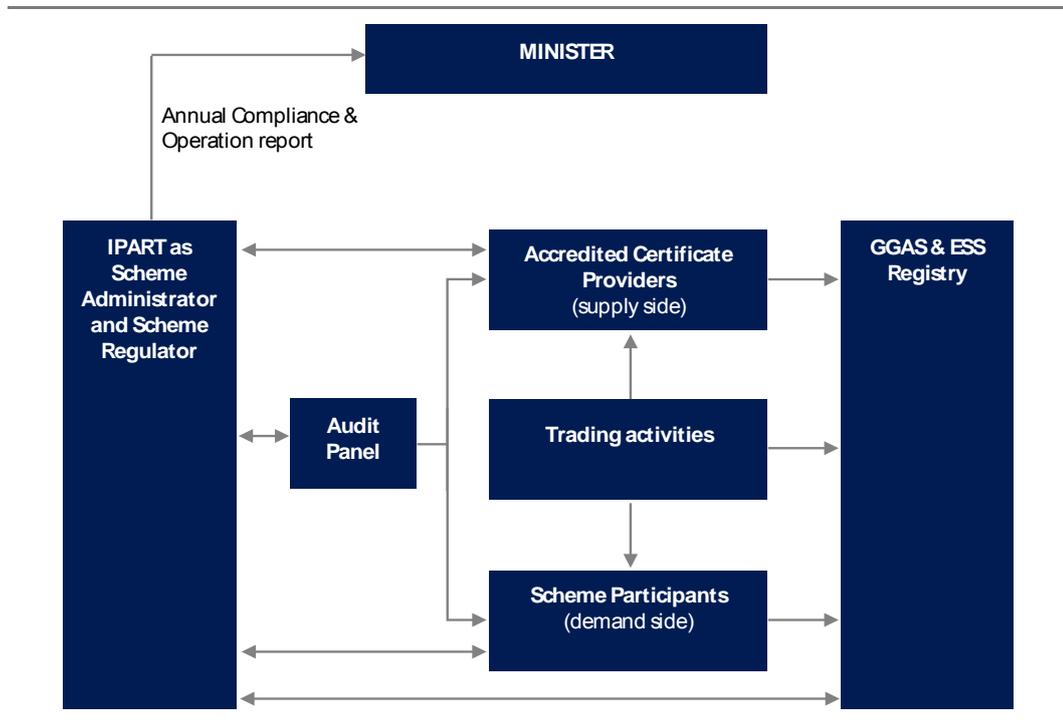
We also host the ESS website, which can be found at www.ess.nsw.gov.au.

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.

² See <https://www.ggas-registry.nsw.gov.au>.

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 (see Section A.7).



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 (up to 10% of their individual energy savings target) 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 (eg, another scheme or development application 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 as production has reduced. 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 Registry³ 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 NSW Minister for Resources and 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.

³ The ESS Registry is also referred to as the GGAS-ESS Registry as it was originally developed for the GGAS Scheme. GGAS closed on 30 June 2012.



The NSW Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS) 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 Resources and Energy. The Office of Environment and Heritage (OEH) provides policy support and recommends developments to the ESS.

A.6 Ministerial Order and the Exemptions Rule

Exemptions are allowed under the ESS for electricity loads used in conjunction with emissions-intensive and trade-exposed industries or activities. They are granted by the NSW Minister for Resources Energy via a Ministerial Order.⁴ The Ministerial Order lists each exempted person (company), 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 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.

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.

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.

Exemptions under the ESS are designed to align with the approach the Commonwealth Government takes 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

⁴ The Ministerial Order can be downloaded from the ESS website at www.ess.nsw.gov.au/How_the_scheme_works/Framework_and_Rules.

from Australian Energy Market Operator (AEMO), plus any unregistered generator sales⁵ (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 CO₂-e to be consistent with the former GGAS and any national scheme. In converting MWh to CO₂-e, 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 CO₂-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

⁵ The intent of the ESS is to capture all AEMO and non-AEMO purchases made by a Scheme Participant.

▼ 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. To do this they need to have maintained adequate records so that any additional savings claimed can be validated by an independent 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 NSW 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) program⁶ 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 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.

⁶ See www.cbd.gov.au

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 $\geq 10,000$ hours	10,000 hours
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 downlights 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 heads⁷. It does not include the installation of compact fluorescent light globes or water flow restrictors.

⁷ Replacement of showerheads is no longer eligible after the Rule amendment in 2011.

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 NSW⁸ 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.9 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, 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 Resources and Energy.

⁸ www.industry.nsw.gov.au/energy/electricity/network-connections/rules