IPART

Independent Pricing and Regulatory Tribunal
New South Wales

NSW Energy Savings Scheme Compliance and Operation in 2016

Annual Report to the Minister

Energy Savings Scheme

July 2017

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1 Executive summary

This is the Independent Pricing and Regulatory Tribunal of NSW's (**IPART's**) eighth annual report on the NSW Energy Savings Scheme (**ESS**), as required by section 174 of the *Electricity Supply Act 1995* (**Act**). It summarises the scheme's performance during the 2016 calendar year, including the energy (electricity and gas) savings achieved and the compliance by Scheme Participants and Accredited Certificate Providers. It also outlines the key administration activities and developments during the year.

Overall, the ESS has continued to perform well. The ESS target for the 2016 calendar year was met and in general the compliance performance of both Scheme Participants and Accredited Certificate Providers was high, with some issues as noted.

IPART continued to make incremental improvements to the administration of the ESS in 2016, including strengthening our systems for preventing, detecting and responding to non-compliance.

Box 1.1 The Energy Savings Scheme is a legislated NSW scheme

The ESS is a state-based scheme that aims to reduce the consumption of energy (electricity and gas) in NSW by encouraging the implementation of activities that save energy without reducing production or service levels. It is established under Part 9 of the Act.

The Act sets out **ESS targets** for each calendar year to 2025, and obliges all electricity retailers operating in NSW and other specified parties – known as **Scheme Participants** – to meet these targets by purchasing and surrendering Energy Savings Certificates (certificates). This creates demand for certificates.

It also provides for parties to be accredited to create those certificates from recognised energy saving activities.[a] These parties are voluntary participants in the ESS, and are known as **Accredited Certificate Providers**. This provides the supply of certificates.

IPART administers the ESS

IPART is both Scheme Regulator and Scheme Administrator for the ESS. The Scheme Regulator role relates to activities of Scheme Participants, while the Scheme Administrator role relates to the activities of Accredited Certificate Providers.

a Certificates for energy saving activities may be created up to six months after the end of the calendar year in which the energy savings occur (or are deemed to occur), eg, 2016 vintage certificates may be created up until 30 June 2017.

1.1 ESS target for 2016 of 7% is higher than previous years

The ESS target for the 2016 calendar year was 7% of all electricity purchased for supply to end-use customers in NSW, compared to 5% for the 2015 calendar year. After deducting allowed exemptions, the effective target was 5.8% for the 2016 calendar year. This was

equivalent to a total of 3,794,614 megawatt hours (MWh) of electricity savings, or 3,794,614 certificates.[1]

Box 1.2 The ESS target sets the demand for certificates each year

The ESS target (expressed as a percentage) is applied to each Scheme Participant's annual liable electricity acquisitions to determine its individual energy savings target for the year. The target started at 1% of liable acquisitions in 2009[a] and increased annually to reach 5% in 2014 and 2015. It increased to 7% for 2016 and will continue to increase each year to reach 8.5% in 2019, after which it will remain steady until 2025.[b]

A Scheme Participant's liable acquisitions include any electricity it purchases for supply to end-users in NSW **excluding** a specified part of the load it supplies to entities in emissions-intensive and trade-exposed industries that have been granted an exemption[c] from the ESS by the Minister for Energy and Utilities.[d]

The ESS target sets the demand for certificates by Scheme Participants in a year. Accredited Certificate Providers create the supply of certificates by implementing energy saving activities.

a The first compliance period was the half year to 31 December 2009. The energy savings target was 0.5% for the half year or 1% as a nominal annual rate.

b The ESS target for each calendar year is set out in Schedule 5 of the Act.

c The level of exemption is specified in the relevant Ministerial Order.

d Refer Section 119 of the Act and the Scheme Regulator Exemptions Rule No. 1 of 2016.

1.2 Certificate creation and energy savings achieved also increased

Accredited Certificate Providers created 4,315,029 certificates in 2016, which is equivalent to 4,070,782 MWh of electricity savings.[2] This is the highest annual creation of certificates to date, and greater than the number required to meet the energy savings target in 2016. As a result, the certificate surplus increased from 2015. The majority of certificates created in 2016 were from commercial lighting projects, similar to previous years.

Following changes to the *Energy Savings Scheme Rule of 2009* (**ESS Rule**) on 15 April 2016, certificates may now be created for gas saving activities as well as electricity saving activities. For activities implemented up to the end of 2016, all certificate creation was from electricity saving activities – no certificates were created from gas saving activities.

A total of 19,154,333 certificates have been created (equivalent to 18,070,125 MWh of electricity savings) for activities implemented from the start of the ESS in July 2009 to 31 December 2016.[3] Some certificates associated with an energy saving activity are created after the energy savings have occurred. However, the ESS Rule also allows certificates for certain types of activities to be created up to 25 years in advance of the energy savings occurring. This is known as deeming or forward-creation (see Box 2.1).

1 To calculate the target (demand) for certificates each year, the electricity savings target (in MWh) is multiplied by the energy conversion factor (1.0 for 2016, 1.01 for the years 2009 to 2015).

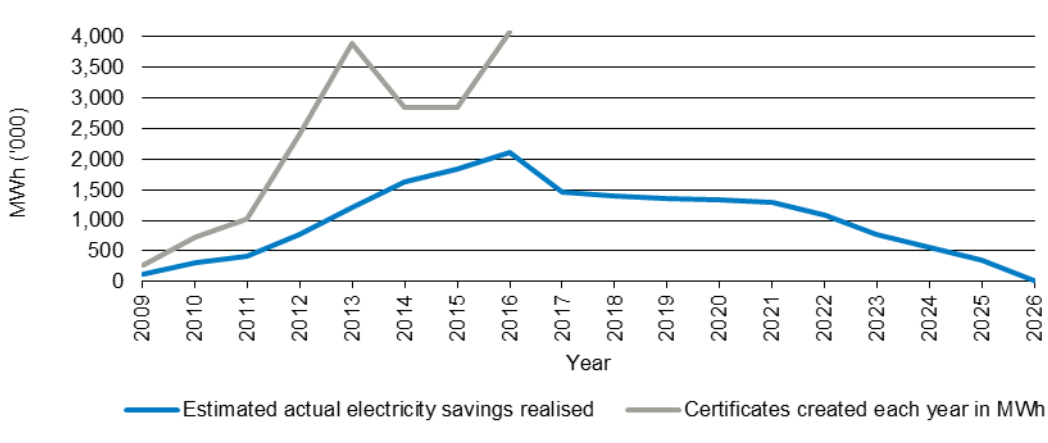
2 To calculate the supply of certificates, the electricity savings achieved (in MWh) is multiplied by the certificate conversion factor (1.06 for electricity since the ESS commenced).

3 This compares to 14,885,918 certificates created (equivalent to 14,043,319 MWh of electricity savings) for activities implemented up until the end of the 2015 calendar year.

When deeming and forward-creation are taken into account, the ESS has achieved (or will achieve) estimated actual electricity savings for activities implemented during 2009-2016 of:

- 6,311,695 MWh during the period 2009-2015 (equivalent to 1.3% of NSW electricity consumption during this period)
- 2,108,295 MWh during 2016 (equivalent to 2.9% of NSW electricity consumption during this period), and
- 9,650,136 MWh over the next 10 years of 2017-2026 (Figure 1.1 and Table 2.1).[4]

Figure 1.1 Certificates created compared to estimated actual electricity savings



1.3 Certificate price fell as total certificate surplus increased

The total certificate surplus[5] in June 2017 was 4.9 million certificates, compared to 3.9 million certificates in June 2016 (Figure 1.2). The surplus rises throughout the year as Accredited Certificate Providers register certificates, and falls sharply in March/April the following year when Scheme Participants surrender certificates to meet their compliance obligations.

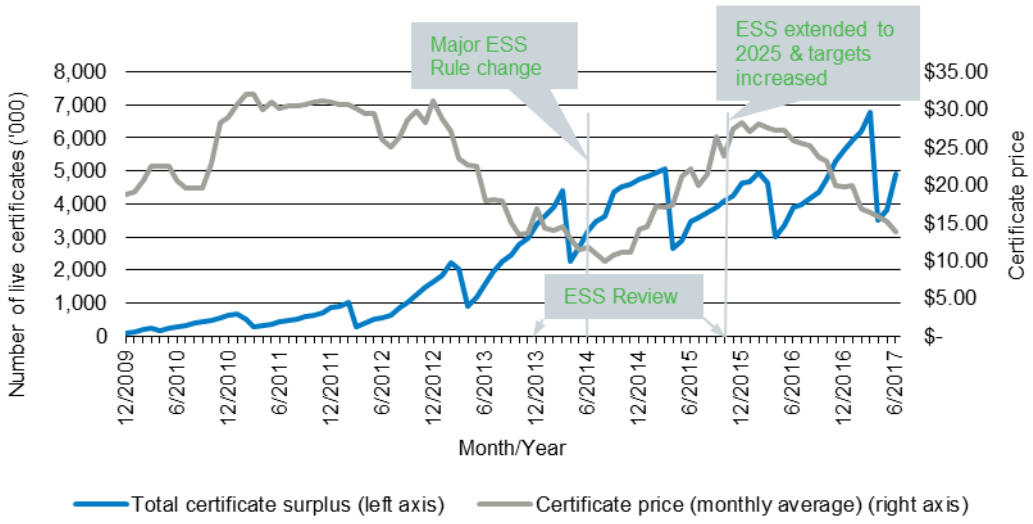
The indicative certificate price[6] decreased from the relatively high level of $27-$28 in early 2016 to $20 in late 2016 (see Figure 1.2). We attribute this to the continuing large surplus of certificates.

4 Section 174 of the Act requires an estimate of the actual energy savings that have been, and will be, realised with regard to the number of certificates created.

5 Total certificate surplus comprises all vintages, including 2017 certificates that are unable to be surrendered to meet the 2016 target.

6 The price data is provided by third parties, as indicated in Figure 1.2. As it does not include price data for all certificate trades, it may not represent the actual average certificate price over time. Nevertheless, it provides a useful guide to broad movements in the certificate price.

Figure 1.2 Total certificate surplus and indicative certificate price[a]



a Based on data provided by the financial brokers, Nextgen and TFS Green Australia, for all certificates traded through brokers in both the spot market and the forward market. This represents the majority of certificates traded each year, but does not include bilateral trades (ie, trades between buyers and sellers that did not involve brokers).

1.4 Scheme Participant compliance was high

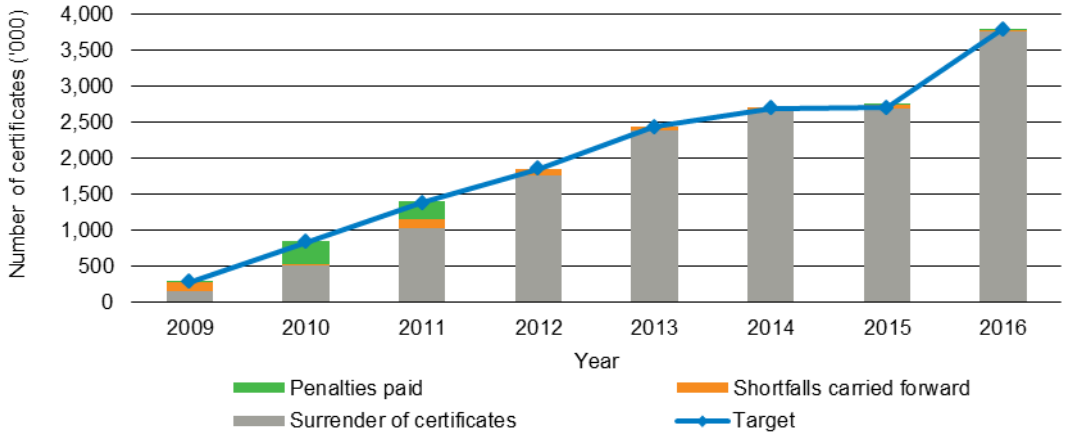
Of the 62 Scheme Participants operating in NSW during the 2016 calendar year,[7] 60 complied with their obligations. Of these:

- 40 met their individual target by surrendering certificates or carrying forward a shortfall of no more than 10% of their target
- 18 reported no liable acquisitions in NSW, and
- two elected to meet their targets by paying a penalty instead of surrendering certificates.

Two Scheme Participants did not meet their individual target as they went into voluntary administration. Figure 1.3 shows how Scheme Participants have met their energy savings target each year since the ESS began.

7 This compares to 59 Scheme Participants in the 2015 calendar year.

Figure 1.3 How the increasing ESS targets have been met each year



1.5 Accredited Certificate Providers were generally compliant

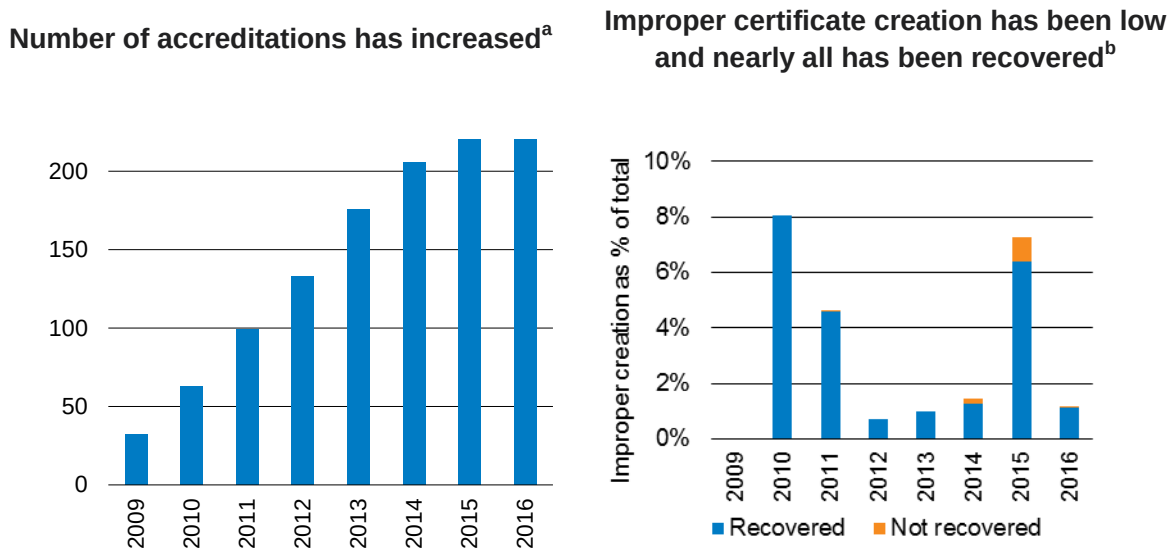
In 2016, the overall instances of non-compliance were low. We found that 51,132 certificates (of various vintages)[8] had been improperly created due to a range of Accredited Certificate Provider errors. This is equivalent to 1.2% of all certificates created for 2016 activities (see Figure 1.4). We have recovered all but 1,633 (0.04% of all certificates created in 2016) of these improperly created certificates.

We continually undertake activities to minimise non-compliance and ensure Accredited Certificate Providers create certificates only where genuine energy savings have occurred. These activities include:

- monitoring Accredited Certificate Providers' energy saving activities and using third-party audits to verify savings, and
- using set-aside deeds to commit Accredited Certificate Providers to withhold from trade a percentage of the certificates they create until an audit of those certificates has been satisfactorily completed.

8 Some of the certificates we identified as improperly created in 2016 were created in previous years.

Figure 1.4 Number of accreditations and improper certificate creation



a This represents the number of accreditations that were 'live' at some point during each year.
b Refer to previous ESS Annual Reports for details of improper creation, and our recovery of improperly created certificates prior to 2016.

1.6 ESS administration and improvements

We continued to effectively administer the ESS and made improvements to our systems and processes, including the ESS Portal.[9] The level of our administration activities in 2016 remained similar to 2015, with a few exceptions (noted below). In particular, we:

- approved 22 new accreditations
- approved 96 amendments to the conditions of existing accreditations[10]
- accepted 2,120 lighting products for use in the scheme (compared to 1,068 products accepted in 2015), which increased the total number of products accepted since 2011 to 3,930
- approved one new member of the Audit Services Panel, which increased the total membership to 17 firms
- approved our first seven auditors under our new specialist category for audits of Accredited Certificate Providers using the Project Impact Assessment with Measurement and Verification Method
- approved the first eight Measurement and Verification Professionals, and
- cancelled 51 accreditations[11] (compared to 19 in 2015).

9 The ESS Portal is an online system we use to manage compliance activities.
10 Some accreditations had their conditions amended multiple times. Most amendments were to change the maximum number of certificates to be created between audits, or change the activities allowed under the accreditation.
11 These accreditations were typically cancelled because the Accredited Certificate Provider requested cancellation, or was subject to a winding up order; or because we were satisfied that the Accredited Certificate Provider had breached its accreditation conditions.

The large increase in the number of accreditations we cancelled was primarily due to a process we implemented in 2015 to proactively monitor accreditations that are either inactive, or appear to be ineligible. Cancelling inactive or ineligible accreditations removes the risk of improper certificate creation from these accreditations.

We also improved the ESS Portal to provide benefits such as:

- increased administrative efficiency
- more timely validation of Accredited Certificate Providers' activities, and
- a more user-friendly means for Accredited Certificate Providers to interact with us and track their compliance requirements.

We continued our 'face-to-face' interaction with stakeholders to help improve their understanding of ESS requirements. In particular, we held a public stakeholder forum with 53 attendees and also increased the number and scope of our online training workshops.

1.7 Further changes were made to the ESS Rule

The Minister made changes to the ESS Rule on 15 April 2016,[12] which included:

- amending existing methods to incorporate gas savings
- introducing a Regional Network Factor to reward energy savings in regional areas
- amending the Home Energy Efficiency Retrofits Method to make it easier to implement, and
- making energy efficient public lighting upgrades more accessible to councils.

The Minister made further minor changes to the ESS Rule on 30 September 2016 by extending the pause on new accreditations for the sampling sub-method of the Project Impact Assessment with Measurement and Verification Method.[12] This allowed further development of this sub-method before it was reactivated via a further ESS Rule change that took effect on 28 April 2017.[13]

1.8 We continue to work with other regulators

We continue to work with other states and territories and the Commonwealth Government to align the operation of the ESS with other energy efficiency schemes, reduce red tape for participating businesses and address common compliance issues. Examples of this interaction include:

- accepting for use in the ESS, most categories of lighting products approved under the Victorian Energy Efficiency Target (**VEET**) scheme (the VEET scheme also recognises ESS accepted products)

12 See www.resourcesandenergy.nsw.gov.au/energy-consumers/sustainable-energy/efficiency/scheme/energy-savings-scheme-rule-change-2015-16.

13 See www.resourcesandenergy.nsw.gov.au/energy-consumers/sustainable-energy/efficiency/scheme/energy-savings-scheme-rule-change-2016-17.

- considering an organisation's compliance performance in the VEET scheme when it applies to be accredited under the ESS
- working with the ACT Government to allow the creation of certificates for activities in the ACT where the savings are calculated using ESS calculation methods[14]
- working with the Commonwealth Government's Clean Energy Regulator to ensure that the ESS and the Emissions Reduction Fund[15] operate together, and
- introducing a quarterly scheme regulators forum to share relevant information between jurisdictions.

1.9 IPART is the Scheme Regulator and the Scheme Administrator

IPART is both Scheme Regulator and Scheme Administrator of the ESS and may delegate the exercise of these functions to another person or body.[16] For the period of 1 August to 31 October 2016, the Tribunal exercised the functions of Scheme Regulator and Scheme Administrator. During this time, the Tribunal comprised:

- Dr Peter J. Boxall AO as Chair, and
- Ms Catherine Jones and Mr Ed Willett as Tribunal Members.

From 1 January to 31 July 2016, and from 1 November to 31 December 2016, the Tribunal delegated these functions to the ESS Committee, which comprised:

- Mr Ed Willett as Chairman, and
- Dr Brian Spalding and Ms Fiona Towers as Committee Members.

The Secretariat continued to exercise certain administrative functions previously delegated to it by the Tribunal to improve administrative efficiency.

1.10 Report structure

The remainder of this report discusses the compliance performance and operation of the ESS during 2016 in more detail:

- Chapter 2 focuses on the scheme's performance in terms of energy savings achieved and certificate market activity
- Chapters 3 and 4 discuss the compliance performance of Scheme Participants and Accredited Certificate Providers respectively, and
- Chapter 5 outlines our activities in administering the scheme.

Further information about the ESS is available on our website.[17] For example, see "How the scheme works" for an overview of the scheme.[18]

14 Energy savings certificates for activities in the ACT would be used to meet ACT targets, not NSW targets.
15 More information on the Emissions Reduction Fund is available on the Clean Energy Regulator's website, see *www.cleanenergyregulator.gov.au*.
16 Section 152(4) of the Act allows IPART, with the approval of the Minister, to delegate the exercise of its functions as Scheme Regulator and Scheme Administrator to another person or body.
17 See *www.ess.nsw.gov.au*.

2 Scheme performance

The principal objective of the ESS is to reduce the consumption of energy (electricity and gas) by encouraging energy saving activities. To assess the scheme's performance against this objective each year, we estimate the energy savings it has achieved from the certificate creation.

2.1 Energy savings are increasing

The Minister made changes to the ESS Rule in April 2016 to include gas saving activities, but as yet no certificates have been created for gas savings activities. As such, all energy savings that have occurred, and will occur in the future from certificates created to date, are for electricity saving activities.

As a result of certificates created between 2009 and 2016, we estimate that the ESS has achieved or will achieve (over the lifetime of projects) actual electricity savings of 18,070,125 MWh, comprising:

- 6,311,695 MWh during the period 2009-2015
- 2,108,295 MWh during 2016, and
- 9,650,136 MWh over the next 10 years of 2017-2026 (see Table 2.1).

Some of the electricity savings will be realised in future years because Accredited Certificate Providers may, under some methods, create certificates in advance of the savings occurring (see Box 2.1). To estimate these future savings, we pro-rated the certificates created in each year across the forward-creation or deeming period of the relevant energy saving activity.

18 See *www.ess.nsw.gov.au/How_the_scheme_works*.

Box 2.1 Certificate creation in advance of actual energy savings

For some recognised energy saving activities (**RESAs**), specifically all accreditations under the Metered Baseline Method, certificates can only be created in the year that the energy savings occurred. However, for other RESAs, certificates may be created in advance of the actual energy savings occurring where those savings will continue up to 25 years into the future. This is referred to as forward creation and deeming.

Under the Project Impact Assessment Method and the Project Impact Assessment with Measurement and Verification Method, it is possible to forward-create certificates (at the start of the energy savings period) for up to five years and 10 years respectively, based on estimated energy savings. The certificates are discounted by an approved percentage to account for some uncertainty, and may later be 'topped up' if additional actual savings can be verified.

Under the Deemed Energy Savings Method, which includes the Commercial Lighting Energy Savings Formula, the lifetime or deemed energy savings are estimated up-front and the certificates are forward-created from the time the activity is implemented. The deeming period depends on the type of activity, and ranges from 1.5 years to 25 years.

Table 2.1 Estimated actual electricity savings (in MWh) by calculation method[a]

Calculation method	2009-15[b]	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026[d]	Total
Deemed Energy Savings Method													
Commercial Lighting Formula	2,601,888	1,260,509	1,260,509	1,260,509	1,260,118	1,257,528	1,213,596	1,018,711	688,929	484,500	308,973	1,298	12,617,068
Default Savings Factors	555,163	95,936	39,140	405	319	289	120	0	0	0	0	0	691,372
Power Factor Correction Formula	91	22	22	22	22	22	17	0	0	0	0	0	215
Sale of New Appliances	37,640	65,793	65,793	65,793	65,793	65,793	65,793	65,791	65,781	65,731	42,080	21,395	693,177
Installation of High Efficiency Appliances for Business	182	403	403	403	403	403	403	403	330	133	0	0	3,464
Removal of Old Appliances	43,170	17,692	17,692	17,692	12,949	6,816	4,765	3,067	0	0	0	0	123,843
High Efficiency Motor Formula	135	135	135	135	135	135	135	135	135	135	135	0	1,480
Total	**3,238,268**	**1,440,489**	**1,383,693**	**1,344,958**	**1,339,738**	**1,330,986**	**1,284,829**	**1,088,106**	**755,175**	**550,498**	**351,188**	**22,692**	**14,130,620**
Metered Baseline Method[c]													
Baseline per unit of output	1,412,007	311,782	0	0	0	0	0	0	0	0	0	0	1,723,789
Baseline unaffected by output	78,616	26,285	0	0	0	0	0	0	0	0	0	0	104,901
NABERS baseline	248,646	34,690	0	0	0	0	0	0	0	0	0	0	283,336
Normalised baseline	405,927	140,459	0	0	0	0	0	0	0	0	0	0	546,387
Metered Baseline Total	**2,145,196**	**513,216**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2,658,412**
Project Impact Assessment Method	**927,373**	**146,945**	**74,960**	**39,553**	**13,312**	**2,501**	**0**	**0**	**0**	**0**	**0**	**0**	**1,204,643**
Project Impact Assessment with Measurement and Verification Method	**858**	**7,645**	**7,645**	**7,645**	**7,645**	**7,645**	**7,645**	**7,645**	**7,645**	**7,645**	**6,787**	**0**	**76,450**
TOTAL SAVINGS	**6,311,695**	**2,108,295**	**1,466,297**	**1,392,156**	**1,360,695**	**1,341,132**	**1,292,474**	**1,095,751**	**762,820**	**558,143**	**357,975**	**22,692**	**18,070,125** [e]

a Methods for which certificates are yet to be created (eg, Aggregated Metered Baseline Method) are not included in this table.

b For the period from 1 July 2009 to 31 December 2015.

c Certificates can only be created under the Metered Baseline Method after the savings have occurred (ie, there is no forward creation or deeming like other methods).

d Section 174(2)(e) of the Act requires the Scheme Administrator to estimate electricity savings over the next 10 years having regard to the number of certificates created.

e Represents total electricity savings achieved under the ESS based on total certificates created.

Note: Totals may not add exactly due to rounding. All data is in MWh. While the ESS closes at the end of 2025 (Section 178 of the Act), savings will be realised beyond that date. Small differences in data compared to previous annual reports reflect certificates that have been forfeited after the report was released.

We have compared the estimated actual energy savings by calculation method (Table 2.1) to the certificate creation by calculation method (Table 2.3). This shows that there are substantial differences in the relative proportions by method (see Table 2.2). In particular, the Metered Baseline Method has accounted for 31.6% of the estimated actual electricity savings to date, but only 14.7% of the certificate creation to date. This is because there is no deeming or forward creation under the Metered Baseline Method, while there is deeming or forward creation under the other methods.

Table 2.2 Calculation method proportions – certificate creation vs actual savings

	Certificate creation (2009-2016)	Estimated actual electricity savings in MWh (2009-2016)
Deemed Energy Savings Method	14,978,457 (78.2%)	4,678,757 (55.6%)
Metered Baseline Method	2,817,917 (14.7%)	2,658,412 (31.6%)
Project Impact Assessment Method	1,276,922 (6.7%)	1,074,318 (12.8%)
Project Impact Assessment with Measurement and Verification Method	81,037 (0.4%)	8,503 (0.1%)
Total	**19,154,333 (100.0%)**	**8,419,990 (100.0%)**

Data source: ESS Registry as at 30 June 2017.

2.2 Certificate market activity

As Scheme Administrator, we maintain publicly available registers of Accredited Certificate Providers and energy savings certificates on the ESS Registry.[19] This Registry records information about all Accredited Certificate Providers, their activities and the certificates they create. It also records information about each certificate, including the creator, vintage, energy saving calculation method used and activity undertaken. In addition, it tracks the status of a certificate – which is either live (available for transfer or surrender), surrendered or forfeited.

2.2.1 Certificate creation increased in 2016

The ESS Registry recorded the creation of 4,315,029 certificates of 2016 vintage,[20] which is 43% more than 2015 (see Figure 2.1, Table 2.3 and Table 2.4). We attribute much of this increase in certificate creation to the relatively high certificate price during 2016,[21] and the NSW Government's decision in October 2015 to extend the operation of the ESS from 2019 to 2025 and to increase the targets.[22]

19 See *www.ggas-registry.nsw.gov.au*.

20 2016 vintage certificates relate to energy saving activities undertaken during the 2016 calendar year. However, certificates may be created up to six months after the end of the calendar year. Therefore, a 2016 vintage certificate can be registered from 1 January 2016 to 30 June 2017.

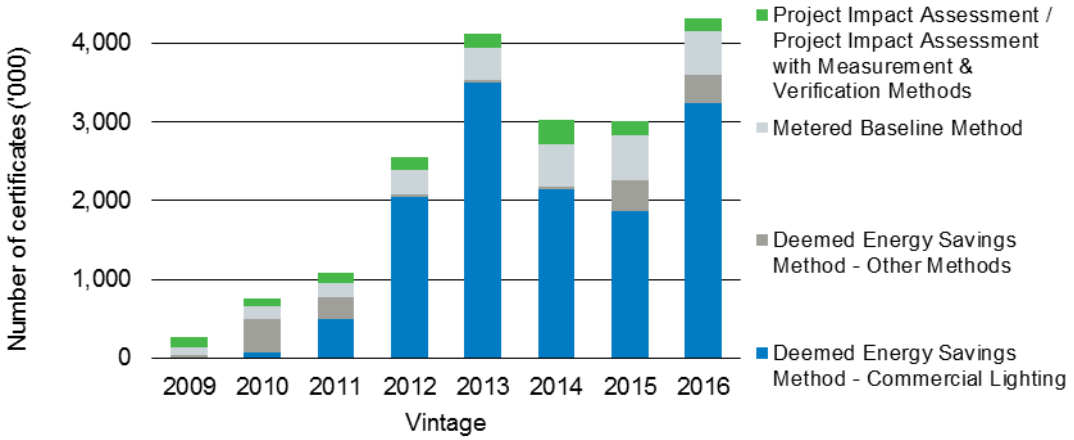
21 Although the certificate price decreased during 2016, the average indicative price for 2016 was $25. In contrast, the average indicative price from 2013 to 2015 was $18 (see Figure 1.2).

22 See www.resourcesandenergy.nsw.gov.au/energy-consumers/sustainable-energy/efficiency/scheme/energy-saving-scheme-review.

The certificate creation in 2016 was the highest annual creation, with the previous highest annual creation occurring in 2013. The lower level of certificate creation in 2014 and 2015 is likely to have occurred due to:

- the substantial decrease in certificate price from 2013 to 2014, and
- major changes to the ESS Rule in July 2014, to which some Accredited Certificate Providers took time to adjust.

Figure 2.1 Certificate creation by calculation method and vintage



There were differences in the proportion of certificates created under the different calculation methods in 2016 compared to 2015 (see Table 2.3), including:

- an increase in commercial lighting activities, which is likely to be related to the relatively high certificate price during 2016
- a decrease in creation under the Project Impact Assessment Method, as this method has been phased out and replaced by the Project Impact Assessment with Measurement and Verification Method, and
- a modest increase in creation under the Project Impact Assessment and Verification Method, as more Accredited Certificate Providers completed the required measurement and verification steps for their implementations, thereby allowing them to create certificates.

Table 2.3 Number of certificates created by energy savings calculation sub-method

	2009-2013[a]	2014	2015	2016	Total
Commercial Lighting Formula (DESM)	6,120,495	2,142,174	1,875,345	3,236,078	13,374,092
Sale of New Appliances (DESM)b	226	24,206	367,236	343,100	734,768
Baseline per unit of output (MBM)	819,226	327,952	349,549	330,489	1,827,216
Normalised baseline (MBM)	137,063	138,541	154,679	148,887	579,170
Project Impact Assessment Method	689,687	307,703	184,224	95,308	1,276,922
Project Impact Assessment with Measurement and Verification Method	0	0	9,090	71,947	81,037
NABERS baseline (MBM)	187,568	40,221	35,776	36,771	300,336
Baseline unaffected by output (MBM)	28,120	27,315	27,898	27,862	111,195
Removal of Old Appliances (DESM)b	80,696	15,220	12,600	22,758	131,274
Installation of High Efficiency Appliances for Business (DESM)	0	0	1,843	1,829	3,672
Default Savings Factors (DESM)b	732,854	0	0	0	732,854
High Efficiency Motor Formula (DESM)	0	0	1,569	0	1,569
Power Factor Correction Formula (DESM)	228	0	0	0	228
Aggregated Metered Baseline (MBM)	0	0	0	0	0
Home Energy Efficiency Retrofits (DESM)	0	0	0	0	0
1-for-1 Residential Downlight Replacement (DESM)b	0	0	0	0	0
Total	**8,796,163**	**3,023,332**	**3,019,809**	**4,315,029**	**19,154,333**

a Refer to previous ESS Annual Reports for a breakdown of the number of certificates created during these years.

b As part of changes to the ESS Rule in 2014, the Default Savings Factors sub-method was replaced with three new sub-methods: 1-for-1 Residential Downlight Replacement, Removal of Old Appliances and Sale of New Appliances. Some existing accreditations under the Default Savings Factors sub-method transitioned into the new sub-methods (see section 6.1 of NSW Energy Savings Scheme – Compliance and Operation in 2014 available on our website).

Note: Small differences in data compared to previous annual reports reflect certificates that have been forfeited after the report was released. DESM stands for Deemed Energy Savings Method, MBM stands for Metered Baseline Method.

Table 2.4 Number of certificates created by project type

	2009-2013[a]	2014	2015	2016	Total
Lighting	6,297,664	2,198,715	1,890,549	3,236,078	13,623,006
New Appliances	1,185	24,206	367,236	343,100	735,727
Multiple activities	295,557	258,232	276,725	268,421	1,098,935
Process Change/Control Systems	813,612	306,459	297,702	245,418	1,663,191
Heating Ventilation and Air conditioning	160,496	76,437	57,490	78,239	372,662
Building Upgrade	184,382	32,429	26,057	46,134	289,002
Refrigeration	73,984	42,203	40,292	28,083	184,562
Refrigerator & freezer removal	80,696	15,220	12,600	22,758	131,274
Fans/Pumps	51,965	30,385	19,016	21,564	122,930
Compressed Air	102,094	14,896	29,451	16,190	162,631
Ind Refrigeration and Freezing	0	0	0	7,376	7,376
Power Systems	2,305	24,150	1,122	1,668	29,245
Showerheads	728,025	0	0	0	728,025
High Efficiency Motors	3,970	0	1,569	0	5,539
Power Factor Correction	228	0	0	0	228
Air Handling Fans Ventilation	0	0	0	0	0
Number of certificates created each year	**8,796,163**	**3,023,332**	**3,019,809**	**4,315,029**	**19,154,333**

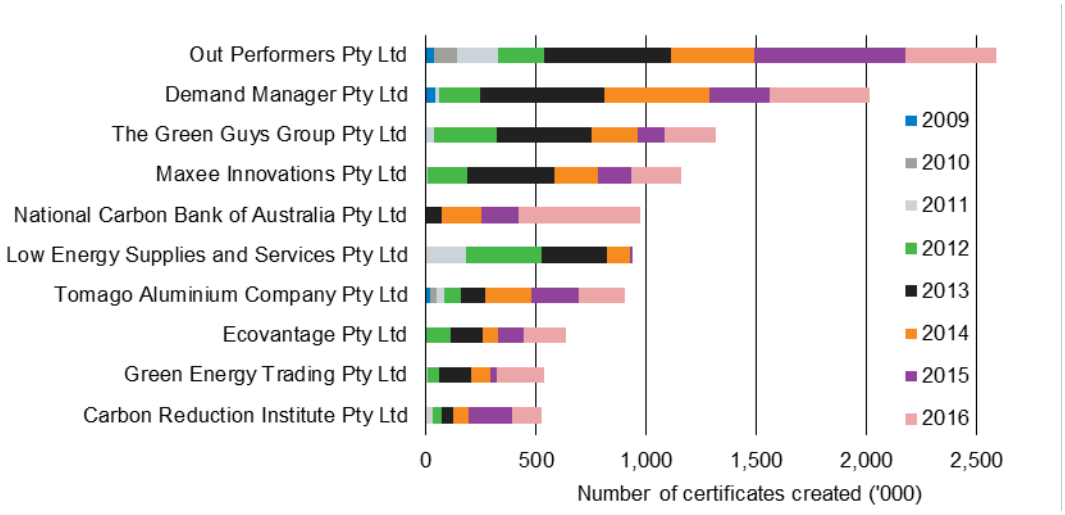
[a] Refer to previous ESS Annual Reports for a breakdown of the number of certificates created during these years.

Note: Small differences in data compared to previous annual reports reflect certificates that have been forfeited after the report was released.

Out Performers Pty Ltd has created 2.6 million certificates since the ESS began, the largest amount created by an Accredited Certificate Provider. Other large creators are Demand Manager Pty Ltd – which has created 2 million certificates, and The Green Guys Group Pty Ltd and Maxee Innovations Pty Ltd – both of which have created more than one million certificates (see Figure 2.2). The 10 largest creators of certificates account for 61% of the total number of certificates created under the ESS to date.

All of the Accredited Certificate Providers listed below, with the exception of Green Energy Trading Pty Ltd, were on the list of the 10 largest certificate creators in 2015.

Figure 2.2 Accredited Certificate Providers – 10 largest certificate creators



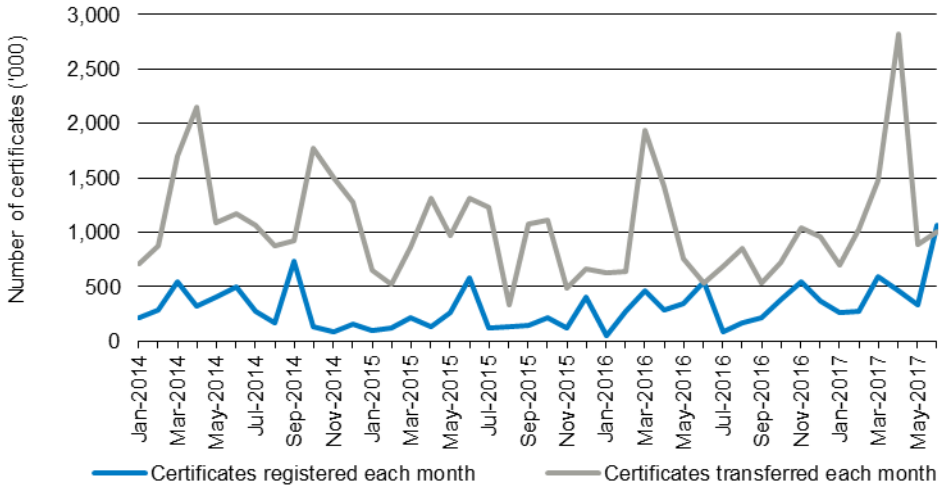
2.2.2 Certificate registration activity varies substantially through the year

Monthly certificate registration has varied considerably over time (see Figure 2.3). In 2016, the average monthly certificate registration was 311,934, with peaks in March (461,736 certificates registered) June (552,338 certificates registered) and November (541,346 certificates registered).

These peaks in certificate creation in March, June and November may be due to:

- the 30 April deadline for Scheme Participants to surrender certificates
- the 30 June deadline for registering certificates for activities that were implemented in the previous calendar year, and
- the typical cessation of business activities that usually occurs in late December / early January.

Figure 2.3 Number of certificates registered and transferred each month for 2014-2017



2.2.3 High level of certificate transfers continues

During 2016, the ESS Registry recorded 1,230 transfers,[23] involving 10.7 million certificates. This is approximately three times the number of certificates created in 2016 (see Figure 2.3). This indicates that most certificates were transferred multiple times between their initial creation and final surrender.

Factors that may be contributing to certificates being transferred multiple times include:

- Accredited Certificate Providers creating certificates for their clients[24] and then transferring the certificates to their clients as part of their business agreements
- market conditions that may be facilitating more trading of certificates[25] (ie, the large number of surplus certificates available to be traded, and the substantial fluctuations in certificate price), and
- the sophistication of the certificate trading market.[26]

2.2.4 Most certificates surrendered were to meet regulatory obligations

The ESS Registry recorded the surrender of 3,766,762 certificates for 2016. Of these, 3,765,238 certificates were surrendered by Scheme Participants to meet their regulatory obligations. The remaining 1,524 certificates were surrendered by Accredited Certificate Providers for compliance purposes.

23 Each time there is a change in ownership of certificates, it is recorded as a transfer in the ESS Registry.
24 Typically businesses for whom the Accredited Certificate Provider has completed an energy saving activity.
25 The trading of certificates occurs either directly between buyers and sellers, or via brokers. IPART records the transfer of ownership, but is not involved in the trading of certificates.
26 Some organisations now actively trade certificates in both the spot market (ie, for immediate exchange) and the forward market (ie, for exchange at a future date) to manage the risk of fluctuations in the certificate price.

The surrender of certificates occurs when an owner offers valid certificates for surrender (typically to meet an obligation) which IPART accepts and then cancels in the ESS Registry (removing them from the market).

2.2.5 Certificates were forfeited to correct certificate creation issues

The voluntary forfeiture of certificates occurs where certificates that are considered improperly created are cancelled in the ESS Registry at the request of the Accredited Certificate Provider or under a set-aside deed agreement.[27] There were 69 instances where Accredited Certificate Providers voluntarily forfeited certificates in 2016, involving 193,181 certificates. These certificates were forfeited to:

- address improper certificate creation identified through audit or other means
- correct errors identified during the certificate registration process, such as registering a certificate as the incorrect vintage, or
- correct errors identified by the Accredited Certificate Provider.

2.2.6 Certificate surplus remains high

At 30 June 2017, there were 3,766,873 certificates of 2016 vintage or older available for surrender in future compliance years (see Table 2.5). The surplus has remained above 2.5 million certificates since 2013. This is due to the high level of certificate creation in 2013, and annual certificate creation since that time being similar to, or exceeding, the amount required to be surrendered each year.

Further information about creation, transfer and surrender of certificates is available from the ESS Registry.[28]

27 In some cases, certificates were identified as improperly created after the Accredited Certificate Provider had transferred them to another owner. In these cases, other valid certificates owned by the Accredited Certificate Provider at the time were cancelled to meet the forfeit.

28 See *www.ggas-registry.nsw.gov.au*.

Table 2.5 Supply and surplus of certificates

Year	Total certificates created[a]	Total certificates surrendered	Surplus for the compliance year	Revived certificates[b]	Cumulative surplus
2009	276,942	148,928	128,014	0	128,014
2010	764,385	651,655	112,730	0	240,744
2011	1,079,407	1,063,564	15,843	0	256,587
2012	2,553,627	1,885,240	668,387	0	924,974
2013	4,121,802	2,491,055	1,630,747	0	2,555,721
2014	3,023,332	2,700,190	323,142	26,603	2,905,466
2015	3,019,809	2,706,669	313,140	0	3,218,606
2016	4,315,029	3,766,762[c]	548,267	0	3,766,873

a Small differences in data compared to previous annual reports reflect certificates forfeited after report release.

b The certificates that were revived in 2014 increased the cumulative surplus at the end of the 2014 calendar year (sees section 3.3 of NSW Energy Savings Scheme – Compliance and Operation in 2014 available on our website for further detail).

c As noted in section 2.2.4, this comprises 3,765,238 certificates surrendered by Scheme Participants to meet their regulatory obligations, and 1,524 certificates surrendered by Accredited Certificate Providers for compliance purposes

3 Compliance by Scheme Participants

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 that purchase electricity directly from the National Electricity Market. Scheme Participants have legislated obligations under the scheme (see Box 3.1). To assess each participant's compliance performance each year, we check whether it met these obligations, including meeting its individual energy savings target and submitting its Annual Energy Savings Statement (**AESS**) by the compliance date.

Box 3.1 Scheme Participant obligations

Scheme Participants' key compliance obligations include:

- Calculating their individual energy savings target for the year.
- Meeting their individual energy savings target by either obtaining and surrendering certificates, carrying forward an energy savings shortfall (within the 10% limit) to the next year, or paying an energy savings shortfall penalty.
- Lodging their AESS by the compliance date, and ensuring it is complete and correct, covering:
  - the Scheme Participant's calculation of its individual energy savings target
  - the particulars of its liable electricity acquisitions and any deductions in respect of exempt loads
  - the extent to which it met the target by surrendering certificates
  - any energy savings shortfall it is carrying forward, and
  - any penalty it is required to pay.
- Lodging an independent audit report of the AESS, if required.[a]

We assess each AESS by reviewing the data it contains (and any audit report), cross-checking certificate numbers with the ESS Registry, and undertaking a reasonableness check. Where an error or misstatement is identified, the Scheme Regulator may make an amendment. We advise Scheme Participants that the certificates they have offered for surrender have been accepted (or refused in certain cases) in the ESS Registry, and of any energy savings shortfall penalties they must pay.

a An audit is typically required if the AESS includes data about liable acquisitions from non-market sources or seeks exemptions for any electricity loads (see sections 3.2 and 3.4). The exempt person must provide details of their exempt load to the electricity retailer in order to claim the exemption.

3.1 Scheme Participants mostly continued to be compliant

During 2016, there were 62 Scheme Participants in the ESS (compared to 59 in 2015), including 58 retail electricity suppliers, three direct suppliers, and one market customer. All except two Scheme Participants met their obligations (Table 3.1).

Table 3.1 Scheme Participants' performance in 2016

Surrendered certificates to fully meet their individual energy savings target	34
Surrendered certificates to meet at least 90% of their target and carried forward a shortfall of no more than 10% of their target to 2017	6
Not required to surrender certificates as no direct purchases or sales of electricity were made	18
Elected to pay a penalty for the shortfall	2
Did not submit an AESS and did not surrender certificates	2
Total Scheme Participants	62

The Scheme Participants that did not meet their obligations were GoEnergy Pty Ltd (**GoEnergy**) and Urth Energy Pty Ltd (**Urth Energy**). GoEnergy went into voluntary administration at the beginning of 2016 and failed to submit an AESS or meet its individual energy savings target in both 2015 and 2016. Urth Energy went into voluntary administration at the beginning of 2017 and failed to submit an AESS or meet its individual energy savings target in 2016.

We made default assessments under clauses 33(1) and 33(2) of the Regulation and issued invoices for the energy savings shortfall penalties to the administrators of GoEnergy and Urth Energy, to whom we are an unsecured creditor.

Two Scheme Participants offered a higher number of certificates for surrender than their individual targets:

- Brookfield District Energy (GX) Pty Ltd offered 4,431 certificates for surrender, compared to its target of 4,413 certificates, and
- Next Business Energy Pty Ltd offered 7,010 certificates for surrender, compared to its target of 7,009 certificates.

For these Scheme Participants, we refused to accept for surrender the certificates offered in excess of their targets.

As section 1.1 discussed, the energy savings target for 2016 was equivalent to 3,794,614 certificates. Table 3.2 reconciles the certificates required to meet Scheme Participants' combined compliance obligation for 2016 with the certificates they offered for surrender (and we accepted). Table 3.3 summarises the compliance performance of individual Scheme Participants.

Table 3.2 Reconciliation of certificates required to meet combined compliance obligations and certificates surrendered

Certificates required to meet 2016 compliance obligations	**3,794,614**
Add: Certificates required to meet shortfalls carried forward from 2015	55,484
Less: Shortfall carried forward to 2017	(77,545)
Less: Certificate equivalent value of penalties to be paid in lieu of certificate surrender (Sanctuary Energy Pty Ltd and GoEnergy)	(7,315)
Add: Over-surrender *of* certificates not accepted for surrender by the Scheme Regulator	19
Total certificates surrendered	**3,765,257**

Table 3.3 Individual Scheme Participant compliance in 2016

Surrendered sufficient certificates to meet 2016 energy savings target	
1st Energy Pty Ltd	Momentum Energy Pty Limited
Alinta Energy Retail Sales Pty Ltd	Next Business Energy Pty Ltd
Blue NRG Pty Ltd	Origin Energy Electricity Limited
Click Energy Pty Ltd	Origin Uranquinty
Cogent Energy Pty Ltd	People Energy Pty Ltd
Cova U Pty Ltd	Pooled Energy Pty Ltd
COzero Energy Retail Pty Ltd	Powershop Australia Pty Ltd
Diamond Energy	Progressive Green Pty Ltd
EnergyAustralia Pty Ltd	Red Energy Pty Limited
EnergyAustralia Yallourn Pty Ltd	Sanctuary Energy Pty Ltd
Enova Energy Pty Ltd	Simply Energy
ERM Power Retail Pty Ltd	Stanwell Corporation Limited
Brookfield District Energy (GX) Pty Ltd	Sun Retail Pty Ltd
Infigen Energy Markets Pty Limited	Sunset Power International Pty Ltd (previously Delta Electricity up to 17 December 2016)[a]
Lumo Energy (NSW) Pty Ltd	Tomago Aluminium Company Pty Ltd
M2 Energy Pty Ltd	WINenergy Retail Pty Ltd
Macquarie Bank Limited	
Mojo Power Pty Ltd	
Surrendered certificates to meet part of 2016 energy savings target and chose to carry forward the remaining energy savings shortfall to 2017	
AGL Macquarie Pty Ltd[a]	AGL Sales (Queensland Electricity) Pty Ltd
AGL Sales Pty Limited	Powerdirect Pty Ltd
AGL South Australia Pty Ltd	QEnergy Pty Ltd
Did not directly purchase or sell electricity in NSW in 2016 so were not required to surrender certificates	
ActewAGL Retail Ltd	International Power (Retail) Pty Limited
Aurora Energy Pty Ltd	Locality Planning Energy Pty Ltd
Ausgrid	Metered Energy Holdings Pty Ltd
CS Energy	Neighbourhood Energy Pty Ltd
Delta Electricity (now Sunset Power International Pty Ltd) [a]	OC Energy Pty Ltd
EDL Retail Pty Ltd	OzGen Retail Pty Ltd
ElectrAg Pty Ltd	Pacific Hydro Retail Pty Ltd (t/as Tango Energy Pty Ltd)
Energy Locals Pty Ltd	Savant Energy Power Networks Pty Limited
Infigen Energy Holdings Pty Limited	Tilt Renewables Australia Pty Ltd (formerly TrustPower Australia Holdings Ltd)
Chose to pay an energy savings shortfall penalty against their 2016 energy savings target	
Online Power and Gas Pty Ltd	
SparQ Pty Ltd (t/as Sumo Power)	
Did not submit an annual energy savings statement[b]	
GoEnergy Pty Ltd	
Urth Energy Pty Ltd	

a A direct supplier of electricity.

b In voluntary administration.

3.2 Deductions for exempt loads were less than in 2015

Under Section 119 of the Act, the Minister can grant exemptions from the ESS for part of the electricity load used by entities in emissions-intensive and trade-exposed industries or activities.[29] The entities with an exemption are listed in a Ministerial Order published each year in the Government Gazette.[30,31] Scheme Participants that supply electricity to these entities are entitled to deduct the exempt portion of their sales when calculating their annual liable acquisitions, thereby reducing their individual energy savings target (in MWh).

During 2016, 23 entities claimed exemptions for 28 locations (all with 90% exemptions of the load). Various manufacturing activities are undertaken at these locations, including aluminium smelting, integrated iron and steel manufacturing, and the production of various chemicals, and glass and paper products.

Thirteen Scheme Participants supplied electricity to these entities at these locations. In total, the deductions they claimed for exempt loads represented approximately 17.6% of the total electricity supplied in NSW in 2016, compared to 23% in 2015 (the exempt loads totalled 16,953,435 MWh in 2015 and 11,581,724 MWh in 2016).

More information on the Ministerial Order and the Exemptions Rule is available on our website.[32]

3.3 Energy savings shortfalls were carried forward and some penalties were paid

A Scheme Participant with an energy savings shortfall in a given year can elect to carry forward at least some of this shortfall to the next year – up to a maximum of 10% of its individual energy savings target. Any shortfall carried forward must be met in the following compliance year.

In 2016, six Scheme Participants elected to carry forward a total obligation of 77,545 certificates to the 2017 compliance year. This represents around 2% of Scheme Participants' combined compliance obligation for 2016, similar to the proportion that was carried forward in 2015.

Additionally, two Scheme Participants, that each had a target of only one certificate, elected to pay an energy savings shortfall penalty (ie, they did not surrender any certificates).

29 These entities must provide details of their exempt load to the electricity retailer in order to claim the exemption. The retailer then deducts this proportion of the load from its annual liable electricity acquisitions, thereby reducing its individual energy savings target (in MWh). It is then a matter for the exempt party and the retailer to negotiate any adjustment to pass through costs.

30 The Ministerial Order lists each exempt entity (company or business name), the trade exposed activity it undertakes, the site where the activity takes place, and the proportion of the load that is exempt under the ESS (90% for all loads in 2016).

31 The amended Ministerial Order published on 18 December 2015 applied for the 2016 year. See NSW Government Gazette no. 115 of 2015 at *www.nsw.gov.au/gazette*.

32 See *www.ess.nsw.gov.au/Scheme_Participants*.

3.4 Almost all Scheme Participants complied with audit requirements

Scheme Participants are required to have their AESS audited where the statement includes either of the following data inputs:

- data relating to non-market purchases, or
- data relating to exempt electricity loads (ie, in relation to emissions-intensive trade-exposed exemptions).

In 2016, the AESSs of 32 Scheme Participants met the above criteria for an audit. Of these, 30 submitted audit reports with their AESS and two failed to submit an AESS or an audit report (GoEnergy and Urth Energy).

These audits were undertaken by members of the ESS Audit Services Panel in early 2017, prior to the compliance deadline of 30 April 2017, and verified that:

- inputs and arithmetical calculations were correct
- claims for exemptions for electricity sold to exempt parties were supported by appropriate evidence, and
- any energy savings shortfalls had been calculated correctly.

We were satisfied with the outcome of all audits of AESSs.

4 Compliance by Accredited Certificate Providers

Accredited Certificate Providers include all organisations accredited to create certificates from RESAs in NSW, and they have a range of legislated obligations (see Box 4.1). To maintain the integrity of the ESS, we actively manage their compliance with these obligations (see Box 4.2 and Chapter 5). To assess their performance, we monitor their compliance with their obligations and use independent third-party audits to verify the energy savings they claim. Where we detect non-compliance, we take action to bring Accredited Certificate Providers into compliance and ensure the integrity of energy savings certificates they create.

4.1 Most Accredited Certificate Providers complied with requirements

During all or part of 2016, there were 123 Accredited Certificate Providers in the ESS, holding 222 accreditations. Of these, 50 providers and 70 accreditations were active[33] and created certificates from energy saving activities at thousands of sites across NSW.[34]

Among most of these Accredited Certificate Providers, the level of compliance was good. There were 47 instances of non-compliance (see Table 4.1), and all significant instances of non-compliance were addressed.

The number of certificates we identified this year as being improperly created was 51,132, equivalent to 1.2% of all certificates created from 2016 activities. We have now recovered all but 1,633 of these certificates. These unrecovered certificates are equivalent to 0.04% of all certificates created from 2016 activities.

33 Inactive accreditations are those where the Accredited Certificate Provider is yet to commence implementations, or has ceased conducting implementations.

34 For comparison, 50 providers and 76 accreditations were active in 2015.

Box 4.1 Accredited Certificate Provider obligations

Accredited Certificate Providers' key obligations include complying with:

- the requirements of the Act, the Regulation and the ESS Rule, and
- the conditions of accreditation set out in their Accreditation Notices, such as engaging auditors to undertake the audits of their certificate creation and record keeping.

The Act also sets out a range of actions that constitute non-compliance with Accredited Certificate Provider obligations, and may result in apparent breach notices, or suspension or cancellation of accreditation. These include:

- improperly creating certificates (Section 133)
- contravening the conditions of accreditation (Section 138)
- obstructing the Scheme Administrator (Section 157)
- supplying false or misleading information (Section 158).

Box 4.2 How we manage Accredited Certificate Providers' compliance

When we accredit an organisation as an Accredited Certificate Provider with respect to a RESA, we impose audit and reporting requirements as part of the conditions of accreditation. We determine these requirements using a risk management approach and with reference to our Compliance and Performance Monitoring Strategy.[a]

We typically require post-registration audits (which occur after the certificates have been created). However, where we consider the risk of improper creation to be high, we may require pre-registration audits. These audits must be completed (with a satisfactory result) before the Accredited Certificate Provider can register (and trade) certificates.

We can also request the Accredited Certificate Provider to enter voluntarily into a set-aside deed to mitigate these risks. In general, the deed requires the Accredited Certificate Provider to:

- withhold from trade a portion of the certificates it creates[b] until an audit is completed, and
- surrender certificates that it has withheld from trade to address any improper creation identified by an audit.

In addition, we can require, by order, that an Accredited Certificate Provider surrender certificates.

Further, we can suspend the accreditation of an Accredited Certificate Provider. Typically, we would consider this approach when we have serious concerns about the activities and evidence of serious instances of non-compliance.

a See www.ess.nsw.gov.au/Audits_and_Compliance/Audit_and_compliance_guides

b Typically, the portion to be set-aside depends on the risk rating of the accreditation, and reduces to zero after three successive audits with no material error.

Table 4.1 Instances of non-compliance by Accredited Certificate Providers

Type of non-compliance	2011	2012	2013	2014	2015	2016
Improper creation of certificates (Section 133 of the Act)	14	21	45	50	39	36
Failure to meet record keeping requirements (Clause 46 of the Regulation)[a]	-	-	-	-	-	5
Failure to submit a report statement by required deadline (Section 138 of the Act)	15	19	14	57	N/A[b]	N/A[b]
Failure to engage an auditor by the required deadline (Section 138 of the Act)[c]	1	4	3	25	4	6
Failure to meet other Accreditation Notice conditions (Section 138 of the Act)	0	1	3	0	1	0
Total	**30**	**45**	**65**	**132**	**44**	**47**

a This is the first year that we have reported this category of non-compliance.

b The requirement to submit periodic reports was removed during 2015 due to the requirement to submit implementation data before applying for certificate registration.

c Where we notified an Accredited Certificate Provider that it had breached its conditions of accreditations by failing to engage an auditor by the required date.

4.2 Improper creation of certificates

The 36 instances of improper creation we identified in 2016 involved 51,132 certificates of various vintages (see Table 4.2). Ten instances were considered material,[35] and these accounted for more than 67% of the total number of improperly created certificates.

Table 4.2 Improper creation of certificates

Type of error and means of identification	Number of instances	Number of certificates improperly created
Material improper creation identified by audit	10	34,437
Non-material improper creation identified by audit	25	5,971
Improper creation identified by other means[a]	1	10,724
Total	**36**	**51,132**

a See section 4.2.3.

We took a range of actions to recover the improperly created certificates, and we have recovered all but 1,633 of these certificates.

4.2.1 Improper creation of certificates may occur for different reasons

As in previous years, we found a wide range of reasons for the improper creation of certificates. These included Accredited Certificate Providers:

- failing to meet the requirements of the method used to calculate the energy savings
- using incorrect data or factors in energy savings calculations

35 Material improper creation is improper creation that exceeds 5% of the certificates audited.

- making input, transcription or rounding errors in energy savings calculations
- lacking sufficient or consistent evidence to support certificate claims
- creating certificates before the project's implementation date
- not being nominated as the energy saver as at the implementation date
- creating certificates from projects that occurred before accreditation
- creating certificates from energy savings that were the result of a reduction in production or service levels
- creating certificates in relation to equipment that had not been accepted for use
- creating certificates of the incorrect vintage
- creating certificates more than six months after the end of the calendar year in which the energy savings occurred, and
- failing to obtain a net co-payment of at least $5 per MWh of energy savings from the purchaser of a lighting upgrade under the Commercial Lighting Energy Savings Formula.

In some instances, where certificates were created prior to equipment being accepted for use, the original certificates were voluntarily forfeited and new certificates were registered after the equipment was accepted.

4.2.2 Material instances of improper creation identified by audit

Through post-registration audits of Accredited Certificate Providers, we identified 10 material instances of improper creation involving 10 Accredited Certificate Providers (see Table 4.3 for more detail). This included two major instances under the Commercial Lighting Energy Savings Formula involving Demand Manager Pty Ltd and Carbon Reduction Institute Pty Ltd.

Both of these Accredited Certificate Providers contravened clause 9.4.1(e) of the ESS Rule. This rule requires the Accredited Certificate Provider to obtain a net co-payment of at least $5 per MWh of energy savings from the purchaser of the lighting upgrade.

The 10 instances resulted in the improper creation of 34,437 certificates. We asked each Accredited Certificate Provider to voluntarily forfeit the improperly created certificates and we recovered 95% or 32,804 of these certificates.

In comparison, in 2015 we identified 221,512 certificates (of various vintages) had been improperly created. We recovered, or have a binding agreement to recover, 87.6% or 193,950 of these certificates.

No material errors were identified during pre-registration audits undertaken in 2016.

Table 4.3 Material instances of improper certificate creation identified by post-registration audits

Accredited Certificate Provider	Accreditation	Number of improperly created certificates	Error rate (%)	Reason for error	Certificate forfeiture
Tomago Aluminium Company Pty Limited	Lighting Replacement Program	2,094	39.7	Insufficient evidence to support the calculated energy savings	Forfeited full amount
Demand Manager Pty Ltd	Commercial Lighting Aggregation Project	15,790	24.8	Did not meet minimum co-payment requirement, error calculating certificates	Forfeited full amount
Haron Robson Energy Pty Ltd	Commercial Lighting Energy Savings	2,230	11.7	Created certificates of incorrect vintage, error in energy savings calculations, over-registration of lamps	Forfeited 597 certificates
Boral Cement Limited	Cement Mill Grinding Aid	259	8.3	Error in energy savings calculations	Forfeited full amount
Robert F McMahon & Associates Pty Ltd	Energy Conservation Lighting Project	1,882	7.2	Did not meet minimum co-payment requirement, over-registration of lamps	Forfeited full amount
Carbon Reduction Institute Pty Ltd	CRI Commercial Lighting (551C)	6,854	6.98	Did not meet minimum co-payment requirement	Forfeited full amount
The Sigma Global Company Pty Ltd	SG0006 - PIAM Normalised Baseline	40	6.6	Error in energy savings calculations and mis-registration of certificates	Forfeited full amount
Knowledge Global Pty Ltd	Fitness First Efficiency Verification Program	471	6.3	Errors in energy savings calculations	Forfeited full amount
Greenmoola.com Pty Ltd	Greenmoola.com Rebate Program	278	6	Qualitative error categorising appliances resulting in erroneous energy savings calculations	Forfeited full amount
The Green Guys Group Pty Ltd	Commercial Lighting Replacement	4,539	5.29	Created certificates of incorrect vintage, breached creation limit of accreditation notice, did not meet eligibility requirements and made errors in energy savings calculations	Forfeited full amount
Total	**10**	**34,437**			

4.2.3 Some improper creation was identified through other means

In late 2016, we identified that one Accredited Certificate Provider, Boral Limited (**Boral**), had created 10,724 certificates for energy savings that occurred after the maximum period allowed under the relevant method elapsed.[36] The Scheme Administrator wrote to Boral regarding the validity of these certificates and Boral elected to forfeit all 10,724 certificates prior to its audit.

4.3 Failure to meet record keeping requirements

In 2016, we identified five instances where an Accredited Certificate Provider materially failed to keep records in accordance with the requirements set out in the Act, Regulation and its conditions of accreditation. In each instance we required the Accredited Certificate Provider to detail the steps it would undertake to rectify the issue and required that the changes made be assessed at the next audit.

In some instances we also imposed, through the Accredited Certificate Provider's conditions of accreditation, a stricter audit requirement including requiring pre-registration audits of proposed certificate creation.

4.4 Failure to engage an auditor by the required deadline

In 2016, there were six instances where we notified an Accredited Certificate Provider that it had breached its conditions of accreditations by failing to engage an auditor by the required date. In each instance, we requested that the Accredited Certificate Provider address the non-compliance.

In some instances we also imposed, through the Accredited Certificate Provider's conditions of accreditation, a stricter audit requirement including requiring pre-registration audits of proposed certificate creation.

4.5 Failure to meet other accreditation conditions

In 2016, we did not identify any instance where an Accredited Certificate Provider breached a condition of accreditation not related to non-compliances in Table 4.1.[37]

36 The certificates were created under the Project Impact Assessment Method, for which the maximum period allowed is 10 years after the Implementation Date.

37 The non-compliances identified in Table 4.1 are also breaches of an Accredited Certificate Provider's Accreditation Notice conditions.

5 Scheme administration

In our role as Scheme Administrator, we continued to improve the administration of the ESS, in addition to conducting the following core activities:

- assessing applications for accreditation as an Accredited Certificate Provider
- amending existing accreditations
- cancelling existing accreditations
- assessing applications to have emerging lighting technologies accepted for use in the ESS
- managing the membership of the Audit Services Panel
- conducting regular audits of Accredited Certificate Providers, and
- working with governments in other jurisdictions to align the ESS with other energy efficiency and emissions reduction schemes.

5.1 We made improvements to our systems and processes

During 2016, we undertook a range of actions towards our goal of continually improving the administration of the ESS and reducing non-compliance.

5.1.1 We further developed the ESS Portal

We continued to develop the ESS Portal (our primary administration system) to improve the efficiency of our administration of the ESS and our interactions with Accredited Certificate Providers. In particular, we:

- included gas savings as part of implementation data submission and reporting
- enabled Accredited Certificate Providers to upload large implementation data files such as the ones usually produced for the Sale of New Appliances Method
- improved the audit process workflow, and
- increased the reporting and data capturing capabilities for IPART staff.

We also decommissioned our old internal administration system, following transfer of functionality to the ESS Portal.

Further improvements to the ESS Portal will be completed in 2017. These include better compliance and performance management functions, increased reporting functionality, and improvements to dashboards for Accredited Certificate Providers and auditors.

5.1.2 We upgraded the ESS Registry to facilitate integration with other jurisdictions

During 2016, we upgraded the ESS Registry to allow for the creation of certificates for energy saving activities in other jurisdictions, in particular the ACT. The upgrade will also allow us to separately track and report such certificate creation when there are legislative arrangements in place for this to occur.

We are working with the ACT Government to allow the creation of certificates for activities in the ACT where the savings are calculated using ESS calculation methods.

5.1.3 We revised our compliance framework

We made several changes to the Compliance and Performance Monitoring Strategy in 2016 to adjust some of our requirements. In particular, we:

- included new requirements for the Home Energy Efficiency Retrofits Method, and
- updated our general process for adjusting volumetric audit limits to reward ongoing compliance.

In November 2016 we released a short consultation paper seeking feedback on our compliance framework, including the Compliance and Performance Monitoring Strategy.[38] This feedback is currently being reviewed and further amendments to the compliance framework are being considered.

5.1.4 We took steps to improve stakeholder understanding of ESS legislation and requirements

We continued to hold in-person and online workshops for potential Accredited Certificate Providers and auditors to help them understand the ESS requirements.

In 2016 we held 12 online workshops and one in-person auditor workshop with 144 participants across all sessions. We updated the content of our existing workshops and introduced two new online workshops to cover aspects not covered by the existing workshops.

In addition, we held an in-person stakeholder forum with 53 attendees. We hold these forums to improve the administration of the ESS, to discuss current issues, and assist us to be more efficient and effective.

Further information about our workshops and forums, and registration for all of our events, is available on our website.[39]

38 See *www.ess.nsw.gov.au/ESS_Notices_and_Updates/Updates/20163_Consultation_Compliance_Framework_Review.*
39 See *www.ess.nsw.gov.au/online_workshops*.

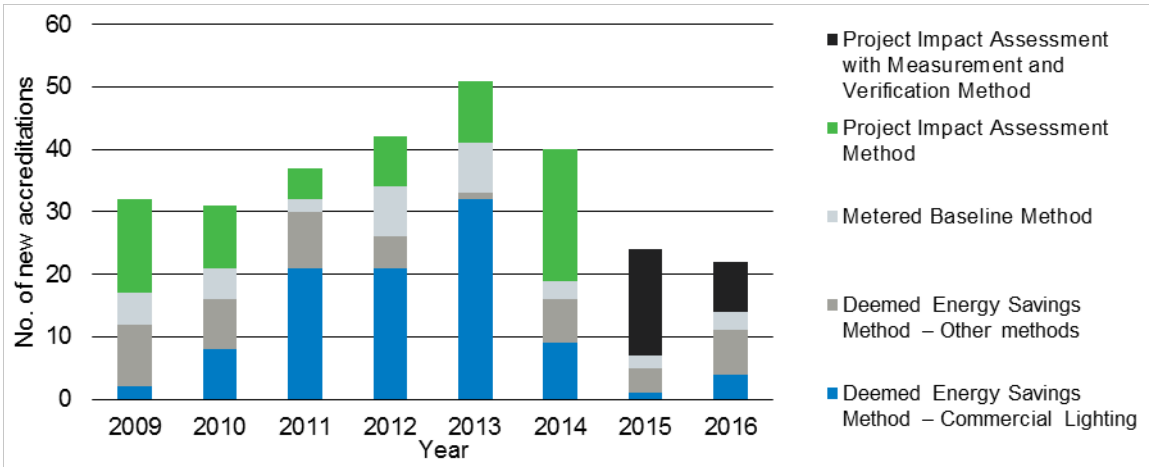
5.2 We granted a similar number of new accreditations to 2015

During 2016, we granted 22 new accreditations (compared to 24 in 2015) under various calculation methods (see Box 5.1). These included:

- Eight using the new Project Impact Assessment with Measurement and Verification Method. This method covers a broad range of activities that involve energy savings at commercial and industrial sites. It requires the development of complex energy models to accurately predict energy savings.
- Four using the Commercial Lighting Energy Savings Formula, which is a sub-method of the Deemed Energy Savings Method and involves replacing inefficient lights with more efficient lights. It is simple to apply, and makes use of deeming (claiming future energy savings) at the time of certificate creation.
- Seven using the other sub-methods of the Deemed Energy Savings Method. These methods cover activities such as the sale or installation of more energy efficient appliances, and power factor correction activities.
- Three using the Metered Baseline Method, which covers activities such as upgrades to heating, ventilation & air conditioning and building management systems.

In 2016, there was a shift in the calculation methods used in new accreditations – away from the Project Impact Assessment with Measurement and Verification Method back to the Deemed Energy Savings Methods (which included Installation of High Efficiency Appliances for Business and Home Energy Efficiency Retrofits) (see Figure 5.1).

Figure 5.1 New accreditations each year by calculation method



Our average time for processing applications for accreditation was 92 calendar days. This compares with 87 days in 2015, 72 days in 2014, 103 days in 2013 and 125 days in 2012.[40] The slight increase in the average processing time in 2016 was primarily due to the poor quality of some applications. It took more time to assess these applications and obtain the missing information. In response, we have modified the application forms and guidance

40 Processing times include days taken by the applicant to respond to requests for information.

documentation to make the requirements clearer. Further information about the application process is available on our website.[41]

Box 5.1 How do the calculation methods relate to energy saving activities?

The ESS Rule outlines how energy savings, and consequently certificates, are determined. It comprises four calculation methods, some of which include a number of sub-methods, which detail how energy savings are measured and calculated depending on the type of energy saving activity.

The **Deemed Energy Savings Method** provides a wide range of energy saving activities, many of which can be applied in the residential sector. These calculation methods deem that energy savings commence at implementation and continue into the future (see Box 2.1). Deemed methods are specific to the type of activity:

- **Sale of New Appliances** encourages retailers to sell energy efficient appliances over less efficient ones.
- **Commercial Lighting Energy Savings Formula** encompasses the replacement of inefficient lights with more efficient lights.
- **Public Lighting Energy Savings Formula** covers the upgrade of traffic signals, or lighting for roads and public spaces.
- **Power Factor Correction Energy Savings Formula** covers the installation of capacitors to more efficiently manage the power supply to commercial or industrial sites.
- **Removal of Old Appliances** encourages the removal and destruction of old inefficient fridges and freezers.
- **Home Energy Efficiency Retrofits** provides for activities that improve the energy efficiency in homes and small businesses.
- **Installation of High Efficiency Appliances for Business** covers the installation of energy efficient heating, cooling and refrigeration units.

The **Project Impact Assessment Method** calculates energy savings using an engineering assessment or modelling of the reduced electricity consumption of an activity. This method is restricted to persons accredited to use the method on or before 30 September 2014, as the new **Project Impact Assessment with Measurement and Verification Method** provides more rigour around the calculation of energy savings using modelling and measurement.

The **Metered Baseline Method** encompasses a range of sub-methods designed to achieve energy savings by measuring electricity or gas consumption before and after an activity is carried out. This includes the **NABERS Baseline** sub-method, which uses commercial buildings ratings from the National Australian Built Environment Rating System to measure improvements in energy efficiency. The **Aggregated Metered Baseline** sub-method provides for measured energy savings across a group of electricity or gas users using statistical techniques.

The number of accreditations reduced from 200 as at 31 December 2015 to 171 as at 31 December 2016 (see Table 5.1).[42] The largest reductions in existing accreditations during 2016 were under:

- the Commercial Lighting Energy Savings Formula, with existing accreditations reducing from 80 to 59, and

41 See *www.ess.nsw.gov.au/How_to_apply_for_accreditation*.
42 This was due to IPART granting 22 new accreditations and cancelling 51 existing accreditations.

- the Project Impact Assessment Method, with existing accreditations reducing from 50 to 38.

The number of accreditations under the Project Impact Assessment with Measurement and Verification Method increased from 17 to 25 during the same period.

Table 5.1 Change in number of accreditations by calculation sub-method during 2016

Method	As at 31 December 2015	As at 31 December 2016
Commercial Lighting Energy Savings Formula (DESM)	80	59
Project Impact Assessment Method	50	38
Project Impact Assessment with Measurement and Verification Method	17	25
Baseline Unaffected by Output (MBM)	10	9
NABERS Baseline (MBM)	11	7
Project Impact Assessment Method & Project Impact Assessment with Measurement and Verification Method[a]	5	6
Sale of New Appliances (DESM)	4	5
Baseline per Unit of Output (MBM)	4	5
Installation of High Efficiency Appliances for Business (DESM)	2	5
Normalised Baseline (MBM)	3	3
1-for-1 Residential Downlight Replacement (DESM)[b]	4	2
Home Energy Efficiency Retrofits (DESM)	0	2
Power Factor Correction Energy Savings Formula (DESM)	2	1
High Efficiency Motor Energy Savings Formula (DESM)	1	1
Removal of Old Appliances (DESM)	1	1
Baseline per Unit of Output (MBM), Baseline Unaffected by Output (MBM) & Normalised Baseline (MBM)[a]	0	1
Public Lighting Energy Savings Formula (DESM)	0	1
Default Savings Factors (DESM)	5	0
Default Savings Factors (DESM) & 1-for-1 Residential Downlight Replacement (DESM)[a]	1	0
Total	**200**	**171**

[a] These accreditations comprise more than one calculation method.

[b] The 1-for-1 Residential Downlight Replacement sub-method has been discontinued and replaced by another sub-method, and accreditations under this method are being cancelled or amended to the other sub method.

Note: DESM stands for Deemed Energy Savings Method, MBM stands for Metered Baseline Method.

Further information about Accredited Certificate Providers and their accreditations is available from the ESS Registry.[43]

43 See *www.ggas-registry.nsw.gov.au*.

5.3 We amended a similar number of accreditations to 2015

From time to time, we amend the conditions of accreditation imposed on Accredited Certificate Providers. During the 2016 calendar year, we approved 96 amendments to the conditions of existing accreditations.[44]

Most of the amendments were to:

- change the limit on the number of certificates that can be created between audits
- expand or change the description of the activity allowed
- reflect changed requirements resulting from amendments to the ESS Rule in 2015, or
- change the audit requirement or audit due date.

5.4 We cancelled a large number of accreditations

We cancelled 51 accreditations. This is an increase compared to previous years (19 in 2015, and nine in 2014 and 2013). The increase is primarily due to a new process started in 2015 to identify and manage accreditations that are either:

- inactive – such as when the Accredited Certificate Provider has ceased implementing energy saving activities, or
- ineligible to continue operating in the ESS – such as when the company has been wound up.

5.5 We accepted more emerging lighting technologies than in 2015

During 2016, we received 950 applications for acceptance of emerging lighting technologies (**ELT**) covering 2,399 products. We accepted 2,120 of these products for use in the scheme (which included 129 products previously approved under the VEET scheme).[45] This is an increase from the 1,068 products we accepted in 2015.

This took the total number of products we have accepted since 2011 to 3,930.

Our average time for processing ELT applications, which includes the time for an applicant to respond to requests for further information, was 35 days. This is an improvement on 2014 and 2015, when the average was 47 days and 41 days respectively.

Further information about applying for acceptance of ELTs is available on our website.[46]

44 This compares to 90 amendments in 2015.

45 We apply a streamlined application process for products that are already approved under the VEET scheme.

46 See www.ess.nsw.gov.au/Projects_and_equipment/Emerging_lighting_technologies.

5.6 Approvals for membership of the Audit Services Panel

During 2016, we appointed one new member firm to the Audit Services Panel, and approved three new lead auditors. We also removed one lead auditor. These changes increased the total number of members to 17 firms, with a total of 33 lead auditors.

We also approved the first seven auditors under our new specialist category for audits of Accredited Certificate Providers using the Project Impact Assessment with Measurement and Verification Method.

All audits must be undertaken by a member of our ESS Audit Services Panel, with IPART (either as Scheme Administrator or Scheme Regulator) as the principal client. Applications for panel membership may be made at any time. We assess applicants against specific selection and eligibility criteria to ensure that they have both the institutional capacity to support the audit process and lead auditors with demonstrated qualifications, skills and experience.

Further information about the Audit Services Panel, including a list of panel members, is available on our website.[47]

5.7 Number of audits of Accredited Certificate Providers similar to 2015

In 2016, the Audit Services Panel undertook 92 audits of Accredited Certificate Providers (compared to 83 audits in 2015), covering 62 accreditations, comprising:

- 66 post-registration audits
- 23 pre-registration audits, and
- three record keeping audits.

A post-registration audit occurs after the certificates have been created, and it examines whether the certificates have been validly created and are supported by appropriate records. A pre-registration audit involves the same procedures, but reduces risk as it occurs before the certificates are created. A record keeping audit examines whether the Accredited Certificate Provider's system and processes meet the ESS requirements, but does not examine certificate creation. Most post-registration and pre-registration audits also examine record keeping.

On average, these audits took 56 days to complete. This compares with 47 days in 2015 and 38 days in 2014. The increase in average processing time in 2016 was primarily due to our decision to expand the evidence requirements and scope of a number of specific audits. We took these actions after we detected potential and actual non-compliance, based on information provided to us by industry sources and audit findings.

47 See *www.ess.nsw.gov.au/For_Auditors*.

Box 5.2 Why and how we audit Accredited Certificate Providers

When we accredit an Accredited Certificate Provider to carry out a RESA, we impose audit requirements as part of the conditions of accreditation. Audits provide assurance that:

- certificates have been properly created and are supported by sufficient records, and
- the number of certificates created is accurate, based on valid information that is free from material misstatement.

These auditing functions maintain the integrity of certificates created under the ESS by ensuring that certificates are created in accordance with the Act, the Regulation, the ESS Rule and conditions of accreditation.

The timing and type of audits varies by accreditation depending on our risk assessment. For example, audits may be required on a **periodic** or **spot** basis, or on a **volumetric** basis (ie, when a threshold number of certificates has been created). If the risk is assessed as high, **pre-registration** audits may be required.

Pre-registration audits are conducted prior to certificates being registered on the ESS Registry. This reduces the likelihood of improper certificate creation, but requires the Accredited Certificate Provider to pay the audit costs before certificates can be registered and sold.

5.8 We approved the first eight Measurement and Verification Professionals

Accredited Certificate Providers approved to use the Project Impact Assessment with Measurement and Verification method must use an approved Measurement and Verification Professional to validate their use of the method to calculate energy savings. To be approved as a Measurement and Verification Professional, an applicant must submit an application to IPART. We publish a list of approved Measurement and Verification Professionals.

We assess applications against specific selection and eligibility criteria to ensure that the applicants have the relevant qualifications, skills and experience and a demonstrated understanding of the Project Impact Assessment with Measurement and Verification method requirements.

In 2016, we approved the first eight Measurement and Verification Professionals. Further information about the Measurement and Verification Professional approval process and the list of approved Measurement and Verification Professionals is available on our website.[48]

[48] See www.ess.nsw.gov.au/Methods_for_calculating_energy_savings/Project_Impact_Assessment_with_MV

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 relating to a Recognised Energy Saving Activity.
Act	The *Electricity Supply Act 1995,* which establishes the ESS.
Baseline	The level of energy consumption or energy intensity against which improvements are measured, and from which the calculation of Energy Savings Certificates is made.
Certificate Conversion Factor	The factor to be applied to convert energy savings in megawatt hours to a number of energy savings certificates. As specified in section 130 of the Act, the factor is 1.06 for electricity savings and 0.39 for gas savings.
Default Savings Factors	A default figure which may be used to calculate the number of Energy Savings Certificates 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.
Energy Saver	The person who has the right to create certificates for particular Energy Savings arising from an implementation of a RESA, as defined in the relevant calculation method of the ESS Rule.
Energy Savings	The calculated reduction in electricity consumption arising from implementation of a 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 has a value of one notional megawatt hour.
ESS Rule	The *Energy Savings Scheme Rule of 2009* made by the Minister for Resources, Energy and Utilities, and the Arts, sets out the primary eligibility requirements, calculation methods and arrangements for the creation of Energy Savings Certificates. It is amended from time to time.
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.

Term	Meaning
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.
Exempt Electricity Load	An Exempt Electricity Load is the load attributed to a person or class of person which has been granted exemption (90% from the scheme by the Minister, as specified in the Ministerial Order).
Implementation Date	The Implementation Date is generally the date on which the Energy Savings from the RESA commence and is defined for each calculation method in the ESS Rule.
Individual Energy Savings Target	The Individual Energy Savings Target is the value (in MWh) of energy savings that a Scheme Participant must meet each year. This target is determined by multiplying the Energy Savings Target for that year by the total liable acquisitions in that year and the certificate conversion factor.
Liable Acquisition	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	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 (90% under the ESS).
National Australian Built Environment Rating System (NABERS)	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. This method can be used for new or existing buildings.
Recognised Energy Saving Activity (RESA)	A specific activity implemented by an Energy Saver that increases the efficiency of energy consumption or reduces energy consumption without reducing production or service levels.
Regulation	The *Electricity Supply (General) Regulation 2014*.
Retail Supplier	A Scheme Participant under the Energy Savings Scheme. Includes all holders of an electricity retail licence for operation in NSW.
Scheme Administrator	The body responsible for administering functions such as accrediting Accredited Certificate Providers, verifying energy saving activities and maintaining a registry of certificates. The NSW Independent Pricing and Regulatory Tribunal (IPART) is the Scheme Administrator for the Energy Savings Scheme.

Term	Meaning
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).
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.
Victorian Energy Efficiency Target (VEET) scheme	Similar to the ESS, the VEET scheme is a Victorian Government initiative designed to make energy efficiency improvements more affordable, contribute to the reduction of greenhouse gases, and encourage investment, employment and innovation in industries that supply energy efficiency goods and services.