



Review of the Energy Savings Scheme

Position Paper

October 2015



MAKING IT HAPPEN

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Executive summary

The NSW Energy Savings Scheme (ESS) is NSW's premier energy efficiency program. The *Electricity Supply Act 1995* (the Act) places an obligation on electricity retailers and large electricity users to purchase an amount of energy savings each year, in the form of certificates. The Act also provides a framework for businesses to calculate energy savings and create certificates, which they can sell to electricity retailers to meet this obligation.

The Office of Environment and Heritage and the NSW Department of Industry have conducted a review of the ESS to examine how it could be enhanced.

This document summarises stakeholder feedback on proposed reforms to the ESS, and outlines the NSW Government's final positions on the proposed reforms.

Energy Savings Scheme Review Report package

In November 2014, the Minister for the Environment and Minister for Industry, Resources and Energy announced the NSW Government's intention to enhance the ESS including by expanding it to gas and extending it to 2025. This announcement also committed to consultation on additional reforms to the ESS in April 2015.

On 21 April 2015, the Minister for Industry, Resources and Energy and the Minister for the Environment jointly released the ESS Review Report Package for a four week public consultation period. The package included:

- an **Overview** which provided an executive summary of the ESS Review
- **Part 1: Draft Statutory Review Report** which examined ESS performance during its first five compliance years from 2009 to 2013, and considered whether the policy objectives of the ESS remain valid and whether the terms of Part 9 of the Act remain appropriate
- **Part 2: ESS Review Options Paper** which provided further details on how the NSW Government intends to implement the reforms announced in November 2014, and presented options on how the ESS could be enhanced to better meet its objectives.

On 6 May 2015, the Office of Environment and Heritage and the NSW Department of Industry held a public information session on the proposed reforms. This information session was attended by 149 stakeholders from 102 organisations.

The Office of Environment and Heritage and the NSW Department of Industry also held meetings with key stakeholder groups to answer any questions about the proposed reforms.

39 stakeholders made written submissions to the ESS Review. The submissions were from a diverse range of stakeholders, with the most submissions from energy efficiency service providers and energy retailers.

After careful consideration of stakeholder feedback, the NSW Government's final position on proposed reforms to the ESS is summarised below. The following sections of this paper contain detailed analysis of stakeholder feedback and the NSW Government response.

Expanding to gas

The NSW Government intends to expand the ESS to gas by:

- increasing the energy savings target on electricity sales (see below for target settings)
- making gas savings eligible to create energy savings certificates

- introducing a certificate conversion factor to value gas savings based on their primary energy equivalence to electricity.

Target, penalties and duration

Targets (preferred option with amendments)

The NSW Government intends to increase ESS targets on electricity sales to:

- 7.0 per cent in 2016
- 7.5 per cent in 2017
- 8.0 per cent in 2018
- 8.5 per cent from 2019 to 2025.

Upward pressure on energy bills due to the increase in targets will be addressed by using the Climate Change Fund.

Penalty rates (no change)

The NSW Government will retain penalty rates at their current level, noting there is a current oversupply of certificates.

If the legislative conditions to change penalty rates are met in future, the NSW Government will consider the preferred option to set penalty rates at the short term costs of avoided electricity generation including externalities. Based on the analysis in the ESS Review Options Paper, this would give a tax effective penalty rate of \$42 per megawatt hour.

Scheme duration (NSW Government position with amendments)

As set out in the ESS Review Options Paper, the NSW Government intends to extend the automatic termination of the ESS to 2025. The NSW Government will also:

- review the duration of the ESS in 2020
- limit the age of baselines used in energy savings calculations to 10 years.

The NSW Government will amend the preferred position to allow businesses to use the age of a current baseline older than 10 years as their baseline age limit if accredited before this reform commences.

Future approach to setting targets and penalty rates (preferred option with amendments)

The NSW Government intends to codify quantitative thresholds for the conditions set out in sections 105 and 114 of the Act to review ESS targets and penalty rates. The government will retain the requirement to provide a full calendar year of notice before a change in targets or penalty rates would take effect, in accordance with these provisions.

IPART, in its role as the scheme administrator, will report annually on whether there has been an under or over supply of certificates.

Sharing costs and benefits

Support for regional customers (NSW Government position)

As set out in the ESS Review Options Paper, the NSW Government will introduce a regional network factor of 1.03 for energy saved in the Essential Energy network area. The application of

the regional network factor will be based on the postcode of the site where the energy savings activity occurs.

Support for low income households (preferred option)

The NSW Government does not intend to amend the ESS to provide additional support for vulnerable households. The government intends to implement its preferred option to assist vulnerable low income households to undertake energy efficiency activities through a supplementary program which is complementary to the ESS. The government has committed \$26.8 million towards the Home Energy Action Program to target the barriers that prevent low income households from accessing energy savings.

Energy savings at peak times and locations (preferred option)

The NSW Government does not intend to amend the ESS to directly target savings at peak times. Instead, the government will work with industry stakeholders and network service providers to collect and publish information that could be used to value the benefit of energy efficiency programs in constrained network locations.

Treatment of emissions intensive sites (preferred option with amendments)

The NSW Government intends to proceed with the preferred option in the ESS Review Options Paper to streamline the exemptions process in the ESS.

Considering stakeholder feedback, the government will also make some small amendments to the treatment of exempt sites under the ESS. This includes removing the requirement that an exemption can only take effect in the beginning of the year after an exemption order is granted. Changes will also be made to harmonise the ESS with proposed changes to the Renewable Energy Target, and provide a standard 90 per cent exemption for emissions intensive and trade exposed activities (currently some activities have 90 percent exemptions, and some have 60 per cent exemptions).

Scheme administration

Letter of appointment to IPART (NSW Government position)

The NSW Government intends to clarify IPART's role as scheme administrator and regulator. This will include specifying responsibilities for IPART similar to those of the Clean Energy Regulator, and introducing key performance indicators.

Following stakeholder feedback, the NSW Government will also require IPART to publish service level standards. IPART will consult with industry and the government to establish key performance indicators and service level standards. IPART will also consult with industry and the government to review compliance and performance monitoring strategy and the role of IPART in auditing.

Compliance powers (preferred option with amendments)

The NSW Government intends to implement its preferred option, and enhance the compliance powers available to IPART to target poor performers, to require 'set aside' of certificates and to issue official warnings and penalty infringement notices. This will ensure IPART has the tools required to reflect those of a modern and responsive regulatory regime. The government will develop a schedule of penalty infringement offences and rates for penalty infringement notices for targeted stakeholder consultation.

In addition, the government intends to provide IPART with the power to issue cautions, and to amend the power for IPART to order the surrender of certificates under section 142 of the Act, to

allow this order to be made prior to court action. This will align these powers with those provided in the Victorian Energy Efficiency Target scheme.

Cost recovery fees (preferred option with amendments)

The NSW Government will increase existing administrative fees to recover the costs of services provided to businesses accessing financial incentives under the ESS. The government will adjust the following fees:

- increase certificate registration fees from \$0.70 to \$0.80 in 2016 and then index with the Consumer Price Index
- increase application fees for recognised energy savings activities from \$500 to \$2,500.

IPART will consult with stakeholders on an appropriate fee structure for product registrations.

Price transparency (preferred option)

The NSW Government will implement its preferred option to require IPART to report on trends in certificate spot prices in its annual report on the ESS, and include an estimate of the sales-weighted price paid by scheme participants for that compliance year.

The government will work with IPART to identify potential improvements to the certificate creation and trading information available on the ESS website, and examine opportunities to improve the accessibility and functionality of the ESS registry.

Continuous improvement

Evaluation framework (NSW Government position)

As set out in the ESS Review Options Paper, the NSW Government will develop an evaluation, monitoring and verification framework to provide the information required to continuously improve the ESS, maintain the accuracy of financial incentives and understand the costs and benefits of the ESS using Treasury's Energy Efficiency Cost Benefit Analysis Framework.

Regular reviews of the ESS Rule (NSW Government position)

As set out in the ESS Review Options Paper, the NSW Government will proceed with annual updates to the ESS Rule to update deemed savings factors and incorporate new products and practices, with a major review of the ESS Rule every three years.

Interaction with the Emissions Reduction Fund (NSW Government position)

The NSW Government intends to continue to work with the Australian Government to establish formal information sharing arrangements between the ESS and the ERF, to harmonise the energy efficiency methods in both schemes, and to prevent double counting of energy savings. The government will monitor the effect of the Emissions Reduction Fund until operations of the fund becomes settled.

Harmonisation with state based schemes

The NSW Government intends to expand the Minister's power to approve corresponding schemes under section 127 of the Act to enable a staged process to harmonising with other states. This would include allowing the accrediting and crediting functions of the ESS to be used in other jurisdictions, while preventing energy savings generated outside NSW from being used to meet ESS targets. This will enable the ESS to be expanded to other jurisdictions without costs to NSW energy users.

The Office of Environment and Heritage and the NSW Department of Industry will investigate how the crediting and accreditation functions of the ESS could be expanded to South Australia, the ACT, Tasmania and Queensland with the relevant departments in each state.

The Office of Environment and Heritage and the NSW Department of Industry will continue to investigate other opportunities to harmonise methods and product acceptance with the Victorian Department of Economic Development.

1 Introduction

This position paper summarises stakeholder feedback on the NSW Energy Savings Scheme (ESS) Review Options Paper. It provides analysis of issues raised and final positions on enhancements to the ESS.

The remainder of this section provides:

- an overview of the ESS
- background information on the ESS Review process to date
- an overview of the consultation process on the ESS Review Report Package and stakeholder feedback.

1.1 The NSW Energy Savings Scheme

The ESS is a market based mechanism known as a white certificate scheme. The ESS was established in 2009 under the *Electricity Supply Act 1995*. The primary objective of the ESS is to create a financial incentive to reduce the consumption of electricity by encouraging energy saving activities.

The ESS works by placing an obligation on NSW energy retailers and very large energy users, known as scheme participants, to purchase energy savings in the form of certificates each year. If a scheme participant does not purchase sufficient certificates to meet their target, they must pay a penalty.

The ESS provides a framework for accrediting businesses, calculating energy savings and crediting energy savings activities. Any person can apply to become an accredited certificate provider. The ESS has a range of calculation methods that can be used for energy savings activities in all sectors of the economy.

Accredited certificate providers create certificates and sell them to scheme participants. This enables accredited certificate providers to reduce the cost and increase the accessibility of energy savings activities. This financial incentive created by the ESS targets market barriers to energy efficiency including:

- information barriers: customers may lack information on how their choice of technologies and their pattern of electricity use actually relates to the size of their electricity bill
- transaction cost inefficiencies: for example, most energy users' bills represent only a small portion of their expenditures and it may not be worth their while to research and implement energy savings measures individually
- split incentives: for example where building owners would bear the cost of improving air conditioning or lighting, but are not motivated to do so because tenants will receive the benefits in lower future bills
- behavioural barriers: such as the failure to value energy savings over time when making initial capital purchases (often called "bounded rationality").

The ESS has been highly successful to date. The ESS has supported projects that will deliver around 12,000 gigawatt hours of electricity savings between 2009 and 2025. These electricity savings are estimated to deliver around \$1.7 billion in bill savings for NSW households and businesses over the next decade.

1.2 The Review of NSW Energy Savings Scheme

1.2.1 Terms of Reference

Section 175 of the *Electricity Supply Act 1995* (the Act) requires the Minister for Industry, Resources and Energy to review the operation of the ESS to determine whether the policy objectives of the ESS remain valid and whether the terms of Part 9 of the Act remain appropriate for securing those objectives.

Action 1 of the Energy Efficiency Action Plan¹ commits the NSW Government to review the ESS to identify how it could be enhanced, including:

- targets, penalties and scope to help meet the NSW annual energy savings target of 16,000 gigawatt hours (GWh) in 2020 above business as usual and drive sustainable industry growth
- ESS functions and capabilities to define roles and responsibilities to make the administration of the ESS more understandable, logical and transparent
- the state of the current energy efficiency market to identify pathways for market transformation.

1.2.2 Issues Paper

On 23 December 2013, the Office of Environment and Heritage and the NSW Department of Industry released an ESS Review Issues Paper.² The ESS Review Issues Paper raised issues across four broad themes:

- scheme performance: general issues with the ESS and its performance to date
- the energy efficiency market: explores issues around building a national market for energy efficiency and the ESS's role in transforming the products and services market
- roles and responsibilities: the parties involved in delivering the ESS and the roles that may be required to ensure the ESS is a success
- scheme design: ESS penalty rate and targets and the scope of these targets in terms of fuel coverage, exemptions, support of vulnerable low-income and regional households, and peak demand reduction.

The Office of Environment and Heritage and the NSW Department of Industry received a total of 39 written submissions. In February 2014, the agencies held a public forum that was attended by 245 stakeholders from 148 organisations.³

Stakeholder groups that made submissions to the ESS Review Issues Paper included energy retailers, distributors and generators, large energy users, industry bodies, community organisations, government bodies and energy efficiency product and service providers.

The Office of Environment and Heritage and the NSW Department of Industry considered written submissions and input from stakeholders at the public forum in developing an ESS Review Options Paper.

¹ NSW Government, August 2013, *NSW Energy Efficiency Action Plan*, accessed at www.environment.nsw.gov.au/resources/energyefficiencyindustry/130588-energy-efficiency-action-plan.pdf

² NSW Government, December 2013, *Review of the Energy Savings Scheme: Issues Paper*, accessed at www.resourcesandenergy.nsw.gov.au/_data/assets/pdf_file/0005/499658/ESS-Review-Issues-Paper.pdf

³ NSW Government, November 2014, *ESS Review Report – public consultation*, accessed at www.resourcesandenergy.nsw.gov.au/energy-consumers/sustainable-energy/efficiency/scheme/energy-saving-scheme-review

1.2.3 Information Paper

On 11 November 2014, the Minister for Industry, Resources and Energy and the Minister for the Environment announced initial enhancements to the ESS. The ministers announced that the NSW Government intends to enhance the ESS by:

- expanding the ESS to include gas
- extending the ESS to 2025
- introducing a regional network factor
- improving the administration and effectiveness of the ESS.

The NSW Government also announced that it would consult on the statutory review and further proposals to enhance the ESS in April 2015. These further proposals include:

- revising cost recovery fees for IPART's administration services to reduce budget dependence
- enhancing targets and penalty rates
- improving IPART's compliance powers as scheme administrator to enable better targeting of poor performers and reduce costs to business.

1.2.4 ESS Review Report Package

On 21 April 2015, the Minister for Industry, Resources and Energy and the Minister for the Environment released the ESS Review Report Package for a four week consultation period. This package included:

- an **Overview** which provided an executive summary of the ESS Review
- **Part 1: Draft Statutory Review Report** which examined the scheme's performance during its first five compliance years from 2009 to 2013, and considered whether the policy objectives of the ESS remain valid and whether the terms of Part 9 of the Act remain appropriate
- **Part 2: ESS Review Options Paper** which provided further details on how the NSW Government intends to implement the reforms announced in November 2014 and presented options on how the ESS could be enhanced to better meet its objectives.

The statutory review report was finalised in June 2015 after considering stakeholder feedback and was tabled in Parliament in August 2015.

1.3 Stakeholder consultation on the ESS Review Report

The four week consultation period included two main engagement activities: a public information session and a call for written submissions.

On 6 May 2015, the Office of Environment and Heritage and the NSW Department of Industry held a public forum that was attended by 149 stakeholders from 102 organisations. The purpose of the information session was to inform stakeholders about the proposed reforms to improve the quality and quantity of submissions.

A total of 39 stakeholders made written submissions to the ESS Review Report Package. **Figure 1** below shows a breakdown of the submissions by stakeholder category.

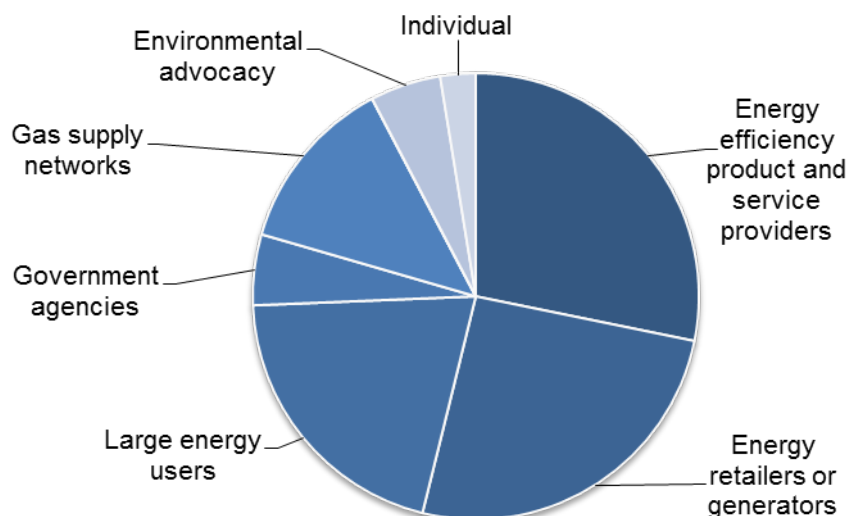


Figure 1 Breakdown of submission by stakeholder group

The two environmental advocacy groups that made submissions were highly supportive of the proposed reforms, in particular to the proposed increase in targets. They recommended higher targets than those proposed.

Submissions from energy efficiency service providers and their industry associations were highly supportive of the proposed reforms, and argued for further increases to targets. This sector was also generally supportive of additional compliance powers and cost recovery fees for IPART, as long as these reforms were accompanied by improvements in administrative services.

Submissions from energy retailers and their industry associations included a diversity of views on the ESS and the proposed reforms. Most energy retailers did not express a view on targets but emphasised the need to carefully consider impacts on consumers. Those submissions that did make recommendations on targets favoured smaller increases than proposed, or no change from current settings. Most energy retailers commented on how the ESS should be expanded to gas, with some supporting separate targets on gas and electricity retailers, and others supporting the government's preferred option of a single increased target for electricity retailers. Most energy retailers supported a common certificate for gas and electricity. Energy retailers also expressed a consistent preference to maintain current penalty rates.

Submissions from gas networks and suppliers and related industry associations primarily focussed on how the ESS could be expanded to gas. This stakeholder group was supportive of the preferred option to expand to gas by having a single target for electricity retailers. This group also argued for an alternative conversion factor to compare gas and electricity savings based on greenhouse gas emissions rather than primary energy.

Submissions from large energy users and their industry associations were all from sectors that receive exemptions under the ESS, and mostly from businesses that have accessed financial incentives from the ESS in the past. These submissions had a diversity of views on most of the proposed reforms, but were consistent in their support of the existing eligibility of exempt sites to access the ESS, and the need to maintain exemptions at or higher than their current levels.

IPART and the City of Sydney both made public submissions with very different views. IPART was not supportive of increasing targets or on the proposed new customer service and reporting functions. IPART recommended further analysis before expanding the ESS to gas. The City of Sydney was highly supportive of the proposed reforms and urged the NSW Government to increase targets further than proposed.

The submissions from all stakeholder groups were broadly supportive of the decision to extend the ESS to 2025, as well as the government's preferred options to support low income households, introduce a regional network factor, and retain current treatment of exempt sites.

2 Expanding to gas

In November 2014, the NSW Government announced that the ESS would be expanded to include gas. The ESS Review Options Paper presented options as to how the ESS could be expanded to include gas, including on the size and nature of the additional target, and certificate conversion factors.

Preferred option in the ESS Review Options Paper

Under the preferred option in the ESS Review Options Paper (Option 2), the existing obligation to purchase certificates on electricity sales would be increased. There would be no target on natural gas sales.

When combined with the preferred option in relation to increasing targets in the ESS Review Options Paper, this would mean that the existing obligation on electricity retailers and large electricity users would increase from 6.5 per cent to 8 per cent of liable electricity sales.

New conversion factors would allow gas savings activities to generate energy savings certificates. Incentives for gas efficiency would have a 'conversion factor' relative to electricity efficiency.

The ESS Rule would be amended to limit access to financial incentives for some fuel switching activities to mitigate the risks of increased peak demand.

Alternative options for consultation

Under the first alternative option (Option 1 in the ESS Review Options Paper) instead of increasing targets on electricity sales, a new obligation to purchase certificates would be placed on gas retailers and large energy users representing 6.5 per cent of their liable gas sales.

The existing exemptions for electricity use under the ESS for emissions intensive and trade exposed industry activities would be reviewed to account for high gas consuming industries falling within this category.

Under the second alternative option (Option 3 in the ESS Review Options Paper), a separate 'gas savings certificate' would be established. Gas retailers and large energy users would be required to purchase gas savings certificates equivalent to 6.5 per cent of natural gas sales. This alternative option has two key differences from the others:

- activities which involve replacing electricity powered equipment with gas powered equipment (and vice versa) would not be eligible for financial incentives
- certificates created from electricity savings would not be eligible to surrender against gas savings certificates.

2.1 Submissions

Around two thirds of all submissions welcomed the expansion of the ESS to gas. 40 per cent of all submissions supported the preferred option to place targets on electricity sales only, 13 per cent of all submissions supported a separate target on gas sales with a combined certificate, and 44 per cent did not state a preference.

The preferred option to place targets on electricity sales only was supported by gas networks, energy efficiency providers, some energy retailers and around half of large gas users. Most energy retailers and the other half of large gas users supported separate targets on gas and electricity sales. No submissions supported the alternative option to have a separate gas certificate scheme, and this option is not considered further in this analysis.

The most commonly cited issue raised about the mechanism for extending the ESS to gas was the relative cost to scheme participants of placing targets on electricity sales only, compared to a placings targets on gas and electricity sales. This was followed by issues associated with exemptions for large energy users. Comments on a certificate conversion factor for gas savings were split between support for a conversion factor based on primary energy, and support for an alternative certificate conversion factor based on greenhouse gas emissions.

Table 1 Summary of submissions on expanding to gas

Stakeholder group	Summary
Environmental advocacy groups	Total Environment Centre supported the expansion of the ESS to gas.
Energy efficiency product and service providers	<p>Energy efficiency product and service provider submissions generally supported the expansion to gas through increased targets for electricity only.</p> <p>Out Performers supported a certificate conversion factor relative to primary energy if it is reviewed every year. EECCA also recommended an annual update to the certificate conversion factor.</p> <p>Around half of these submissions made suggestions for new gas technologies to be made eligible for the ESS, including cogeneration and similar technologies.</p>
Energy retailers	<p>Some retailers noted their support for the government’s decision to expand the ESS to gas. This included ERM Business Energy who saw the expansion to gas as an opportunity to harmonise with Victoria, and Lumo Energy Australia and Red Energy who believed it would effectively minimise future gas shortfalls. Alinta Energy and ESAA stated that they did not support the NSW Government’s decision to expand the ESS to gas.</p> <p>Alinta Energy, ERAA, ERM Business Energy, Lumo Energy Australia and Red Energy believed expanding to gas may create greater cross subsidies between consumers that participate in the ESS, and those that do not.</p> <p>Most retailers that commented on gas supported separate targets on gas and electricity sales. Alinta Energy, Lumo Energy Australia and Red Energy expressed concern that a target on electricity sales only would create cross subsidies from electricity to gas customers.</p> <p>AGL, Origin Energy and Simply Energy did not indicate support for any option, although Origin Energy specifically did not support a separate gas certificate scheme.</p> <p>Energy Australia supported the preferred option to place targets on electricity sales only.</p> <p>Some submissions from energy retailers argued that because Victoria already places targets on gas sales, the administrative costs of targets on gas sales would not be as great as estimated and that it could lead to efficiencies for businesses operating across states.</p> <p>Lumo Energy Australia and Red Energy also suggested that the analysis underestimated the economic benefits of gas efficiency.</p>
Gas distributors	<p>All gas suppliers supported the preferred option to place targets on electricity sales only. Jemena, Gas Energy Australia and ENA expressed concern that other options would increase red tape and administrative costs associated with the ESS, reducing the net benefits of the program.</p> <p>These stakeholders all recommended a certificate conversion factor for gas savings based on greenhouse gas emissions.</p> <p>Gas Energy Australia and ENA recommended minimising the risk of fuel switching from gas to electricity as it may exacerbate peak demand issues.</p>

Stakeholder group	Summary
Large energy users	<p>Orora welcomed the expansion of the ESS to gas as it will “<i>further incentivise industry to improve overall energy efficiency beyond low hanging fruit</i>”. Orora, Norske Skog and Qenos also supported the preferred option to place targets on electricity sales only as it would avoid cost impacts on large gas users.</p> <p>Qenos estimated that, without exemption adjustments, targets on gas sales would increase ESS costs to Qenos from \$60,000 to \$1 million per year.</p> <p>CSR Limited argued that there were greater market forces than the ESS that will drive fuel switching to high efficiency electrical equipment.</p> <p>All recommended that large gas users and/or users of gas for feedstock be considered for exemption. Orora noted that gas used as chemical feedstock and electricity generation is already reported under the National Greenhouse and Energy Reporting Scheme.</p>
Government agencies	<p>IPART suggested that the preferred option to place targets on electricity sales only could create a cross-subsidy from electricity consumers bearing costs for gas consumers’ benefit.</p> <p>City of Sydney welcomed the expansion to gas, the certificate conversion factor and the opportunity for harmonisation, but also raised the issue of cross subsidies.</p>

2.2 Analysis of key issues raised

Stakeholders raised a number of issues around the differences between the preferred option to place targets on electricity sales only, and the alternative option of separate targets on gas and electricity sales. These issues included:

- the significance of administrative costs for scheme participants under either option
- administrative complexity of exemptions for large gas users under targets on gas sales
- retail gas price impacts of a target on gas sales
- potential cross subsidies from electricity users to gas users with a target on electricity sales only.

Other issues raised included:

- certificate conversion factors to compare gas and electricity savings
- eligibility of fuel switching and cogeneration technologies.

2.2.1 Administrative costs of separate targets on gas and electricity sales

The ESS Review Options Paper preferred placing targets on electricity sales only on the basis that this would avoid introducing a new obligation on scheme participants. A new target on gas sales would require scheme participants to establish new compliance, reporting and cost recovery systems to pass through the costs of new obligations to their customers. Analysis in the ESS Review Options Paper suggested that the additional costs could be over \$1 million (all else being equal).⁴

Some submissions that supported a target on electricity sales only were concerned about the additional administrative costs under a new target on gas sales.

“[A] mechanism which imposes a new target on gas retailers would increase the ESS’s ‘red tape,’ including its complexity and the administrative and compliance burdens placed on retailers and large gas users. In the case of retailers, these increased costs would ultimately flow through to higher end-retail gas prices.” (Jemena, a gas distributor)

⁴ A survey conducted on behalf of IPART found that in the first year of the ESS, the costs to scheme participants to establish systems were around \$5 per certificate.

However, submissions from energy retailers noted that the Victorian scheme already places targets on gas sales.

“Establishing and operating under an approach consistent with the Victorian scheme will be lower cost for scheme participants, and ultimately contribute to greater net benefits to consumers.” (ERAA, an industry association representing energy retailers)

Stakeholder feedback suggests that the ESS Review Options Paper may have overestimated the impact of administrative costs for scheme participants under a new target on gas sales. This is because the analysis did not consider that the opportunity to harmonise cost pass through systems with Victoria may lead to efficiencies that lower costs to scheme participants.

2.2.2 Administrative complexity of exemptions for large gas users

The ESS Review Options Paper outlined that, under a target on gas sales, exemptions would need to be granted to gas used to generate electricity or gas used as a chemical feedstock. The ESS Review Options Paper highlighted that determining these exemptions could be administratively complex. Under the preferred option for an electricity only target, large gas users would not have any liability, and so there would be no need to define and report on exemptions.

Several stakeholder submissions agreed that these activities should be given exemptions, and some identified an administratively simple way to identify the gas used for these activities.

“Orora also believed that facilities that consume gas as feedstock should also be exempt, as this gas is not used for energy creation. This information could easily be obtained through NGERS.” (Orora, a large energy user)

NSW Government has an information sharing agreement with the Australian Government to access National Greenhouse and Energy Reporting Scheme (NGERS) data, so this could make the administration of exemptions for these uses relatively simple. Reporting under NGERS is on a financial year basis, whereas compliance with the ESS is on a calendar year basis. This would introduce the need to estimate gas consumption for exempt activities across financial years.

This indicates that it may not be administratively complex to establish an exemptions regime for a target on gas sales.

2.2.3 Retail price impacts of a target on gas sales

One of the main differences between placing a target on electricity sales only and placing a target on both gas and electricity sales is the cost impact on retail gas prices.

“A new 6.5 per cent target on gas retailers and large energy users, without any changes to existing exemptions is estimated to cost \$1 [million] p.a. based on a [certificate price] of \$17.50.” (Qenos, a large energy user)

Table 2 below shows the forecast cost of the ESS on retail electricity and gas prices in 2019 for different customer types.

Table 2 Predicted ESS pass through cost on retail energy usage prices in 2019⁵

Customer type	Energy type	ESS pass through cost on retail prices in 2019	
		Targets on electricity sales only	Targets on gas and electricity sales
Small customer	Electricity	\$2.13 / MWh or 0.6% to 1.1%	\$1.75 / MWh or 0.5% to 0.9%

⁵ The percentages in **Table 2** represent the ESS costs as a proportion of a typical customer’s usage charges for electricity or gas. The percentage ranges represent the differences in retail prices within the customer type depending on their consumption and location in NSW.

Customer type	Energy type	ESS pass through cost on retail prices in 2019	
	Gas	n/a	\$0.18 / GJ or 0.5% to 0.9%
Large customer	Electricity	\$2.13 / MWh or 1.3% to 1.7%	\$1.75 / MWh or 1.0% to 1.4%
	Gas	n/a	\$0.18 / GJ or 0.8% to 1.3%
Emissions intensive and trade exposed	Electricity	\$0.21 / MWh or around 0.2%	\$0.18 / MWh or around 0.2%
	Gas	n/a	\$0.02 / GJ or 0.1% to 0.2%

Table 2 shows that if targets are on gas and electricity sales the ESS would contribute to an increase of between 0.5 per cent and 0.9 per cent to small customer retail gas prices. This impact would be higher for large customers because they pay lower retail gas prices.

Table 2 shows that placing targets on electricity only would require an additional cost of between 0.1 per cent and 0.3 per cent of retail prices compared to placing targets on both gas and electricity sales. This is significantly smaller than the relative impact on gas prices from placing a target on gas sales.

The ESS places a small charge on electricity bills. As **Table 3** below shows, this charge will be \$11.40 a year for the average NSW household in 2019. **Table 2** shows that the retail price impact of placing a new target on gas sales may be more significant than increasing the target on electricity sales.

There are also expected to be decreases in retail electricity prices in NSW due to recent determinations by the Australian Energy Regulator for NSW electricity transmission and distribution businesses.

2.2.4 Cross subsidies from electricity users to gas users

Most of the submissions that did not support a target on electricity only were concerned that this would result in a cross subsidy from electricity users to gas users.

“The NSW Government’s preferred option ... would require electricity customers to fund gas efficiency projects ... a customer’s contribution to the ESS through their electricity bill may not be proportional to the benefits they would be eligible to receive.” (ERM Business Energy, an energy retailer)

However, the ESS Review Options Paper indicates the potential for a cross subsidy from electricity users to gas users is likely to be minimal for two reasons.

First, NSW energy users that represent around 80 per cent of primary energy use, use electricity for at least 70 per cent of their primary energy needs.⁶ Therefore, the vast majority of gas users would still contribute to the ESS from the majority of their energy use and the potential cross subsidy is modest.

Second, the subsectors of the economy that rely on gas for the majority of their energy needs do not typically use gas for end use energy, but rather as a chemical input or for electricity generation. Because these subsectors do not use the gas for end use energy, they are more likely to have limited opportunities for gas savings. Therefore, there is minimal potential for a cross subsidy to these industries.

Submissions from major manufacturers and their peak bodies supported this analysis that there would be limited opportunities for large gas users to take advantage of any cross subsidy.

⁶ See page 62 of the ESS Review Options Paper. The term primary energy in this context is limited to electricity and natural gas.

The potential cross subsidy may be most pronounced in the residential sector, because a large proportion of households only use electricity to meet their energy needs. **Table 3** below shows the expected cost for the ESS on an annual household bill in 2019. It shows the costs depending on what sources of energy the household uses, and whether targets are applied on gas and electricity sales or on electricity sales only.

Table 3 ESS cost on household annual bill in 2019 by type of domestic energy supply⁷

Domestic energy supply	Proportion of NSW households	Annual energy bill in 2012	Annual cost on household energy bill in 2019 (based on 2012 usage)	
			Targets on electricity sales only	Targets on electricity and gas sales
Electricity only	39%	\$1664	\$12.65	\$10.40
Electricity and mains gas	38%	\$2184	\$9.85	\$11.95
Electricity, mains gas and other	2%	\$2704	\$14.80	\$15.85
Electricity and bottled gas	9%	\$2548	\$14.15	\$11.65
Electricity, bottled gas and other	4%	\$2132	\$13.10	\$10.80
Electricity and other	8%	\$2028	\$13.95	\$11.50
Average	n/a	\$2000	\$11.40	\$11.25

This analysis shows that the average NSW household that only uses electricity would be around \$2.25 better off a year if targets were placed on gas and electricity. The average NSW household that is connected to electricity and mains gas would be around \$2.10 better off if targets were on electricity only.

This analysis also shows that the average NSW household would pay less for the ESS if targets were on both gas and electricity. This is because the residential sector consumes a relatively smaller share of gas in NSW compared to the residential sector's share of electricity consumption.

Table 3 indicates that there is potential for a cross subsidy between households connected only to electricity and those connected to both electricity and mains gas. This does not mean that a cross subsidy will occur as households connected only to electricity will still have significant opportunities to access financial incentives from the ESS.

A cross subsidy would only occur if a household has greater access to the financial incentives from the ESS because it is connected to both electricity and mains gas. As most of the residential activities in the ESS Rule will save electricity rather than gas, this potential cross subsidy may not be significant. The NSW Government considers that the potential for cross subsidy of electricity users to gas users under the preferred option of placing a target on electricity only is relatively small.

As a whole, these reforms will mean that households will:

- have more opportunities to access financial incentives through the ESS than under current settings, with the potential for all households to access the ESS with the recommended increase in targets and extension to 2025

⁷ Based on the relative electricity and gas consumption of different NSW households in 2012 as estimated in Australian Bureau of Statistics, 2013, *4670.0 Household Energy Consumption Survey 2012*, Table 18 and Table 19, accessed at www.abs.gov.au/AUSSTATS/subscriber.nsf/log?openagent&hecs%20summary%20tables.xls&4670.0&Data%20Cubes&00F3F72A91F36DA8CA257BEF0013D143&0&2012&24.09.2013&Latest.

- benefit from the downward pressure the ESS places on energy prices through the estimated \$1.3 billion in additional avoided costs to the energy supply system compared to current settings even if they do not directly participate.⁸

In regional NSW, households will also benefit from the introduction of a regional network factor to recognise the additional three per cent value of energy saved in regional NSW.

2.2.5 Equity across sectors of the economy of a target on gas sales

Placing a new target on gas sales may increase the share of ESS costs carried by the industrial sector compared to the residential and commercial sectors, as industrial users consume relatively more gas for their primary energy needs.

Table 4 compares the share of costs that are expected to be passed through to different sectors, and the share of certificates that are expected to be created for energy savings activities in these sectors. The table shows different shares of costs depending on whether targets are on gas and electricity sales or on electricity sales only.

Table 4 Expected share of costs and financial incentives from 2016 to 2025 for different sectors

Sector	Predicted certificate creation (consistent whether targets are on gas sales or electricity sales)	Share of ESS costs	
		Final position Targets on electricity sales only	Alternative option Targets on gas and electricity sales
Household	47%	41%	39%
Commercial	33%	36%	33%
Industrial	20%	23%	28%

The analysis in **Table 4** shows that the predicted share of costs would be closer to the predicted share of financial incentives from the ESS if targets were on electricity sales only.

For example, the industrial sector is expected to benefit from 20 per cent of certificates. If targets are on electricity only, the industrial sector would be expected to contribute around 23 per cent of the costs of the ESS. But if targets are on gas and electricity sales, the industrial sector is expected to contribute around 28 per cent to the costs of the ESS.

The total additional regulated costs of certificates are expected to be around \$608 million in present value terms between 2015 and 2025. The analysis in **Table 4** suggests that industrial energy users would incur an additional \$30 million cost in present value terms if targets are placed on both electricity and gas sales.

This suggests that placing a new target on gas sales, rather than a target on electricity sales only, may create a larger cross-subsidy between sectors of the economy.

2.2.6 Conversion factor based on greenhouse gas emissions

Under a target on gas and electricity sales or a target on electricity sales only, there would be a single type of certificate which would be used to meet the target. Gas savings would require a certificate conversion factor so they could be compared to electricity savings.

⁸ Avoided costs estimate based on the final position to increase targets to 8.5 per cent in 2019.

⁹ The proportion of liable gas and electricity sales is based on assumptions about gas consumption at exempt sites and analysis energy consumption data published in Australian Government Bureau of Resource and Energy Economics, July 2014, *2014 Australian Energy Statistics Update*, accessed at www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Australian-energy-statistics.aspx#.

The preferred option in the ESS Review Options Paper is to use a certificate conversion factor for gas based on primary energy. This metric reflects the level of energy used over the supply chain to deliver the end use service, from production to end-use.

Most stakeholders that commented on the conversion factor supported a primary energy metric. However, submissions from gas suppliers and networks argued that a conversion factor based on greenhouse gas emissions (rather than primary energy) would be consistent with other schemes in Victoria, South Australia and the Emissions Reduction Fund, and facilitate greater harmonisation.

If the ESS used a certificate conversion factor based on emissions it would still not be consistent with these schemes. The Victorian Energy Efficiency Target uses a 'marginal emissions' factor, the South Australian Retailer Energy Efficiency Scheme uses a weighted factor that also considers retail prices, and the Emissions Reduction Fund uses average emissions across Eastern Australia.

Sensitivity analysis conducted by the Office of Environment and Heritage (see **Appendix B**) indicates that using a conversion factor based on greenhouse gas emissions would only save 3.5 petajoules of gas in 2020. This is less than the 5.2 petajoules of gas that is predicted to be saved if the certificate conversion factor is based on primary energy.

Gas savings earn less certificates under a certificate conversion factor based on greenhouse gas emissions (0.24 certificates per megawatt hour saved) than a primary energy conversion factor (0.39 certificates per megawatt hour saved). Electricity savings would be rewarded with the same conversion factor under either emissions or primary energy (1.06 certificates per megawatt hour saved).

This means that under a certificate conversion factor based on greenhouse gas emissions, there is a greater incentive to switch fuels from electricity to gas (which save electricity but increase gas use), and a smaller incentive to switch from gas to electricity (which save gas but increase electricity use).

“Orora does not support using the greenhouse gas emissions based conversion factor as this would discount the energy saving benefits of natural gas efficiency activities.” (Orora, a large energy user)

A certificate conversion factor based on greenhouse gas emissions has impacts on the equity of the ESS across sectors of the economy. **Table 5** below shows the anticipated share of costs and financial incentives depending on the certificate conversion factor.

Table 5 Expected share of costs and financial incentives for different sectors from 2016 to 2025 if using a greenhouse gas emissions (GHG) conversion factor

Sector	Certificate creation if a GHG conversion factor is used (consistent whether targets are on gas sales or electricity sales)	Share of ESS costs if a GHG conversion factor is used	
		Targets on electricity sales only	Targets on gas and electricity sales
Household	50%	41%	40%
Commercial	33%	36%	34%
Industrial	17%	23%	26%

A certificate conversion factor based on greenhouse gas emissions is expected to lead to the industrial sector receiving a lower share of certificates (from 20 per cent to 17 per cent), and the residential sector receiving a greater share of certificates (from 47 per cent to 50 per cent). This is because of projected uptake of more fuel switching activities in the residential sector (i.e. from electricity hot water to gas hot water), and fewer gas efficiency projects in the industrial sector.

This suggests that a certificate conversion factor based on greenhouse gas emissions may have a minor negative impact on the equity of the ESS across sectors of the economy.

Since the ESS Review Options Paper was prepared, the Australian Energy Market Operator released the 2015 *Gas Statement of Opportunities* (GSOO). The report stated that there is unlikely to be any shortfall in gas supply in NSW in the foreseeable future.¹⁰ This differs from the messages of the previous 2013 GSOO and 2014 GSOO May Update which forecast supply shortfalls in NSW of 3,500 TJ and 47 TJ, respectively, for 2019-2020.

“Assumptions around the forecast supply and demand for gas may have changed since the [ESS Review] Options Paper was developed, however this does not diminish the identified opportunities to improve gas efficiency.” (City of Sydney)

Sensitivity analysis conducted by the Office of Environment and Heritage found that if the certificate conversion factor was based on greenhouse gas emissions, the ESS would deliver an additional economic benefit of \$99 million for an additional cost of \$16 million in present value terms (compared to a primary energy conversion factor, see **Appendix B**).

The difference in benefits is because the ESS is predicted to facilitate more fuel switching from electricity to gas, and less fuel switching from gas to electricity (which may increase peak demand). The result is more electricity savings which is predicted to deliver a higher benefit to the economy.

The costs of the ESS with a certificate conversion factor based on emissions are different because the low cost opportunities to save gas in the industrial sector would create less certificates and would therefore require a higher certificate price. This results in an estimated increase in the certificate price from \$25.08 to \$25.67 per certificate.

This analysis suggests that a certificate conversion factor based on greenhouse gas emissions may enable the ESS to deliver a greater net economic benefit. However this is expected to come at a higher cost and would deliver financial incentives less equitably across the economy.

2.2.7 Cogeneration, waste heat recovery and similar technologies

Several stakeholders from different sectors recommended that cogeneration and other heat recovery technologies be eligible for financial incentives under the ESS.

“[U]tilisation of waste heat in industry is an important targeted solution to reduce grid energy consumption, particularly in the industrial sector.” (Energy Efficiency Council, an industry association representing energy efficiency service providers)

One of the main objectives of the ESS is to encourage energy savings activities. The ESS Rule already contains principles for including these technologies as recognised energy savings activities.

Under the ESS Rule, equipment that reduces energy consumption by recovering electricity is eligible to generate energy savings certificates as long as the recovered energy is used to provide the same end use service (i.e. the recovered energy must not be exported for another purpose). For example, processes involving heat recovery from an electric furnace are already eligible because they recover energy from a process fuelled by an eligible fuel (i.e. electricity), and use that energy to offset greater electricity use in the furnace.

Once the scheme is expanded to gas, processes that are fuelled by gas would also be eligible to generate energy savings certificates. This means that some cogeneration, waste heat recovery or similar energy recovery technologies would be eligible where they provide energy for the same end use service.

Gas Energy Australia also suggested including small-scale gas powered off-grid electricity generation projects as eligible activities under the ESS. This type of electricity generation is not

¹⁰ AEMO, April 2015, *Gas Statement of Opportunities for Eastern and South-Eastern Australia*, accessed at www.aemo.com.au/Gas/Planning/Gas-Statement-of-Opportunities.

considered an end use energy service, and so would not be consistent with the objectives of the ESS or eligible for financial incentives.

2.2.8 Fuel switching

The preferred option in the ESS Review Options Paper to expand the ESS to gas included limiting access to financial incentives in the ESS Rule for some fuel switching activities. This would mitigate the risks of increased peak demand which could be created by consumers switching fuels.

Around 10 per cent of submissions supported the approach in the preferred option of limiting access to financial incentives for fuel switching activities that could increase peak demand. No submissions offered additional eligibility criteria than those identified in the ESS Review Options Paper. However, Jemena argued that they may not be sufficient to limit impacts on peak demand.

The Energy Efficiency Council proposed limits to eligibility for fuel switching from electric boilers to gas boilers (storage hot water systems) because rising gas prices could erode any bill savings for consumers.

ENA noted that a report by consultants Oakley Greenwood found that the Victorian scheme had increased gas consumption as electrical systems were switched for gas systems, including 39 per cent of over 45,000 water heating installations.

“It should be noted that measures contained in the Victorian VEET program actually increased gas consumption by around 134 TJ between 2009 and 2012 as electrical systems were changed for gas-fired equipment.” (ENA, an industry association representing gas and electricity network businesses)

If retail gas prices were to increase significantly, off peak electric hot water may be a more cost effective solution for NSW energy users. However at this stage gas hot water appears to be more cost effective. The NSW Government will consider an amendment in the future should this situation change (e.g. the ESS Rule could restrict eligibility for incentives to those households without off peak electric hot water).

2.3 Summary

The ESS Review Options Paper outlined the NSW Government’s objectives to:

- assist households and businesses overcome barriers to gas efficiency and adapt to increases in domestic gas prices
- help delay any short term natural gas supply shortages
- encourage the most efficient use of energy
- enable greater harmonisation with other jurisdictions with energy efficiency schemes that include gas.

The analysis presented in the ESS Review Options Paper indicated that the preferred option to expand the ESS to gas by raising the targets on electricity sales and including a gas conversion factor best meets the objectives for government action. In particular, it would:

- retain more of the existing regulatory, compliance and reporting framework of the ESS than new targets on gas sales
- avoid administrative complexity for the scheme administrator and new scheme participants to establish new compliance, reporting and cost recovery systems if there were new targets on gas sales
- avoid the administrative complexity to define and report on exemptions for gas powered generation or gas used as a chemical feedstock if there were new targets on gas sales

- encourage a greater range of gas efficiency measures than a separate gas scheme
- allow for a more liquid certificate market than a separate gas scheme
- facilitate greater harmonisation with other jurisdictions (that is, South Australia, Victoria, the ACT and the Australian Emissions Reduction Fund) than a separate gas scheme
- provide a more equitable distribution of financial incentives across the NSW economy than a separate gas scheme with a separate gas savings certificate
- avoid additional costs on gas users at a time when their gas costs have already been increasing
- have a minor impact on electricity costs passed through to consumers compared to an electricity only scheme.

Submissions indicated that the administrative costs of placing targets on both electricity and gas sales may not be significant. Stakeholders highlighted that gas retailers have already established cost pass through mechanisms under the Victorian scheme, and that large energy users already have to report their usage of natural gas for electricity generation and chemical feedstock under the National Greenhouse and Energy Reporting Scheme.

Submissions that supported the preferred option for a target on electricity sales only were primarily concerned about additional administrative costs under targets on gas and electricity sales identified by the ESS Options Review Paper.

Other differences between placing targets on electricity sales only, and placing targets on both gas and electricity sales, are as follows:

- the cost impact of a potential cross subsidy from electricity users to gas users if targets are on electricity sales only
- the cost impact on gas consumers of placing targets gas and electricity targets.

The NSW Government considers that the potential for a cross subsidy from electricity users to gas users if targets are on electricity sales only is minor as most NSW energy users use electricity for most of their energy needs.

The predicted share of costs and financial incentives from the ESS is expected to be fairer across the residential, industrial and commercial sectors if the targets are on electricity sales only.

If targets were placed on both electricity and gas sales, this will result in a small price increase for all gas consumers. However, the expansion of exemptions for emissions intensive and trade exposed activities and other changes to the exemptions regime (see **Section 4.4**) would largely mitigate cost impacts on large gas users.

Placing targets on electricity only will avoid any impact on gas bills. The relative impact on electricity prices from the increased target on electricity will be significantly smaller than the relative impact on gas prices from placing a target on gas sales.

2.4 Final position

The NSW Government intends to:

- expand the ESS to gas by increasing the energy savings target on electricity sales only
- apply a primary energy certificate conversion factor for converting natural gas savings to certificates
- limit access to financial incentives for fuel switching activities in the ESS Rule to mitigate the risks of increased peak demand.

A target on electricity sales only will:

- avoid the need to establish new liable parties, exemptions and cost pass through mechanisms to consumers
- avoid any impact on retail gas prices and require only a modest increase in the price impact on retail electricity prices
- create the potential for a minor cross subsidy from electricity users to support gas users
- provide a fairer spread of costs and financial incentives across the residential, commercial and industrial sectors.

3 Targets, penalties, and duration

3.1 Targets

Preferred option in the ESS Review Options Paper

ESS targets would be set at a level so that the ESS would deliver the greatest net economic benefit. The net economic benefit is the net present value of the ESS to the NSW economy estimated in accordance with the NSW Government's energy efficiency policy cost benefit analysis framework (consistent with the NSW Government Guidelines for Economic Appraisal).¹¹ Analysis by the Office of Environment and Heritage indicates this target would be 6.5 per cent of liable electricity sales from 2016 to 2020.

3.1.1 Submissions

Over 80 per cent of submissions commented on the preferred option for ESS targets, with around half of these submissions supporting increases at, or above, the preferred option of 6.5 per cent of electricity sales from 2016 to 2020. Submissions supporting a target increase were mostly from energy efficiency service providers, environmental advocacy groups and large energy users, including Norske Skog and Orora. The remaining submissions from energy retailers and other large energy users were roughly split between those that did not express a view on the level of the target, and those that supported retaining the target at the current setting.

Table 6 Summary of submissions on targets

Stakeholder group	Summary
Environmental advocacy groups	The Total Environment Centre argued that energy efficiency was a key tool for reducing greenhouse gas emissions, and recommended a higher target of 10 per cent when the ESS is expanded to gas. The Total Environment Centre accepted that this may not maximise the net economic benefit of the ESS.
Energy efficiency service providers	Accredited certificate providers all welcomed an increase in targets, with many arguing that the target should be much higher. Many energy efficiency service providers noted that proposed targets in Victoria, the European Union and United States are the equivalent of a 10 to 15 per cent ESS target. These submissions argued that it is likely that the economic analysis has overestimated the costs of achieving targets, because it has not factored in the economies of scale of delivering energy savings activities. The Energy Efficiency Council suggested that the NSW Government examine the target that would deliver the highest net economic benefit for an ESS that includes gas, and is extended to 2025. EECCA argued that the ESS Review Options Paper did not consider the efficiency of alternative policies required to meet the NSW energy savings target. EECCA argued that given the cost effectiveness of the ESS compared to alternatives, a higher target may maximise the net economic benefit for all NSW energy efficiency programs. EECCA also requested that industry be able to provide input on the modelling of the NSW energy efficiency opportunity.

¹¹ NSW Government, 2007, *NSW Government Guidelines for Economic Appraisal (TPP07-5)*, accessed at www.treasury.nsw.gov.au/_data/assets/pdf_file/0016/7414/tpp07-5.pdf.

Stakeholder group	Summary
Energy retailers and generators	<p>Energy Australia and Origin Energy emphasised the need for certainty and did not express a view on options for targets. Energy Australia stated that it believed <i>“that certainty and a long term view towards target setting are crucial to enable consumers, retailers and certificate creators maximise the benefit they obtain from the scheme.”</i></p> <p>AGL had no position on the NSW Government’s preferred option, but did suggest that alternative policies to meet the NSW energy savings target should be examined.</p> <p>ERAA did not express a view on targets, but cautioned against change before the NSW Government had conducted further investigation into impacts on consumer bills.</p> <p>ERM Business Energy suggested a more graduated increase to targets over time to limit bill shock for consumers.</p> <p>Simply Energy argued that the ESS Review Options Paper had not adequately addressed the uncertainty of future energy prices, and suggested further sensitivity analysis on the costs and benefits of the ESS.</p> <p>Alinta Energy argued that barriers to households and small businesses accessing the ESS needed to be overcome before targets were increased.</p>
Large energy users	<p>Orora supported the preferred option to increase targets on the basis that the overall impact on energy users would be modest. Norske Skog supported the logic for setting the target at the point that it delivered the highest net economic benefit.</p> <p>AIGN, the Cement Industry Federation and the Cement Concrete and Aggregates Australia supported retaining current targets. These submissions stated that they preferred climate change policies to be set at a national level.</p>
Gas distributors and suppliers	<p>Gas networks including APA Group, Australian Gas Networks and ENA did not comment on target settings. However these submissions did emphasise the need to harmonise with the Victorian scheme and the Emissions Reduction Fund, to focus on greenhouse gas emissions reduction and to be agnostic across fuels.</p>
Government agencies	<p>IPART recommended that targets be left unchanged at 5 per cent to maximise the economic efficiency of the ESS. IPART also argued that the certificate oversupply had occurred when targets were lower, and that this should not be used to justify an increase in the target.</p> <p>City of Sydney argued that targets should be increased to as high as possible as long as the ESS delivers a net economic benefit. This would maximise bill savings for consumers who undertake energy efficiency activities.</p>

3.1.2 Analysis of key issues raised

Key issues raised by stakeholders include:

- a 6.5 per cent target may not maximise net economic benefit under an ESS that is expanded to gas and extended to 2025
- the importance of analysing the ESS in comparison to alternatives to meet the NSW energy savings target
- proposed NSW targets are lower than other states in Australia, the United States and European Union
- uncertainty about future energy prices and demand
- bill shock and impacts of changing targets on consumer prices.

Targets under an ESS that is expanded to gas and extended to 2025

Some stakeholders raised concerns that the preferred option in the ESS Review Options Paper to increase targets to 6.5 per cent was based on an economic analysis of an ESS that did not include gas and that terminated in 2020. The ESS Review Options Paper had considered expanding the ESS to include gas and extending the ESS to 2025 separately from increasing the ESS targets. The ESS Review Options Paper proposed increasing targets further to 8 per cent to accommodate

the inclusion of gas in the ESS. This 1.5 per cent increase was the equivalent of setting a 6.5 per cent target on gas sales.

“Separately modelling the size of the target, length of the target and inclusion of gas will have underestimated the benefits of a higher target. We recommend that [the] modelling team estimate the best target for a scheme that runs to 2025 and includes gas.” (Energy Efficiency Council, an industry association representing energy efficiency service providers)

In response to stakeholder feedback, the Office of Environment and Heritage has conducted further sensitivity analysis of various targets when the ESS is expanded to gas and extended to 2025 (See **Appendix B** for details).

Figure 2 below shows that once the ESS is expanded to gas and extended to 2025, the target that delivers the greatest net economic benefit (without the introduction of new or expanded complementary energy efficiency policies) is around 10 per cent.

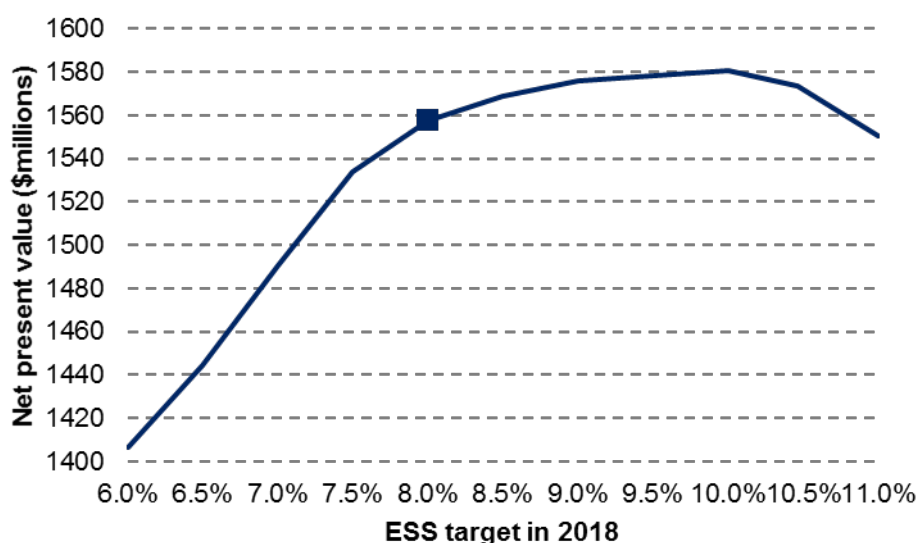


Figure 2 Net present value of the ESS under various targets when expanded to gas and extended to 2025 (preferred option for targets in the ESS Review Options Paper marked with square)

Economic efficiency of alternatives to meet the NSW energy savings target

Some stakeholders have argued that targets should be left unchanged to avoid decreasing the economic efficiency of the ESS. Other stakeholders have suggested that alternative options to meet the NSW energy savings target should be examined, with some arguing that higher targets may be more efficient than the alternative policies.

“Energy-saving activities should not be viewed in isolation from other types of energy efficiency. Appliance standards can drive comparable outcomes.” (AGL, an energy retailer)

“Setting a higher ESS target will facilitate the most efficient and cost effective energy efficiency activities which are likely to be more cost effective than the [alternative] measures to address the shortfall.” (EECCA, an industry association representing accredited certificate providers)

The Office of Environment and Heritage has identified and analysed indicative alternative energy efficiency policies to help meet NSW energy savings target (see **Appendix B** for more detail). These alternatives and the benefit cost ratio estimated are shown in **Table 7** below.

This analysis shows that the benefit cost ratio of the ESS when expanded to gas and extended to 2025 is one of the most efficient options to contribute to the NSW energy savings target. At a target

of 9 per cent, the benefit cost ratio of the reforms may be comparable with alternative policies to help meet this NSW target (see **Appendix B** for more detail).

This indicates that setting an ESS target of 8.5 per cent would make sure the ESS is more efficient at delivering energy savings than alternative policy options.

Table 7 Benefit cost ratios of the ESS and alternative policies to help meet NSW energy savings target

ESS and alternative energy efficiency policy options	Estimated range of benefit cost ratio
ESS target increase to 8.5 per cent in 2019 (final position)	2.3
ESS target increase to 8 per cent in 2018 (preferred option in Options Paper)	2.5
ESS target increase to 9 per cent in 2018	2.1
Increasing the scope and stringency of minimum standards for equipment	1.9 to 2.1
Increasing the stringency of minimum standards of residential buildings	1.6
Government programs that provide information to energy consumers	1.3 to 2.2
Government programs that support energy users to identify opportunities	0.8 to 2.2

Energy price and demand uncertainty

Several energy retailers argued that the target should not be increased because of the risk that the costs of the ESS would be higher than expected.

“The [cost benefit analysis] results are not a given, they are estimates based on assumptions and forecasts. As such there is no certainty that these outcomes will be achieved. This is why it is important to choose an option based not simply on the highest estimated net benefits, but also to minimise the risk that the outcomes are negative, i.e. costs exceed the estimates and benefits are lower than anticipated.” (ESAA, an industry association representing the electricity generators and upstream gas suppliers)

Submissions from the energy efficiency sector argued strongly that the costs of the ESS are likely to be lower than expected based on experience with the ESS and other similar schemes.

“There are numerous examples of modelling around ESS, and other similar Australia schemes such as VEET, substantially underestimating the energy efficiency market’s ability to initially deliver at a cost effective price and then continually reduce the costs of delivery through innovation, process efficiencies, improved marketing and sales activity and through the design and manufacture of appropriate products.” (EECCA, an industry association representing accredited certificate providers)

Certificate prices have been approximately 34 per cent lower than predicted in the supporting economic analysis for the 2009 Better Regulation Statement for the legislative enactment of the ESS.¹² There are major differences between the assumed energy demand and energy prices in this original analysis for the Better Regulation Statement, and the actual market environment since 2009.

This suggests that the main uncertainties with the estimates of the net economic benefit used in the cost benefit analysis of the proposed reforms are likely to be changes to energy prices and changes to energy demand. A number of stakeholders suggested that further sensitivity analysis be conducted to examine the impact of different energy prices and levels of energy demand in addition to those used in the cost benefit analysis.

¹² McLennan Maganisk Associated, 2009, *Benefits and Costs of an Energy Efficiency Program for the NSW Energy Sectors*, prepared for the Office of Environment and Heritage (unpublished).

The existing cost benefit analysis was based on the ‘medium’ scenario for demand and energy price developed by the Australian Energy Market Operator (AEMO) for their 2014 National Electricity Forecasting Report. In response to stakeholder feedback, the Office of Environment and Heritage conducted sensitivity analysis on AEMO’s other scenarios. These scenarios are:

- ‘high’ scenario where lower wholesale electricity and gas prices result in higher demand for electricity (referred to as low energy price / high energy demand)
- ‘low’ scenario where higher wholesale electricity and gas prices result in lower demand for electricity (referred to as high energy price / low energy demand).

These scenarios change the results of the cost benefit analysis for increasing targets under the ESS in two ways. Firstly, they impact on demand for certificates, because ESS targets are set as a percentage of electricity sales. Secondly, the scenarios impact the economic benefit of saving energy, as the avoided wholesale electricity generation delivers a different economic benefit.

To assess the full range of possible outcomes, the sensitivity analysis also used lower and higher estimates for benefits from deferred network investment, avoided air pollution and avoided carbon emissions (see **Appendix B**).

“Sensitivity modelling needs to be carried out on all externalities. In particular, the modelling ... underestimates the value of carbon mitigation, whether that value is set as a social cost of carbon or a likely future carbon price and health impact costs are at the lowest range of international estimates.” (Energy Efficiency Council, an industry association representing energy efficiency service providers)

In the ‘low energy price / high energy demand’ scenario, the ESS was predicted to require 4.0 million additional certificates, and more expensive energy savings activities to be undertaken to meet the preferred option for targets in the ESS Review Options Paper (8 per cent target in 2018).¹³ This was forecast to increase the certificate price by around \$5.45, and the regulated costs of the ESS by \$221 million in present value terms. Under this scenario, the economic benefit of the ESS decreases by around \$119 million in present value terms, because the lower energy prices outweigh the effect of the additional energy savings. The total net economic benefit was forecast to decrease from a net present value of \$1,558 million to \$1,218 million.

In the ‘high energy price / low energy demand’ scenario, the preferred option for targets in the ESS Review Options Paper was predicted to require 3.1 million fewer certificates and be met with lower cost energy savings activities. This was predicted to reduce the certificate price by around \$4.25, and decrease the cost of the ESS by \$150 million in present value terms. This effect was amplified by a higher economic benefit of \$411 million in present value terms from higher energy prices, which outweighs the effect of lower energy savings from lower quantities of certificates. The net economic benefit was forecast to increase from a net present value of \$1,558 million to \$2,119 million.

Figure 3 below shows the results of this sensitivity analysis for different target settings under an ESS that is expanded to gas and extended to 2025.

¹³ The final position is an 8.5 per cent target by 2019.

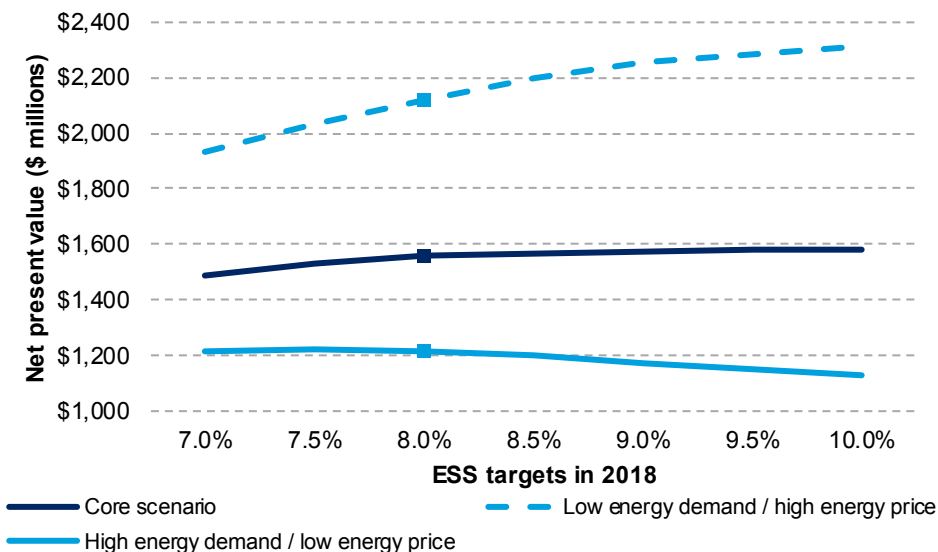


Figure 3 Net economic benefit of the ESS under recommended settings at various targets and scenarios for energy prices and energy demand (square shows the preferred option for targets in the ESS Review Options Paper)

The sensitivity analysis indicates the range of outcomes that could be expected from the ESS (if expanded to gas and extended to 2025) under various target settings and scenarios for energy prices and energy demand.

It shows that a much higher target (outside of the range tested) would be needed to maximise the net economic benefit under a ‘high energy price / low energy demand’ scenario, but that a slightly lower target around 7.5 per cent would maximise the net economic benefit under a ‘low energy price / high energy demand’ scenario. In all of these scenarios, the ESS is predicted to deliver a very significant net economic benefit to NSW.

This indicates that the recommended target of 8.5 per cent in 2019 is appropriate in a range of demand scenarios. The main risk is that if energy prices are higher and energy demand is lower, the target will be lower than optimal to achieve maximum net economic value.

Pace of increase in targets

Some energy retailers raised concerns about the rate of change in targets under the preferred option for targets in the ESS Review Options Paper.

“Increasing the ESS target from 5% of liable electricity sales in 2015 to 6.5% in 2016 represents a 30% increase in the annual ESS impost likely to be recovered through a customer’s electricity bill. We are concerned that this significant and sudden increase could lead to bill shock for customers.” (ERM Business Energy, an energy retailer)

The ESS is expected to have a cost pass through of around \$0.53 per megawatt hour on a small customer bill by 2019 without the reforms, or \$2.13 per megawatt hour with the proposed reforms.

Figure 4 below shows the historical pass through costs for the ESS, and those expected in the future under the proposed reforms. In 2012, a competitive pass through of ESS costs would have been around \$1 per megawatt hour. **Figure 4** shows that the proposed reforms could cause the cost pass through for the ESS to increase by \$1.10 per megawatt hour from 2012 levels by 2019.

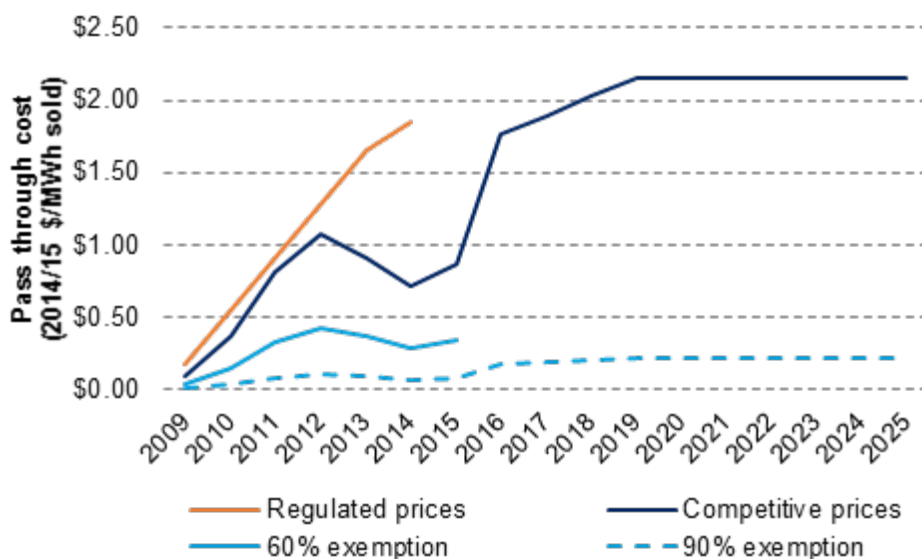


Figure 4 Historical pass through costs for the ESS and forecast costs under the final position for targets

In each year over the past 16 years, the average NSW wholesale price of electricity has increased or decreased by an average of \$8 per megawatt hour each year.¹⁴ Only one year saw a change under \$2 per megawatt hour. Network charges have changed even more significantly in recent years, with rapid increases in the 2009-2014 determination period and significant decreases in the 2014-19 determination period.

The Australian Energy Market Commission predicts that residential retail prices will reduce by \$27 per megawatt hour from 2014-15 to 2015-16 due to network prices, and then increase by \$5 per megawatt hour in 2016-17 due to changes in wholesale prices.¹⁵

This indicates that the change in pass through cost from the proposed ESS reforms is likely to be manageable within the full retail prices seen by energy consumers, and that it is highly unlikely that bill shock would occur from increasing ESS targets.

Impacts on consumer prices

Some industry associations representing large energy users argued that increasing targets would place a burden on consumers.

Most energy retailers recommended further analysis of impacts on energy prices.

“The ERAA cautions the NSW Government against implementing this material increase in the ESS target without careful considerations of the immediate impact on electricity prices.”
 (ERAA, an industry association representing energy retailers)

For households and other small customers, pass through costs in competitive retail offers under an enhanced ESS (8.5 per cent target in 2019, expanded to gas, extended to 2025) are expected to be around the same as in 2013-14 (when electricity prices were regulated). Because small customers are consuming less electricity in the past, the overall cost of the ESS per customer is expected to be lower than in 2013-14.

¹⁴ Based on figures for historical NSW average wholesale electricity prices published in Australian Energy Market Operator, 2015, *Average Price Tables*, accessed at www.aemo.com.au/Electricity/Data/Price-and-Demand/Average-Price-Tables/Average-Price-Tables-Annual.

¹⁵ Australian Energy Market Commission, December 2014, *2014 Residential Electricity Price Trends: Final Report*, prepared for COAG Energy Council, accessed at www.aemc.gov.au/getattachment/ae5d0665-7300-4a0d-b3b2-bd42d82cf737/2014-Residential-Electricity-Price-Trends-report.aspx.

A summary of impacts on retail prices is shown below in **Table 8**. It is worth noting that the proposed reforms to the ESS, including increasing targets, will deliver large bill savings to NSW households and businesses.

Table 8 ESS cost pass through as a proportion of usage charges in 2019 and net present value of bill savings under different scenarios

Parameter	Customer type	Current settings	Extending to 2025 with no increase to targets	Preferred option in ESS Review Options Paper	Final position
Average pass through cost and as a proportion of usage charges	Small customer	\$0.53 / MWh or 0.2% to 0.3%	\$0.61 / MWh or 0.2% to 0.3%	\$1.80 / MWh or 0.5% to 0.9%	\$2.13 / MWh or 0.6% to 1.1%
	Large customer	\$0.53 / MWh or 0.3% to 0.4%	\$0.61 / MWh or 0.4% to 0.5%	\$1.80 / MWh or 1.1% to 1.4%	\$2.13 / MWh or 1.3% to 1.7%
	Trade exposed	\$0.05 / MWh or under 0.1%	\$0.06 / MWh or under 0.1%	\$0.18 / MWh or around 0.2%	\$0.21 / MWh or around 0.2%
Bill savings between 2016 and 2040 (NPV)	All	\$2.1 billion	\$3.4 billion	\$5.3 billion	\$5.6 billion

The target for the Victorian scheme in 2014 was roughly 30 per cent larger than the ESS would be with an 8 per cent target in 2018.¹⁶ The AEMC reported that the Victorian scheme contributed \$2.1 per megawatt hour to residential retail electricity prices in 2013/14.¹⁷ This indicates the figures in **Table 8** above may be conservative and that impacts on retail prices could be lower than estimated.

Schemes like the ESS place downward pressure on future energy prices. Recent analysis conducted for the current review of Victorian scheme¹⁸ found that it would result in a small net increase in retail electricity prices of between \$0.1 and \$0.2 per megawatt hour in the short term from 2016 to 2020 but decrease electricity prices by around \$0.1 to \$0.2 per megawatt hour over the longer term to 2030.

3.1.3 Summary

The ESS Review Options Paper outlined the NSW Government's objectives to:

- help meet the NSW energy savings target
- deliver an equitable distribution of benefits including minimising impacts on consumer bills
- encourage sustainable growth and diversity in the energy efficiency industry.

The analysis presented in the ESS Review Options Paper indicated that the preferred option to set the target at 6.5 per cent best meets the objectives for government action. In particular it:

- would optimise the net economic benefit of the ESS
- would contribute 11 per cent of the remaining energy savings in 2020 required to help meet the NSW energy savings target
- is likely to lead to a fairer share of costs and benefits across the economy than current settings

¹⁶ Based on a target of 5.4 million certificates compared to a forecast demand for certificates of 4.1 million certificates under the ESS.

¹⁷ Australian Energy Market Commission, December 2014, *2014 Residential Electricity Price Trends: Final Report*, prepared for COAG Energy Council, accessed at www.aemc.gov.au/getattachment/ae5d0665-7300-4a0d-b3b2-bd42d82cf737/2014-Residential-Electricity-Price-Trends-report.aspx.

¹⁸ Jacobs, April 2015, *Energy Market Impact of the VEET Scheme*, prepared for the Victorian Department of Economic Development, accessed at www.energyandresources.vic.gov.au/_data/assets/word_doc/0004/218308/Appendix-C.docx.

- could give industry confidence to invest in delivering a more diverse range of energy efficiency activities and develop innovative energy efficiency solutions that would minimise impacts on customer bills.

Energy efficiency service providers and environmental advocacy groups were in favour of higher targets than those proposed. Around half of large energy users supported the proposed increases, while the other half argued that targets should be left unchanged. Most energy retailers did not express a view on targets but emphasised the need for long term certainty for all participants. Some of those energy retailers that did comment on targets recommended smaller or slower increases.

Subsequent analysis by the Office of Environment and Heritage indicated that a target of around 10 per cent (without the introduction of new or expanded complementary energy efficiency policies) would maximise the net economic benefit of the ESS once it includes gas and is extended to 2025. This analysis also showed that the ESS would remain more efficient than alternative energy efficiency policies up to a target of around 9 per cent. At a target of 9 per cent, the benefit cost ratio of the reforms may be comparable with alternative policies to help meet this NSW target. Sensitivity analysis has demonstrated that even if energy prices are lower than expected and energy demand is higher than expected, the ESS would deliver a large net economic benefit.

This indicates that setting an ESS target of 8.5 per cent would make sure the ESS is more efficient at delivering energy savings than alternative policy options.

3.1.4 Final position

The NSW Government intends to proceed to increase targets to maximise the net economic benefit of the ESS by increasing targets to 7 per cent in 2016, 7.5 per cent in 2017, 8 per cent in 2018 and 8.5 per cent from 2019 to 2025. This is consistent with the ESS Review Options Paper to 2018, and includes an additional small increase to 8.5 per cent from 2019 to 2025. This will enable the ESS to deliver greater benefits to consumers and the economy in the long term, while making sure the ESS is more efficient than alternative energy efficiency policies. This would deliver:

- an additional net economic benefit of \$853 million above current settings or \$463 million above an ESS that is extended to 2025 without an increase in targets
- an additional 524 gigawatt hours in 2020 towards the NSW energy savings target above current settings
- an additional \$3.4 billion in bill savings in present value terms above current settings, offsetting the \$608 million in additional short term regulated costs that would be passed through to consumers.

Upward pressure on energy bills due to the increase in targets will be addressed by using the Climate Change Fund.

Section 105 of the Act provides the legislative framework for future target reviews. This reduces the risk that targets have been set too low or too high.

3.2 Penalty rates

Preferred option in the ESS Review Options Paper

The ESS penalty rate would be increased to the tax effective equivalent of \$42 to reflect the avoidable costs in the short term (in economic terms known as the Short Run Marginal Cost) of energy supply.

Short Run Marginal Cost is the cost of increasing energy supply in the short term period where capital costs and fixed operating costs, such as building power stations and networks, are fixed. This approach would not rely on forecasting future technology costs and demand.

The inputs to calculate the short term cost of energy supply for this review used the following variables:

- fuel costs of power stations estimated to be \$15.40 per MWh in 2016¹⁹
- variable operating and maintenance costs of power stations estimated to be \$2.70 per MWh in 2016¹⁹
- line losses estimated to be an average of 6 per cent or \$2.40 per MWh saved in 2016²⁰
- the cost of carbon based on the price of future derivatives for European Emission Allowance Unit of \$8.60 per tCO₂e in 2016 or around \$7.40 per MWh in 2016²¹
- the health impacts of air pollutants (NO_x, SO_x and PM₁₀) estimated to be \$14.40 per MWh in 2016.²²

3.2.1 Submissions

Around half of submissions commented on penalty rates, mostly energy efficiency service providers and energy retailers. Stakeholder feedback was closely split between the preferred option which was supported by energy efficiency providers (17 per cent) and retaining the existing penalty rate, which was preferred by retailers and large energy users (14 per cent).

The most commonly cited issue with the preferred option was that there was no immediate need for increasing penalty rates, and that increased penalty rates could be passed through from retailers to consumer bills.

¹⁹ Analysis by the Office of Environment and Heritage based on a capacity weighted average of forecast electricity generation published in Australian Energy Market Operator, 2013, *National Transmission Network Development Plan: Zero Carbon Price Scenario Model Results* (Microsoft Excel workbook), accessed at www.aemo.com.au/Electricity/Planning/~media/Files/Electricity/Planning/Reports/NTNDP/2013/2013%20NTNDP%20zero%20carbon%20price%20scenario%20modelling%20results.xlsx.ashx.

²⁰ Australian Energy Market Operator, 2014, *Distribution Network Loss Factors for the 2014/15 Financial Year*, accessed at www.aemo.com.au/Electricity/Market-Operations/Loss-Factors-and-Regional-Boundaries/~media/Files/Other/loss%20factors/DLF_FINAL_V2_2014_2015.ashx.

²¹ Independent Economics and Frontier Economics, 2014, *Economic and Energy Market Forecasts*, prepared for the Australian Energy Market Operator, accessed at www.aemo.com.au/Electricity/Planning/Forecasting/National-Electricity-Forecasting-Report.

²² Based on the approach to quantify health impacts from coal fired power stations developed in Australian Academy of Technology, Science and Engineering, 2009, *Hidden Costs of Electricity: Externalities of Power Generation in Australia*, accessed at www.atse.org.au/Documents/Publications/Reports/Energy/ATSE%20Hidden%20Costs%20Electricity%202009.pdf.

Table 9 Summary of submissions on penalty rates

Stakeholder group	Summary
Energy efficiency service providers	<p>Half of all submissions from energy efficiency service providers supported the preferred option. Three submissions, including EECCA, believed future reviews should set penalty prices in line with the long run marginal costs of increasing energy supply (\$125 per megawatt hour).</p> <p>Opower supports penalty price increases only if they are “<i>accompanied with a system to ensure that electricity retailers only pass-on the actual cost of ESS compliance to their customers, rather than the full penalty rate equivalent as happened in the past.</i>”</p> <p>Out Performers supported the preferred option if electricity retailers were only allowed to pass through the actual cost of ESS compliance to their customers, rather than the full penalty rate.</p>
Energy retailers and generators	<p>Submissions from energy retailers and their industry associations objected to increasing penalty rates, either because certificate prices were well below penalty rates, or because retailers would pass through the maximum penalty price to consumers.</p> <p>Alinta agreed that penalty rates are important caps on prices, but argued that there is no rationale for increasing the penalty rates, because there is no evidence that certificate creation is being discouraged.</p> <p>AGL also suggested an alternative penalty rate could be the market value of the certificates, plus an incorporated penalty percentage.</p> <p>ERM Business Energy believes the penalty rate should be set with consideration for the maximum acceptable cost that consumers are willing to pay to access the benefits of the ESS.</p>
Large energy users	<p>Orora supported the preferred option and noted that a sensible increase in the penalty rate should further encourage participation in the ESS. CSR Limited suggested that “<i>having a rationale for penalties linked to the market provides a transparent basis for the market.</i>”</p> <p>AIGN supported retaining the current to penalty rates. No other large energy users commented.</p>
Government agencies	<p>City of Sydney supported increases to penalty rates to reflect the value of energy savings to the NSW economy (the preferred option).</p> <p>IPART supported retaining current penalty rates because a higher penalty appears to result in lower net benefits. IPART also suggested that lower penalty rates should be examined.</p>

3.2.2 Analysis of key issues raised

Key issues raised by stakeholders include:

- the need to increase penalty rates when certificate prices are expected to be well below existing penalty rates
- cost impacts from increasing penalty rates on consumers
- linking penalty rates to certificate prices or consumer willingness to pay
- benefits of lower penalty rates.

No need to change to penalty prices

Stakeholder feedback has correctly highlighted that there is currently an oversupply of certificates, resulting in certificate prices being consistently below penalty rates. Stakeholders also highlighted that the preferred options for targets were not predicted to require high certificate prices.

“Alinta considers, however, that the current penalty rate of \$37 is appropriate ... especially given that this penalty rate does not appear to be discouraging the creation of certificates under the scheme.” (Alinta, an energy retailer and electricity generator)

Pass through costs to consumers and penalty rates

Some submissions from retailers argued that they may pass on the full penalty rate for certificates to manage certificate price risk. This means an increase in penalty rates would impact on consumer prices.

“It should not be assumed that retailers do not consider penalty rates when assessing the potential cost of [certificates] procurement during a compliance year. Increasing the penalty rate increases the potential maximum price that a scheme participant may face to procure [certificates] to acquit its liability.” (ERAA, an industry association representing energy retailers)

Retailers can effectively manage certificate price risk by entering forward contracts with accredited certificate providers. This would provide both parties with certainty and reduce volatility in certificate prices. A competitive retail market should encourage energy retailers to pass through the actual cost of the ESS, not the penalty rate.

However, where energy retailers enter multiyear contracts with commercial and industrial customers this may not be possible. In these situations, penalty rates may have some influence on pass through costs.

Alternative principles for setting penalty rates

Submissions from energy retailers have argued that a penalty rate should be set based on certificate prices, or consumer willingness to pay for the benefits of the ESS.

“Alternatively, the market value of the certificates, plus an incorporated penalty percentage, is a sound way to set the penalty rate.” (AGL, an energy retailer and electricity generator)

“ERM Business Energy believes the penalty rate should be set with consideration for the maximum acceptable cost that consumers are willing to pay to access the benefits of the ESS.” (ERM Business Energy, an energy retailer)

It is unclear how consumers’ willingness to pay for the ESS would be identified. A penalty rate based on certificate prices would not necessarily cap the cost of the ESS as certificate prices fluctuate over time.

IPART has argued that the benefits of lower penalty rates to the economic efficiency of the ESS should also be examined.

“IPART recommends that the penalty be retained at its current level (indexed to inflation) until further analysis is undertaken. This analysis should include a scenario that lowers the penalty, which could yield a higher net benefit.” (IPART, the scheme administrator and scheme regulator)

The price of certificates will approach the penalty rate when there is an undersupply of certificates. In 2011, when there was a shortage of certificates, certificate prices came within around \$4 of the penalty rate. If the penalty rate had been higher, it is likely that certificate prices would also have been higher. Higher prices would have led to greater impacts on consumers, but not necessarily faster or greater investment in capacity to deliver energy savings.

A lower penalty rate could limit certificate price volatility as there would be a smaller range of potential prices. However, this could also limit the range of cost effective energy efficiency activities that could be supported by the ESS. It could also dampen the price signal to invest in capacity to deliver energy efficiency products and services if there is an undersupply of certificates.

A penalty rate could be developed based on economic analysis under target settings. For example, the preferred option in the ESS Review Options Paper for targets (8 per cent in 2018), expanding

to gas and extending ESS duration was expected to require an average certificate price of \$22.55.²³ Sensitivity analysis of scenarios for energy demand and energy prices (see **Section 3.1.2** above) found that certificate prices may need to be \$27.95 if there is higher energy demand and lower energy prices than expected. A penalty rate could be set based on this amount plus a buffer to ensure energy retailers purchase certificates.

However, this would not meet the NSW Government's objective of providing a transparent method for setting penalty rates as this relies on access to commercial in confidence data that cannot be published without significant effort and resources. Information on the estimated energy efficiency opportunities may be difficult to report publicly which may limit transparency.

A method based on this economic analysis would estimate certificate price as an average over the duration of the ESS. This would not take into account price fluctuations, and so would increase the risk that the ESS does not provide a sufficient price signal to meet targets in any given year. This approach would assume that all activity can be conducted at, or below, the average price of certificates.

3.2.3 Summary

The ESS Review Options Paper outlined the NSW Government's objectives to:

- establish a transparent method for setting the ESS penalty rate
- ensure the penalty rate is set above the marginal price of energy efficiency required to maximise economic benefits
- ensure the penalty rate acts as a safety valve to ensure the ESS delivers a net economic benefit.

The analysis presented in the ESS Review Options Paper indicated that the preferred option best meets the objectives for government action. In particular it:

- could be based on publicly available data, making it transparent and easy to communicate the rationale and method for setting the ESS penalty rate
- enables the optimal net economic benefit of the ESS to be realised
- ensures the ESS continues to deliver net economic benefits even if the market behaves differently from forecasts.

60 per cent of submissions commenting on penalty rates did not support the preferred option. Stakeholders argued that there is no immediate need to increase penalty prices. Some stakeholders recommended further analysis on penalty rates based on consumer willingness to pay or the amount required to ensure energy retailers purchase certificates rather than pay penalty rates.

Certificate prices in the ESS have been well below the penalty rate to date, and are not forecast to rise beyond the tax effective penalty rate under the recommended changes to targets. This indicates that there is no immediate need to change penalty rates.

The Minister for Industry, Resources and Energy has the power under section 114 of the Act to adjust penalty rates in the future if the legislated conditions are met. However, the case for action to establish a principle for transparently setting penalty rates is still valid. The alternatives suggested by stakeholders do not allow penalty rates to be set transparently and may not provide a sufficient price signal if there is an undersupply of certificates.

²³ The final position is an 8.5 per cent target by 2019.

3.2.4 Final position

The NSW Government will retain penalty rates at their current level, noting there is a current oversupply of certificates.

If the legislative conditions to change penalty rates are met in future, the NSW Government will consider the preferred option to set penalty rates at the short term costs of avoided electricity generation including externalities. Based on the analysis in the ESS Review Options Paper, this would give a tax effective penalty rate of \$42 per megawatt hour.

3.3 Scheme duration

Preferred option in the ESS Review Options Paper

The NSW Government intends to extend the duration of the ESS to 2025. However, there are two further issues for consultation.

The first is the timing of when the NSW Government would review the duration of the ESS again. The preferred option is to review the duration of the ESS in 2020.

Under the current ESS Rule, accredited certificate providers would be able to create certificates after 2020 for existing projects that have been in the ESS since 2009 using the Metered Baseline Method.

The NSW Government is proposing that projects would be ineligible to create certificates using a baseline under the Metered Baseline Method that is more than 10 years old. This would improve the integrity of an extended ESS and encourage new and additional energy savings.

The NSW Government would amend the ESS Rule to reflect these changes from the 2016 compliance year.

3.3.1 Submissions

Only some stakeholder submissions included comments on the NSW Government's intention to extend the ESS to 2025 and the associated proposals for consultation. These submissions are summarised in **Table 10** below.

Table 10 Summary of submissions on ESS duration

Stakeholder group	Summary
Environmental advocacy groups	The Total Environment Centre welcomed the NSW Government's decision to extend the ESS and supported the preferred option to review the duration again in five years.
Energy efficiency service providers	All energy efficiency service providers welcomed the NSW Government's intention to extend the ESS. Out Performers and EECCA did not support the preferred option to limit the age of baselines under the Metered Baseline Method to 10 years.
Energy retailers and electricity generators	Most submissions from energy retailers did not comment on the issues associated with ESS duration. AGL was satisfied with the proposed approach to reviewing ESS duration every five years and the methods for project based activities. Alinta argued that barriers to households and small businesses from accessing the ESS should be addressed before the ESS duration is extended.
Gas distributors and suppliers	APA Group and Australian Gas Networks supported the ESS continuing to 2025 subject to regular reviews.

Stakeholder group	Summary
Large energy users	Large energy users that made submissions on ESS duration welcomed the NSW Government's intention to extend the ESS. CSR Limited supported the option to review the ESS duration every five years. Norske Skog and Orora supported the proposal to limit the age of baselines under the Metered Baseline Method to 10 years but highlighted that the ESS Rule need to be carefully worded to ensure existing projects could update their baselines rather than needing to reapply for accreditation.
Government agencies	IPART supported extending the ESS subject to a review of complementarity with the Australian Government's Emissions Reduction Fund.

3.3.2 Analysis of key issues raised

Stakeholders raised the following issues:

- the implications of limiting the age of baselines for energy savings calculations to 10 years under the Metered Baseline Method in the ESS Rule
- whether extending the duration of the ESS should be subject to a review of complementarity with the Emissions Reduction Fund.

Changes to the Metered Baseline Method to drive continuous improvement

Some energy efficiency service providers did not support the proposal to limit the age of baselines used to calculate energy savings under the Metered Baseline Method.

"We do not support the idea of limiting Metered Baseline RESAs to a 10 year maximum life as there is no clear justification... Some of our largest clients use this as an effective tool to motivate long-term continuous improvement in energy productivity as it's often the only viable and accurate method under the Scheme to do so." (Out Performers, an accredited certificate provider)

There are many existing energy efficiency projects that access the ESS through the Metered Baseline Method. This method uses measured energy consumption to calculate savings and provide access to financial incentives each year.

Most businesses that have invested in these projects did so on the understanding that the ESS would continue to 2020. Some businesses do not have an expectation of a financial incentive beyond this time period.

"With the extension of the scheme it is reasonable that a 10 year time limit be placed on certificate creation." (Norske Skog, a large energy user)

"While Orora supports the change to the ESS Rule relating to Metered Baseline Method, participant[s] in this method should be able to re-evaluate and amend their baseline to within this 10 year period, to ensure continue participation in the Scheme." (Orora, a large energy user)

The Metered Baseline Method supports businesses to have continuous improvement energy management practices. Limiting baselines to 10 years of age would mean that only those businesses that continue to improve over time will continue to receive incentives beyond the initial 10 year period.

However, there are some cases where businesses are accredited for existing projects using baselines that are up to 15 years old. Introducing a change to limit baselines to be a maximum of 10 years old in these cases could result in sudden impacts on business investment in energy efficiency, as they may factor in financial incentives from the ESS into their annual energy management budget.

Complementarity with the Emissions Reduction Fund

IPART has recommended that the extension of the ESS be subject to a review of complementarity with the Emissions Reduction Fund.

The effects of the Emissions Reduction Fund are still uncertain, particularly on energy efficiency projects in NSW.

On 15 April 2015, the Clean Energy Regulator held the first auction for the Emissions Reduction Fund. The successful projects were in the land management, freight and waste sectors. The methods for energy efficiency projects have only recently been made available and only two energy efficiency projects have been registered.

The NSW Government has committed to monitoring the effects of the Emissions Reduction Fund to ensure the ESS remains complementary. This monitoring will inform future reviews of targets and the ESS Rule.

Reviewing and adjusting targets and the ESS Rule would enable incremental reform and ensure there is no gap in access to financial incentives for NSW households and businesses. Delaying an extension of the ESS for an additional review will reduce investment certainty, one of the key reasons for extending the ESS.

3.3.3 Summary

Most stakeholder submissions welcomed the extension to the duration of the ESS, and supported the options to review the ESS duration every five years, and limit the age of baselines for energy savings calculations to 10 years.

Complementarity with the Emissions Reduction Fund will be better assessed at a later stage once the fund is more fully established, and its effects are better understood.

3.3.4 Final position

The NSW Government will extend the ESS to 2025. The government will review the duration of the ESS again in 2020, and will reform the ESS Rule to limit the age of baselines in energy savings calculations to 10 years.

The NSW Government will allow businesses to use a baseline older than 10 years if their project was accredited before this reform commences. This will ensure that these businesses are still required to update their baselines, without causing a significant disruption to their business operations.

The Office of Environment and Heritage and the NSW Department of Industry will consult with businesses that access the ESS with the Metered Baseline Method on the wording of the proposed age limit for baselines in the ESS Rule to ensure there are no unintended impacts.

3.4 Future approach to setting targets and penalty rates

Preferred option in the ESS Review Options Paper

Under this option, the legislative conditions set out in sections 105 and 114 of the Act for changing ESS targets or penalty rates, respectively, would remain as they are, but with codification of when a legislative condition has been met. The NSW Government would seek to prescribe by regulation when particular conditions set out in sections 105 and 114 of the Act for changing targets and penalty rates have been met. The proposed changes are described in **Table 11** below.

Table 11 Proposed clarifications to conditions when targets and penalty rates may be reviewed

Current conditions in the Act	Proposed clarification ²⁴
“ ... to achieve greater uniformity or harmonisation with a scheme in another jurisdiction with similar objectives to the energy savings scheme, or for the purposes of implementing a national scheme with similar objectives to the energy savings scheme ...”	This condition has been met when greater uniformity or harmonisation results in greater than 20 per cent change in the estimated energy efficiency opportunity that could be supported by the Energy Savings Scheme in NSW
“ ... sustained under supply of energy savings certificates, as evidenced by scheme participants being required to pay a substantial energy savings shortfall penalty for 2 or more consecutive years ...”	A “substantial energy savings shortfall” is one greater than 10 per cent each year
“ ... sustained oversupply of energy savings certificates, as evidenced by the total number of certificates created substantially exceeding the total number of certificates required to meet all individual energy savings targets for 2 or more consecutive years ...”	“Substantially exceeded” is considered to be greater than 20 per cent each year
“ ... significant changes to the rules governing the creation of energy savings certificates ... ”	A “significant change” to the rules governing certificate creation means one that results in greater than 20 per cent change in the estimated energy efficiency opportunity that could be supported by the Energy Savings Scheme in NSW
“ ... significant changes to the policy or regulatory framework, or the market conditions, in which the energy savings scheme operates ... ”	Significant changes to the policy or regulatory framework are those that result in greater than 20 per cent change in the estimated energy efficiency opportunity that could be supported by the Energy Savings Scheme in NSW.

Under this option IPART, as the scheme administrator, would review these conditions in its annual report. If a legislative condition set out in section 105 or 114 of the Act has been met, the NSW Government would review whether there is a case to adjust targets or penalty rates, including conducting cost benefit analysis and consultation. This option would retain the full calendar year of notice before a change in targets or penalty rates would take effect.

3.4.1 Submissions

Around 60 per cent of submissions commented on the preferred option in relation to future target settings. Over 35 per cent of all submissions supported the preferred option, 8 per cent preferred a regular three year review, and one submission preferred the existing approach.

Most submissions from energy efficiency providers welcomed the preferred option as a means to address future certificate oversupply issues. Most submissions from large energy users and energy

²⁴ The *estimated energy efficiency opportunity* would be calculated through analysis of an energy efficiency opportunity model, such as the one used to inform the analysis of options in this paper.

retailers supported quantitative conditions for review on the basis that it would provide a more objective basis for reviewing targets and provide more certainty.

Table 12 Summary of submissions on future approaches to target setting

Stakeholder group	Summary
Energy efficiency service providers	EECCA recommended a number of adjustments to the preferred option to increase the responsiveness of changes to targets. This included rolling monthly or quarterly reporting on relevant market information from the scheme administrator or a third party. CSR Limited suggested a similar approach. The Energy Efficiency Council believed the conditions for review should be 12 months of oversupply, rather than the current 2 years, and that targets should not be revised downward.
Energy retailers	Most submissions from energy retailers welcomed the preferred option as it would improve market certainty and make risk management easier. EnergyAustralia said that the preferred option would provide <i>“assurance that targets will not be subject to political whim and will improve investment conditions for energy efficiency.”</i> Alinta stated that <i>“this initiative has the potential to stabilise certificate prices over the long term, by providing the Minister with a greater ability to respond to a potential sustained over / under supply of certificates in the future.”</i> ERM Business Energy recommended a five year notice period for changes to targets, and that conditions based on harmonisation, also include when potential change is expected to reduce ESS costs by 10 per cent.
Gas distributors and suppliers	Gas distributor submissions supported reviews of the ESS every three years.
Large energy users	Orora supported the preferred option as it <i>“would allow for the Scheme to remain relevant without compromising certainty in the market.”</i>
Government agencies	City of Sydney supported the preferred option as it <i>“would provide greater transparency and certainty for the scheme.”</i> IPART did not comment on future targets setting, but stated that oversupply was a positive outcome and should not justify an increase in the target.

3.4.2 Analysis of key issues raised

Key issues raised by stakeholders include:

- whether there should be a legislative condition in the Act to change targets based on two consecutive years with an oversupply of certificates and how many years an oversupply should be required before the condition is met
- the appropriate scope of a review following two consecutive years with an undersupply of certificates
- the length of the minimum notice periods if targets are changed by regulation
- alternative quantitative thresholds for the other conditions to review targets
- the need for transparent market information on whether legislative conditions set out in sections 105 and 114 of the Act for review of targets and penalties, respectively, have been met.

Condition based on oversupply of certificates

IPART argued that oversupply of certificates should not be a legislative condition for a review of ESS targets and penalties.

“An oversupply would usually result in lower certificate prices, which means that the scheme will achieve its objectives at lower cost. As this is a positive outcome - an oversupply of certificates should not be used to justify an increase the target.” (IPART, the scheme administrator and scheme regulator)

This is consistent with the analysis in the ESS Review Options Paper. An oversupply of certificates should place downward pressure on the price of certificates, so that the price reflects the actual cost of undertaking the energy savings activity.

However, a consistent oversupply of certificates indicates that there is a larger energy efficiency opportunity that can be achieved at lower cost than predicted. This would suggest that larger targets could provide a greater benefit to the NSW economy.

The approach taken by the ESS Review Options Paper is consistent with IPART's review of the ESS's predecessor, GGAS, which found *"that models could not anticipate how the market would respond to the signal provided by the schemes. In particular, it was hard to anticipate the new business models and technological innovation that would develop in response to the economic incentives."* IPART argued that policy makers should provide a transparent mechanism for adjusting targets over time, to allow for the possibility of greater activity at lower cost than expected.²⁵

The Energy Efficiency Council recommended that the legislative conditions set out in section 105 and 114 of the Act be amended to refer to only a single year of oversupply instead of two consecutive years. Other stakeholders supported the proposed quantitative threshold, but stressed the need for certainty and to avoid constant adjustment.

The supply of certificates is likely to stabilise with a single year of oversupply of certificates if it is caused by short term conditions or a one-off event, for example a very large energy savings project. If the oversupply persists, it would indicate that the ESS may be able to deliver more energy savings at lower cost and that a target change may be warranted.

The NSW Government considers that the legislative conditions set out in sections 105 and 114 of the Act for review of targets and penalties based on an oversupply of certificates are appropriate. The NSW Government considers that two years is an adequate period to determine if an oversupply is the result of short term market conditions, or an indication that economic analysis has overestimated the cost of delivering energy savings.

Condition based on undersupply of certificates

The Energy Efficiency Council argued that an undersupply of certificates should not justify a downward adjustment of the target. This was because penalty rates were considered a sufficient 'safety valve' for undersupply.

The objectives of the ESS include reducing the consumption of electricity by encouraging energy saving activities, and assisting households and businesses to reduce electricity consumption and electricity costs. An appropriate target reflecting market conditions can meet these objectives better than scheme participants paying penalties.

In the event of two years of consecutive undersupply, it would be important to review penalty rates and targets in parallel so that the NSW Government can determine whether there is a greater benefit from increasing penalty rates or decreasing targets. The government considers that the legislative conditions set out in sections 105 and 114 of the Act for review of targets and penalties based on an undersupply of certificates for two years is appropriate.

Minimum notice period for changes to targets by regulation

Most retailers and large energy users stressed the importance of adequate consultation, and supported retaining the current calendar year notification period before changes to targets and

²⁵ IPART, 2013, *NSW Greenhouse Gas Reduction Scheme: Strengths, Weaknesses and Lessons Learnt*, accessed at www.ipart.nsw.gov.au/files/sharedassets/website/trimholdingbay/nsw_greenhouse_gas_reduction_scheme_-_strengths_weaknesses_and_lessons_learned_-_final_report_-_july_2013.pdf.

penalty rates can take effect. ERM Business Energy recommended extending the calendar year notice period.

“To improve short to medium term certainty, we recommend that targets are set on a rolling five-year basis, with the criteria for review assessed annually. This would require the NSW Government to fix targets for the years 2016 – 2020 under this review. Then during 2016, the target for 2021 would be set. During 2017, the target for 2022 would be set, and so on.”
(ERM Business Energy, an energy retailer)

A five year rolling target setting approach would not meet the objective of being responsive to changed market conditions. Other submissions from energy efficiency service providers raised concerns that the existing notice period would lead to extended delays.

“The proposed changes improve many areas of the target setting process but will still likely require a timeframe of 3-4 years before a revised target is implemented.” (EECCA, an industry association representing accredited certificate providers)

Under the preferred option, there would need to be two years of consecutive oversupply (year one and two), the following year targets would be reviewed and then could be reset (year three), a full calendar year of notice would be given before targets commence (year four), targets would then apply the following year (year five), and scheme participants would have a further six months before the end of the compliance period (year six).

A calendar year notice provides a balance between responsiveness and certainty for scheme participants and accredited certificate providers.

Alternative quantitative thresholds for the other conditions to change targets

ERM Business Energy suggested an additional quantitative threshold for the legislative conditions set out in sections 105 and 114 of the Act based on harmonisation, changes to the ESS Rule or market conditions.

“We propose that this condition is also considered to be met when change is expected to result in at least 10% reduction in scheme costs.” (ERM Business Energy, and energy retailer)

The intent of prescribing quantitative thresholds is to enable market actors to anticipate whether targets will be reviewed. It is unclear how the cost of the ESS would be calculated based on transparent publically available information.

Reducing costs may be a worthwhile indicator for whether the legislative conditions set out in sections 105 and 114 of the Act have been met, and is a necessary consideration for changing targets. However it is unlikely to be suitable as a quantitative threshold.

Reporting information on the quantitative thresholds

Several submissions recommended regular public updates from the NSW Government, the scheme administrator or a third party that would track whether or not the quantitative thresholds are likely to be met.

“EECCA proposes a rolling monthly or quarterly reporting on certificate generation, market pricing and any other relevant market information – this to be carried out either by the scheme administrator or preferably by a suitable 3rd party to achieve complete information on pricing.” (EECCA, an industry association representing accredited certificate providers)

Stakeholders suggested content for market updates included indicators of the likelihood of legislative conditions set out in sections 105 and 114 of the Act being met, such as certificate generation and other relevant market information.

Undersupply and oversupply of certificates can be predicted with publicly available information. IPART already maintains a dashboard on the ESS website showing the number of live certificates. This data shows current supply of certificates to meet targets.

The Australian Energy Market Operator publishes forecast electricity demand for NSW and the ACT. IPART reports on exemptions each year in its annual report. These forecasts can be used to estimate demand for certificates to meet targets.

Another piece of information that could be used to predict undersupply and oversupply is future certificate creation. IPART requests quarterly reports from accredited certificate providers about future certificate creation which could be aggregated and published to inform the market.

The preferred option in the ESS Review Options Paper for future target setting would also set quantitative thresholds for other legislative conditions set out in sections 105 and 114 of the Act (i.e. harmonisation, change in ESS Rule, and change in policy and regulatory framework) based on the change in energy efficiency opportunity in NSW.

The NSW Energy Efficiency Opportunity Model²⁶ used to estimate the energy efficiency opportunity includes commercial in confidence data that cannot be published without significant effort and resources. Information on the estimated energy efficiency opportunities may be difficult to report publicly which may limit transparency and the ability of market actors to predict when targets may be reviewed.

This indicates that quantitative thresholds for legislative conditions set out in sections 105 and 114 in the Act that are based on harmonisation, change in ESS Rule, and change in policy and regulatory framework may not be transparent to market actors.

3.4.3 Summary

The ESS Review Options Paper outlined the NSW Government's objectives to:

- provide transparency in the target and penalty rate setting process with the intention of improving market confidence
- ensure that the ESS delivers optimal net economic benefit by being responsive to changed market conditions.

The analysis presented in the ESS Review Options Paper indicated that the preferred option best meets the objectives for government action. In particular, it:

- would be more responsive to market conditions as it provides market based thresholds for when legislative conditions set out in sections 105 and 114 of the Act are met
- would provide greater certainty for scheme participants and accredited certificate providers through a clear process and principles for changing targets and penalty rates.

Stakeholders were broadly supportive of retaining legislated targets and prescribing quantitative thresholds for when legislative conditions set out in sections 105 and 114 of the Act to review targets and penalty rates would be met. Most stakeholders stressed the need for transparency on these thresholds.

A minority of stakeholders raised issues with the length of the notice period and the scope of the certificate undersupply and oversupply conditions set out in sections 105 and 114 of the Act. However, the NSW Government considers that the current settings for legislative conditions based on undersupply and oversupply are appropriate.

²⁶ Energetics, 2014, *NSW Energy Efficiency Opportunity Model*, prepared for NSW Office of Environment and Heritage (unpublished).

The application of quantitative thresholds in relation to the legislative conditions set out in section 105 and 114 of the Act to review targets and penalty rates based on harmonisation, change to the ESS Rule, or changes to the policy and regulatory framework, may not be transparent to market actors.

Harmonisation, major amendments to the ESS Rule or changes to the policy and regulatory framework at a scale likely to meet legislative conditions set out in sections 105 and 114 of the Act for review of targets and penalty rates have been historically infrequent. There has only been one major change to the ESS Rule since it began in 2009, and this review would implement the first significant changes to the policy framework.

Given this, the NSW Government considers that qualitative measures for harmonisation, major amendments to the ESS Rule or changes to the policy and regulatory framework are likely to be sufficient, and there is no need to introduce quantitative thresholds to determine if these legislative conditions have been met.

3.4.4 Final position

The NSW Government intends to codify quantitative thresholds for the conditions set out in sections 105 and 114 of the Act for review of ESS targets and penalty rates which relate to undersupply and oversupply of certificates.

These two legislative conditions can be tracked with existing publically available data. This would provide a transparent basis for reviewing targets, and balance the need for targets to be responsive to market conditions with certainty for market actors.

IPART will report annually on whether there has been an under or over supply of certificates. A full calendar year of notice will still be required before a change in targets or penalty rates would take effect.

The NSW Government does not intend to prescribe thresholds in relation to other legislative conditions set out in sections 105 and 114 of the Act which relate to harmonisation, major amendments to the ESS Rule and changes to the policy and regulatory framework.

4 Sharing costs and benefits

4.1 Support for regional customers

NSW Government position

The NSW Government intends to reform the ESS Rule to include a regional network factor of 1.03 for energy saved in the Essential Energy network area. Activities undertaken from 1 January 2016 will be eligible for the regional network factor. This factor will:

- in conjunction with actions specified in the NSW Energy Efficiency Action Plan, contribute to overcoming market barriers to energy efficiency specific to regional areas
- fairly value the energy saved by regional customers helping the energy efficiency market to find the most cost effective energy efficiency opportunities.

4.1.1 Submissions

Most stakeholder submissions included comments on the NSW Government's position to reform the ESS Rule to include a regional network factor of 1.03. These submissions are summarised in **Table 13** below.

Table 13 Summary of submissions on regional customers

Stakeholder group	Summary
Energy efficiency service providers	All energy efficiency service providers supported the introduction of a regional factor. However, most submissions argued that the 1.03 factor is unlikely to overcome the higher transaction costs of delivering energy efficiency in regional areas. Opower suggested that the "Distribution Use of System Charges" is another empirical value to base a regional network factor that would value the benefit of deferring network investment in regional NSW. Out Performers and the Energy Efficiency Council argued that the ESS should also support regional customers in other electricity networks other than Essential Energy.
Energy retailers and generators	Alinta and Energy Australia supported the regional network factor, although Alinta noted that this may not be sufficient to provide support to regional energy users. AGL supported introducing a regional factor of 1.03 but suggested that further review may be necessary if this ESS objective is not being met.
Gas distributors and suppliers	APA Group and Australian Gas Networks supported the regional network factor. Jemena considered that a regional network factor is more appropriate than applying regional savings targets because the regional factor minimises increases in complexity and administration costs. Gas Energy Australia supports a regional network factor, but suggested that such a factor should include not only line losses, but the conversion factor to pool electricity and gas savings to encourage distributed energy in remote and regional areas. ENA stated that additional support for regional customers is reasonable, but that the proposed option may not result in changes in non-metropolitan networks. ENA suggested that the level of support should be reviewed regularly to ensure the effects of the program in regional areas are comparable to those in metropolitan areas.
Large energy users	All large energy users that commented on this issue supported the government's position.
Government agencies	City of Sydney supported the government's position.

4.1.2 Analysis of key issues raised

Stakeholders raised the following issues:

- the cost of providing network infrastructure in regional NSW could also be accounted for in the regional network factor
- the ESS should also support regional customers in other electricity networks other than Essential Energy
- the challenges and administrative burden associated with accurately defining the Essential Energy distribution network area.

Accounting for deferred network investment in regional NSW

One submission argued that the regional network factor could account for the cost of providing network infrastructure in regional NSW.

“One such alternative may be to compare full distribution use of system (DUOS) cost differences between rural and urban nodes of the grid. Another would be to compare historical costs of identical/comparable network augmentation activities in urban and rural NSW, and use this delta to augment the line loss figure.” (Opower, an energy efficiency service provider)

Applying a regional network factor based on line losses provides a fair price signal to regional electricity consumers to save energy. The additional certificates created for an activity in regional NSW would represent the actual additional energy saved by avoiding line losses, ensuring each certificate represents one megawatt hour saved. This makes the energy savings benefit to regional electricity customers clear and empirical.

Reduced energy savings are not the only benefit of saving energy in regional areas. Energy efficiency can also help defer investment in network infrastructure. This infrastructure is typically more expensive in regional areas, which is why “Distribution Use of System Charges” are higher in the Essential Energy network area. However, amending the ESS to value economic benefits, rather than energy saved, represents a fundamental shift in the way that the ESS functions. This would also require an assumption about the peak demand reduction of each type of energy savings activity.

As discussed in **Section 4.3.2** below, the COAG Energy Council has initiated a number of reforms to ensure that the market correctly values the economic benefits of deferred network investment. It remains to be seen whether further barriers exist beyond these reforms.

Regional customers outside the Essential Energy network area

Some energy efficiency service providers argued that the ESS should support regional customers in other electricity networks other than Essential Energy.

“[W]e don’t think it’s logical or practical to restrict the application of the regional factor to the Essential Energy network area. The added costs and barriers faced by regional energy users are not limited to the Essential Energy distribution area, and indeed most consumers are not aware of which DNSP supplies them.” (Out Performers, an accredited certificate provider)

There are regional customers in the Ausgrid and Endeavour Energy network areas who may face similar barriers to those in the Essential Energy network area. However, the regional network factor is not intended to be an additional subsidy for regional customers. It is intended to fairly value the energy saved.

The regional areas of the Ausgrid and Endeavour Energy networks may have greater line losses than the average for the whole network area. However these values are not reported, and are not used by electricity retailers to settle the difference between electricity bought from the National Electricity Market and sold to these regional customers.

Defining areas of the Essential Energy network area

Some stakeholders raised concerns that the regional network factor could be administratively complex to implement.

“There are also challenges in accurately defining the Essential Energy distribution network area and requiring this delineation is likely to result in significant additional administrative burden.” (Energy Efficiency Council, an industry association representing energy efficiency service providers)

All electricity bills in NSW are required to include a contact telephone number for the relevant distribution network service provider. A simple verification method for a regional network factors could be the electricity bill. However the electricity bill payer may not be the purchaser of the energy efficiency upgrade.

This indicates that the ESS Rule may need to specify network area by region, for example postcode, to avoid individual accredited certificate providers having to do so on a case by case basis.

4.1.3 Summary

The ESS Review Options Paper outlined the NSW Government’s objectives to:

- help overcome the market barriers to energy efficiency specific to regional areas
- ensure the ESS places appropriate value on the benefit of saving energy in regional areas.

The analysis presented in the ESS Review Options Paper indicated that the NSW Government position meets the objectives for government action. In particular it:

- will reward activities in regional areas with additional energy savings certificates based on the measurable differences in network loss factors between metropolitan and regional areas (around 1.03)
- may not be a large enough incentive to overcome the additional cost of servicing customers in regional NSW
- would be enabled through simple changes to the ESS Rule and would have only a minimal increase in administrative complexity.

Stakeholders overwhelmingly supported the government’s position to use a regional network factor, but acknowledged that a value of 1.03 may not be sufficient to overcome barriers to saving energy in regional NSW. Some stakeholders suggested valuing the cost of providing network services in regional NSW.

Subsequent analysis shows that applying a regional network factor that accounts for the value of deferred network infrastructure would change the fundamental operation of the ESS. Certificates would value not only the benefit of saved energy, but the broader economic benefit of deferring electricity network infrastructure. This issue is discussed further in section 4.3 on targeting energy savings on the times and locations of peak demand.

4.1.4 Final position

The NSW Government intends to proceed to reform the ESS Rule to include a regional network factor of 1.03 for energy saved in the Essential Energy network area. Activities undertaken from 1 January 2016 will be eligible for the regional network factor. This factor will:

- contribute to overcoming market barriers to energy efficiency specific to regional areas
- fairly value the energy saved by regional customers helping the energy efficiency market to find the most cost effective energy efficiency opportunities.

4.2 Support for low income households

Preferred option in the ESS Review Options Paper

The NSW Government would not amend the ESS to provide additional support for vulnerable households. The NSW Government's preferred option is to assist vulnerable low income households undertake energy efficiency activities by providing supplementary assistance which is complementary to the ESS.

4.2.1 Submissions

Most stakeholder submissions included comments on the NSW Government's intention to support low income households through a supplementary program rather than through the ESS. These submissions are summarised in **Table 14** below.

Table 14 Summary of submissions on support for low income households

Stakeholder group	Summary
Energy efficiency service providers	<p>Energy efficiency service providers were mixed in their responses on supporting low-income households.</p> <p>The Energy Efficiency Council and Ecovantage supported the preferred option.</p> <p>The Energy Efficiency Council and Opower stated that alternative support for low income households is required if funding for supporting programs is discontinued. Opower recommended reviewing the need to amend the ESS if necessary and that funding certainty should be the same for the ESS and for low income household support programs.</p> <p>Out Performers and Next Energy recommended including a sub-objective in the ESS to reduce funding risks and higher costs associated with separate schemes. Next Energy also suggested a temporary residential multiplier to all households to address the fact that only a small fraction of certificates are generated from residential activities.</p> <p>Green Energy Trading argued that the ESS could support low income households better through the inclusion of new activities like high efficiency water heaters, space heaters and base building upgrades like insulation and double glazing.</p>
Energy retailers and generators	Origin Energy, ERM Business Energy, ERAA, Energy Australia, and Alinta supported the preferred option, and were generally against including sub-targets in the ESS. AGL similarly did not support including targets in the ESS for low income households.
Gas distributors and suppliers	Jemena, Gas Energy Australia, the APA Group and Australian Gas Networks supported the preferred option.
Large energy users	Norske Skog, CSR Limited and Orora supported the preferred option.
Government agencies	The City of Sydney supported the preferred option.

4.2.2 Analysis of key issues raised

Stakeholders raised the following issues:

- concerns that funding for a supplementary program is not as certain as the legislative certainty of the ESS
- improvements to the ESS Rule to increase accessibility for low income households.

Funding certainty for supplementary programs to support low income households

Some energy efficiency service providers were concerned about funding certainty for supplementary programs to support low income households.

“We do not support [the proposed] option – we believe a vulnerable households objective should be built-into the ESS in order to increase the chance of it being implemented effectively, rather than being at risk of volatile government budget priorities.” (Out Performers, an accredited certificate provider)

The NSW Government is committed to supporting low income households to manage their energy bills through energy efficiency. In March 2015, the government announced a new \$26.8 million program to help vulnerable low income households purchase high cost, high return energy efficient items, such as fridges and washing machines.

Home Energy Action will use the ESS incentives to minimise the cost of delivering support to low income households. Home Energy Action targets market barriers that the ESS would not be able to target by itself. For example, Home Energy Action addresses the landlord tenant split incentive through partnerships with community housing providers and the NSW Land and Housing Corporation. It will also investigate the best way to address the split incentive for all low income renters, including those in the private market.

Consumer advocacy groups provided extensive comments as part of the NSW Government’s review into access to energy efficiency for low income households in 2013-14. This review provided the basis for establishing a supporting program for low income household energy efficiency.

Home Energy Action targets market barriers that the ESS cannot affect. While supplementary programs do not have the same certainty as the ESS, they give the NSW Government flexibility to scale and focus its support to continue to target remaining barriers to deploying energy efficiency in low income households.

Suggested improvements to the ESS Rule to improve accessibility

Some stakeholders recommended improvements to the ESS Rule to improve accessibility and effectiveness of the ESS for low income households. This included:

- adding new appliance types to the “Sale of New Appliances” sub-method and enabling appliance rental services to access the ESS
- amending the Home Energy Efficiency Retrofit sub-method, including removing the \$90 co-contribution requirement and increasing the forward certificate creation for some activities
- reinstating the 1-for-1 Residential Downlight Replacement sub-method which was subsumed into the Home Energy Efficiency Retrofit sub-method in 2014.

The ESS Rule’s “Home Energy Efficiency Retrofit” sub-method has mechanisms in place to waive various requirements when an activity is undertaken as part of a low income household program. This sub-method provides access to the ESS for upgrades to residential building fabric and fixed appliances, which are significant energy efficiency opportunities in NSW.

4.2.3 Summary

The ESS Review Options Paper outlined the NSW Government’s objective to reduce energy bill pressure on vulnerable low income households by targeting the market barriers that prevent these households from accessing energy efficiency activities.

The preferred option in the ESS Review Options Paper was not to amend the ESS, but to consider a supplementary program targeting low income households.

This option:

- specifically targets market barriers which prevent vulnerable households from becoming more energy efficient

- enables more flexible eligibility criteria and the scale of the program to be changed more efficiently than a certificate multiplier or sub-targets in the ESS
- allows for faster and iterative policy development to identify the most effective, efficient and simplest approach to assist vulnerable households
- enables the government to bundle assistance from different existing programs rather than forcing additional complexity onto the ESS.

The NSW Government has committed significant funds towards the Home Energy Action Program to target the barriers that prevent low income households from accessing energy savings.

4.2.4 Final position

The NSW Government does not intend to amend the ESS to provide additional support for vulnerable households. The government will implement the preferred option to assist vulnerable low income households undertake energy efficiency activities through a supplementary program which is complementary to the ESS. The NSW Government has committed significant funds towards the Home Energy Action Program to target the barriers that prevent low income households from accessing energy savings.

4.3 Savings at peak times and locations

Preferred option in the ESS Review Options Paper

The NSW Government would not amend the ESS to create a particular incentive for energy savings in peak demand. Instead, the government would use components of the ESS to provide information to the energy efficiency industry and network service providers about the impact of energy efficiency on peak demand to overcome market and regulatory barriers. This includes:

- integrating information about the impact of energy efficiency on peak demand savings into ESS calculation methods to measure, record and demonstrate peak energy savings at different locations and times
- collating and publishing existing information on when and where energy savings are required to target peak demand
- evaluating, measuring, and verifying the impact of different types of energy savings activities on peak demand at different times and locations.

4.3.1 Submissions

Only some stakeholder submissions included comments on the NSW Government’s intention to encourage savings at peak times and locations. These submissions are summarised in **Table 15** below.

Table 15 Summary of submissions on peak

Stakeholder group	Summary
Environmental advocacy groups	Total Environment Centre requested more detail on the preferred option, and recommended that the government work with the Total Environment Centre on this issue.

Stakeholder group	Summary
Energy efficiency service providers	<p>Submissions from energy efficiency service providers supported higher levels of government intervention than the preferred option, but recommended different approaches to do so.</p> <p>The Energy Efficiency Council agreed that the NSW Government should not amend the ESS to include a peak multiplier, but stated that the preferred option may not be sufficient to address market barriers. The Energy Efficiency Council’s submission recommended setting minimum required levels of investment for distribution network service providers in demand management.</p> <p>Similarly, Opower recommended placing a requirement on network service providers to use a percentage of network funds to target demand management constrained areas, stating that otherwise the preferred option would have limited impact.</p> <p>Next Energy suggested a multiplier, and CSR Limited recommended using a location-specific multiplier based on postcodes.</p> <p>EECCA and Maxee Innovations supported the preferred approach, but requested that the Government review the option of providing incentives to target peak demand within 2 years.</p> <p>Out Performers preferred modifying the ESS to target peak demand, but argued that the ESS should not target location-specific demand constraints. Instead, Out Performers considered that the ESS should incentivise all participants to manage their demand more effectively, “as this will result in a net benefit to all, at some time.”</p> <p>Green Energy Trading stated that NSW could adopt a complementary scheme to target peak demand, similar to the program used in South-East Queensland.</p> <p>Water Heating Research suggested that a mass refit of energy efficient water heaters in class 2 buildings could ameliorate urban peak demand.</p>
Energy retailers and generators	<p>Energy Australia and Alinta supported the government’s preferred option, and were against establishing a new mechanism in the ESS to address peak demand because of likely increased cost and complexity.</p> <p>AGL pointed out that the current lowest cost approach encouraged by the ESS did not necessarily correlate with demand reduction activities.</p>
Gas distributors and suppliers	<p>ENA stated that it may be difficult to target peak demand through the ESS, and may not be the most efficient way of reducing peak demand. ENA stated that there would be limited opportunity for reducing peak demand in the gas network.</p> <p>APA Group supported the broad principle of the preferred option.</p> <p>Gas Energy Australia supported a certificate multiplier in areas with network capacity constraints, but acknowledged the reasoning for the preferred approach. Gas Energy Australia suggested the preferred option could include combining a certificate multiplier for peak demand with the conversion factor for using gas to discourage fuel switching to electricity.</p> <p>Jemena suggested that the impact of fuel switching on increasing peak demand should be considered, and argued that activities that increase electricity peak demand would be contrary to the ESS’s objectives. ENA similarly cautioned against this effect.</p>
Large energy users	<p>Orora and Norske Skog suggested that peak demand is better managed through transmission and distribution network tariff reform rather than through the ESS.</p>
Government agencies	<p>The City of Sydney stated that collecting and publishing information about constrained network locations is an important first step. The City of Sydney supported introducing a certificate multiplier in the future, building on the information obtained in the preferred option.</p>

4.3.2 Analysis of key issues raised

Issues raised by stakeholders include that the preferred option may not adequately overcome regulatory barriers to targeting peak demand.

Regulatory barriers may need to be overcome if the preferred option is to be effective

Some stakeholders stated that the proposed option may not be effective because regulatory barriers will prevent network service providers from investing in demand management.

“Providing information will be highly ineffective at overcoming the entrenched energy market incentives that result in poor management of peak demand.” (Energy Efficiency Council, an industry association representing energy efficiency service providers)

The COAG Energy Council is overseeing significant reforms to the National Energy Market. These reforms include cost reflective network pricing and enhancements to the Demand Management and Embedded Generation Incentive Scheme. There are also a number of third party initiated reforms that may help to overcome these regulatory barriers.

“[Total Environment Centre] is currently a proponent in a rule change request to the AEMC which would incentivise networks to set demand management targets and undertake more effective [demand management] programs as an alternative to augmentation capex to meet higher peak demand.” (Total Environment Centre, an environmental advocacy group)

These existing processes are intended to ensure that networks have the right incentives to invest in demand management where it is the most cost effective solution. If these processes are effective, there would be no need to require network service providers to invest in demand management.

There is limited data available on how different types of energy savings affect peak demand in NSW. The data on each network subzone’s load profile is also not easily accessible. Even if network service providers have the right incentives to invest in demand management, they will not be able to invest in energy efficiency without this information.

4.3.3 Summary

The ESS Review Options Paper outlined the NSW Government’s objectives to:

- better coordinate the ESS with demand side programs and assist the energy efficiency industry to target energy savings at the times and locations of peak demand
- address the market and regulatory barriers that are preventing network service providers and energy efficiency market industry participants from enabling energy efficient demand management projects to maintain network reliability.

The preferred option in the ESS Review Options Paper was not amend the ESS, but instead to use to provide information to the energy efficiency industry and network service providers about the impact of energy efficiency on peak demand. This could:

- overcome ‘imperfect information’ and ‘data as a public good’ market barriers by building the knowledge base required to value the peak demand reduction benefit of energy efficiency activities
- enable energy efficiency service providers and network service providers to negotiate business arrangements to deliver energy efficiency to deliver peak demand savings.

Stakeholders were mixed on the issue of how to target energy efficiency on the times and locations of peak demand, but were broadly against modifying the ESS to do so. Some stakeholders argued that the preferred option would not be effective because network service providers did not have the right incentives to invest in demand management.

There are a number of processes underway to overcome regulatory barriers to investment in demand management at the national level.

However, there are also information barriers to investment in demand management. Investment grade information on the impact of energy efficiency on peak demand would be required for network service providers to have the confidence to invest in cost effective energy efficiency. This information does not currently exist.

4.3.4 Final position

The NSW Government intends to collect and provide information on the impact of energy efficiency on peak demand. This will help coordinate the ESS with demand management programs administered by NSW network businesses, and assist the energy efficiency industry to target energy savings at the times and locations of peak demand.

The NSW Government will continue to monitor developments in the National Energy Market which are addressing regulatory barriers to investment in demand management.

The recommended approach to the regional network factor (**Section 4.1**) will establish a regulatory framework for a certificate multiplier based on location. This could potentially be amended in the future to target energy savings at peak locations and times if regulatory barriers to investment in demand management are not adequately addressed.

4.4 Treatment of exempt sites

Preferred option in the ESS Review Options Paper

The preferred option in the ESS Review Options Paper was not to change the current treatment of exempt sites. Existing exemptions would remain, and there would be no restrictions on certificate creation at emissions intensive trade exposed sites.

Other proposed changes to the exemptions process

The current exemptions process involves some administrative complexity. Section 122 of the Act states that “[a]n exemption does not take effect until the beginning of the year after the order granting the exemption is made.” Consequently, if a site is identified immediately after the preparation and publication of the NSW exemptions order then the site cannot become an exempt site until January of the following year (i.e. up to 13 months later).

It is proposed that, to address this issue, section 122 of the Act be amended to allow exemptions to come into effect as soon as they are granted.

The current process also requires the ongoing cooperation of the Commonwealth Clean Energy Regulator to prepare the exemptions order.

It is proposed that the NSW Government directly assess exemption applications on the basis of the exempt activities identified by the Clean Energy Regulator. This could improve administrative processes and streamline the ESS for retailers.

4.4.1 Submissions

Most stakeholders supported the preferred option to not change the current treatment of exempt sites.

Table 16 Summary of submissions on treatment of exempt sites

Stakeholder group	Summary
Energy efficiency service providers	Ecovantage, CSR Limited, Out Performers, and the Energy Efficiency Council supported the preferred option. EECCA supported continuing exemptions for emissions intensive and trade exposed activities, but suggested the ESS should limit the amount of certificates each EITEI can create to 50,000 a year. Maxee Innovations and EECCA also suggested a regular review of emissions intensive and trade exposed activities.
Energy retailers and generators	AGL, ERM and ERAA supported the preferred option. Energy Australia supported the preferred option, but highlighted the complexity of the current exemptions framework.
Large energy users	AIGN and Orora supported the preferred option. Qenos and PACIA supported a process that provided a 90 per cent exemption for the entire site where sites have multiple levels of exemption. The Cement Industry Federation and Cement Concrete and Aggregates Australia supported the preferred approach of retaining the current ESS exemptions framework, but called for the current exemption for clinker production to be expanded to include cement milling.

4.4.2 Analysis of key issues raised

Stakeholders were generally supportive of the preferred option to allow exempt sites to create certificates. One stakeholder raised the idea of introducing an absolute cap on certificate creation by exempt sites.

Stakeholders also raised other issues related to exemptions for emissions intensive and trade exposed activities including:

- the complexity of the current process for sites with multiple levels of exemption
- the current exemption for clinker production to expand to include cement milling.

An absolute cap on certificate creation by exempt site

Some submissions suggested placing an absolute cap for certificate creation on sites with exemptions.

“EECCA supports exemptions for EITE activities but would like to see some limits placed on EITE Industry activities within the scheme. EECCA suggests a cap per entity of 50,000 [certificates] annually.” (EECCA, an industry association representing accredited certificate providers)

Sites with exemptions vary widely with some consuming more than 10 per cent of all electricity in NSW, to smaller sites that only consume an equivalent amount to a large office building. Placing an overall limit on certificates is unlikely to be fair to the larger sites.

These emission intensive and trade exposed sites contribute to the competitiveness of the NSW economy and should be encouraged to invest in improvements in their energy productivity. The case for an absolute cap is not clear.

The complexity for sites with multiple levels of exemption

Large energy users have argued that the current exemptions framework, where a single site can have two levels of exemptions, is unnecessarily complex.

“Exemption processes need to reflect the energy infrastructure currently in place on manufacturing sites. Many manufacturing sites would not separately meter gas for feedstock or energy. PACIA would therefore support a process that provided an exemption for the entire site, precluding the need to separately monitor different activity groups.” (PACIA, an industry association representing large energy users)

There are two levels of exemptions granted under the ESS depending on the level of trade exposure of the activity. Those activities with a high trade exposure are granted a 90 per cent exemption. Those activities with a moderate trade exposure are granted a 60 per cent exemption. The exemptions are granted to an activity rather than a site to ensure that only the trade exposed components of a business are granted an exemption.

This means that some sites have two levels of exemption, where some processes are exempt at 60 per cent and some at 90 per cent. It can be difficult to determine how much energy is used by each different process. In these cases, companies have the option to either claim an exemption for the entire site at the lowest level (60 per cent), or undertake a once-off engineering assessment to derive a methodology to calculate what electricity is spread throughout each exemption.

The current exemptions are based on activities and levels defined under the Australian Government’s Renewable Energy Target. The Australian Government is proposing to reform the exemptions regime for the Renewable Energy Target to be a single level with a full exemption for all emissions intensive and trade exposed sites. This means that there will no longer be a clear reference to determine which activities only require a 60 per cent exemption under the ESS.

The government will consider the implications of the changes to the Renewable Energy Target exemptions regime on the ESS.

Full exemption for emissions intensive and trade exposed activities

Some stakeholders have suggested that the ESS adopt a full exemption to align with the proposed changes to the exemptions framework under the Renewable Energy Target.

“Consideration should also be given to reflecting the proposed amendments to the RET, which, once implemented, will exempt EITEs from 100% of the costs of the RET’s.” (Qenos, a large energy user)

Unlike the Renewable Energy Target, emissions intensive and trade exposed sites can directly benefit from the ESS. A full exemption would not provide an incentive to invest in energy efficiency upgrades and is not appropriate.

Clinker production should expand to include cement milling

The Cement Industry Federation and Cement Concrete and Aggregates Australia requested an exemption for cement milling, as this process uses significant amounts of energy.

“Cement milling is a critical component of integrated cement manufacturing, representing around 50 per cent of Australian cement manufacturing electricity costs. Only providing a partial exemption for the intermediary clinker production stage of the cement production process leaves the final stage of cementitious milling fully exposed to the costs of the ESS – therefore adding to the cost base and impacting on the competitiveness of our industry.” (The Cement Industry Federation and Cement Concrete and Aggregates Australia, industry associations representing large energy users)

The ESS relies on the Australian Government’s determination of exemptions under the Renewable Energy Target to determine what activities should be eligible for exemptions under the ESS. This is an administratively simple process that avoids duplication of reporting.

The NSW Government would consider granting an exemption for cement milling, once this has been considered by the Australian Government through the Renewable Energy Target.

4.4.3 Summary

The ESS Review Options Paper outlined the NSW Government's objective to:

- minimise potential cross subsidies as a result of exemptions to emissions intensive and trade exposed activities
- retain an incentive for emissions intensive and trade exposed sites to benefit from energy savings opportunities.

The analysis presented in the ESS Review Options Paper indicated that the preferred option to retain the existing exemption provisions best meets the objectives for government action. In particular it:

- provides the full certificate value for energy savings in emissions intensive trade exposed sectors, encouraging lowest cost energy efficiency across the economy
- allows the benefit of energy savings to be spread across the whole economy in the form of downward pressure on electricity prices
- would give emissions intensive and trade exposed industries the greatest incentive to adopt energy efficiency activities.

All stakeholders supported the preferred option. A small number of stakeholders, mostly large energy users, highlighted issues with the complexity of the current exemptions framework, arguing that in cases where sites have multiple levels of exemption, the entire site should be exempt at the higher level.

The exemptions under the ESS are based on those under the national Renewable Energy Target. The Australian Government has proposed changes to the exemptions regime under the Renewable Energy Target that would mean that there would only be one level of exemption at 100 per cent. If the NSW Government harmonised the ESS exemptions regime to have only one level of exemption, it would address the complexity of multiple levels of exemption at one site.

However, as discussed above, a 100 per cent exemption would not provide businesses with an incentive to invest in energy efficiency upgrades and is not appropriate. An exemption of 90 per cent for all emissions intensive and trade exposed activities under the ESS is more appropriate.

4.4.4 Final position

The government will proceed with the preferred option to:

- allow emissions intensive trade exposed sites to benefit from energy savings opportunities through the ESS
- allow more flexibility in the granting of exemptions by removing the requirement from section 122 of the Act that an exemption can only take effect in the beginning of the year after an exemption order is granted
- continue to assess exemption applications based on the exempt activities identified by the Clean Energy Regulator in administering the national Renewable Energy Target.

Following issues raised by stakeholders, the NSW Government also intends to amend the preferred option from the ESS Review Options Paper and provide emission intensive and trade exposed activities with a consistent exemption level of 90 per cent. This would allow the NSW Government to continue to align lists of exempt sites and activities with the Renewable Energy Target.

This would have a small impact on the number of certificates required each year, reducing demand by around 18,000 certificates. By retaining a 90 per cent exemption, rather than a 100 per cent

exemption, there would still be an incentive for emissions intensive and trade exposed sites to benefit from energy savings opportunities and minimise their costs under the ESS.

5 Administrative reforms

5.1 Letter of appointment

Preferred option in the ESS Review Options Paper

The NSW Government will clarify IPART’s responsibilities as the scheme administrator through a letter of appointment outlining:

- requirements for IPART to assist prospective businesses to become involved with the ESS including guidance and training to assist them to comply with the ESS Rule, legislation and regulations
- requirements to report on key performance indicators including:
 - average time taken to process applications for accreditation and product acceptance
 - survey results of estimated audit costs to IPART, accredited certificate providers and scheme participants per certificate created
 - estimated accreditation costs to IPART and accredited certificate providers per certificate created
 - proportion of invalidly created certificates by recognised energy savings activity
 - number of new Recognised Energy Savings Activities in the ESS
 - details of certificates created by industry sector, end use and postcode (ensuring it will not be possible to identify individual sites at which energy efficiency activities take place)
 - average reported cost of energy efficiency projects to the purchaser per certificate.

5.1.1 Submissions

A small number of stakeholders provided submissions on scheme administration. Stakeholder submissions were overwhelmingly in favour of the NSW Government’s decision to clearly define IPART’s roles and responsibilities through a letter of appointment. IPART was the only stakeholder that raised issues with the changes.

Table 17 Summary of submissions on a letter of appointment

Stakeholder group	Summary
Energy efficiency service providers	<p>Energy efficiency service providers support the NSW Government clarifying IPART’s responsibilities as scheme administrator through a letter of appointment.</p> <p>The Energy Efficiency Council also recommended that the roles of the NSW Department of Industry and the Office of Environment and Heritage be clarified.</p> <p>The Energy Efficiency Council argued that there are administrative features from other jurisdictions that are significantly more efficient than IPART’s processes.</p> <p>EECCA argued that IPART’s appointment should lead to a wide ranging review of ESS governance covering issues including IPART’s compliance strategy, the role of compliance audits, cost effective service delivery, establishing service level agreements and key performance indicators to accompany cost recovery, and continuous improvement.</p> <p>EECCA proposed that an industry advisory committee is established to provide input into the design and delivery of this review.</p>
Energy retailers and generators	<p>Alinta Energy supports the NSW Government in formally appointing IPART as the scheme administrator and regulator.</p> <p>AGL commented that they are satisfied with IPART’s performance as scheme administrator.</p>

Stakeholder group	Summary
Large energy users	<p>The AIGN and Norske Skog supported the proposed changes to clarify IPART's responsibilities as the scheme administrator.</p> <p>CSR Limited added that IPART should have an obligation to deliver continuous improvement to reduce costs of administration and audit for both IPART and participants.</p>
Government agencies	<p>IPART does not support the proposal to expand its responsibilities to include a role to assist businesses becoming involved with, and comply, with the ESS.</p> <p>IPART stated that it is committed to being accountable for its performance, but does not consider that additional reporting requirements are an effective way of addressing concerns about efficiency and transparency.</p> <p>IPART commented that over the past it has:</p> <ul style="list-style-type: none"> ▪ increased transparency by publishing comprehensive guidance material and increasing the number of feedback channels ▪ reduced processing times through improved processes and more efficient systems. <p>The City of Sydney supports appointing IPART as the scheme administrator and regulator.</p>

5.1.2 Analysis of key issues raised

Issues raised by stakeholders include:

- whether IPART's appointment should be linked to improvements in administrative services
- whether IPART should have an obligation to deliver continuous improvement to reduce costs of administration and audit, for both IPART and businesses engaged with the ESS
- IPART did not support the proposal to expand their responsibilities.

Improvements in administrative services

Most stakeholder submissions supported formally appointing IPART as the scheme administrator and regulator. A number of stakeholders also argued that the letter of appointment of IPART as scheme administrator should result in improved service levels and cost reduction.

"CSR supports the letter of appointment. However IPART should have a continuous improvement obligation to participants. This would ensure ongoing improvements to administration, audit and direct and indirect costs both to IPART and participants." (CSR Limited, a large energy user)

The intent of a letter of appointment is to clarify responsibilities for IPART. The key performance indicators in this letter of appointment are intended to result in more transparent and efficient processes, delivering cost reductions for government and business.

IPART does not support any expansion of its responsibilities

IPART did not support the proposal to require it to assist prospective businesses to become involved with the ESS.

"This would create risks with regards to our ability to be the independent administrator of the scheme. Promoting the scheme should be undertaken separately from independent administration and regulation." (IPART, the scheme administrator and scheme regulator)

Other comparable scheme regulators have legislated responsibilities to assist and advise stakeholders, without compromising the regulator's independence. For example, the Clean Energy Regulator, under the Australian Government's Emissions Reduction Fund, has legislated functions including those listed below:

- to promote compliance with the Act and the associated provisions
- to conduct and/or coordinate education programs about the Act and the associated provisions

- to advise and assist persons in relation to their obligations under the Act and the associated provisions
- to advise and assist prospective applicants in connection with ensuring that applications are in accordance with the Act and the associated provisions.²⁷

The NSW Government considers that similar functions would be appropriate for IPART to reflect the importance of assisting prospective applicants and promoting compliance with the ESS.

IPART also did not support additional reporting requirements.

“We are committed to being accountable for our performance but we consider that the proposed additional reporting requirements are not an effective means of addressing the concerns raised about efficiency and transparency.” (IPART, the scheme administrator and regulator)

Based on industry feedback, IPART has made significant improvements in the processing times of applications. However, industry submissions support the government’s preferred positions. For example, EECCA argued for a review of ESS governance that should include the establishment of key performance indicators and service level agreements. Many other stakeholders argued for improvements in the efficiency and service levels of scheme administration.

It is important for the scheme administrator to provide clear information on performance indicators to stakeholders, in particular where administrative services attract a fee (see **Section 5.3**).

5.1.3 Final position

The NSW Government intends to proceed with the position in the ESS Review Options Paper to clarify IPART’s role as scheme administrator and regulator. This will include specifying responsibilities similar to the Clean Energy Regulator’s legislated responsibilities mentioned above.

Following stakeholder feedback, the NSW Government will amend the preferred option to require IPART to develop service level standards. This will complement the introduction of key performance indicators and support the introduction of administrative cost recovery fees, examined in **Section 5.3**.

In addition, the NSW Government will request IPART to consult with industry and the government to establish key performance indicators and service level standards, and to review compliance and performance monitoring strategy and the role of IPART in auditing.

²⁷ Carbon Credits (Carbon Farming Initiative) Act 2011, Section 286.

5.2 Compliance powers

Preferred option in the ESS Review Options Paper

Under the preferred option, the NSW Government would enhance IPART's current range of regulatory and non-regulatory enforcement tools by giving IPART additional powers to:

- issue official warnings for repeat breaches or serious breaches
- issue penalty notices for limited offences
- require accredited certificate providers to give undertakings that they will 'set aside' a proportion of certificates pending the results of an audit.

Under this option, IPART would issue an official warning that it intends to issue a penalty notice if a breach is not rectified within a specified timeframe. This would give an accredited certificate provider or scheme participant the opportunity to rectify a breach before being issued with a penalty notice. If IPART issued a penalty notice, the scheme participant or accredited certificate provider could apply for an internal review of the decision to issue the penalty notice, or elect to have the matter resolved in court.²⁸

The power to require an undertaking to 'set aside' certificates would build on the existing voluntary agreements between IPART and accredited certificate providers. IPART would be able to require an undertaking from accredited certificate providers to withhold a proportion of certificates from sale or transfer until an audit has shown they are validly created certificates. Once an audit is complete, the accredited certificate provider could voluntarily surrender certificates to make up for any invalid certificate creation, and sell or transfer the remaining certificates. Compliance with the undertaking would be a condition of accreditation, so a failure to comply with the undertaking would amount to a breach of accreditation.

5.2.1 Submissions

Table 18 Summary of submissions on compliance powers

Stakeholder group	Summary
Energy efficiency service providers	The Energy Efficiency Council supported the NSW Government's proposal to enhance IPART's compliance powers. EECCA supported increasing IPART's compliance powers subject to a review of its compliance strategy, and a move away from auditing all certificates to a risk based approach.
Energy retailers and generators	AGL did not oppose enhancing IPART's regulatory and non-regulatory powers in line with the NSW Government's preferred option. Alinta Energy supported IPART having an appropriate range of powers, but encourages IPART to ensure voluntary compliance and avoid punitive enforcement measures where possible. Energy Australia stated that it supported the minor amendments proposed by the NSW Government.
Large energy users	Orora agreed with the NSW Government's preferred option of enhancing compliance powers. CSR Limited supported the NSW Government's preferred option to enhance compliance powers. CSR Limited also supported cancellation of accreditations for breaches of conditions. Norske Skog agreed with the proposed changes to provide IPART with the appropriate tools to target poor performers.

²⁸ *Fines Act 1996*, Division 2A.

Stakeholder group	Summary
Government agencies	City of Sydney supported the NSW Government's proposal to enhance IPART's compliance powers. IPART supported new powers to issue penalty infringement notices and to require 'set aside' of certificates.

5.2.2 Analysis of key issues raised

Several submissions supported enhanced compliance powers for IPART, on the condition that this is accompanied by improvements in service levels and a risk based approach to auditing and compliance.

“EECCA also believes that additional compliance powers are appropriate if IPART reviews its Audit and Compliance Strategy to move to a risk based audit regime in place of 100% compliance audits. This should be included in the review scope detailed above.” (EECCA, an industry association representing accredited certificate providers)

As stated in the ESS Review Options Paper, the introduction of powers to require 'set aside' of certificates and issue penalty infringement notices are intended to enable IPART to better target poor performers. This should lead to a more flexible risk based auditing and compliance approach that results in cost reductions for good performers.

As discussed above in **Section 5.1**, the NSW Government intends to formally appoint IPART as the scheme administrator, set key performance indicators and service level agreements. All of these reforms are intended to improve service delivery. However, the government considers that enhancing compliance powers is a related but separate issue, and the two are not contingent on one another.

5.2.3 Summary

As outlined in the ESS Review Options paper, the objective of government action is to facilitate the efficient and equitable operation of the ESS.

The preferred option to enhance IPART's compliance powers is:

- effective at targeting poor performers and providing the scheme administrator with a wider range of powers that are more proportional to the offences
- efficient, as better targeting poor performers can reduce costs
- administratively simple, as this reform will provide IPART with new enforcement powers that are likely to be easier to process and cost effective to administer.

Stakeholders supported enhancing IPART's compliance powers. Some energy efficiency service providers argued that enhanced powers should be accompanied by improvements in service levels and cost reductions for good performers.

5.2.4 Final position

Based on analysis outlined in the ESS Review Options Paper and stakeholder submissions, the NSW Government intends to proceed with the preferred option to enhance IPART's compliance powers. This will include giving IPART the power to require 'set aside' of certificates, and to issue penalty infringement notices, after official warnings for repeat breaches or serious breaches.

The NSW Government will develop a schedule of penalty infringement offences and rates for penalty infringement notices for targeted stakeholder consultation.

In addition, the government intends to provide IPART with the power to issue a caution, and intends to amend the power for IPART to order the surrender of certificates under section 142 of

the Act, to allow this order to be made prior to court action. This will align these powers with those provided in the Victorian Energy Efficiency Target scheme.²⁹

5.3 Cost recovery fees

Preferred option in the ESS Review Options Paper

Under the preferred option, the NSW Government would increase fees to cover IPART's costs associated with scheme administration from 2016 onwards. These fees would also be reviewed on an ongoing basis to ensure revenue and expenditure are reasonably aligned.

This option involves fee increases as follows:

- increase certificate registration fees from \$0.70 to \$0.80 in 2016 and then index with the Consumer Price Index
- increase application fees from \$500 to \$2,500
- introduce \$500 accreditation amendment fees where this is done at the request of an accredited certificate provider and reduces compliance costs
- introduce a \$1,000 investigation fee required to assess novel or highly complex applications that require additional assessment effort
- introduce a product registration fee of between \$200 and \$420 per bundle of up to 10 related products.

5.3.1 Submissions

Table 19 Summary of submissions on cost recovery fees

Stakeholder group	Summary
Energy efficiency service providers	<p>The majority of accredited certificate providers responding to this issue argued that any increase in fees should be tied to improvements in IPART's service levels.</p> <p>The Energy Efficiency Council also opposed the introduction of a new \$1,000 investigation fee on the basis that it will stifle innovation.</p> <p>Ecovantage argued that fees should be waived if IPART does not deliver within the published timeframe.</p> <p>Green Energy Trading raised specific concerns about whether an accredited certificate provider will be charged \$500 for all accreditation amendments, including requests to increase audit limits. Green Energy Trading was also concerned that the new \$1,000 investigation for novel or complex applications will deter businesses from accessing more complex methods.</p>
Energy retailers and generators	<p>AGL, an energy retailer, argued that costs should not be increased. Rather, these costs should be absorbed by IPART, and cost recovery should only be considered in the future should IPART's costs exceed expectations.</p> <p>Alinta Energy, an energy retailer, argued that government should keep fees to an absolute minimum.</p>

²⁹ Outlined in section 40A of the *Victorian Energy Efficiency Target Act 2007*.

Stakeholder group	Summary
Large energy users	<p>AIGN argued that IPART should have an ongoing obligation to reduce ESS costs as they become a barrier to participation.</p> <p>CSR Limited argued that it is not appropriate for government to increase fees and index them to inflation, as businesses are unable to index their products and services to inflation. Rather than increase fees, CSR Limited proposed that IPART require Accredited Certificate Providers to undertake training in order to become an accredited certificate provider - this should be on a cost recovery basis.</p> <p>Norske Skog argued that they have no issue with cost recovery for IPART's administrative services, provided that there is a limit to annual increases and an incentive for IPART to reduce these costs.</p> <p>Orora supported the introduction of new fee structures, provided they are regularly reviewed to ensure they are limited to reflecting the administrative costs of the ESS.</p>

5.3.2 Analysis of key issues raised

Issues raised by stakeholders included:

- increasing fees to reflect the cost of administration should be tied to guarantees of improved service levels
- concerns about the introduction of the proposed \$1,000 investigation fee, and application of the proposed \$500 accreditation amendment fee
- increases in ESS fees could be a barrier to participation in the ESS.

Support for increasing fees is conditional on improved value for money

The majority of energy efficiency service providers supported increasing fees to reflect administrative cost recovery, on the condition that service levels are improved. Large energy users, Norske Skog and Orora, also supported the increase of ESS fees, provided that the fees reflect the cost of scheme administration.

*“Norske has no issue with cost recovery for IPART provided there is a limit to annual increases and an incentive for IPART to reduce the cost of providing these services.”
(Norske Skog, a large energy user)*

As addressed in **Section 5.1**, the government will request that IPART consult with industry to establish key performance indicators as part of IPART's letter of appointment.

This process is intended to lead to the improvements in service levels that energy efficiency service providers requested as the condition of supporting increasing fees.

Concerns over a new investigation fee and accreditation amendment fee

Some energy efficiency service providers and representative organisations raised concerns over the introduction of a new \$1,000 investigation fee for novel or complex accreditations.

*“[W]e oppose the introduction of the \$1,000 ‘investigation fee’ to assess novel or highly complex applications that require additional assessment effort. These ‘investigation fees’ would be a barrier to the development of diverse and innovative projects under the ESS.”
(Energy Efficiency Council, an industry association representing energy efficiency service providers)*

This appears to be a reasonable assertion. In May 2014, the ESS Rule was changed to include a number of new calculation methods that require novel and more complex applications. Additional costs through an investigation fee may lead to an additional barrier to innovation within the ESS.

Another energy efficiency service provider raised concerns over the treatment of how the proposed new \$500 accreditation amendment fee would be applied, raising a number of scenarios in which accreditations would need to be amended.

“We have concerns over the \$500 accreditation amendment fees where this is done at the request of an accredited certificate provider. Does this mean that every time we wish to increase our audit limit we will need to pay?” (Green Energy Trading, an accredited certificate provider)

Green Energy Trading also raised that businesses applying to use new calculation methods may be required to make multiple changes to accreditations as both businesses and the scheme administrator learn how to use methods effectively.

It would appear to be unreasonable to charge a \$500 fee in a scenario where an accredited certificate provider applies to increase their audit limit. The \$500 amendment fee requires clarification.

The NSW Government agrees that these proposed fees introduce new complexity that may make it more difficult for businesses to understand their likely fee structures, and create a barrier to innovation.

Opposition to any increase to ESS fees

Some energy retailers and large energy users opposed any increases to ESS fees.

“AGL is of the view that the function of scheme administrator should first be absorbed as BAU by IPART, and further funding sought by IPART as a future consultation on scheme cost recovery should costs borne by IPART exceed reasonable expectations.” (AGL, an energy retailer and electricity generator)

“Companies are under cost down pressures and cannot index the cost of their products to CPI. It is not appropriate for Government to do so either.” (CSR Limited, a large energy user)

As discussed earlier (see **Section 5.1**), IPART would need to report on key performance indicators for the administrative services that attract a fee. This would provide a strong driver to improve the efficiency of processes over time.

By providing a dedicated funding stream for IPART’s administrative services there is more certainty that service levels will be adequate and will not be subject to changing government funding priorities.

The ESS Review Options Paper included analysis that the administrative effort by IPART and accredited certificate providers required to develop applications and audit certificates for small projects would outweigh the financial incentive provided.³⁰

This indicates that it is not cost effective for small one-off projects to have an individual accreditation. It would be more efficient for these projects to access the ESS through a broader accreditation. The proposed fee increases are intended to provide a signal to prospective accredited certificate providers about the scale of project that would be viable under the ESS.

5.3.3 Summary

As outlined in the ESS Review Options Paper, the objective of government action is to reduce the budget dependence of the ESS, and to provide an appropriate price signal to drive a more efficient use of IPART’s resources.

³⁰ NSW Government, 2015, *Energy Savings Scheme Review: Part 2 Options Paper*, page 104, accessed at www.resourcesandenergy.nsw.gov.au/energy-consumers/sustainable-energy/efficiency/scheme/?a=558865.

The preferred option to increase fees to cover the costs of scheme administration is:

- effective at minimising the budget dependence of the ESS and setting more appropriate price signals for IPART's resources
- efficient by setting more transparent costs, reducing speculative applications, and driving more efficient scheme administration
- administratively simple as IPART will have minor upfront costs to establish a payment system, but these costs will be outweighed by the benefits.

Energy efficiency service providers supported the proposed increase in fees to recover the costs of the ESS, on the condition that the increase is paired with improvements to the efficiency and service levels of administration. Some service providers also raised concerns about the new fees proposed. Some energy retailers and large energy users argued against the proposed increase in scheme administration fees.

The NSW Government acknowledge stakeholder concerns that:

- the proposed new \$1,000 investigation fee may lead to unintended outcomes and reduce the incentive for innovation
- the proposed new \$500 accreditation amendment fee requires clarification as this could result in new fees for minor and regular administrative processes.

5.3.4 Final position

Based on the above analysis and stakeholder submissions, the NSW Government intends to amend clauses 39 and 51 of the Regulation to introduce the following fees:

- increase application fees for a recognised energy savings activity from \$500 to \$2,500
- increase certificate registration fees from \$0.70 to \$0.80 in 2016 and then index with the Consumer Price Index.

As proposed, the NSW Government will review fees on an ongoing basis to ensure that they are fair and efficient. IPART will consult with stakeholders on an appropriate fee structure for product registrations.

The government does not intend to proceed with elements of the preferred option in the ESS Review Options Paper including:

- the proposed introduction of the new \$1,000 investigation fee
- the proposed introduction of the new \$500 accreditation amendment fee.

5.4 Certificate price transparency

Preferred option in the ESS Review Options Paper

Under the preferred option, the NSW Government would not change existing reporting certificate prices or make any change to compliance cycles.

The current level of information provided to the certificate trading market by government and industry led services has been sufficient to date. There is no clear role for government intervention at this point in time, as the market is providing a number of information services.

The NSW Government will make the costs of the ESS transparent to energy consumers by ensuring that IPART's annual reporting includes an estimate of the sales-weighted average certificate spot price and any voluntary information provided by scheme participants.

5.4.1 Submissions

The majority of stakeholders support the preferred option to focus on transparency of prices passed through to consumers rather than trading information. A minority of stakeholders preferred a greater level of government support to provide ESS price information.

Table 20 Summary of submissions on certificate price transparency

Stakeholder group	Summary
Energy efficiency service providers	<p>The Energy Efficiency Council supported greater transparency of certificate prices, but did not have a view on the preferred option.</p> <p>EECCA supported the NSW Government's preferred approach, believing that there are many brokers and traders that are able to provide detailed information at low or no cost.</p> <p>Out Performers supported the preferred option of improved annual reporting on certificate prices through an annual survey.</p> <p>Next Energy argued that the NSW Government's preferred option does not go far enough, and that IPART should provide monthly reports on certificate market prices.</p> <p>Green Energy Trading stated that the market currently works efficiently. Brokers and service providers offer price information services, and the healthy levels of trading activity in the market through these service providers is evidence of adequate price transparency.</p>
Energy retailers	<p>ERAA, ESAA, AGL and ERM Business Energy supported the NSW Government's preferred option to make no change to certificate price reporting. All argued that if individual trades are published in the ESS registry, this would breach commercial arrangements between parties, and may indicate individual trade behaviour which would be highly inappropriate.</p> <p>ERM Business Energy also proposed that the ESS registry could be expanded to include a 'pending' status, to help the market better understand the upcoming certificate pipeline.</p>
Gas distributor	<p>APA Group and Australian Gas Networks supported the NSW Government's preferred option, noting that the more regular and granular data available, the better. ENA discussed the importance of transparency for any trading scheme.</p>
Large energy users	<p>CSR Limited argued that the current information available is one-sided and illiquid. CSR Limited suggested that the registry should provide more detailed trading information, including better information on certificate trading prices and certificate creation by volume and activity category. CSR Limited also highlighted issues with the functionality of the registry and suggested changes to improve its accessibility.</p> <p>Norske Skog argued that current market information provided by traders is sufficient and annual surveys would provide little benefit.</p> <p>Orora supported the NSW Government's preferred position, arguing that better information can be valuable in estimating a business's exposure to the ESS.</p>

Stakeholder group	Summary
Government agencies	City of Sydney supported the proposal to provide an estimate of the sales-weighted average certificate spot price in annual reporting. However, City of Sydney proposed that the NSW Government investigate the cost of purchasing more regular and comprehensive information from the private sector to publish for the market, as a lower cost option to developing a trading platform.

5.4.2 Analysis of key issues raised

Issues raised by stakeholders include:

- the preferred option would not provide enough information to limit price volatility and provide transparency
- changes to the ESS registry to improve accessibility to data.

Information on certificate prices to limit price volatility

Some stakeholders requested further information on certificate trading volumes and prices to provide better information to the market to minimise price volatility. Stakeholders also suggested this could provide 'greater market depth', improved ability to estimate business exposure to the ESS (for large energy users), and reduced information asymmetry between negotiating parties.

"Fundamentally the more regular and granular the data provided to the market place in regard to certificate values, the better." (ENA, an industry association representing gas and electricity network businesses)

Data on the price and volume of certificates created and sold can help limit price volatility. However, it is not clear that there is a further role for government as the ESS registry already provides information on trades and certificate creation, and the private sector already provides information on certificate prices.³¹

The private sector also offers brokerage and advice services that provide more detailed levels of information and build on the private sector's market expertise.

"EECCA supports this approach and believes that there is a multitude of brokers and traders who would be able to supply detailed information at zero or minimal cost." (EECCA, an industry association representing accredited certificate providers)

Stakeholders also suggested that the scheme administrator or a third party could provide monthly or quarterly reporting on certificate creation. The ESS registry already provides information on certificate creation and trading volumes.

Changes to the ESS registry to improve its accessibility and provide transparency

CSR Limited argued that the ESS registry is obscure and difficult to use and requested changes to improve its accessibility.

"The tools are obscure and difficult to use and the processes need improvement. Management systems need to align with those used in banking or used in industry. Improvements would include easier administration of task delegations, lower levels of delegation and appointment of a system manager. Introduce tiered roles where users are aligned with on-line banking provisions." (CSR Limited, a large energy user)

IPART maintains and administers the ESS registry, which was built on the GGAS registry platform. Although the user interface could be improved, the benefit of improving the ESS registry may not

³¹ For example, see Marco Stella, 2015, 'April enviro markets update – VEECs and ESCs', Climate Spectator, 6 May 2015, accessed at www.businessspectator.com.au/article/2015/5/6/carbon-markets/april-enviro-markets-update-veecs-and-escs

outweigh the costs of any fundamental change. However, this feedback could be considered next time updates to the registry are required.

The ESS registry provides details on number of live, surrendered and forfeited certificates as well as the number of certificates traded. IPART provides summary statistics on the ESS website, including the total number of certificates created, live certificates, and certificates surrendered.³²

ERM Business Energy proposed a specific change to expand the ESS registry to include a 'pending' status, to help the market better understand the upcoming certificate pipeline.

Schemes such as the Victorian Energy Efficiency Target scheme and the Small Renewable Energy Scheme provide a pending status on their registries for those certificates that are undergoing a quality assurance or auditing process. The ESS allows accredited certificate providers with a good track record to create certificates prior to the results of audit, so a pending status is not applicable to the ESS.

5.4.3 Summary

As outlined in the ESS Review Options Paper, the objectives of government action are to:

- ensure adequate information is provided to the certificate trading market to limit price volatility
- make the costs of the ESS to energy consumers transparent.

The preferred option is no change, with IPART continuing to report on trends in certificate spot prices in the annual report and include a sales-weighted average spot price paid for each compliance year. This approach is:

- effective at meeting the objectives as the private sector currently offers regular certificate price and trading information and an annual survey will make the costs of the ESS to energy consumers transparent
- efficient compared to establishing a certificate trading exchange
- administratively simple for government.

5.4.4 Final position

The NSW Government will implement its preferred option not to change existing reporting of certificate prices or compliance cycles.

The current level of information provided to the certificate trading market by government and industry led services has been sufficient. There is no clear role for government intervention at this point in time, as the market is providing a number of information services.

The NSW Government will continue to make the costs of the ESS transparent to energy consumers by ensuring that IPART's annual reporting includes an estimate of the sales-weighted average certificate spot price and any voluntary information provided by scheme participants.

Following stakeholder feedback, in addition to the preferred option, the government will work with IPART to identify potential improvements to the certificate creation and trading information available on the ESS website, based on existing data from the ESS registry.

The government will also work with IPART to examine cost-effective opportunities to improve the accessibility and functionality of the ESS registry as part of future upgrades and maintenance.

³² See www.ess.nsw.gov.au.

6 Continuous improvement

6.1 Evaluation measurement and verification

Preferred option in the ESS Review Options Paper

The NSW Government will develop a comprehensive evaluation, measurement and verification framework for the ESS, and will publicly report on the outcomes of the framework. This framework will include:

- improved public reporting on the type and location of energy savings, and the administrative costs of the ESS to IPART, accredited certificate providers, scheme participants and electricity customers
- measurement and verification studies to provide empirical evidence of energy savings from projects that use 'deemed' calculation methods
- monitoring the uptake of energy efficiency opportunities in NSW and assessing the remaining opportunities that could be supported by the ESS
- quantification of economic costs and benefits of the ESS through consistent and transparent analysis.

6.1.1 Submissions

Stakeholder submissions were supportive of the NSW Government's intention to develop a comprehensive evaluation, monitoring and verification framework for the ESS.

Table 21 Summary of submissions on evaluation

Stakeholder group	Summary
Environmental advocacy groups	Total Environment Centre suggested that the NSW Government publish data annually on how NSW emissions are being influenced by NSW Government policy and other factors.
Energy efficiency service providers	Most energy efficiency service providers did not comment on the evaluation, measurement and verification framework. Opower supported the proposed framework, and noted that the implementation of a rigorous measurement and verification framework encourages better forecasting and innovation, and optimisation of regulated investments in the energy system.
Gas suppliers and distributors	Australian Gas Networks, APA Group, Jemena and ENA supported the principle of this recommendation.
Large energy users	Orora, the Cement Industry Federation and Cement, Concrete and Aggregates Australia supported the continuous improvement of the ESS to ensure relevance and effectiveness for the duration of the ESS. CSR Limited supported obligations on IPART for continuous improvement to participants to ensure ongoing improvements to administration, audit and direct and indirect costs.
Government agencies	The City of Sydney is supportive of the proposed framework to publicly report information. IPART did not support any additional reporting requirements.

6.1.2 Analysis of key issues raised

The submissions received that addressed the evaluation measurement and verification framework were supportive. Issues raised by stakeholders include:

- that the NSW Government should publish data annually on how NSW emissions are being influenced by NSW Government policy and other factors

- whether there should be obligations on IPART for continuous improvement to participants to ensure ongoing improvements to administration, audit and direct and indirect costs.

Publishing data on how NSW Government policy impacts on NSW greenhouse gas emissions

Total Environment Centre argued that the NSW Government should publish data on greenhouse gas emissions.

“Even if it does not wish to pursue a target for carbon pollution reduction, the NSW Government should still publish data annually on how NSW emissions are being influenced by EEAP and REAP actions as well as other factors including small scale solar uptake and developments in the manufacturing sector.” (Total Environment Centre, an environmental advocacy organisation)

The NSW Government agrees with the Total Environment Centre that tracking NSW greenhouse gas emissions and the impacts of NSW Government policy on emissions would be useful in assessing the benefits of NSW Government policy.

IPART currently reports on actual energy savings achieved as part of its annual reporting on the ESS. The NSW Government tracks progress towards the NSW energy savings target. This information is sufficient to estimate emissions reductions from NSW energy efficiency programs.

There are a range of benefits from energy efficiency, including avoiding carbon emissions. Reporting on carbon emissions reductions and other benefits provides stakeholders and policy makers with a better understanding of the benefits of the ESS.

The Australian Government reports on Australia’s emissions and progress towards Australia’s international commitments. This includes forecasts of future emissions intensity of electricity supply that would be required to estimate future emissions reductions from the ESS. The Australian Government also publishes information on NSW emissions through the National Greenhouse Gas Inventory.

Reporting on administration costs and continuous improvement

Several stakeholders (see **Section 5.1**) argued that IPART should report on administrative costs, and have an obligation to improve the efficiency of their services. IPART argued that additional reporting would not address stakeholder concerns about the efficiency and transparency of scheme administration.

It is unclear what administrative processes are creating costs for accredited certificate providers, or if these costs are unnecessary. Without this information, it would be difficult for IPART to assess its own administrative processes and identify improvements to reduce these costs.

Reporting on administrative costs should not be a burden, but is required if funding for the administration of the ESS is to be recovered through fees (see **Section 5.3**).

6.1.3 Summary

As outlined in the ESS Review Options Paper, the objectives for government action are to:

- maintain the accuracy of financial incentives to save energy
- make the costs and benefits of the ESS transparent to stakeholders and infrastructure planners.

The proposal to develop a comprehensive evaluation, measurement and verification framework for the ESS is:

- effective at meeting the government's objectives to maintain the accuracy of financial incentives and make the costs and benefits of the ESS transparent to stakeholders
- efficient as the cost of evaluation, measurement and verification would be outweighed by the economic benefits of ensuring the accuracy of financial incentives and providing energy infrastructure planners with investment grade information
- administratively simple as this framework will leverage the work of existing research projects wherever possible.

Stakeholder submissions supported a transparent evaluation monitoring and verification framework for the ESS. IPART opposed additional reporting requirements. However, there was broad support from industry stakeholders on the proposal to introduce a comprehensive evaluation, monitoring and verification framework.

The Total Environment Centre suggested including reporting on emissions reductions as part of this framework. However, the Australian Government is responsible for publishing actual carbon emissions in NSW and forecasting Australia's carbon emissions.

6.1.4 Final position

The NSW Government will develop an evaluation, monitoring and verification framework for the ESS.

This framework will include monitoring of administrative costs and provide information to the Australian Government so that NSW energy efficiency programs can be considered in reporting on trends for greenhouse gas emissions.

The framework will provide the NSW Government, IPART and stakeholders with the information required to continuously improve the ESS, maintain the accuracy of financial incentives and understand the costs and benefits of the ESS.

6.2 Regular reviews of the ESS Rule

Preferred option in the ESS Review Options Paper

The NSW Government will manage an annual process to update the ESS Rule. This annual process will:

- incorporate stakeholder feedback and evaluation results
- maintain the effectiveness of the ESS Rule, through updates to savings factors, and adding activity schedules for new technologies
- complement changes to building and equipment standards.

Over the next three years, the NSW Government intends to limit changes to the ESS Rule arising from the annual review process to minor amendments. Some more significant amendments will also be necessary to implement the findings of this Review.

6.2.1 Submissions

A diverse mix of stakeholders commented on the NSW Government's intention to review the ESS Rule on an annual basis including energy efficiency service providers, gas suppliers, large energy users and government agencies.

Table 22 Summary of submissions on the ESS Rule

Stakeholder group	Summary
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Stakeholder group	Summary
Energy efficiency service providers	<p>Energy efficiency service providers supported the government's position to introduce an annual process for updates to the ESS Rule. Some submissions argued that the greater flexibility provided by an annual review of the ESS Rule would encourage new products and activities.</p> <p>Energy Cost Attack argued for specific changes to the ESS Rule to introduce requirements for how accredited certificate providers can dispose of old lamps that they replace, including a requirement for mercury capture from old fluorescent lamps.</p> <p>The Energy Efficiency Council recommended that the ESS include projects that use waste heat to offset electricity or gas use, irrespective of whether the waste heat is used directly or converted into electricity.</p>
Gas suppliers	<p>Australian Gas Networks and APA Group supported the principle of the proposal to introduce an annual process to update the ESS Rule, but suggested ESS stability and certainty be considered. They are concerned that if changes occur too frequently, scheme participants and accredited certificate providers could lose confidence in the ESS.</p> <p>ENA was not supportive of ad hoc reviews, but supported reviews with predetermined review periods and success indicators. ENA also supported regular reviews of the technologies which are able to receive certificates under ESS.</p> <p>ENA argued for reviews of the ESS Rule to include consideration of the effects of other schemes to ensure maximum efficiency of funds, and to avoid double counting in order to ensure the ESS does not duplicate effort.</p> <p>Jemena supported an annual review of the ESS Rule that includes an assessment of remaining opportunities that could be supported by the ESS, and the quantification of the ESS's economic costs and benefits.</p> <p>Jemena also proposed that major changes to the ESS Rule are considered on a three year cycle.</p>
Large energy users	<p>Orora supported engagement with industry in general ESS reviews, as well as in the review and development of new methodologies in the ESS Rule, to facilitate growth of recognised energy efficiency activities.</p> <p>Norske Skog supported the principle of regular updates of the ESS Rule if industry is engaged in the process, but is concerned about investment certainty.</p> <p>CSR Limited suggested new products be added to the ESS Rule on a more frequent basis than the annual cycle.</p>
Government agencies	<p>IPART recommends ensuring the ESS Rule is efficient and to minimise red tape by removing unnecessary complexity.</p>

6.2.2 Analysis of key issues raised

Issues raised by stakeholders include:

- the proposed annual process for changes to the ESS Rule may not be responsive enough to allow for new technologies, or may be too frequent and may affect investment certainty
- specific recommendations on changes to the ESS Rule including amendments to methods in the residential sector, and standards for the disposal of old lamps containing mercury.

Frequency of changes to the ESS Rule

Some stakeholders have commented that frequent significant changes to the ESS can be disruptive, and can impact on businesses involved in the ESS.

“APA [Group] supports the principle of this recommendation, although scheme stability and certainty needs to be considered when the scheme is reviewed. If this process were to occur too frequently, scheme participants could easily lose confidence in the scheme.” (APA Group, a gas distributor)

The regular annual updates to the ESS Rule are intended to:

- incorporate stakeholder feedback and evaluation results
- maintain the effectiveness of the ESS Rule, through updates to savings factors, and adding activity schedules for new technologies
- complement changes to building and equipment standards.

These changes would not affect projects that create certificates annually through the Metered Baseline Method, where businesses have made investments based on the current ESS Rule.

Other stakeholders have suggested that an annual process to update the ESS Rule may be too slow to include new technologies and practices.

“A more flexible approach can be better integrated with new product launches and marketing plans, rather than waiting for the 12 monthly review.” (CSR Limited, a large energy user)

Annual updates to the ESS Rule provide the opportunity for industry engagement with the process without being onerous for stakeholders or government. This is consistent with annual update cycles for schemes requiring measurement such as the *National Greenhouse and Energy Reporting Scheme*.

The Australian Energy Market Commission, an independent national body, coordinates updates to the National Electricity Rules and National Gas Rules. These rules are updated frequently with changes requested by proponents. Changes requested by stakeholders are made public on the commission’s website. In 2014, the National Electricity Rule was updated ten times.

This type of approach requires greater resources and introduces more cost to the development of the ESS. The NSW Government considers that any benefit of updates more frequently than on an annual basis are unlikely to warrant the cost.

Specific requests for changes to the ESS Rule

A number of stakeholders have requested specific changes to the ESS Rule including changes to methods for retrofits to residential buildings (see **Section 4.2**), to make projects that use waste heat eligible (see **Section 2.2.7**), and to introduce requirements for the disposal of old lamps that contain mercury.

Existing residential buildings across NSW have large opportunities to save energy. In 2014, the NSW Government changed the ESS Rule to include the new home energy efficiency retrofit sub-method, to provide access to the ESS for upgrades to fixed appliances and building fabric. The new sub-method includes:

- a co-payment to ensure that consumers are engaged in their purchasing decision (i.e. no ‘give-aways’) requirement
- a bundling requirement to ensure that a number of activities are delivered, rather than a single activity.

Stakeholders have argued that the new sub-method may not result in any significant uptake of the energy efficiency opportunity in existing residential buildings. Stakeholders argued that the co-payment and bundling requirements may be too restrictive to deliver these savings.

Energy Cost Attack, an energy efficiency service provider, argued that the ESS drives significant quantities of fluorescent lamps to be replaced with more efficient lamps. The old lamps contain mercury, which if incorrectly disposed of can harm environmental and human health. Adopting best practice in disposal of waste is an important goal.

The NSW Environment Protection Authority is working to improve waste management in NSW through a wide variety of programs and initiatives. The ESS may not have a direct role in improving these practices, but it can inform other government programs targeted at waste management.

The next ESS Rule update process is an opportunity to assess these stakeholder suggestions.

6.2.3 Summary

As outlined in the ESS Review Options Paper, the objective of government action is to:

- enable stakeholder input into policy development
- maintain the effectiveness of the ESS Rule
- complement building and equipment minimum performance standards.

The proposal to manage an annual process to update the ESS Rule is:

- effective as it will deliver the NSW Government's objectives for action
- efficient as it ensures that the financial incentives provided by the ESS are accurate to drive energy savings while limiting freeriders
- administratively simple as an annual process for updates to the ESS Rule will establish clear processes and guidelines for stakeholders and government.

Stakeholder submissions were all supportive of major reviews of the ESS every three years and more regular reviews of the ESS Rule to include new products and practices, and update deemed savings factors to reflect market and regulatory conditions. Stakeholder feedback also supported ESS stability and stakeholder engagement as a priority in these annual update processes.

Annual updates to the ESS Rule to incorporate new products and practices will allow faster uptake of energy efficiency opportunities without being too onerous and costly to implement. A three year cycle for major reviews of the ESS Rule could enable the NSW Government to ensure the ESS Rule is effective without creating unnecessary investment uncertainty.

6.2.4 Final position

The NSW Government intends to proceed with annual updates to the ESS Rule to update deemed savings factors and incorporate new products and practices, with a major review of the ESS Rule every three years.

The Office of Environment and Heritage and the NSW Department of Industry will consult with industry on all changes to the ESS Rule.

As part of the next update of the ESS Rule, the Office of Environment and Heritage will include an assessment of the technologies and changes to methods suggested in submissions to this review, and consider whether the ESS Rule should contain a requirement for the disposal of lamps containing mercury.

6.3 Interaction with the Emissions Reduction Fund

NSW Government position in the ESS Review Options Paper

The Australian Government's Emissions Reduction Fund will fund emission abatement activities in NSW.

The NSW Government will work with the Australian Government to establish formal information sharing arrangements between the two schemes to harmonise the schemes and prevent double counting of energy savings.

The NSW Government will monitor the effect of the Emissions Reduction Fund until operations of the ESS become settled.

6.3.1 Submissions

A range of stakeholders commented on the NSW Government's position to continue the ESS in parallel with the Emissions Reduction Fund, and to work with the Australian Government on information sharing and harmonisation of the two schemes.

Table 23 Summary of submissions on interaction with the ERF

Stakeholder group	Summary
Environmental advocacy groups	The Total Environment Centre supports harmonisation of the NSW ESS with a national scheme, as long as NSW targets are not reduced.
Energy efficiency service providers	Energy efficiency service providers including the Energy Efficiency Council were supportive of retaining the ESS alongside the Emissions Reduction Fund, and harmonising the two schemes if the ESS is not diminished in any way. Out Performers also suggested including a mechanism to allow substitution of certificates under both schemes where the certificates would comply with both schemes. Opower suggested harmonising the calculation methods to the fullest extent practical to make energy savings fungible across both schemes, and allow the availability of one market as a hedge against price fluctuations in the other. Water Heater Research suggested that the ESS should be considered at the national level as part of the Direct Action Plan.
Energy retailers and generators	No energy retailers commented on the NSW Government's position in relation to information sharing and harmonisation of methods with the ERF. Alinta argued that there is overlap in the objectives of the ESS and the Emissions Reduction Fund. To reduce costs, complexity and burden Alinta supports a single scheme covering the NEM jurisdictions that aims to both improve energy efficiency and reduce emissions.
Gas suppliers	Most gas suppliers supported harmonisation between the ESS and the Emissions Reduction Fund to improve consistency between schemes and to avoid double counting. APA Group, Australian Gas Networks, Gas Energy Australia and ENA also argued the main objective of the ESS should be changed to emissions reduction, rather than energy savings. They argued that this would be more consistent with the Victorian Energy Efficiency Target scheme and the Emissions Reduction Fund. This could reduce scheme compliance complexity for national organisations. ENA argued that energy savings calculation methods should be removed from the ESS if they are covered by a national scheme such as the Emissions Reduction Fund.

Stakeholder group	Summary
Large energy users	<p>Large energy users generally supported harmonisation of the ESS with the ERF to avoid duplication costs, double counting and improve consistency of both programs.</p> <p>AIGN prefers that climate change policies be implemented at the national level to avoid costly duplication.</p> <p>Orora suggested the ESS be adopted on a national scale. Orora also suggested information from the federal government be used to verify exemptions for emissions intensive trade exposed facilities.</p> <p>The Cement Industry Federation and Cement, Concrete and Aggregates Australia also prefer a single national approach to greenhouse gas reductions but support information sharing arrangements that seek to also streamline monitoring and reporting.</p>
Government agencies	City of Sydney believes the ESS is complementary to the Emissions Reduction Fund and supports the proposed collaborative approach.

6.3.2 Analysis of key issues raised

Issues raised by stakeholders include:

- the ESS and Emissions Reduction Fund should have a consistent methods to ensure that businesses can operate across both programs
- the ESS may overlap with some of the financial incentives from the Emissions Reduction Fund
- the ESS should allow substitution of certificates for Australian carbon credit units (ACCUs), and vice versa.

Harmonisation of calculation methods with the Emissions Reduction Fund

Some stakeholders argued that there should be a common methods across both schemes.

“We strongly encourage the NSW Government to proactively engage with the Commonwealth Government to ensure that both the ESS and the ERF share a common [measurement and verification] framework, to the fullest extent practical.” (Opower, an energy efficiency service provider)

Other stakeholders argued that if the Emissions Reduction Fund has a method for a specific energy efficiency activity, the activity should be removed from the ESS.

“Any method covered by a national scheme such as the [Emissions Reduction Fund] should be automatically removed from the ESS to ensure that consumers pay for least cost measures and that efforts to increase efficiency and reduce GHG emissions are not double counted.” (ENA, an industry association representing electricity and gas network businesses)

The COAG complementarity principles³³ require an understanding of whether a national mitigation policy is adequate to address the market barriers targeted by state based programs.

Although there are calculation methods available for energy efficiency under the Emissions Reduction Fund, there is no evidence that the methods enable energy efficiency projects to access financial incentives. Not one energy efficiency project has participated or been successful in an Emissions Reduction Fund auction, and only two energy efficiency projects have registered under the Emissions Reduction Fund so far (a paper mill in Victoria).

“... there is not a significant risk of overlap given the unsuitability of the ERF for supporting efficiency measures in commercial buildings, small to medium manufacturers and many

³³ Council of Australian Governments, 2008, *COAG Principles for Jurisdictions to Review and Streamline their Existing Climate Change Mitigation Measures*, accessed at https://www.coag.gov.au/sites/default/files/20081129_complementarity_principles.pdf

other types of energy efficiency projects.” (Energy Efficiency Council, an industry association representing energy efficiency service providers)

Energy efficiency in NSW has been supported by the ESS and GGAS for more than a decade, so much of the low cost opportunities would have been taken up. It is unclear if energy efficiency projects in NSW could compete in the reverse auction with energy efficiency projects in other states.

If the NSW Government were to prematurely limit the scope of the ESS to ensure complementarity with the Emissions Reduction Fund, it could limit investment certainty and mean that cost effective energy efficiency opportunities in NSW are not taken up.

The ESS Review Options Paper outlines the NSW Government’s position to monitor the effect of the Emissions Reduction Fund and review ESS targets and the ESS Rule. This would enable incremental reform and ensure there is no gap in financial incentives for NSW households and businesses to save energy.

Fungibility of certificates with the Emissions Reduction Fund

Some stakeholders have suggested that the schemes could allow substitution of certificates under the ESS and Emissions Reduction Fund.

“... we would like to see a mechanism whereby [certificates] are fungible with ACCUs, and vice versa, under certain conditions to comply fully with the differences in the scheme. This could be an important opportunity to enhance the resilience and effectiveness of both schemes. Although clearly not without its challenges.” (Out Performers, an accredited certificate provider)

The methods for energy efficiency under the Emission Reduction Fund are all based on those in the ESS Rule, so there is unlikely to be any accuracy issues in allowing certificates from the Emissions Reduction Fund to be used in the ESS.

Accepting certificates from the Emissions Reduction Fund could provide a transparent link between the two certificate markets, and show the effect of the Emissions Reduction Fund on the ESS. However, the fungibility of certificates is a decision for both the NSW and Australian Governments to make together.

6.3.3 Summary

Stakeholders were generally supportive of the NSW government position on the interactions between the ESS and the ERF. Some stakeholders raised overlap issues associated with industrial energy efficiency methods while others argued that methods should be consistent and certificates should be fungible across schemes.

The effect of the Emissions Reduction Fund are still unclear. Incremental changes to the ESS can ensure the schemes remain complementary.

6.3.4 Final position

The NSW Government intends to continue to work with the Australian Government to establish formal information sharing arrangements between the two schemes, to harmonise the energy efficiency methods in both schemes and prevent double counting of energy savings. The NSW Government will monitor the effect of the Emissions Reduction Fund until operations of the scheme become settled.

The Office of Environment and Heritage and the NSW Department of Industry will continue to investigate other opportunities to harmonise the ESS and the Emissions Reduction Fund with the Australian Government Department of Environment.

6.4 Harmonisation with state based schemes

The ESS Review Options Paper did not consider harmonisation of state based energy efficiency schemes. However, many submissions urged the NSW Government to harmonise with other states or expressed strong preference for a national scheme.

As outlined in the NSW Energy Efficiency Action Plan, the NSW Government supports a national energy efficiency market. The NSW Government is engaged in ongoing discussions with other jurisdictions with energy efficiency schemes to align activities and reduce red tape, while ensuring that schemes continue to deliver the high quality outcomes that consumers expect. This will help to expand opportunities for consumers to reduce their energy costs, and continue to grow jobs and skills in each state or territory's energy efficiency sector.

The NSW Government intends to expand the Minister's power to approve corresponding schemes under section 127 of the Act to enable a staged process to harmonising with other states. This would include expanding accrediting and crediting functions to be used in other jurisdictions, while preventing energy savings generated outside NSW from being used to meet ESS targets. This will enable the ESS to be expanded to other jurisdictions without costs to NSW energy users.

The Office of Environment and Heritage and the NSW Department of Industry will investigate how the crediting and accreditation functions of the ESS could be expanded to South Australia and the ACT with the relevant departments in each state.

The Office of Environment and Heritage and the NSW Department of Industry will continue to investigate other opportunities to harmonise methods and product acceptance with the Victorian Department of Economic Development.

Appendix A Cost benefit analysis

Several submissions commented on the cost benefit analysis in the ESS Review Options Paper. These submissions are summarised in **Table 24**.

Table 24 Summary of submissions on cost benefit analysis

Stakeholder group	Summary
Energy efficiency service providers	<p>Several energy efficiency service providers argued that the costs of delivering energy efficiency were likely to be overestimated, and that some of the benefits were underestimated. The Energy Efficiency Council and Opower argued that the cost benefit analysis underestimated energy market benefits caused by the transformation of the energy sector as a result of energy efficiency, the value of carbon mitigation linked to energy savings, and the value of health benefits from avoided air pollution. These submissions also argued that the cost benefit analysis should adopt the four per cent discount rate used by the Victorian Government in their recent analysis of the Victorian energy efficiency scheme.</p> <p>EECCA argued that the cost benefit analysis should include benefits attributable to increased business and residential engagement in energy use behaviour outside of the ESS, noting that the support of other government programs to create these benefits needs to be accounted for in the modelling.</p> <p>Maxee Innovations and EECCA also argued that the cost benefit analysis overestimated the costs of delivering energy efficiency opportunities because it did not account for cost reductions from economies of scale of delivering energy savings activities.</p>
Energy retailers and generators	<p>Some energy retailers argued that the cost benefit analysis overestimated the benefits attributable to the ESS, such as avoided generation and deferred network investment. Lumo Energy Australia and Red Energy argued that the analysis underestimated the economic benefits of gas efficiency because the benefits of deferred gas investment were not considered.</p> <p>Simply Energy argued that forecasts overestimated electricity prices because of oversupply in generation capacity, and were out of date because they did not consider proposed reforms to the Australian Government's Renewable Energy Target. Simply Energy argued that capacity charges were not a good reflection of the value of deferred network investment because of the way networks are regulated. Simply Energy also argued that avoided health costs from energy efficiency would be lower than estimated because the merit order effect means that energy efficiency would reduce the output of gas fired generators first.</p> <p>ESAA suggested that the cost benefit analysis should include any private costs incurred to implement energy savings activities. They also suggested that avoided electricity generation should only value fuel and variable operating costs, that network benefits should not accrue unless they occur in constrained network areas, and that freeriders be considered differently to the approach taken in the cost benefit analysis.</p>
Government agencies	<p>IPART argued that the cost benefit analysis overstated the health benefits from avoided air pollution, and understated the administrative costs associated with extending and expanding the ESS.</p> <p>City of Sydney recommended a lower discount rate be used to align with the recent analysis by the Victorian Government of its energy efficiency scheme.</p>

Stakeholders raised issues about these elements of the cost benefit analysis:

- discount rates
- private costs and benefits
- economies of scale and technological improvements
- avoided electricity generation
- deferred network investment
- avoided cost of carbon emissions
- avoided cost of health pollution

- freeriders and spillover.

Discount rates

Some energy efficiency service providers and the City of Sydney recommended the cost benefit analysis adopt a lower discount rate to align with Victoria's approach to cost benefit analysis.

"The benefits in the ESS modelling exercise are discounted at a punitive 7% versus the 4% used in Victoria. We would argue that 4% should be used in NSW as well." (Opower, an energy efficiency service provider)

The cost benefit analysis determines net economic benefit by discounting future costs and benefits by an annual rate of seven per cent. This is consistent with the NSW Government's Guidelines for Economic Appraisal³⁴ which requires that the central scenario in cost benefit analysis use a seven per cent discount rate, with sensitivity analysis at four per cent and ten per cent rates.

Private costs

Some stakeholders argued that the cost benefit analysis should include the full private costs and benefits associated with the ESS.

"[A]ny private costs incurred to achieve the benefits need to be included in the [cost benefit analysis], otherwise it will understate the costs of realising the benefits." (ESAA, an industry association representing electricity generators and upstream gas suppliers)

The private costs for energy consumers who undertake energy efficiency activities is not considered an economic cost as their action is voluntary and they exhibit a willingness to pay when offered a financial incentive from the ESS. Private costs are assumed to be offset by private benefits (which would include private benefits to the consumer who saves energy).

The cost benefit analysis only takes account of regulated costs borne by private customers. This means that the cost of implementing an energy efficiency measure is assumed to be the financial incentive required to motivate the energy user to save energy.

Economies of scale and technological improvements

EECCA argued that the cost benefit analysis overestimated the cost of providing energy efficiency activities and underestimated the speed with which innovation may drive uptake of new activities.

"Net economic benefits have likely significantly overstated costs ... examples include the penetration of commercial lighting in NSW and the rollout of standby power controllers (SPCs) and then LED residential downlight programs. Modelling of activities in ESS and other schemes has been characterised by very conservative assumptions around scheme participants' abilities and of business and residential uptake of these activities." (EECCA, an industry association representing accredited certificate providers)

Based on a Grattan Institute analysis of comparable Australian trading schemes, a 2013 IPART legacy review of the NSW Greenhouse Gas Reduction Scheme (GGAS) recommended that modelling should not attempt to anticipate innovation.³⁵

"[M]odels could not anticipate how the market would respond to the signal provided by the schemes. In particular, it was hard to anticipate the new business models and technological innovation ... While it would not be prudent for scheme designers to count on the scheme

³⁴ NSW Government, 2007, *NSW Government Guidelines for Economic Appraisal (TPP07-5)*, accessed at www.treasury.nsw.gov.au/data/assets/pdf_file/0016/7414/tpp07-5.pdf

³⁵ IPART, 2013, *NSW Greenhouse Reduction Scheme: Strengths, weaknesses and lessons learned*, accessed at www.ipart.nsw.gov.au/Home/Industries/Greenhouse_Gas_Reduction_Scheme/NSW_Greenhouse_Gas_Reduction_Scheme_-_Strengths_weaknesses_and_lessons_learned_-_Final_Report_-_July_2013

promoting innovation ... they should not be surprised if it does.” (IPART, the scheme administrator and scheme regulator)

This suggests that it would not be appropriate to rely on cost reductions over time for energy efficiency products and services in cost benefit analysis.

Avoided generation benefits

ESAA and Simply Energy argued that the benefits of avoided electricity generation may be overstated in the cost benefit analysis.

Simply Energy argued that the wholesale electricity price forecasts prepared for the Australian Energy Market Operator needed to be updated considering recent changes in both electricity oversupply and renewable energy undersupply.

“The National Electricity Market (NEM) is currently experiencing a situation of chronic generation oversupply. This has been driven by reductions in the energy intensity of the economy and decreasing general grid-delivered energy usage ... The price forecast that has been used needs to be replaced with an updated forecast ... assumptions are now over 15 months old and no longer look appropriate for the purpose of the ESS Review. In particular, [the Australian Energy Market Operator] assumed that the Renewable Energy Target (RET) would require 41 terawatt hours (TWh) of Australia’s electricity to come from renewable sources by 2020.” (Simply Energy, an energy retailer)

The price forecasts for the Australian Energy Market Operator were developed in early 2014. The oversupply of generation capacity in the National Energy Market existed well before this time. The changes to the Renewable Energy Target will help reduce the oversupply of generation capacity compared to what would have happened otherwise.

ESAA argued that avoided input costs should be used to estimate benefits instead of average wholesale electricity prices.

“[Cost benefit analyses] are designed to assess the costs and benefits to the economy as a whole. As such, the appropriate figures to use are the avoided input costs of generation, not the value the electricity is sold at ... As no new generation investment is expected to be required over the assessment period, even if the ESS did not continue, there is nothing to avoid on the capital front ...” (ESAA, an industry association representing the electricity generators and upstream gas suppliers)

In an efficient wholesale energy market:

- electricity generators would bid to sell their output at the lowest price they would require to make generating electricity worthwhile (i.e. their short run marginal cost)
- the wholesale price reflects the bid price of the most expensive generator required to meet demand for electricity at any one point in time
- reducing demand therefore avoids the cost of the electricity generated by the most expensive generator at any one point in time
- the average wholesale electricity price over a year represents the weighted average of the bid price over a year
- therefore, energy efficiency will avoid the average wholesale electricity price as long as it reduces demand consistent with overall electricity demand over a year.

Many energy efficiency activities typically have a greater effect on peak demand than on average demand. This suggests that using the average wholesale electricity price is a conservative approach to the value of avoiding electricity generation through energy efficiency.

Deferred network investment

Simply Energy argued that deferred network investment benefits should not be based on demand charges. They argued this was because distribution costs could not be reduced within a determination period because of network pricing regulation.

"[N]etworks are subject to a revenue cap. This means that the revenues they receive from customers in total are set by the [Australian Energy Regulator] for a five-year period. If customers use less energy or reduce their peak demand then the distribution businesses will increase their charges for each unit of energy delivered or unit of peak demand met." (Simply Energy, an energy retailer)

In 2014, the Australian Energy Market Commission introduced changes to the regulatory framework that determine how distribution network service providers recover their costs from electricity users.

"Each network tariff must be based on the long run marginal cost of providing the service. Long run marginal cost is a measure that includes the future network costs that are incurred by using more energy, or the costs that could be saved by using less energy." (Australian Energy Market Commission, emphasis added)³⁶

This suggests that the regulatory regime for distribution network service providers is intended to enable costs to be saved by using less energy, including through energy efficiency. It also indicates that network tariffs should represent the long term avoidable cost of network infrastructure.

ESAA and Simply Energy argued that only peak demand savings in specific areas where there are network constraints could defer network investments.

"Unless energy efficiency investment is concentrated in a given area, and that area is approaching a network constraint, network savings will be negligible. Further, not all types of savings will have a network impact. Only consumption reductions from peak demand should be counted." (ESAA, an industry association representing the electricity generators and upstream gas suppliers)

NSW distribution network service providers take into account average demand growth across their networks to calculate the long run marginal cost of providing network services.

"The [average incremental cost] approach calculates the average of expected capacity related expenditure over the period that output is expected to change." (Ausgrid, a NSW distribution network service provider)³⁷

Therefore, long run marginal cost estimated by distribution network service providers already accounts for the likelihood that an increase or decrease in demand across the network would require new investment.

With capacity charges, energy users pay for the peak demand they place on the distribution network. Capacity charges reflect the revenue a distribution network service provider is willing to forgo if peak demand is reduced, and needs to recoup if peak demand is increased. This is effectively a market set price for distribution capacity and is more conservative than using a long run marginal cost.

This suggests that the cost benefit analysis did not overestimate the benefits of deferred network investment.

³⁶ Australian Energy Market Commission, 2014, *National Electricity Amendment (Distribution Network Pricing Arrangements) Rule 2014*, accessed at www.aemc.gov.au/getattachment/de5cc69f-e850-48e0-9277-b3db79dd25c8/Final-determination.aspx

³⁷ Ausgrid, 2015, *Initial Pricing Proposal For the financial year ending June 2016*, accessed at www.aer.gov.au/sites/default/files/Initial%20Pricing%20Proposal%20-%20Main%20Submission.pdf

Deferred gas network investment

Identical submissions from Lumo Energy Australia and Red Energy suggested the analysis in the ESS Review Options Paper underestimated the value of reduced gas consumption because it did not consider additional benefits from deferred investment in new gas production, transmission and distribution.

“Savings in significant quantities of natural gas would also defer major investments ... in new gas production and ... transmission and distribution investments. These are additional benefits that should be added to the total benefits ...” (Lumo Energy Australia and Red Energy, energy retailers).

Conversely, Jemena suggest that reduced demand on existing infrastructure may have negative impacts by increasing retail prices. AGL also suggest there may be negative implications for gas supply from delays in new gas infrastructure development, but do not specify what they may be.

“The costs of providing gas distribution services are largely fixed. As significant reductions in the volumes of gas used by customers would not correspond to a decrease in our costs, over time our average network prices would need to increase in order to allow us to recover the same costs.” (Jemena, a gas distributor).

The Australian Energy Regulator’s 2014 *State of the Energy Market* report notes that Australian gas networks (excluding Western Australia) are slated to invest an additional \$2.8 billion to 2020, driven by:

- rising connection numbers
- replacement of ageing networks
- maintenance of capacity to meet consumer demand.

The 2010-2015 Australian Energy Regulator access arrangements for Jemena³⁸ and Country Energy³⁹ (Wagga Wagga) natural gas distribution networks have projected capital expenditure of \$790 million. This was driven by a projected 13.5 per cent increase in customer numbers, and an increase to annual total load of 2.7 per cent from 2010 to 2015 (a 44.5 PJ increase).

Further analysis is required to determine how much of this investment could be deferred by reducing gas demand. However, a 2013 report prepared for the Australian Government on a National Energy Savings Initiative found that deferred gas investment could generate an additional 2 per cent of total economic benefits.⁴⁰ This could be up to \$33 million in additional net economic benefits.

Avoided cost of carbon emissions

The Energy Efficiency Council argued that the cost benefit analysis underestimated the cost of carbon emissions and health costs as a result of reduced air pollution.

“[T]he modelling ... substantially underestimates the value of carbon mitigation, whether that value is set as a social cost of carbon or a likely future carbon price and health impact costs

³⁸ AER, 2010, *Access arrangement (post mine subsidence) – JGN NSW gas distribution 2010-2015*, accessed at www.aer.gov.au/sites/default/files/Access%20arrangement%20%28post%20mine%20subsidence%29%20-%20JGN%20NSW%20gas%20distribution%20-%20Final%20Decision%20-%2026%20September%202011.pdf.

³⁹ AER, 2010, *Access arrangement for the Wagga Wagga gas distribution network, 2010-2015*, accessed at www.aer.gov.au/sites/default/files/AER%20-%20Country%20Energy%20access%20arrangement%20-%20Varied%20access%20arrangement%20%28including%20the%20terms%20and%20conditions%20and%20access%20arrangement%20informatio%29.pdf.

⁴⁰ SKM MMA, 2013, *Final report: The economic benefit of a National Energy Savings Initiative*, prepared for the Australian Department of Environment, accessed at www.industry.gov.au/Energy/IndustrialEnergyEfficiency/NationalEnergySavingsInitiative/Documents/Economic-benefits-from-NESI.pdf.

are at the lowest range of international estimates.” (Energy Efficiency Council, an industry association representing energy efficiency service providers)

Opower recommended the cost benefit analysis evaluate the avoided cost of carbon emissions based on the US Environmental Protection Agency’s social cost of carbon projections. The Energy Efficiency Council proposed sensitivity analysis be carried out on all externalities, particularly the cost of carbon.

In the absence of a locally appropriate study of the whole of economy cost of climate change impacts, the NSW Government preference is for market data to be used where it exists.

The Office of Environment and Heritage included higher estimates for the cost of carbon emissions in sensitivity analysis detailed in **Appendix B**.

Avoided cost of air pollution

Some stakeholders argued that the cost benefit analysis had overstated the avoided health costs from the ESS because low emission gas fired generation will be avoided first.

“The merit order effect means that reductions in energy demand impact the most expensive generating units first. The market therefore sees reductions in the output of gas-fired generation rather than reductions in the output of coal-fired generation ... [The] assumption that coal-fired generation, rather than gas-fired generation, reduces output tends to significantly exaggerate the health benefits of energy efficiency measures.” (Simply Energy, an energy retailer)

A 2014 study of energy efficiency policy in NSW found that coal fired power stations were the displaced marginal generator for over 90 per cent of the energy savings from NSW energy efficiency programs.⁴¹

IPART also argued that avoided costs of air pollution should not be based on energy savings from coal generation and that European population density was not comparable to Hunter Valley population density.

“The second assumption is that as Hunter Valley population densities are roughly 20% of median European population densities, the high health cost rates observed in Europe would apply in NSW with the 20% scaling factor ... [The] approach to estimating the influential health externalities lacks a proper empirical grounding in the NSW situation.” (IPART, the scheme administrator and scheme regulator)

The estimated average air pollutant from NSW power stations is based on reported pollutant quantities in 2012-13 from the National Pollutant Inventory and the NSW Environment Protection Authority’s air emission inventory, and annual generation figures published in each generator’s annual report.

The cost benefit analysis used an approach established by the Australian Academy of Science Technology and Engineering in its *Hidden Costs of Electricity Generation* report to estimate the costs of air pollution. This approach takes values of health damage costs from the European Union and discounts the value based on the local population density (in this case based on the figure published in the same report for the Hunter Valley).

Sensitivity analysis conducted in response to these submissions is detailed in **Appendix B**.

Freeriders and spillover

The ESAA argued that the cost benefit analysis overestimated benefits because it did not account for non-additional activities, also known as ‘freeriders’.

⁴¹ Jacobs, 2014, *NSW energy efficiency programs cost benefit analysis*, prepared for NSW Office of Environment and Heritage (unpublished).

The cost benefit analysis did account for freeriders using a 'net to gross' energy savings ratio.⁴² The net to gross ratio was assumed to be equivalent to 13 per cent of business as usual benefits for the ESS based on similar programs in comparable jurisdictions.

EECCA argued that the cost benefit analysis underestimated benefits because it did not account for flow on impacts of the policy on energy savings beyond the ESS, also known as 'spillover'.

“Modelling may not include benefits which derive from increased business and residential engagement in their energy use behaviour – it has been observed in many jurisdictions that increasing the flow of information regarding energy use and efficiency changes behaviour. ESS with supporting government programs has and will continue to create these benefits and these need to be included in the modelling.” (EECCA, an industry association representing accredited certificate providers)

The 'net to gross' ratio accounted for both freeriders and spillover effects. The 13 per cent figure used was based on an assumed freerider rate of 30 per cent and a spillover rate of 17 per cent.⁴³

ESAA suggested an alternative approach to accounting for non-additional savings by excluding cost-effective activities from the cost benefit analysis.

“If the ESS subsidy reduces the payback period below a certain level it is assumed the activity is undertaken. ... The benefits of any activity whose payback is below the threshold, prior to the application of the ESS subsidy, should be removed from the [cost benefit analysis].” (ESAA, an industry association representing the electricity generators and upstream gas suppliers)

This approach would not take account of market barriers to energy efficiency that are overcome by creating an industry whose purpose is to save energy. It would also not account for the spillover effect.

The approach taken in the cost benefit analysis using a net to gross ratio is the most appropriate given the information available on the ESS at this stage.

The NSW Government will consider a study into freeriders and spillover as part of the ESS evaluation measurement and verification framework.

⁴² NSW Government, April 2015, *Review of the NSW Energy Savings Scheme: Part 2: Options Paper*, p. 142, accessed at www.resourcesandenergy.nsw.gov.au/energy-consumers/sustainable-energy/efficiency/scheme/?a=558865.

⁴³ Navigant, 2013, *Custom free ridership and participant spillover jurisdictional review*, prepared for the Sub-committee of the Ontario Technical Evaluation Committee; Skumatz, 2009, *Lessons learned and next steps in energy efficiency measurement and attribution: Energy savings, net to gross, non-energy benefits, and persistence of energy efficiency behavior*, prepared for California Institute for Energy and Environment

Appendix B Sensitivity analysis

The Office of Environment and Heritage tested the sensitivity of its analysis to assumptions under a number of different scenarios including:

- **Combined scenarios:** estimating impacts of different targets between 6 per cent and 11 per cent for an ESS that includes gas and is extended to 2025 (previous analysis examined these scenarios separately)
- **High and low demand:** testing the sensitivity of results to different Australian Energy Market Operator scenarios for high and low energy demand and economic benefit
- **Emissions conversion factor for gas:** testing the sensitivity of results to a greenhouse gas certificate conversion factor for gas compared to a primary energy factor
- **Alternative programs:** comparing the economic efficiency (by benefit cost ratio, or BCR) of different ESS targets to alternative energy efficiency policies and programs
- **Additionality and freeriders:** test target settings if discounted benefits accounting for 'freeriders' (non-additional projects) were double current assumption.

Combined scenarios

In the ESS Review Options Paper, separate analysis was undertaken to examine the case for increasing electricity targets, expanding to gas and extending ESS duration.

The Office of Environment and Heritage has conducted sensitivity analysis of targets set to deliver optimal net economic benefit under an ESS that is expanded to gas and extended to 2025.

This included testing a combination of:

- targets on electricity sales from 6 per cent to 11 per cent
- extending ESS duration to 2025
- gradual increase over three years to reach target by 2018, including the recommended target settings to reach an 8.5 per cent target by 2019
- a maximum increase of 7 per cent in 2016.

Figure 5 below shows estimated millions of certificates required each year to meet combined scenario targets.

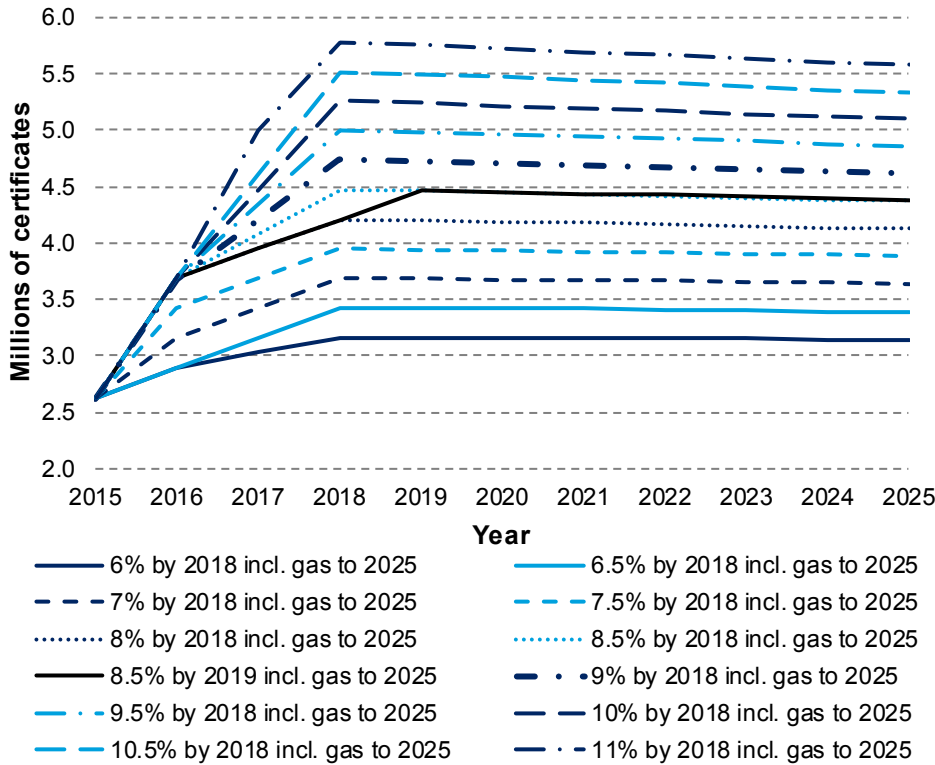


Figure 5 Certificates per year under combined scenarios (final position shown as a solid black line)

Figure 6 below shows that once the ESS is expanded to gas and extended to 2025, the target that delivers the greatest net economic benefit is around 10 per cent (if the target is on electricity sales only).

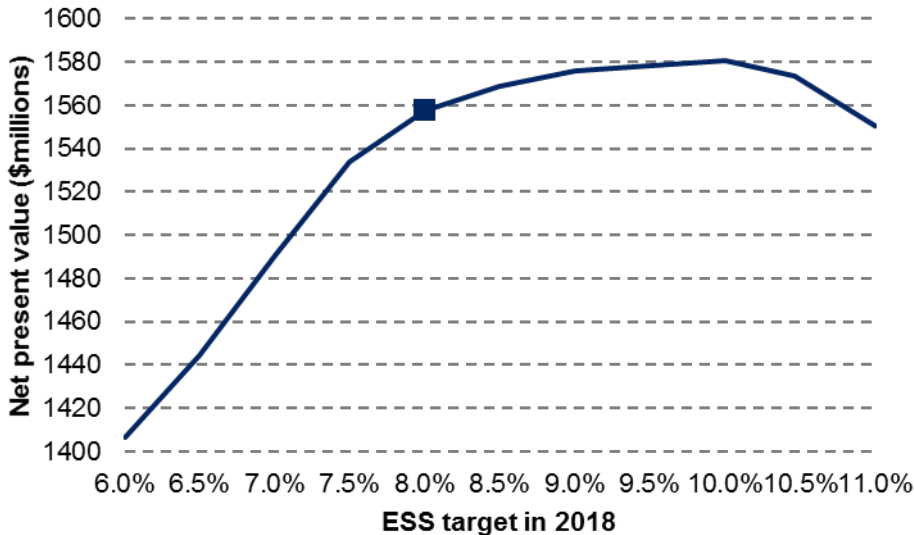


Figure 6 Net present value of the ESS under various targets when expanded to gas and extended to 2025 (preferred option for targets in the ESS Review Options Paper marked with square)

Table 25 shows the combined scenario results in more detail. The net economic benefits peak at around 10 per cent, generating \$23 million more in net economic benefits than the preferred option for targets in the ESS Review Options paper (8 per cent target) but at a less efficient benefit cost ratio of 2.3. The final position is for an 8.5 per cent target by 2019.

Table 25 Overall economic costs and benefits in present value terms (FY13\$ millions)

Parameter	Current settings	7% by 2018 to 2025 incl. gas	8% by 2018 to 2025 incl. gas	9% by 2018 to 2025 incl. gas	10% by 2018 to 2025 incl. gas	Final position – 8.5% by 2019 to 2025 incl. gas
Government costs	\$60	\$96	\$97	\$98	\$98	\$97
Compliance costs	\$115	\$380	\$624	\$869	\$1,126	\$723
Total costs	\$175	\$476	\$721	\$967	\$1,224	\$820
Avoided electricity generation	\$548	\$1,055	\$1,275	\$1,464	\$1,655	\$1,349
Deferred network investment	\$171	\$309	\$372	\$425	\$476	\$394
Avoided gas supply	n/a	\$304	\$284	\$263	\$241	\$280
Cost of carbon emissions	\$36	\$69	\$73	\$77	\$81	\$76
Cost of air pollution	\$135	\$228	\$274	\$313	\$353	\$290
Total benefits	\$890	\$1,967	\$2,278	\$2,543	\$2,805	\$2,388
Net benefits	\$715	\$1,491	\$1,558	\$1,576	\$1,580	\$1,568
Benefit cost ratio (BCR)	5.1	4.1	3.2	2.6	2.3	2.9
Benefit cost ratio above current settings (BCR)	N/A	3.6	2.5	2.1	1.8	2.3

Table 26 below shows bill savings under combined scenarios. This shows that as targets increase, gas connected household bill savings decline. This is likely to be because incentives to switch from electricity to gas become greater under higher targets. Also, net electricity bill savings (accounting for bill impacts) begin to decline after a 10 per cent target.

Table 26 Bill savings, certificate pass through, average household bill savings and average household bill impacts for combined scenarios

Parameter	Current settings	7% by 2018 to 2025 incl. gas	8% by 2018 to 2025 incl. gas	9% by 2018 to 2025 incl. gas	10% by 2018 to 2025 incl. gas	Final position – 8.5% by 2019 to 2025 incl. gas
Net present bill savings (\$ mill)	\$2,131	\$4,645	\$5,312	\$5,871	\$6,426	\$5,550
Total bill savings to 2040 (\$ mill)	\$4,054	\$10,186	\$11,694	\$12,985	\$14,320	\$12,226
Electricity certificate pass through from 2016 to 2020 (\$/MWh)	\$0.55	\$1.00	\$1.75	\$2.40	\$3.05	\$1.90
Gas certificate pass through from 2016 to 2020 (\$/GJ)	n/a	n/a	n/a	n/a	n/a	n/a
Average household electricity bill savings from 2016 to 2020 (\$ p.a.)	\$23.10	\$26.20	\$31.50	\$37.30	\$42.65	\$33.90
Average household electricity bill impact from 2016 to 2020 (\$ p.a.)	\$3.10	\$6.00	\$10.15	\$13.90	\$17.70	\$11.25

Parameter	Current settings	7% by 2018 to 2025 incl. gas	8% by 2018 to 2025 incl. gas	9% by 2018 to 2025 incl. gas	10% by 2018 to 2025 incl. gas	Final position – 8.5% by 2019 to 2025 incl. gas
Gas connected household bill savings from 2016 to 2020 (\$ p.a.)	n/a	\$31.70	\$32.30	\$27.45	\$20.85	\$31.10
Gas connected household bill impact from 2016 to 2020 (\$ p.a.)	n/a	n/a	n/a	n/a	n/a	n/a

Figure 7 below shows the average bill reduction and bill impact of certificate pass through on household bills over the lifetime of the scheme. It shows that the certificate pass through costs remain small relative to bill reductions under combined scenarios.

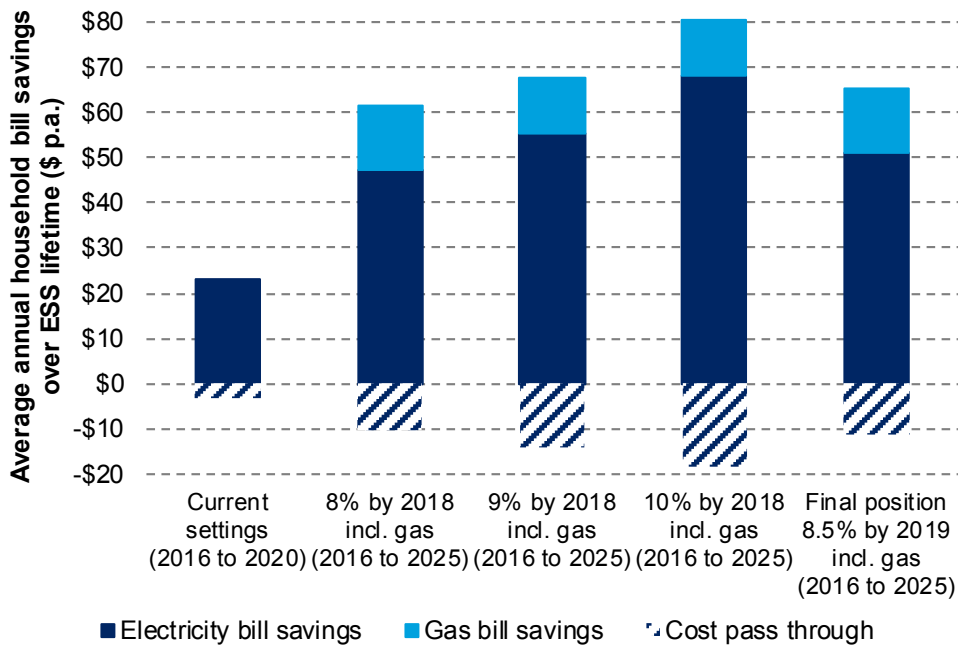


Figure 7 Average annual household bill reductions and certificate pass through costs over the lifetime of the scheme for combined scenarios

Energy demand and energy price scenarios

The ESS Review Options Paper documents the cost benefit analysis of the ESS using mid-range energy demand and price scenarios developed for the Australian Energy Market Operator.

To reach the final position, the Office of Environment and Heritage conducted sensitivity analysis on the preferred option for targets in the ESS Review Options Paper using a high demand / low price scenario and a low demand / high price scenario drawn from the Australian Energy Market Operator 2014 National Electricity Forecasting Report.⁴⁴

The high demand / low price scenario included:

⁴⁴ The final position is to increase targets to 8.5 per cent by 2019.

- using ‘high’ forecasts for annual energy demand in the Australian Energy Market Operator’s 2014 National Electricity Forecasting Report
- using the low forecasts for wholesale electricity and gas prices prepared for the Australian Energy Market Operator
- using a low value for deferred network investment discounting current low and high voltage network capacity charges by 20 per cent (the core scenario was based on a weighted annual capacity charge that applied to different customer classes across NSW)
- using a low value for the forecast cost of carbon emissions developed for the Australian Energy Market Operator that were based on the Clean Development Mechanism credit prices (the core scenario was based on futures prices for emission permits under the European Union’s Emissions Trading Scheme)
- using a low cost of air pollution by using the average population density in NSW (the core scenario was based on Hunter Valley population density).

The low demand / high price scenario included:

- using ‘low’ forecasts for annual energy demand in the Australian Energy Market Operator’s 2014 National Electricity Forecasting Report
- using the high forecasts for wholesale electricity and gas prices prepared for the Australian Energy Market Operator
- using high value for deferred network investment based on the long run marginal cost for low and high voltage networks reported by Ausgrid and Endeavour Energy in their 2014-15 annual pricing proposals
- using a high value for forecast cost of carbon emissions prepared for the Australian Energy Market Operator that were based on the Australian Treasury’s ‘Strong Growth, Low Pollution’ scenario for an Australian carbon price.

Table 27 below shows that under the preferred option for targets in the ESS Review Options Paper (8 per cent by 2018), compared to the mid-range energy demand and price scenario used in the cost benefit analysis, a high demand / low price scenario would result in about 9.3 per cent more certificates surrendered to meet the same target at \$5.40 more per certificate.⁴⁵ A low demand / high price scenario would result in about 7.2 per cent less certificates surrendered at \$4.25 less per certificate.

Table 27 Certificates surrendered and forecast certificate price under different energy price and demand forecasts under the preferred option for targets in the ESS Review Options Paper (8 per cent target by 2018)

Parameter	8% by 2018 to 2025 incl. gas – mid demand / mid price	8% by 2018 to 2025 incl. gas – high price / low demand	8% by 2018 to 2025 incl. gas – high demand / low price
Total certificates surrendered (millions)	42.9	39.8	46.9
Average certificate price (\$)	\$22.55	\$18.30	\$27.95

Figure 8 below shows the results of this sensitivity analysis for different target settings under an ESS that is expanded to gas and extended to 2025.

⁴⁵ The final position is an 8.5 per cent target by 2019.

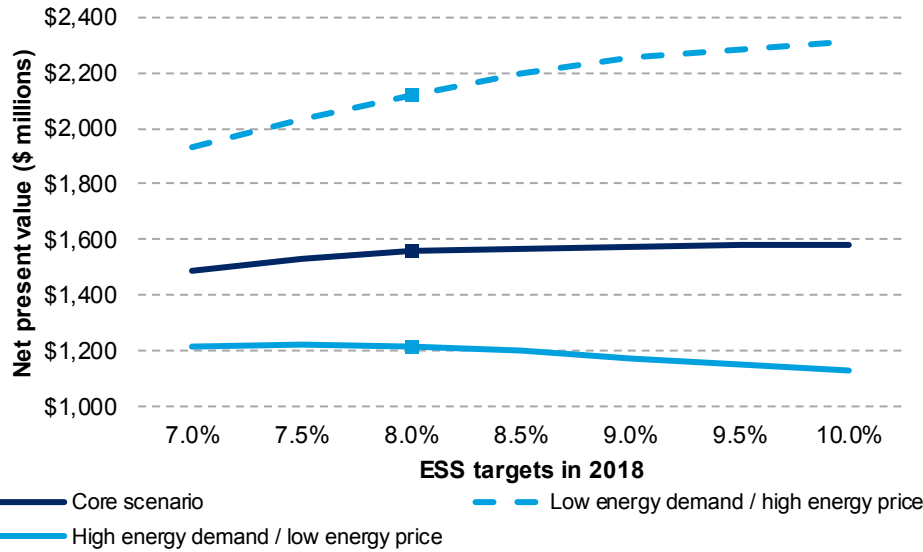


Figure 8 Net economic benefit of the ESS at various targets and scenarios for energy prices and energy demand (square shows the preferred option for targets in the ESS Review Options Paper)

As discussed in **Section 3.1**, this shows that a higher target would be needed to maximise the net economic benefit under a low energy demand / high energy price scenario. **Table 28** shows that under an 8 per cent target by 2018, a high energy demand / low energy price scenario would deliver \$119 million less with at a less efficient benefit cost ratio of 2.3. A low energy demand / high energy price would deliver \$411 million more with a larger benefit cost ratio of 4.7.

Table 28 Economic costs and benefits of alternative price and demand scenarios under the preferred option for targets in the ESS Review Options Paper (8 per cent target by 2018) (FY13\$ millions)

Parameter	8% by 2018 incl. gas to 2025	8% by 2018 incl. gas to 2025	8% by 2018 incl. gas to 2025
	Mid energy demand / mid energy price	Low energy demand / high energy price	High energy demand / low energy price
Government costs	\$97	\$97	\$98
Compliance costs	\$624	\$474	\$844
Total costs	\$721	\$570	\$942
Avoided electricity generation	\$1,275	\$1,523	\$1,457
Deferred network investment	\$372	\$385	\$337
Avoided gas supply	\$284	\$332	\$224
Cost of carbon emissions	\$73	\$203	\$12
Cost of air pollution	\$274	\$246	\$130
Total benefits	\$2,278	\$2,690	\$2,160
Net benefits	\$1,558	\$2,119	\$1,218
Benefit cost ratio (BCR)	3.2	4.7	2.3

This analysis indicates that the final position of an 8.5 per cent target by 2019 is appropriate and would deliver significant economic benefits under a range of price and demand scenarios.

Emissions conversion factor for gas

The Office of Environment and Heritage conducted sensitivity analysis if a greenhouse gas emissions metric was used to convert gas savings to energy savings certificates (0.24 certificates per megawatt hour of energy saved). The ESS Review Options Paper used a higher primary energy emissions conversion factor of 0.39 certificates per megawatt hour of energy saved.

Table 29 shows results of this sensitivity analysis. A greenhouse gas emissions conversion factor would mean that less certificates would be generated for the same amount of gas savings compared to a primary energy conversion factor. The net economic benefits under a greenhouse gas emissions conversion factor are forecast to be higher, with higher compliance costs, and higher electricity savings, but lower gas savings and lower greenhouse gas emissions savings.

Table 29 Economic costs and benefits of alternative gas conversion factors (FY13\$ millions)

Parameter	8.5% by 2019 incl. gas to 2025 Primary energy conversion factor	8.5% by 2019 incl. gas to 2025 Greenhouse gas emission conversion factor
Government costs	\$97	\$97
Compliance costs	\$723	\$739
Total costs	\$820	\$836
Avoided electricity generation	\$1,349	\$1,492
Deferred network investment	\$394	\$436
Avoided gas supply	\$280	\$171
Cost of carbon emissions	\$76	\$69
Cost of air pollution	\$290	\$320
Total benefits	\$2,388	\$2,487
Net benefits	\$1,568	\$1,651
Benefit cost ratio (BCR)	2.9	3.0

The Office of Environment and Heritage sensitivity analysis tested if gas prices rose to the Australian Energy Market Operator's high price scenario. In the event of gas price increases, net economic benefits would be substantially lower if a greenhouse gas emission based conversion factor is used.

This is because a lower conversion rate means that gas efficient activities generate less certificates and receive less financial incentives to make them cost effective. More electricity activities are taken up, including fuel switching for some services from electricity to potentially expensive gas.

Alternative programs

Office of Environment and Heritage sensitivity analysis compared the benefit cost ratio of the ESS Review Options Paper target settings to deliver energy savings towards the NSW target. Potential alternatives include:

- the national Greenhouse and Energy Minimum Standards program
- the NSW Building Sustainability Index (BASIX)
- other NSW energy efficiency programs

- potential national mandatory residential energy ratings.

The national Greenhouse and Energy Minimum Standards program was assessed as having a benefit cost ratio of 4.6 for the whole program or 3.0 for potential new measures when considered alone.⁴⁶ However, this economic appraisal took the entire retail energy price to be the economic benefit which is not consistent with the NSW approach outlined in the draft energy efficiency policy cost benefit analysis framework. The Office of Environment and Heritage estimates that the program would have a benefit cost ratio of between 1.9 and 2.1 if using the NSW approach.

The BASIX program sets minimum standards for the construction of residential buildings. In late 2013, the NSW Government consulted on options to enhance the BASIX program that were found to represent a benefit cost ratio of 1.6.⁴⁷

Analysis by the Office of Environment and Heritage of energy efficiency programs in 2012 found that NSW Government delivered programs had benefit cost ratios of between 1.6 and 2.7. Using the draft energy efficiency policy cost benefit analysis framework these programs would deliver a benefit cost ratio of between 0.8 and 2.2.

A study into a potential national program to mandate energy ratings of residential buildings at the point of sale or lease identified policy options that would represent a benefit cost ratio of between 1.4 and 2.4.⁴⁸ To be consistent with the NSW approach, the Office of Environment and Heritage estimates that these policy options would have represented a benefit cost ratio of between 1.3 and 2.2 once excluding voluntary private costs and benefits.

This suggests that when using the draft energy efficiency policy cost benefit analysis framework, increasing ESS targets will be a more efficient means to save energy than alternative policies if there is a benefit cost ratio of around 2.2 or higher.

Table 30 shows the benefit cost ratios of increasing targets compared to current settings. The benefit cost ratio of increasing the ESS target remains higher than alternative policy options up to a target of around 9 per cent. Beyond 9 per cent, growth in net economic benefits shows a small increase before declining, and the benefit cost ratio of increasing the ESS target starts to become comparable with the upper bound of alternative policy options to help meet the NSW energy savings target.

Table 30 Benefit cost ratio and net economic benefits of increasing targets compared to current settings

Parameter	7% by 2018 to 2025 incl. gas	8% by 2018 to 2025 incl. gas	9% by 2018 to 2025 incl. gas	10% by 2018 to 2025 incl. gas	Final position - 8.5% by 2019 to 2025 incl. gas
Benefit cost ratio of increasing target above current setting	3.6	2.5	2.1	1.8	2.3
Additional net economic benefits (FY13\$ millions)	\$776	\$843	\$861	\$865	\$853

⁴⁶ NSW Department of Industry, 2014, *Impacts of the E3 program: projected energy, cost and emissions savings*, accessed at www.energyrating.gov.au/wp-content/uploads/Energy_Rating_Documents/Library/General/Equipment_Energy_Efficiency_Program_%28E3%29/Impacts-of-the-E3-Program.pdf.

⁴⁷ Allen Consulting Group, 2013, *Benefit Cost Analysis of Proposed BASIX Stringency Changes*, prepared for NSW Department of Planning and Environment, accessed at www.basix.nsw.gov.au/basixcms/images/4050pdfs/Allen_Benefit_Cost_Analysis.pdf.

⁴⁸ Allen Consulting Group, 2011, *Mandatory Disclosure of Residential Building Energy, Greenhouse and Water Performance: Consultation Regulatory Impact Statement*, prepared for the National Framework for Energy Efficiency Building Implementation Committee, accessed at ris.dpvc.gov.au/files/2011/08/03-Mandatory-Disclosure-RIS.pdf.

Additionality and freeriders

Freeriders and spillover can be estimated through a 'net to gross' energy savings ratio. The ratio balances the amount of savings that would have been undertaken without the ESS (freeriders) with the amount of savings attributable to spillover (impacts of the policy on energy savings beyond the ESS).

Based on similar programs in comparable jurisdictions, the net to gross ratio accounting for both freeriders and spillover was assumed in the ESS Review Options Paper to be equivalent to 13 per cent of business as usual energy savings for the ESS. This included a freerider proportion of 30 per cent, with a spillover proportion of 17 per cent.

The Office of Environment and Heritage conducted freerider sensitivity analysis by amending the 'net to gross ratio' to discount energy savings by 26 per cent. This assumes that the ESS has a freerider proportion of 60 per cent and a spillover proportion of 34 per cent. If the amount of non-additional benefits doubled, the net economic benefits would be lower, but have no impact on the target level where net economic benefit peaks.

Appendix C List of submissions

The consultation period for the *Review of the Energy Savings Scheme* commenced on 20 April and closed on 18 May 2014. The following stakeholders made submissions:

1. AGL
2. Australian Gas Networks
3. Alinta Energy
4. APA Group
5. Australian Industry Greenhouse Network (AIGN)
6. Cement Industry Federation/Cement Concrete and Aggregates Australia
7. City of Sydney
8. CSR Limited
9. Ecovantage
10. Energy Australia
11. Energy Cost Attack
12. Energy Efficiency Certificate Creators Association (EECCA)
13. Energy Efficiency Council
14. Energy Networks Association (ENA)
15. Energy Retailers Association of Australia (ERAA)
16. Energy Supply Association of Australia (ESAA)
17. ERM Business Energy
18. Gas Energy Australia
19. Green Energy Trading
20. Independent Pricing and Regulatory Tribunal (IPART)
21. An individual
22. Jemena
23. Lumo Energy Australia
24. Maxee Innovations
25. Next Energy
26. Norske Skog
27. Opower
28. Origin Energy
29. Orora
30. Out Performers
31. Plastics and Chemicals Industry Association (PACIA)
32. Qenos
33. Red Energy

34. Simply Energy

35. Total Environment Centre

36. Water Heating Research

There were also three confidential submissions.