



**ACT**  
Government

Environment and Planning

# Energy Efficiency Improvement Scheme

## Regulatory Impact Statement

Prepared in accordance with Chapter 5 of the *Legislation Act 2001*

September 2015

### **Setting Key Scheme Parameters to 2020 by Disallowable Instruments:**

*Energy Efficiency (Cost of Living) Improvement (Emissions Multiplier) Determination 2015 (No 1)*

*Energy Efficiency (Cost of Living) Improvement (Energy Savings Target) Determination 2015 (No 1)*

*Energy Efficiency (Cost of Living) Improvement (Penalties for Noncompliance) Determination 2015 (No 1)*

*Energy Efficiency (Cost of Living) Improvement (Energy Savings Contribution) Determination 2015 (No 1)*

*Energy Efficiency (Cost of Living) Improvement (Priority Household Target) Determination 2015 (No 1).*

# Contents

Executive Summary.....	3
The Energy Efficiency Improvement Scheme .....	7
Extending the EEIS beyond 2015 .....	9
Selected scenario – summary of modelling results .....	16
Summary of changes to key scheme parameters.....	20

# Executive Summary

## Background

The *Energy Efficiency (Cost of Living) Improvement Act 2012* (the Act) was passed by the Legislative Assembly on 3 May 2012. The Act provides for a retailer obligation energy efficiency scheme, referred to as the Energy Efficiency Improvement Scheme (EEIS), and establishes a Territory-wide Energy Savings Target (EST) which correlates to mandatory energy savings obligations for individual electricity retailers based on their electricity sales in the ACT. The Act provided for a scheme running initially until 31 December 2015.

The ACT Government's climate change strategy Action Plan 2 (AP2) released in September 2012 identified reducing energy use in existing homes as one of the most cost-effective ways for the ACT to achieve its emissions reduction targets and reduce the impact of rising electricity and gas prices over the long-term, and committed to extending the EEIS to 2020 as a key action, subject to further review.

An independent review of the EEIS was completed and tabled in the Legislative Assembly in September 2014<sup>1</sup>. The review analysed activity undertaken to date and drew on extensive internal and external stakeholder consultation.

The outcomes of the review highlighted that there is advantage in continuing the EEIS as complementary to the Government's focus on reducing the GHG intensity of the electricity grid. Reducing energy consumption can reduce the costs associated with electricity use, and a 90 per cent renewable energy target.

The ACT Legislative Assembly passed the *Energy Efficiency (Cost of Living) Improvement Amendment Act 2015* which amended the Act to continue the EEIS to 2020. This document outlines the costs and benefits associated with setting new targets and associated key scheme parameters made by disallowable instruments for the period 2016 to 2020.

This Regulatory Impact Statement relates to the extension of the EEIS to 2020 and setting key parameters by the following disallowable instruments:

- *Energy Efficiency (Cost of Living) Improvement (Emissions Multiplier) Determination 2015 (No 1)*
- *Energy Efficiency (Cost of Living) Improvement (Energy Savings Target) Determination 2015 (No 1)*
- *Energy Efficiency (Cost of Living) Improvement (Penalties for Noncompliance) Determination 2015 (No 1)*
- *Energy Efficiency (Cost of Living) Improvement (Energy Savings Contribution) Determination 2015 (No 1)*
- *Energy Efficiency (Cost of Living) Improvement (Priority Household Target) Determination 2015 (No 1).*

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<sup>1</sup> [http://www.environment.act.gov.au/\\_\\_data/assets/pdf\\_file/0003/642315/ACT-EEIS-Review-Final-Report.pdf](http://www.environment.act.gov.au/__data/assets/pdf_file/0003/642315/ACT-EEIS-Review-Final-Report.pdf)

## Consultation

A consultation paper, seeking stakeholder input on a wide range of key energy efficiency scheme parameters, was circulated to key stakeholders in 2014.

Retailers obligated under the EEIS, including both Tier 1 and Tier 2 retailers, as well as key community, industry and environment stakeholders were also actively engaged through a consultation paper and workshop and 10 written submissions were received.

Stakeholders generally supported the continuation of the EEIS to 2020 at a similar level of ambition – noting the importance of providing long-term certainty regarding retailer obligations. It was also suggested that the EEIS would benefit from greater third-party participation, allowing some trading of certificates, including business lighting measures, and clarifying the transition from Tier 2 to Tier 1 retailer status.

## Complementarity

In considering the continuation of the EEIS to 2020, the Government's broader objectives of achieving greater integration of programs and leveraging existing programs where feasible, have been considered. A review of existing schemes, policies and programs available to the residential and small to medium enterprise (SME) sectors indicates gaps remain in the ACT without the EEIS.

Opportunities for further alignment and harmonisation with similar schemes in other jurisdictions, was also a primary consideration – and changes to the EEIS improve these outcomes.

## Recommended continuation of the EEIS to 2020 – legislative changes

Based on the review of consultation and modelling results, amendments to the *Energy Efficiency (Cost of Living) Improvement Act 2012*:

- a) Provide for annual compliance periods for each calendar year from 2016 to 2020 (inclusive);
- b) Increase the notice time given to retailers when increasing future compliance year targets;
- c) Allow the Administrator to register 'approved abatement providers' who are eligible to undertake EEIS activities in the ACT and create abatement that may be purchased by retailers to meet their energy saving targets. This will facilitate participation of Tier 2 retailers and increase competition in activity delivery – lowering costs for all electricity consumers and broadening the participant base;
- d) Allow the Administrator to recognise abatement created in the ACT under an 'approved interstate energy efficiency scheme';
- e) Provide that the Administrator may develop codes (by Disallowable Instrument) setting specific requirements for 'registered third-party providers' and for activities undertaken in the ACT and credited under a 'recognised other-jurisdictional scheme';
- f) Provide that existing requirements on retailers (or their contractors) undertaking activities under the EEIS be extended to 'registered third party providers' to ensure the effective operation of these parties;

- g) Enable the shortfall penalty rate (for a retailer not meeting their abatement target) to be set by disallowable instrument to provide the necessary flexibility and allow the EEIS to respond to implementation challenges should they emerge; and
- h) Clarify that a retailer transitions from being a Tier 2 to a Tier 1 retailer in the compliance period following the calendar year in which they exceeded the 5,000 customer and 500,000 MWh sales thresholds.

## Overview of modelling

Detailed modelling was undertaken by Energetics Pty Ltd to determine the impact of continuing the EEIS to 2020. This modelling builds on existing modelling undertaken by Energetics to establish the original scheme and extend the EEIS to the non-residential sector. Further detail is provided in the Regulatory Impact Statement completed to support the *Energy Efficiency (Cost of Living) Improvement Amendment Act 2015* which extended the EEIS to 2020.

## Modelling results

Modelling results indicate that continuing the scheme to 2020 will have significant positive economic benefits.

Setting the EEIS Energy Savings Target at the preferred level of ambition of 8.6 per cent for the period is expected to result in a Net Present Value to the ACT economy of \$38.9 Million.

Under this scenario, overall energy savings of gas and electricity are similar to the level targeted in 2015, with slightly lower anticipated costs to retailers and pass through costs to consumers. Lifetime emissions saved as a result of the EEIS over the period 2016 to 2020 under this target are estimated at 515 ktCO<sub>2</sub>-e. The reduction in projected lifetime savings compared to the period 2013 to 2015 reflects the falling emissions associated with saving electricity in the ACT, due to the 90 per cent Renewable Energy Target.

Changes in the Emissions Factor also result in a much greater incentive to implement activities that save natural gas. Electricity savings anticipated in 2020 as a result of implemented measures are 128,000 MWh, compared to 480,000 GJ of natural gas.

### ES 1: Comparison of 2015 reference scenario and proposed 2016 - 2020 scenario

	Energy Savings Target	NPV (\$M/yr)	Lifetime CO <sub>2</sub> -e (kT/ year)	Electricity Saved (MWh/yr)	Gas Saved (GJ/yr)	Average Bill Pass-through (\$/MWh)	Cost to Tier 1 Retailer (\$M/yr)	Tier 2 Energy Savings Contributions (\$M/yr)
Reference Case (2015) <sup>1</sup>	14.0%	\$14.00	296	353,210	929,553	\$4.90	\$10.9	\$4.4
Proposed 2015-2020	8.6%	\$8.00	103	280,249	1,162,517	\$3.95	\$8.2	\$3.8

1 The reference case represents the estimated values of the EEIS as operating in 2015

## Summary of household costs and benefits

Modelling at the recommended target level demonstrates net-savings for households on average – noting that, as not all households will participate, actual household savings for participating households are expected to be higher – as has been observed in the first three years of the EEIS. It is important to note that while costs associated with the scheme will end with the end of the scheme, savings will continue to accrue for the lifetime of the implemented measures. Aggregate lifetime bill savings for the Residential sector are estimated at \$106 Million in present value terms.

### ES 2: Summary of household costs and benefits

Average household price increase	Average bill Cost 2016 - 2020 (\$/week)	Average residential bill savings in 2020 (\$/Week)
2.32%	\$0.62	\$3.19

In addition, due to the design of the Scheme, which requires that a proportion of total Tier 1 retailer energy savings be achieved in priority households, a defined proportion of the benefits will continue to accrue in these households – in proportion with the Priority Household Target.

## Summary of business costs and benefits

Estimated average costs to the non-residential sector are more difficult to determine due to the significant differences in energy use between different businesses. The impacts for various business electricity spends are outlined below. Total bill savings accruing in this sector over the lifetime of measures implemented under the EEIS are estimated at \$192 Million in present value terms.

### ES 3: Summary of business costs

Annual business electricity spend of \$1,000	Annual business electricity spend of \$10,000	Annual business electricity spend of \$100,000	Annual business electricity spend of \$1,000,000
\$15	\$151	\$1,514	\$15,143

## The Energy Efficiency Improvement Scheme

Given the large and immediate opportunity for cost-effective energy efficiency in the ACT to achieve the GHG reductions required, the ACT Government has acted to implement a retailer obligation energy efficiency scheme.

The *Energy Efficiency (Cost of Living) Improvement Act 2012* was passed by the Legislative Assembly on 3 May 2012. The Act provides for a retailer obligation energy efficiency scheme – the Energy Efficiency Improvement Scheme (EEIS) – commencing from 1 January 2013, running initially until 31 December 2015. The *Energy Efficiency (Cost of Living) Improvement Amendment Act 2015* extends the operation of the Act from 1 January 2016 to 31 December 2020.

The objects of this Act are to:

- a) encourage the efficient use of energy; and
- b) reduce greenhouse gas emissions associated with stationary energy use in the Territory; and
- c) reduce household and business energy use and costs; and
- d) increase opportunities for priority households to reduce energy use and costs.

The Act establishes a Territory-wide Energy Savings Target (EST) which correlates to mandatory energy savings obligations for individual electricity retailers based on their electricity sales in the ACT. The EST is set by the Minister for the Environment by Disallowable Instrument. Lifetime savings of measures are deemed upfront and given in the year that they are undertaken, meaning that the targeted savings actually occur over a longer time period.

### Retailer obligations

The individual retailer obligation is represented in tonnes of CO<sub>2</sub>-e, calculated by the following formula:

$$\text{Obligation (tonnes CO}_2\text{-e)} = \text{Energy Savings Target (\%)} \times \text{Emissions Multiplier} \times \text{Retailer Sales (MWh)}$$

The emissions factor is also a Disallowable Instrument made by the Minister and has been set at 0.89 for 2013 to 2015. The Minister by *Energy Efficiency (Cost of Living) Improvement (Emissions Multiplier) Determination 2015 (No 1)* determined the Emissions Multiplier to be 0.4 per cent for each compliance period from 1 January 2016 to 31 December 2020.

The way in which a retailer must meet this target is determined by their electricity sales as well as the number of customers they have. Retailers are defined as being either Tier 1 or Tier 2.

Tier 1 Retailer:

- Electricity sales of 500,000MWh or greater to customers in the ACT in a compliance year; and
- Greater than 5, 000 customers in the ACT.

## Tier 2 Retailer:

- All other retailers.

In order to meet their energy savings obligation, Tier 1 retailers must undertake eligible energy saving activities approved under the Act. Tier 1 retailers are also obliged to achieve a proportion of their energy savings obligation in low-income households, as determined by the Minister by Disallowable Instrument. The Minister by *Energy Efficiency (Cost of Living) Improvement (Priority Household Target) Determination 2015 (No 1)* determined the Priority Household Target to be 20 per cent of the energy savings obligation, calculated under section 15 of the Act for the period from 1 January 2016 to 31 December 2016. This target will continue to be reviewed annually.

Tier 2 retailers may choose to undertake eligible energy saving activities or they may pay a contribution fee set at the expected average cost of abatement for a Tier 1 retailer. The contribution is set by the Minister by Disallowable Instrument, based on the estimated *average cost of compliance* for a Tier 1 retailer. This provides a simplified obligation for smaller retailers who may not have the customer base or resources in the ACT to fully participate in the Scheme, and who may be discouraged from participating in the ACT market if required to undertake activities. This equalises the cost of participation for all retailers and, in turn, mitigates potential adverse effects of the Scheme on competition in our retail electricity market. The Minister by *Energy Efficiency (Cost of Living) Improvement (Energy Savings Contribution) Determination 2015 (No 1)* determined the Energy Savings Contribution at \$116 per tonne of carbon dioxide equivalent greenhouse gas emissions energy savings obligation as calculated under section 13 of the Act for each compliance period from 1 January 2016 to 31 December 2020.

In order to ensure reasonable incentives exist for Tier 1 suppliers to undertake abatement activities, the penalty for not achieving the abatement target is set slightly higher than the expected *maximum* price a retailer will pay per tonne of abatement. The Minister by *Energy Efficiency (Cost of Living) Improvement (Penalties for Noncompliance) Determination 2015 (No 1)* determined the shortfall penalties for noncompliance to be \$300 per tonne for each compliance period from 1 January 2016 to 31 December 2020.

## Eligible activities

A Notifiable Instrument, providing for an initial list of activities which retailers may undertake to meet their obligation under the EEIS is made by the Minister.

The EEIS has been developed specifically to align closely with other energy efficiency schemes in Australia. While the ACT non-certificate market based scheme, due to the small size of the ACT economy, activity and eligible product requirements align with those of other jurisdictions where possible. This simplifies retailer participation, with many retailers in the ACT also operating in other jurisdictions.



## Extending the EEIS beyond 2015

### Objective

An independent review of the EEIS was completed and tabled in the Legislative Assembly in September 2014. The review analysed activity undertaken to date and drew on extensive internal and external stakeholder consultation.

The outcomes of the review highlighted that there is advantage in continuing the EEIS as complementary to the Government's focus on reducing the GHG intensity of the electricity grid. Reducing energy consumption can reduce the costs associated with electricity use, and a 90 per cent renewable energy target.

The review also highlighted that obligated electricity retailers require longer term certainty (beyond the current legislated three year periods) regarding the future of the Scheme to enable the implementation of a sustainable and effective business model. Retailers also require greater responsiveness from the Administrator of the Scheme with regard to bringing in new innovative activities that can deliver cost-effective energy savings.

Building on the work of the Review, EPD has undertaken further extensive stakeholder consultation, analysis and modelling to inform options for the extension of the EEIS beyond 2015. Retailers obligated under the EEIS, including both Tier 1 and Tier 2 retailers, as well as key community, industry and environment stakeholders were actively engaged through a consultation paper and workshop. Ten written submissions were received.

### Overview of options and impacts – continuing the EEIS to 2020

#### *Scheme metric*

For the period 2013-2015 the EEIS metric was framed in terms of carbon dioxide equivalent (CO<sub>2</sub>-e) savings – with the retailer obligation targets set in relation to GHG savings. Consequently, activities are also measured in terms of their CO<sub>2</sub>-e savings. However rather than being justified on the basis of CO<sub>2</sub>-e savings, the Scheme has been designed to stimulate energy efficiency activities that achieve an optimal balance of costs and financial benefits for participants and the community as a whole. This justification is set out in the Scheme Targets and Impacts section of the original Regulatory Impact Statement underpinning the development of the EEIS.

Given the ACT Government's 90% renewable energy target, it was identified that the existing CO<sub>2</sub>-e metric becomes less meaningful as the portion of the ACT's energy provided by renewable sources grows. However, the EEIS was identified as still having a critical role to play in reducing energy use and costs, as it is likely to enable the ACT Government to achieve its 90 per cent renewable energy target sooner and with less cost, as well achieve cost savings for customers over the long run.

The use of a range of metrics (including CO<sub>2</sub>-e, NPV and energy savings) were therefore considered for the continuation of the EEIS beyond 2015.

Stakeholders noted that the current CO<sub>2</sub>-e metric is well understood across schemes and maintaining the metric would provide participants with continuity and certainty. Some stakeholders noted changing to a non-energy or CO<sub>2</sub>-e metric could create unnecessary confusion and would require some changes to retailer's systems. Stakeholders noted the EEIS should focus on alignment with other schemes and ensure the outcomes sought by the EEIS are clear. The EEIS should seek to minimise the number of assumptions required to determine the key parameters of the scheme, noting the importance of the metric is in some ways impacted by the length of the scheme and the anticipated lifetime of energy savings associated with the activities undertaken.

In order to meet these objectives, reduce changes and decrease the assumptions underpinning the scheme, it was determined appropriate that the CO<sub>2</sub>-e metric be maintained, but that the emissions factors be updated to reflect the 90 per cent renewable energy target – with retailer targets, associated scheme parameters (such as penalties and contributions) and abatement values associated with eligible activities scaled accordingly.

### ***Priority Household Target***

Tier 1 retailers are obliged to achieve a proportion of their energy savings obligation in low-income households, as determined by the Minister by Disallowable Instrument. The Priority Household Target (PHT) was set at 25 per cent each year from 2013 to 2015. This was set just above the estimated 20 per cent of households receiving energy concessions and/or holding a concession card in the ACT. In reality, however, 30 per cent of participating households to-date have been priority households – showing the target incentivises retailers to overshoot the target to ensure the target is met and avoid any penalties associated with not meeting the target.

Through the consultation process, a number of stakeholders noted that low-income households benefit the most from energy efficiency, but are least able to make improvements without additional assistance. Stakeholders also identified that a large number of low income households had already participated in the scheme, therefore the PHT should not be so onerous that it increases costs and risks to the EEIS.

Although ensuring energy savings are achieved in low income households remains a Government priority, it is recommended the PHT be decreased in 2016 to 20 per cent. This would have the effect of balancing costs to consumers, while ensuring priority households in the ACT continue to benefit from the EEIS - noting the incentive to overshoot the target also remains.

For the purposes of modelling, all household costs and savings assume a 20 per cent priority household target for the period 2016 to 2020, however, the target will continue to be subject to annual review. The Minister by *Energy Efficiency (Cost of Living) Improvement (Priority Household Target) Determination 2015 (No 1)* determined the priority household target at 20 per cent of the energy savings obligation, calculated under section 15 of the Act for the period 1 January 2016 to 31 December 2016.

## ***Background to scheme impact modelling***

Modelling was undertaken by consultants Energetics to determine the potential energy saving opportunities available and the costs and benefits to the ACT economy, households and businesses as a result of extending the EEIS to 2020. Importantly, this analysis also informs the setting of new targets and associated parameters which set the ambition of the EEIS beyond 2015.

In summary, the model developed by Energetics uses a range of inputs, calculates the uptake and resulting energy savings at a maximum incentive price and from this the economic benefits to the economy as a whole and energy consumers.

## **Energy and scheme costs**

Energy cost savings calculations in the Scheme modelling do not assume any reduction or increase in distribution network charges across the economy resulting from the Scheme. This reflects that distribution network charges generally recover fixed capital costs that may not reduce as a result of reduced energy consumption within short to medium-term timeframes. It is acknowledged that any material reduction in total ACT electricity or gas consumption would result in a proportional reduction in revenue to ActewAGL Distribution. Any benefits associated with deferred capital investment resulting from the scheme are additional to those modelled.

Estimated consumer bill savings, however, assume that the household or business saves on the full retail price of electricity – as they will see a reduced energy bill corresponding with lower consumption.

In relation to the calculation of costs and benefits accruing to the ACT economy as a whole (i.e. the calculation of the Net Present Value), the modelling conservatively assumed 10 per cent of costs associated with implementing the scheme are recycled within the ACT economy – acknowledging stakeholder feedback regarding staffing of the retailer and their contractors.

## **Emissions factors and activity abatement values**

A significant change in the EEIS model inputs is the projected emissions associated with the consumption of electricity in the ACT (the ‘emissions factor’). The emissions factors in the model have been updated to reflect the current projections for grid electricity in the ACT – a significant difference from the last version of the EEIS modelling is that these projections now account for the ACT’s 90 per cent by 2020 renewable energy target<sup>2</sup>.

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<sup>2</sup> The emissions factors were developed by consultants pitt&sherry for the ACT Government and are consistent with the approach to calculate Scope 2 emissions factors for electricity purchased from a grid, as described in Chapter 7 of the Technical Guidelines for the estimation of greenhouse gas emissions by facilities in Australia, as specified for use in the National Greenhouse and Energy Reporting System, and are also consistent with the approach for calculating electricity generation emissions as described in the National Inventory Report. This approach aligns with the definitions used in The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard of the World Resources Institute/World Business Council for Sustainable Development (the GHG Protocol).

The Emissions Factor for electricity was estimated to be 0.89 on average over the period 2013-2015 under the original modelling of the EEIS. The average Emissions Factor over the period 2016-2020 is now estimated at 0.4. Therefore, the Minister by *Energy Efficiency (Cost of Living) Improvement (Emissions Multiplier) Determination 2015 (No 1)* determined the Emissions Multiplier to be 0.4. The Emissions Factor for electricity is expected to stay stable at around 0.1 beyond 2020. Subsequently this flows through to the assumed abatement values associated with activities undertaken under the EEIS, and this is reflected in the modelled abatement from activities over their lifetime.

## **Modelled economic costs and benefits**

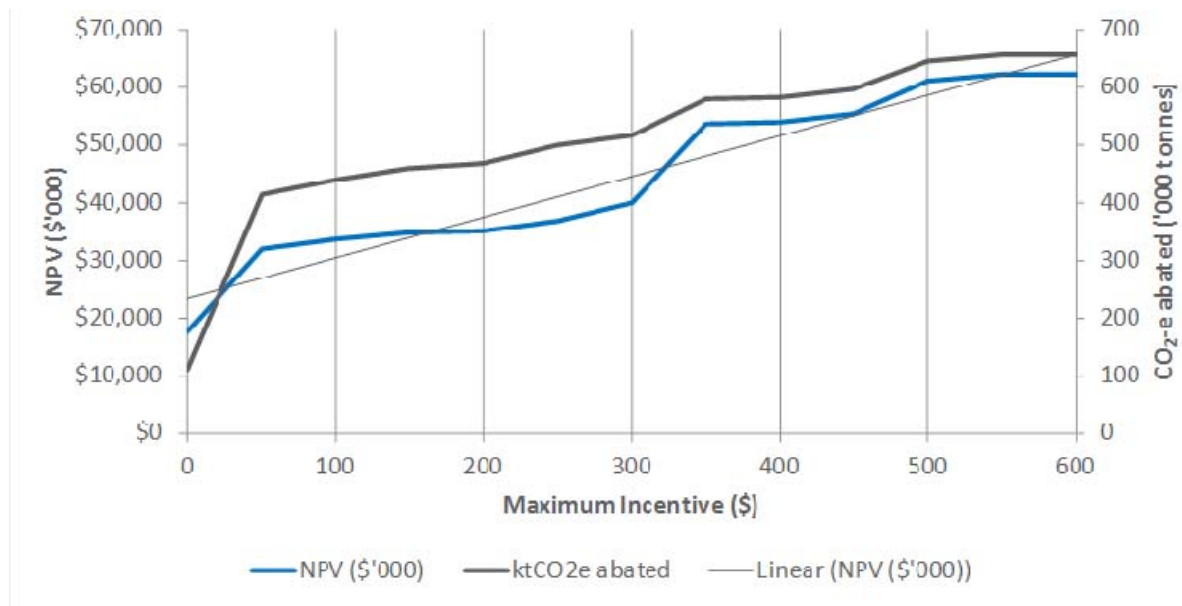
Modelling of the continuation of the EEIS to 2020 indicates that the EEIS will continue to deliver a positive Net Present Value (NPV) to the ACT economy at all levels of ambitions under a range of future price projection scenarios and discount rates.

The modelled NPV and emissions saved at varying levels of ambition is shown in Figure 1 below. Each vertical line in the graph represents the *maximum* cash incentive a retailer would pay for a tonne of abatement, and the resulting uptake of initiatives and associated abatement over a five year scheme.

As the level of ambition of the scheme increases (represented by the *maximum* incentive a retailer would pay for 1 tonne of abatement under the EEIS, but not the average), the NPV and CO<sub>2</sub>-e abated increases, but not at a linear rate. This reflects the staggered uptake of activities at different price points. In addition, the levelling-off of abatement achieved, compared to increases in the NPV at a \$300/tonne maximum incentive price, reflects that at this point only additional activities that save electricity (and not natural gas) are taken up – which has a much lower emissions savings in the future in the ACT, but reflects significant economic benefit.

It is important to note that uncertainty remains regarding the precise point at which the NPV and/or GHG emission savings will significantly increase, and therefore the significant step-increase between \$300 and \$350/tonne maximum incentive should not be interpreted as a precise point at which the NPV significantly increases.

**Figure 1: Summary of NPV and GHG savings at varying incentive price points**



### Selection of preferred scenario

In considering the appropriate level of ambition for the EEIS for the period 2016 – 2020 the following factors must be considered:

- Delivering the maximum benefit to the community – Significant net economic benefits are associated with pursuing a high level of ambition under an extended scheme.
- Limiting pass-through costs – Benefits associated with the scheme are achieved only by participating households and businesses, while costs are passed through to all electricity consumers. Equity issues may therefore increase as the scheme becomes more ambitious.
- Achieving value for money – As the scheme becomes more ambitious, there is generally diminishing returns for money invested through the scheme as less cost effective measures are required to meet scheme targets.
- Limiting risks - As the scheme becomes more ambitious, costs become more uncertain, industry delivery capability is tested and normal occupational health and safety risks associated with undertaking works in residential and commercial premises are amplified.

Following a detailed comparison of the associated costs and benefits to the ACT economy and electricity consumers under a range of targets, it is recommended the Energy Savings Target be set at the ‘maximum incentive price’ of \$300/t. This corresponds to an 8.6 per cent target for the period 2016 to 2020. Therefore, the Minister by *Energy Efficiency (Cost of Living) Improvement (Energy Savings Target) Determination 2015 (No 1)* determined the Energy Savings Target to be 8.6 per cent of total electricity sales for each compliance period from 1 January 2016 to 31 December 2020. When combined with the decreasing emissions associated with saving electricity in the ACT in the future (as a result of the ACT’s 90 per cent renewable energy target), this represents a similar level of ambition to the EEIS in 2015 in terms of anticipated total scheme costs and projected electricity and gas savings. This is consistent with stakeholder feedback to continue the scheme at current levels.

Under base case assumptions, setting the EEIS Energy Savings Target at 8.6 per cent for the period is expected to result in a NPV to the ACT economy of \$38.9 million. Lifetime emissions saved as a result of the EEIS over the period 2016 to 2020 under this target are estimated at 515 ktCO<sub>2</sub>-e. The reduction in projected lifetime savings compared to the period 2013 to 2015 reflects the falling emissions associated with saving electricity in the ACT, with the whole scheme scaled accordingly.

Noting the sharp increase in NPV and GHG emissions also corresponds to a modelled sharp increase in costs to retailers and consumers, it is considered prudent to set the target at this level to ensure pass-through costs to consumers are minimised, while ensuring ambition is maximised, under some uncertainty. The targets, and scheme costs and benefits, will also be subject to ongoing evaluation for their appropriateness into the future.

Changes in the Emissions Factor also result in a much greater incentive to implement activities that save natural gas. As shown in Table 1, gas savings become proportionally much more dominant in the EEIS as modelled beyond 2015. Electricity savings anticipated in 2020 as a result of implemented measures are 128,000 MWh, compared to 480,000 GJ of natural gas.

A comparison of the energy savings and costs between the current 'base case' (i.e. assuming the EEIS were to continue under the 2015 parameters), compared to the 8.6 per cent target, is provided below in Table 1.

**Table 1: Summary of Scheme impacts compared to reference case**

	Energy Savings Target	NPV (\$M/yr)	Lifetime CO <sub>2</sub> -e (kT/ year)	Electricity Saved (MWh/yr)	Gas Saved (GJ/yr)	Average Bill Pass-through (\$/MWh)	Cost to Tier 1 Retailer (\$M/yr)	Tier 2 Energy Savings Contributions (\$M/yr)
<i>Reference Case (2015)</i> <sup>1</sup>	14.0%	\$14.00	296	353,210	929,553	\$4.90	\$10.9	\$4.4
2016-2020	8.6%	\$8.00	103	280,249	1,162,517	\$3.95	\$8.2	\$3.8

<sup>1</sup> The reference case represents the estimated values of the EEIS as operating in 2015

### Sensitivity analysis – Net Present Value

All modelling is inherently sensitive to changes in the key input parameters and assumptions. In particular projected future energy prices, the assumed recycling rate of costs within the ACT economy and the economic discount rate used to calculate Net Present Value (NPV) have an impact on the modelled outcomes.

The results of this analysis indicate that, while the modelling is sensitive to changes in key input parameters and assumptions, in no instance do the net benefits of the Scheme become negative, as summarised below in Table 2.

**Table 2: Summary of sensitivity analysis**

<b>Scenario</b>	<b>NPV ('000)</b>
<i>Base Case</i>	\$39,841
0% Economic Recycling Rate	\$30,187
25% Economic Recycling Rate	\$54,323
'Real 20% RET by 2020' Price Scenario	\$44,859
30% RET by 2020' Price Scenario	\$40,648
3% Nominal Discount Rate	\$76,837
10% Nominal Discount Rate	\$20,773

### **Sensitivity analysis – GHG savings achieved**

The changing market share of the single Tier 1 retailer in the ACT, ActewAGL Retail, also has implications for the amount of abatement achieved in the ACT as a direct result of retailers undertaking energy saving activities. The modelling assumes 100 per cent participation when calculating the uptake of measures required to meet the target, and the associated cost. In reality this outcome is unlikely to be met as Tier 2 retailers have an opportunity to pay a simplified contribution fee (at the calculated average cost of abatement for a Tier 1 retailer) rather than undertake activities.

While changes to the legislation have been drafted to increase opportunities for Tier 2 retailer participation, these changes will be phased-in over time, and it is anticipated that Tier 2 retailers will initially continue to pay an energy savings contribution. It is expected that this would have the net effect of making the costs conservative, as reduced participation by Tier 2 retailers would result in more cost-effective opportunities being available to ActewAGL Retail.

Assuming that all Tier 2 retailers elect to pay the Energy Savings Contribution, rather than undertaking activities, the actual targeted abatement resulting in a changing market share for ActewAGL are provided in Table 3.

**Table 3: Changing market share sensitivity analysis**

<b>ActewAGL market share</b>	<b>GHG abatement (ktCO<sub>2</sub>-e)</b>
100 %	515
80 %	412
70 %	354
60 %	309

## Selected scenario – summary of modelling results

### Electricity price impacts

Electricity retailers participating in the Scheme are expected to pass-through a proportion of their compliance costs to government, business and residential electricity customers through electricity bills. For modelling purposes this proportion is assumed to be 100 per cent. At the proposed target level, the pass-through cost associated with the EEIS is estimated at \$3.80/MWh.

How these changes translate to estimated impacts on households and businesses is discussed in further detail below.

### Modelled versus likely costs and benefits

It is important to note that financial and environmental benefits associated with the Scheme are likely to differ from the modelling. The modelling assumes a 100 per cent participation rate by retailers and a 100 per cent pass through of estimated compliance costs. Estimated energy savings must be discounted from the modelled amounts to reflect that a proportion of the targets are expected to be met by Tier 2 retailers paying an Energy Savings Contribution, rather than undertaking activities.

### Cost of living impact – household costs and benefits

Modelling at the target level demonstrates net-savings for households on average – noting that, as not all households will participate, actual household savings are expected to be higher. It is important to note that while costs associated with the scheme will end with the end of the scheme, savings will continue to accrue for the lifetime of the implemented measures. Aggregate lifetime bill savings for the Residential sector are estimated at \$106 million in present value terms – noting savings are extremely sensitive to Tier 1 retailer market share and future energy prices.

In addition, due to the design of the Scheme, which requires that a proportion of total Tier 1 retailer energy savings be achieved in priority households, a defined proportion of the benefits will continue to accrue in these households –set for 2016 at 20 per cent.

**Table 4: Household Costs and Benefits**

Pass-through cost 2016 to 2020 (\$/MWh)	Average Household Price Increase	Lifetime Residential bill savings (\$M - NPV)	Average Bill Cost 2016 – 2020 (\$/week)	Average Bill Savings in 2020 (\$/week)
\$3.95	2.32%	\$106	\$0.62	\$3.19



## Summary of business costs and benefits

Estimated average costs and benefits for business are more difficult to determine than in the residential sector due to the significant differences in the nature and extent of energy use between different businesses. The broad range of impacts, depending on annual electricity spend, are summarised below. Total bill savings expected to accrue over the lifetime of EEIS measures implemented in this sector are estimated at \$191 million in present value terms.

While the total GHG savings expected in the residential sector are higher than the business sector, the total bill savings are expected to be higher in the business sector due to higher electricity savings in the business sector, and the higher value of electricity bill savings.

**Table 5: Range of Business Pass-through Costs**

Annual electricity spend of \$1,000	Annual electricity spend of \$10,000	Annual electricity spend of \$100,000	Annual electricity spend of \$1,000,000
\$15	\$151	\$1,514	\$15,143

## Impact on service provider sector

It is anticipated that the industry delivering energy efficiency activities will grow to meet the increased demand created by the EEIS, however, it is difficult to predict the extent of this impact. Providing future opportunities to facilitate third-party participation and to directly align with activity requirements under other jurisdictional schemes is expected to diversify the range of services delivered by the industry in the ACT and provide additional opportunities to those businesses operating in this sector.

## Impact on Scheme Administrator

While diversification of the energy efficiency industry, and broadening the EEIS for third-party participation and alignment with other jurisdictional schemes, may be positive for the ACT economy in the long term, the conduct of retailers, businesses and individuals implementing energy efficiency measures create inherent risks to property, life and the environment. These risks must be carefully managed, and it is proposed that an increase in energy efficiency activities provided for under the Scheme should be accompanied by an appropriate regime of technical inspection and the development of new training or other educational material for providers and consumers.

The future funding of the EEIS Administrator beyond 2015-16 will be subject to a future budget consideration, noting future Tier 2 funds are expected to continue to cover administration costs into the future.

## Retailer Costs

### ***Tier 1 retailer costs***

A retailer's obligation (in tonnes CO<sub>2</sub>-e) is calculated as:

$$\text{Energy Savings Target (\%)} \times \text{Emissions Multiplier} \times \text{Retailer Sales (MWh)}$$

At the targeted level of ambition, the estimated average cost of compliance for a Tier 1 retailer is \$116 per tonne of CO<sub>2</sub>-e. This includes an allowance for the 20 per cent Priority Household Target, which is assumed to be 50 per cent more expensive on a dollar-per-tonne basis to achieve.

The modelled average for 2016 to 2020 represents an apparent increase in the estimated cost in 2015 of \$41 per tonne of CO<sub>2</sub>-e for the ACT's single Tier 1 retailer, ActewAGL. However, noting a retailer's CO<sub>2</sub>-e target is calculated using the emissions multiplier and the overall scheme Energy Savings Target (both of which are to reduce from 2016), the total anticipated cost of compliance for a Tier 1 retailer remains similar.

The ongoing costs associated with the implementation of the EEIS will continue to be monitored over the period 2016 to 2020, along with the Energy Savings Target and Emissions Multiplier.

### ***Tier 2 retailer Energy Savings Contribution***

Smaller Tier 2 retailers are able to pay an Energy Savings Contribution (ESC) to meet their obligation under the EEIS. This is in recognition of the increased difficulty for smaller retailers to deliver energy savings in the ACT. A Tier 2 retailer's target is calculated in the same way as a Tier 1 retailer target.

The ESC is set by the Minister by Disallowable Instrument to the Act and is currently set at \$37 per tonne CO<sub>2</sub>-e. This is based on the original modelled expected average cost of compliance for a larger, Tier 1 retailer. Based on the modelling for the new target scenario, it is appropriate to set the Tier 2 Energy Savings Contribution at the average expected average cost of compliance for a Tier 1 retailer, at \$116 per tonne CO<sub>2</sub>-e. Therefore, the Minister by *Energy Efficiency (Cost of Living) Improvement (Energy Savings Contribution) Determination 2015 (No 1)* determined the Energy Savings Contribution to be \$116 per tonne for each compliance period from 1 January 2016 to 31 December 2020. This figure will continue to be monitored for appropriateness based on the actual experienced costs of Tier 1 retailers undertaking EEIS activities.

### ***Shortfall Penalty***

The penalty for a retailer not achieving their Energy Savings Target or Priority Household Target in a compliance period is currently set in the Act at \$70 per tonne of CO<sub>2</sub>-e of a retailer's target not achieved. This was set to be slightly higher than the expected maximum amount a retailer would pay per tonne of CO<sub>2</sub>-e abated.

Under the modelled continuation of the EEIS at the targeted level of ambition, it is anticipated that the maximum cost a retailer would pay per tonne of CO<sub>2</sub>-e abated is \$300/tonne of CO<sub>2</sub>-e. This increase reflects the decreasing emissions associated with saving electricity in the ACT, and the associated increase in the cost per tonne. Drafted changes to the legislation allow this figure to be set by the Minister by Disallowable Instrument, allowing this figure to be monitored and adjusted as necessary based on the actual experience of implementing the EEIS – noting the Minister must take into consideration the Objects of the Act in setting the shortfall penalty. The Minister by *Energy Efficiency (Cost of Living) Improvement (Penalties for Noncompliance) Determination 2015 (No 1)* determined the shortfall penalty for noncompliance to be \$300 per tonne for each compliance period from 1 January 2016 to 31 December 2020.

As a reference test, whilst highly unlikely, if the entire 2015 EEIS CO<sub>2</sub>-e target was paid by retailers at the 2015 penalty rate, this would be a similar total cost to paying the entire 2016 EEIS CO<sub>2</sub>-e target at the 2016 penalty rate.

## Summary of changes to key scheme parameters

### Disallowable Instruments

In order to effectively target the level of energy savings detailed above, key scheme parameters must be re-set for the period 2016 to 2020. These parameters are set by the Minister by disallowable instrument.

It is acknowledged that there is some degree of uncertainty regarding the future costs associated with the continuation of the EEIS to 2020, especially in light of the changing emissions factors and the impact this has on the overall scheme, as it is difficult to predict how the market will respond and the innovative solutions retailers and service providers may develop.

All key parameters outlined below are determined by the Minister under the Act. All parameters will continue to be monitored for ongoing suitability based on experienced Tier 1 retailer costs and changing market circumstances.

<b>Instrument</b>	<b>Proposed Value</b>	<b>Period</b>
Energy Savings Target	8.6% (each year)	2016 to 2020
Priority Household Target	20%	2016
Emissions Multiplier	0.4	2016 to 2020
Energy Savings Contribution (Tier 2 Retailer)	\$116/tonne CO <sub>2</sub> -e	2016 to 2020
Shortfall Penalty (non-compliant Retailers)	\$300/tonne CO <sub>2</sub> -e	2016 to 2020

### Included measures 2016 – 2020

As previously identified, the abatement associated with undertaking individual activities will also be influenced by the declining Emissions Factor for electricity in the ACT. While the model assumes high level abatement values for categories of activities, actual abatement values for specific EEIS eligible activities (and categories of products within these activities) are being evaluated by the EEIS Administrator.

It is important to note that the results of this modelling exercise, with the inclusion of a lower Emissions Factor for electricity, has identified that activities encouraging future fuel switching from gas to electricity are unlikely to produce positive abatement results in the EEIS beyond 2015.