Energy Efficiency Improvement Scheme Review

ACT GOVERNMENT

EEIS Review: Final Report

SB20490

13 August 2014

JACOBS

Energy Efficiency Improvement Scheme Review

Project no:	SB20490
Document title:	EEIS Review: Final Report
Revision:	D
Date:	13 August 2014
Client name:	ACT Government
Client no:	SB20490
Project director:	Walter Gerardi
Project manager:	Sarah Alexander
Author:	Sarah Alexander and Liisa Parisot

Jacobs Group (Australia) Pty Limited
ABN 37 001 024 095
64 Allara Street
Canberra ACT 2601 Australia
T +61 2 6246 2700
F +61 2 6246 2799
www.jacobs.com

Document history and status

Revision	Date	Description	By	Review	Approved
A	16 July 2014	Draft report	SA / LP	WG	WG
B	31 July 2014	Draft final report	SA / LP	WG	WG
C	12 August 2014	Final report	SA / LP	WG	WG
D	13 August 2014	Final report with minor revision	SA / LP	WG	WG

JACOBS

Contents

Executive Summary

The Energy Efficiency Improvement Scheme (EEIS) was established by the *Energy Efficiency (Cost of Living) Improvement Act 2012* (ACT). The EEIS commenced on 1 January 2013 and is legislated to run for three years until 31 December 2015.

The objectives of the Act are articulated in s6. These are to:

- Encourage the efficient use of energy
- Reduce greenhouse gas emissions associated with stationary energy use in the Territory
- Reduce household and business energy use and costs
- Increase opportunities for priority (low income) households to reduce energy use and costs

The Act imposes an energy savings target for the total reduction in greenhouse gas emissions to be achieved by retailers, expressed as a percentage of total electricity sales in the ACT. Tier 1[1] retailers are required to undertake activities to meet their obligation, while tier 2 retailers may undertake activities or choose to pay a contribution[2] instead. The scheme also incorporates a requirement for tier 1 retailers to meet at least 25% of the energy savings target emissions reductions from priority residential households.

A key requirement of the EEI Act is to review the EEIS in its second year of operation. Jacobs was engaged to conduct this Review in accordance with this requirement.

The key findings of the review are outlined in Table 1-1.

Table 1-1: Summary of EEIS Review findings

Question	Summary
Efficiency	
Does the EEIS framework provide certainty and predictability in the costs associated with its implementation?	For the tier 1 retailer, longer term planning regarding the costs and benefits of the EEIS is somewhat challenging as they are restricted by the list of eligible activities which will become more costly as the relatively cost-effective options reach saturation in the market. For tier 2 retailers, the fixed cost per tonne of abatement makes the EEIS a relatively straightforward and predictable scheme. For the ACT Government, general administration and compliance costs can be reasonably predicted. However there is some uncertainty regarding the technical compliance costs which are determined by the activities selected by the tier 1 retailer.
Is the legislative framework and funding mechanism of the EEIS efficient and fair?	Given tier 2's relatively low market share in the ACT, the option to pay a contribution fee rather than undertake activities reduces any potential competitive disadvantage that could arise from the EEIS. Retailers can increase energy rates to compensate for additional costs associated with the EEIS. Whilst this prevents potential impediments to retail competition, it could enable the tier 1 retailer to increase costs above reasonable levels and provides them with low cost marketing opportunities. The allocation of contribution payments made by tier 2 retailers is yet to be determined. However it will be critical that this fund is used for further energy efficiency activities as per the legislation.

[1] Tier 1 retailers have more than 500,000 MWh of sales each year and at least 5,000 customers. Presently, only one tier 1 retailer exists in the ACT, ActewAGL

[2] The contribution is estimated from the cost of compliance for a tier 1 retailer.

Question	Summary
Effectiveness	
Does the EEIS encourage the efficient use of energy?	In order to meet their targets, the tier 1 retailer and their energy service provider have invested in customer education and awareness relating to the selected energy efficiency activities. A quarter of participating households said that they have undertaken further energy saving activities. There are some challenges regarding long term energy efficiency associated with standby power controllers, as some customers find the inconvenience outweighs any potential savings.
Has the EEIS achieved reductions in greenhouse gas emissions?	Only four eligible activities have been implemented, whereas modelling for the EEIS was based on a more diverse range of activities being undertaken. The EEIS is estimated to have abated around 238,000 tons of carbon emissions since commencement, with 50,719 activities undertaken in 24,386 homes. Average emissions abatement per household is 9.8 t CO_2-e. A fixed emissions benefit is ascribed to every household undertaking a given activity.
Has the EEIS reduced energy use and costs?	The estimated net present value energy cost savings is $1,614 per participating household, or $318 in annual savings. Based on an assumed cost of $37/t CO_2-e, on average the cost to each household was estimated to be around $18.68 for 2013 and $33.25 in 2014. Over half of participating households surveyed reported a reduction in their energy use resulting from the activities, and less than a third reported that they would have been likely to have purchased these products within the next 12 months without the EEIS.
Has the EEIS provided opportunities for priority households to reduce their energy use and costs?	Targets for priority households were consistently met across all activities, with priority households accounting for around 30% of the total number of participating households.
Is the EEIS cost-effective?	The tier 1 retailer's cost of implementing the scheme in 2013 was estimated to be $41/t CO_2-e, which appears acceptable compared to costs in other jurisdictions and given the lack of economics of scale and the retailer's focus on managing reputational risk. The ICRC also reviewed the retailer's forecast costs and determined that they were "prudent and efficient". The vast majority of households were satisfied with the scheme and on average the payback period of activities undertaken is less than two years. However overtime, the cost-effectiveness may reduce as higher cost options are required to meet the targets.
Alignment	
Is the EEIS aligned with broader ACT Government policy and programs?	EPD also implement additional energy efficiency activities under ACT Smart. However, these are increasingly shifting to focus on education and awareness which is complementary to the EEIS. Some of these programs involving conducting and supporting water and energy efficiency assessments and priority upgrades, which presents some areas of potential overlap. The ACT Government also has a 90% renewable energy target, which means that the EEIS's objective to "reduce greenhouse gas emissions associated with stationary energy use in the Territory" is expected to become redundant as the portion of the ACT's energy provided by renewable sources grows. However the EEIS can help reduce energy use and costs and enable the

Question	Summary
	90% renewable energy target to be achieved sooner and with less cost.
Does the EEIS optimise opportunities for harmonisation with other jurisdictional schemes?	EPD has worked closely with other jurisdictions in establish the EEIS. Much of the activities data and product registers have been based on information produced by the Victorian Government for the VEET scheme. However there is also a risk in relying too heavily on other schemes, as their circumstances and direction may change (e.g. VEET scheme being closed). The ACT context also differs in many aspects to other jurisdictions, so this needs to be carefully considered and adjusted accordingly with any harmonisation efforts undertaken (e.g. abatement values appropriately amended and updated).
Enhancement	
Are there opportunities to improve the EEIS based on the experiences of similar schemes in other jurisdictions?	As energy efficiency schemes have been operating in South Australia, Victoria, and New South Wales for a longer time than the ACT EEIS there are opportunities to examine their approaches, activities, achievements, and challenges to help inform the future operation of the EEIS. The Victorian Government recently axed the VEET scheme on the grounds that the benefits did not exceed the scheme costs and led to higher tariffs for non-participants. These findings were in part driven by projected low growth in electricity demand for Victoria, which is unlikely to be as low for the ACT due to the lack of energy intensive industrial loads. The actual energy savings were also found to be only around 48% of purported energy savings calculated using the scheme regulations, which should be considered in future activity design for the EEIS. However it is important to note that these findings have been disputed by many stakeholders, and that the Victorian Labor government is attempting to introduce amendments to legislation to prevent the VEET scheme from being abolished. Other lessons from the other schemes include avoiding placing constraints on how retailers can achieve their energy saving targets, as this can lead to inefficiencies in both complying with the scheme and implementing activities. There is also a trade-off between selecting a smaller or larger list of eligible activities, as whilst the smaller is more manageable, it also limits the retailer's ability to determine an optimal strategy to meet their regulatory obligations.
How could the current effectiveness and efficiency of the EEIS be improved?	Maintaining energy efficiency reductions in the future is likely to require further effort in overcoming barriers to uptake (education, access to capital, behaviour change). This could involve better linking the EPD's ACTSmart programs with tier 1 retailer activities, or through the application of the contribution fee collected from tier 2 retailers. Consumers are not currently required to make any payment for activities, which may limit the ability of the EEIS to undertake more expensive activities in the future (this is particularly challenging in markets where split incentives exist). Other improvements include formal collaboration and liaison with other jurisdictions, obtaining more detailed data to support the long term credibility and effectiveness of this scheme (potentially as a joint exercise with other jurisdictions), and expanding the activities for the commercial sector (with a particular focus on commercial lighting in the short term).
Coordination / harmonisation	
How might Commonwealth Government policies or	Direct Action policy: unlikely to be any interactive effects on the EEIS in the short-term, as the initial focus is mostly on larger business. National energy efficiency scheme: although this would provide efficiencies

Question	Summary
programs impact the EEIS?	for both jurisdictional governments and retailers and has been flagged in the EEIS Act, it is unlikely to be developed over the short to medium term.
Are there opportunities to increase harmonisation with other jurisdictional schemes?	Given the geographic proximity of the ACT and NSW, and the NSW ESS's focus on business energy saving measures, there may be opportunities to formalise interactions with the NSW Government.
Extendibility beyond 2015	
Ability to meet targets?	The current set of activities could be rolled out to all ACT households in seven to eight years to maintain the target (including consideration of priority households), but considering that the target is doubling in 2014 and 2015 and that consumers may not accept all the activities offered, new activities would probably be required in three to four years to effectively maintain the target. It is unlikely that the relativity between cost and benefits will change significantly until 2017, so targets should not be increased further until most households have had an opportunity to participate.
Potential benefits?	The previous regulatory impact statement indicated that there would be positive net cash flows for the activities included and estimated the net present value of the scheme over its lifetime to be around $33 million, which could be extrapolated to estimate benefits beyond 2015.

Based on these findings, the following recommendations have been proposed (further detail on each of these points is provided in section 6):

- Reframe the EEIS objectives
- Enhance data collection
- Establish a clear and transparent process to propose eligible activities
- Continue contribution fee option for tier 2 retailers and consider setting the cost to encourage competition
- Invest tier 2 retailer contribution fee towards energy efficiency improvements
- Longer term certainty with lower baseline targets
- Extend the EEIS beyond 2015
- Continue to implement education and awareness programs to encourage behaviour change
- Formalise collaboration with other schemes
- Documentation and regular review of activity factors

Important note about your report

The sole purpose of this report and the associated services performed by Jacobs is to review the Energy Efficiency Improvement Scheme in accordance with the scope of services set out in the contract between Jacobs and the Client. That scope of services, as described in this report, was developed with the Client.

In preparing this report, Jacobs has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

Jacobs derived the data in this report from information sourced from the Client (if any) and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations and conclusions expressed in this report. Jacobs has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by Jacobs for use of any part of this report in any other context.

This report has been prepared on behalf of, and for the exclusive use of, Jacobs's Client, and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the Client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

1. Introduction

Following the Intergovernmental Panel on Climate Change Fourth Assessment Report in 2007, the Australian Capital Territory (ACT) Legislative Assembly committed itself to significant emissions reduction targets. These commitments are captured in the *Climate Change and Greenhouse Gas Reduction Act 2010*, which included reduction targets of:

- Peaking per person greenhouse gas emissions by 2013
- 40% below 1990 levels by 2020
- 80% below 1990 levels by 2050
- Zero net greenhouse gas emissions by 2060

The EEIS operates as a mechanism to achieve reductions targets, with the legislative framework provided by the *Energy Efficiency (Cost of Living) Improvement Act 2012* (the Act). The ACT Government's section Action Plan for climate change (AP2) identified reducing energy use in existing homes as "one of the easiest and 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.

The EEIS commenced on 1 January 2013 and is legislated to finish on 31 December 2015. AP2 considered continuation of the EEIS until 2020, finding that further energy savings opportunities could be expected, particularly given the growth in global demand for energy efficiency technology and products.

A key requirement of the EEI Act is to review the EEIS in its second year of operation. Jacobs was engaged to conduct this Review in accordance with this requirement.

This report summarises the Review undertaken, including the objectives, methodology, data collected, and key findings. Recommendations as to the future operation of the EEIS are provided.

1.1 Objectives of Review

The objectives of the Review are to:

1) Review the legislative framework for the delivery of the EEIS;
2) Undertake a preliminary assessment of the appropriateness of the eligible activities and associated abatement currently included under the EEIS to deliver the objectives of the Scheme and the Government's broader energy and climate change strategies;
3) Assess the cost effectiveness of the current implementation of the scheme, including the:
    a) experienced costs and savings for households and business
    b) the success of targeting energy savings in priority households
    c) the spread of savings across the community;
4) Evaluate the current funding mechanisms for the Scheme including the design as a 'market-based scheme' paid for by electricity consumers and the current arrangements whereby Tier 2 retailers may pay an energy savings contribution;
5) Identify relevant outcomes from reviews of other jurisdictional schemes and identify opportunities to learn from the experience of other schemes and increase harmonisation;
6) Identify impacts that may arise as a result of the proposed Commonwealth 'Direction Action' and Emissions Reductions Fund and the likely repeal of the Carbon Price;
7) In light of the above analysis, consider the commitment to continue the EEIS as outlined in AP2;
8) If the Review recommends the Scheme is to continue, determine the level of ambition that should be targeted; and

9) In considering the outcomes against the above Objectives, provide recommendations to improve the current effectiveness of the EEIS and/or for the future of the Scheme.

1.2 Scope

The scope of the Review is to conduct qualitative and quantitative analysis of the cost, energy, and greenhouse gas (GHG) savings associated with the EEIS. The analysis is to be informed by interviews and feedback from relevant stakeholders, and existing information sources.

2. Description of the Energy Efficiency Improvement Scheme

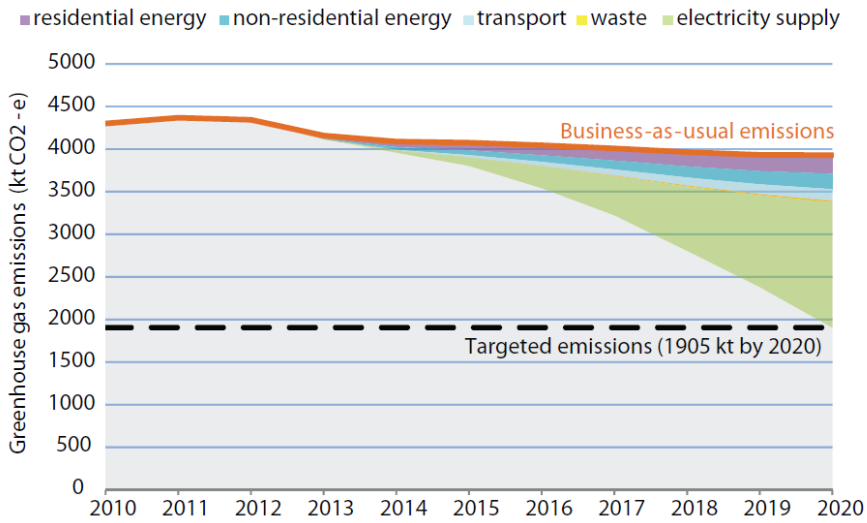
2.1 Policy

The ACT Government employs a sectoral approach to both the identification of emission reduction opportunities in the ACT and the implementation of measures that promote a fair and low carbon economy. Consistent with this approach, AP2 identified the following sectors as the major sources of emissions in the ACT:

- Residential sector energy use
- Non-residential sector energy use
- Transport sector emissions
- Waste sector emissions
- Energy supply sector emissions

The existing reductions framework seeks to implement mechanisms on a sector-by-sector basis to lower emissions over time. Figure 2-1 below provides the anticipated contributions of each of the major sectors to carbon reduction in the ACT to 2020. The EEIS targets reductions in the residential and non-residential (small and medium enterprise (SME)) sectors.

Figure 2-1: Potential contribution of sectors to meeting 2020 reduction targets[3]



The EEIS requires retailers to implement energy efficiency improvements in low-income households in order to meet legislated energy savings targets, with energy consumers in the ACT collectively paying through-costs associated with the scheme. The net decrease in household energy consumption achieved through activities conducted under the EEIS offsets the cost of installing energy efficient technology and results in an overall reduction in greenhouse gas emissions.

2.2 Legislation

The EEIS was established by the *Energy Efficiency (Cost of Living) Improvement Act 2012* (ACT), which was passed by the Legislative Assembly on 3 May 2012. The EEIS commenced on 1 January 2013 and is legislated to run for three years until 31 December 2015.

The objectives of the Act are articulated in s6. These are to:

- Encourage the efficient use of energy

[3] Source: ACT Government, *Action Plan 2*, p21.

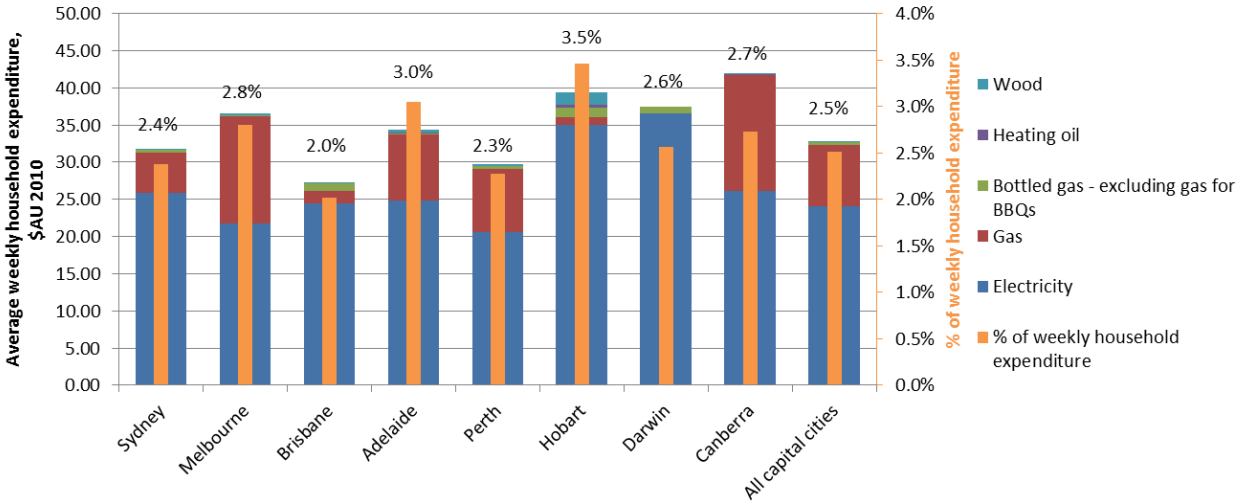
- Reduce greenhouse gas emissions associated with stationary energy use in the Territory
- Reduce household and business energy use and costs
- Increase opportunities for priority (low income) households to reduce energy use and costs

The Act imposes an energy savings target for the total reduction in greenhouse gas emissions to be achieved by retailers, expressed as a percentage of total electricity sales in the ACT. Tier 1[4] retailers are required to undertake activities to meet their obligation, while tier 2 retailers may undertake activities or choose to pay a contribution[5] instead. The scheme also incorporates a requirement for tier 1 retailers to meet at least 25% of the energy savings target emissions reductions from priority residential households.

Based on the objects of the Act, a principal reason for undertaking the scheme is to reduce household and business energy use and costs, and hence reduce the cost of living for Canberra residents, including priority households. Canberra is considered to have high average weekly household expenditure on fuel compared to other states and territories in Australia (see Figure 2-2). In terms of the proportion of overall household expenditure, Canberra has the fourth highest expenditure at 2.7%, exceeded only by Melbourne, Adelaide and Hobart, cities that also face cool winters that require increased expenditure on heating from gas and electric appliances.

Another reason for undertaking the scheme is to improve the cost of living and/or quality of life for priority[6] households. Based on 2010 ABS data, the ACT has the lowest share of low income households in Australia, at 28.6% compared to NSW which has a share of 41.1%. Nevertheless, the average cost of household energy for priority households is approximately double that of other homes and the ABS reports an average cost between 2.5% to 3% for householders who either rent, mortgage or own their home outright, while those that live in public housing spend 6.7% of their income on domestic fuel. The risk for priority households will occur if power prices increase to a point where economising may compromise quality of life and health.

Figure 2-2 : Average weekly household expenditure by state and territory



Source: ABS 6530.0 Household Expenditure Survey, Australia: Detailed Expenditure Items, 2009-10

[4] Tier 1 retailers have more than 500,000 MWh of sales each year and at least 5,000 customers. Presently, only one tier 1 retailer exists in the ACT, ActewAGL

[5] The contribution is estimated from the cost of compliance for a tier 1 retailer.

[6] Priority households include all residential premises in which at least one person is a recipient of an ACT government concession, holds a commonwealth pensioner concession card or health care card, holds a department of veterans affairs pensioner concession card, TPI gold repatriation health care card, war widows repatriation health care card or gold repatriation health care card.

2.3 Roles and Responsibilities

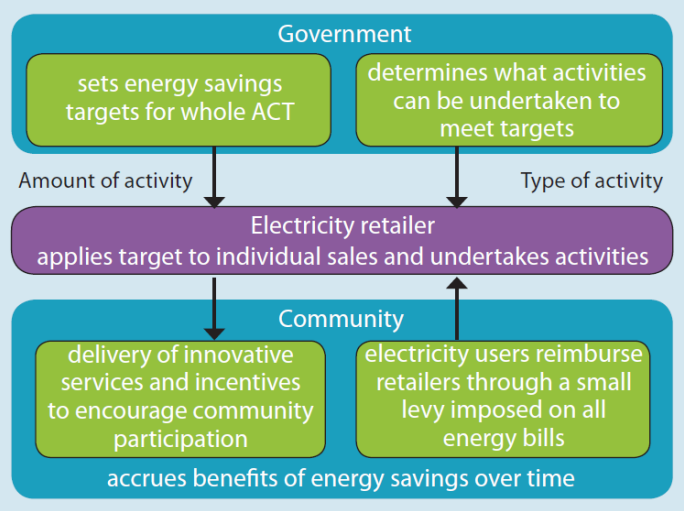
The successful operation of the EEIS involves Government, industry, and the community. The roles of each group are as follows:

- **Government.**
  - The *Minister for the Environment* is responsible for establishing Territory-wide Energy Savings Targets (EST). The targets set under the EEI Act correlate to mandatory energy savings obligations (ESO) of individual electricity retailer. The Minister is also responsible for defining what activities may be undertaken by electricity retailers to meet their individual obligations.
  - The *Administrator* of the EEIS is based in the Environment and Planning Directorate (EPD) and is required to establish the operation of the scheme and monitor retailers' compliance with their ESOs. The Administrator is also supported by policy staff from EPD who assist with policy analysis, stakeholder engagement and coordination, and general implementation of the EEIS. The role of the Administrator is defined by the Act and includes the following functions:
    - Establishing reporting and record keeping requirements for electricity suppliers;
    - Determining electricity suppliers' compliance with the suppliers' energy savings obligations;
    - Approving acquisition of abatement factors;
    - Approving codes of practice;
    - Preparing annual reports;
    - Reporting to the Minister, at the Minister's request, on anything relating to the operation or administration of this Act;
    - Administering funds raised by the Scheme.
- **Industry (electricity retailers).** All electricity retailers have an obligation under the EEIS that is determined by formula and represented in tonnes of CO_2-e.[7] The manner in which the retailer meets their obligation under the EEIS depends on the retailer's classification as a Tier 1 or Tier 2 retailer:
  - *Tier 1* – a retailer with electricity sales of 500,000 MWh or greater to customers in the ACT in a compliance year and with greater than 5,000 ACT customers. All Tier 1 retailers must undertake eligible energy saving activities approved under the Act, with 25% of their ESO to be achieved in low-income households. Where a Tier 1 retailer does not undertake abatement activities, a penalty of $70/tonne of CO_2-e applies.
  - *Tier 2* – all other retailers. All Tier 2 retailers must either undertake eligible energy saving activities or pay a contribution fee set at the expected average cost of abatement for a Tier 1 retailer. The contribution fee is currently set at $37/tonne of abatement.
- **Community.** The costs incurred by retailers in undertaking energy savings activities under the EEIS are ultimately borne by the community. Retailers pass on costs incurred by increasing their market contract rates in line with an adjustment to the Transition Franchise Tariff rate. The community therefore collectively incurs the cost burden of the EEIS, but benefits from the energy and cost savings and emissions reductions achieved.

The interactions and roles and responsibilities of the respective groups are depicted in Figure 2-3 below.

[7] The following formula defines the retailer obligation: Obligation = EST x emissions factor x retailer sales (MWh). The emissions factor has been set by the Minister at 0.89 for 2013 to 2015.

Figure 2-3: Roles and interactions under the EEIS[8]



2.4 Budget and investment

The government budget for EEIS is provided in Table 2-1. The administration functions include general administration and compliance (e.g. operational policy, implementation of additional residential and business activities, legislative compliance), technical compliance (e.g. inspectorate officers, including specialist building inspectors for EEIS activities that fall outside of the approval / certification process, plumbing / gas-fitting inspectors, and electrical inspectors), and vehicle and personal protective equipment (PPE) for the inspectors.

Table 2-1: ACT Government administration budget for EEIS

Budget	2013/14	2014/15	2015/16	Total
Budget for EEIS administration	$200,000	$200,000	$200,000	**$600,000**
Budget for extension of EEIS administration (to include additional inspectorate resources)	$377,000	$613,000	$626,000	**$1,516,000**
Total	$577,000	$813,000	$826,000	**$2,116,000**
Actual (spent and accrued)	*$71,000**	-	-	***$71,000****

Note: *Plus 2xFTE funded internally within EPD. The extent of technical compliance costs in 2014 and 2015 depend on the type of activities adopted.

[8] Source: ACT Government, *Action Plan 2*, p32.

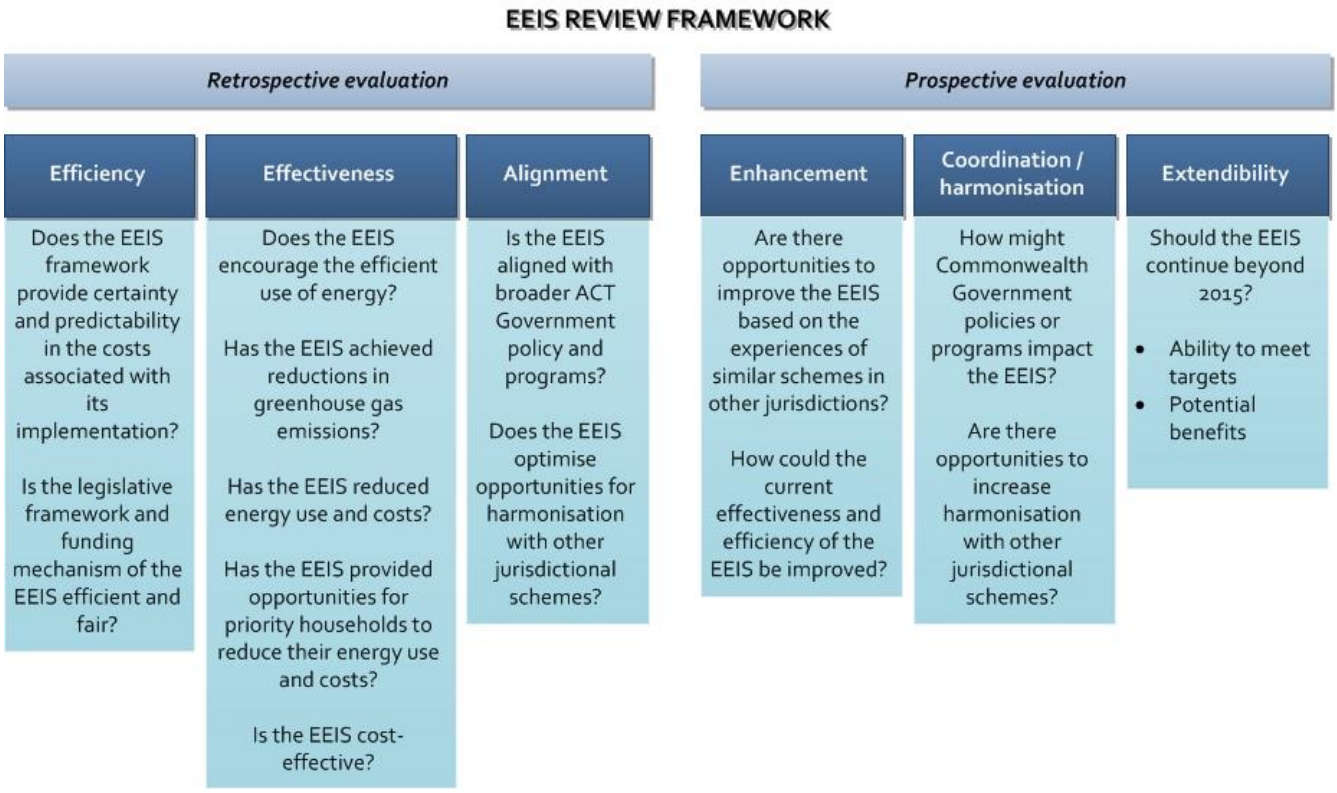
3. Review methodology

3.1 Review framework

Figure 3-1 outlines the key evaluation themes and questions used to review the EEIS. The approach is consistent with the objectives set by the EEIS Review Terms of Reference (refer section 1.1) and the *ACT Government Evaluation Policy and Guidelines* (2010). The Review comprised two areas of evaluation:

- **Retrospective evaluation** – assesses the costs and achievements of the EEIS over its first year of operations.
- **Prospective evaluation** – considers opportunities to enhance, harmonise, and extend the EEIS in the future.

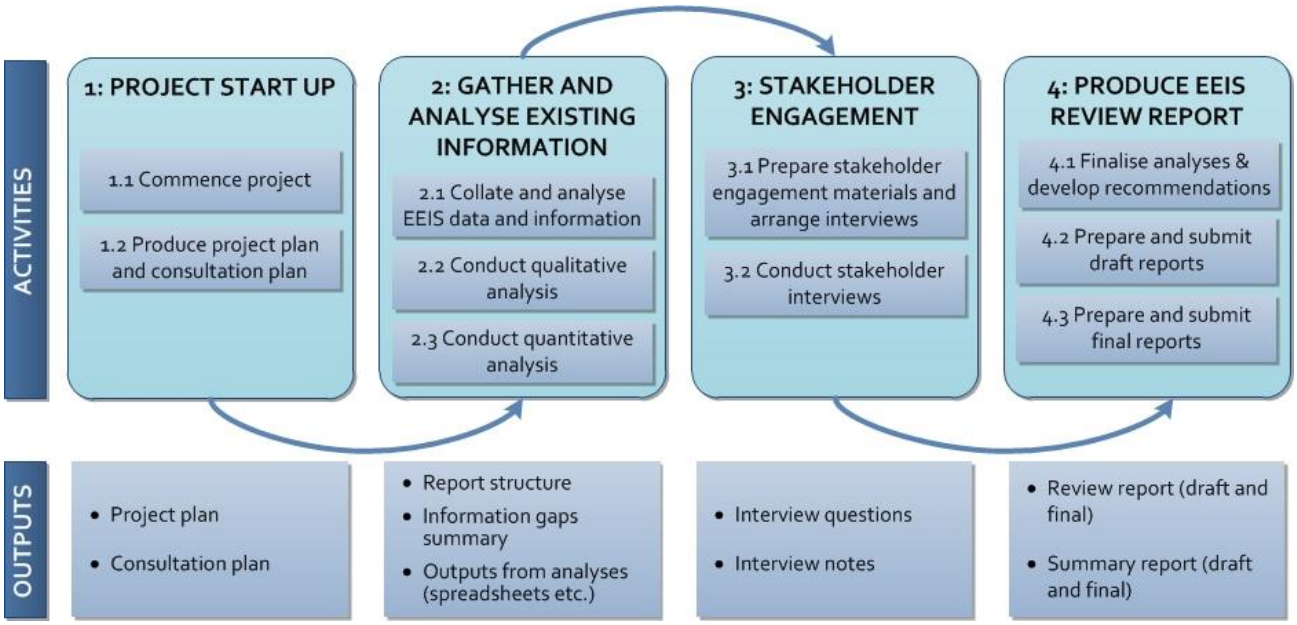
Figure 3-1: EEIS Review Framework



3.2 Methodology

Jacobs' methodology for conducting the Review is outlined in Figure 3-2.

Figure 3-2: Study methodology



3.3 Data sources

The following sources of data and information were drawn upon to inform this Review:

- ActewAGL compliance reporting data
- Tier 2 retailer reporting data
- EEIS Regulatory Impact Statements
- EEIS legislation (the Act and supporting determinations)
- Reviews of schemes in other jurisdictions – Victoria, New South Wales, South Australia, and the United States
- ACT Government economic models for AP2 and the EEIS
- Other relevant reports and publications – e.g. ICRC reports

Jacobs also interviewed representatives of tier 1 and 2 retailers, ACT Government agencies, ActewAGL's contracted installers, small business, academic institutions, and the Minister for the Environment. Interviews were conducted in person or via telephone depending on the location of the interviewee. A full list of stakeholders interviewed is provided in Appendix B.

Other schemes considered for comparative purposes include:

- South Australian Residential Energy Efficiency Scheme (SA REES)
- Victorian Energy Efficiency Target (VEET) Scheme
- New South Wales Energy Savings Scheme (NSW ESS)

An analysis of these schemes is provided in Appendix C.

4. Retrospective evaluation

The purpose of the summative evaluation is to assess the operation of the EEIS to help inform its future direction.

4.1 Scheme establishment

A significant effort was required from numerous ACT Government agencies in the establishment phase of the EEIS. Resources are still required to ensure that activities conducted under the EEIS comply with Building Codes and that they are appropriately aligned with other ACT Government sustainability programs. The EEIS has an appointed administrator to oversee its implementation and compliance, as well 2 full time equivalent (FTE) to support its delivery. Additional inspectors are also available if required to check technical compliance (however due to the nature of activities undertaken to date, these resources have not yet been required).

The legislative framework of the EEIS enables minimal administration by relying on retailers to deliver the benefits and leveraging resources developed by other jurisdictions. In 2013 all retailers met their ESO. This implies that the current financial penalty facing tier 1 retailers of $70 per tonne of CO_2-e per MWh is effective in enforcing compliance with the targets of the scheme. This view was confirmed through interviews with ActewAGL, where a strong desire to meet targets and concerns about capacity to meet the targets over time were expressed. However an area of potential risk from a regulatory perspective is ensuring that what is reported by the retailer accurately represents the activities actually undertaken. Although the ACT Government is confident in the reporting processes, there is no external auditing requirement currently associated with EEIS.

Another risk is that the ACT Government's reliance on abatement factors and product registers produced through VEET may leave a major gap in the knowledge required to implement the EEIS. Furthermore, it is critical that any data obtained from other jurisdictions is appropriately adjusted to take into account ACT-specific conditions. Otherwise, retailers' and households' experience of the EEIS in terms of energy and cost savings may fall well below their expectations.

Although all tier 2 retailers acknowledged that the ACT Government was highly collaborative and adaptable in responding to their concerns and queries (mostly related to reporting), there appears to have been some confusion in the first year of the EEIS around tier 2 reporting requirements. Tier 2 retailers said that they received the reporting guidelines somewhat last-minute, which were then followed by an optional reporting template in PDF form even later. All tier 2 retailers appear to have found the reporting requirements somewhat unclear with a lot of duplication in the data being requested, and nearly all tier 2 retailers said that they had to have some back-and-forth interaction with the ACT Government in order to clarify the requirements.

4.2 Efficiency

The efficiency of the EEIS was assessed by analysing whether the:

- Costs involved in implementing the EEIS are appropriately certain and predictable
- Legislative framework and funding mechanism of the EEIS are efficient and fair

4.2.1 Does the EEIS framework provide certainty and predictability in the implementation costs?

Expenditure associated with implementing the EEIS in 2013 is listed in Table 4-1. The total cost of the scheme in 2013 was around $9,822,000, of which only around 4 percent represents transaction or overhead costs.

Tier 2 retailers interviewed all stated that the EEIS was a "straightforward" scheme compared to energy efficiency schemes operating in other jurisdictions. This was because the option to pay a contribution fee based on the fixed cost of $37/t CO_2-e was a relatively simple requirement that they could factor into their costs as soon as it was announced, providing them with a high level of certainty and predictability compared to tradable certificate-based schemes.

Tier 1 retailer, ActewAGL, went to market through an open tender process to find the best value for money option to meet their ESO. The list of eligible activities provided them with some autonomy in determining the

most cost-effective approach to achieving their targets, however also placed constraints on their strategy. Whilst the option to propose new eligible activities for consideration by the ACT Government exists, ActewAGL is required to produce information outlining specific details about the new activity, which would increase their transaction costs and ultimately the activity may not even be accepted.

Furthermore, although ActewAGL is able to predict their costs with some certainty over the short-term, as more households receive the most cost-effective abatement options, ActewAGL and its contractor will need to consider some of the relatively costly options to ensure that they continue to meet their targets. There are higher levels of uncertainty around what this could comprise, and the ability to accurately estimate the associated costs may diminish even further with the potential closure of VEET.

Table 4-1: Implementation costs of the EEIS

Stakeholder group	Item	Indicative cost (2013)	Was this cost expected?
ACT Government	Staffing associated with ensuring general and technical compliance.	$264,000 (2013/14)	Budgeted. In 2014 the costs may increase depending on the activities being implemented.
Tier 1 and 2 retailers	Cost of undertaking eligible activities to meet the ESO, transaction costs associated with complying with the EEIS, and energy savings contribution to meet the ESO.	$9,558,000	Due to this being the first year of the EEIS, there was some uncertainty around these costs in the ACT market. Tier 2 retailers reported transaction costs ranged from $1,000 to $60,000 per retailer. Only three of the ten tier 2 retailers reported transaction costs, which they said mostly involved IT / systems expenses. Other tier 2 retailers said they may have incurred around $1,000 in staff time, which has been included as part of the total cost (but this is not reported in most cases). All tier 2 retailers stated that the fixed price of abatement enabled them to plan and budget for the energy savings contribution fee as needed.

4.2.2 Is the legislative framework and funding mechanism of the EEIS efficient and fair?

The scheme requires tier 1 retailers to undertake energy savings activity, and enables tier 2 retailers to undertake such activity as an option. In the ACT, no tier 2 retailers have chosen to undertake activities, generally because the fixed costs associated with doing so would place them at an overall competitive disadvantage given that their market share is substantially lower than that of ActewAGL (the only tier 1 retailer in the ACT). Tier 2 retailers in the ACT instead pay a charge of $37/t CO_2-e, based on the estimated costs of implementation prior to the scheme going ahead. ActewAGL have actually invested around $41/t CO_2-e to implement energy savings activities to meet the target, and presumably any gap between retailer price increases would be addressed on an ex-post basis.

All retailers are allowed to increase energy rates to compensate for this additional cost. The approach taken avoids creating a barrier that would impede retail competition, but may enable ActewAGL[9] (and consequently other retailers) to increase costs above reasonable levels (if the tender process for energy service providers is inefficient, which could be the case if a number of medium to high income consumers would have been willing

[9] ActewAGL specify on their website (http://www.actewagl.com.au/Help-and-advice/Assist/Energy-saving-house-calls/Frequent-questions.aspx) that retail bills will increase by 1.3 to 2.1% over the first three years of the scheme, while savings from energy savings activity will continue over the life of products provided.

to pay for the services they were provided) and could unfairly provide zero or low cost marketing opportunities for ActewAGL at the detriment of other competing retailers. Also, while the scheme is open to all consumers in the ACT (regardless of supplier), it is possible for consumers to develop the impression that these offers are only open to customers of ActewAGL. However, Jacobs notes that the ActewAGL website states that:

> *"ActewAGL's Energy Efficiency program is open to all residents in the ACT. ActewAGL will be doorknocking homes across Canberra offering the program to all residents, including priority households. Anyone living in the ACT can book an appointment by calling 1300 789 002."*

Contribution payments collected from tier 2 retailers are, according to the legislation, intended to enhance further energy demand reduction efforts beyond those provided by ActewAGL. Presently optimal use of these funds is still under consideration by the relevant ACT governing body.

4.3 Effectiveness

The effectiveness of the EEIS was assessed by examining its achievements against Act's objectives as listed in Section 2.2.

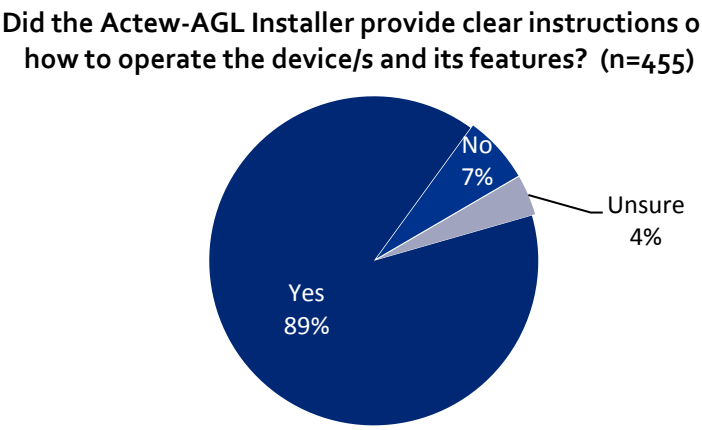
4.3.1 Does the EEIS encourage the efficient use of energy?

In its purest form, energy efficiency schemes like the EEIS may not directly provide motivation to consumers to take up additional energy efficiency actions to those undertaken as part of the scheme. This is because they are designed to provide an up-front offset to capital costs that may be incurred in undertaking an activity, but there is no requirement to provide education or support to consumers who undertake activities. However, in Australia most schemes of this type require retailers to meet a target, which will incentivise them to educate and assist consumers in taking up activities, usually through energy service providers.

The ACT is no exception, and a major part of ActewAGL's selected energy service provider's role is to encourage households to undertake activities so that ActewAGL can meet their targets. This means that the energy service provider motivates and educates consumers on energy efficiency, at least in relation to the activities they are offering. It also means that suppliers have gained incentive to seek out and overcome barriers to uptake of energy efficiency, including lack of time and information, as pointed out in the 2012 RIS. The 2012 RIS also indicated that suppliers would have incentives to overcome barriers such as split incentives. However this is only partly true, since suppliers are only likely to seek to overcome those barriers where it is economic to do so, such as when the cost of overcoming those barriers is less than the cost of implementing more expensive energy efficient options.

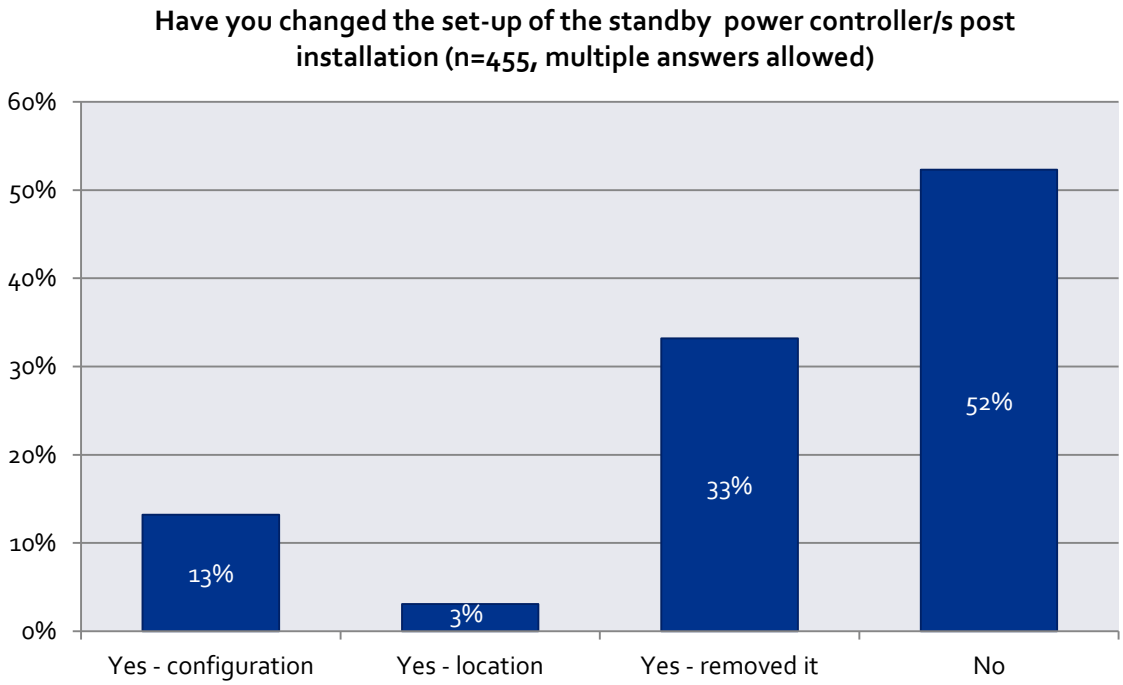
Results from a recent survey of participating households commissioned by EPD (July 2014) confirm this expectation, with almost 90 percent of households reporting that the ActewAGL installer provided clear instruction on how to operate device/s and its features (refer Figure 4-1).

Figure 4-1: Participating household survey – instruction provided by installer



However similar to findings of the VEET scheme review, there are some doubts regarding the capacity of SPCs to provide lasting energy efficiency, as households tend to find the inconvenience of power automatically switching off (particularly when watching or recording television) to outweigh the potential efficiency savings. As a result, a third of households removed the device post-installation (refer Figure 4-2).

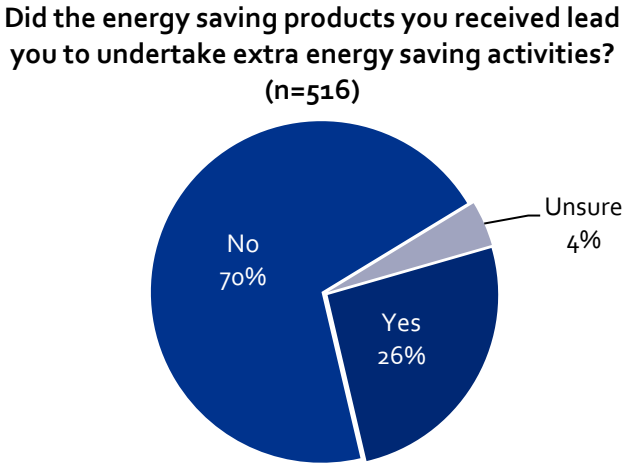
Figure 4-2: Participating households – SPC use post-installation



To provide sufficient motivation to encourage ongoing energy savings, it is important that supplementary programs also exist to provide additional motivation and guidance, and to provide early demand for future products and services offered under the EEIS. As can be seen in Figure 4-3, only a quarter of participating households feel that the activities delivered by ActewAGL will lead them to undertake extra energy saving activities. The ACTSmart[10] program is in place in the ACT to complement the EEIS by providing home energy advice services that include education and advice, including borrowed home audit kits and in-home advice for low income households (refer section 4.4.1 for further detail on additional programs being delivered under ACTSmart).

[10] http://www.actsmart.act.gov.au/your_household

Figure 4-3: Participating households – undertaking extra energy saving activities



4.3.2 Has the EEIS achieved reductions in greenhouse gas emissions?

Implementation of the scheme, especially in a relatively small jurisdiction, requires some compromises to make the operation of the scheme simple enough to keep costs low and maximise benefits. One example of such a compromise is that a fixed emissions benefit is ascribed to every household undertaking a given activity, regardless of fuel use, occupancy and lifestyle factors within that household. This is common practice, and this process enables simpler administration of the program, trading off accuracy of estimation of energy savings.

Thus far, only four activities have been implemented, as shown in Table 4-2. This outcome is quite different to modelled results which included a larger variety of inexpensive and expensive activities that might have been undertaken[11], as indicated in Figure 4-4. The chart reveals that expectations were that the majority of activity would be undertaken in area and water heating applications rather than standby power controllers (SPCs), lighting, and door seals.

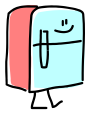
Including future emissions abatement, the scheme has been estimated to have abated around 238,000 tons of carbon emissions since commencement from 50,719 activities undertaken in 24,386 homes, which includes the installation of over 270,000 items. The average number of activities undertaken in each home is 2.1, while the average emissions abatement per household is 9.8 t CO_2-e. The program has significantly exceeded energy

[11] Eligible activities under the scheme include:
- Building sealing (doors and windows)
- Exhaust fan sealing
- Ventilation opening sealing
- Installation of thermally efficient windows
- Retrofit thermally efficient glazing
- Install thermally efficient window coverings
- Install window pelmets
- Installation of space heating and cooling appliances of 5 stars or greater, including:
  - Replacement of electric central heating with gas central heating
  - Installation of high efficiency natural gas or LPG space heating
  - Installation of high efficiency ducted gas heating in new premises
  - Install insulated gas heating ductwork
- Hot water energy use reduction activities including:
  - Decommission and replace electric resistance water heater with high efficient gas/LPG or gas/LPG boosted solar alternatives
  - Installation of low flow shower heads
  - Hot water tap improvements
- Lighting activities including replacement of incandescent or halogen lamps with a low energy general lighting alternative
- Decommissioning and disposal of pre-1996 refrigerators and freezers
- Purchase of high efficiency refrigerators or freezers
- Installation of high efficiency gas clothes dryers or high efficiency electric clothes dryers
- Installation of standby power controllers
- Purchase of high efficiency televisions
- Installation of high efficiency swimming pool pumps

reduction targets with respect to the ActewAGL contribution, and is actually within 0.4% of achieving the target for the entire jurisdiction[12].

Funds collected as energy savings contributions from other retailers are still to be allocated to future energy reduction effort subject to the ACT Budget process.

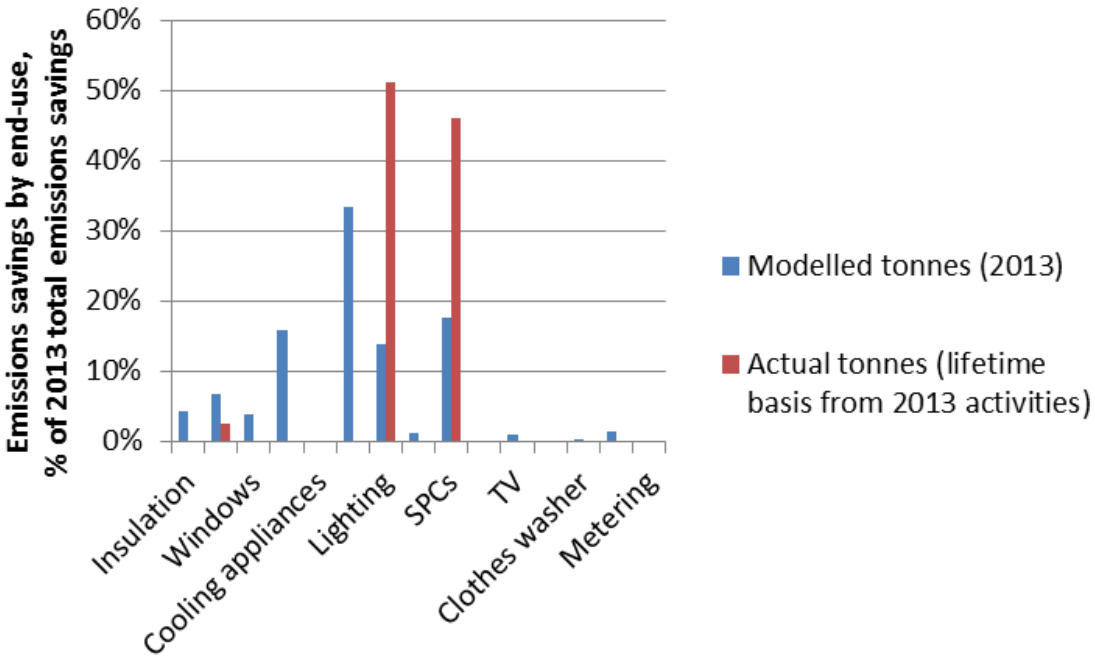
Table 4-2 : Implemented energy saving activities

Item	Description	Average emission savings per unit, t CO_2-e	Number of households	Estimated overall abatement, t CO_2-e	Abatement per household, t CO_2-e
Door seals	Door seals reduce the gaps under external doors or doors that separate conditioned from unconditioned zones in the home, reducing drafts and increasing the efficacy of heating and cooling appliances. 	0.304	9,049	5,037	0.6
Standby Power Controller (SPC)	SPCs switch off groups of appliances after they have been inactively operated for a period of time. Installation is available for information technology (IT) or audio visual (AV) environments. 	3.003	22,124	133,097	6.0
Lighting	Replacement of mains voltage incandescent or halogen lamps with low energy alternatives. 	0.470	19,546	99,381	5.1
Refrigerator and freezer removal	Pre-1996 refrigerators and freezers are removed and responsibly disposed of. 	2.76 (single door) Or 4.93 (two door)	92	393	4.3
ALL		**-**	**24,386**	**237,908**	**9.8**

Source: EEIS program data for calendar year 2013 + Q1 2014

[12] Noting that any surplus is allocated to the following year's obligation for ActewAGL.

Figure 4-4 : Comparison of modelled and actual emission benefits, 2013



Source: Jacobs' analysis of EEIS program data; Values for standby power controllers de-rated by 33% to account for homeowners who have removed the appliance due to inconvenience

4.3.3 Has the EEIS reduced energy use and costs?

Table 4-4 shows the level of participation by household type and occupancy. For convenience, the number of units and abatement levels are also shown. The abatement data was converted to energy savings by annualising the emission benefits and back-calculating energy savings using the emission intensity factors applied to develop the emissions values. From this data it was possible to estimate the energy savings benefits to households, as shown in Table 4-5. Household energy cost reductions are estimated using the average of 2012/13 and 2013/14 ActewAGL variable tariff rates to estimate prices for 2013, with prices for years following based on growth rates from recent Jacobs energy market modelling that excluded a carbon price. Price projections are provided in Table 4.3.

Table 4.3 : Residential electricity price projections, $2013/MWh

FY ending June	2013	2014	2015	2016	2017	2018	2019	2020	2021
Electricity price	199.10	203.13	205.15	216.37	226.74	240.16	250.47	253.92	252.26
FY ending June	2022	2023	2024	2025	2026	2027	2028	2029	2030
Electricity price	250.60	250.94	250.35	248.91	249.37	252.94	256.08	257.40	257.20

Source: Jacobs

Table 4-4 : Participation in scheme

	Units	Door seals	Lighting	Standby power controllers	Fridge removal	Total
Participating households[13]						
Priority	Households	2,751	6,144	6,631	25	7,427
Rentals	Households	692	1,615	1,829	-	2,041
Owner occupied	Households	2,059	4,529	4,802	25	5,386
Proportion rental	%	25%	26%	28%	0%	27%
Non priority	Households	6,298	13,402	15,493	67	16,959
Rentals	Households	1,171	2,532	2,803	10	3,166
Owner occupied	Households	5,127	10,870	12,690	57	13,793
Proportion rental	%	19%	19%	18%	15%	19%
Total	Households	9,049	19,546	22,124	92	24,386
Participating households with activity	%	37.1%	80.2%	90.7%	0.4%	
Unit numbers						
Total	Units	16,568	211,448	44,747	92	272,855
Average per household	Units/household	1.8	10.8	2.0	1.0	11.2
Abatement						
Total	t CO2-e	5,037	99,381	133,097	392.8	237,908
Average per unit	t CO2-e/unit	0.304	0.470	2.974	4.270	0.872
Average per household	t CO2-e/house	0.557	5.084	6.016	4.270	9.756

Source: Jacobs' analysis of EEIS program data for Calendar year 2013 + Quarter 1, 2014.

Table 4-5 : Average lifetime energy cost savings[14]

Activity	Fuel	Estimated household energy savings, MWh (elec) or GJ (gas)	NPV cost savings by fuel, $ /participating household	Proportion of participating households with activity
Door seals	Electricity	0.04	63.62	37.1%
	Gas	0.47	82.34	
Lighting	Electricity	2.81	1,020.19	80.2%
Standby power controllers[15]	Electricity	0.79	814.13	90.7%
Fridges	Electricity	0.75	866.50	0.4%
All[16]			1,613.76	

Source: Jacobs' analysis of EEIS program data for calendar year 2013 + Quarter 1, 2014.

Based on an assumed[17] cost of \$37/t CO_2-e, Jacobs estimated that the cost to all households (participating and non-participating) was, on average, around \$18.68[18] for 2013 and \$33.25 in 2014. Some caveats are required to correctly interpret the information provided in Table 4-5:

[13] Note that the total number of participating households may not match the total of the number of households that have participated in given activities. This is because households may not be offered every activity available, and may choose not to opt in to undertake every activity offered
[14] Note that even though the scheme is only applicable to electricity customers, the emissions benefits have been designed to include gas emissions reductions. Data applies to customers who have undertaken activity in 2013 and Quarter 1 of 2014.
[15] Derated by 33%
[16] Spread over participating households weighted by proportion of participation for each activity

- The analysis was based on estimated fuel savings, and is dependent on the assumptions used to produce those estimates. For example:
  - There is great variability in how different households use energy so fuel saving benefits can vary across households.
  - Many consumers will experience some degree of rebound. That is, they may exchange energy savings for greater comfort, by, for example, setting their thermostat to a more comfortable setting or using appliances such as heaters or air conditioners for a longer period of time. The fuel savings assume a 5% level of rebound which is quite low. A UK study[19] determined that the evidence for the household sector is that 'direct' rebound effects are at the lower end of a 10% to 30% range, and that for the low income household the rebound effect may be large – in some cases negating any energy savings because the need for improved comfort levels is much higher. Achievement of this improved comfort will increase the social benefits, so Jacobs have chosen not to adjust the energy savings estimates for increased rebound. There is inherent value in rebound that is usually not included in estimates of economic benefit. Furthermore, to achieve social policy objectives such as improved cost of living, it could be argued that rebound impacts should be removed from calculation of scheme abatement values, especially when applied to lower income households.
  - There will exist a portion of consumers who 'will have purchased the higher efficiency option anyway', allowing programs to reward effort that would have occurred in the absence of the program. Jacobs have reviewed the calculation of emissions benefits and note that the benefits were adjusted down so that they would not be overstated. A high proportion of priority (low income) households were targeted through the EEIS, and low income households are generally less likely to purchase energy efficiency measures, despite the fact they may need them more than other consumers.
- The EEIS will increase costs during the years of the scheme, but participant energy savings will continue for the life of the energy efficiency measure (i.e. lighting / SPC / door seal).

Just over half of participating households surveyed (July 2014) reported that the activities had some impact on reducing their energy use, with a third of households stating that it was too early to tell (refer Figure 4-5). One of the criticisms of other similar schemes is that households may have undertaken these activities anyway, based on the rationale that energy efficiency activities reduce energy use and thus provide cost savings. As shown in Figure 4-6, only a third of participating households reported that they would be 'likely' or 'very likely 'to have purchased these products within the next 12 months, and a further gap usually exists between consumer intentions and actions that would suggest even fewer than this number would ultimately have actually bought these products. Similarly for businesses, a 2012 Australian Industry Group report[20] found that whilst large business were increasingly taking or planning action to improve their energy efficiency, a relatively small portion of SMEs were focused on energy efficiency, as they did not judge it sufficiently important, lacked information about opportunities, and lacked the internal capacity and skills.

[17] Jacobs assumes that any cost paid by ActewAGL above this amount has been applied for promotional and marketing activity.
[18] Based on ICRC pass through costs of $1.12/MWh for 2012/13, $3.75/MWh for 2013/14, and $4.33/MWh for 2014/15, available at http://www.icrc.act.gov.au/wp-content/uploads/2013/02/Report-4-of-2013-June-2013.pdf and http://www.icrc.act.gov.au/wp-content/uploads/2013/10/Report-4-of-2014-Final-Report-Standing-offer-prices-for-the-supply-of-electricity-to-small-customers.pdf. Average energy use was assumed to be 7.67 MWh/year (see http://www.icrc.act.gov.au/wp-content/uploads/2013/08/Report-7-of-2013-August-2013.pdf). i.e. Average cost per household in 2013 = 7.67 x (1.12+3.75)/2 = 18.68 and average cost per household in 2014 = 7.67 x (3.75+4.33)/2 = 33.25
[19] Sorrell 2007, "The Rebound Effect: An Assessment of the Evidence for Economy-Wide Energy Savings from Improved Energy Efficiency", UK Energy Research Centre, October, London.
[20] AI Group, Energy shock: pressure mounts for efficiency action, July 2012

Figure 4-5: Participating households – impact on energy use

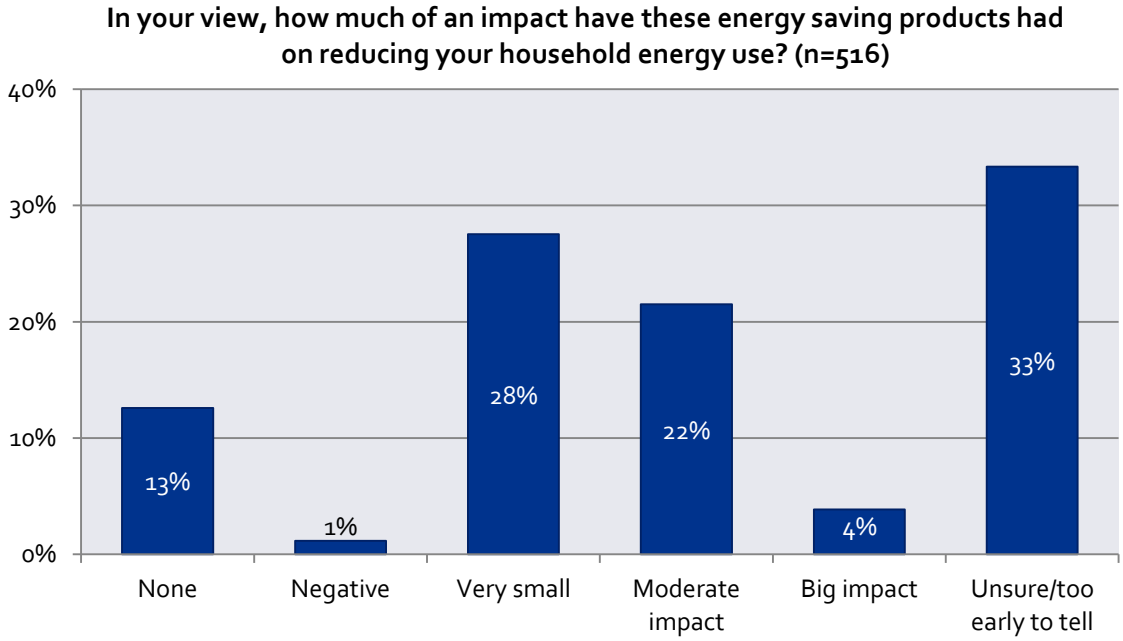
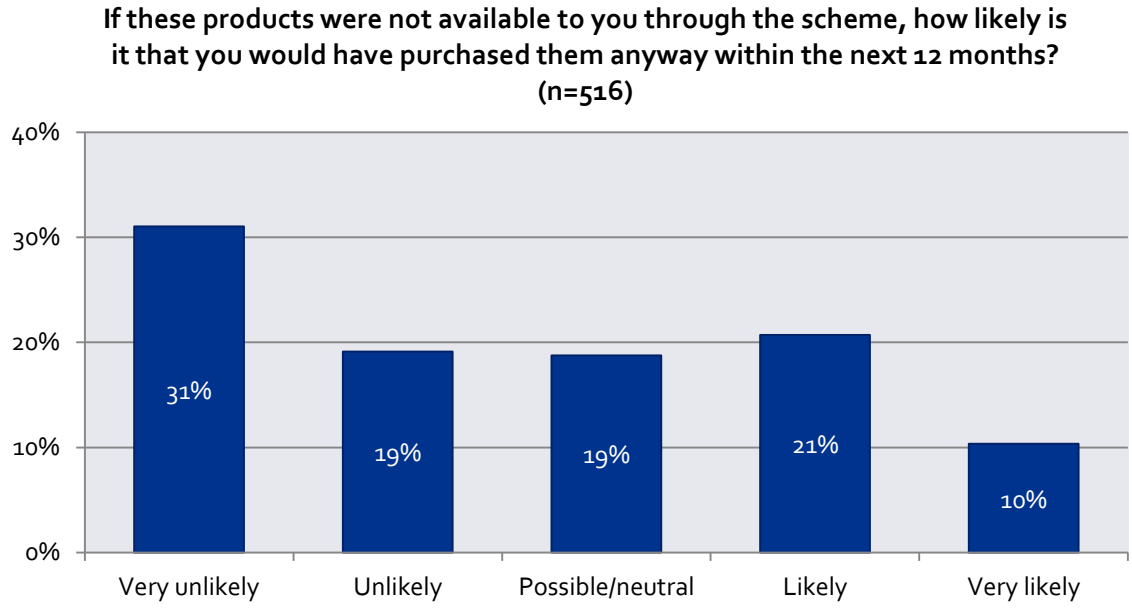


Figure 4-6: Participating households – likelihood of purchasing products without the EEIS



4.3.4 Has the EEIS provided opportunities for priority households to reduce their energy use and costs?

The emissions reduction targets for priority households were consistently met across all activities. Around 30% of all participating households were priority households.

Table 4-6 : Emissions savings in priority households

Item	Emission savings per unit, t CO_2-e	Number of households	Estimated overall lifetime abatement, t CO_2-e	Lifetime abatement per household, t CO_2-e	% installations in priority households
Standby Power Controller	3.003	6,631	38,812	5.85	30%
Door seals	0.304	2,751	1,510	0.55	30%
Lighting	0.470	6,144	32,900	5.35	31%
Refrigerator and freezer removal	2.76 (single door); 4.93 (two door)	92	393	4.27	26%
Total	-	**7,402**	**34,803**	**9.89**	**-**

4.3.5 Is the EEIS cost-effective?

The ActewAGL cost of implementing the scheme in 2013 was estimated to be \$41/t CO_2-e, and is provided without further breakdown by activity or for priority/non-priority homes. This value was compared with values provided for other jurisdictions and is in the ballpark of what would be expected in the first year of a program, as shown in Table 4-7. A comparison reveals that \$41/t is on the higher side of the experienced cost range, though this may stem from lack of economies of scale or ActewAGL's substantial effort in selecting and managing a service provider that would enable them to adequately manage their reputational risk[21].

Table 4-7: Comparison of average reported program costs by jurisdiction (\$2013)[22]

Program	Cost, \$/t CO2-e	Source
Modelled	\$37	2012 RIS
SA REES	\$44	REES Annual Report 2009-2011
VEET	\$15.70 (shortfall penalty of \$44.54)	Based on average value of Victorian Energy Efficiency Certificate (VEEC) spot prices in 2013, as sourced from NGIS data.
NSW ESS	\$20.36 (shortfall penalty of \$25.35)	Based on average value of Energy Saver Certificates (ESCs) in 2013, as sourced from NGIS data.
Various US (14 programs)	\$19 – \$41 (median \$33)	"Saving energy cost-effectively: A national review of the cost of energy saved through utility sector energy efficiency programs", Friedrich et all, September 2009, ACEEE

ActewAGL's forecast costs for 2014/15 are around \$41/t CO_2-e per MWh, which is an allowance of \$4.92 per MWh for the EEIS. This represents a 31 percent increase from the 2013/14 allowance of \$3.75 per MWh. As

[21] Priority households are more expensive to service because a larger number of households will need to be serviced for the same emissions reduction benefit. This was observed in the 2013 data set because lower income households usually have smaller homes requiring fewer light bulbs, a lower number of standby power controllers and possibly lower levels of draught proofing perhaps because of a higher tendency to live in apartments.

[22] Note that these costs are cost per ton of delivery, not actual cost of abatement or energy savings.

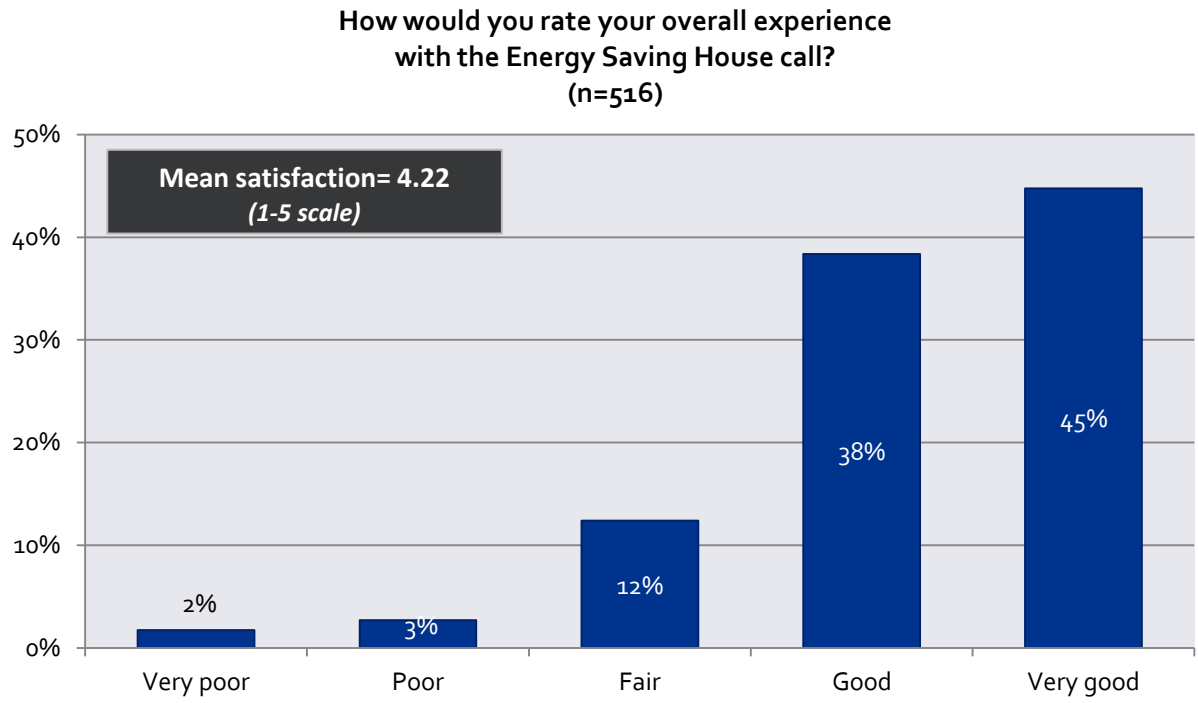
part of the ICRC's *Standing offer prices for the supply of electricity to small customers* (July 2014) report, the ICRC examined the prudency and efficiency of these forecast costs, noting the ACT Government's submission stating that the costs were higher than expected based on comparison with schemes in other jurisdictions.

The ICRC reviewed costs in other jurisdictions, and determined that the benchmarking exercise did not provide a substantive basis for considering ActewAGL's costs. This was due to the data on jurisdictional scheme costs being calculated using different methods, and the structure of jurisdictional schemes being fundamentally different (e.g. certificate-based).

Instead, the ICRC examined the procurement process used by ActewAGL to select a contractor to implement the EEIS activities, as this represents "a market-based cost for providing energy efficiency abatement services in the ACT".[23] They found that an open-market and competitive tender process was used, eliciting 17 submissions with the best value for money option being selected. The ICRC also compared these costs to the penalty rate ceiling of $7.06 per MWh, which is significantly higher than the forecast costs. On this basis, it determined that the allowance of $4.92 per MWh for 2014/15 was prudent and efficient.

ActewAGL's implementation of activities through its service provider has also been generally well-received. A recent survey of participating households commissioned by EPD (July 2014) revealed that over 80 percent of households would rate their experience with the scheme as 'good' or 'very good', and only 5 percent as 'poor' or 'very poor' (refer Figure 4-7).

Figure 4-7: Participating households' rating of the overall Energy Saving House call experience



Furthermore, most households were satisfied with each of the three activities delivered by ActewAGL (refer Figure 4-8, Figure 4-9, and Figure 4-10). The only activity which may prove to be not as cost-effective as expected is the installation of SPCs, as discussed in section 4.3.1 and demonstrated by the relatively high proportion of households which reported 'very low' or 'low' satisfaction with the activity.

[23] ICRC, Standing offer prices for the supply of electricity to small customers, July 2014, p. 26

Figure 4-8: Participating household satisfaction with lighting activities

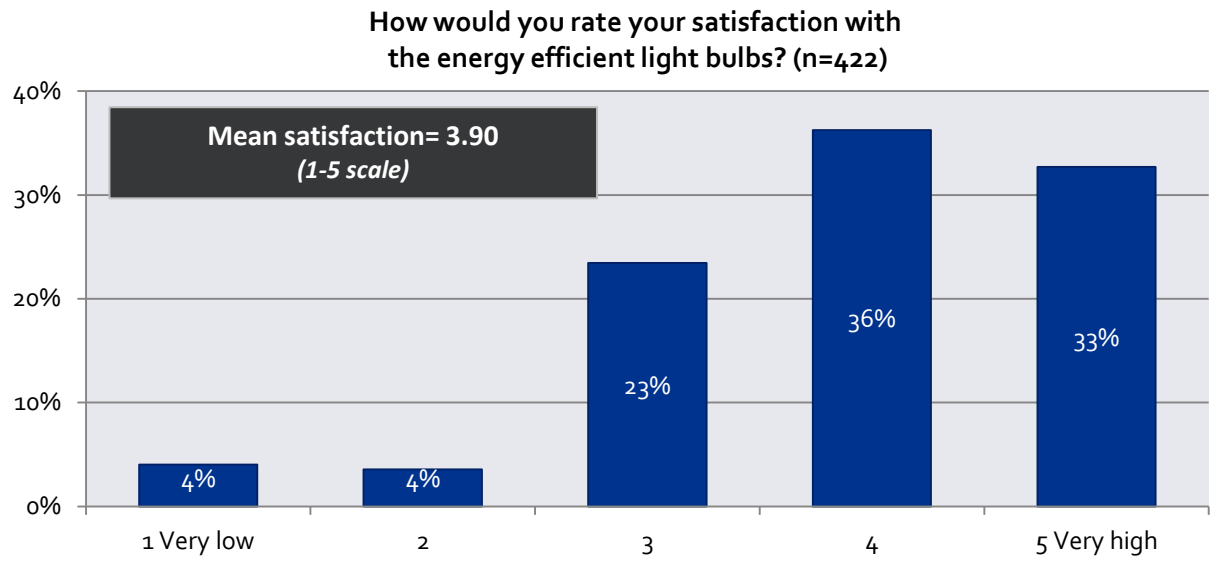


Figure 4-9: Participating household satisfaction with door seals

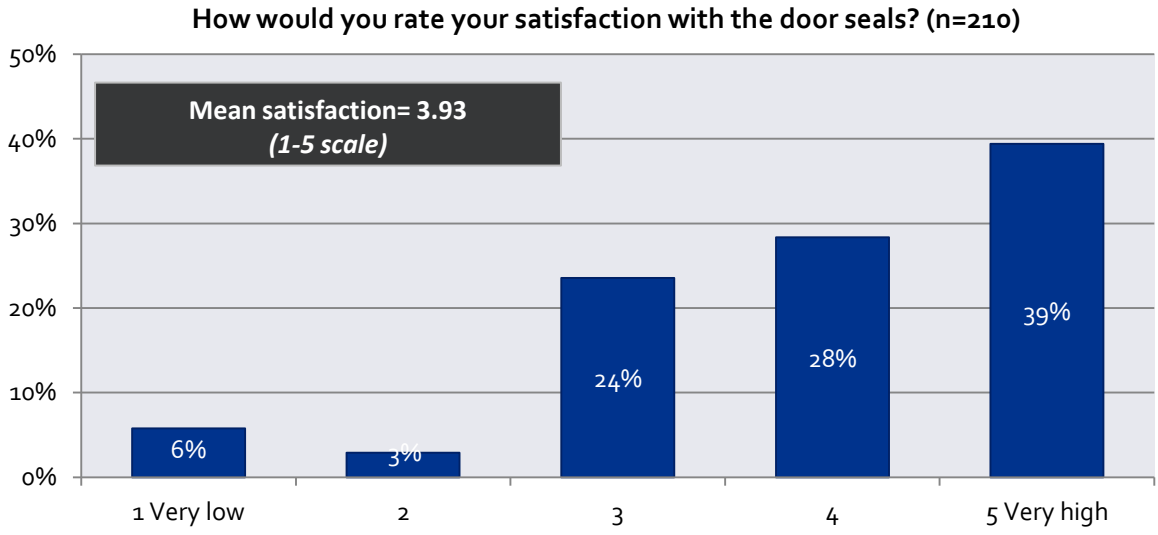
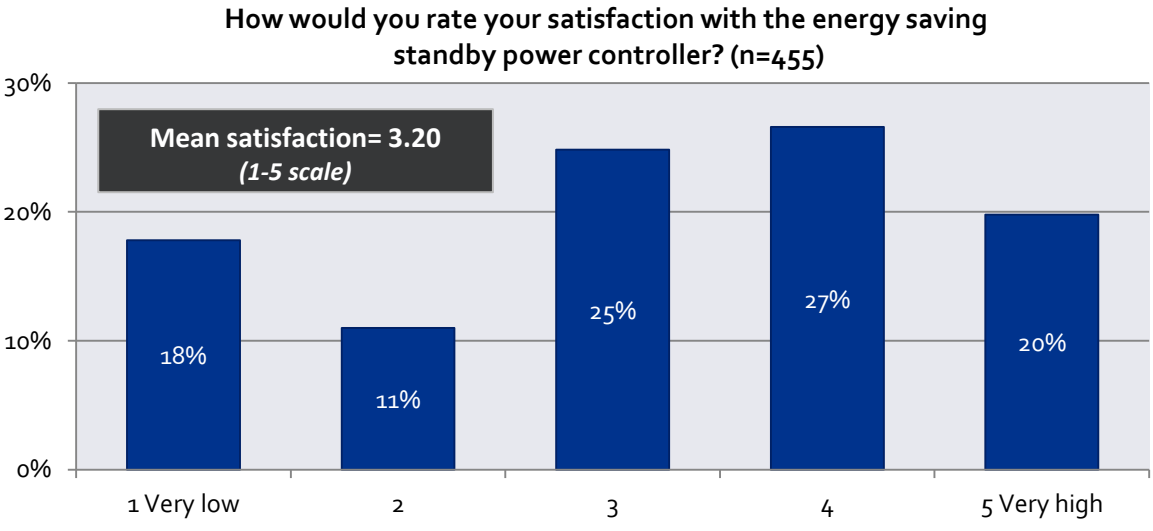


Figure 4-10: Participating household satisfaction with SPCs



More broadly, as indicated in Section 4.3.3, the scheme has generated annual savings in energy costs to participant households of around $318 as compared with an upfront cost of $405[24]. This would suggest a payback period of less than two years on average, which would indicate that the scheme has been cost effective to date for participating households. The cost effectiveness may reduce over time as higher cost options are required to meet the target.

4.4 Alignment

This section considers the alignment of EEIS with broader ACT Government policies and similar schemes in other jurisdictions. Alignment is important to avoid duplicating activities and resources and to ensure consistency across government objectives and priorities.

4.4.1 Is the EEIS aligned with broader ACT Government policy and programs?

ACTSmart programs

Within EPD, a number of additional programs under ACTSmart are being delivered. These programs include:

- *Home Energy Advice Team (HEAT) program* – closed on 20 April 2013. Provided energy audits to owners of homes built in or before 2006 and $500 rebates to audit participants if they spent at least $2,000 on priority energy efficiency improvements.
- *Low income energy and water efficiency program (Outreach)* – following a trial of the program, it was expanded in June 2011 and is planned to run until June 2015. It is implemented through community welfare organisations, and provides low-income households with energy efficient essential home appliances, energy and water efficiency home assessments, retrofits and repairs to improve the energy and water efficiency, as well as general advice and information. Other stakeholders involved include Housing ACT and a panel of energy efficiency service providers. In 2012/13, Outreach assisted 1,075 low-income households.
- *ACTSmart Business Energy and Water Program* – commenced 1 July 2012. Assists small businesses in the ACT in reducing their energy and water consumption by providing a subsidised energy and water assessment and a 50% rebate for the costs of undertaking approved upgrades up to $5,000. In 2012/13, the program assessed 112 small businesses, 32 of which completed upgrades and claimed a rebate.
- *ACTSmart Government Energy and Water Program* – commenced September 2012. Provides energy and water efficiency assessments at ACT Government agency sites and a report that can be used to support applications for Carbon Neutral Government Fund loans. 21 sites received assessment reports in 2012/13.
- *ACTSmart Home Energy Advice* – commenced in April 2014. Provides information, advice, and resources via telephone, online queries, and workshops / public events to all ACT residential households to minimise their home energy use. A home energy efficiency assessment is also available at a cost of $250 to $350 per home depending on the size of the home (free for Pensioner Concessions Card holders under the Outreach program).

The focus of these programs differs to that of the EEIS in two key ways. Firstly, their primary objective is around water and energy efficiency education and awareness. Secondly, their activities are more customised to the specific needs of the premise, with the first step typically involving a water / energy efficiency assessment to identify priority upgrades.

This first point means that the ACTSmart programs are complementary to the EEIS, as a common criticism of energy efficiency schemes like the EEIS is that they do not address the behaviour change needed to achieve lasting energy efficiencies in households and businesses. The second point presents some areas of potential overlap however, as in some cases there may be both ACT Government and ActewAGL energy efficiency providers visiting the same households to offer the same energy efficiency measures. The ACTSmart programs section have attempted to address this issue by referring households to the ActewAGL program for implementation of any of their recommendations relating to lighting, SPCs, or door seals. There may also be an opportunity to encourage ActewAGL energy efficiency providers to refer households and businesses to the ACT

[24] The upfront cost was calculated by multiplying the average cost to ActewAGL of $41/t CO2e per household and the average abatement of CO2e of 9.89 t/household.

Government ACTSmart programs for further efficiency opportunities. However there is no requirement or direct incentive for ActewAGL to take on this type of promotion role.

Whilst the ACTSmart programs may achieve greater savings per household compared to the EEIS due to their more customised and holistic approach, they are not able to achieve the same reach as the EEIS in terms of the total number of participating households and businesses, plus the savings are achieved at a significantly higher cost.

Although it may be less cost-effective for ActewAGL to undertake a wider range of activities, there may be an opportunity to extend their current activities by household. For instance, the ACTSmart programs have found greater savings to be achieved through whole-of-house draught proofing, however currently ActewAGL only seals the bottom of the door.

90% Renewable Energy Target

In November 2013, the ACT Government legislated a 90% renewable energy target (*Climate Change and Greenhouse Gas Reduction (Renewable Energy Targets) Determination 2013 (No 1)).* The combination of the EEIS with the 90% renewable target is likely to have the following impact on market retail prices:

- Additional renewable energy requirements above the level of the RET would increase retail power prices. The increase in power prices could encourage further investment in energy efficiency, potentially reducing the additional energy savings attributable to the EEIS.
- At the same time, oversupply of generation may reduce market prices, possibly compensating for any increase in retailer costs and possibly offsetting the costs of the EEIS. The level of impact on electricity prices would not be possible to determine without sophisticated market modelling.
- The EEIS would reduce energy requirements and consequently the size of the 90% renewable target, making the implementation of the 90% renewable target cheaper.
- The 90% renewable target would reduce the emissions abatement values attached to each activity, reducing the benefit of the scheme to market participants wishing to invest in energy efficiency. This would also reduce the cost burden on non-participants. Providing the 90% renewable target was achieved gradually, this would slowly phase out the EEIS over time if targets and abatement values associated with energy efficiency activities were not accordingly updated.

Given the ACT Government's 90% renewable energy target, the existing objective to "reduce greenhouse gas emissions associated with stationary energy use in the Territory" is expected to become redundant as the portion of the ACT's energy provided by renewable sources grows. However the EEIS still has a critical role to play in reducing energy use and costs and it is likely to enable the ACT Government to achieve its 90% renewable energy target sooner and with less cost, as well achieve cost savings for customers over the long run.

Therefore consideration should be given to change the objective from reducing GHG emissions to reducing or removing market barriers to enable savings in energy costs and energy usage.

4.4.2 Does the EEIS optimise opportunities for harmonisations with other jurisdictional schemes?

EPD has worked closely with other jurisdictions in establishing the EEIS. In particular, EPD has drawn on the activities data and product registers produced by the Victorian Government for the VEET scheme. This enabled the EEIS to be started relatively quickly and assisted in addressing some of the resource constraints faced by the ACT Government. This sort of alignment would also provide benefits to retailers operating across jurisdictions as it provides some consistency in the activities, products, and models associated with complying with different state / territory energy efficiency legislation. However in the case of the ACT, as there is only one retailer large enough to be required to undertake activities, this benefit may not be as meaningful.

There is also a risk in relying on the data and resources from other schemes. Firstly, it is important that any adjustments or changes made to the other scheme are quickly considered and acted upon within the ACT context, however remaining informed of such changes and fully understanding the rationale driving them can be a challenge. Secondly, the ACT context has some critical points of difference (e.g. cooler climate, single major

retailer, smaller population, strong political and policy commitments to become carbon neutral) that provide both opportunities and challenges when compared to schemes in other jurisdictions and these should be fully realised / addressed. Lastly, as is currently being experienced with the potential shutting down of the VEET scheme, EPD's dependency on others for data relating to activities could suddenly and unexpectedly lead to a major knowledge and resource gap for continuing implementation of the scheme.

5. Prospective evaluation

The purpose of the prospective evaluation is to consider opportunities to enhance, harmonise, and extend the EEIS.

5.1 Enhancement

5.1.1 Are there opportunities to improve the EEIS based on the experiences of similar schemes in other jurisdictions?

Energy efficiency schemes have been operating in South Australia, Victoria, and New South Wales for a longer time than the ACT EEIS. This provides an opportunity to examine their approaches, activities, achievements, and challenges to help continuing to inform the future operation of the EEIS. Refer to Appendix C for more detail on jurisdictional schemes. An overview is contained in Table 5-1.

The Victorian Government recently axed the VEET scheme on the grounds that the benefits did not exceed the scheme costs and that although the scheme reduced participant costs it led to higher tariffs for non-participants. These findings where in part driven by projected low growth in electricity demand for Victoria, which reduced the impact of the VEET on reducing on wholesale electricity prices and deferring capital spend in generation and networks. Growth in future electricity demand may not be as low for the ACT as for Victoria as the ACT does not have the energy intensive industrial loads as in Victoria, with this sector being a major source of load reduction in Victoria. Further, the low purported benefits were also driven in part by scheme design issues (for example, it was found that that actual energy savings were only 48% of purported energy savings calculated using the scheme regulations). The ACT should consider the lessons learnt for the review of the VEET and apply remedies for its own scheme.

Table 5-1: Overview of energy efficiency schemes in other jurisdictions

Scheme	SA REES	VEET	NSW EES
Approach	Requires retailers to deliver energy saving measures and energy efficiency audits to the residential sector, with a focus on low-income households	Requires third party providers to deliver energy saving measures to the residential sector, with tradable certificates produced online following completion of the works. Certificates are valid for up to 6 years and a certain number must be surrendered to the Commission each year.	Businesses invest in energy savings measures and earn certificates for reducing energy consumption. Electricity retailers are then obligated to purchase certificates.
Activities	• Installation of efficient showerheads • Installation of ceiling Installation • Install draught proofing products • Remove second fridge/freezer • Install energy efficient lamps • Upgrade ductwork • Upgrade heating / cooling • Upgrade water heater • Install SPCs	• Incandescent lighting replacement (64.7%) • Water heating (17.3%) • SPCs (13.8%) • Space heating and cooling (3.6%) • Space conditioning • Destruction of old fridges/freezers and purchasing of new energy efficient models • Shower roses • Televisions (upgrade to more efficient systems) • Commercial lighting	• Commercial and industrial equipment (upgrades and new plant) • Lighting (commercial lighting refits, and halogen lighting replacements) • Motors and power factor correction (for industrial motor upgrades mainly) • Commercial building design • Site based programs (mainly industrial)

Scheme	SA REES	VEET	NSW EES
	• Energy audits (for priority households only)	upgrades • Clothes dryers • Pool pumps • In-home displays • Motors • Refrigerated display cabinets • Refrigeration fans • Low flow trigger nozzles • Pre-rinse spray values	• Whitegoods (destruction of spare fridge/freezers)
Achievements	All targets were met by retailers from 2009 to 2011, however in 2011 some retailers started to struggle to meet their regulatory commitments and penalty notices were issued. The majority of participating households were happy with the quality and outcomes of the scheme.	Whilst the VEET was found to deliver a net benefit of $1.42 billion to 2021, there was a net social cost (sum of the private cost to the entity making energy efficiency improvements and costs imposed on others in the community resulting from the improvement – this was based on upfront capital costs and bill savings for participating households) and increase in retail tariffs to non-participant residents.	So far the scheme has achieved savings in excess of those required to meet the targets of the scheme.
Challenges	Generally, retailers stated that they need more freedom in pursing their regulatory targets. Major retailers suggested that tradable certificates for abatement requirements would be preferred, and that they should be allowed to identify priority households themselves. In 2011, concerns emerged as the market had reached saturation point for the cheaper options of abatement. There were also concerns that energy audits do not actually result in emissions reductions.	Some issues were raised regarding the types of energy saving measures being delivered under the scheme. For instance, surveys found that 43% of SPC were removed post-installation, and there was a view that the scheme should not be providing free efficient light bulbs when they are now standard purchase. Similar to the SA REES, concerns were also raised about the market having reached saturation for cheaper forms of abatement, meaning that future reductions would incur significant costs.	Issues were raised regarding participation in the scheme by both residential and business sectors, red tape, and the certainty of energy savings. As a result, the ESS rules were slightly altered for 2014.
Future direction	Was subject to review in 2013. The review report recommended that the scheme continues to 31 December 2020 or until a national scheme that is acceptable to South Australia is in place. It also recommended regulatory	To be axed on 1 July 2015.	Currently under review to determine if still economically beneficial and also to review eligible activities and other regulations.

Scheme	SA REES	VEET	NSW EES
	amendments and administrative improvements for the scheme to apply from 1 July 2015. The government has accepted continuation of the scheme to 2020 and to extend to small business, and is currently evaluating the proposed changes to regulations.		

Key findings from this analysis that are relevant to the ACT EEIS include:

- There is a risk that placing constraints on how retailers can achieve their energy saving targets may lead to inefficiencies in terms of both complying with the scheme and implementing energy efficiency activities. On the other hand, there is a risk that allowing retailers to pursue their targets solely through the delivery of cheaper energy savings measures may result in the market quickly becoming saturated with these measures and further savings being very costly to achieve.
- Similarly, there is a trade-off between selecting a smaller or larger list of eligible activities, as a smaller list is more manageable from the government perspective in terms of ensuring compliance and quality, but limits the freedom of the retailer to determine an optimal strategy for them to meet their regulatory obligations.

Given that the ACT Government currently only deals with a single tier 1 retailer required to undertake activities, there may be an opportunity to enhance collaboration in selecting eligible activities to achieve efficiencies for both the ACT Government (particularly given the VEET scheme products and abatement registers may no longer be available or current) and retailers. Interviews with ActewAGL also revealed that reputation is one of their key priorities in the implementation of the EEIS, which minimises the quality risk often associated with installing energy efficiency measures in households. It is unlikely that ActewAGL would deliver a wide variety of measures at any one point in time given the additional administrative burden associated with this, so there may be some inefficiency in the ACT Government determining and developing a long and comprehensive list of eligible activities.

However the collaboration required may involve additional resources for both the ACT Government and ActewAGL. ActewAGL is currently working with the ACT Government on the inclusion of commercial lighting in the list of activities to be delivered to businesses under the expansion of the scheme. Yet there is some uncertainty as to whether this will be achieved within the required timeframes. We recommend both ActewAGL and the ACT Government devote the resources required to develop the appropriate code of practice and other technical compliance documents for the additional identified eligible activities as this could improve cost effectiveness of the scheme in the future.

5.1.2 How could the current effectiveness and efficiency of the EEIS be improved?

To be able to maintain energy efficiency reductions in the future, it is likely that more effort will be required to overcome barriers to uptake, especially in the areas of education and access to capital. Behavioural measures may also be useful. Whilst EPD, through the range of ACTSmart programs, are currently investing in education and awareness of energy efficiency in homes and businesses, there is an opportunity to better link these efforts with activities being delivered by ActewAGL, or through the application of the contribution fee collected from tier 2 retailers.

The process of using service providers provides the physical resources necessary to undertake activities. The appropriate level of financial resources to undertake any given activity will depend on whether a consumer payment is needed to fill the gap between the cost of undertaking the activity and any financial incentive provided by the EEIS. To date, consumers have not been required to make any payment for activities and the

services have been provided for free. This constraint is likely to limit the ability of the EEIS to undertake more expensive activities such as retrofits, as energy efficiency becomes more difficult to sell once costs become significant to consumers. This problem is exacerbated in markets where split incentives exist, and it is likely that suppliers will focus attention to easier markets where barriers are lower.

Further improvements to effectiveness and efficiency may also be possible from:

- Formal collaboration and liaison with the NSW (Office of Environment and Heritage) and Victorian (Essential Service Commission and Sustainability Victoria) to discuss lessons learnt from their schemes. In particular, there appears to be some data on actual savings versus the calculated savings that could be used to recalibrate the savings formulas. There could also be useful lessons in determining eligible activities going forward as all jurisdictions seem to be or are about to suffer from the saturation of low cost options requiring higher cost options to meet the target.
- The long term credibility and effectiveness of the scheme depends on obtaining data through surveys on the extent of market failures affecting energy efficiency uptake. One reason for the axing of the Victorian scheme was the limited number of empirical studies on the incidence of purported market failures (such as split incentives). As this survey is likely to be a costly exercise, consider undertaking joint funding of the survey with the NSW and South Australian counterparts. Similar consideration should be given to undertaking surveys of ACT participants and non-participants to determine the actual savings (across like households) from activities adopted so far.
- Expand the scheme to include more options for the commercial sector, particularly focusing on commercial lighting, as the majority of ACT SMEs are office-based so their priorities are primarily related to lighting and HVAC efficiencies.

5.2 Coordination / harmonisation

5.2.1 How might Commonwealth Government policies or programs impact the EEIS?

With the repeal of the carbon tax, Direct Action policy may be implemented. Elements of Direct Action include:

- Establishment of baselines for emissions which will use the existing National Greenhouse and Energy Reporting Scheme (NGERS) to determine overall base levels. This approach effectively targets larger businesses, and small business is provided the option to participate on an 'opt-in' basis. Businesses that function at business as usual levels will not be penalised, but if they operate at emissions levels above business as usual they will incur a penalty. Businesses will also be provided a financial incentive to reduce their emissions, through an Emission Reduction Fund (ERF). Funding levels for the ERF are approximately $2.5 billion over 4 years.
- Establishment of an expert body to assess tenders and make recommendations on activities to be supported by the Emissions Reduction Fund. As the fund is intended to support a broad range of initiatives, measures considered by the committee will be assessed against similar proposals from similar sectors. Assessment is to include consideration of significant public co-benefits.
- Collaboration with industry groups including the Clean Energy Council, the Energy Efficiency Council, the Green Buildings Council, and the Property Council to develop complementary energy efficiency measures.
- Resurrection of the 'Greenhouse Friendly' programme, a 2001 program which enabled Australian businesses to market greenhouse-neutral products or services, deliver greenhouse gas abatement and give consumers greater environmentally credible purchasing choice. Funding levels for the Greenhouse Friendly program are around $2 million per year for five years with review for continuance after 3 years.

Based on funding levels provided, it appears that the focus is on larger business, and it seems unlikely that there would be any interactive effects on the EEIS. However if Direct Action policy activities were later undertaken in SMEs and households, careful administration would be required to avoid duplication and potential impacts on targets should be considered.

Another Commonwealth level consideration flagged in the Act and EEIS Regulatory Impact Statements is the potential for a national energy efficiency scheme. Nearly all retailers interviewed mentioned this, stating that it

would create significant efficiencies for them but that they had little confidence in a national scheme being developed.

In 2012 the Department of Climate Change and Energy Efficiency and the Department of Resources, Energy and Tourism produced a progress report for the National Energy Savings Initiative. Key relevant issues highlighted by stakeholders in this report included:

- Inefficiencies and inconvenience caused by inconsistencies between schemes
  - Stakeholders stated that a streamlined national scheme would reduce administrative costs, while providing companies with a greater economy of scale and variety in energy saving measures.
  - Activities that were permitted in one state and not in others were of particular concern.
- Stakeholders believed that schemes that maintained flexibility were of better value.
- Most groups favoured the retention of tradeable certificates in future schemes.

Similar to the views expressed by retailers, stakeholders advocated for a national scheme, which obviously individual states cannot provide in isolation. However most state legislation related to the existing schemes allows them to have regard to the future of the scheme in the case of a national scheme.

5.2.2 Are there opportunities to increase harmonisation with other jurisdictional schemes?

Given the possible closure of VEET, the ACT Government will need to continue to build networks with other jurisdictional schemes in order to utilise their knowledge and available resources to support implementation of the EEIS. There may be value in formalising or providing greater structure in their interactions with the NSW Government, as the geographic proximity of the ACT and NSW means that there are businesses and residents operating across both jurisdictions and the NSW focus on business energy saving measures would assist with the development and implementation of business-specific measures under the EEIS.

5.3 Extendibility beyond 2015

5.3.1 Ability to meet targets

Participating households are estimated to make up approximately 13% of all households[25] in the ACT. As activities are being efficiently taken up at 13% of households annually, this implies that the current set of activities could be rolled out to all ACT households in seven to eight years to maintain the target, providing all households are willing to accept the various technologies. Since 30% of this group encompasses priority households, and this proportion is similar to the overall proportion of priority households in the ACT population, it is likely that the same set of activities can be rolled out to priority households over a similar period of time. Under the assumption that not all consumers would be happy with the various technologies, and considering that the target is doubling in 2014 and 2015, there are probably another three to four years in which targets could be effectively maintained before new activities would be required. This information also implies that another three to four years is also the period in which all or most ACT consumers will have begun to realise benefits of the scheme in their own homes, provided that the activities can be effectively distributed across most homes in the territory.

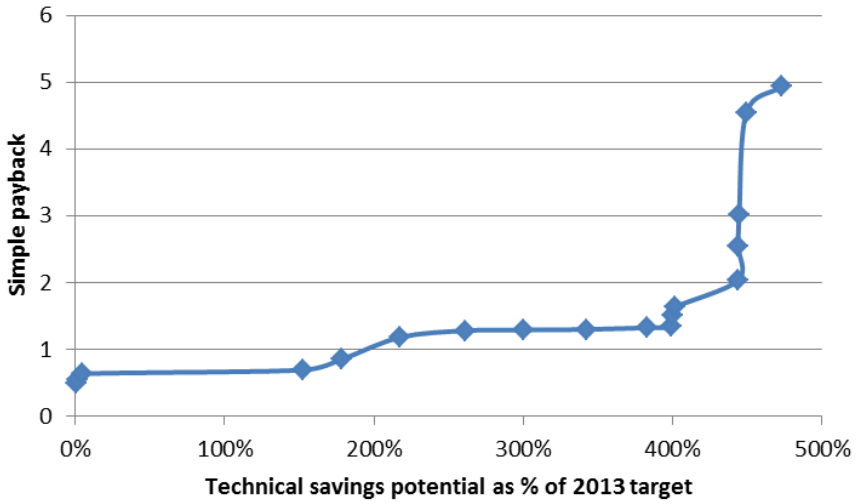
Jacobs reviewed the costs of activities that could potentially be accepted in the market using the modelling that was undertaken from the previous RIS. These activities covered the residential and small to medium enterprise (SME) markets.

The RIS identified approximately $400 million in potential lifetime energy savings for future residential market activities, and another $18 million in potential lifetime energy savings for the small to medium enterprise market. Most of these savings provided a positive net benefit to the ACT economy, indicating economic potential of $377 million in the residential sector and $13 million in the small to medium enterprise sector. However, a significant portion of this potential for further energy savings will come at higher upfront costs that require consumers to overcome additional barriers such as finding access to capital.

[25] Assumes 142,000 households, based on ABS household projections for 2013, http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3236.02006%20to%202031?OpenDocument

Figure 5.1 shows a marginal cost curve comparing the technical potential of a range of activities (restricted to those with positive net economic benefit to the ACT) against the payback period for those activities in 2013. Around 90% of technical potential can be achieved at a payback period of two years or less, and around 95% of technical potential can be economically achieved under a payback period of 3 years. These values equate to technical savings potential up to five times the present target of 7%, implying that the technical potential is around 5 times the present target (roughly 35% of residential and SME energy use)[26]. Similarly economic savings ramp up to around four times the present target, providing up to 28% of energy savings capability in the ACT market. However, achieving these savings may be constrained by the fact it is not typical for a scheme on its own to be able to encourage energy efficiency uptake. The presence of supplementary information and other programs will influence greater uptake.

Figure 5.1: Marginal cost curve demonstrating the relationship between the economic and technical potential for energy efficiency in the ACT



Source: Jacobs' analysis of EEIS modelling data

Based on the cost effectiveness to date, non-participating households would contribute around $46 in 2013, regardless of whether they receive any benefit from the EEIS. However participation in the program would provide significant benefits in excess of this amount, approximately $1,614 over the life of the activity. Assuming the same activities are likely to be undertaken over the next three to four years, it is unlikely that the relativity between costs and benefits will change significantly until around 2017. On this basis it would be unwise to increase targets further until the time comes that most households will have had the opportunity to participate and take advantage of additional energy savings that could overtake the cost of increasing bills as a result of the scheme.

Once most consumers have received energy cost savings benefits, it may be feasible to increase the size of the scheme if costs can be maintained at reasonable levels and the savings are achievable. Figure 5-2 and Figure 5-4 show unit costs of residential and SME activities previously considered in the RIS, limited to those activities with a payback period of less than three years and positive net present value[27], and sorted from lowest to highest in terms of consumer up-front cost[28]. Figure 5-2 indicates a number of residential activities with low up-front cost, excluding the four activity types which have already been undertaken in 2013 and early 2014 (i.e. lighting, standby power controllers, door seals and fridge removal). For most of the residential activities shown, the gap payment after receipt of the retailer incentive payment is low and only five activities have gap payments above $100.

[26] Economic potential from the AP2 work appears to have ignored market barriers and may have overstated the true economic cost of uptake.
[27] Calculated as lifetime marginal savings to ACT less Program implementation costs and admin fees, as calculated from the EEIS RIS
[28] Calculated as unit cost less EEIS subsidy

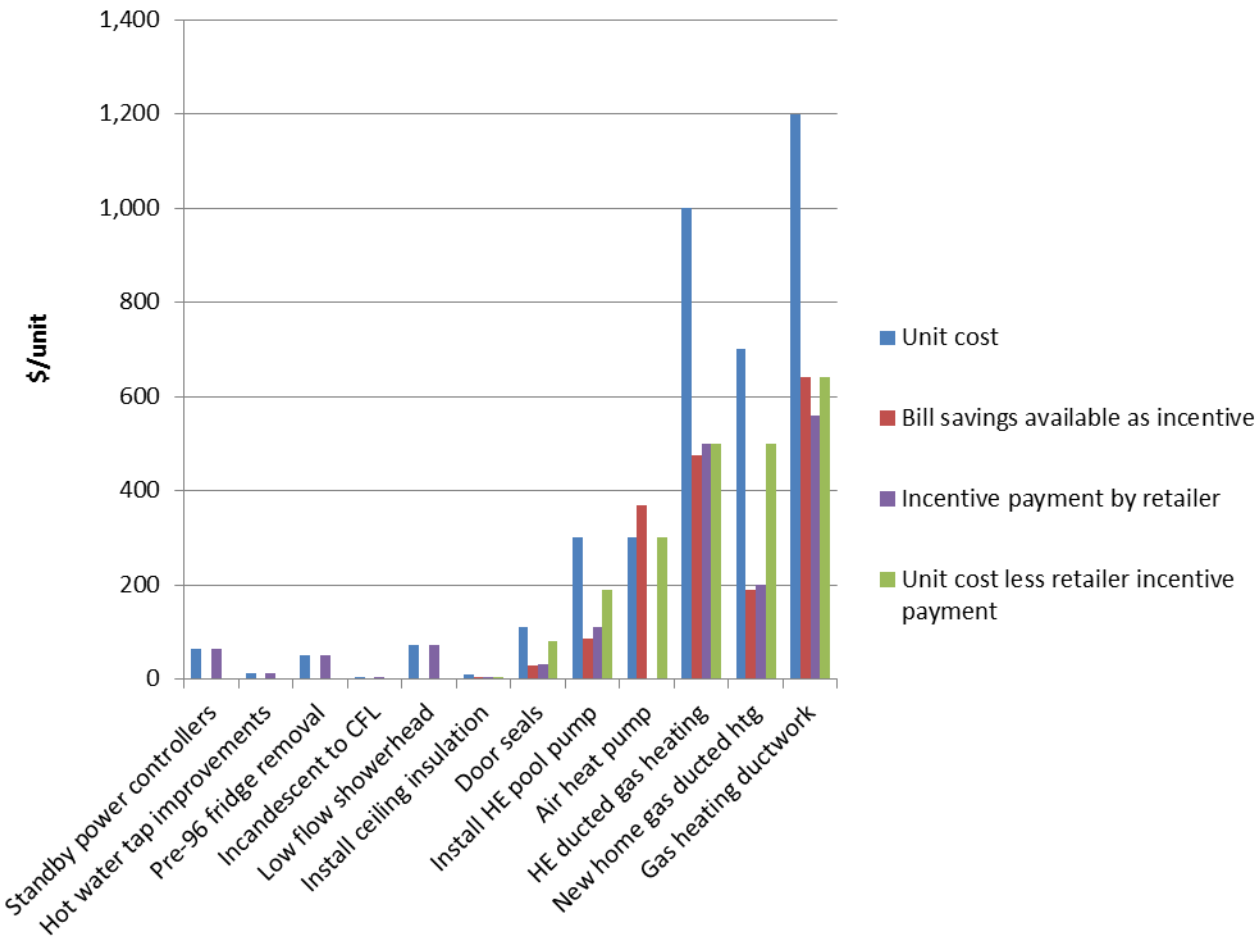
Activities with higher up-front costs face higher barriers for uptake with consumers who lack access to capital. Typically priority households are most limited in this regard. However there are still a number of activities left with similar cost ranges to those already undertaken, though some may require permission from landlords.

Most of the residential and SME activities shown also affect existing household fixtures and fittings, and are therefore likely to require owner investment in the case of rental properties, making this set prone to a split incentive barrier where the owner making the investment is unlikely to realise the energy savings benefits. The implication is that the scheme is unlikely to adequately cover a significant portion of the market (around 32% of all homes in the ACT are rented[29]) unless the split incentives barrier can be addressed. As SMEs are also likely to have difficulties with access to capital, so the higher up-front costs shown are likely to restrict this group significantly with respect to uptake of activities. The chart indicates however that funding within the first year to realise energy savings benefits may be sufficient to encourage uptake.

5.3.2 Potential benefits

It is important to also examine average expected future costs and compare these to the historical values, to assess future cost effectiveness. Figure 5-3 displays the marginal cost to save energy for each activity, with the theoretical marginal cost for the activities already undertaken highlighted in red. The chart indicates that the selected activities should be at least as cost effective as those already commenced, provided that any barriers to uptake for the new activities are not more onerous than for those already commenced.

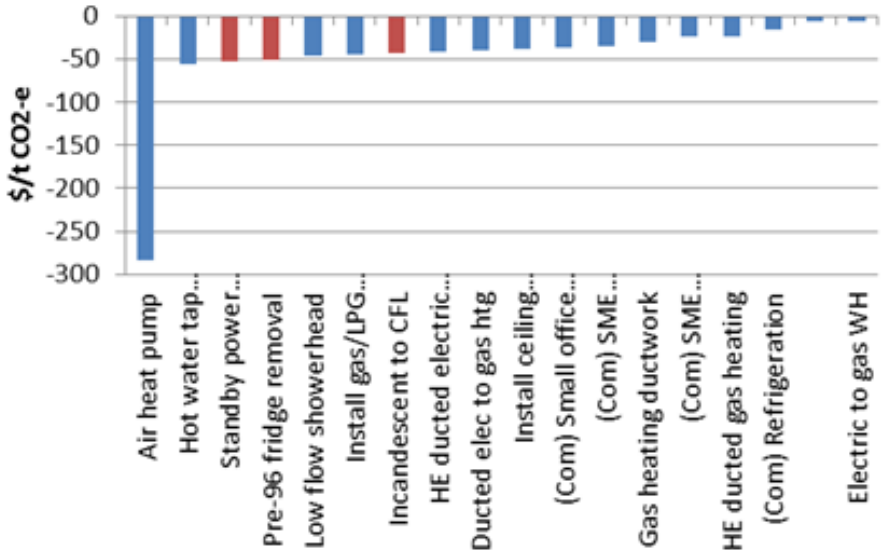
Figure 5-2 : Potential residential energy efficiency activities to be undertaken after 2013



Source: Jacobs analysis of RIS modelling, Note that bill savings available as incentive are calculated as 70% of the first year's energy cost savings.

[29] ABS 6523.0, "Household income and income distribution, Australia – Detailed tables, 2011-12", Table 15A

Figure 5-3 : Marginal abatement costs



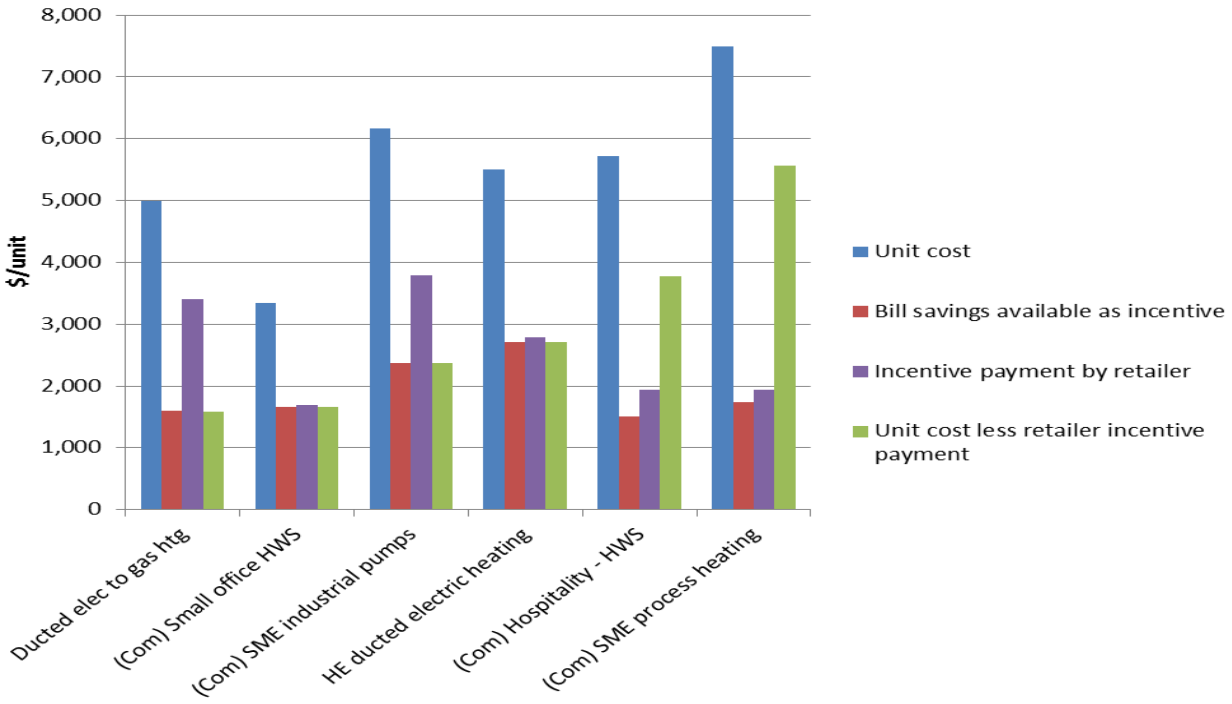
Source: Jacobs' analysis of RIS modelling

Negative marginal abatement cost values do not however translate directly to negative program costs. Further, the marginal abatement costs are of little relevance should the target be changed to an energy reduction target rather than an abatement target.

The work undertaken for the previous RIS indicated that there would be positive net cash flows for the activities described. The RIS also attempted to estimate the future benefit of the EEIS. For the activities described in this section, the net present value of the scheme over its lifetime was evaluated to be around $33 million, assuming that the activities shown in this section would be undertaken during the three year life of the scheme. Potentially these numbers could be extrapolated to provide indicative estimates of benefits for further years beyond 2015 although some care is required. In particular:

- Any cost-benefit calculation should incorporate a relatively complete analysis of costs and benefits across the chain of industry impacts, including impacts on the wholesale and network market, as well as analysis of actual costs rather than implied costs based on certificate prices. Such market impacts should be adequately taken into consideration, as this could lead to misleading results.
- The analysis undertaken for the RIS did not take avoided infrastructure costs from peak demand reduction into account. As peak demand projections have been dropping in recent times, this may not be material. However localised reductions to capacity may be material as might competitive impacts on the wholesale market.
- The analysis undertaken for the RIS assumed a carbon scheme would be in place and estimated benefits using reasonable projections of carbon price based on the literature available at the time of the study. This is still a reasonable approach under Direct Action (because emissions still have an inherent economic cost), although it is likely that the energy saving benefits may be overstated because wholesale prices may drop under Direct Action (for participating businesses only). As a sensitivity analysis, Jacobs reduced benefits by 10% and net present value benefit would remain positive at around $20 million.
- The RIS analysis appropriately used actual equipment costs and administrative costs to estimate the cost elements for the cost-benefit analysis.
- Any cost-benefit evaluation should utilise the best energy demand projections available. As the demand projections underlying the RIS study are now out of date and are likely to be overstated, it is possible that market benefits could also be overstated. However the methodology underlying the estimation of benefits has not been clearly defined so it is not possible to confirm whether this may be the case.

Figure 5-4 : Potential SME energy efficiency activities to be undertaken after 2013



Source: Jacobs analysis of RIS modelling

6. Recommendations

6.1 Reframe the EEIS objectives

Given the ACT Government's 90% renewable energy target, the existing objective to "reduce greenhouse gas emissions associated with stationary energy use in the Territory" is expected to become redundant as the portion of the ACT's energy provided by renewable sources grows. However the EEIS still has a critical role to play in reducing energy use and costs, as it is likely to enable the ACT Government to achieve its 90% renewable energy target sooner and with less cost, as well achieve cost savings for customers over the long run. Consequently, the objective relating to GHG emissions should be removed and the measures used for reporting on the scheme should be based on units of energy use and energy costs.

Based on these reframed objectives, the list of eligible activities should be reviewed to account for any costs and benefits that may have been under or over-stated or no longer relevant given the future context of carbon neutrality in the ACT.

6.2 Enhance data collection

Data collection is important for both compliance and informative purposes with respect to the EEIS. There are both immediate and longer term improvements and investments that could be made to enhance the operation, effectiveness, and rationale of the EEIS. Immediate improvements include:

- Invest in auditing of activities undertaken to provide the regulator with greater certainty regarding compliance with EEIS requirements, and also to better inform assumptions relating to the actual energy savings achieved by particular activities.
- Collect data on the identity of the participating household's retailer. This would assist future assessment regarding the spread of benefits.
- Develop a Microsoft Excel-based reporting template for tier 2 retailers, with very clear supporting guidance as to the data that should be reported and avoid any overlap or duplication in the data requested.

A longer term improvement is the development of a survey-based study to address some of the information gaps that currently exist regarding energy efficiency schemes. In particular, there are varying views regarding the the importance of market failures that underpin energy efficiency schemes, but there is a lack of data to robustly argue the case one way or the other. A multi-year survey (that could potentially be jointly-funded with other jurisdictions) of households to better understand typical energy usage by renters and owners, persistence of energy savings associated with energy efficiency appliances, and the natural rate of uptake of energy efficiency activities could be conducted to better understand the benefits and value of such schemes.

6.3 Establish a clear and transparent process to propose eligible activities

Retailers can propose activities for the ACT Government to consider for inclusion with the determination on eligible activities. However there is a lack of clarity and transparency about how this process works. This lack of transparency creates a level of uncertainty that makes the risks and costs associated with proposing activities high for the tier 1 retailer. This could be addressed by clearly documenting a process and providing supporting guidance such as templates and criteria that are made available to the retailer. The process should also include clear timeframes so that the tier 1 retailer can plan their energy efficiency strategy in advance.

Commercial lighting for the SME sector was identified as a key activity that ActewAGL and small business representatives see great opportunities for but is not yet appropriately established as an eligible activity. This could be used as a pilot activity for the proposed new activity process.

6.4 Continue contribution fee option for tier 2 retailers and consider setting the cost to encourage competition

Feedback from tier 2 retailers suggested that the option to pay a contribution fee rather than undertake activities was preferable given their relatively small market share in the ACT. They did not perceive the existence of the EEIS as a barrier to entry, however stated that there was a lack of clarity regarding a scenario where a tier 2 retailer grows to tier 1 status (e.g. when would the targets and requirement to implement activities commence, would a time lag be acceptable).

However given that the current cost is \$37/t CO_2-e for tier 2 retailers and \$41/t CO_2-e for the tier 1 retailer, consideration should be given as to the appropriate level of payment. The ACT Government has policy goals of increasing competition in the energy market and some of ActewAGL's costs in implementing activities were associated with reputation and brand benefits, which suggest there may be a case to maintain the tier 2 retailer fee below the ActewAGL cost. However there is a risk that this may present discrimination issues under the National Electricity Law so should be considered through appropriate legal review.

6.5 Invest tier 2 retailer contribution fee towards energy efficiency improvements

Currently, the tier 2 contribution payment has not yet been allocated through the ACT Government Budget process. This presents a number of reputation and effectiveness issues to the EEIS, as there is an expectation from both tier 2 retailers and customers that fees collected through the EEIS are being reinvested to support energy efficiency improvements. Furthermore, assessing future effectiveness of the EEIS will be challenging and partially incomplete if costs associated with the scheme are not invested towards the realisation of its objectives and benefits. There are also substantial opportunities to be realised through the contribution payments in terms of developing or enhancing complementary activities.

6.6 Longer term certainty with lower baseline targets

There is a tension in schemes like the EEIS between the retailer focusing on the most cost effective strategy to meet their targets, and the desire of governments to encourage retailers to undertake more innovative and comprehensive energy efficiency activities. One of the reasons for this tension is the short-term timeframe of such schemes. The EEIS is mandated to run from 2013 to 2015, which means that retailers will only plan a 3-year timeframe due to the uncertainty about the scheme's existence and structure beyond 2015. Consequently, transaction costs associated with potentially visiting a household twice to implement different activities (rather than providing a wider range of activities on the first visit), are unlikely to be major factors in a retailer's consideration of their strategy for meeting their targets.

Thus, in order for retailers to develop and implement a longer term strategy that may include more comprehensive and innovative energy efficiency measures, they need to be provided with greater flexibility in their targets (e.g. less ambitious targets or targets that encourage a greater diversity of activities like the NSW aggregated baseline metered method) and greater certainty regarding the long term future of the scheme.

6.7 Extend the EEIS beyond 2015

Feedback from stakeholders indicated that on the whole, there was a high level of satisfaction with the EEIS. Furthermore, it is clearly aligned with the ACT Government's broader policy goals relating to achieving carbon neutrality, creating a business enabling environment for small to medium enterprises (through reduced costs), and improving the cost of living for residents (particularly low income households).

Although it appears unlikely that a national scheme will be instigated, the NSW ESS has been well received and is expected to continue, and given the unique environment of the ACT, there is a case for continuing the EEIS. Given the small size of the ACT market, the current approach is more practical than a market based approach, because it enables smaller retailers to participate in the scheme without reducing competition (through proportionality higher transaction costs to the smaller retailers). The approach is cost effective provided that tier 1 retailers can effectively and consistently demonstrate least cost when deriving an appropriate surcharge to be

added to consumer bills. To demonstrate that this is occurring, it may be appropriate to benchmark retailer costs against costs reported in other regions.

The original justification for the scheme included reducing market barriers to energy efficiency and enable reductions in energy bills. By 2015, it is likely that the majority of households will include around two activities and the ongoing energy savings will offset any tariff increases that may have occurred in the interim.

The scheme was intended to reach groups that have high barriers to uptake, including tenants of rental properties and low income consumers. The scheme has reached these groups by including a minimum requirement for low income households, which has been successfully achieved to date. The EEIS has also been successful in reaching a significant proportion of rental properties although some improvement is likely to be required since application of new activities may not be able to overcome all barriers relating to split incentives of property owners and tenants. If the scheme is extended, it is recommended that complementary approaches to reach tenanted properties be adopted, such as those foreshadowed in AP2 with respect to energy efficiency information disclosure for tenants.

It may be appropriate to liaise with the NSW government to incorporate an increased set of approaches and activities to more cost effectively meet energy reduction targets.

The ACT has a commitment to achieve greenhouse gas reduction of 40% from 1990 levels by 2020, as well as a target to source 90% of its electricity from renewable energy sources. An EEIS can reduce the energy required to be sourced from renewable sources over this period, reducing the cost of meeting both targets.

Further modelling should be undertaken prior to scheme extension to re-assess the cost effectiveness of the scheme with reference to the likely set of future activities that will be undertaken, as well as to determine optimal target levels. Similarly reviews should be undertaken every 2 years the scheme is in operation to confirm that the spread of activities and energy savings is appropriate to the goals underlying the scheme. Higher targets and/or saturation of existing low cost activities will mean that the scheme cost will increase over time. The reviews should ensure that the ongoing benefits of the scheme are commensurate with the ongoing costs.

6.8 Continue to implement education and awareness programs to encourage behaviour change

The EEIS assists customers to improve the energy efficiency of their household or business by addressing the barriers of high up-front capital costs (with uncertain future benefits) and lack of awareness of energy efficiency measures. However, education and behaviour change are important for maintaining and enhancing energy savings into the future. The EPD's additional ACTSmart programs have been focusing on education and behaviour change, which would appear to be well-aligned with the broader energy-related policies and programs being implemented by the ACT Government.

There are potentially further opportunities to be realised through greater alignment. For instance, increased cross-referral between EPD's other ACTSmart prgorams and ActewAGL activities could encourage greater uptake of both. In particular, there may be mutual benefits in increasing collaboration between the ACT Outreach program (which targets low income households) and ActewAGL. Identifying priority households and cost-effective measures to achieve their priority household target is likely to become a challenge for ActewAGL in future years of the EEIS, so working with the network created by Outreach could assist ActewAGL in meeting their targets as well as providing low income households with greater energy cost savings.

6.9 Formalise collaboration with other schemes

Given the closing of the VEET, it is important that the ACT Government closely aligns with other jurisdictional schemes to leverage their investment in activity and product knowledge, harmonise where possible to simplify compliance for retailers operating across jurisdictions, and learn from their experiences. Whilst this has been informally occurring, there may be benefit in establishing a formal mechanism for collaboration with regular forums and knowledge sharing, to avoid any duplication in effort, to keep to up-to-date with changes that may have occurred which should also be applied across the ACT (e.g. readjustment of abatement factors), and to

minimise differences across the schemes to lower transaction costs for liable parties operating in a number of jurisdictions.

6.10 Documentation and regular review of activity factors

The activity factors in use under the EEIS were based on work undertaken for the Victorian scheme and modified for use in the ACT. This is a sensible approach that utilises pre-existing knowledge and enables a scheme to be undertaken in a smaller jurisdiction at lower cost. Nevertheless, lifetime emissions factors in use under the approach utilise a number of assumptions such as market and fuel emissions factors, appliance utilisation factors, appliance mix and discount rates that incorporate rebound or non-additionality of activities, and these factors may significantly change during the life of the scheme, especially if the scheme is extended. These assumptions are only partially documented, so administrators attempting to adjust the factors to allow for specific market conditions run the risk of double counting adjustments or using factors based on unrealistic assumptions. It is therefore desirable to document the nature of these assumptions and have the capacity to update the assumptions as the need arises. Jacobs recommends that the factors should be reviewed at least every three years. If alignment with other schemes occur, it may also be worthwhile to align activity factors with those of the other schemes

Appendix A. Acronym List

Abbreviation	Meaning
ACT	Australian Capital Territory
AP2	Action Plan 2
CO_2	Carbon dioxide
Act	*Energy Efficiency (Cost of Living) Improvement Act 2012* (ACT)
EEIS	Energy Efficiency Improvement Scheme
EPD	ACT Government Environment and Planning Directorate
ESO	Retailer Energy Saving Obligation
ESS	Energy Savings Scheme (New South Wales)
EST	Energy Savings Target
FTE	Fulltime equivalent
ICRC	Independent Competition and Regulatory Commission
MWh	Mega-watt hours
REES	Residential Energy Efficiency Scheme (South Australia)
t	Tons
VEET	Victorian Energy Efficiency Target

Appendix B. Stakeholder interview list

Representatives of the following stakeholder groups were interviewed to inform this Review:

- ACT Government
  - Minister for the Environment
  - EEIS staff and administrator
  - EPD – ACTSmart program staff
  - Construction Services
  - Chief Minister and Treasury Directorate
- Retailers
  - ActewAGL Retail
  - Alinta Energy
  - EnergyAustralia
  - ERM Power Limited
  - Origin Energy
  - Red Energy
- ActewAGL's energy service provider (campaign manager and installer)
- Australian National University
- Green Business Co

Appendix C. Jurisdictional scheme analysis

The table below lists the elements reviewed to inform this analysis and the key questions considered under each element.

Element	Analysis
Period of operation	When did the scheme start? How long has it been running for? What is its current and expected future status?
Legislative framework	What legislation, regulation, and policy are used to support the scheme?
Objectives and targets	What are the specific objectives and priorities of the scheme? What are the targets of the scheme (e.g. x% reduction in greenhouse gas emissions)? Have these been modified? Does the scheme focus on particular areas / groups? (e.g. residential vs business, low income households) Why, and what approach has been used to target these groups?
Implementation / processes	How is the scheme implemented? What funding mechanisms are used?
Stakeholders	Who are the key stakeholders involved? What is the role and responsibilities of stakeholders involved?
Activities	What activities are within scope of the scheme? Have these changed or been modified over the life of the scheme? What was the basis for selecting particular activities?
Evaluation	Has the scheme been a success? Did it meet it objectives and / or targets? What are the strengths and weaknesses of the scheme? How has it been received by industry, government, and customers?
Criticism	What are the criticisms? What are the impacts of the problems/why is it a problem? Are there any suggestions/proposed solutions?

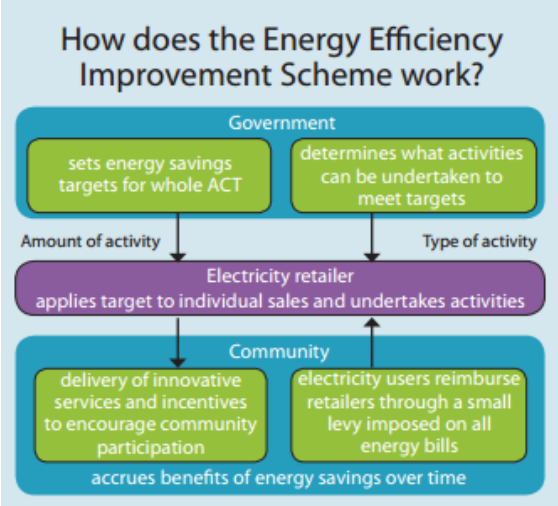
C.1 ACT Energy Efficiency Improvement Scheme

Element	Analysis
Period of operation	Started on 1 January 2013. It is legislated to run for three years until the end of 2015. It is subject to review regarding the length and breadth of the scheme. The scheme will be extended to 2020 subject to outcomes of the scheme review in 2014, regulatory impact assessments and developments at the national level. This review is obligated in the legislature, and must consider: the operation of the Act after 2015, any changes to improve the operation of the act, and the impact of national law and policy on the act.
Legislative framework	Sets an ACT-wide energy savings target, and includes obligations for ACT electricity retailers to meet an individual Retailer Energy Savings Obligation (RESO). • Energy Efficiency (Cost of Living) Improvement Act 2012 • Determinations (Minister for the Environment) • Codes of practice (EEIS Administrator)
Objectives and targets	This scheme is a part of the AP2 action plan which targets a zero net emission of carbon by 2060 and a 40% reduction on 1990 levels by 2020. It is action 1 of a six action plan to reduce carbon emission by 2020 in residential sectors by 218,000 t. (Not all savings in the scheme are residential, however)

<table>
<tr><th>Element</th><th>Analysis</th></tr>
<tr><td></td><td>
25% of savings must be delivered to priority household targets in the first year.
Reduction or residential sector emissions by 6.2% from business as usual in 2015 and 4,7% in 2020.
Proposed Targets: (Energy Efficiency Improvement Scheme Regulatory Impact Statement March 2012).

<table>
<tr><th>Scheme period</th><th>Period Date Range</th><th>Electricity sales-related emissions (ktCO2-e)</th><th>Lifetime abatement of eligible activities achieved (ktCO2-e)</th><th>Energy Savings Target (Not actual annual savings)</th><th>Annual pass-through costs ($M)</th></tr>
<tr><td>Period 1</td><td>1 Jan 2013 to 31 Dec 2013</td><td>2,679</td><td>193.8</td><td>7.2%</td><td>$7.2</td></tr>
<tr><td>Period 2</td><td>1 Jan 2014 to 31 Dec 2014</td><td>2,581</td><td>339.1</td><td>13.1%</td><td>$12.6</td></tr>
<tr><td>Period 3</td><td>1 Jan 2015 to 31 Dec 2015</td><td>2,499</td><td>339.2</td><td>13.6%</td><td>$12.6</td></tr>
</table>

176,535 t/CO_2-e were claimed in the year of 2013 .
</td></tr>
<tr><td>Implementation / processes</td><td>
The scheme only targets electricity producers
Retailers incur penalties if they fail to meet their targets. Market based schemes rejected for the ACT due to the small size of the territory and the possibility for illiquid markets.
The process of implementation follows the diagram below (AP2, a new climate change strategy and action plan for the Australian Capital Territory). Currently, the Minister sets the energy savings targets and the regulatory body determines what activities may be undertaken.



Definitions of proposed activities are provided by the department.
Tier 2 energy saving contributions have been set at $37 in 2014, and tier 1 cost of compliance (allowed pass-through) reported to be $41/t.
</td></tr>
<tr><td>Stakeholders</td><td>
ACT residential and small and medium-sized enterprise (SME) sector
Households and business are expected to absorb a portion of pass-through costs.
Priority households are low income households that will be targeted via concessions and outreach programs.
Different obligations for Tier 1 suppliers (>500,000MWh/year) and Tier 2 Suppliers under the act. Tier 1 suppliers must achieve a priority household target in addition to the tier 2 responsibilities of undertaking eligible activities.
</td></tr>
</table>

Element	Analysis
	ACT Government: faces pass through costs but will benefit from scheme. Also administrator of the scheme.
Activities	Encourage the efficient use of electricity and gas by incentivising energy efficient product installation and activities. The activities covered by the scheme include: (from ACT EEIS Activity Calcs DMCA) • Category A- Water Heating • Category B-Space Heating • Category C-Insulation • Category D-Weather Sealing • Category E-Lighting • Category F-Domestic Appliances • Category G-Space Cooling • Category H-Commercial Each of these categories contains activities that companies can complete to earn certificates towards meeting regulatory targets. In 2013, ActewAGL mainly focused on the installation of door seals, energy efficient globes, and standby power controllers to meet targets. Tier 2 companies may pay an energy savings contribution in lieu of compliance with the scheme activities. All activities subject to review
Evaluation	Approximately 29.5% of CO2 abatement claimed came from priority households in 2013 which accounted for 29.1% of households under the scheme. This exceeded the target of 25% for the year. The target of 193.8 kt/CO2-e was reached for 2013, with a total of 176,535 t/CO2-e claimed by the tie 1 retailer. No tier 2 retailers have opted in to the program. Currently, only ActewAGL Retail is offering activities. Net present benefit of 2.7-2.1 was proposed for the scheme with a $40 million economic benefit to the ACT.
Criticisms	Some inferences can be made about the fact that every tier 2 retailer has opted out of the scheme, and retailers in other states all advocate for a certificate trading scheme. There seems to be a public concern about the legitimacy of doorknockers who say they are from the scheme. (http://www.environment.act.gov.au/energy/energy_efficiency_improvement_scheme_eeis/information_for_residents_about_the_energy_efficiency_improvement_scheme)

C.2 South Australian Residential Energy Efficiency Scheme (REES)

Element	Analysis
Period of operation	Commenced January 2009, the REES is a six-year scheme consisting of two three-year stages. Scheme was extended until 2020 in November 2013, and has been expanded to include small businesses. Significant reviews were conducted after the completion of Phase 1 (2011) and in July 2013 by Pitt and
Legislative framework	Establishes the Essential Services Commission of SA as the administrator of REES under the

<table>
<tr><th>Element</th><th>Analysis</th></tr>
<tr><td></td><td>

Electricity Act (1996)
Gas Act (1997)

The commission reports annually to the Minister for Energy on retailer's progress. It also must act in accordance with any requirements set by the Minister for Energy. The Minister sets:

Number of residential customers before obligations to REES arise
Number of annual energy audits required
Annual greenhouse gas reduction target
Percentage of abatement target that must be met by priority households

</td></tr>
<tr><td>Objectives and targets</td><td>
Improve Energy Efficiency and reduce Greenhouse Gas emissions within the residential sector. These targets are set each year for each company with regard to their number of customers for every REES-obliged retailer.
Assist households prepare for likely energy price rises due to carbon emissions trading
Reduce Energy costs for households, especially low income households
Has set milestones for abatements of greenhouse gas residential emissions due to the scheme as a percentage of business as usual. (From evaluation of the south Australian residential energy efficiency scheme(REES) by Pitt and Sherry)

Table 1 REES GHG targets as a percentage of BAU residential emissions to 2020
<table>
<tr><th>Target</th><th>2009</th><th>2010</th><th>2011</th><th>2012</th><th>2013</th><th>2014</th></tr>
<tr><td>REES GHG target (t CO_2-e)</td><td>155,000</td><td>235,000</td><td>255,000</td><td>255,000</td><td>335,000</td><td>410,000</td></tr>
<tr><td>Program abatement as a percentage of expected BAU emissions to 2020</td><td>0.29%</td><td>0.73%</td><td>1.21%</td><td>1.69%</td><td>2.32%</td><td>3.10%</td></tr>
</table>
</td></tr>
<tr><td>Implementation / processes</td><td>
Targets can be rolled over to the next year if they are not met; however repeat failures to meet targets result in penalty shortfall notices being issued. These penalty units are covered in the Electricity Act 1996 and the Gas Act 1997, as well as REES regulations (which set the number of penalty units).
Targets are set for each obliged retailer each year (REES Code 2014)
Obliged retailers must submit compliance plans by March 31
Obliged Retailers provide schemes that pass energy efficiencies or audits onto customers and record each audit and action performed at the time the activity is performed
</td></tr>
<tr><td>Stakeholders</td><td>
Electricity and gas suppliers with over 5,000 customers. There are about ten companies that qualify for the scheme.
Residential customers, with a particular focus on low income, priority customers.
South Australian Government: Manages scheme, ensures compliance, sets targets
</td></tr>
<tr><td>Activities</td><td>
Energy saving measures, as well as energy efficiency audits, must be delivered in the residential sector, with a focus on low-income households. All energy audits and 35% of greenhouse gas reductions are required to be delivered to low –income consumers.
These activities include: (REES Code February 2014)

Installation of efficient showerheads
Installation of ceiling Installation
Install draught proofing products

</td></tr>
</table>

Element	Analysis
	• Remove second fridge/freezer • Install energy efficient lamps • upgrade ductwork • upgrade heating/cooling • upgrade water heater • Install standby power controllers • Energy audits (for priority households only) These activities are all detailed in the REES code, as well as their contribution to annual targets. They are subject to annual review.
Evaluation	In the first phase of the scheme, from 2009 to 2011, all targets regarding energy audits, greenhouse gas emission reductions and greenhouse gas reductions from priority groups was achieved. Some companies were unable to meet the regulatory commitments, and Lumo Energy was issued with a penalty notice in 2011. Private benefits for Stage 1 were valued at $136 million (REES Annual Report 2009-2011). The cost of the scheme per ton of CO2 during stage 1 was approximately $$44/ton, which means that the scheme could not be justified on the basis of the federal carbon tax alone, which priced carbon at $23/ton About 95% of households that participated said they were either happy or very happy with the scheme. (REES survey March 2013) Concerns remain about the quality and outcomes of the energy audits offered under the scheme. Currently, the majority of households are happy with them. There is also no current methodology for calculating value from these schemes. (Independent Evaluation July 2013) Independent Analysis shows a cost to benefit ratio around 4:1 (with a 7% discount rate) (Independent Evaluation 2013) Major Retailers were generally comfortable with the scheme as currently structured, and recognised the administration was effective and efficient. However, all retailers indicated they did not wish for REES to continue beyond 2014. They also asked for a tradable certificate scheme. All stakeholders indicated more communication activities were needed to better promote REES.
Criticisms	Major retailers contributed feedback at the end of Stage 1. Criticisms included: • Creating tradeable certificates for abatement requirements (similar to Victoria and New South Wales) • Allowing companies to identify priority households for the scheme Generally companies wanted higher levels of freedom to pursue their regulatory targets. They wanted opportunities to purchase certificates, rather than having to negotiate with the regulatory body, which many companies, especially smaller companies, viewed as a burden. In 2012, the Essential Services Commission of South Australia expanded the determination of priority households to include “those participating in a licensed energy retailer’s hardship program” Large companies were in favour of a certificate trading scheme as it aligned with their responsibilities in Victoria and New South Wales. Another criticism raised was that regional and remote households were under-represented in REES. Concerns were also raised that the market had reached saturation point for the cheaper options of abatement. External reviews of the REES scheme, including the EEIS Regulatory Impact Statement (on DMCA), note that audits do not necessarily lead to emissions reductions, and generally

Element	Analysis
	the period between action and receiving the bill is too long to associate behaviours with savings.

C.3 Victorian Energy Efficiency Target (VEET) scheme

Element	Analysis
Period of operation	Commenced January 2009, with two periods from 2009-2012 and 2012-2014. Original legislature allowed for continuation until 2030, with reviews every three years where new targets would be set. After a review of the scheme in 2013, the government has decided to close the scheme in 2015 after a transitional year. This was due to modelling that predicted a net cost to the state if the scheme were continued, mainly due to saturation of cheaper activities (Business Impact Assessment Victorian Energy Efficiency Target, Feb 2014)
Legislative framework	The Essential Services Commission administers the *Victorian Energy Efficiency Target Act 2007* and the *Victorian Energy Efficiency Target Regulations 2008.*
Objectives and targets	The scheme is aimed at all retailers of Electricity and Gas The legislative objectives of the program are: • Reducing greenhouse gas emissions • Encouraging the efficient use of energy and gas • Encouraging investment, employment and technology development in industries that supply goods and services which reduce the use of electricity and gas by consumers. For the first phase (2009-2012) the energy efficiency target was 2.7 million tonnes of GHG abatement per annum. For the second phase (2012-2015), this target was raised to 5.4 million tonnes abatement. For the final, transitional year, the target is 2 million tonnes abatement.
Implementation / processes	Market based with energy savings measures being delivered by third party providers for the residential sector. Obligated parties' costs are treated as a cost of doing business. Process: • Each certificate is 1 tonne of GHG abatement. • Number of Certificates needed to be handed over is a product of energy production rate and a factor determined by Government. Certificates are created by organisations online after works have been completed. These certificates are valid for up to 6 years, and a certain number must be surrendered to the Commission each year. Certificates may be traded. Penalty for each certificate not surrendered is $40 per certificate (2010) and $42.73 per certificate (2012)
Stakeholders	Electricity and gas suppliers with over 5000 employees Residential Clients Business Customers
Activities	There are 28 eligible measures for VEET certificates; however, 9 of these covered more that 99.3% of all scheme savings. These measures are grouped into the following categories (percentages are percentage of savings, (from Analysis of the Impact of the Victorian Energy Efficiency Target Scheme on energy consumption and Victorian Energy Markets, Oakley Greenwood) • Lighting (64.7%). Replacement of incandescent lighting with high efficiency lighting • Water Heating (17.3%). Predominately included replacing electric storage heating with gas or LPG storage, or other methods

Element	Analysis
	• Standby Power (13.8%) • Space Heating (3.6%). Replacement of electric resistance heating with ducted gas heating Other activities that are prescribed under the scheme include • Destruction of old fridges/freezers and purchasing of new energy efficient models • Shower Roses • Televisions (upgrade to more efficient systems) • Commercial Lighting Upgrades • Dryers • More available at https://www.veet.vic.gov.au/Public/Public.aspx?id=VEETActivities The list is more extensive than other schemes, however as noted above, most activities are limited to specific areas. These activities are also subject to review, with several activities having been deregistered
Evaluation	Business customers accounted for an exceedingly small proportion of the overall program impact: Approximately .2% impacts of the impacts of electricity consumption and 3% of the impacts of gas consumption (Analysis of the Impact of the Victorian Energy Efficiency Target Scheme on energy consumption and Victorian Energy Markets, Oakley Greenwood) VEET RIS estimates a net benefit of $1.42 billion to 2021, at a benefit to cost ratio of 1.6, however there was a net cost to non-participant residents under the program. Customer satisfaction with scheme results may be lower, according to one survey, 43% of standby power consoles were removed post installation. (source: http://www.theage.com.au/victoria/the-great-energy-turnoff-20121222-2bsl9.html) Gas use increased during the period, due in part to the incentives offered to remove inefficient electric water heaters Energy Industry says scheme is out of date and should be wound up (May 2014). Point to issues with providing free efficient light bulbs when they are now the standard purchase. (http://www.esaa.com.au/media/veet_scheme_past_its_useby_date)
Criticisms	Two main criticisms have been cited as the driving reasons behind the discontinuation of the VEET scheme. Following a review of the scheme in 2013, findings were released that the program would run a net cost to the state, even at the reduced target of 2 Mt CO_2-e abatement per year. Secondly findings were released that while the scheme provided a net benefit to participants in the scheme, this was subsidised by a net cost to those who did not. (Both of these are sourced from energy market modelling of the continuation of the Victorian Energy Efficiency Target (VEET) Scheme, 2015 through 2017, Oakley Greenwood). These criticisms were accompanied by a consensus that the market had reached saturation for cheaper forms of abatement, and that future reductions would incur significant costs.

C.4 NSW Energy Savings Scheme (ESS)

Element	Analysis
Period of operation	Commenced 1 July 2009. It is legislated to continue until 2020 or until a national scheme is introduced.
Legislative framework	The Energy Savings Scheme is established under Part 9 of the *Electricity Supply Act 1995* and Part 8 of the *Electricity Supply (General) Regulation 2001*. It is administrated by the Scheme Administrator according to the *Energy Savings Scheme*

Element	Analysis
	Rule of 2009.
Objectives and targets	Part of the New South Wales Government's plan to cut greenhouse gas emissions by 60% by 2050. The scheme is aimed at the Electricity Industry only (not gas) The Energy Schemes Savings targets are given as a percentage abatement of NSW electricity sales (it is very unclear what the baseline is for this comparison). Source Table1: file:///C:/Users/acox/Downloads/ESS_Fact_Sheet_2012.pdf
Implementation / processes	Market based with the majority of energy saving services delivered by third party providers Obligated parties' costs are treated as a cost of doing business. The scheme will increase the cost of electricity for business. Businesses that invest in energy saving measures will earn certificates for reducing energy consumption. These savings can include installation of equipment in households. Each certificate represents one tonne of carbon dioxide emissions abated. Electricity retailers are then obligated to purchase certificates. Figure below shows a schematic of the scheme (source: http://www.ess.nsw.gov.au/Overview_of_the_scheme) The shortfall penalty rate is $24.80 per certificate.
Stakeholders	All holders of Electricity Retail Licenses in NSW. Other electricity generators- see below. Large wholesale purchasers of electricity – all electricity producing companies are obliged to surrender a certain amount of certificates based on the targets in Table 1, and the proportion of energy they produce. Residential- Main activities include lighting efficiency upgrades and white goods sales. While they are eligible for certificates, it seems their main benefit comes from companies installing these measures on their behalf. Commercial –Benefits are available to retailers for installing more efficient plant. The main forms of savings would come in the design of new infrastructure or the installation of more efficient lighting options. Opportunities also exist to provide these products to residential clients and benefit from the production of certificates. (Eg. A company installs energy efficient globes for a household at reduced cost) Industrial – much more heavily involved in this scheme than others, with many certificate creation opportunities available for improving efficiency of equipment and processes)
Activities	The general categories for activities that can generate certificates are • Commercial and Industrial Equipment (upgrades and new plant) • Lighting (Commercial lighting refits, and halogen lighting replacements) • Motors and power factor correction (for industrial motor upgrades mainly) • Commercial Building Design • Site Based Programs (mainly industrial) • Whitegoods (destruction of spare fridge/freezers) Amendments to the legislation in 2014 have caused small variations in the list of accepted activities: these changes relate to certain types of replacement for lighting that are no longer considered to provide energy savings.
Evaluation	Overall benefit estimated at $24.56 per certificate (tonne of carbon dioxide emissions

Element	Analysis
	abated) So far the scheme has produced 9 million certificates and has required 6.3 million to be surrendered. This means savings so far have been in excess of those required to meet targets of the scheme.
Criticisms	ESS rules have subtly changed for 2014 to address the following concerns that have been flagged • Expanding the opportunities for households and businesses to participate in the scheme • Simplify the scheme by removing red tape • Enhance the environmental benefits of the scheme by improving the certainty of energy savings