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Advisory

Review of the Energy Efficiency Improvement Scheme – Final report

Prepared for:
ACT Environment Planning Sustainable Development Directorate

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The findings in this report have been formed on the above basis.

VERSION CONTROL

Version	Date	Author	Project Director
V1	16/04/18	C. Murphy / C. Brulliard	C. Knaggs
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Part 2 – Report overview



1 INTRODUCTION

Energy is, in most of its forms, a costly resource. Ignoring energy productivity comes with multiple long-term risks, including a loss of competitiveness, and, if energy generation is fossil-fuel reliant, a risk to society related to the impacts of climate change. Conversely, well-managed energy systems can deliver multiple economic and social benefits for businesses, households and society in general - reducing costs and driving energy independence, thus reducing risks in the long term. Indeed, a well-functioning and efficient energy system is an imperative for modern economies to remain prosperous.

The ACT Government has been a pioneer in this space, committing to completely decarbonising its electricity supply by 2020 and, on the demand side, rolling out the Energy Efficiency Improvement Scheme (EEIS) in January 2013. The EEIS was required as cost-effective energy efficiency upgrades were not being taken up by the market as readily as economic theory may have suggested. The scheme was designed based on careful consideration of the policy and commercial environment at the time and modelling of the cost-effectiveness of possible scheme arrangements. The scheme has four key objectives:

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

As part of its commitment to continual improvement and transparency of the impacts of the scheme; the Environment, Planning and Sustainable Development Directorate (EPSDD) engaged Point Advisory and partnering organisation Sustainable Business to conduct a post-implementation review of the EEIS to assess whether it remains appropriate, how effectively and efficiently it has tackled the original policy problems and scheme objectives, and to propose potential improvements.

1.1 Overview of the EEIS

The EEIS is an energy efficiency obligation scheme for electricity retailers in the ACT. The EEIS was first legislated in 2012 under the *Energy Efficiency (Cost of Living) Improvement Act 2012* (the Act) to run from 2013 to 2015. After regulatory reviews that found it to be effective, the scheme was extended to 31 December 2020.

The EEIS is a non-certificate scheme, as it imposes direct obligations on retailers rather than using tradeable “certificates” of greenhouse gas abatement generated by eligible activities that any accredited certificate provider can deliver and then sell to obligated parties in the compliance market (retailers). Additional information on different obligation schemes is provided in Part 3 – comparative analysis.

The EEIS requires electricity retailers to achieve a Retailer Energy Savings Obligation (RESO). This is currently set at 8.6% of electricity sales. Currently, there is only one Tier 1 retailer (based on the number of customers and total sales) which must meet the target through approved energy saving activities, such as lighting upgrades, installing high efficiency heaters or removing and responsibly disposing of low efficiency fridge-freezers. In addition, to ensure that a proportion of energy savings are delivered in low-income households, the Tier 1 retailer must achieve a priority household target (PHT) each year. More recently, abatement activities targeting small to medium enterprises have been included in the scheme. Eligible beneficiaries exclude National Greenhouse and Energy Reporters and Government buildings.

‘Tier 2’ retailers (retailers with a relatively small market share) may opt to deliver activities or pay an Energy Savings Contribution (ESC) to achieve their RESO. This measure is in place to avoid imposing an unfair burden on retailers that have relatively small market share but would face relatively high fixed costs to set up and administer compliance activities. ESCs thus collected are used to fund activities that align with the objectives of the Act, such as the suite of ‘Actsmart’ programs, and to fund the EEIS’s administration and compliance costs.

All Tier 1 and Tier 2 retailer costs of compliance are passed through to electricity customers (both households and businesses) in the ACT through their electricity bills after approval by the Independent Competition and Regulatory Commission (ICRC). In addition, to fund some activities’ upfront costs, retailers may ask for co-contributions from activity participants.

Figure 1 provides an overview of the EEIS program logic detailing how the scheme is expected to deliver intended benefits. At the bottom of the figure the market barriers to energy efficiency uptake in the ACT are listed. The EEIS was developed to address these barriers directly. At the top of the diagram the policy objectives of reducing GHG emissions and reducing household and business energy bills are identified. In some cases, co-benefits such as improved levels of comfort in homes and reduced maintenance costs in business may be delivered by the activities undertaken.

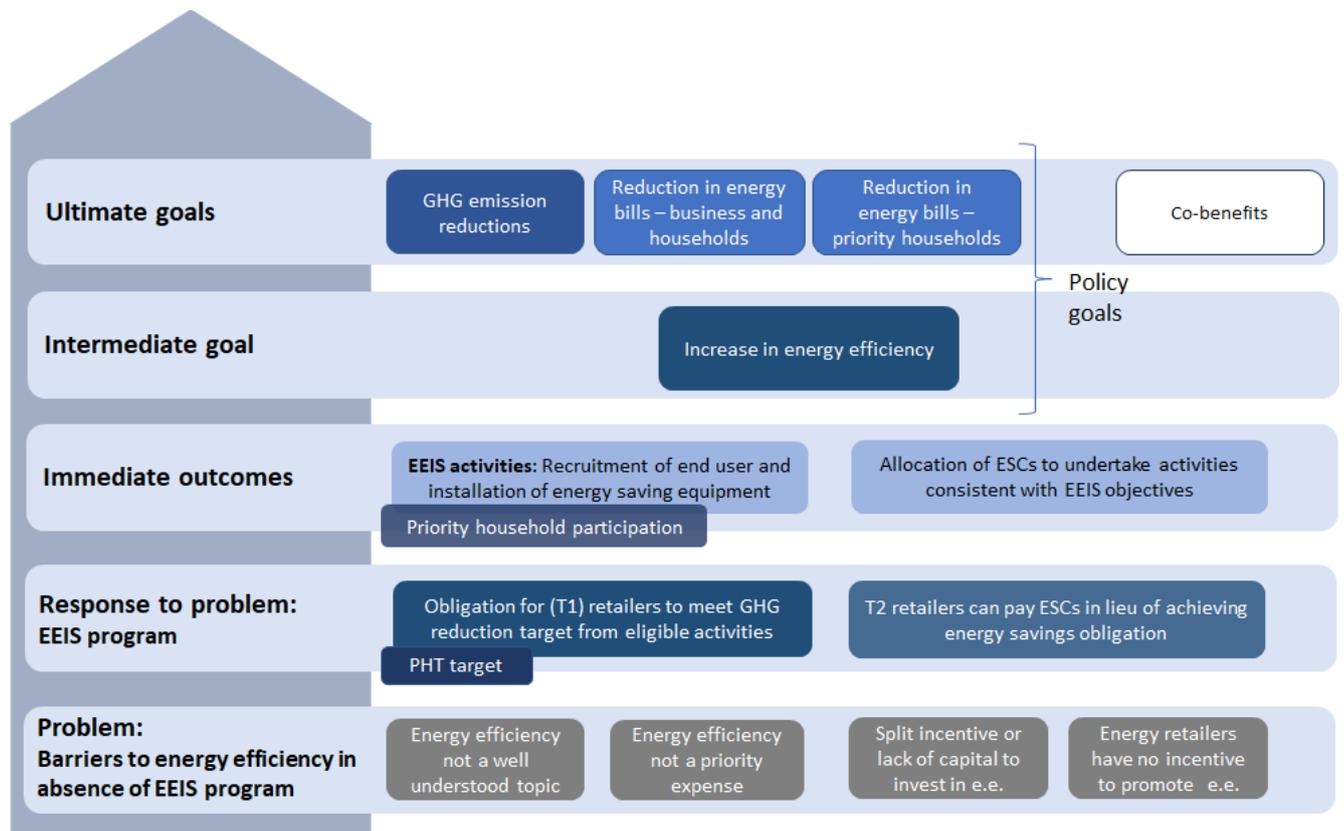


Figure 1. ACT EEIS program logic

1.2 Objectives of the review

The objectives of this review were to:

- Identify the ongoing relevance of the scheme architecture and delivery, through comparison with other policy options and schemes.
- Identify the ongoing need for the ACT Government to address market barriers preventing the widespread uptake of energy efficiency measures, rising energy price rises, and climate change.
- Quantify the benefits and costs of the EEIS in terms of energy, bill savings and GHG savings for households and businesses in the ACT, with a particular focus on low-income ‘priority’ households.
- Critically assess the success factors and limitations of the EEIS as it currently stands and of a range of options for modifying the design or specific parameters of the scheme, both in the short term or longer term (post-2020).
- Identify the costs and benefits associated with various options for extending the scheme post-2020, to inform decision and policy making.

Broadly speaking, these objectives cover two areas of evaluation:

- **Retrospective:** assessing the benefits and costs of the EEIS since its implementation in 2013
- **Prospective:** considering opportunities to improve, harmonise between now and 2020, and through an EEIS extension post-2020.

1.3 Methodology

To deliver on the review objectives, the key elements of the methodology were as follows:

- Development of a structured **research framework** to identify themes (both technical and policy-oriented) relevant to the appropriateness, effectiveness and efficiency of the EEIS. This framework was informed by the key evaluation questions (KEQs) developed by the EPSDD as part of the review's original scope of works.
- **Comparative analysis and literature review:** Using the framework defined above and analysing the evidence provided by the EPSDD and other publicly available information, this analysis aimed to provide key insights into energy efficiency schemes across jurisdictions. This information on other programs was used for benchmarking the structure, design and cost-effectiveness of the EEIS.
- **Extensive stakeholder engagement** that informed the review of past impacts and identified improvements for the future. The engagement was structured around a consultation plan which was approved by the EPSDD. Questions were informed by the KEQs defined by the EPSDD, the research framework, previous records of stakeholder consultation, and insights from the desktop research. Results of the consultation were summarised in a **stakeholder report**, which was used to inform the rest of our work.
- **Analysis and evaluation:**
 - **Empirical analysis of ex-post energy, bill and greenhouse gas savings.** Using the most up-to-date energy savings modelling provided by the EPSDD, the empirical analysis aimed to identify the net benefit delivered by the EEIS since inception. Results were developed for the scheme's performance in terms of the legislated energy savings target (EST) and priority household target (PHT), and scheme costs and benefits. In addition, the information collected for the comparative analysis, particularly previous EEIS Regulatory Impact Statements, was used to compare actual results (ex-post) to modelled estimated outcomes (ex-ante).
 - **A strengths, weaknesses, drivers and constraints (SWOT) analysis** evaluated the scheme's performance to identify potential improvements, and alternative policy options post 2020. This analysis drew heavily on the literature reviewed as part of the comparative analysis.
 - **A cost-benefit analysis** assessed the value of extending the scheme into the future using the counterfactual and a range of informed scenarios that could be implemented post-2020. This analysis provided options for the EPSDD to consider when identifying how to extend the scheme post-2020.

This approach is summarised in Figure 2.

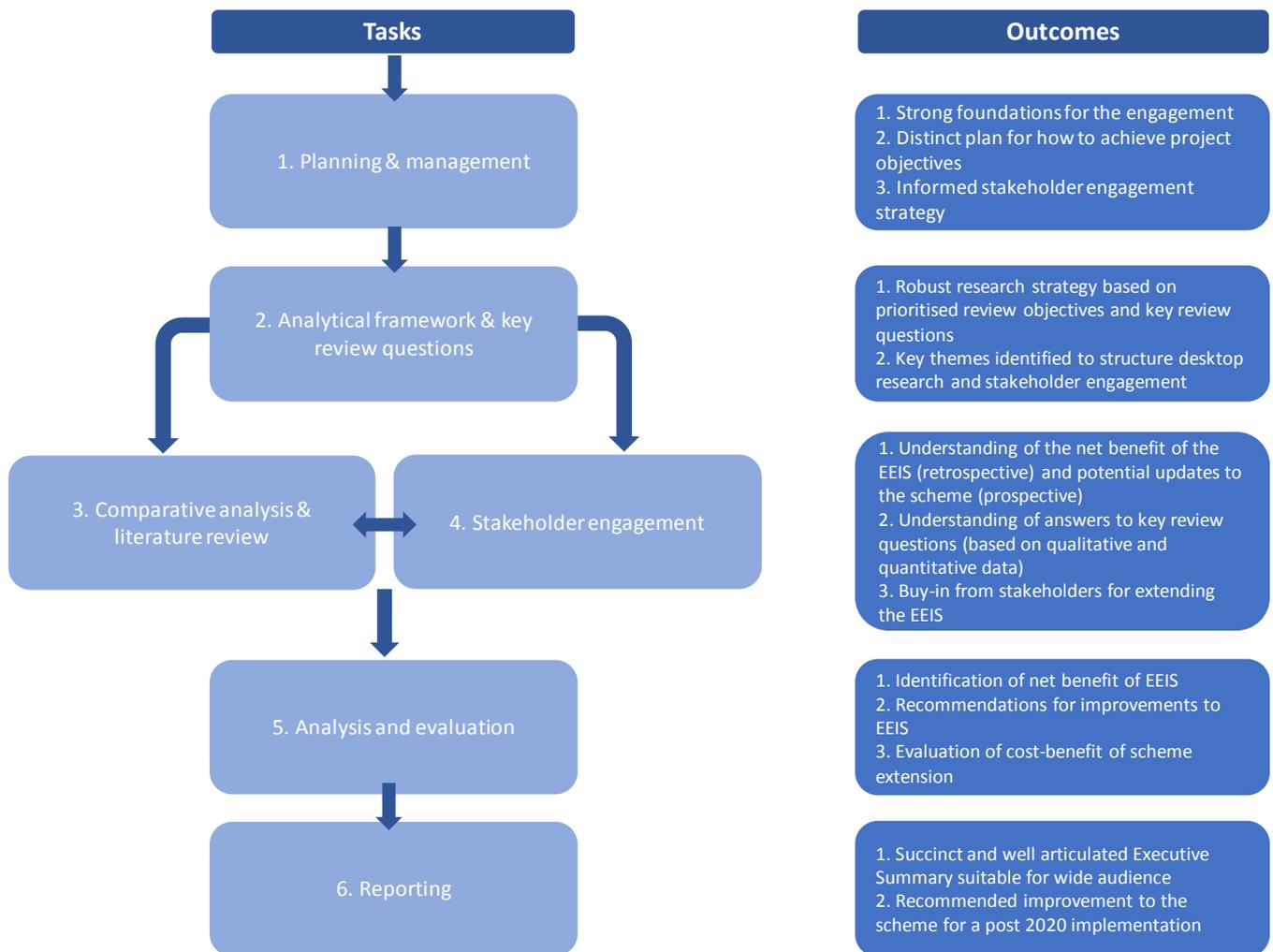


Figure 2. Method used for this review

1.4 Limitations

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

The analysis presented below is based on our consultants' own analysis and the information gathered through the project and is valid at a specific time of writing and within the boundaries of the assessment.

The ensuing recommendations proposed should be read in this context and should be considered by the ACT Government in the context of other government policy development work undertaken.

2 ACT CLIMATE CHANGE POLICY ENVIRONMENT

2.1 ACT leadership

The ACT's ambitious emissions reduction and renewable energy targets have stimulated action and achievements resulting in positive environmental, social and economic outcomes. The ACT is regarded as a 'front-runner' in Australian climate change action, and in 2016 amended legislated greenhouse gas targets to be even more ambitious and align with the intent of the Paris Agreement. The ACT's current targets are:

- 40 per cent reduction in greenhouse gas emission on 1990 levels by 2020
- 100 per cent renewable energy by 2020
- zero net emissions by 2050 at the latest.

2.2 Current policy objectives and complementary suite of policies

This section provides an overview of the energy and climate change policy environment in the ACT to provide context for the operation of the EEIS.

2.2.1 ACT Climate Change Strategy (AP2)

The ACT Climate Change Strategy (AP2) was put in place in 2012 to formalise the ACT Government's targets and to coordinate actions in combatting climate change through regulation, policy, community engagement, and the active cultivation of business partnerships. AP2 will be replaced by a new climate strategy to net zero emissions in 2018. AP2 identifies 18 main actions and a further three supporting actions, targeting energy efficiency, the built environment, new technologies, community engagement, risk assessments and planning.

AP2 also highlights the importance of co-benefits, such as lower energy bills, economic regeneration, job creation, improved health and increased resilience to climate risks, which aligns with the objectives of the EEIS. AP2 recognises that higher energy prices can have adverse social impacts if members of the community are unable to pay increased costs or cannot afford the upfront costs required to improve the energy efficiency of their homes. To mitigate the impact of increasing bills on low income households and small-medium enterprises (SMEs), the ACT Government has:

- introduced some safeguard measures in programs such as the EEIS, in the form of a Priority Household Target (PHT). The PHT sub-target of 20% (reduced from an initial 25%) means that electricity retailers are required to achieve at least 20% of targeted energy savings in low income 'priority' households;
- expanded the EEIS to also include business energy efficiency in 2014 (AP2 Action 7) and by introducing new EEIS commercial lighting and refrigeration upgrade activities in 2016;
- put in place a range of complementary policies and programs to help low income households reduce the cost of their energy bills, such as the Actsmart Low Income Home Energy Efficiency and solar for low income programs, energy concessions, vouchers, no interest loan schemes and energy efficiency improvements to public housing; and
- developed an ACT housing strategy.

The Commissioner for Sustainability and the Environment reported in a 2017 report titled "Implementation Status Report on ACT Government's Climate Change Policy", that the EEIS has a high-level business plan to ensure that the program operates effectively, including audits, compliance, target reviews and stakeholder engagement.

2.2.2 ACT Climate Change Adaptation Strategy

The Energy Efficiency Improvement Scheme is contributing to the delivery of the ACT Climate Change Adaptation Strategy by delivering activities to help improve thermal comfort in both summer and winter when ACT experiences extreme heat and cold. EEIS activities which have a positive climate change adaptation impact include, but are not limited to draught sealing and the replacement of heaters with efficient reverse cycle air-conditioners.

2.2.3 The ACT's renewable energy target

In May 2016, the ACT Government established the 100% by 2020 renewable electricity target (RET), which superseded the original AP2 90% RET. This means that by 2020 all the electricity used in the ACT will be from renewable sources such as solar and wind. Beyond 2020, it will be important to improve the efficiency of the ACT's energy use to manage demand and ensure the territory continues to meet the 100% renewable electricity target at lowest cost as the population grows.

2.2.4 Actsmart programs

The suite of Actsmart Energy Programs offers support to households and businesses that meets the objectives of the *Energy Efficiency (Cost of Living) Improvement Act 2012* but is not offered through the EEIS. Examples include education, behaviour change strategies and solar for low-income households. The ACT Government has decided that the following Actsmart initiatives would be funded by the ESCs paid by Tier 2 retailers:

- The Actsmart Business and Energy and Water Program, since 1 July 2012
- The Actsmart Sustainable Home Advice (ASHA) service was launched on 1 July 2016 following a decision by the ACT Government to provide a cost-effective in-home energy efficiency service for households
- The Actsmart Low Income Energy Efficiency Program provides energy efficiency advice and support through St Vincent de Paul (SVDP)
- The Actsmart Government Energy and Water Program provided tailored assistance and advice to ACT Government agencies to identify energy and water efficiencies between September 2012 and 2016.
- A Solar for Low Income Pilot Program was announced as part of the budget for 2016/17 and will provide funding of \$2 million over four years.

2.2.5 ACT Housing Strategy

The ACT Government is currently developing a new housing strategy for the territory. The four main goals of the new ACT Housing Strategy are:

- Reducing homelessness
- Strengthening social housing assistance
- Increasing affordable rental housing
- Increasing affordable home ownership.

The recent consultation for the ACT Housing Strategy (ACT Government, *What we heard. Developing a new housing strategy for the ACT, 2018*) determined *'that the cost of living was a significant factor contributing to the overall affordability of housing. Participants acknowledged that the (community housing) sector has a role to play in working to reduce living costs – especially maintenance and energy costs – as a way to improve overall housing affordability.'*

2.2.6 ACT Planning Strategy

The ACT Planning Strategy (ACT Government, *ACT Planning Strategy. Planning for a sustainable city, 2012*) was adopted by the ACT Government in 2012 and is used to guide the planning and development of Canberra to *'be recognised throughout the world as a truly sustainable and creative city'* by 2030. One of the key outcomes for 2030 outlined in the planning strategy is that *'In 2030, Canberra will be a city that makes it easy for people to make more sustainable living choices and has the resourcefulness and capacity to manage change'*.

As described in the recent implementation status report on the Act Government's climate change policy (Office of the Commissioner for Sustainability and the Environment, 2017), planning functions can also be a key lever in reducing emissions.

2.2.7 COAG National Energy Productivity Plan (NEPP) and The Finkel Review

The ACT Government is also a part of COAG Energy Council. In that role, the ACT Government has committed to contributing to the delivery of the COAG National Energy Productivity Plan (NEPP) and responding to recommendations from the Finkel Review. The EEIS helps the ACT Government in this regard in multiple ways. For instance, the EEIS formally contributes to achieving close to a third of all COAG NEPP measures and also helps the ACT reduce peak electricity demand and natural gas demand helping to address energy security and reliability issues highlighted in the Finkel Review.

3 EVALUATION OF THE EEIS SO FAR – A SUMMARY

The evaluation questions (see section 5, in particular retrospective questions) have guided the analysis in this section.

3.1 Role of the EEIS

The EEIS has four objectives:

- 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 households to reduce energy use and costs

The EEIS was set up prior to the ACT committing to a 100% RET for electricity. The core metric for the scheme is greenhouse gas (GHG) emissions, which means that energy efficiency activities are defined and selected based on their GHG abatement potential. The EEIS is therefore technically a scheme supporting the ACT's carbon reduction goal and also aims to achieve the other objectives listed above.

The evaluation shows that the EEIS fulfilled that role and complemented various ACT policies against a backdrop of climate change policy stagnation at the national level.

The EEIS played a role in supporting **energy efficiency** in the ACT under the National Energy Productivity Plan (NEPP) and is working to harmonise with other schemes under the COAG NEPP measure 2, that mentions state energy efficiency schemes and possible alignment work (COAG Energy Council, 2015). This role was particularly important in the context of:

- the repeal of the emission trading scheme at the national level and failure to replace it with a Clean Energy Target as recommended by the Finkel Review and the lack of a carbon price nationally.
- comparatively weak national energy efficiency standards for residential and commercial buildings (the Building Construction Code revision is due in 2019) and for Minimum Energy Performance Standards (MEPS).
- lack of interest and progress at the national level to develop a national energy efficiency obligation scheme.

This means the energy efficiency “gap” is not being addressed properly at the national level by adequate minimum standards or price signals sent by internalisation of carbon prices and hence a greater portion of the task falls back onto state and territory government energy efficiency schemes such as the EEIS. The EEIS contributed to reducing this efficiency gap in the following ways:

- Energy Efficiency Obligation (EEO) schemes (as they are known internationally) encourage low cost energy efficiency measures that are not occurring, whatever the reason (barrier) might be.
- EEO schemes can encourage market transformation of key enabling technologies by helping to bring down the cost of these technologies.
- EEO schemes require retailers to achieve abatements through pre-approved activities, which lead them to offer upgrades for free or with modest co-payments, thereby overcoming split incentives and upfront cost barriers to energy efficiency upgrades. This has enabled the EEIS to deliver upgrades to over 17,900 low income households including over 15,000 rental homes as well as just under 1,700 businesses, many of whom are commercial building tenants.
- EEO schemes work best with relatively simple activities that can be implemented on a mass scale: by leveraging the relationship of the Tier 1 retailer with its customers, the EEIS achieved mass scale for some of the activities delivered, while limiting the recruitment cost for participation in the program (as the retailer derives reputational benefits from undertaking activities).

It must be recognised, however, that the field of application of an EEO scheme has some limitations:

- EEOs are rarely intended to be the sole or primary policy to achieve all energy efficiency policy objectives within a jurisdiction.
- EEOs are not an efficient way to compensate for the shortfall of appliances or buildings standards.
- EEOs create a fundamental tension for obligated retailers, as they are meant to undertake activities that ultimately will reduce the volume of the product they are selling (electricity).

- As EEOs are funded through a “levy” on energy sold (the pass-through cost to energy customers), there is always going to be a tension between their level of ambition and affordability (regressive impacts).
- EEOs encourage discrete, lowest-cost energy efficiency measures. However, the optimal pathway to deep decarbonisation sometimes requires a whole of house upgrade that includes some higher-cost measures to be undertaken to maximise potential energy savings (e.g. insulating the walls and roofs of a house plus retrofitting high performance glazing before changing the heating system or undertaking both upgrades jointly for maximum impact). This highlights the need in the ACT for EEIS to be working in concert with building codes. It highlights the need for building codes to require good wall insulation and high performance glazing when the home is first built, as retrofits are much less cost effective than including them in new builds.

3.1.1 ACT context

Some drivers and constraints specific to the ACT also impose some limitations on what the scheme can be expected to deliver, but also deliver specific benefits.

These constraints include:

- The ACT is a small market compared to other schemes worldwide or even in Australia. This means that it is more difficult to achieve scale for a particular activity and it is less likely that many activities can be offered at the same time.
- The retail energy market is dominated by one sole Tier 1 retailer.

Benefits include:

- The ACT’s market size means that it is easier and quicker for a particular EEIS activity to be rapidly rolled out to a significant percentage of households or SME businesses. This means that retailers will move through the activities a lot faster in the ACT than they will in most other schemes and jurisdictions.
- Stakeholders recognised that the EEIS can leverage the extensive network of the Tier 1 retailer to roll out energy efficient technology at scale, that is, to a large number of households and businesses.
- The EEIS is able to leverage off the energy efficiency product registers run by Victorian, NSW and Federal Governments (i.e. MEPS) helping to reduce overall EEIS scheme administration costs.
- The ACT’s climate of cold winters and hot summers - This means that the potential for and need for energy efficiency gains to improve thermal comfort is likely to be high. Heating and cooling makes up over 60% of household energy usage in the ACT which is much higher than most other Australian jurisdictions.

3.1.2 Drivers for the ACT Government supporting greater investment in energy efficiency

Key drivers (past and ongoing) for greater investment in energy efficiency include:

- While the ACT has historically benefitted from low energy prices compared to the rest of Australia, both gas and electricity prices have more than doubled over the last decade, making it even more important to incentivise energy efficiency improvements via the EEIS to increase energy affordability, improve housing affordability and business competitiveness.
- The ACT Government has consulted and modelled options to achieve potential ACT greenhouse gas reduction targets to 2030. This has shown that energy efficient fuel switching upgrade activities provide some of the most cost effective abatement options post 2020 to 2030¹.
- The ACT’s 100% RET and general trends such as electric vehicles are likely to drive a transition from gas to electricity, in turn leading to an increase in electricity demand. Sourcing renewable electricity comes at a cost to the Territory, hence to its taxpayers. It is therefore important to minimise electricity consumption to avoid additional supply costs.

3.1.3 Appropriateness of the policy intervention

On balance, despite the constraints listed above, an EEO scheme such as the EEIS was an appropriate instrument for the ACT as there was and is a clear ongoing need for energy efficiency improvement in the Territory.

Compared to other instruments (such as grants, direct investment or regulation), an EEO is an appropriate intervention on the grounds of acceptability, effectiveness and cost-efficiency (see next sections). While the scheme remains a fairly blunt instrument, an EEO offers the best balance across these considerations for the following reasons:

- It covers a broad spectrum of activities and can be flexibly adapted, which makes it effective.

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¹ https://www.yoursay.act.gov.au/application/files/5915/1988/5834/ACT_climate_change_strategy_economic_modelling_report.pdf

- It has been applied successfully across Australia and the rest of the world and its drawbacks (especially regressive impacts) are not perceived by the general public, as the financing mechanism is a small levy on the price of kWh that has been rising for other reasons anyway.
- Some EEOs, including the EEIS, include revenue-raising components. This can provide an independent funding source for scheme administration and complementary programs.

Notwithstanding, the following barriers to energy efficiency remain and it may be best to address them through complementary programs, rather than expect that scheme design adjustments could be made to address them:

- split incentives, where property owners don't make efficiency investments because it's the renters who pay the energy bills.
- lack of awareness / deep behavioural change, as energy users are not deeply invested in the program.
- some financial barriers where co-contributions are required and low-income households cannot afford them or renters cannot recoup the cost.

3.1.4 The future role of the scheme

While there is an ongoing role for an EEO in the ACT, some changes will need to be made, in particular in relation to the guiding metric, and some fundamental policy decisions will need to be made. Recommendations about the future framing and focus of the EEIS are provided in section 4, and are based on the following premises:

- Setting only one core objective for the legislation (energy efficiency *or* affordability) instead of four would greatly sharpen the focus of the instrument. Associated objectives can be considered as secondary goals.
- The carbon metric needs to be changed to an energy metric to better align with the ACT climate change policy package and support the 100% RET.

3.2 Effectiveness

A key assessment theme was the effectiveness of the EEIS. This is the ability of the EEIS to deliver the key goals set out in the Act (see EEIS program logic in Figure 1). Detailed responses to effectiveness questions are presented in section 5. At a high level, the scheme was found to be effective in the following areas:

- Reaching a large proportion of ACT households and businesses over its years of operation through mass implementation of small energy efficiency measures.
- Low cost-effective abatements due to retailer obligation to identify savings within their commercial context.
- Delivering “wired in” energy efficiency improvements that do not rely on behavioural changes (with exceptions, such as Standby Power Controllers).
- Delivering bill savings for participants.
- Delivering bill savings to low-income households, thanks to the Priority Household Target (PHT).
- Energy savings across gas and electricity lead to greenhouse gas savings that are “locked in” over the life of the product or equipment underpinning the activity.

One key feature of energy efficiency activities is their cumulative impact. The activities delivered in a particular year have a small impact on energy demand during that year (indeed, in most cases it is difficult to detect it); however, over the lifetime of all installed equipment, cumulative savings accrue to significant volumes.

3.2.1 Limitations

EEO schemes do have some generic limitations affecting their effectiveness in terms of achieving **energy savings**:

- As activities are designed based on lowest cost of abatement, they are not tailored to anyone's particular needs, in particular low-income households.
- In an EEO scheme, this is emphasised by the fact that the most cost-effective activities are picked by retailers based on their own appreciation of risks and “ease of implementation” the market opportunity, abatement potential and business case and not based solely on end-users' needs. There is a selection bias that may lead to skewing the merit order of implemented activities.
- This feature is observed in the ACT where only a small number of activities are typically available at any given time: participants cannot select what makes the most sense to them.

- The deeming of savings over the life of an asset / activity to set and assess the achievement of a target is widely used in schemes around the world. This is an effective way of encouraging activities with long-lasting impacts and efficiently calculating savings. However, deeming creates some uncertainty, as it does not take into account changes and innovation that can occur over the life of the asset, such as the rapid market transformation of LED lighting, making this new technology more accessible and therefore more widespread, especially for customers who do not experience financial barriers.

Deeming is also problematic when an activity fully or partially fails but has been undertaken in good faith by the obligated parties, such as standby power controllers being disconnected by participants.

- Finally, rebounds occur when savings in energy are reallocated by the end user to other uses. These impacts could in particular be expected when replacing outdated heating systems with heating / cooling split systems. They are factored into the deeming of EEIS activities, but, in the absence of on-the-ground monitoring over the long term, it is very difficult to ensure that the moderating factors applied are accurate.

More particularly, in the ACT the following limitations applied to the EEIS:

- Tier 2 retailers, who have a small market share, have not found it cost-effective to deliver activities in the ACT, electing to pay the Energy Saving Contribution (ESC) instead. This means that a portion of the modelled energy efficiency savings (about 30%) did not occur.
- The ESC funds collected were allocated to funding the administration and compliance of the scheme, as well as some complementary Actsmart energy programs.
- The focus of the Actsmart program is not on delivering abatement at the lowest cost. Actsmart's mandate through AP2 is providing access to quality energy services for low income households and to support households and businesses to make informed choices regarding energy efficiency.
- The ACT is a small jurisdiction and the most cost-effective way of delivering activities for the Tier 1 retailer is to focus on a small number of activities at a time.
- One activity, widely used across Australia, was found to be poorly accepted by participants in the long term: SPCs have drawbacks in terms of user experience and are easy for users to disconnect. They had to be heavily discounted based on reports that participants had disconnected them.

3.2.2 Achievements

It is estimated that the lifetime energy savings presented previously will translate into **390 kt CO₂-e of lifetime GHG savings** from activities carried out from 2013 to the end of 2017 (a peak was reached in 2015). The total scheme cumulative greenhouse gas (GHG) emissions savings equate to 268 kt CO₂-e over the same period, with residential lighting delivering the bulk of the savings (71%). In terms of **GHG savings**, the most notable event impacting the EEIS' effectiveness has been the ACT's 100% RET. The link between electricity savings and GHG reductions was weakened due to increasing renewables in the grid, above that which was modelled during scheme design. As a result, savings post-2020 delivering only very minimal GHG reductions. As abatement values already defined were not retrospectively changed (to provide certainty to obligated parties), this led to a drop in GHG savings from the scheme, when gauged against modelled emission reductions. This is one of the reasons why a switch to an energy reduction metric is recommended.

In relation to **energy savings**, it is estimated that the EEIS has delivered (by the end of 2017) a total of 4.5M GJ of lifetime energy savings from activities rolled out since 2013. EEIS delivery is on track compared with modelled expectations. Scheme extension modelling suggested that "Electricity savings anticipated in 2020 as a result of implemented measures are 128,000 MWh, compared to 480,000 GJ of natural gas."² This equates to an estimated 940,800GJ in lifetime savings from activities to be delivered in 2020. As the lifetime energy savings in 2016 were 755,156 GJ and 1,288,932 GJ in 2017, the trend suggests that energy savings forecasts to 2020 should be in line with modelled results.

Regarding **bill savings** for households and small businesses, when aggregated, the EEIS delivered approximately \$240M of lifetime savings, in line with expectations (when considering Tier 1 retailers market share only). These savings were distributed widely throughout the community in the early years of EEIS. Note however that the average bill savings does not account for the large variability in the benefits delivered to various categories of beneficiaries. For the residential sector specifically, it is estimated that lifetime bill savings are \$180M, and just under \$60M for the commercial sector (1 year implementation only). Cumulative bill savings (i.e. savings that have been achieved from energy saving measures installed in a particular year plus all the savings achieved in that year from measures installed in previous years) for both the residential and business sectors were estimated at **\$70M** based on all activities delivered from 2013 to the end of 2017. Average weekly savings across the scheme from 2013 to 2017 are \$4.80 per participating household per week, and

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² http://www.environment.act.gov.au/_data/assets/pdf_file/0008/1164806/2015-Regulatory-Impact-Statement-EEIS-Parameters-to-2020-FINAL.pdf, p.6

the trend is that these weekly household savings are increasing as the scheme matures, with savings of \$5.65 per participating household in 2017.

In relation to **priority households**, the PHT was found to be an effective mechanism to ensure that a proportion of the activities was delivered to this proportion of households that are typically more difficult to engage (hence more costly). Overall, 17,900 priority households in the ACT have received some form of energy savings measure since 2013. The PHT was readjusted from 25% to 20% for the 2016 compliance period and has been reconsidered (and confirmed at the level of 20%) for 2017 and 2018. While the PHT reduces the overall cost-effectiveness of the scheme, it is likely that very few activities would flow to the most vulnerable households if the target was removed. Removing the target would not be in line with government priorities to assist low income households manage cost of living pressures.

3.3 Efficiency

The program has been efficiently delivered, with an overall low administration budget and overall positive benefit-cost-ratio (see below). It is however difficult to:

- establish benchmarks across schemes, as they all have different designs and coverage and operate in a different policy environment
- form a view on the details of pass-through costs (incorporating marketing and participant recruitment costs, compliance costs, etc.), as it is not within the functions of the scheme administrator to scrutinise those costs.

The Tier 1 retailer's prices are regulated by the Independent Competition and Regulatory Commission (ICRC). ICRC completes an annual price determination for the Tier 1 retailer to evaluate the economic efficiency of scheme delivery and this includes approval of EEIS pass-through costs. This is at a very high level so that evidence of an open tender is the key evidence of delivering a competitive price. The Minister for Climate Change and Sustainability has made submissions to the ICRC to encourage further scrutiny of the abatement costs, to ensure the scheme is being delivered at least cost to ACT electricity consumers (<http://www.icrc.act.gov.au/energy/electricity/retail-electricity-prices-2017-2020/>).

3.3.1 Benefit-Cost ratio

As mentioned above, one of the strengths of Energy Efficiency Obligation schemes, and a likely reason why they are widespread, is their cost-effectiveness and lasting impact: while costs associated with the scheme are accounted for in a given year, savings will continue to accrue for the lifetime of the implemented measures. While some uncertainty remains on future savings, it is appropriate to consider lifetime savings when assessing the costs and benefits of the scheme.

The Benefit-Cost ratio (lifetime bills savings / cost of the scheme to date) calculated from 2013 to 2017 was close to 4. When considering the cumulative Benefit-Cost ratio (cumulative bills savings to date / cost of the scheme to date) for comparison purposes, the ratio was 1.15. The cumulative benefit-cost ratios increase over time because the cumulative savings continue to grow each year as more activities are delivered and earlier ones provide ongoing benefits as a result of the initial investments in the scheme.

Figure 3 and Figure 4 present the expected lifetime energy bill savings for the whole scheme and the cumulative energy bill savings versus the costs of scheme delivery, noting that these are highly sensitive to future energy price assumptions which are quite uncertain.

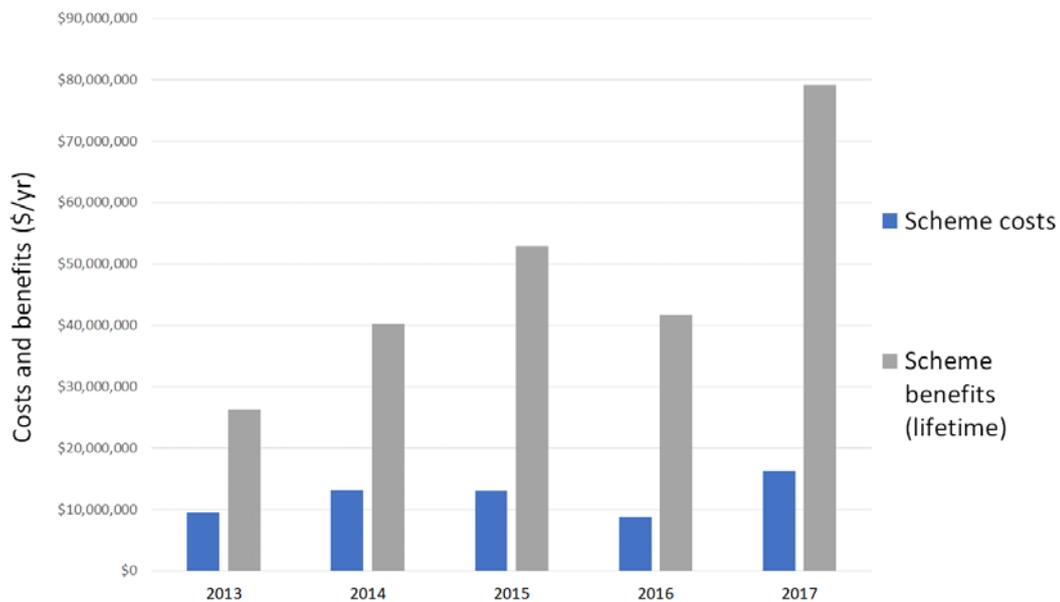


Figure 3. Lifetime energy bill savings versus costs of scheme

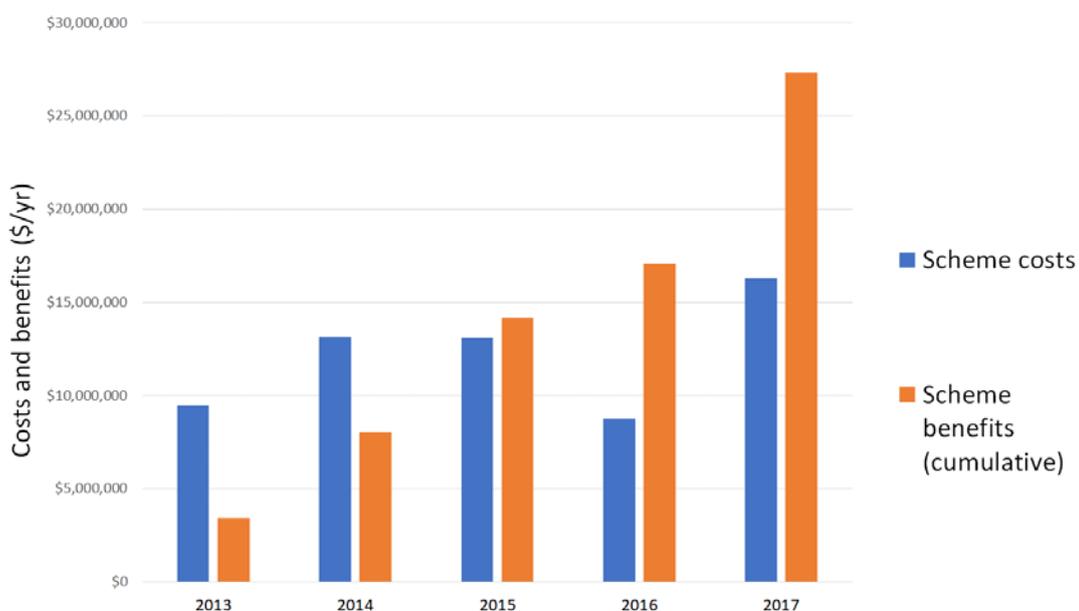


Figure 4. Cumulative energy bill savings versus costs of scheme

3.3.2 Efficiency shortcomings and possible improvements

Overall there are limited opportunities to improve the cost-effectiveness of the scheme without increasing delivery risks or fundamentally changing the governance of the scheme. The main considerations are examined below.

Limitations arising from activity design

The selection of discrete energy efficiency activities is both a strength and a weakness of EEOs: while it may make sense and be cost-effective to have a programmatic approach to some activities, it may require going back to the same households several times over the years to deliver different activities and it does not deliver holistic benefits to each individual household. This may be less efficient than undertaking the most cost-effective and needed activities for each household.

Administrative costs

One aspect of the scheme discussed by some stakeholders was the emphasis put on quality and training by both the ACT Government and the Tier 1 retailer which add to both safety and cost. Over 500 EEIS installers have received EEIS training through 86 training sessions run until mid-2018. Anecdotal remarks hinted to efficiency gains being possibly achieved through reduced training requirements or on-line delivery, but that these should be balanced against risks. NEPP measure 2.1 describes how harmonisation of processes across jurisdictions at a national level could reduce costs.

Scheme policy makers and administrators take active steps to achieve cross jurisdictional efficiencies through a working group which usually meets 1-2 times per year. This collaboration allows alignment, although different statutory frameworks, climates, targets and other features mean there are differences between schemes. ACT is comparatively well harmonised with other schemes with most activities derived from those in other schemes and updated in line with relevant changes at the earliest opportunity.

3.4 Distributional impacts

Distributional impacts are the differing impacts across people affected by EEIS. These are important considerations because:

- Several stakeholders expressed concern that not everyone has benefited from EEIS savings, even though all energy users are paying for the scheme, including low income energy users.
- Regressive impacts of EEOs are a well-documented drawback; that is, because of pass-through costs, end users pay for the cost of the scheme but have not all benefited from the scheme.
- Energy budgets for vulnerable households represent a higher proportion of overall household budgets (see Part 4 – Empirical analysis for more discussion on this point).
- The EEIS includes an explicit objective relating to inclusion of priority households:
 - a PHT was set-up as a safeguarding mechanism to ensure that a fair share of activities was delivered to priority households.
 - large users (NGER reporters) are not eligible to participate in the scheme, leaving more scope for small energy users to benefit (NGER reporters are still paying for the scheme's cost like every other energy user).
 - part of the ESC collected has been allocated to Actsmart programs targeting the most vulnerable households.

In addition, the ACT Government provides utility concessions (for electricity, gas, water and sewerage) to eligible households up to a combined maximum of \$600 per year (\$654 for 2018-19)³.

The governance and programs are therefore in place to ensure that vulnerable households are not put under further stress because of utility bills.

Over the five years period of the EEIS's existence:

- 17,900 priority households have received some form of energy savings measure out of approximately 30,000 priority households in the ACT - this was exclusively achieved by the Tier 1 retailer's delivered activities, as data of what was delivered through Actsmart programs was not available.
- over 53,000 non-priority households received energy savings measures (including some may have received more than one energy saving house call with different activities)
- there is no major difference in the participation of priority households across activities, except for activity 2.3 - high efficiency electric room heater, which was exclusively delivered to priority households living in public housing, as part of a trial.
- the proportion of lifetime energy savings from activities undertaken by priority households varied over time: while in 2013 and 2014 this proportion was higher than the target and close to 30%, it was below target in 2015 and 2016 with the previous surplus used to ensure compliance.⁴

However, despite the safeguards, distributional impacts could not be fully avoided because:

³ https://www.assistance.act.gov.au/data/assets/pdf_file/0007/293506/Utilities-Concession.pdf

⁴ As the use of a surplus to achieve their PHT targets in following years is authorised under the scheme; overall the target was achieved.

- there has been a drop in the number of beneficiaries in recent years due to fewer, higher savings activities being needed to achieve the scheme targets
- there is no embedded mechanism to overcome split incentives and ensure that renters can equally benefit from the scheme
- the exclusion of NGRS reporters from EEIS is a safeguard against “free-riding” behaviours within the scheme,⁵
- increases in energy prices are likely to hurt vulnerable households that do not receive upgrades (which are not available on a mass scale, as they are costly) and any shift to fewer, high abatement activities is likely to further reduce the number of vulnerable households assisted.

Over the life of the scheme, activities delivered in priority households have changed: initially, most abatement at priority households related to a small set of activities including SPCs, lighting upgrades, draught sealing and refrigerator removal activities. In recent years heating and cooling upgrade activities have taken over, although refrigerator removal activities continue.

The implication of this shift is the same for priority and non-priority households but will have more significant consequences on priority households’ energy budgets because:

- while a large number of households received energy savings activities in the earlier years of the program, they typically delivered relatively small savings for each household, which still outweighed the average household cost of the scheme
- in the last year (2017), a small number of households (about 1,250, including around 200 priority households) have received savings that make a large difference to their energy bills (and deliver a large amount of abatement under the scheme)
- in 2017, just 14% of the priority households that received these heating and cooling measures were renters, which represents around 25 households.

While activities delivered at the start of the period are still delivering benefits, the number of non-participating priority households has been large in recent years, while still bearing the cost of the scheme (pass through costs). While this does not impact the general effectiveness of the scheme in terms of energy efficiency, it raises the question of equity across participants.

This is reinforced by the fact that vulnerable households often have needs for specific, basic upgrades that are not necessarily offered by the retailer or have been offered for a specific period and have been discontinued once demand for this type of upgrades waned or their abatement value decreased. Examples of these activities include draught-proofing, residential lighting, curtains or standby power controllers. With a move towards activities requiring co-contributions, those who do not own their dwelling or cannot afford upfront co-payments are more difficult to target with upgrades.

With significant increases in electricity and gas prices over the period, it is possible that participants’ bills may still end up higher at the end of the period despite reducing energy consumption, and bills being lower than they would have been without the scheme. This is problematic in a context where energy poverty is reported as an increasing issue in the Territory (recognising that they are likely to receive some compensation under the utility concession scheme - see above).

The EEIS, like other EEOs, does not incorporate mechanisms to deal with split incentives. This is unimportant when activities are offered at no cost or for a very small co-contribution by the retailer, as was the case for lighting upgrades in the early years of the scheme. However, with the move to deeper activities requiring co-contributions, renters are at high risk of being excluded. There is no incentive for the owner of the dwelling to agree to pay for the co-contribution unless they see this as adding value to the dwelling, in which case they are likely to attempt to recoup the cost (and the resulting added value) by increasing rent. Assuming the rent increase is equal to the savings in energy bills, the renter is not financially better off although health and other benefits are likely⁶. There does not seem to be any obvious solution to the problem without complementary instrument or regulation.

A separate, specific, case discussed during the evaluation process is dwellings owned by ACT Housing and allocated to low income households. In this case, the policy maker and the landlord are both the ACT Government, so there is an

⁵ The key issue with free-riding behaviour is that resources are diverted towards upgrades that did not need to be subsidised instead of being allocated to beneficiaries facing real barriers. Indeed, “free-riders” are often the most likely to be willing and able to pay contributions.

⁵ “It is important to note that cost-effective energy savings are societally important even for power systems that may be increasingly supplied by renewable generation. Aside from the cost considerations, deep decarbonisation is only possible in most regions of the world when renewable energy is used.”

⁶ <http://energyconsumersaustralia.com.au/wp-content/uploads/Multiple-Impacts-of-Energy-Efficiency-An-Assessment-Framework.pdf>

opportunity for collaborative action and some EEIS-funded upgrade programs have recently been tested with ACT Housing.

An additional challenge appears to be enabling tenants to benefit from upgrade activities. This was reported by stakeholders and this was confirmed by the empirical analysis.

4 OPPORTUNITIES AND RECOMMENDATIONS FOR THE EEIS

4.1 Future policy suite and role of energy efficiency

ACT's current climate change strategy, AP2, sets a pathway to achieving the Territory's 2020 targets. A new climate change strategy is being developed in collaboration with stakeholders to set a pathway to achieve net zero emissions by 2050 at the latest. The new *ACT's climate strategy to a net zero emissions territory* and 2025 action plan will be in place by 2019. Key focus areas for reducing emissions and increasing resilience to climate change are energy, transport, waste and land use.

In May 2018, the ACT Climate Change Minister Shane Rattenbury announced that the Government will introduce legislation into the ACT Legislative Assembly to formally adopt a zero net emissions target year of 2045. A series of interim targets will also be adopted via a disallowable instrument. The new targets will be:

- 40% below 1990 levels by 2020 (on track to achieve this existing target)
- 50-60% below 1990 levels by 2025
- 65-75% below 1990 levels by 2030
- 90-95% below 1990 levels by 2040
- zero net emissions by 2045 (previously 2050).

These targets built upon previous modelling analysis and the report "*ACT Transition to Net Zero Emissions – Stationary Energy/Buildings*" by Strategy Policy Research (SPR, 2017). This was aimed to assist the ACT in determining how soon it could attain net zero greenhouse gas emissions in the stationary energy and buildings sector. As part of this analysis, SPR identified a number of current and proposed policies that will help the territory achieve net zero emissions before 2050, with the EEIS seen as an imperative part of this. Figure 5 presents the key policy options that SPR recommended in its medium scenario⁷ to achieve net zero emissions in advance of 2050; how the EEIS is expected to interact with these, and the key implications for the delivery of the EEIS.

⁷ At the time of publishing, the SPR recommendations were still under consideration.

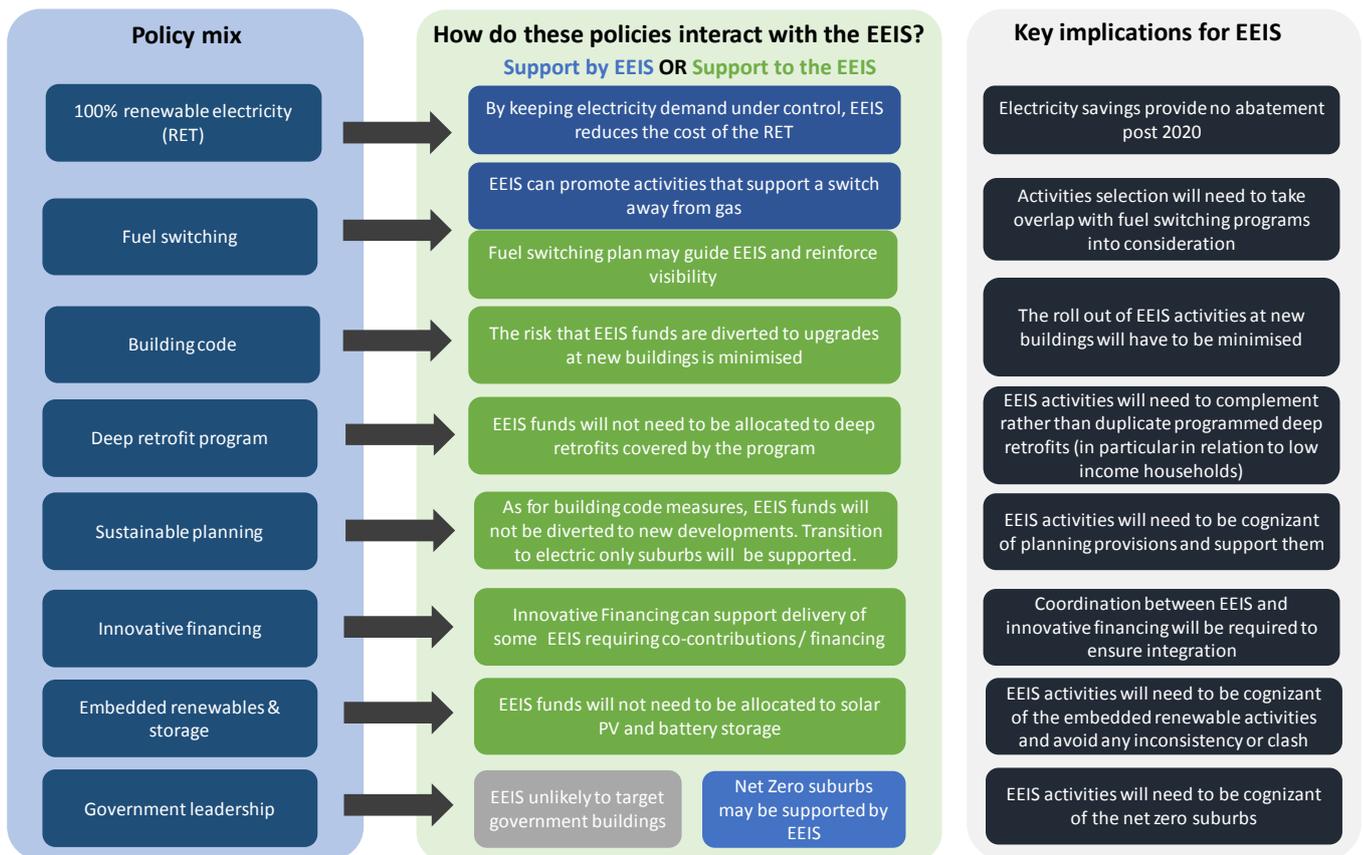


Figure 5. Future policy options to achieve zero emissions in advance of 2050 (medium scenario) (SPR, 2017)

The need for ongoing integration of energy efficiency in the suite of policies presented above can be summarised as follows:

- 100% RET:** Recent projections of the Territory’s emissions (Energetics, 2018) finds that by 2030, electricity demand will overshoot the Territory’s currently contracted renewable energy supply by approximately 2% (75 GWh, roughly equivalent to 10,500 households). Energy efficiency can help to reduce the growth in the ACT’s future electricity demand, lowering the amount of renewable electricity required to be purchased to achieve the RET, with the result of limiting the cost impost transferred to electricity customers.

The practical implication of the RET leading to a near zero electricity GHG emissions factor for the Territory is that electricity savings would no longer deliver any GHG abatement. Hence, a key recommendation of this report is to **switch to an energy metric for a future EEIS**, to keep incentivising electricity energy savings and help control increases in electricity demand and reduce energy costs for consumers.
- Fuel switching / transition from gas:** This point is closely linked to the previous one - to take full advantage of the decarbonisation of the electricity grid, fuel switching will be necessary for both stationary energy and transport. It is our opinion that a transition out of gas needs to be orderly to avoid perverse outcomes and negative impacts on existing users. The risk of stranded assets needs to be managed at the Territory level; for example, if gas assets could be repurposed or used differently, this needs to be carefully considered and planned. It is not for the EEIS or any energy efficiency program to lead the way in this regard, but it needs to support any policy that is put in place.

Assuming the EEIS will continue to focus on stationary energy, fuel switching will mean switching to renewable energies and / or electricity systems, in particular for heating and water heating in the residential sector. The practical implication for the EEIS in the short and medium term is that **activities that involve swapping inefficient gas appliances to efficient gas appliances should be critically and carefully examined** before being made eligible under the scheme as they may not be consistent with the net zero emissions strategy. To assist the development of the next ACT climate change strategy and action plan, economic modelling found that activities such as accelerated replacement of gas space heaters and replacement of gas hot water heaters by solar systems provided some of the

most cost effective abatement of all climate change mitigation measures⁸. As gas heater and gas hot water upgrades are eligible activities, the EEIS is well positioned to contribute to emission reduction targets in a cost-effective way.

- **Building code stringency:** The residential building code in Australia inadequately covers energy efficiency. A new iteration of the code is due to be released in 2019, but energy efficiency provisions are as yet uncertain. The Territory can add its own energy efficiency requirements for new buildings. The key implication for an energy efficiency scheme is to try and minimise the allocation of resources to new buildings that should not be in need of upgrades, as they should have been built to adequate standards in the first place. Upgrading recent buildings is economically inefficient. **Adequate building standards** are necessary to support the cost-efficiency of an EEO and of the whole climate policy.
- **Deep retrofits:** To achieve ambitious energy conservation goals and ensure that ongoing utility bills are affordable (especially for low income households), deep retrofits are necessary. As mentioned previously, EEOs are not the best instrument to encourage deep retrofits because they work best on programmatic approaches focusing on small, discrete, cost-effective measures rolled out *en masse* but also because deep retrofits are expensive and deliver large benefits to the households where they are implemented. Financing these large private benefits through a levy on energy use impacting all users can be problematic from an equity point of view, especially if not targeting low-income households only. Other mechanisms can be put in place (e.g. on-bill financing) to recoup some of the cost or direct investment can be made by the Territory to finance retrofits for those who cannot afford them. Different suggestions are proposed in the recommendations below. Whatever the changes made, a future EEIS will need to manage possible **overlaps with any deep retrofit measure** or policy put in place.
- **Sustainable planning provisions:** As mentioned above, the transition to electric households or suburbs will need to be planned for and managed through separate measures: the role of the future EEIS will be to fit in and **support decisions made**.
- **Innovative financing:** We understand that investigations are in train in relation to innovative financing mechanisms for a range of sustainability initiatives, including some of the policy objectives mentioned above. There are likely to be overlaps between the future EEIS and financing mechanisms singled out by the ACT Government for implementation. In some cases, there may be complementarity, e.g. when co-contributions under the scheme could make use of these mechanisms. It is therefore likely that developments in this space will **lend support to a future EEIS**.
- **Embedded renewables:** Renewables and energy storage have the potential to transform energy networks and markets and lead to the more flexible and cheaper production and distribution of electricity. Market incentives may be provided to facilitate the transition (new tariffs arrangements, rebates, etc.) and demand management incentives may be part of these arrangements, rewarding active energy management and alleviating energy budget pressures for participants. This may require household equipment to be compatible with new requirements to be able to take full advantage of arising opportunities and may have consequences for the definition of activities under a future EEIS. As soon as a strategy for embedded renewables emerges, **implications for a future EEIS should be examined** to ensure early alignment. Supporting the purchase of energy storage or solar panels as such goes beyond the mandate of an EEO and should only be supported in proportion of the “public good” benefit it may deliver (e.g. by leading to a drop in the retail cost of energy in the ACT by reducing the need to purchase renewable electricity or reducing infrastructure costs or peak demand).
- **Government leadership:** In relation to the housing strategy, the future EEIS will need to support government-developed “new zero energy suburbs”, especially if they require retrofits (as opposed to new buildings).

4.2 Short term opportunities

The following recommendations could be implemented in the short-term. These are based either on suggestions from stakeholders, ideas from the literature study or questions included in the review brief.

4.2.1 Changes to activities

Stakeholders recommended considering adding the following activities to the EEIS. The table below also includes post-stakeholder consultation notes on how the ACT government is currently addressing each of the above suggested activities.

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 was achieved.

⁸ The key issue with free-riding behaviour is that resources are diverted towards upgrades that did not need to be subsidised instead of being allocated to beneficiaries facing real barriers. Indeed, “free-riders” are often the most likely to be willing and able to pay contributions.

Table 1. ACT Government initiatives addressing stakeholder suggested activities

Suggested activity	Current ACT government EEIS initiatives addressing stakeholder suggested activities
Insulation	EEIS is currently developing ceiling and under-floor insulation activities and considering wall insulation activities.
Building envelope activities including draught proofing and curtains for priority households.	EEIS has a range of building envelope activities including draught proofing and curtain activities and has delivered draught seals and exhaust fan sealing activities. Proposed new insulation activities will further add to the building envelope activities available. The Actsmart Low Income Energy Efficiency Program assists with building sealing activities including curtains ⁹ .
Heating activities, especially reverse cycle heating (split systems) for priority households	EEIS has a range of heating activities available. Efficient electric split systems are being delivered by the Tier 1 retailer with additional incentives for priority households and a program delivering split systems to ACT public houses. New activities are being developed to provide efficient electric split systems to small and medium businesses.
Smart systems and demand management	Smart systems such as in-home displays have been considered for EEIS, but options explored to date, speedy technological change and uncertain emission savings have constrained development of stand-alone smart system activities. However, they may be of benefit when associated with solar generation and energy storage. Demand management capacity is being considered as a technological requirement for efficient electric heating activities. Improving the energy efficiency of data centres has also been suggested.
Hot water systems	EEIS has a range of hot water activities available to retailers, and hot water systems have been delivered to households under the scheme.
Project Impact Assessment with Measurement and Verification (PIAM&V)	EEIS continues working towards the introduction of PIAM&V methods integrated with the NSW Energy Savings Scheme ¹⁰ . Stakeholders have suggested that these methods are unlikely to be taken up in the ACT unless EEIS becomes available to National Greenhouse and Energy Reporting organisations ¹¹ .
Solar photovoltaic systems	The ACT government solar for low income program provides subsidies of up to 60% for eligible households to invest in rooftop solar panels and help reduce energy costs. The program is funded through EEIS Energy Savings Contributions.
Eliminate gas to gas or electricity to gas activities (in the context of a transition away from gas)	Electric to gas activities and most gas to gas activities were removed from EEIS at the end of 2015. The only gas to gas activity which remains is upgrading central ducted gas heating. Electric ducted reverse cycle heating systems have not been delivered yet, as they are less cost effective than ducted gas heating systems.
Energy audits to help move to more targeted activities	Actsmart works alongside EEIS and delivers energy audits to identify priority energy saving activities for individual households and businesses. These programs are largely funded through EEIS Energy Savings Contributions.
Battery storage	ACT's \$25M Next Generation Energy Storage Program is one of the largest household battery projects in the world and is on track to provide batteries to over 5,000 households and businesses by 2020 ¹² .

An immediate change to eligible activities that was recommended by stakeholders and makes sense in the context of a likely transition out of gas is to exclude replacing an inefficient gas appliance with an efficient gas appliance.

While upgrading gas appliances may deliver immediate bill savings and GHG abatement, it is inconsistent with the long-term policy direction and likely required fuel switching. In all cases, an efficient electricity option would be preferable and is likely to be available but may be less cost effective.

The absence of diversity in activities was also said to be an issue, especially for priority households. Recognising that the Tier 1 retailer needs to be on board, stakeholders suggested a package of activities which could be delivered together should be considered: for priority households, there would be merit in exploring the definition of a package of activities

⁹ https://www.assistance.act.gov.au/adult/utilities/outreach_energy_and_water_efficiency

¹⁰ http://www.environment.act.gov.au/_data/assets/pdf_file/0008/857789/ACT-EEIS-Stakeholder-Consultation-on-2016-activities-update-report-2.pdf

¹¹ http://www.environment.act.gov.au/_data/assets/pdf_file/0005/909113/2016-Stakeholder-Forum-Report-ACCESS.pdf

¹² <https://www.actsmart.act.gov.au/news-events/news/battery-storage>

that could be delivered together and provide both efficiency and comfort benefits including insulation, draught-proofing, heaters, lighting upgrades, curtains, etc.

4.2.2 Improve administrative arrangements through harmonisation with other schemes

Minor improvements could be made to the current administrative arrangements, including:

- Pursue the harmonisation of activities and processes (e.g. specification, training) across schemes, managing the value of credits to make them appropriate to ACT circumstances with factors or coefficients, to reduce costs.
- Refer to point 3.3 in relation to the regulator's scrutiny of pass through costs.

A potential approach to harmonisation that is being considered for EEIS would involve near complete integration with the NSW Energy Savings Scheme (ESS) for specified activities. Under this approach, approved abatement providers could deliver activities in the ACT, but obtain Energy Savings Certificates through the ESS registry. This would streamline the administrative efficiency and simplicity for government, retailers and providers, while assuring abatement, product and installation quality. This fuller harmonisation with the NSW Energy Savings Scheme (ESS) should be pursued to the extent that it does not involve additional costs and is a commitment that has been made a few years ago. There is however no guarantee that this will lead to ESS certificate providers moving in to the ACT market, as it is a relatively small market. Further investigations and consultations should therefore be carried out before investing much time and effort in this direction.

4.3 Post 2020 and longer term possible improvements

As stated above, there is merit in continuing the scheme, with some adjustments to maintain its alignment with the Territory's policy directions.

Recommendations for an effective post-2020 scheme are summarised below in sections 4.3.1 and 4.3.2. These need to be considered in the context of government priorities and the broader suite of policies for the Territory. There are therefore options that the government will need to examine in light of its priorities, in particular in relation to the new interim greenhouse gas reduction targets and 2025 Climate Change Action plan. They are therefore presented as possible scenarios in this section and in the Cost-Benefit Analysis report. The key scheme design elements considered as part of these scenarios are described in section 4.3.3.

4.3.1 Change metric to energy

The core metric for the scheme should be changed from greenhouse gas (GHG) emissions reductions to energy savings, as soon as practicable. The reasons for this change are summarised below:

- With a GHG metric, electricity savings activities will lead to no abatement at all post-2020, hence the scheme would become a gas savings scheme rather than an energy savings scheme:
 - The role of gas is still important in the ACT (38% of stationary energy use) including in terms of security (as a separate source of energy). The transition out of gas needs to be carefully thought through and an optimal balance needs to be found between the benefits of reducing emissions and the associated costs, including stranded assets and investment in new infrastructure. The EEIS should be part of the transition.
 - There will be a need for a mechanism to keep electricity demand increases under control as other sectors (transport in particular) add to electricity demand as part of their own transition. There could also be a rebound effect for non-price sensitive energy users if large-scale renewable electricity removes concerns about GHG emissions¹³. Sourcing renewable electricity comes at a cost to the Territory and any energy efficiency gain reduces this cost.
 - There is a fundamental inconsistency in using a levy on electricity to exclusively fund gas savings. This effectively means that electricity users would bear the whole brunt of the transition, without gaining any benefit from the scheme.

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¹³ "It is important to note that cost-effective energy savings are societally important even for power systems that may be increasingly supplied by renewable generation. Aside from the cost considerations, deep decarbonisation is only possible in most regions of the world when renewable energy is used efficiently; wasting renewable power on inefficient end uses would make the energy transition slower, more expensive and technically more challenging." (International Energy Agency, 2017)

- An energy metric would reduce energy costs for all consumers, not just those that use gas. Consultation for this review suggests that people are more concerned about energy bills than emission reductions.
- An energy metric will encourage delivery of all types of energy efficient items, without prioritising those that shift demand off gas. This addresses the risk that increasing demand from population growth and fuel switching could raise electricity demand above the existing contracts for 100% renewable electricity.
- The transition in energy systems will require a focus on energy rather than carbon. The ACT Government is already investing in battery storage as part of its climate change strategy. The reform of energy markets and energy generation and distribution systems allowing a better integration of distributed energy will require a new, integrated approach to energy management, addressing questions of reliability and security of electricity at the same time. Demand management, including demand response, will likely be part of this new approach and a focus on energy rather than carbon will allow the EEIS to evolve in this direction (see section 4.3.2).
- There is a strong alignment between the national agenda on energy productivity (NEPP) and an energy efficiency scheme such as the EEIS. This alignment is likely to endure over time, as there is broad agreement around the need to increase energy productivity.

The key drawback in changing from a GHG abatement metric to an energy savings metric, is that there will be a need to move away from GHG savings as a core objective of the scheme. The EEIS should however not be a “first-response” instrument for climate change mitigation (see Part 3 – comparative analysis for more information), but a supporting instrument.

There are also some risks that the shift to an energy metric may weaken the EEIS contribution to ACT government climate change targets. Scheme design elements that could be used to address these risks, including a greenhouse gas sub-target or multipliers applied to high priority activities that achieve strong gas reductions.

4.3.2 Focus the scheme on a single objective

As mentioned in Section 3, having multiple legislated objectives creates some tensions in the management of these objectives and the way market failures need to be addressed.

In the case of the EEIS, apart from the tension between achieving GHG reductions and energy savings in the context of a commitment to 100% renewable electricity that can be addressed by dropping the GHG emission metric (see above), the main difficulty has been to ensure that the balance between overall energy savings from the scheme (effectiveness) and affordability (distributional impacts, especially affecting priority households) are maintained (see section 3.4).

To resolve this tension, it is recommended to reduce the objectives of the scheme, and to undertake modelling and consultation towards a decision to focus the EEIS design on either:

- **Targeted energy bill savings, or**
- **Lowest cost** of energy efficiency improvements, or
- **Highest greenhouse gas emission reductions, or**
- **Balancing** multiple objectives: **emission reductions energy and bill savings.**

A fifth possibility would be to redefine the entire scheme to support a **broader energy management** program that includes rooftop solar PV, customer-sited cogeneration and combined heat and power (CHP) systems, demand response and energy efficiency, and behind-the-meter energy storage. A broad sketch of what this option could look like is provided below, however further consideration is required when further details on the future ACT energy management strategy become available. This needs to be examined in the context of the development of the ACT’s policy suite.

Each of the EEIS design options are outlined in the *Cost Benefit Analysis* together with another option that balances energy bill savings, emission reductions and a low cost of abatement.

Targeted bill savings focus

Focusing the scheme on bill savings for households and businesses is in line with the majority of stakeholders’ expectations and with the framing of the legislation around “cost of living”.

As a consequence of this shift of focus, the following scheme design elements would apply:

- Scheme metric would be set on energy savings.
- The PHT would be retained.
- A rental target could be introduced.

- A small business target could be introduced.
- A not-for-profit organisation target could be introduced.
- Energy Savings Contributions could fund non-EEIS priority household energy saving programs.
- Premises may be restricted from receiving more than one major energy efficiency item.
- A sub-target could be applied to increase proportion of participating households and businesses.

Other options for an evolution of the scheme would be possible, including:

- Moving priority households into a separate program or removing the responsibility to meet the PHT from the retailer and creating a separate system for low income households as suggested in section 0.
- The transformation of the scheme to be able to use auctions (as per 0 below).

The drawbacks of this approach are:

- The cost of the scheme would be higher, due to the additional complexity and tailoring; or the targets would have to be reduced so that the target can be achieved within the same broad cost envelope.
- NGER reporters would still be excluded from the scheme to allow a focus on smaller energy users and better spread of energy saving measures.
- Specific measures to address remaining barriers (especially access to capital to finance co-contributions) to participation for low-income households would still need to be devised to ensure that the benefits of the scheme are fairly distributed across households and businesses.

Lowest cost of energy efficiency improvements

Focussing the scheme on lowest cost energy efficiency measures would mean that distributional impacts and measures in favour of low-income households would need to be developed in separate programs and policies. As a consequence of this shift of focus, the following scheme design elements would apply:

- Scheme metric would be set on energy savings.
- The Tier 1 threshold could be lowered so that other large retailers are also obliged to deliver savings.
- No sub-targets, including PHT removal.
- The scheme could be expanded to NGERS reporters.
- Energy Savings Contribution could fund non-EEIS priority household energy saving program

The advantage would be a simplification of the scheme, a potential drop in the cost of the scheme or ability to increase the target (this would require some detailed modelling).

The drawbacks of this approach are:

- There is a strong risk of pushback from Tier 2 retailers becoming Tier 1 due to threshold changes.
- The risk of “free-riding” behaviours is increased.
- There is no guarantee that (large) businesses would not benefit more than households (depending on what activities are seen as most cost-effective).

Highest greenhouse gas emission reductions

This option would maintain a strong scheme emphasis on emission reductions, and would continue to target a modelled quantity of abatement each year to support the achievement of climate change strategy. This option would involve the following scheme design elements:

- Gas retailers could become obligated parties under the scheme
- Either:
 - Scheme metric would be set on greenhouse gas emissions, or
 - A sub-target would be introduced for greenhouse gas emissions.
- Either:
 - High priority activities would be mandated, or
 - Multipliers would be applied to high priority activities.

- The PHT could be retained although, combined with the measures above, the ability to offer attractive emissions saving activities to low income households without being hampered by split incentive or access to capital barriers should be carefully assessed.

The benefit of this option is that there is a significant ACT market for activities, post 2020, that reduce greenhouse gas emissions as well as saving energy. This is partly because of the fact that there are 245,000 natural gas using appliances in the ACT residential sector.

The drawback of the option is that it may lead to an overall higher cost of the scheme, spread over gas and electricity retailers. Given the importance of the energy poverty topic and legitimate concerns from most stakeholders, the poverty alleviation goal would need to be covered by other programs and policies with appropriate budgetary allocation.

There could also be a need to ensure that electricity use increase is contained through other means to avoid cost escalations in renewable electricity sourcing.

Balancing multiple objectives: emission reductions, energy and bill savings .

Balancing all objectives would require a mix of the design elements mentioned above to be combined, but it should be acknowledged that a balanced outcome automatically lead to some trade-offs and added complexity. The following scheme design elements would apply:

- The retailer energy savings obligation could be extended to gas retailers.
- Scheme metric could be set on energy savings.
- A sub-target could be introduced for greenhouse gas emissions.
- Multipliers could be applied for activities that reduce greenhouse gas emissions and save energy.
- NGERs reporters could be included, but in a sub-market set-up, except government offices (Territory and federal)
- The PHT sub-target would be retained
- A rental target could be introduced.
- A small business target could be introduced.
- Energy management systems would be incentivised.
- Premises could be restricted from receiving more than one major energy efficiency item.
- A sub-target could be applied to increase proportion of participating households and businesses.

The main attraction of this option is the balanced aspect and the pursuit of multiple goals, plus the extension of the coverage.

The main drawback is the added complexity and the fragmentation of the market into small sub-markets in an already narrow market such as the ACT. It would be important not to alter multipliers or sub-targets too frequently as this would further erode scheme efficiency.

Creating two completely separate sub-schemes would significantly diminish funding available for the “smaller user” scheme and cross-subsidising the small scheme with funds from the “large users” scheme would be complex and likely to face opposition.

4.3.3 Scheme design elements

The following policy levers are considered in the scenarios described in section 4.3.2 above.

Scheme metric and emission reduction sub-targets

The options are:

- The scheme metric could be set on greenhouse gas emissions
- The scheme metric could be set on energy savings

Retaining the GHG emissions metric leads to the exclusion of electricity saving activities from the scheme post-2020, hence most of the options considered involve switching to an energy saving metric

Obligated parties coverage

Currently only electricity retailers are obligated parties under the EEIS. Options for extending the obligated parties coverage include:

- The retailer energy savings obligation could be extended to gas retailers
- The Tier 1 threshold could be lowered so that other large retailers are also obliged to deliver savings

Eligible beneficiaries

The scheme currently excludes NGERs reporters. Scheme design elements that may affect eligible beneficiaries include:

- The scheme may continue to exclude NGERs reporters
- The scheme could be expanded to NGERs reporters (including or excluding government reporters)
- Premises could be restricted from receiving more than one major energy efficiency item.
- The market could be partitioned between “big” and “small” users

Their inclusion in the scheme would bring up the question of whether to include or exclude government NGERs reporters. Including these would equate transferring some of the burden of government facilities upgrades to all electricity customers. Including non-government NGERs reporters may still create some “free-riding” issues. Restricting premises from receiving more than one major energy efficiency item could help to address the distributional weakness whereby all electricity users pay for EEIS but less than half have benefited.

Scheme design elements involving sub-targets include:

- No sub-targets
- The PHT sub-target could be retained
- A rental target could be introduced
- A small business target could be introduced
- A not-for-profit organisation target could be introduced
- A sub-target could be introduced for greenhouse gas emissions
- A sub-target could be applied to increase proportion of participating households and businesses.

Targets for small businesses, rental households and not-for-profit organisations, restricting the number of large appliances available on a premises or requiring an increase in participating premises could be envisaged to improve distributional impacts. This would however likely increase the cost of compliance and hence the pass through costs. Other actions in favour of priority households are mentioned below.

Re-formulating the PHT and encouraging measures in favour of priority households

As it currently stands, the PHT has resulted in the delivery of energy saving activities in nearly half of all priority households, however the majority of these households (>85%) were targeted in the first three years of the scheme, when the activities delivered did not provide deep energy savings. Therefore, the PHT may not constitute a strong safeguard that a significant number of priority households will benefit from the most impactful EEIS activities: only about 200 unique households benefitted in 2017. Stakeholders also expressed strong concern around the increase of energy poverty.

Submissions made to the ACT government when considering the 2018 PHT setting suggested a possible reformulation of the PHT so that it applies to residential savings only. This would prevent a trade-off between delivering EEIS activities to businesses and residences because any savings delivered to businesses increase the proportion of residential savings that are required in priority households. This is not recommended since it would provide a disincentive for abatement to be delivered in households, which would not be consistent with the PHT goal of supporting low income households.

It is therefore not suggested to change the PHT setting, which is currently at 20% of all abatement, without giving due consideration to alternative mechanisms to assist low-income households with energy efficiency upgrades. Should a decision be made post-2020 to refocus the scheme on lowest cost energy savings, then a comprehensive complementary program would need to be put in place targeting priority households.

In the future, activities most needed by priority households (see below) could be further incentivised by the following exclusive options:

- applying factors (multipliers) to specific activities relevant to priority households, when they are offered to priority households, to make them more attractive to retailers and activity providers.
- mandating some activities to be undertaken at priority households, thus removing the ability of the retailer to define activities, accepting that this may result in increased pass-through costs.

- subsidising co-contribution for activities in low-income households (this could be financed by the Tier 2 ESC or another funding mechanism although this may be a problematic transaction if fees paid by small retailers are seen as being used to assist large retailers to meet statutory targets).

Note that these options would require modelling and consultation with obligated parties.

Finally, it was noted during the stakeholder consultation that there would be some merit in streamlining coordination between Actsmart and the EEIS when introducing / removing activities and reducing the lead time in making activities available under Actsmart, so that vulnerable households do not miss out on the implementation of simple measures for administrative reasons.

Developing a sub-program for priority households

A major challenge facing the EEIS is how to maintain an equitable distribution of benefits and address energy poverty issues in an effective way. Targeting specific barriers facing various groups of low-income households is complex and hence costly.

Should it prove too difficult for the Tier 1 retailer to deliver activities to priority households, the program requirements could be modified so that the **Tier 1 retailer is allowed to opt to pay the ESC in relation to the PHT portion of their target**. This would generate additional funds each year that, along with the ESC from Tier 2 retailers, could add up to \$4M per year to be allocated exclusively to activities for low-income households.

These activities could be undertaken under the Actsmart umbrella, provided significant energy savings can be demonstrated. Or, to create a mid-way system, a reverse auction system (see also 0) could be organised to select service providers able to deliver a package of activities likely to benefit priority households (draught-proofing, curtains, LED lights, replacement of old / inefficient equipment or even roof insulation). This could be supported by a checklist system to ensure that value for money is delivered. Assuming \$4M funding plus administration and quality assurance costs, hypothetically, spending \$1,000 per household would mean that around 4,000 low-income households could benefit each year, which represents about one eighth of the ACT's priority households.

Other features could include:

- Putting in place innovative financing arrangements (e.g. by recovering some of the upfront investment by reducing utility concessions to the household for a period of time post-activities or partnering with retailers to implement on-bill financing arrangements).
- Retailers could still be involved in the marketing of these activities to minimise recruitment costs.

Advantages of this approach include:

- Greater capacity to manage distributional impacts and allocate resources to those who have the greatest need for assistance.
- The capacity to better target the needs of low-income households.
- A greater ability to target the barriers specific to various sub-groups, including renters (e.g. by more heavily supporting some activities and legislating against increases in rents as a result of such upgrades).
- Relieving retailers from the responsibility of delivering activities to priority households would ensure that the scheme's costs remain low.

Drawbacks of this approach include:

- A more direct involvement of the government in the definition and management of activities in favour of low-income households, and hence higher administrative costs.

Multipliers and other incentives for specific activities

It is possible to mandate some high priority activities or add multipliers to the determination of abatement values to ensure that these activities are more attractive to retailers. This would reduce the ability of the retailers to select lowest cost activities and therefore would likely increase the pass through costs.

Activities that support energy management, through links to energy storage or peak demand management could be incentivised in the same way (incentives or multipliers). Useful links can be made between demand response and energy efficiency. However, the drawbacks of this approach are:

- It requires a lot of work to be done on target energy management systems before being implemented.
- It would greatly add to the complexity of defining and specifying activities and related energy credits.

4.3.4 Further considerations for energy efficiency in the ACT

The following opportunities for energy efficiency measures in favour of households and businesses have also been explored in the SWOT analysis.

Deep retrofits and tailored upgrades to households

The review identified that the delivery of discrete activities to participants is a source of inefficiency:

- Participants need to be recruited and visited on separate occasions.
- Activities are not tailored to the needs of participating households. This is a missed opportunity to make significant changes to energy efficiency and bills for a specific household, especially for low-income households.

To address this the SA Retailer Energy Efficiency Scheme (REES) mandates energy audit activities as part of the scheme.

The ACT could consider defining a flexible program of eligible activities that could be decided based on a site assessment and implemented on the spot or during a second visit to the household. The assessment could be supported by a Scorecard-style system similar to the one being developed by the Victorian Government¹⁴ to guarantee its objectivity and the credits allocated to the upgrade work done could also be linked to the improvements achieved under the Scorecard. Assessment and delivery of upgrades could be undertaken by different parties for additional objectivity.

The advantages of this approach are:

- It delivers more tailored upgrades to households (especially low-income households) and increases the likelihood that household bills will be significantly reduced.
- It saves on recruitment costs and flagfall charges for visiting each separate participant.

The drawbacks of this approach are:

- Assessors may need to be independent from implementers for increased objectivity.
- Activity suppliers need to be capable of undertaking a range of eligible activities.
- It would add to the complexity of defining and specifying activities packages and related energy credits.

Metered approach rather than specific activities with deemed savings

While a very efficient way of managing credits, deeming of energy savings based on statistics is somewhat problematic as it does not address possible rebound impacts and does not link activities undertaken in a given year with reduction in energy use in subsequent years for the pool of participants.

To deal with this issue, some jurisdictions (California) have innovated and have abandoned all *ex ante* deemed savings in favour of a metered approach.

In the longer term, the ACT could consider following California's innovative lead and moving all measurement, monitoring and verification to a metered approach (this would require a parallel investment/incentive regime to accelerate digital meter rollout in the Territory).

The advantages of this approach are:

- It delivers objective savings compared to a baseline (controlled for confounding factors) that can be monitored over multiple years. It therefore controls for rebound impacts.
- It allows market forces to identify a wider range of savings than that contained in the lists of "eligible activities", including some behavioural programs.
- Participants may receive financial incentives to reduce their energy use (which arguably can have some perverse outcomes on comfort), which increases their awareness and understanding of energy management opportunities.
- The approach is highly compatible with demand management measures that are likely to be required in a future networked energy management system (see section 4.3.2).
- This may encourage the transition of retailers from energy sellers to "energy as a service" providers.

The drawbacks of this approach are:

- It requires rollout of digital meters and access to meter data.
- It is likely to be considered too complex and too risky by retailers (and too constraining, as it effectively sets an absolute and reducing cap on future energy use, as least for a sub-group of participants).

¹⁴ <https://www.energy.vic.gov.au/energy-efficiency/residential-efficiency-scorecard>

Auction systems

One of the issues identified in the present EEIS is that the activities chosen by the retailer are not necessarily tailored to the needs of scheme participants. This is because it is more efficient for the retailer to adopt a “one size fits all” approach to activity delivery and to target activities that are the most cost effective to implement.

To regain some control over the activities that are delivered, it would be possible to trial a reverse auction-based approach to delivering energy efficiency improvements that increases innovation and competition, on the model of what was implemented in the US (Independent System Operator of New England, PJM Interconnection) and in Portugal, Germany, Switzerland.

This would involve:

- Using the ESC or transforming the EEIS into a certificate-based scheme collecting a “levy” on energy use to fund the reverse-auction (this is compatible with the suggestion made in 0 for example).
- Calling for innovative delivery of energy savings to households and / or businesses by activity providers, based on a list of existing activities or some Scorecard system such as the one described under 4.3.4.
- Encouraging participation through an appropriate marketing campaign, possibly involving the retailers.

The advantages of this approach are:

- It encourages innovation.
- It increases the scope of activities delivered to participants.
- It increases control over activities and the commissioning process by the ACT Government.

The drawbacks of this approach are:

- Reduced incentive for retailers to market activities.
- Potentially, increase in administrative costs for managing the auction and auditing compliance.
- There will still need to be safeguard mechanisms to ensure an equitable distribution of benefits.

5 RESPONSE TO KEY EVALUATION QUESTIONS

Key evaluation questions outlined in the project brief are addressed in the table below. They have been grouped in a way that makes it easier to address the broader evaluation themes listed in Section 3 - i.e. appropriateness / role of the EEIS, effectiveness, efficiency and distributional impacts. However, they can be read in any order.

Key evaluation questions have also been split between evaluative questions (retrospective evaluation questions) directly linked to Section 3 and forward looking, prospective questions, that support the reflexion leading to recommendations relating to the future of the scheme (Section 4).

The tables below summarise these responses, linking the responses to specific sections of the analysis (consultation, comparative analysis, empirical analysis, SWOT/CBA).

Note that the numbers in brackets after each question corresponds to the original KEQ number provided in the original scope of works by the EPSDD.

5.1 Retrospective evaluation questions

KEQs	Comment or sub-question	Stakeholder engagement	Comparative analysis	Empirical analysis	SWOT / CBA	Conclusion
Appropriateness: Is there an ongoing need for government support for energy efficiency in the ACT?						
Is EEIS working well as a key policy option for tackling market failure in energy efficiency?	What barriers are there to delivering other energy saving activities?	<p><u>Direct consultation</u></p> <p>Stakeholders highlighted a number of ongoing barriers to energy efficiency. These include:</p> <ul style="list-style-type: none"> • Split incentives between landlords and tenants (major barrier) • A lack of information and knowledge about energy efficiency • Perceptions that the benefits of energy efficiency do not outweigh the costs • Limited access to capital to fund energy efficiency improvements • Resistance to behaviour change. <p>Stakeholders suggested that these barriers were being addressed by the scheme to some extent. Following the ACT Housing trial, it was suggested that the scheme could have further impact by more specifically targeting low income renters outside of the public housing system.</p>	<p>Barriers typically identified in the literature are:</p> <ul style="list-style-type: none"> • Access to capital • Behavioural barriers: bounded rationality. <p>Market failure:</p> <ul style="list-style-type: none"> • Public good information, information spill-overs and information asymmetry • Split incentives. <p>There are different barriers for different categories of energy users (large / small enterprises), and different categories of households. For example, the split incentive issue is relevant for low-income renters, but not owner occupied non-priority households.</p>	<p>Activities delivered to priority households (addressing barriers to capital and split incentives, as a significant proportion of them are renters):</p> <ul style="list-style-type: none"> • 25% of all households that have participated in the EEIS have been priority households. • Since scheme inception, over 50% (or just over 17,900) priority households in the ACT have received some form of energy savings activities since 2013 (assuming approximately 20% of households in the ACT are priority households). • 15,000 rental households participated in the EEIS <p><u>Behavioural barriers:</u> 45% of households in the ACT have participated in the ACT which indicates the scheme has been successful in overcoming behavioural barriers in the territory. The trends in delivery of activities rolled out to non-priority households and priority households are very similar. In terms of the number of households taking part in the scheme, the most popular activities have been lighting upgrades (>80,000), followed by SPCs (>40,000) and draft sealing</p>	<p>EEIS pushes for a tightening of standards and professional codes. EEIS tackling inertia (behavioural) by making people aware of opportunities. However, it is debatable whether participating in the scheme translates into long-term awareness around energy efficiency.</p>	<p>The strength of the EEIS is to address a range of barriers indiscriminately, i.e. providing an incentive for activities to take place, regardless of the barrier. Barriers remain in relation to:</p> <ul style="list-style-type: none"> • split incentives (perverse incentive: as landlords may look at raising rents after upgrading dwellings) • awareness / deep behavioural change (as energy users are not deeply invested in the program) • some financial barriers, where co-contributions are required from low-income households.

KEQs	Comment or sub-question	Stakeholder engagement	Comparative analysis	Empirical analysis	SWOT / CBA	Conclusion
				(>20,000). In total approximately 70,000 unique households have received energy saving upgrades. <u>Split incentive:</u> The split incentive issue is seen for rental properties for heating and cooling activities 2.1 (2.2) and 2.4 (2.6). Less than 4% of these activities were rolled out in rental properties (priority and non-priority). However, 100% of households that received activity 2.3 (replacing gas wall heaters with RCACs) in 2017 were rented priority households in public housing.		
Impact: What change has the program made to energy savings in the ACT, CO2-e emissions, End users' energy bills?						
What has been the net impact of EEIS on the ACT economy and households?		<u>Direct consultation</u> Overall, stakeholders expressed support for the scheme and suggested that it was tackling barriers to the uptake of energy efficiency. <u>Post implementation surveys</u> Across all post implementation surveys: <ul style="list-style-type: none"> • 54-70% of respondents reported a reduction in energy bills. • 50-60% of respondents to the Elton Consulting surveys stated they would not have carried out the activities if the EEIS was not in existence. • 70% of respondents for the 2018 business survey stated they would not have carried out the activities if the EEIS was not in existence. 	Costs difficult to compare (confounding factors), but appears to be in line with international schemes. Impact of EEO schemes on cost of electricity has been the downfall of some of the most ambitious targets (UK, Denmark). EEOs do not target specific market failures for specific groups of stakeholders, hence some schemes deal with vulnerable households separately.	Cost in line with predictions. In terms of cumulative impact on bills, the scheme started breaking even in 2015 (1.08) but that excludes benefits from Actsmart activities. Benefit-cost ratio is positive when considering lifetime savings, at 3.95 (arguably should be discounted). The EEIS helps to reduce stationary energy consumption in the ACT. In terms of cumulative energy savings, the EEIS has been delivering an increasing trend in energy savings from 0.4% of total ACT stationary energy use in 2013 to 2.9% in 2017.	The mass rollout of cost-effective technology has been a key strength of the program, a significant percentage of which would not have happened without the program, according to feedback from participants. However, as the activities are not tailored to specific groups of energy users' needs, some of them still missed out on benefits, even though they are bearing the cost of the program. It is of particular concern if the users missing out belong to the group of vulnerable households or businesses.	While the overall impact is positive, there are concerns that some people still missed out on benefits, even though they are bearing the cost of the program, some of whom can ill-afford it (acknowledging that financial support programs exist).

KEQs	Comment or sub-question	Stakeholder engagement	Comparative analysis	Empirical analysis	SWOT / CBA	Conclusion
What activities have been delivered?		N/A	<p>Most schemes start with simple activities, with an evolution towards more complex activities over time. In terms of coverage, schemes including the industrial sector and larger users typically generated a majority of certificates through that channel.</p>	<p>In terms of lifetime energy and energy bill savings, the most impactful activities have been:</p> <ul style="list-style-type: none"> Residential lighting upgrades Commercial lighting upgrades Space heating and cooling activities. <p>Over time, the trend in activities delivered has changed. The types of measures rolled out in 2017 changed significantly from previous years:</p> <ul style="list-style-type: none"> heating and cooling activities represented 46% of all energy savings, while commercial lighting upgrades represented 53% of savings. This contrasts sharply with previous years, where residential lighting, SPC, and sealing activities dominated the lifetime energy savings. 	<p>The mass roll out of effective technologies is the main strength. A corresponding weakness is that activities calling on simple technology work best (e.g. lighting). When more complex activities are undertaken (heating), there is a trade-off between the depth of the activity and the number of beneficiaries.</p>	<p>The scheme encouraged mass implementation of simple activities to start with, with an evolution in the last year to activities delivering deeper savings to a smaller number of households, but also opening to commercial lighting (simple activity, new type of participants).</p>
What have been the energy efficiency gains from the program?	How did this translate into CO ₂ -e savings?	N/A	<p>The success of EEO schemes is typically calculated as the percentage reduction in energy consumption targeted in a given year. Globally, the strength of these schemes stood at 0.4% in 2016 across all the final energy consumption covered, with global strength doubling over the last decade (IEA, 2017).</p>	<p>As described earlier, the EEIS has been delivering an increasing trend in energy savings from 0.4% of total ACT stationary energy use in 2013, to 2.9% in 2017. This has translated into approximately 390 kt CO₂-e of lifetime GHG savings from activities carried out from 2013 to the end of 2017.</p>		
	How well has the carbon metric aligned with energy bill savings?	N/A	<p>There is general consensus in the literature that EEO schemes work best by focusing on one primary objective.</p>	<p>The empirical analysis shows a growing disconnect between GHG savings and energy bill savings, as the grid emission factor goes down while energy prices go up.</p>	<p>The GHG metric introduces additional confounding factors in the monitoring of scheme's results in the context of a rapidly changing grid emission factor. Not only do activities end up delivering less GHG savings than initially modelled for the same</p>	<p>The carbon metric and energy bill savings are increasingly disconnected as the grid emission factor goes down while energy prices go up. It is recommended to switch to an energy metric for better alignment.</p>

KEQs	Comment or sub-question	Stakeholder engagement	Comparative analysis	Empirical analysis	SWOT / CBA	Conclusion
					energy savings, but also activities picked on the basis of GHG savings may not deliver the most bill savings.	
Are Energy Savings Contributions being effectively applied to meet the scheme objectives?		N/A	N/A	About \$5.1M out of \$15M ESCs collected has been expended by Actsmart for both low income and business programs. Actsmart appears to be well regarded by stakeholders and delivers complementary benefits to the EEIS (mostly on energy poverty alleviation). \$2M has been used for EEIS program administrative costs, which, arguably, could be funded through general revenues to maximise the impact of ESC. The rest is allocated through the budget process on complementary programs which meet the objectives of the Act.	N/A	Allocation of the ESC has gone primarily to Actsmart programs destined to alleviate energy poverty and to achieve business savings for equipment not being delivered through EEIS. This expenditure is consistent with the objectives of the Act. A proportion of the ESC is still in the process of being allocated. Government should also consider funding the operation of the scheme by using separate sources of funding rather than an allocation of the ESC.
What has been the impact of applying the EEIS retailer obligation to electricity only, rather than electricity and gas?		N/A	A large proportion of EU schemes place obligations on both electricity and gas suppliers, and other fuels such as oil. Both the EEIS and NSW ESS base their targets on electricity sales, putting the obligations on electricity retailers only, while the SA REES and VEU base targets on both gas and electricity sales, and obligate both types of retailers. In comparison with the ACT, these three states have multiple large market share gas and electricity retailers (AER, 2017). This is also the case for EU countries.	From the retailers' perspective: As the Tier 1 retailer for gas and electricity is the same company and retains around 90% of market share for small customers (overall market share is unknown), it can be ventured that applying the EEIS retailer obligation to electricity and gas would have had little impact on Tier 2 participation. From the energy users' perspective: The ACT has the highest percentage of homes connected to gas in Australia (85%) and 54% of household energy is from gas. This means that "electricity only" households are bearing a relatively larger share of the cost of the scheme. This could be an issue if vulnerable customers were more likely to fall into this	Advantages of not having a dual scheme: <ul style="list-style-type: none"> • Simplicity • In the context of a transition out of gas, less "conflict of interest" for the gas retailer not to be involved. • Low-income households using gas for heating not impacted by pass-through cost. Drawbacks of not having a dual scheme: <ul style="list-style-type: none"> • Equity issue: only electricity users bear the burden of the scheme. • Could potentially increase overall target by broadening the scheme, while minimising impact on each retailer. 	Applying the retailer obligation to electricity only is not considered to have significantly hampered the ability of the scheme to deliver results. However, in the context of a transition out of gas, including gas retailers in the scheme is unlikely to be an option.

KEQs	Comment or sub-question	Stakeholder engagement	Comparative analysis	Empirical analysis	SWOT / CBA	Conclusion
				category, which is probably not the case.		
Effectiveness: How is EEIS tracking on its multiple statutory objectives?						
How well did the EEIS:		<u>Direct consultation</u> In general, stakeholders reported that the scheme was effective in encouraging the efficient use of energy. Some stakeholders felt that just by having the scheme in operation it attracted a focus on energy efficiency, while other stakeholders suggested that there was limited ongoing awareness and impact.	See question above on market barriers.	The EEIS has delivered significant lifetime and cumulative energy savings. See the Empirical Analysis for more information.	Mass implementation of simple measure. One weakness is that there is no ex-post control of savings (deemed savings).	Energy efficiency gains are primarily achieved by subsidising the substitution of specific equipment. They are therefore “wired in”, but there is no control for any rebound effect should users choose to offset savings by increasing their energy use (e.g. by using a piece of equipment longer).
a. Encourage the efficient use of energy						
b. Reduce GHG emissions associated with stationary energy use in the Territory		<u>Direct consultation</u> In general, stakeholders were more focused on energy affordability than the GHG reductions associated with the scheme. Stakeholders generally acknowledged however, that GHG emissions were being reduced through the scheme.	It is extremely difficult to compare the impacts of different schemes across the world for the reasons explained in the literature review / comparative analysis section of this report.	The EEIS has delivered significant lifetime and cumulative GHG savings though the ex-post analysis demonstrated these are not as great as was previously forecasted in the Scheme Inception RIS and Scheme Extension RIS. The main reason for this is changes to grid emission factors as a result of the ACT’s 100% RET, and lower than expected Tier 2 retailer participation. See the Empirical Analysis for more information.	<u>Strength:</u> the GHG metric encourages the selection of activities that offer the most cost-effective emission reduction activities, based on emission factors prevalent at the time of the activity definition. <u>Weakness:</u> the GHG metric did not preclude activities’ abatement values from using emission factors that became outdated once the decision to source 100% RET was made. Hence the reduction achieved is disconnected from the ambition that presided over the setting of the target.	As many activities lead to a reduction in electricity use, and the electricity emission factor has been dropping in line with the ACT Government’s 100% RET by 2020, GHG emission reductions have been lower than initially modelled (for the same level of energy savings).

KEQs	Comment or sub-question	Stakeholder engagement	Comparative analysis	Empirical analysis	SWOT / CBA	Conclusion
c. Reduce household and business energy use and costs		<p><u>Direct consultation</u></p> <ul style="list-style-type: none"> In general, stakeholders reported that the scheme was effective in reducing household and business energy and costs. Stakeholders were unable to estimate the actual usage and cost reductions. <p><u>Post implementation surveys</u></p> <p>Based on the analysis of the Elton Consulting phone surveys and the 2018 business survey results, the majority of participants (households and businesses) report some reduction in energy bills (54-70%), while a minority (>25%) were not sure if their bills had decreased.</p>	Reduction in energy bills is not the primary focus of most schemes internationally, but it is an expected benefit of the EEO. Safeguards and complementary measures for households and / or vulnerable households are often included in the schemes.	Average weekly savings across the scheme from 2013 to 2017 are \$4.80 per participating household per week, and the trend is that these weekly household savings are increasing as the scheme matures, with savings of \$5.65 per participating household in 2017. In 2017, total cumulative bill savings to the commercial sector were over \$5M, while in 2016 they were just over \$300,000. This equates to savings of \$3 per MWh consumed by businesses in the ACT, for 2017. See the Empirical Analysis for more information.	<p><u>Strength:</u></p> <ul style="list-style-type: none"> Mass implementation in the first years of the scheme. <p><u>Weaknesses:</u></p> <ul style="list-style-type: none"> Non-participants bear the cost of the scheme without benefitting. Some participants may have still experienced an increase in energy bills despite savings from the scheme, as energy prices have more than energy cost savings through the EEIS. Recently (2017), participation has been limited to ACT Housing priority households (heating) and businesses (commercial lighting). 	A majority of beneficiaries of the scheme report bill savings. While in the initial years of the program benefits were spread across households and small businesses, the proportion of non-participants has increased as the type of activities implemented shifted. There is a risk that a gap will appear between beneficiaries and non-beneficiaries as a smaller number of participants in the scheme will benefit significantly while the majority of non-participants bear the costs.
d. Increase opportunities for priority households to reduce energy use and costs		<p><u>Direct consultation</u></p> <ul style="list-style-type: none"> Overall, the explicit focus of the scheme on priority households was important to stakeholders. Stakeholders highlighted that priority households present unique challenges in relation to encouraging energy efficiency. The use of community organisations as a conduit for delivery to low income households was seen as valuable. Delivery through ACT Housing was considered to be important and effective. Community organisations and consumer advocates suggested that lighting products were no longer available through the scheme. They suggested that this remained a 	Measures in favour of low-income households are present in some schemes: <ul style="list-style-type: none"> The SA REES requires a number of annual energy audits in low-income households, which despite being costly, may provide more meaningful savings to participants than cheaper measures. In the UK EEO scheme, a sub-target focusses on the delivery of insulation measures in rural areas, another on insulation activities and other activities targeting the reduction of lifetime heating costs in low-income and vulnerable 	In total the EEIS has delivered over 800,000 GJ of lifetime energy savings in priority households, or 22% of total scheme residential lifetime energy savings. The trend in recent years is to deliver heating and cooling activities in priority households. Nearly 400 priority households received these high impact activities since 2016 (noting this number is higher than the unique priority households for reasons explained in the empirical analysis), meaning that they should have significant bill savings. For example, replacing an inefficient ducted gas heater could save households over	<ul style="list-style-type: none"> Removal of PHT would likely result in activities moving away from the hardest to access customers, likely to be, in majority, priority households High risk of “free ridership” where participants wait for a subsidy to implement cost-effective measures. 	The scheme has increased opportunities for priority households to participate in energy reductions (and associated cost savings). Actsmart programs have also played a role in dealing with more complex needs. There is, however, an ongoing concern that some low income households might still be excluded from the scheme, while still bearing associated cost, especially as activities become “deeper”, deliver a large amount of abatement, but require co-payments and are concentrated on fewer beneficiaries.

KEQs	Comment or sub-question	Stakeholder engagement	Comparative analysis	Empirical analysis	SWOT / CBA	Conclusion
		<p>valuable activity for low income households.</p> <ul style="list-style-type: none"> There was a high degree of interest from stakeholders to maintain the focus on priority households. Retailers were the only group that expressed concern about the focus on priority households, but they recognised that it was a policy priority. 	<p>households and efficient heating systems.</p> <ul style="list-style-type: none"> Fuel poverty certificates from the French scheme can command a higher price than conventional certificates in this market (IEA, 2017). In total, five European EEOs include specific provisions that can either be attributing a bonus factor for actions implemented in low-income households (bonus approach) or requiring obligated parties to achieve a minimum share of energy savings in low-income households (mandatory approach) (ATEE, 2017) 	<p>\$16,000 in lifetime bill savings over the life of the measure, while installing insulated gas heating ducting could save around \$10,000 in lifetime bill savings over the life of the measure (based on 2017 gas prices).</p> <p>However, as recorded during the stakeholder engagement, lighting upgrades still remain an important issue for priority households, and practically no households received these activities in 2017.</p> <p>Analysis of co-contributions paid by households showed that priority households were offered a larger rebate (\$3,000 vs \$2,000) than non-priority households. This should help to address the barrier of lack of capital available to priority householders. However, this may not be enough to fully remove this barrier.</p>		
<p>Is EEIS also efficiently tackling additional policy objectives? These include:</p>	<p>a) Peak demand management</p>	<p>N/A</p>	<p>Generally speaking, energy efficiency has the potential to support peak demand management, but usually only as a side-benefit, and this has been highlighted in the comparative analysis.</p>	<p>N/A</p>	<p>Activities such as draught-proofing and door seals, as well as insulation have the potential to reduce peak demand. Similarly, more efficient appliances typically have a positive impact on peak demand. However, this is likely to have had a very minor impact so far.</p>	<p>Minimal impact so far. Opportunity to specify measures (such as remotely controllable appliances) enabling future peak demand management measures to be activated.</p>

KEQs	Comment or sub-question	Stakeholder engagement	Comparative analysis	Empirical analysis	SWOT / CBA	Conclusion
	b) Climate change adaption	N/A	N/A	N/A	Activities such as draught proofing and door seals, as well as insulation have a positive climate change adaptation impact, albeit probably a minor one at this stage. The replacement of heaters with efficient reverse air-conditioners have a definite climate change adaptation benefit for beneficiaries. The qui-pro-quo is however a rebound effect on energy use.	Minimal impact so far.
	c) Reducing energy demand	The scheme's impact on awareness and education is debated: some stakeholders think it brought energy efficiency to the attention of beneficiaries, some other think that it works precisely because it does not require any behavioural change.	N/A	The impact of the EEIS on energy demand at the Territory level cannot be identified amongst confounding factors.		Impact on overall demand cannot be identified. At an individual level, impact on energy awareness is uncertain. See also question 1 on energy efficiency.
	d) Delivering health benefits	N/A	Better insulated and performing buildings have definite health benefits.	N/A	<u>Strength</u> : tackling energy poverty is likely to bring health benefits. <u>Weakness</u> : the absence of comprehensive assessment of badly performing dwellings make it difficult to demonstrate such benefits.	No conclusive evidence so far.
	e) Targeted market transformations	As the scheme sets high standards for eligible activities and activity providers undergo training, this could raise the standards across the industry. Specification for appliances can "crowd out" badly performing appliances.	N/A	N/A	N/A	In theory, equipment and professional standards can be raised through training and specifications from the scheme. In practice: <ul style="list-style-type: none"> only a small portion of the professionals operating in the energy efficiency markets are involved in the scheme while EEO schemes are effective in swapping out existing, operational and inefficient technologies, MEPS are a much stronger instrument to encourage market transformation.

KEQs	Comment or sub-question	Stakeholder engagement	Comparative analysis	Empirical analysis	SWOT / CBA	Conclusion
	f) Addressing split incentive problems by supporting energy efficiency in rental properties	Some consumers (including low income households) face higher electricity costs by contributing to the costs of the scheme without obtaining any direct benefits. This includes those who face barriers to accessing the scheme such as low-income households and people in rental properties.	N/A	As described previously, split incentives exists for rental properties activities 2.1 (2.2) and 2.4 (2.6). However, for all other activities the split between owner occupied and rentals (based on units installed) was between 7 and 22%, with sealing activities, SPCs and fridge removal the most popular. In addition, 100% of households that received activity 2.3 in 2017 were rented priority public houses.	Strength: the majority of early activities did not require co-contribution, nor landlord approval to be implemented. Hence, they were open to renters. Weakness: more recent activities (heating upgrades) require co-contribution and approval of landlords, which is an identified barrier. This barrier has been overcome by working with ACT Housing as the landlord, although this does not solve the barrier facing private renters.	The EEIS does not specifically target split incentives, but split incentives only apply for activities where co-contribution from the landlord would be required. Complementary measures to raise the standard of rental accommodation are recommended.
	g) Delivering savings to tens of thousands of premises,	N/A	N/A	For the first few years of the scheme (2013-2015), only households received upgrades. The number of unique households who have received upgrades since scheme inception as just over 70,000. This has resulted in lifetime bill savings of \$180M for the residential section. In 2017, the number of households receiving upgrades dropped dramatically as mass activities (e.g. lighting) were discontinued and deeper retrofits were delivered (to about 1,000 households), at the same time as commercial lighting activities started being implemented. Total lifetime bill savings for businesses is just under \$60M.	N/A	The program has delivered savings to a majority of households in the ACT. The question for the future is how this can be maintained, as activities evolve to deeper activities that cannot be spread to widely as they are most costly and typically require co-contributions.
	h) Other multiple benefits of energy efficiency	No other energy efficiency benefits than those noted above were identified. However, it was mentioned that energy savings can be an easy, initial conversation to have with vulnerable households, so that broader issues (e.g. comfort and health) can be assessed. This may however be more related to	The co-benefits of improved energy efficiency of low income households are widely recognised and several studies from around the world have found that health and well-being benefits outweigh the energy benefits by as much as 3:1. Whether this applies in the ACT	N/A	N/A	The program can be a valuable access / entry point to vulnerable households.

KEQs	Comment or sub-question	Stakeholder engagement	Comparative analysis	Empirical analysis	SWOT / CBA	Conclusion
		Actsmart programs than the generic EEIS approach.	would need to be further explored, as it mostly depends on what kind of upgrades have been implemented in the households and whether the beneficiaries' health were vulnerable.			
Has the semi-market measure of the PHT been an efficient way to deliver savings to low income households?		Some consumers (including low income households) face higher electricity costs by contributing to the costs of the scheme without obtaining any direct benefits. This includes those who face barriers to accessing the scheme such as low-income households and people in private rental properties.	<ul style="list-style-type: none"> In Australia, only the EEIS and the SA REES use priority household targets. In the UK EEO scheme, a sub-target focusses on the delivery of insulation measures in rural areas, another on insulation activities and other activities targeting the reduction of lifetime heating costs in low-income and vulnerable households and efficient heating systems. Fuel poverty certificates are used in the French scheme (IEA, 2017). In total, five European EEOs include specific provisions that can either be attributing a bonus factor for actions implemented in low-income households (bonus approach) or requiring obligated parties to achieve a minimum share of energy savings in low-income households (mandatory approach) (ATEE, 2017). There remains a significant debate in the UK and European literature as to whether EEOs are the best mechanism to reduce the energy cost burden on low-income households. 	See previous responses discussing the energy and bill savings for priority households.	<p>Strengths: The PHT is an effective way to ensure that a proportion of the activities and hence benefits flows on to low-income households.</p> <p>Weaknesses: Activities delivered under the PHT are not necessarily targeting the highest needs and do not necessarily significantly reduce energy expenses.</p>	<p>Without the PHT, it is very likely that very few activities would have been delivered in low-income households. Some sort of safeguard or compensation is necessary, but some schemes have implemented different mechanisms, such as:</p> <ul style="list-style-type: none"> grants to low income households to compensate for pass-through costs (so that everyone receives this compensation, as opposed to only participants benefitting) a separate program targeting low income households with specific interventions.

KEQs	Comment or sub-question	Stakeholder engagement	Comparative analysis	Empirical analysis	SWOT / CBA	Conclusion
	Has the PHT formulation as a proportion of a RESO resulted in a trade-off between EEIS delivery to households and businesses?	N/A	<ul style="list-style-type: none"> Focus on lowest cost activities require a minimum of barriers to be erected. 	The shift in 2017 from activities exclusively targeting the residential part of the market to a high proportion of commercial lighting activities tends to indicate that trade-offs occur year on year. The PHT is guaranteeing that some of the year's activities are directed to households (priority households).	<p><u>Strengths:</u> See above</p> <p><u>Weaknesses:</u></p> <ul style="list-style-type: none"> Quantitative delivery requirements for low-income households, as used by the ACT, can increase total scheme costs, if targeted priority households lead to higher individual transaction cost per activity. The delivery of commercial lighting activities has meant that fewer households benefitted from the scheme in 2017. A higher proportion of residential savings were needed in priority households <p><u>Opportunities:</u> Maintaining sub-targets helps to prevent perverse outcomes and free riding.</p>	Trade-offs are made by the Tier 1 retailer based on the lowest cost of delivery of activities. The PHT is guaranteeing that some of the year's activities are directed to households (priority households). It is otherwise possible that all 2017 abatements could have been achieved through commercial lighting activities.
Have trade-offs between objectives affected their achievement?	Has the 100% Renewable Energy Target combined with the EEIS carbon metric reduced its delivery of energy efficiency?	N/A	The combination of a 100% RET and EEO carbon metric has not been identified in any other scheme.	While the 100% RET has impacted the abatement value of activities undertaken, it has not as yet greatly influenced the selection of eligible activities under the scheme and hence has not hampered the realisation of energy efficiency outcomes. The new focus on delivering space heating and cooling activities is an Australian first and is due to the cost effectiveness of these activities in a jurisdiction combining a carbon metric, low carbon grid intensity and cold climate.	N/A	While the 100% RET has had a relatively minor impact on energy savings achievement so far, as the grid emission factor decreases to zero, only activities leading to gas savings will be considered as saving GHG emissions under a carbon metric. This will reduce significantly the field of available activities and will hamper the EEIS's ability to support the 100% RET. Moreover, electricity users would have to fund the transition out of gas without getting any benefit out of it. It is recommended to switch to an energy metric for better alignment.

KEQs	Comment or sub-question	Stakeholder engagement	Comparative analysis	Empirical analysis	SWOT / CBA	Conclusion
Is the EEIS working well as a key policy option for tackling market failure in energy efficiency?	What has been the net impact of EEIS on the ACT economy and households?	<p><u>Direct consultation</u></p> <p>Overall, stakeholders expressed support for the scheme and suggested that it was tackling barriers to the uptake of energy efficiency.</p> <p><u>Post implementation surveys</u></p> <p>Across all of the post implementation surveys:</p> <ul style="list-style-type: none"> • 54-70% of respondents reported a reduction in energy bills. • 50 - 60% of respondents to the Elton Consulting surveys stated they would not have carried out the activities if the EEIS was not in existence. • 70% of respondents for the 2018 business survey stated they would not have carried out the activities if the EEIS was not in existence. 	N/A	<p>The EEIS has delivered:</p> <ul style="list-style-type: none"> • lifetime bill savings of \$180M for the residential sector. • Total lifetime bill savings for businesses is just under \$60M. • The Benefit Cost ratio (lifetime bills savings / cost of the scheme to date) calculated from 2013 to 2017 was close to 4. • In terms of cumulative energy savings, the EEIS has been delivering an increasing trend in energy savings from 0.4% of total ACT stationary energy use in 2013 to 2.9% in 2017. 		While the overall impact is positive, there are concerns that this is achieved by passing through the costs of program administration to end energy users, some of whom can ill-afford it (acknowledging that financial support programs exist).
	b) Where has EEIS performed best?	<p><u>Direct consultation</u></p> <ul style="list-style-type: none"> • Stakeholders recognised that the EEIS can leverage the extensive network of the retailer to roll out energy efficient technology at scale, that is, to a large number of households. • EEIS noted as being a good collaboration between the various actors. <p><u>Post implementation surveys</u></p> <ul style="list-style-type: none"> • In general, the majority of respondents (households and businesses) found that energy savings activities and products were working well and as expected. 	<p>Around the world, EEOs are widely used.</p> <ul style="list-style-type: none"> • Schemes exist in support of “first response” policies, including carbon trading. • Most EEO schemes’ primary focus on bridging the energy efficiency gap and delivering energy savings. • Coverage is sometimes broader than the EEIS: in some jurisdictions, a large proportion of the savings came from the industrial / commercial sectors. • Transport fuels are sometimes included, as well as district heating (not relevant for the ACT) 	<p>Key aspects of performance have been noted above, including:</p> <ul style="list-style-type: none"> • The delivery across a vast proportion of ACT households • Tier 1 retailer has met its targets, including the PHT • The PHT guaranteed that a fair proportion of the activities benefited vulnerable households. 	<p>In principle strengths of the scheme are linked to the EEO instrument itself and include:</p> <ul style="list-style-type: none"> • The EEIS is financially self-sustaining • EEOs effectively catch “laggards” whatever the market failure • Deemed emissions are a simple way of triggering action • The most cost-effective energy savings are selected and implemented efficiently. <p>In the ACT, the following strengths arise from the specific local conditions:</p> <ul style="list-style-type: none"> • The EEIS is a support mechanism to the low carbon transition in the absence of a carbon price • Tier 1 retailer has a vested interest in delivering quality activities 	The overarching comment is that the EEIS was able to achieve scale on simple-to-implement activities delivering benefit to a large number of participants.

KEQs	Comment or sub-question	Stakeholder engagement	Comparative analysis	Empirical analysis	SWOT / CBA	Conclusion
					<ul style="list-style-type: none"> It leverages the Tier 1 relationship with their clients to achieve scale. 	
	<p>c) Where has it not worked well?</p>	<p><u>Direct consultation</u></p> <ul style="list-style-type: none"> Stakeholders highlighted that a strength of the program is that a large number of households receive a benefit from the scheme. However, there are some households that are funding the scheme through higher electricity bills but are not receiving any benefits. This includes a proportion of low income households. <p><u>Post implementation surveys</u></p> <p>Exceptions to the general satisfaction include:</p> <ul style="list-style-type: none"> Between 2013 and 2015, around 30% of SPCs were removed in the first year of implementation, on average. However, it is worth noting that the EEIS has reduced the abatement available for SPCs to reflect their high rate of removal, and the Tier 1 retailer has responded by ceasing SPC installations from 2016. Around 9% of door seals were removed between 2014 and 2016 (noting that these results were not recorded for the 2013 compliance period). Across the surveys between 17 and 24% of participants have experienced technical issues with their lighting upgrades. 	<ul style="list-style-type: none"> Long-standing schemes in the UK and Denmark have faced challenges because of concerns over increasing scheme costs, meaning schemes needed to be reviewed and redesigned. 	<p>Main aspects of the scheme that did not work well are:</p> <ul style="list-style-type: none"> The SPC was the least successful activity in terms of customer satisfaction (relying on some behavioural change that people were not necessarily prepared to accept). Approximately 33% were removed post-installation. Tier 2 retailer participation did not eventuate or was not a success. Split incentives: This barrier to implementation is seen for rental properties for activities 2.1 (2.2) and 2.4 (2.6). Less than 4% of the total households that received these activities were rolled out in low-income rental properties, which may need it most. 	<p>In principle weaknesses of the scheme are linked to the EEO instrument itself and include:</p> <ul style="list-style-type: none"> Retailers have a commercial interest in selling electricity All electricity users pay for the cost of the scheme, even those who can afford it the least (regressive impact). <p>In the ACT, the following weaknesses arise from the specific local conditions:</p> <ul style="list-style-type: none"> There is only one Tier 1 retailer, limiting competition under the scheme As a consequence, pass-through costs determined based on Tier 1 costs are not accessible to the scheme administrator Activities are not tailored by category of participants There is no absolute safeguard guaranteeing that vulnerable households are not impacted by energy price rises. 	<p>The limit of the scheme is in its regressive impacts on the one hand and the transition from activities that deliver small benefits to a large number of participants to activities that deliver large benefits to a small number of participants (and therefore could be seen as less equitable).</p>

KEQs	Comment or sub-question	Stakeholder engagement	Comparative analysis	Empirical analysis	SWOT / CBA	Conclusion
	d) How well is the EEIS non-certificate, market-based approach working?	<p><u>Direct consultation</u></p> <ul style="list-style-type: none"> An advantage of the current scheme is having the Tier 1 retailer supportive and highly active in the scheme. This has contributed to the success of the scheme because the Tier 1 retailer has a large customer base that provides extensive customer reach. The tier 1 retailer also has an interest in minimising risks associated with delivery of the program. This may have contributed to the high standard of program delivery. Conversely, Tier 2 participation has been very limited. A certificate scheme could potentially improve the participation of Tier 2 retailers and encourage participation by a larger number of service providers. Stakeholders highlighted that the small size of the ACT market means that a certificate scheme may be difficult to implement. 	<p>Certificate and non-certificate schemes exist throughout the world.</p> <p>California, Massachusetts: schemes move to ex-post measurements scheme (controlled for exogenous factors)</p> <p>A key drawback of certificate schemes is the volatility of the certificate prices, creating uncertainty for both retailers and certificate providers (e.g. Victoria).</p>	<p><u>Advantages of the non-certificate approach:</u></p> <ul style="list-style-type: none"> Tier 1 retailer are achieving their targets consistently, thanks to their scale and customer relationships Low administration cost <p><u>Disadvantages:</u></p> <ul style="list-style-type: none"> A proportion of scheme costs are borne by Tier 2 retailers through the payment of ESCs, meaning they do not deliver activities directly. Risk of ex-post non-technical failure / shortfall from activities is borne by the scheme (e.g. SPCs), not the retailer. 	<p><u>Strengths:</u></p> <ul style="list-style-type: none"> Reach Cost to government (nil), hypothecated budget for energy efficiency Simplicity <p><u>Weaknesses:</u></p> <ul style="list-style-type: none"> Barriers to involvement of Tier 2 retailers and certificate providers. Narrow number of activities (undertaken discretely), controlled by Tier 1 retailer Activities picked by retailer rather than based on end-user needs. Limited transparency of pass-through costs (i.e. certificate schemes offer better transparency). 	<p>In the context of the ACT, the non-certificate scheme works well because there is good collaboration with the Tier 1 retailer. Price volatility for certificates in a market such as the ACT would likely be high due to the narrowness of the market. The barriers to Tier 2 participations are however a concern and unlikely to be resolved easily, as harmonisation of the EEIS with the NSW OEH scheme would not guarantee a large enough market to guarantee it would be attractive for NSW accredited providers to offer activities in the ACT. With the Tier 2 retailers' market share steadily retreating, incentives for certificate providers keep diminishing.</p>
What has been the effect of excluding National Greenhouse and Energy Reporters (NGER) and other larger enterprises from EEIS?	Consider the impact on pass-through costs	<p><u>Direct consultation</u></p> <ul style="list-style-type: none"> Retailers expressed a preference to include NGER and other larger enterprises. They argued that this would reduce the overall cost of scheme delivery. Other stakeholders either did not express an opinion or were in favour of excluding large companies on the theoretical basis that they do not need assistance to implement energy efficiency measures. 	<p>In Australia, the VIC VEU and NSW ESS allow large energy users, while EEIS and SA REES do not.</p> <p>Across the world, inclusion varies, however the majority of European schemes include the industrial sector – see the literature review / comparative analysis section of this report for more information.</p> <p>About 75 per cent of emissions in the ACT are from utilities, and/or 'other' reporters including the Australian and ACT governments and two large universities. This suggests that a key impact of excluding NGERs reporters is to avoid the transfer of EEIS savings to a small number of very large public sector large agencies</p>	<p>NGERs reporters in the ACT are required to pay for the EEIS through their energy bills, however are excluded from the scheme. The combined energy consumption of NGER reporters in the ACT in 2016/17 was 4,541,670 GJ. This is equal to 26% of the ACT's stationary energy consumption, or 67% of commercial stationary energy consumption. Therefore, it may seem a relatively large opportunity exists for delivering energy savings at NGER facilities, however the majority of NGERs reporters are commonwealth government buildings, multinational companies and universities.</p>	<p><u>Advantages of excluding NGERs reporters:</u></p> <ul style="list-style-type: none"> Households and small businesses not "crowded out" They are still contributing to the scheme as energy users. <p><u>Disadvantages:</u></p> <p>Participation of NGER reporters could possibly allow level of ambition of the target to be increased:</p> <ul style="list-style-type: none"> Low cost activities (at scale) might be possible for these reporters These participants might be able to pay high co-contributions 	<p>Overall, the impact of excluding NGER reporters from the scheme is likely to have been positive in the early years of the establishment of the scheme and given a certain target level. Their inclusion in a scheme structured would require the equity issue and the increased likelihood of free riding would need to be addressed.</p>

KEQs	Comment or sub-question	Stakeholder engagement	Comparative analysis	Empirical analysis	SWOT / CBA	Conclusion
Is the legislative framework accessible, and supporting scheme effectiveness by conveying obligations clearly and simply?		<u>Direct consultation</u> The majority of the stakeholders consulted did not have a detailed working knowledge of the scheme and there was some confusion between the scheme and other measures such as Actsmart. This was not necessarily due to the way in which the scheme was communicated, since schemes of this type are relatively complex compared to other energy efficiency measures such as grant programs.	N/A	N/A	See conclusion.	The legislative framework is accessible to all, but only obligated parties have an interest in becoming familiar with the framework. Anecdotally, it was noted that the marketing benefits from implementing activities accrue to the retailers promoting them (as part of meeting their obligations), not the ACT Government.
Equity: has the delivery of the EEIS been equitable and has it avoided creating inequalities between stakeholders?						
Are stakeholders satisfied with the EEIS framing and delivery?		<u>Direct consultation</u> <ul style="list-style-type: none"> Overall the stakeholder feedback highlighted that stakeholders are satisfied with delivery of the scheme. It has been noted that the focus on stakeholder consultation at each stage of program delivery has been particularly valued by stakeholders. Some different opinions were reported from professionals not involved in the scheme. There are also some stakeholders calling for more to be done in favour of vulnerable households. There was no real ability for stakeholders to comment on the EEIS framing as such. <u>Post implementation surveys</u> Based on the analysis of the Elton Consulting phone surveys and the 2018 business survey results, the level of satisfaction of the respondents with the delivery of activities they had benefitted from is relatively high.	N/A	N/A	N/A	Overall, there is a high level of satisfaction from the implementation of activities. The most notable caveat expressed by stakeholders was that, despite the scheme, energy poverty is progressing in the ACT.
Does the regulatory framework support a level playing field across Tier 1 and Tier 2 retailers in the context of	Are the Tier 2 ESC and shortfall penalty rates at the right level to encourage cost effective Tier 1 activity delivery, maintain low	<u>Direct consultation</u> Stakeholders consistently highlighted that the ACT is in a unique position in that it has a single retailer that accounts for a very high proportion of customers. This creates a very challenging context for the government to create a 'level playing field'	There cannot be any direct comparison in the penalty rate with other schemes, due to very different circumstances. NSW ESS places a penalty rates of \$27.48 per notional MWh, while it is \$46.72 per certificate (1 t CO ₂ -e) under the VEU.	The empirical analysis showed that the Tier1 retailer consistently achieved its target. Tier 2 retailers apart from a small (and short) exception elected to pay the ESCs. The pass-through cost is well below the penalty cost for the	See comments from consultation on level playing field. There cannot be a level playing field in the context of a market dominated by one retailer: <ul style="list-style-type: none"> If the ESC is increased, there is a risk of Tier 2 retailers exiting 	The level of the shortfall penalty and the ESC (determined by the pass-through costs) need to be considered primarily in the context of energy affordability and regressive impacts on energy users.

KEQs	Comment or sub-question	Stakeholder engagement	Comparative analysis	Empirical analysis	SWOT / CBA	Conclusion
providing eligible activities to customers?	pass-through costs and increase Tier 2 participation?	<p>Stakeholders engaged in activity delivery and retailers reported that, from their perspective:</p> <ul style="list-style-type: none"> • There is not a level playing field as the Tier 1 retailer is able to leverage its scale or cross-subsidise between activities to deliver activities at no cost to participants when Tier 2 retailers may try to enter the market. • This is reinforced by the fact that the Tier 1 retailer has a higher penalty rate, hence a greater incentive to deliver activities. • Pushing up the ESC costs to encourage participation could have the effect of pushing the smallest retailers out of the ACT market. • Fixed costs of contracting / reporting / complying with EEIS rules cannot be amortised easily by Tier 2 retailers (small number of customers) whereas the Tier 1 retailer can. <p>One stakeholder also mentioned that the Tier 1 retailer is now in the privileged position of having experience in the scheme and that this advantages them compared to Tier 2 retailers. They also know the market much better, being focussed on the ACT (they understand the requirements too) and have stronger local links.</p>	<p>Note however that long-standing schemes in the UK and Denmark have faced challenges because of concerns over increasing scheme pass-through costs, meaning schemes needed to be reviewed and redesigned.</p>	<p>Tier 1 retailer, indicating that the Tier 1 retailer had ample capacity to select cost-effective activities to meet the target.</p>	<p>the market due to the cost impost.</p> <ul style="list-style-type: none"> • If the ESC is left as is, Tier 2 retailers have no incentive to deliver activities (whereas the Tier 1 retailer can achieve scale and can choose to subsidise some activities). 	<p>Pass-through costs are not the main driver of the significant energy price increases observed in the past year, but they are a contributor (as is the RET). In this context, it is important to moderate the impact on energy users as much as possible. Should energy prices moderate in the future, there may be an opportunity to increase pass-through costs and hence the energy efficiency targets. As mentioned previously, in the context of a diminishing market share for Tier 2 retailers, it appears difficult to expect any participation in the scheme, whatever is done to try and level the playing field.</p>

5.2 Prospective evaluation questions

Primary questions	Comment or sub-question	StakeholdersC	Comparative analysis	Empirical analysis	SWOT / CBA	Conclusion
Taking account of the EEIS track record, ACT climate change targets, energy price rises and market barriers, should the EEIS continue?		<p><u>Direct consultation</u></p> <ul style="list-style-type: none"> Overall stakeholders felt that the scheme should continue. Stakeholders also highlighted that the scheme should include complementary policies – particularly for low income households that face higher energy costs but are not beneficiaries of the scheme. <p><u>Post implementation surveys</u></p> <p>Across all of the post implementation surveys:</p> <ul style="list-style-type: none"> 63% of respondents reported a reduction in energy bills. 61% of respondents stated they would not have carried out the activities if the EEIS was not in existence. At 69%, this was higher for businesses. 	<p>EEO schemes typically support other policies tackling climate change. They are sometimes seen as transitional instruments to improve the level of energy efficiency of an economy (or segment) by targeting laggards. This suggests that the EEIS should continue, in support of the ACT Climate Change Policy, as long as cost-effective energy efficiency opportunities can be found. It is extremely difficult to compare the impacts of different schemes across the world for the reasons explained in the literature review / comparative analysis section of this report. However, the IEA recently compared cost-effectiveness of different schemes, and it was determined that: “Across all programmes for which data are available, the average total cost per lifetime kilowatt-hour (kWh) saved is less than USD 0.03”. This 2018 review determined that the average expenditure by obligated parties per unit of energy saved over the life of the EEIS was 0.029 USD/kWh, meaning that it is comparatively cost-effective against other schemes.</p>	<p>New activities are developed (heating and hot water) but they do not have the same broad reach as the initial activities and therefore bring large benefits to a smaller number of households and businesses.</p>	<p>There is a need for a program supporting AP2 and keeping electricity use in the ACT from escalating (with the result of increasing cost of achieving the 100% RET). Energy prices are high (providing an incentive for energy users to take an interest in energy efficiency) but market barriers to energy efficiency remain, especially for low income households in rental accommodation.</p>	<p>The EEIS, or some similar form of EEO, should continue, with amendments (in particular in the metrics) to be best placed to support the ACT’s Climate Change Policy. See recommendations section for specific options.</p>
What can we learn from EEIS so far to inform a possible extension?		<p><u>Direct consultation</u></p> <ul style="list-style-type: none"> In general, stakeholders were more focused on energy efficiency and energy affordability than the greenhouse gas reductions associated with the scheme. 	N/A	<ul style="list-style-type: none"> The GHG metric is problematic in creating stable abatements over time. 	<p>See also “Where has EEIS performed best?” and “What did not work well?” sections, Drivers and constraints:</p> <ul style="list-style-type: none"> ACT market is small. 	<p>The main lessons informing the recommendations put forward for a possible extension of the scheme are:</p>

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		<p>This is a consideration for the focus of the extension.</p> <ul style="list-style-type: none"> Tier 2 retailers face cost barriers to delivering activities. 		<ul style="list-style-type: none"> Some activities (SPC) fail as they are based on modification of behaviour. 	<ul style="list-style-type: none"> ACT climate is specific (heating regime). Market hegemony of one retailer has implications (efficiency vs control) for scheme design. <p>Improvements / focus:</p> <ul style="list-style-type: none"> The question of energy poverty needs to be addressed (pass through costs and activities benefitting low-income households). Activities would need to be tailored by category of participants. 	<ul style="list-style-type: none"> The GHG metric has become problematic in the context of a 100% RET. A decision needs to be made on the level of focus on energy poverty / affordability – there are some trade-offs between encouraging low-cost opportunities or opportunities tailored to low income households’ needs. The ambition of the target is limited by regressive impacts (pass through costs). In addition, the EEIS extension needs to be considered in the context of other ACT policies.
<p>Is the EEIS market based approach still the best way to incentivise low cost abatement?</p>		<p>N/A</p>	<p>A market-based EEO approach (whether certificate or non-certificate based) is still widely used to incentivise energy efficiency, but GHG reductions can be a co-benefit rather than a central objective.</p> <p>To achieve deep decarbonisation it is sometimes necessary to implement measures that are not least-cost but may have a transformational impact. EEOs are typically supporting mechanisms (for example, to a trading scheme). Issues are raised about the deeming mechanisms (“free riding” and overestimation of benefit periods).</p>	<p>To date approximately 70,000, or 45% of all households in the ACT, have received energy saving activities through the EEIS. This means that energy savings in approximately 55% of households remained untapped in 2018.</p> <p>Applying this 55% to projected residential stationary energy consumption in 2020, equates to 4,600,000 GJ of remaining energy savings potential for households. There are approximately 26,000 business operating in the ACT based on recent ABS data. Of these, 57% are sole traders (which may impact the quantum of energy savings abatement that can be achieved), and 43% (>11,000) have employees. To date, the total number of businesses who have participated in the EEIS is just below 1,700, or 15% of total employing businesses. Therefore, a</p>	<p>Strengths:</p> <ul style="list-style-type: none"> Mass scale implementation, as the obligated retailers are well placed to recruit participants. No cost to the government. <p>Weaknesses:</p> <ul style="list-style-type: none"> Ultimately, activities offered to participants are chosen by the obligated retailers and are the lowest cost / lowest risk, from their perspective, with limited transparency around costs, as there is no scrutiny from the regulator. Equity needs to be maintained (as the pool of beneficiaries has been contracting). 	<p>Note that “abatement” suggests a GHG metric: in the context of the 100% RET, energy efficiency opportunities reducing electricity use will not lead to abatement. It is therefore suggested to switch the focus of the scheme to an energy metric. The alternative to market-based approaches is increasing the stringency of regulations (appliance and housing standards) or investing money in upgrade programs delivered directly by government. Both measures are likely to be met by resistance from a range of stakeholders and / or face budgetary cost barriers. Given the good level of acceptance of the current mechanism, and the fact that it can be adjusted to meet future objectives, it appears like the</p>

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				<p>large proportion of businesses remain available for energy saving activities. Considering the large quantum of energy savings delivered by commercial lighting upgrades in 2016 and 2017, there is a strong argument for continuing the EEIS scheme to achieve low cost-effective energy savings in the commercial sector.</p>		<p>best mechanism to incentivise low cost energy efficiency measures.</p>
<p>What are the key considerations for selecting metrics for a post-2020 EEIS.</p>		<p>N/A</p>	<p>While some schemes have a GHG metric, a majority have an energy metric. Recently, both the NSW ESS and the SA REES changed their focus to energy savings rather than emissions. Continued use of GHG reduction targets may drive actions towards gas efficiency activities and fuel switching and away from cost-effective electricity efficiency gains – see references below:</p> <ul style="list-style-type: none"> • ACT Government. (2017). 2016 Energy Efficiency Improvement Scheme (EEIS) Legislative Update Review. EEIS Harmonisation Strategy. Canberra: ACT Government. • ACT Government. (2015). Energy Efficiency Improvement Scheme: Setting Key Scheme Parameters to 2020. Regulatory Impact Assessment. Canberra: ACT Government. 	<p>Retailers effectively meet their targets but the overall government objective, expressed in kt of CO₂-e is not met. This is due to a multitude of reasons which make it difficult to reconcile the 2018 results with previous modelling, described in detail in the empirical analysis section of this report. However, one of the most important reasons is because of the differences in emissions factor assumptions used to underpin the modelling, as a result of the ACT's 100% RET. Therefore, for ease of conveying the scheme impacts, it is recommended to convey these using energy savings rather than emissions abatement.</p>	<p>Threats: If the metric is not changed, EEIS could stop supporting electricity efficiency. Opportunity: The EEIS could move towards supporting a whole new energy management system (including demand management, RE integration, etc.) An energy metric is better aligned with bill savings, a key consideration for vulnerable customers.</p>	<p>Key considerations:</p> <ul style="list-style-type: none"> • Need to support the 100% RET and avoid a dramatic increase in electricity consumption through energy efficiency • Need to support vulnerable households: once / if they switch to electric, there needs to be some incentive for electricity energy efficiency. An energy metric aligns better with bill savings than a GHG metric. • As the grid's emission factor converges to zero, a GHG metric will encourage exclusively activities that reduce gas use, but the pass-through cost impacts electricity customers. This raises an equity issue.
<p>What immediate changes would increase stakeholder satisfaction with EEIS?</p>		<p><u>Direct consultation</u> Stakeholders made a number of suggestions for improvement (depending on their area of interest). These are listed in section 2.2.5 of the stakeholders' report and include:</p>	<p>N/A</p>	<p>N/A</p>	<p>Note that some questions envisaged in the CBA were not raised spontaneously by stakeholders, including:</p> <ul style="list-style-type: none"> • Mandating specific activities, although this could be considered to 	<p>On balance, immediate changes to consider relate to:</p> <ul style="list-style-type: none"> • Allocate more resources to the alleviation of fuel poverty. • Add new activities, including insulation, considering in particular those that benefit

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		<ul style="list-style-type: none"> Better address the needs of priority households and ensure they benefit from the scheme (more resources, more referrals, better coordination with Actsmart, keep activities such as draught proofing). Activities to add / consider, including (not limited to): <ul style="list-style-type: none"> insulation is still the greatest need types of heating eliminate gas to gas activities Harmonisation with interstate schemes – although this may not be sufficient to provide a level playing field for Tier 2 retailers. Divergent opinions were expressed in relation to co-contributions. Administrative recommendations in relation to compliance processes. 			<p>have been implied, in particular in relation to priority households.</p> <ul style="list-style-type: none"> Setting additional sub-targets for different categories of participants. <p>However, the following ideas were mentioned but not elaborated upon:</p> <ul style="list-style-type: none"> The use of factors for priority activities. The emergence of energy management needs, such as peak demand management . 	<p>low income households (mandating or applying factors).</p> <ul style="list-style-type: none"> Remove gas to gas activities.
<p>Are there any other changes recommended for improving EEIS outcomes if EEIS is extended beyond 2020?</p>	<p>Overarching changes</p>	<p><u>Direct consultation</u> With regard to the focus of the scheme beyond 2020:</p> <ul style="list-style-type: none"> Many referred to the need to keep working on efficiency, regardless of the cost of energy and the GHG emission factor, so as to reduce supply and distribution system costs while enhancing affordability. Even after achieving the target of 100% renewable electricity, there will be an ongoing need for infrastructure to be built and so energy efficiency has a role to play in reducing the need for future infrastructure. Energy affordability will be an ongoing concern for businesses post-2020. Vulnerable households that are at risk of or are experiencing energy poverty. 	<p>Based on the literature review, scheme design can include:</p> <ul style="list-style-type: none"> Activities that credit based on metered data rather than deemed. 	<p>N/A</p>	<p>See SWOT and CBA section.</p>	<p>See recommendations on how to approach the future scheme.</p>
	<p>Could high priority activities be mandated to target specific objectives under the Scheme such as emissions abatement?</p>		<p>Based on the literature review, scheme design can include:</p> <ul style="list-style-type: none"> Activities that credit based on metered data rather than deemed. Multipliers applied to activities delivered to priority households. Completely separate activity set to be delivered to priority households (better targeting their needs), accepting that 	<p>N/A</p>	<p><u>Strength:</u> Better control over the activities undertaken (in particular for low income households). <u>Weakness:</u> There is likely be a tension between government’s objectives and the retailers’ willingness to accept high priority activities that may only be resolved in a reduction of the target.</p>	<p>While giving back some control to government on the choice of activities, mandating of activities does not fit with the principle of a market-based mechanism. Should government wish to go down that path, it might be more appropriate to simply impose a levy on electricity sales (the ESC) and manage high priority activities through an auction system (see SWOT and CBA section).</p>

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	<p>Could additional factors be applied to high priority activities that support specific objectives such as energy efficiency, peak demand management, reducing climate change impacts on low income households?</p>	<ul style="list-style-type: none"> • A gas transition plan will need to be part of the policy package • People talked about the need to integrate with other elements of the policy package: <ul style="list-style-type: none"> ○ Building standards ○ Transport and waste. 	<p>there will be a higher cost in targeting them / delivering activities.</p> <ul style="list-style-type: none"> • Peak demand or more broadly any aspect of energy management, provided metric is switched to energy. 	<p>N/A</p>	<p><u>Strength:</u> Same as above: better control over the activities undertaken (in particular for low income households).</p> <p><u>Weakness:</u> Increased complexity in the activity specification and definition of factors.</p>	<p>The use of factors applied to current activities is likely to be just a safeguard to avoid perverse outcomes in the future. This should be encouraged, but is unlikely at this stage to have a major impact on the scheme's effectiveness or cost-efficiency.</p>
	<p>Is there a risk that EEIS-subsidised in-home displays, electric space heating and cooling activities to increase on peak electricity demand? If so, how is that risk managed?</p>	<p><u>Direct consultation</u> The rebound effect from reverse air-conditioning was mentioned by some stakeholders, noting that 1/ education was necessary to ensure the success of these upgrades (and avoid bills rebounding) and 2/ comfort from increased use of heating / cooling would be valuable co-benefits if there was rebound.</p>	<p>There is a risk of rebound that is well documented in the literature.</p>	<p>Space heating and cooling have been delivered experimentally but, to our knowledge, there is no monitoring study on the overall impact on energy consumption. Rebound impacts are however documented.</p>	<p>The impact on peak demand is more difficult to assess than the rebound impact, as it depends on time of use. However, as 1. the ACT transitions to electricity as the major source of stationary energy that can be made zero carbon, and 2. reverse cycle air-conditioners replace traditional gas heaters, there is logically a risk of increasing peak electricity demand, in particular during heat waves. This is however not necessarily attributable to the EEIS but to the overall energy transition.</p>	<p>As the ACT's stationary energy is increasingly sourced from renewable electricity, there is an increased risk of high peaks in demand. However, activities encouraged by the EEIS are unlikely to be the primary source of increase in peak demand. The transformational RET and other sectors such as transport are likely to contribute much more to this trend. This should be managed as part of the general modernisation of the electricity distribution system. Integration of solar PV, battery storage and demand management capacity in the system can mitigate this risk. The role of the EEIS will be to ensure that activities undertaken support and do not hamper the ACT Government's energy management plans.</p>
	<p>What is the likely impact of integrated methods with the</p>		<p>An Issue observed in other (certificate based) schemes is a high volatility in certificate prices.</p>	<p>The fixed costs that could potentially be reduced through harmonisation / integration are:</p>	<p>There is no evidence that NSW certificate providers would move into the ACT market,</p>	<p>In our opinion, harmonisation with the NSW ESS is unlikely to be attractive enough for</p>

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	NSW Energy Savings Scheme?	<p><u>Direct consultation</u> Harmonisation is a topic that was primarily brought up by Tier 2 retailers / activity providers.</p>	<p>Previous reports / analyses on harmonisation:</p> <ul style="list-style-type: none"> - ACT Government. (2016). 2016 Energy Efficiency Improvement Scheme (EIS) Legislative Update Review. EIS Harmonisation Strategy. Canberra: ACT Government. 	<ul style="list-style-type: none"> • Costs to obligated retailers: ~\$57M to date. For example, if all schemes were merged, it would mean that obligated retailers would not be required to have separate compliance teams for each scheme, reducing compliance costs. 	<p>creating cost effective certificates for Tier 2 retailers to buy. Still a small (and specific) market for abatement providers:</p> <ul style="list-style-type: none"> • There would be difficulties (and costs) associated with recruitment when not endorsed by retailers. • Economies of scale for abatement providers would be difficult to achieve, especially if Tier 1 retailer does not participate (full certificate scheme scenario) and Tier 2 retailers' market share keeps shrinking. 	<p>certificate providers to move into the ACT market simply to provide certificates for Tier 2 retailers.</p>
	What are the benefits and priorities for harmonising across schemes to streamline the national approach to energy efficiency schemes?	<p>It is called for by these parties, however, there could be a different understanding of what "harmonisation" means and could refer to anything from a full merger of schemes, making certificates created in another state eligible in the ACT or simply an harmonisation of eligible activities. It is unclear whether opening the ACT to activity providers accredited in NSW would be attractive to these providers, given the relatively small size of the ACT Tier 2 market and its specificities (cool winter climate). Other aspects of harmonisation were thought valuable, including:</p> <ul style="list-style-type: none"> • training processes • certificate process • warranty levels for products • BCA changes. 		<ul style="list-style-type: none"> • Administrative costs: \$2M to date. It is important to note that currently ESCs are used to fund these costs, and hence are cost neutral to government. However, if for example the administration of all schemes was merged, a full EEIS administrative team would not be required, reducing these costs and freeing ESCs up for other purposes. • Societal costs: ~\$61M to date (includes co-contributions from households and businesses). As described previously, harmonisation/integration could result in reduced compliance costs to obligated retailers. As these costs are passed through to energy customers in the ACT, the societal costs should reduce in line with these. 	<p>Abatement providers would probably expect a full integration (i.e. retailers can purchase credits from anywhere). However, a full integration would lead to a loss of control for the ESPDD (quality) and a necessary transformation into a certificate scheme. Benefits of harmonisation can still be realised as per recommendations of stakeholders.</p>	<p>National harmonisation across certificate processes, training, etc. would deliver some benefits but would lead to some loss of control (potentially over the quality of the activities implemented). A full integration could be a way of bringing a level playing field across all Tiers of retailers.</p>

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Would EEIS benefits be maintained if additional measures were applied to support multiple objectives? Examples could include:	<p>a) additional abatement available for priority households</p> <p>b) additional factors applied to activities that support peak demand management or energy productivity,</p> <p>c) an alternative formulation of the priority household target, a target for non-profit enterprises, a business sub-scheme,</p> <p>d) mandating high priority activities that are complementary to a market-based approach</p> <p>e) alternatively focusing on a single objective, rather than multiple objectives.</p>	<p>Stakeholders minimally contributed to this question, however:</p> <ul style="list-style-type: none"> Some stakeholders mentioned and supported the use of multipliers (or factors) to favour of activities delivered to priority households. Some called for specific activities to be defined for priority households, to better respond to their needs, deliver co-benefits (e.g. health) and address energy poverty. Some stakeholders were not opposed to the mandating of priority activities. 	<p>Some other schemes use multipliers. Breaking down the scheme would require looking into different examples where that may have been applied.</p>	N/A	<p>See section on CBA where a detailed analysis is carried out.</p> <p>a) or b) multipliers: this obviously reduces the volume of savings / abatement by directing it to the highest need (but likely to be more difficult activities).</p> <p>b) energy productivity and demand management: if turning the scheme into an energy management scheme, this can make sense.</p> <p>c) sub-scheme for various participant categories: the major downfall of partitioning the market further is efficiency and cost-effectiveness of managing compartments.</p> <p>d) mandating high priority activities: mandating does not seem to be in line with a market-based approach and is likely to be resisted by retailers. However, it would address some concerns around priority households.</p>	<p>The use of factors or additional abatement for priority households (a) or mandating priority activities (d) is likely to be just a safeguard to avoid perverse outcomes in the future. This should be encouraged but is unlikely to have a major impact on the scheme’s effectiveness or cost-efficiency.</p> <p>In the future, the management of peak demand (b) is likely to be necessary, but the EEIS should align on a coordinated policy rather than drive this strategy. Sub-schemes (c) are not recommended in a small market like the ACT.</p> <p>Focusing on a single objective (e) is highly recommended, either:</p> <ul style="list-style-type: none"> energy savings, or energy affordability. <p>If focusing on GHGs, the EEIS would become a scheme supporting the transition away from gas.</p> <p>A change to the PHT formulation so that it applies to residential abatement only is not recommended, as this would provide a disincentive for abatement to be delivered in households, which would not be consistent with supporting low income households.</p>
	What other adjustments could be made so that EEIS best supports social equity	With regard to the focus of the scheme beyond 2020, it was highlighted that energy affordability will be an ongoing concern for businesses post-2020. Stakeholders called for:	N/A	N/A	Introducing a crediting system linked to the performance of the dwelling (on a rating scale) could encourage more holistic approaches.	An abatement methodology based on a “household energy scorecard” could be developed or adopted from other schemes, to encourage more holistic

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	objectives such as delivering upgrades to priority, low income households, rental accommodation and other households experiencing hardship?	<ul style="list-style-type: none"> • More tailored activities for low income households • A more holistic approach to upgrades that will make a difference to priority households. 			<p>In addition, some fundamental changes to the scheme have been explored in the CBA: Exclude PHT from the scheme and resource deep retrofits on a completely different budget <i>OR</i> Turn the scheme into a PHT and priority small business scheme.</p>	<p>approaches to energy upgrades, in particular in low-income households. Depending on the priority policy orientations, post 2020, the ACT Government could choose to either:</p> <ul style="list-style-type: none"> • turn the EEIS into a scheme that supports exclusively priority households, while still using the Retailer Energy Saving Obligation to collect funds (and / or undertake activities), or • focus on low cost savings and dealing with the specific needs of low income households in a separate scheme. • The question of rental accommodation is likely to remain an issue unless regulation is introduced with minimal performance standards.
Would a certificate-based scheme achieve the policy outcomes more effectively and efficiently compared with the current, non-certificate, activities approach?		Some stakeholders remarked that the ACT market for upgrades does not have the volume to operate an effective market-based scheme (by which the stakeholders probably meant certificate-based).	Around the world there is a greater prevalence of non-certificate EEOs than non-certificate schemes – see the literature review / comparative analysis section of this report for more information.	N/A	<p>There is no evidence that a hybrid scheme (part certificate part non-certificate) or even a full scheme would attract innovation and function well in a small market such as the ACT. A full certificate-based scheme would present the following strengths:</p> <ul style="list-style-type: none"> • Encourage lowest cost (through competition) and innovation. • Make it easy for retailers but does not allow them to 	If a full market-based certificate-driven scheme presents some dangers, it could be worthwhile for the ACT to consider trialling an auction-based approach to delivering targeted energy efficiency improvements. The same levy would be put on electricity sold but then these funds could be used to commission activities on behalf of all retailers through a system of reverse auctions in which certificate providers would participate. This would level the playing field between retailers,

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					leverage their client relationship. And weaknesses: <ul style="list-style-type: none"> • Experience a high price fluctuation. • Quality / safety risk less easy to control. 	increase innovation and competition (used in the US by PJM, ISO-NE, Portugal, Germany, Switzerland). The question is whether this can be done cost-effectively, and whether quality of activity delivery may be impacted.
Should the exclusion of NGER and other larger enterprises be retained or amended?		Apart from retailers who would look favourably into an expansion of the scheme to larger energy users, other stakeholders mostly preferred to keep this exclusion on the basis that they do not need financial support and cross-subsidisation to undertake such activities.	A broad base is good for lowest cost abatements. Including NGERs reporters would increase the risk of free-riders and create issues around fairness.	As explained for the response to the retrospective KEQs, a relatively large opportunity exists for delivering energy savings at NGERs premises.	See the section on SWOT analysis. It is mostly a decision of pursuing the lowest cost activities vs avoiding free-riders / regression impact for all users. Cross-subsidising biggest users is not palatable from a social equity point of view.	This option is not recommended without implementing any safeguard as: <ul style="list-style-type: none"> • it increases the risk of “free-ridership” • it increases the risk of regressive impacts and aggravating energy poverty issue.
If EEIS were extended beyond 2020, and what metric would be most appropriate and why?		Stakeholders highlighted even after achieving the target of 100% renewable electricity there will be an ongoing need for a scheme to support energy efficiency and reduce the cost of achieving the Renewable Energy Target and to keep energy affordable for households.	While some schemes have a GHG metric, a majority have an energy metric. Recently, both the NSW ESS and the SA REES changed their focus to energy savings rather than emissions. “It is important to note that cost-effective energy savings are societally important even for power systems that may be increasingly supplied by renewable generation. Aside from the cost considerations, deep decarbonisation is only possible in most regions of the world when renewable energy is used efficiently; wasting renewable power on inefficient end uses would make the energy transition slower, more expensive and technically more challenging.” (IEA 2017).	N/A	See corresponding section in the SWOT analysis section. <u>Threat:</u> As the grid’s emission factor converges to zero, a GHG metric will encourage exclusively activities that reduce gas use, but the pass-through cost impacts electricity customers. This raises an equity issue. <u>Opportunities:</u> <ul style="list-style-type: none"> • Need to support the 100% RET and avoid a dramatic increase in electricity consumption through energy efficiency. • Need to support vulnerable households: once / if they switch to electric, there needs to be some incentive for electricity energy efficiency. An energy metric 	On balance, an energy metric would better serve the ACT focus on energy management in the context of the RET, prepare the path to a more complex focus on energy management and avoid electricity users paying for efficiencies benefitting exclusively gas users.

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					aligns better with bill savings than a GHG metric.	