Review of the Energy Efficiency Improvement Scheme

Part 5 – SWOT analysis

Prepared for:

ACT Environment Planning Sustainable Development Directorate

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1 KEY MESSAGES

- The strengths and weaknesses of energy efficiency obligation (EEO) schemes internationally can be compared using three broad areas, (1) Policy objectives and the role of EEOs, (2) Coverage and effectiveness, and (3) Costs and distributional impacts.
- Key strengths and weaknesses identified for the EEIS are summarised below:
    - Policy objectives and the role of EEOs
        - Strength: The clear target and long-term operation of the scheme provide consistency and business certainty, supporting multiple government objectives and implementation of multiple ACT Government strategies, in particular GHG emission reductions
        - Weakness: Multiple objectives may lead to inefficiently targeted action because objectives have not been specifically targeted at barriers/market failures.
    - Coverage and effectiveness
        - Strength: Mass roll out to both residential and commercial sectors has ensured that a high proportion of the total population has received savings through the EEIS.
        - Weakness: In recent years, fewer participants have benefitted from larger savings, whereas in early years of the schemes, benefits were small, but impacted a larger number of participants.
    - Costs and distributional impacts
        - Strength: The EEIS has operated with no cost to government due to Energy Savings Contributions being used to fund scheme administration.
        - Weakness: There are still low income households incurring costs (pass through costs) while not benefitting, creating regressive impacts. All barriers (access to capital to fund co-contributions) have not been lifted.
- Actions for improving the EEIS were mainly longer term (post 2020) opportunities. These included:
    - Changing the current GHG emissions reduction metric to an energy savings metric in light of the ACT's 100% renewable electricity target by 2020.
    - The roll-out of deep retrofits tailored to individual household needs with the aim of increasing the absolute reduction in per household bills.
    - Considering a metered approach for all measurement, monitoring and verification of energy savings similar to the Californian Government.
    - Considering evolving the scheme into a certificate-based scheme using auctions to select activity providers, thus stimulating innovation and encouraging the delivery of activities more tailored to the needs of energy consumers.
- In addition, a detailed Strength Weaknesses Opportunity Threat analysis (SWOT) and a Cost-Benefit Analysis (CBA) were carried out for a range of scenarios for refocussing the objectives of the EEIS, built in collaboration with the ESPDD based on elemental scheme design variations. These scenarios were:
    - Business as usual, including a greenhouse gas metric,
    - Focus on Energy bill savings,
    - Focus on Low cost of abatement,
    - Focus on High emission reductions,
    - Focus on Balancing bill savings, emission reductions, and
    - Discontinue the EEIS.
- Overall, the merit of implementing a specific scenario depends on government priorities. However, it is important to stress that detailed economic modelling would be required to determine which scenario is likely to deliver greatest "whole of economy" benefits .
- It will also be important to select the future EEIS metric to ensure strong alignment between the EEIS and the broader Territorial strategy and to ensure that, whatever the scenario, distributional impacts are managed, including barriers to access EEIS activities faced by priority households, in particular renters.

2 INTRODUCTION

2.1 Objective

The objective of the Strength Weaknesses Opportunity Threat analysis (SWOT) is to critically assess the success factors and limitations of the scheme as it currently stands and of a range of options for modifying the design or parameters of the scheme, in the short term or longer term (post-2020). This will inform the EPSDD's future work and ongoing consultation with stakeholders in relation to the future directions of the scheme.

This section addresses a number of prospective questions in the scheme, as well as providing some elements of response to some of the retrospective evaluation questions.

2.2 Methodology

This SWOT exercise draws information from:

- The preliminary analysis of internal documents
- The comparative analysis of the EEIS with other schemes (see Part 3)
- The empirical analysis (see Part 4)
- Insights provided by stakeholders (see Part 7 – Stakeholder consultation report)
- Insights from the ESPDD personnel gathered through ongoing conversations and workshops.

The topics explored through the SWOT have been informed by the questions outlined in the RFQ and, where required, suggestions and ideas gathered from the comparative analysis and stakeholder consultation.

2.3 Limitations

The analysis presented below is based on our consultants' own analysis and the information gathered through the project and is valid at a specific point in time 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 all other government policy development work undertaken.

3 SWOT ANALYSIS OF EEO SCHEMES AND THE EEIS

To anchor the analysis of possible changes to the scheme, it was considered important to collectively assess the strengths and weaknesses of the current scheme. The two main contributions to the analysis are:

- A literature review of theoretical strengths and limitations of EEO schemes in general, drawn from the comparative analysis in Part 3. This recognises that outcomes are necessarily bounded by the design and set-up of Energy Efficiency Obligation scheme. This is documented in section 3.1 below.
- A more specific exploration of the strengths and limitations of the EEIS, going into further detail on how the scheme design performs in the specific ACT context, taking into consideration the policy environment described in Part 2 – Overview.

The critical analysis of strengths and limitations, considered all together, then lead to the identification of opportunities to consider for the improvement of the scheme, as well as some threats to be wary of.

3.1 Strengths and weaknesses of EEO schemes

This section is informed by the literature review and aims to summarise typical EEO scheme strengths and weaknesses.

3.1.1 Policy objectives and role of EEOs

Strengths	Weaknesses
EEO schemes with the primary objective of bridging the energy efficiency gap and delivering cost-effective energy savings indiscriminately address a number of market failures causing the energy efficiency gap.	Multiple objectives may lead to inefficiently targeted action because objectives have not been specifically targeted at barriers/market failures. Policy design focussed on a well-defined and limited set of objectives tied to specific market failures or barriers to energy efficiency for individual instruments may lead to better outcomes. For complex problems, multiple objective may be more effectively addressed through the use of multiple targeted instruments within a broader policy package or mix (del Rio & Howlett, 2013).
EEO schemes with a primary emission reductions objective enable jurisdictions to retain a climate change focus in the absence of more comprehensive policy signals (e.g. in the absence of a national carbon price). Such scheme support climate change targets.	Maximising carbon abatement and maximising cost savings may not always align.
Where energy markets are dominated by a single or few major retailers, an optional financial payment can enable small retailers to comply with an EEO, in the absence of a certificate scheme.	Market forces may be blunted where the obligation applies to energy markets dominated by a single or few major retailers. Limited competition in the retail market cannot be relied on to provide incentives for lowest-cost delivery of targets.

3.1.2 Coverage and effectiveness

Strengths	Weaknesses
The crucial role projected by the IEA for energy efficiency in achieving the energy sector transformation required to meet the Paris Agreement's climate targets require energy efficiency gains across all sectors of the economy.	However, increased sector coverage also increases the potential for overlap, duplication and other inefficiencies. It requires careful scheme design as part of well-mapped, integrated energy and climate policy package.

Strengths	Weaknesses
EEO schemes across the world show a diversity of end-use sectoral coverage. A small proportion of schemes have coverage that is broader than end-use. For example, Washington state's (USA) scheme covers reductions in energy consumption from energy efficiency measures applied at the level of electricity production, transmission, distribution and end-use (International Energy Agency, 2017). This multiplies the leverage potential of the scheme and allows it to include high-efficiency consumer-side co-generation for own use increasing demand management and grid flexibility co-benefits. A number of European schemes include the transport and agricultural sectors. Increasing the number of sectors covered increases the reach and overall benefits of the scheme.	
Different end-use sectors show markedly different leverage potential for energy efficiency expenditure with industrial sectors showing the greatest potential for leverage and residential households the least (with the low-income household subset showing even lower leverage potential). (International Energy Agency, 2017) (Rohde, Rosenow, Eyre, & Giraudet, 2014) Commercial and industrial sectors are also more likely to accept (and afford) substantial co-contributions.	Alternative programs (to EEOs) have also been shown to work for commercial and industrial sectors: • Commercial and industrial sectors are more amenable to information, education and comparison campaigns if they are targeted at the relevant industry and engage industry experts. Campaigns that use well-designed case studies, comparisons and public scorecard/award systems can be successful. • Large commercial and government building rating systems have been particularly successful in overcoming inertia for cost-effective improvements. CEOs and tenants do not like to site organisations in publicly assessed, low-energy efficiency buildings.
Most schemes cover more than one fuel source. The largest group cover both electricity and gas with a sizeable group of US schemes only covering electricity. A number of EU schemes cover all fuels and many EU schemes cover district heating.	Complexity increases with the number of sources covered (NSW Government, 2015)
The Australian schemes have produced a large quantum of energy savings across each jurisdiction, through the roll-out of a cost-effective combination of energy efficiency measures, mostly with deemed savings.	Deemed savings from large numbers of products generating small per unit savings (e.g. standby controllers, lighting products) are not guaranteed to be achieved, as the equipment can be disconnected over time by the user (Nadel & Cowart, 2017).
Deemed emission savings are a practical and low-cost way to identify and measure impact of eligible activities. If supported by a robust methodology and *ex post* evaluation (e.g. randomised controlled trials using metering data - (Grubb, Hourcade, & Neuhoff, 2014) (Allcott H., 2009), this methodology can capture average impacts for simple measures. Cross-jurisdictional collaboration in both policy setting and compliance activities, with deemed values adjusted as a result of empirical findings can maximise accuracy of deemed savings.	Deeming introduces some inaccuracy into final savings calculations and may create some distortions where low-cost, easy to install savings are maximised at the expense of higher-cost, deeper savings measures. (International Energy Agency, 2017) (Nadel, Cowart, Crossley, & Rosenow, 2017) • Long-lived measures are particularly likely to overstate savings as there is no incentive for proper long-term maintenance and upkeep (or appropriate replacement for failures). Some EU and US schemes discount long-lived measures to account for this. Discounting can, however, incentivise short-lived

Strengths	Weaknesses
	measures. Metered savings can solve this problem (see Opportunities). • Without robust evaluation methodologies and ex post evaluation of impacts deemed emissions savings have been shown to overstate the energy savings; multiple studies of EEO schemes since 1980 (Levinson, California energy efficiency: Lessons for the rest of the world, or not? , 2014) (Levinson, How Much Energy Do Building Energy Codes Save? Evidence from California Houses., 2016) (Lees and Bayer, 2016) (Fowlie Greenstone and Wolfram, 2015). • Deemed savings developed from engineering models are particularly susceptible as engineering models generally assume close to ideal installation, maintenance and end-use, conditions rarely found in more robust ex post evaluations of real-world use with a heterogeneous set of end-users.
Australian schemes, like others internationally, typically see fewer than 10% of available activities actually delivered to eligible premises. These un-used deemed activities combined with project-based activities in many schemes to support innovation, competition and efficiency.	Activity lists limited to specific activities do not allow for scheme to drive innovation or allow market to find all possible savings at lowest cost.
Single, standard lists of activities provide business certainty and choice to retailers testing markets to develop capacity to deliver new activities for cost effective savings.	Single, standard lists of activities can lead to second-best outcomes where needs differ substantially from "typical" customer profiles (e.g. priority households)
Priority household targets can ensure that a proportion of savings are achieved in premises that spend the highest proportion of their budgets on energy bills but are least able to pay for upgrades.	Eligible entity obligated to provide a target proportion of installations in priority, low income groups, may meet target using "lowest-cost" energy efficiency improvements rather than ones that make significant difference to PHT energy poverty (Rosenow, Platt, & Flanagan, 2013).

3.1.3 Costs / distributional impacts

Strengths	Weaknesses
When financed through obligations on energy utilities, market-based instruments are generally cost-neutral from the perspective of government budgets as costs are passed directly through to consumers. This can protect schemes from changes in public funding resulting from political cycles and allow third-party installers and energy service companies to build businesses on a more stable revenue stream (International Energy Agency, 2017) (Rosenow, Platt, & Flanagan, 2013) (Bayer, 2016).	Market-based instruments funded via an obligation on energy distributors or retailers usually pass their costs through to consumers and can have a regressive impact on low-income households as a result of energy price increases. The extent of such impact depends on each market-based instrument's broader influence on consumer costs since well-designed market-based instruments can lead to overall reduced system costs or reductions may be significantly greater than resulting cost increases.
Most schemes have an inclusive, wide scope, offering a: most households, businesses and industry the possibility to participate.	Unless specific low-income household targets are put in place, a lack of equity may develop where hard-to-treat homes, private rented sector and less accessible areas may be underrepresented

Strengths	Weaknesses
Sub-targets or incentives to carry out activities benefitting low-income households are used in a minority of schemes to manage distributional impacts. This can lead to energy bills savings and potentially co-benefits such as improved thermal comfort and health benefits in households that need them most.	Quantitative delivery requirements for low-income households, as used by the ACT, can increase total scheme costs and reduce carbon savings from individual actions. The UK experience provides some evidence of both these effects, with costs escalations and rebound effects leading to a need to revise the scheme. (Rosenow, Platt, & Flanagan, 2013). 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. A number of commentators suggest that this objective is better met with its own specifically targeted policy and funded from consolidated revenue rather than being part of a broader consumer-funded policy (Boardman, 2010) (Rosenow Platt & Flanagan, 2013) (Stockton & Campbell, 2011)

3.2 Drivers and constraints specific to the ACT EEIS

Before exploring the EEIS' specific strengths and limitations, it is worth looking into the specific characteristics of the ACT market that will influence the government's ability to leverage the typical strengths of EEO schemes and mitigate the weaknesses.

Specific constraints and drivers that need to be taken into account include:

- The ACT is a **small market,** compared to other schemes worldwide or even in Australia. In 2017, there were 158,277 households and just over 26,000 businesses in the ACT. This means that it may not be an attractive market for certificate providers.
- Not only is the market small, it is dominated by **one sole Tier 1 retailer** delivery well in excess of half of the electricity in the Territory, with an estimated market share of 91% when it comes to small businesses and households (Australian Energy Regulator, 2017). This means that the Tier 1 retailer is in a unique position to deliver activities at scale, but also that no other retailer can achieve scale. As a consequence, the only entry to the market for abatement providers is through the Tier 1 retailer.
- The ACT has a **unique climate** in Australia experiencing both heat waves in summer and cold winters. This means that the abatement values calculated for some of the activities, in particular heating / cooling related activities, are specific for the territory. This also means that the potential for energy efficiency in space heating and cooling, and building sealing activities is high.
- While the ACT has historically benefitted from low energy prices compared to the rest of Australia, **both gas and electricity prices have recently increased sharply,** as a result of a conjunction of factors, including general wholesale prices increase and the setting of an ambitious Renewable Energy Target (100% RET by 2020 for electricity).
- The energy price rises mean that **energy affordability** and energy poverty are increasingly important, specifically for vulnerable households and energy intensive small businesses.
- The ACT 100% Renewable Energy Target (RET) itself means that any activity **targeting electricity savings only** will no longer bring any abatement value post 2020, effectively transforming the EEIS into a scheme supporting gas efficiency, while obligating electricity retailers.

3.3 EEIS strengths and limitations

This section first presents the results of the SWOT exercise undertaken with the EPSDD staff. It then provides a summary of the key EEIS' strengths and weaknesses based on a comprehensive analysis of all elements detailed in Section 3. Insights from the analysis have been used to identify opportunities presented in section 4 and recommendations presented in Part 1 – Executive summary.

3.3.1 Collaborative exploration of EEIS strengths and limitations

A collaborative brainstorming exercise of the EEIS with the EPSDD delivered the following analysis. It is presented below with minimal edits to maintain the integrity of the internal stakeholders' input, and comments provided in a separate column of the table.

Strengths	Comments
Mass roll out to both residential and commercial sectors has ensured that a high proportion of the total population has received savings through the EEIS	The EEIS delivered energy saving activities on a large scale (a majority of households and small businesses have benefited to some degree) which some consider went beyond what direct government action could have achieved.
The tier 1 retailer has selected cost-effective technology [for implementation]	As the obligated retailers can choose the activities they are offering to ACT electricity customers to discharge their obligation, it is in their best interest to keep these as cost-effective as possible. *This is a generic strength of EEOs.*
EEIs has demonstrated capacity to transform the market in energy efficiency activities	Market expectations (for appliances or upgrades activities) can be pushed up as government sets the bar higher for the EEIS eligible activities to the point that low performing equipment is pushed out of the market. *This is a generic strength of EEOs.*
The combination of ACT's climate and carbon metric has enabled heating upgrade activities to be delivered from 2017-2018.	ACT's climate results in heating and cooling being a major energy user for residential and commercial sectors. This, plus the carbon metric, has enabled the ACT to be the first jurisdiction where EEO Scheme heating upgrade activities have been chosen by a retailer. ACT's climate and carbon metric also could make insulation activities viable in the EEIS. *This is a strength of the current EEIS design*
EEIS has led to improved quality of electrical installations, influencing standards and safety in the market through codes and training	This is a specific characteristic of the EEIS, with the Tier 1 retailer and the Territory's objectives converging (minimising customers' issues) due, in part, to the dominant market position of the Tier 1 retailer. *This can also be seen as an advantage of the non-certificate scheme over certificate schemes, as retailers have a vested interest in maintaining customer satisfaction.*
Activities are widget based and efficiency outcomes are achieved without requiring behaviour change	This provides better certainty on the delivery of outcomes. See corresponding comment under "limitations".
The clear target and long-term operation of the scheme provide consistency and business certainty	The ACT government has adopted a collaborative approach with stakeholders in developing activities and establishing long-term scheme metrics.
EEIs has operated with no cost to government due to Energy Savings Contributions being used to fund scheme administration.	This financial self-sufficiency is likely to make the scheme more resilient and enduring than schemes relying on budget cycles. *This is a generic strength of EEOs with pass through costs.*

Strengths	Comments
Free riding has been addressed through the exclusion of NGERS reporters.	
Creates local energy efficiency jobs.	EEIS run 86 training sessions, and trained over 500 installers until mid-2018.
EEIS helps contribute to achieving multiple government objectives and implementation of multiple ACT Government strategies.	EEIS has delivered significant energy, greenhouse gas and bill savings consistent with climate change strategies.

Weaknesses	Comments
Single or limited technologies being offered at any particular time mean there is little choice for customers	Each activity targets one type of energy saving and, as obligated retailers choose the activities they offer to the market, a limited number of discrete improvement activities are rolled out either until they are exhausted, or until a market transformation leads to deemed abatement reductions, and then the next activity is rolled out. *This is emphasised by the fact that the EEIS is a non-certificate based scheme with a unique Tier 1 retailer.* *This is a generic limitation of EEOs.*
Not tailored to participants' individual needs Retailers are bound to select activities based on their priorities and ease of roll out rather than based on participants' needs	As a consequence of the above, the activities chosen depend on the overall scale potential and do not take into account what would make most sense for each household. In some instances, activities may have little impact on the end-user's energy use or comfort. *This is emphasised by the limited innovation coming from a non-certificated based scheme.* *While this limitation is common to many EEOs, some schemes (California) only dictate the ultimate savings to be achieved, not the way to achieve them.*
May constrain the energy efficiency appliances markets by providing capacity for obligated retailers to offer rebates for activities in competition with other installers.	Reducing abatement once markets are transforming can grow the absolute market for energy efficient appliances so that competing installers are not disadvantaged in the long term. *This is a generic limitation of retailer obligation EEOs.*
Limited education outcomes as a result of the scheme (limited flow-on to other energy efficiency activities)	Education is not an EEIs objective and most activities deliver savings without the need for behaviour change. There is very little need for engagement of the participants with the topic of energy efficiency as a result.
ACT government do not get recognition for this program, retailers do	*This is a feature of EEOs and may be seen as a quid pro quo of putting an obligation on the retailers*.
This is a consumer tax type of arrangement Some consumers pay for the scheme but do not benefit (non participants)	The costs are passed through to energy customers. *This is a generic limitation of EEOs.*

The scheme administrator does not have control over pass through costs.	The Independent Competition and Regulatory Commission (ICRC) completes and annual price determination for the Tier 1 retailer 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 EEIS Minister regularly comments that the methodology should include further scrutiny of the abatement costs to ensure the scheme is being delivered at least cost to ACT electricity consumers (https://www.jobs.act.gov.au/jobs/community-services/permanent/33116, p. 30) *This is a specific limitation of the EEIS, linked with the legislated powers devolved to the regulator.*
Large activities require co-contributions and this may exclude low income households and others who are least able to overcome market barriers to energy efficiency.	The move towards activities that deliver deeper energy savings but are most costly to undertake and therefore require co-contributions from participants is likely to create additional barriers for low-income households.
National Greenhouse and Energy Reporters (NGER) and other larger enterprises are excluded from the EEIS. This restricts the pool of energy savings that could be delivered.	Most of the energy use and emissions from the ACT are from utilities providers and other sectors dominated by the Australian and ACT governments, large universities and other large research organisations. Excluding these NGERS reporters has minimised free riding whereby benefits accrue to organisations with greatest capacity to run their own upgrades.

3.3.2 Summary of strengths and weaknesses

The table below presents the summary of strengths and weaknesses of the EEIS in relation to some of the key evaluation questions and linking these strengths and weaknesses with opportunities to explore.

Evaluation question	Strengths	Weaknesses / barriers / threats	Opportunities
How well is the EEIS non-certificate, market-based approach working?	The EEIS created a support mechanism to the transition to low carbon economy in the absence of carbon price Effective way to catch "laggards" whatever the reason for failing to act on market signals is (or whatever the market failure might be)	Obligation put on retailers, who have a commercial interest in selling electricity	Introduce some level of control over the activities delivered and of competition between providers by trialling reverse-auctions over the activities
		As there is only one Tier 1 retailer, competition for the delivery of activities is limited	
		Only discriminates between laggards (lack of capital or inertia) and people facing real barriers through the Priority Household Target, hence authorise "free riders" amongst the non-priority customers.	Policy decision could further focus the scheme's focus on those with the least ability to invest
	Simple, deemed activities are the best options for mass roll-outs	May encourage discrete activities with lowest cost to retailer rather than package of activities making most sense for participants (and delivery of co-benefits)	Explore, for households and potentially for businesses, the possibility to develop flexible packages of activities, linking a credit value to a scale / scorecard
	Tier 1 retailer's market position supports high quality, low risk delivery	Tier 2 retailers' market share is too low to make it cost-effective for them to participate	Levelling the playing field would require a full conversion into a certificate-based scheme. This could be an opportunity to trial a reverse auction type of system (see below) but would also loose the benefit of the direct contact between clients and retailers A mixed scheme i.e. certificate-based for Tier 2 retailers only may not succeed, as it would not provide a large market for activity providers to participate in
	Deemed emission savings are a practical and effective way to trigger action	Deemed activities bring forward future savings, with associated uncertainty in relation to rebound effects or failure	In the long term, continuation of cross-jurisdictional collaboration is recommended. Also consider a move towards a California-like "ex-post" measurement system using smart

Evaluation question	Strengths	Weaknesses / barriers / threats	Opportunities
			meters to gain greater certainty over outcome of energy saving activities
	Independent source of funding for energy efficiency, immune to political decisions	Cross-subsidisation across energy users	Opportunity to transform the scheme into a levy scheme (i.e. all retailers would pay the ESC) and centrally organise a reverse auction system to better control activities delivered and encourage innovation
Have trade-offs between objectives affected their achievement? *Energy focus vs GHG metric.*	There is a logical link between energy savings and GHG and bill savings	Less GHG savings have been achieved than modelled due to the drop in electricity emission factor The GHG metric means that electricity saving activities progressively drop in abatement value as electricity grid decarbonises This limits the field of cost effective emission reducing activities to choose from	Change the metric to energy savings Plan orderly transition out of gas and align the scheme on decisions made
Have trade-offs between objectives affected their achievement? How well as the carbon metric aligned with bill savings? *Energy savings vs bill savings*	The four objectives (efficient use of energy, greenhouse gas emission reductions, reduce energy use and increase opportunities for priorities households) ensure that the question of equity and distributional impacts is considered A positive lifetime benefit cost ratio indicates a positive impacts on bill savings overall	There has been a trade-off between small improvements reaching scale (lighting upgrades for example) or large improvements (heating) delivered to a small number of beneficiaries, as has been observed in 2017 The delivery of commercial lighting activities has meant that fewer households benefitted from the scheme in 2017	Increase effectiveness and cost-effectiveness of the instrument by focusing on one objective. This needs to remain aligned with broader policy objectives and still incorporate safeguards to avoid perverse outcomes.
Have trade-offs between objectives affected their achievement? Has the semi-market measure of the PHT been an efficient way to deliver	The PHT ensures that some of the benefits flow on to low-income households, which are typically harder to engage and could likely be excluded without the PHT	The 20% PHT does not ensure that all vulnerable households participate in the scheme, as large savings can be delivered to a small number of households Conversely, even if they participate, bills savings can be more than offset by energy price increases	The scheme's objectives could be redefined to target energy poverty as a priority. This would mean accepting that non-priority households and businesses would not benefit or not benefit as much and lower energy savings are achieved but would integrate with social policy objectives. The scheme's cost effectiveness would need to be considered in

Evaluation question	Strengths	Weaknesses / barriers / threats	Opportunities
savings to low income households? *Priority households target*		Priority households do not necessarily receive the upgrades that are the most appropriate to meet their needs	this new context (harder to reach households, etc)..
What has been the impact of applying the EEIS retailer obligation to electricity only, rather than electricity and gas?	Simplicity, as every energy user has an electricity account Low-income households using gas for heating not impacted by pass-through cost	Equity issue: only electricity users bear the burden of the scheme	If obligation was put on gas retailers, there could be an opportunity to increase the overall target while minimising impact on each retailer
Are Energy Saving Contributions being effectively applied to meet the scheme's objectives?	Over $5.1M in ESCs have been allocated to Actsmart programs that complement the EEIS by delivering education and targeted assistance to small businesses and low-income households. These allocations meet the scheme's objectives	Previous allocations or current budget bids are in train to allocate all anticipated ESCs until the end of 2020. About $2M has been allocated to administration costs, which, arguably could be funded out of general budget allocations	Pursue work in train to allocate the remaining ESC to create maximum impact.
Cost-effectiveness and distributional impacts	No cost to government and a 4:1 projected lifetime benefit:cost ratio , even with the PHT sub-target.	Risk of regressive impacts, as all energy users paid pass-through costs for the scheme, despite not all energy users participating and receiving savings Trade off: quality and risk aversion of the activity delivery versus training and compliance costs	Streamline process, adopt a national approach to training and processes Look for ways of emphasising the co-benefits of the scheme, i.e. bringing up industry standards
	Retailer(s) select(s) most cost-effective activities (technology agnostic) considered all factors, including resistance	The range of activities offered to participants is limited and not tailored to specific households' needs, especially low-income households Barriers to innovation and participation of non Tier 1 retailers	Use factors / coefficient to better control activities delivered Develop "packages" of activities that can be flexibly delivered, potentially linked to a scorecard system, noting that the more savings that are delivered in individual premises, the fewer premises will benefit before the target is reached.

Evaluation question	Strengths	Weaknesses / barriers / threats	Opportunities
	Retailers' relationships with their customers are leveraged to minimise recruitment costs		Leverage retailers' client contact by marketing energy efficiency activities through them but regain control over activities delivered (e.g. through auctions)

4 OPPORTUNITIES FOR IMPROVEMENTS

The sections below examine some of the opportunities arising from the analysis of the strengths and weaknesses of the current scheme, aiming to enhance existing strengths and mitigate some of the weaknesses.

The majority of these opportunities would apply in the case of the recommended scheme extension and would focus the design of the EEIS from 2021. Decisions on scheme architecture and metrics will need to be made in the context of the ACT policy suite and quantitative modelling to optimise costs and benefits. Part 1 – Executive Summary further articulates the consulting team's recommendations, acknowledging the fact that the scope of work did not extend to this broader policy suite.

This following analysis addresses the Key Evaluation Question 12: "*What can we learn from the EEIS to inform a possible extension?*".

4.1 The future EEIS metric

This section addresses the following Key Evaluation Questions:

- What are the considerations for selecting metrics for a post-2020 EEIS?
- If the EEIS were extended beyond 2020, what metric would be most appropriate and why?

The recommendation of the team is to change the metric from a GHG metric to an energy saving metric.

The ACT's move to 100% renewable electricity supply by 2020 can be considered as "first-policy" response to climate change. The EEIS should support this policy, by:

- Firstly, improving 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.
- Secondly, supporting the achievement of the interim targets, announced in May 2018, namely:
    - 40% below 1990 levels by 2020 (on track to achieve this)
    - 50-60% below 1990 levels by 2025
    - 65-75% below 1990 levels by 2030
    - 90-95% below 1990 levels by 2040
    - net zero emissions by 2045 (previously 2050).
- The first point highlights the need for the EEIS to keep encouraging electricity efficiency, in line with the following comment by the IEA:

"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).

The second point highlights the importance of a planned process to manage the transition from a situation where gas is still very important in the ACT to a future where renewable energy plays a much bigger role. If the GHG metric was kept for the EEIS, only gas saving activities would be eligible under the scheme, which could lead to some perverse outcomes.

While a switch to an energy metric is recommended, there is a need to ensure that the EEIS is not encouraging activities that can increase business and households' reliance on gas. Therefore, various scenarios are presented in the Cost Benefit analysis report. This also describes scheme design elements that could continue to incentivise greenhouse gas emission reductions when implemented with an energy metric.

4.2 Simplify / focus the scheme on a single objective

This section addresses the Key Evaluation Questions: “Are there other changes recommended for improving the EEIS outcomes if the EEIS is extended beyond 2020?” and “Should the exclusion of NGER and other large enterprises be retained or amended?”

The SWOT analysis of the current scheme highlighted the tensions arising from having multiple objectives despite the scheme broadly achieving its objective. The cost benefit analysis report provides a set of scenarios which have a single primary policy objective. These scenarios are summarised below and their respective strengths and weaknesses plus associated opportunities and threats are tabulated.

The single objective scenarios are:

- Business as usual, including a greenhouse gas metric,
- Targeted energy bill savings,
- Lowest cost of energy efficiency improvements,
- Highest greenhouse gas emission reductions,

Other scenarios are also presented:

- Balancing multiple objectives: emission reductions, energy and bill savings, and
- Discontinue the EEIS.

Costs, benefits and implications of these alternative objectives are explored in the CBA, but a SWOT analysis for these scenarios is presented in the table below.

Focus	Strengths	Weaknesses	Opportunities	Threats
• **Business as usual:** Scheme metric remains set on greenhouse gas emissions • ACT grid electricity emission factor is considered to be zero post 2020 • PHT formulation is retained • Scheme continues to exclude NGERS reporters. • Only electricity retailers are obligated parties	Continuity with existing scheme	Activities that save electricity will deliver zero savings, meaning that there would be an equity issue, as 100% electric households and businesses would not receive any benefits from the scheme. Scheme automatically becomes a gas saving scheme Challenges in explaining the logic of a scheme that obliges electricity retailers to deliver gas savings, but no efficient electrical activities. Scheme incentives diverge significantly from energy bill savings.	Strong support for ACT net zero emissions strategy.	Disconnect between energy bill savings and abatement values. Electricity use increase would lead to increase costs for the ACT government in sourcing additional volume of renewable electricity (and increase regressive impact for electricity customers).
• **Targeted bill savings:** Scheme metric is set on energy savings. • The PHT is retained. • A rental target is introduced. • A small business target is introduced. • A not-for-profit organisation target is introduced. • Energy Savings Contributions fund non-EEIS priority household energy saving programs. • Premises are restricted from receiving more than one major energy efficiency item. • A sub-target is applied to increase proportion of participating households and businesses.	Greater ability to address energy poverty; focus assistance on those who need it most Activities more likely to be in line with needs of priority households Aligns with stakeholders' concerns around energy affordability	Likely higher savings per household but possibly lower savings overall. Sub-targets likely to reduce overall cost effectiveness	Opportunity to ensure activities deliver significant savings to a reasonable number of participants Multiple opportunities to evolve the scheme to ensure that this occurs (separate scheme, use of factors, mandated activities, etc) Supports the continuation of 100% Renewable Electricity Target beyond	Focus on bills savings does not automatically remove barriers: specific measures will still need to be introduced in the scheme to overcome issues such as split incentives for landlord/renters and the cost barrier for household paying co-contributions. Acceptance of the change to focus on priority households will most likely mean that retailers will

Focus	Strengths	Weaknesses	Opportunities	Threats
			2020 by limiting electricity demand increase Continues to minimise free riding (where participants wait for a government subsidy to implement energy efficiency measures)	push for a significant lowering of the PHT.
• **Lowest cost of energy efficiency improvements:** Scheme metric is set on energy savings. • The Tier 1 threshold is lowered so that other large retailers are also obliged to deliver savings. • No sub-targets, including PHT removal. • Scheme is expanded to NGERS reporters. • Energy Savings Contribution fund non-EEIS priority household energy saving programs.	Highest economic benefit:cost ratio Lowest cost of abatement results in lowest pass-through costs, unless you increase the target	No safeguard for low income households Major equity issue, as every electricity user is paying for upgrades that benefit participants (large businesses) that may not face the same financial barriers Limited activities delivered to priority households Reduced savings to small and medium businesses are also likely. Emission savings not guaranteed as there is a focus on energy savings	Opportunity to increase the energy saving target and open the scheme to NGER reporter participants Large companies benefit Supports the 100% RET by limiting electricity demand increase	Given the importance of the energy poverty topic and legitimate concerns from most stakeholders, the ACT Government would need to take responsibility for developing a separate program, with dedicated sources of funding, for alleviating energy poverty High risk of "free-ridership" (where participants wait for a government subsidy to implement energy efficiency measures) increase
Highest greenhouse gas emission reductions: • Gas retailers become obligated parties under the scheme • Either: – Scheme metric is set on greenhouse gas emissions, or	Strong alignment with net zero emissions climate change targets The ACT Government has greater control over the types of activities undertaken, resulting in more	Increased complexity in activity selection and specification. Equity issue, as only activities that save gas would be incentivised under a GHG metric (less a problem under a sub-target), therefore 100% electric households and	Build a new ACT AC demand response market Supports net zero emissions strategy Greater ability to spread the cost over gas and electricity customers	Risks of creating a winter electricity peak. Electricity use increase would lead to increase costs for the ACT government in sourcing additional volume of renewable electricity (and

Focus	Strengths	Weaknesses	Opportunities	Threats
– A sub-target is introduced for greenhouse gas emissions. • Either: – High priority activities are mandated, or – Multipliers are applied to high priority activities. • The PHT is retained	meaningful impacts for beneficiaries	businesses would not receive any benefits from the scheme Will likely require lowering target or risk higher pass-through costs if high priority activities are mandated		increase regressive impact for electricity customers). Gas retailers are effectively funding a transition away from gas.
Balancing multiple objectives: emission reductions, energy and bill savings: • The retailer energy savings obligation is extended to gas retailers. • Scheme metric is set on energy savings. • A sub-target is introduced for greenhouse gas emissions. • Multipliers for activities that reduce greenhouse gas emissions and save energy. • NGERs reporters are included, but in a sub-market set-up, except government offices (Territory and federal) • The PHT sub-target is retained • A rental target is introduced. • A small business target is introduced. • Energy management systems are incentivised. • Premises are restricted from receiving more than one major energy efficiency item. • A sub-target is applied to increase proportion of participating households and businesses.	➢ Ability to pursue multiple objectives but with lower ambitions on each objective Equitable distribution of benefits but lower scheme savings overall (compared with other scheme design options)	A complex scheme which is hard to model, communicate, and design. Increased complexity and higher management costs Sub-targets reduce cost effectiveness Each objective would need to be less ambitious than for single objective schemes	Supports net zero emissions strategy through the sub-target More scheme design elements allow for specific adjustments throughout the life of the scheme Large companies benefit	As a result of segmenting the market into sub-targets, the economic efficiency of the scheme will be reduced. This will likely require lowering the overall target to minimise the risk of higher pass-through costs for electricity and gas customers Greater capacity for adjustment could generate business uncertainty and add to costs
Discontinue the EEIS	Removes retailer administration and pass-through costs to electricity customers	End of a cost effective and popular scheme which delivers multiple benefits across the economy.	Smaller government with fewer programs, and reduced administrative costs.	Loss of a program which offsets costs of renewable electricity Loss of a proven program delivering outcomes

Focus	Strengths	Weaknesses	Opportunities	Threats
				towards the net zero emissions target. Would require the replacement of the EEIS with another program to manage energy poverty which would lead to significant budgetary outlay.

4.3 Addressing distributional impacts

This section addresses the Key Evaluation Question: "What other adjustments could be made so that the EEIS supports social equity objectives such as delivering upgrades to priority, low income households, rental accommodation and other households experiencing hardship?"

The SWOT analysis and comparative analysis revealed that priority households, in particular renters, continue to face multiple barriers to access EEIS activities, including:

- Split incentives for renters
- Availability of capital to finance co-contributions
- Energy "literacy" and access to information
- Specific needs that may not be addressed by activities proposed at a specific point in time by the retailer.

These barriers are not addressed by the PHT, which is only acting as a "safeguard" to ensure that priority households are not fully excluded from the scheme.

A number of options for addressing some of these barriers can be considered.

4.4 Encourage activities in favour of priority households

In the short term, under the current scheme, activities most needed by priority households 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 with priority households, thus removing the possibility for the retailer to define activities, accepting that this may result in an increase in pass-through costs.
- Subsidising low-income households' participants' co-contributions for activities that require such a co-contribution:
    - this could be financed, for example, by using the Tier 2 ESC
    - alternatively, the allocation of the energy concession to co-contribution payments could also be explored.

The strengths and weaknesses of each option are summarised below:

Opportunity	Strengths	Weaknesses
Use of factors for activities identified as beneficial, in particular for priority households, but also for other participants, for example renters	Better control over the activities undertaken (in particular for low income households)	Increased complexity in the activity specification and definition of factors May also lead to a reduction of overall savings delivered (depending on the negotiations with the retailer)
Mandate some activities identified as beneficial for priority households and / or renters	Better control over the activities undertaken (in particular for low income households)	Retailers' willingness to accept high priority activities that may only be resolved by accepting to reduce the target
Sponsoring low-income households participants' co-contributions	Overcome access to capital barrier Compatible with other mechanisms (such as on-bill financing)	Added complexity Need to access separate source of funding (also ESC funds are currently available)

Note that it is not suggested to change the formulation of the PHT at this stage. Such a change would require due consideration of alternative mechanisms to assist low-income households with energy efficiency upgrades. The PHT is the only safeguard that ensures some of the EEIS activities will flow on to low income households. A comprehensive review of the PHT has been undertaken in 2017 and stakeholders expressed strong concern around the increase of energy poverty, and consultation for this Review further highlighted this concern. The PHT is widely seen as important and effective but

not sufficient to address remaining barriers or alternative scheme set-up to enhance the level of benefits flowing to priority households.

Should a decision be made post-2020 to refocus the scheme on lowest cost energy efficiency measures (see section 4.2) then we would suggest that a comprehensive complementary program would need to be put in place targeting priority households.

4.5 A separate sub-program for priority households

Better targeting the needs of low-income households may require government to move away from the "one-size-fits-all" approach that characterises EEOs (and makes them cost-efficient) and to take control over the activities delivered. This means taking over responsibilities that are currently resting on obligated retailers.

The funding mechanism for securing specific funding for a priority households sub-program, could be as follows:

- Tier 1 retailers could be allowed to pay ESC in relation to the PHT portion of their target
- Tier 2 ESC could be entirely or partly allocated to the priority households sub-program

Activities could be undertaken under the Actsmart umbrella, provided significant energy savings can be demonstrated, or, by commissioning activity providers through a reverse auction.

To give an idea of the scale of the impact, from a purely hypothetical point of view, spending $1,000 per household means that around 4,000 low-income households could benefit each year (assuming a $4M funding plus administration and quality assurance costs), which represents about 1/8 of ACT's priority households.

4.6 Encourage the delivery of packages of activities

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

- Participants need to be recruited and visited at separate occasions;
- Activities are not tailored to the need 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.

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 developed by the Victorian government[1] 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.

Opportunity	Strengths	Weaknesses
Separate priority household sub-program	More tailored activities delivered to low income households Better targeting of specific barriers Greater benefits for a larger number of priority households Greater ability to monitor impact a create lasting change Opportunity to align with other source of funding / innovative financing mechanisms	Increased cost per activity with associated reduction in the number of premises that can be assisted before the target is reached Increased administration and quality control cost, including recruitment costs
Encourage the delivery of packages of activities	More tailored activities delivered, including to low income households Reduces inefficiencies linked with multiple visits	Does not address the issue of split incentives Likely to require independent assessment of needs adding complexity

[1] https://www.energy.vic.gov.au/energy-efficiency/residential-efficiency-scorecard

Opportunity	Strengths	Weaknesses
		Complexity of defining and specifying activities packages

4.7 Evolving the scheme to level the playing field between retailers

The review identified barriers to the participation of Tier 2 retailers, mostly because fixed costs of setting up and reporting on activities cannot be spread over a large enough number of participants.

This section addresses the evaluation questions dealing with the involvement of Tier 2 retailers in the scheme.

A couple of possible avenues to address this issue are presented below. The first one is based on work already in train that has not yet reached completion.

4.7.1 Harmonisation with the NSW EES

The harmonisation process currently in train would involve opening the ACT to activity providers accredited in NSW. Certificates would then be sold to Tier 2 retailers (and possibly Tier 1 retailers, should they wish to participate).

Strengths	Weaknesses
The ability to purchase certificates instead of paying the ESC would create a more level playing field between Tier 1 and Tier 2 retailers, by giving them an alternative to contribute more directly to energy savings activities delivered.	Even if the scheme was converted to a certificated-based scheme where all certificates are created by certificate providers, the market is unlikely to be large enough to encourage broad participation of certificate providers, as the Tier 2 retailers would only purchase certificates if they are cheaper than the set ESC price.
Capacity to harmonise activities with NSW, without the administrative burden of developing the activities for EEIS.	Certificate trading adds complexity and cost to EEO programs. Trading works best in a market with many obligated parties and / or energy efficiency suppliers for efficient price discovery. This is unlikely to happen in the ACT if the Tier 1 retailer continues to organise their own activities rather than buy on the market.
Use of an established scheme's certificate registry avoids the costs of setting up and operating the system.	Certificate prices may be highly volatile.

Note that other aspects of harmonisation could be valuable, at an administrative level, including a streamlining, at the national level of:

- Training process
- certificate process
- Warranty levels for products
- BCA changes

4.7.2 Fully evolve the scheme into a certificate-based scheme, with an auction system

One of the limitations of non-certificate EEOs is that activities offered to participants are not tailored to their needs but based on the appreciation of the retailers of what activities are easiest to roll out to the greatest number of participants.

If the ACT government had an appetite for getting involved in the choice of activities to be offered to participants and was confident to be able to identify how priority needs could be delivered cost effectively, the scheme could be transformed into a certificate-based scheme, where all retailers are paying ESCs in proportion of their sales. An auction (or reverse auction) system would then be organised by the Territory to select activity providers able to deliver specified activities,

groups of activities (see "Encourage the delivery of packages of activities" in section 4.6), or even energy reduction outcomes. Interested providers quote a price for a certain performance and take the risk of delivery. The system allows to specify what activities should be delivered to which groups of participants, such as low-income households.

This model was implemented in the US (Independent System Operator of New England, PJM Interconnection) and in Portugal, Germany, Switzerland, and improves the level of control government has on activities that are delivered, while encouraging innovation and competition

"Auctions can be structured to mitigate the risk of overpayment and reduce administration costs. In both Germany and Switzerland price caps have been put in place through maximum payments per kWh and by setting maximum contributions from the auction to project costs. In addition, if fewer bids are put forward for consideration, the programmes only accept a maximum proportion of bids (e.g. 80% in Switzerland). Allowing multiple projects to be bundled into programmes is commonly used to enable smaller measures to take part without excessive administration costs. In Germany, a maximum size criterion is applied to ensure that funds are not concentrated in too few projects." (International Energy Agency, 2017).

Should this be of interest to the ACT government, a trial could be organised:

- calling for innovative delivery of energy savings to households and / or businesses by activity providers,
- encouraging participation through an appropriate marketing campaign, possibly involving the retailers.

Strengths	Weaknesses
Level playing field	Reduced ownership from retailers and reduced incentive for the retailers to market activities
Increasing the scope of activities delivered to participants	Likely increase in administrative costs for managing the auction and auditing compliance
Increased control over the activities and commissioning process by the ACT government.	There would still be a need for safeguard mechanisms to ensure an equitable distribution of benefits
Encouraging innovation	Requires up-front funding source, which could be ESCs or other public funds.

4.8 Metered approach rather than specific activities with deemed savings

This option is provided for consideration by the ACT government, as it is likely to represent the future of EEOs, taking advantage of emerging technologies in terms of smart metering. It also addresses one of the weaknesses of the deeming methodology, which is that it does not control for rebound effects and does not encourage innovation by retailers.

California has innovated as early as 2015 by abandoning all ex ante deemed savings in favour of a metered approach. Metered savings work on direct measurements of energy use before and after installation of an energy efficiency intervention. Absolute metered savings methodologies allow combinations of behavioural and technology-based saving mechanisms. Results are controlled for changes in occupancy, weather, production levels (for industrial installations) etc.

The Californian legislation (SB-350) requires that all EE savings be measured: "taking into consideration the overall reduction in normalized metered electricity and natural gas consumption." SB-350 also creates "pay for performance programs that link incentives directly to measured energy savings. As part of pay for performance programs authorized by the commission, customers should be reasonably compensated for developing and implementing an energy efficiency plan, with a portion of their incentive reserved pending post project measurement results." Later SB-350 goes on to specifically state that "Incentive payments shall be based on measured results."

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).

Pros	Cons
Objective savings compared to a baseline that can be monitored over multiple years, controlling for rebound effects	Requires digital meters roll out and data availability
Encourages innovation	Likely to be considered too complex and too risky by retailers (and too constraining, as it effectively sets an absolute reduction cap on future energy use, at least for a sub-group of participants).
Allows rewarding participants financially	
Highly compatible with demand management measures, including the create of “Virtual Power Plants”	
May encourage the transition of retailers from energy sellers to “energy as a service” providers	

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