Energy Efficiency Action Plan

Achievements, success factors and future support

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1. Introduction

1.1 Overview of Energy Efficiency Action Plan

The NSW Energy Efficiency Action Plan (EEAP) was introduced by the NSW Government as part of efforts to place downward pressure on household electricity bills, and improve the energy productivity of the NSW government and business sectors. The EEAP aimed to support three groups identified as particularly vulnerable to rising energy bills: low income households, small to medium-sized business, and those in regional areas.

The EEAP was a four-year strategic action plan aimed at accelerating the development of a mature energy efficiency products and services market[1]. This aimed to drive significant energy efficiency improvements in the NSW business, residential and public sectors. The plan ran from July 2013 to June 2017 and cost the NSW Climate Change Fund approximately $88.4 million.

The EEAP detailed 30 actions that delivered multiple targeted interventions. It was complemented by the Renewable Energy Action Plan[2] and the Government Resource Efficiency Policy.[3]

1.2 This document

The Office of Environment and Heritage (OEH) delivered programs to fulfil the EEAP actions. This document summarises:

- what was delivered and achieved by the OEH programs (section 2)
- success factors that supported program delivery (section 3)
- how lessons learnt are informing post-EEAP support for NSW households and businesses for energy efficiency (section 4)
- the findings of an economic evaluation (section 5).

Figure 1 Energy bill
Photo: Katherine Wilson Photography

[1] NSW Government, 2013, NSW Energy Efficiency Action Plan: http://www.environment.nsw.gov.au/energyefficiencyindustry/energy-efficiency-policy.htm

[2] NSW Government, 2013, NSW Renewable Energy Action Plan: https://www.resourcesandenergy.nsw.gov.au/__data/assets/pdf_file/0010/475318/nsw-renewable-energy-action-plan.pdf

[3] NSW Government, 2014, NSW Government Resource Efficiency Policy: http://www.environment.nsw.gov.au/resources/government/140567NSWGREP.pdf

2. Achievements

The EEAP programs provided access to energy efficiency for households, businesses and government agencies. The programs delivered savings to participants in all target sectors (Table 1). In particular, the programs targeting businesses achieved large savings. Programs for households focused on low-income households and achieved savings for this group that is often least able to afford increases in energy prices.

The programs also reduced the peak load on the electricity network (Table 1), which helps reduce the need to invest in expanding electricity network infrastructure.

Table 1 Program benefits by sector

Sector	Electricity & gas savings (GWh)	Energy bill savings ($M 2016–17)	Electricity peak load reduction (MW)
Households	317	100	54.6
Businesses	5,680	1,040	471
Government agencies	313	58.4	45.6

2.1 Programs targeting households

2.1.1 Participation

During the EEAP, the households programs delivered the following support:

- 14,903 eligible households received discounts for energy efficient appliances. 48% of those households live in regional areas.
- Tenants in 2941 social housing dwellings benefited from retrofits to improve energy efficiency.
- 230 households received support to access clean energy.
- 32,420 eligible households received a home assessment by an energy advisor and a Personal Power Savings Action Plan. 53% of those households live in regional areas.

2.1.2 Outcomes

In addition to direct energy bill savings to households of $100 million, a key focus of the household programs was to support the most disadvantaged households. For example, the Home Energy Action program developed an Equity Strategy to identify customers who may need additional support to access the program and achieve outcomes at the same level as other customers. Demographic data from online applications to the program's Appliance Replacement Offer indicates that disadvantaged groups within the low-income audience were over-represented, with:

- 25.5% of participants are living with a disability
- 20% of participants are single parents
- 5.1% of participants are from Indigenous backgrounds
- 61.2% of participants are female.

Applications to the Appliance Replacement Offer provided information about why customers required a new appliance and these indicate benefits beyond energy bill reduction from upgrading appliances, including:

- ‘I live a long way from shopping centres and need to buy bulk items and store them in an energy efficient reliable appliance.’
- ‘I want the upside-down fridge as I cannot bend down to get my veggies from the crisper and I don’t access the freezer much.’
- ‘I bought my fridge in 1986 and over time the seal has broken, so it uses more power to keep food cold, and it is quite old so probably not very energy efficient these days, and this is the only way I can afford to buy a new one.’
- ‘I need a safe fridge for my two very young kids. The foot on this one is a bit unsteady and I am concerned it may fall when my toddler opens the door.’

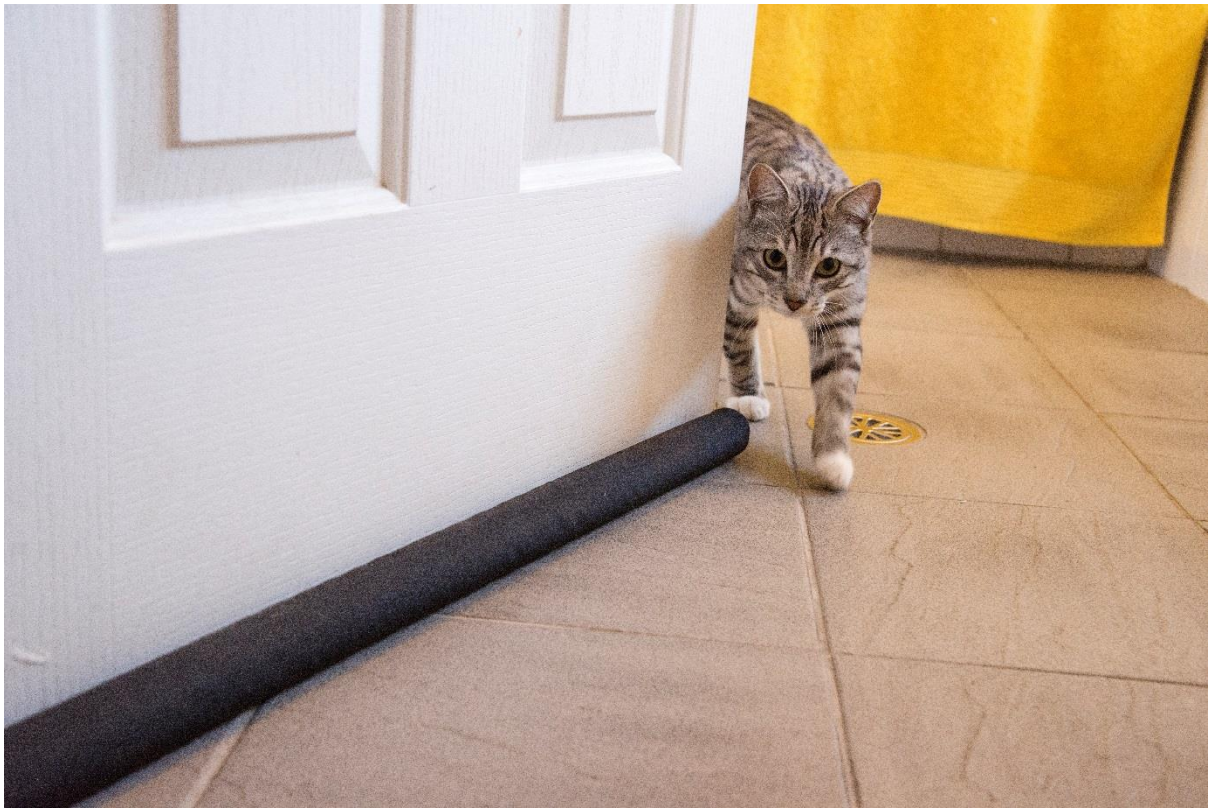

Figure 2 Door snake – Home Power Saving Program
Photo: Lisa Madden

2.2 Programs targeting businesses

Two programs aimed to support small to medium-sized businesses to improve their energy efficiency: the Energy Efficient Business program and the Gas Efficiency Improvement Program.

2.2.1 Participation

During the EEAP, the business programs delivered the following support:

- subsidised energy audits, technical support, and monitoring and verification of energy efficiency projects for 308 businesses. 44% of these were in regional areas
- 164 energy efficiency training courses to 2460 attendees. 29% of attendees were in regional areas

- grants to 120 businesses for post-training support to implement an energy efficiency project. 66% of these businesses were in regional areas
- support and capped co-funding for gas monitoring and efficiency projects for 51 businesses in a pilot of market-based support mechanisms. 40% of businesses were in regional areas
- almost 65,000 views of the Energy Saver webpages between 2014 and 2017 and more than 4500 downloads of resources such as energy efficiency guides, factsheets and tools. The most popular resource was the Lighting Guide, with over 1200 downloads, followed by the HVAC Guide with 992 downloads.

2.2.2 Outcomes

Key outcomes achieved by the business programs include:

- 5680 GWh of energy savings and $1,040 million in energy bill savings by participating businesses
- a reduction in peak electricity load of 471 MW, saving on infrastructure costs
- participant reports of high levels of satisfaction about the way OEH worked with them during the programs, including 100% satisfaction with the Gas Efficiency Improvement Program. OEH's flexibility and understanding of business requirements were key contributors to success
- influencing markets for products and services, for example:
    - participants in the Gas Efficiency Improvement Program reported that it encouraged businesses to seek efficiencies throughout the production system, rather than solely focus on reliability. Participant businesses are now focusing on gas efficiency in the same way as they have for electricity
    - the Energy Efficient Business program supported the development of the energy auditing industry: providing a financial incentive for businesses to commission audits has created more opportunities for professional services providers to build capacity and serve more businesses.
- better energy efficiency capability for participants. For example, follow ups with training participants indicated that:
    - 87% either strongly agreed or agreed that they had improved their knowledge of energy efficiency as a result of the course
    - 69% had either completed or started energy management projects in the areas covered by the training.

2.2.3 The Energy Savings Scheme

The Energy Savings Scheme (ESS) is a legislative scheme designed to reduce electricity consumption in New South Wales by creating financial incentives for organisations to invest in energy savings projects. Improvements to the scheme have been a key contributor to energy savings attributable to the EEAP.

The EEAP required a review of the NSW ESS targets and included actions to introduce revised and new saving methods. The Office of Environment and Heritage and the Independent Pricing and Regulatory Tribunal (IPART) worked together to implement the recommendations of the 2014–15 ESS Review[4], including:

[4] https://www.resourcesandenergy.nsw.gov.au/__data/assets/pdf_file/0006/573738/Energy-Savings-Scheme-Statutory-Review-Report_Final.pdf

- increasing the annual targets to allow a higher level of energy savings
- adding gas to the scheme
- improving administrative arrangements
- creating a regional network factor to reflect the additional 3% value of saving energy in regional New South Wales.

The changes enabled OEH to simplify existing methods for generating Energy Savings Certificates (ESCs) and introduce new eligible methods to generate ESCs and, therefore, save energy for businesses and households. Consultation with participating ACPs and energy retailers indicated that the scheme and its outcomes are highly regarded.

The review also resulted in the energy savings target increasing in stages from 5% of electricity sales in New South Wales in 2015 to 8.5% in 2019. The number of certificates created exceeded the target in each year of the EEAP. The increase to the target meant that approximately 1.65 million additional ESCs had to be created during the period of the EEAP. The additional ESCs generated from the increased targets resulted in around 275 GWh of additional annual energy savings in 2017, mostly in the business sector. More information about the operation of the ESS can be found in annual reports published by IPART[5].

Figure 3 Battery Storage – Energy Efficient Business program
Photo: Chris Harding

[5] IPART 2017, IPART NSW Energy Savings Scheme – Compliance and Operation in 2016 – Annual Report to the Minister, Sydney

2.3 Programs targeting government agencies

2.3.1 Participation and outcomes

During the EEAP, the government program delivered the following:

- support for 71 government agency sites to undertake energy efficiency projects. 73% of these were in regional locations
- support for 16 projects to develop a business case and secure funding from the Government Finance Facility for energy efficiency improvements.

Feedback from agencies indicated that they were able to undertake large energy efficiency projects that may not have been possible without the specialist support provided by OEH to apply for finance through the Government Finance Facility. For example, OEH supported large scale improvements at Lismore hospital.

> 'In hospitals, engineering has a low priority because our primary business is clinical. Engineering funding is very hard to come by… This project probably wouldn't have gone ahead if we hadn't have been able to source funding through this particular project. The money just wouldn't become available.'

Geoffrey Simkus, Group Physical Resources Manager, Tweed Byron Health Services[6]

The program delivered about $58 million in direct energy bill savings to government agencies, equating to 313 GWh of energy saved.

Figure 4 Lismore Hospital HVAC upgrade – Energy Efficient Government Program Photo: Jonatan Lundmark

[6] https://www.youtube.com/watch?v=5virgMYqGps (Accessed 20 April 2018)

3. Success factors

OEH identified four themes in the strengths that supported effective delivery of programs and achievement of outcomes.

Delivery approaches were based on previous experience and existing and/or gathered evidence

Several OEH program teams took steps to develop a deeper understanding of their audiences' needs at the outset of the EEAP. Often, both existing literature and commissioned research informed program planning and design to meet the target audiences' needs. Most program teams continued to evolve their delivery approaches during the EEAP. This included incorporating new experience and evidence, and in some cases co-design, to best meet audiences' needs.

Co-design elements and program reviews also assisted in understanding the target audiences' needs. Co-design was particularly effective for programs, as it placed the target groups' needs at the core of program design. Feedback from program partners confirmed program teams' views that flexible approaches to delivery were a successful way of working.

Partnerships were an important approach and supported effective delivery

Partnerships were a successful tool in delivery across all programs. Under the EEAP, OEH partnered with a wide range of organisations, including:

- at least 18 separate state and federal government agencies
- more than a dozen industry associations
- more than a dozen community service organisations
- over 600 energy efficient service providers
- at least five energy and appliance retailers.

In most cases, partners were selected with a clear rationale and following analysis of potential partners. Many partnerships were supported by effective agreements that set out roles and responsibilities, and this was a useful foundation for collaboration.

Partnerships appeared to be particularly valuable in extending OEH's work into areas of the community to which OEH does not have direct links. This included targeted industries, disadvantaged groups within the community, regional areas, Indigenous communities, culturally and linguistically diverse (CALD) communities and other traditionally under-represented groups.

Finally, these partnerships were successful because of the professionalism, passion and interpersonal skills of the people involved. This highlighted the importance of staff members' individual skills to complement technical aspects of program management and delivery.

Programs made substantial efforts to ensure equity of access

Programs were successful when they sought to understand the specific barriers in accessing energy efficiency benefits. This enabled an evidence-based approach in reaching target audiences. As noted above, partnerships with stakeholders also enabled greater reach. For example, programs targeting households partnered with community service organisations with direct links to eligible households. These partnerships increased the equity of access in two ways:

- helping programs to develop discretionary eligibility criteria so that the most vulnerable households could be supported
- communicating with households more effectively, by acknowledging that the NSW Government does not always have the expertise to engage directly with households experiencing energy stress.

Place-based approaches were found to be an effective way of engaging with regional communities. Regional delivery benefited from the assisted development and use of local networks. This relied on identifying appropriate delivery partners based in the region and maintaining relationships with them, as well as adapting activities for regional delivery at appropriate scales. Regional knowledge and support were required for EEAP interventions to be effectively implemented.

Program teams often used an informal exchange of knowledge and experience in various regional areas. This enabled collaboration and the sharing of resources between the regionally based OEH teams. This improved efficiency and effectiveness across program areas and allowed delivery teams to move beyond the constraints of specific interventions and 'sector' defined target audiences to address regional needs.

Product and service providers participated in programs targeting businesses and government agencies

The participation of organisations providing products and services with the potential to have energy efficiency attributes (e.g. appliance and hardware retailers, engineering consultants and energy auditors) provided a good opportunity to influence the wider market by improving suppliers' organisational capacity, technical expertise and skills. This aimed to make energy efficiency a consideration in day-to-day practices and the services offered to energy users.

Methods to target product and service providers included: co-design processes, face-to-face training, and upskilling through contractual requirements and support to fulfil these. While it is difficult to measure the impact of this involvement on the market, this program approach created discussion and networking with partners.

Interaction between OEH and participating product and service providers delivered benefits including:

- developing providers' energy efficiency capacity through partnership working and providing training and tools
- supporting the change in focus of conversations about gas use from maintenance to process improvement across the business's system
- establishing relationships and a platform for future engagement between government and product and service providers across other policy objectives.

Figure 5 Co-design workshop for the Home Energy Action program Photo: Emmy Etie

4. Applying the learnings to continuing support for energy efficiency

In September 2017, the NSW government announced the Energy Affordability Package, which provides further funding to support households and small businesses to increase their energy efficiency[7]. The Office of Environment and Heritage is responsible for delivering programs that build on actions delivered under the EEAP, including:

- support to households, such as
  - discounts to upgrade homes by partnering with tradespeople and suppliers
  - discounts for concession card holders on replacement energy efficient fridges and TVs
  - grants to cover up to half the cost of upgrading community, public and Aboriginal housing to help tenants
  - partnering with energy retailers to help their energy hardship customers access solar energy
- support to small businesses, such as
  - discounts to upgrade equipment by partnering with tradespeople and suppliers
  - energy management training and follow-up support.

In planning and delivering these programs, OEH has drawn on the lessons learned from delivering the EEAP actions. As well as the success factors identified in section 3, lessons include the following.

Collaborative and strategic communications planning is most effective

In the EEAP programs, communications activity generated media interest that supported program outcomes, although there was variation in the approaches used and challenges in securing effective media monitoring and evaluation of activities. The best results were achieved when a strategic communications plan was developed collaboratively between the program team, communications team and delivery partners. The programs developed later in the EEAP incorporated lessons learned from earlier communications activities. For example, these programs applied more active communications monitoring and used the resulting information to improve future communications.

Partnerships support effective delivery in regional NSW

Relationships with partners and internal regional teams increased reach, through access to existing local networks and communication channels. OEH teams often successfully used an informal exchange of knowledge and experience to support delivery in regional areas. At times, OEH teams encountered challenges in coordinating efforts across diverse and geographically dispersed delivery partners.

To continue to realise the benefits of regional knowledge and networks, OEH is exploring ways to further support sharing of regional knowledge across the organisation, and continuing to focus on involving regional expertise in the design and delivery of programs.

[7] Energy Affordability Package Sept 2017

Linking programs to the ESS can support program delivery and broaden access to savings

Some EEAP programs were designed to work with the ESS. For example, information gathered through the Gas Efficiency Improvement Program was used to develop new eligible energy saving activities under the High Efficiency Appliances for Business methods that were introduced in March 2017. Where appropriate, links like this can improve program delivery, opportunities and outcomes for participants.

The new Energy Affordability Package program offering discounts to households and small businesses for energy efficiency upgrades builds on this approach, and aims to support improved access to ESS benefits. For example: by creating demand for Energy Savings Certificates (ESCs) for a fixed period in previously underserviced sectors and geographical areas, the first round of the program aims to encourage use of a wider range of methods to create ESCs, and enable access to lighting upgrades for a wider range of participants, including those in regional areas.

Figure 6 Morree Cotton Farm – participant in Energy Efficient Business program
Photo: Wayne Pratt Photography & Video

5. Economic evaluation

The Office of Environment and Heritage conducted a cost-benefit analysis (CBA) in accordance with NSW Treasury's guidelines. The CBA measures the economic benefits of the EEAP relative to its costs and found that the EEAP provided a positive net benefit at all discount rates assessed (3%, 7% and 10%) under conservative assumptions. Table 2 presents the costs and benefits for each discount rate: the net economic benefit was estimated to be $275 million at the 7% discount rate.

Key considerations when reviewing the CBA findings include the following:

- The impacts are expected to affect the market beyond the time period of the EEAP, so the assessment of market benefits extends to 25 years.
- Economic benefits were derived from:
    - total energy savings, which resulted in reductions in energy generation and distribution costs, costs associated with carbon emissions, and health costs associated with air pollution from coal-fired power generation
    - energy savings in the peak load periods, which resulted in a deferral of energy network infrastructure investment.

While the EEAP delivered energy bill savings to the businesses and households, the participants' bill savings are not a net economic benefit at the society level. These savings are not included in the CBA but are reported alongside the CBA because achieving bill savings was a key objective of the EEAP.

Table 2 Net economic benefit of the NSW EEAP $2016–17

	Without discount	NPV 3% discount rate	NPV 7% discount rate	NPV 10% discount rate
Total costs ($ million)	152	153	154	156
Total benefits ($ million)	694	555	430	364
Net benefits ($ million)	542	403	275	207

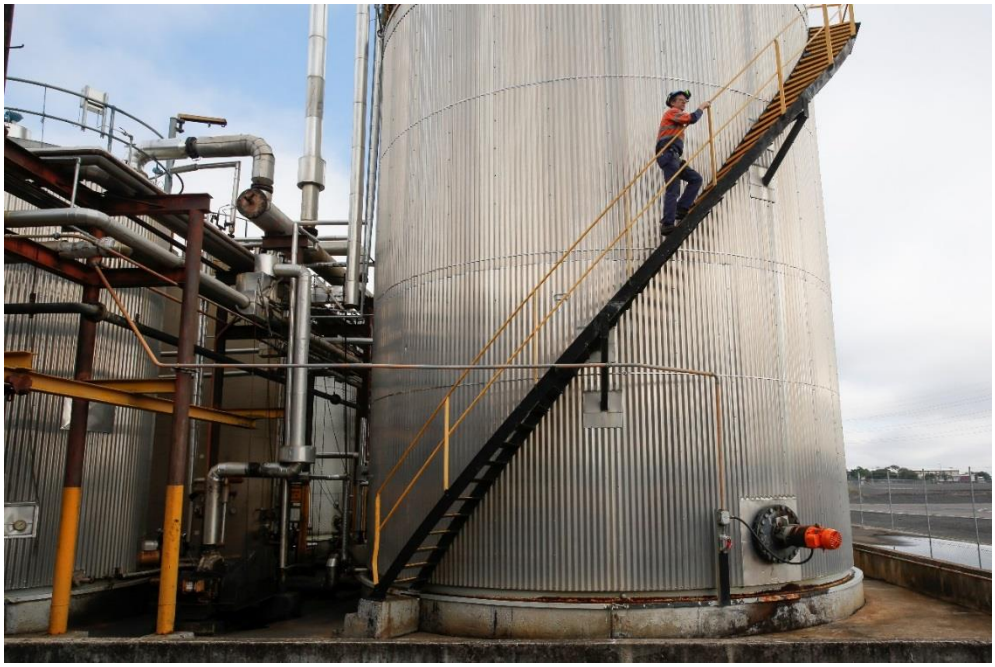

Figure 7 An industrial manufacturer in the Hunter and participant in the Gas Efficiency Improvement Program Photo: Quentin Jones, Jonesphoto