



energy efficiency
COUNCIL

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Australian Energy Efficiency Policy Handbook

Save Energy, Grow the Economy

Acknowledgements

I would like to thank the many individuals and organisations that have helped shape the first edition of the *Australian Energy Efficiency Policy Handbook*. The Handbook is a distillation of ideas developed over many years by Australia's energy efficiency community. Nevertheless, it has been a significant project to bring these insights together in a single document.

The Handbook would not have been possible without the knowledge, hard work and contributions of many individuals. Particular thanks must go to the Council's members; our partner organisations; the Council's Senior Advisors, led by Alan Pears; the EEC Policy Subcommittee, chaired by Lauren Solomon; the EEC Board, chaired by Tony Arnel; and the lead author, the EEC's Head of Policy, Rob Murray-Leach.



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Foreword

A huge opportunity is within Australia's grasp. Energy efficiency can deliver a stronger and more dynamic economy, cheaper energy bills, healthier buildings and a cleaner environment.

Smarter energy use will also foster an innovative, high-tech export industry that can tap into the \$470 billion global market for energy efficient products and services.

The cheapest and cleanest way to deliver comfortable homes and a productive economy is to balance investment in energy supply with energy demand reduction through smart energy use.

And yet, the public debate around energy in Australia has almost entirely focussed on 'supply-side' technologies like solar PV and energy storage. Much less attention has been paid to the 'demand-side' of the market, despite smart energy use offering the fastest, cheapest way to cut energy bills and reduce our environmental impact.

Supply and demand are not separate stories – they are two halves of the same story. Improving the way that we use energy is essential to ensure that the shift to new forms of generation is fast and affordable. We need politicians, business leaders and the community to understand energy in an integrated way, using reforms on both the supply and the demand-side to meet our energy needs cheaply and cleanly.

The tide has started to turn. Energy efficiency has become a major global issue over the past decade, and

has gained significant momentum in Australia in the last year. The Australian Government has set a target to improve energy productivity by 40 per cent by 2030, and the COAG Energy Council signed a new 'National Energy Productivity Plan' in 2015.¹

However, on our current trajectory we will fail to meet this target. We need serious reforms to unlock the full benefits of energy efficiency. This Handbook aims to kick-start a discussion about the actions necessary to meet Australia's energy productivity target. It pulls together the collective knowledge of energy efficiency experts, and sets out a suite of evidence-based recommendations.

This first edition is a first step. The aim is to start a genuine debate among businesses, academics, governments and the broader community, and to draw on their input to create second and subsequent editions. In this way, we hope to build consensus on what constitutes sensible, stable energy efficiency policy in Australia.

We have also released a set of nine priority policies, which we believe should be the focus of government action in 2016-17. While we must start work immediately, we will only deliver an affordable, clean energy system through long-term, stable policy.

Development of the second edition Handbook will commence in 2017, and we invite you to register your interest at www.eec.org.au/handbook to help shape the next edition.



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¹ Energy productivity is the ratio of economic output per unit of energy. Australia's energy productivity target is measured in Gross Domestic Product per Petajoule of primary energy.

1. Executive summary and key recommendations

Overview

Improving Australia's energy efficiency will:

- Improve productivity and ensure that Australia is globally competitive;
- Lower energy bills and keep energy affordable;
- Help transform Australia's energy system and lower greenhouse emissions; and
- Create jobs and investment, tapping into a global market worth \$470 billion a year.

The Australian Government has set a target to improve Australia's energy productivity by 40 per cent by 2030. To meet this target we will need a set of strong reforms. The energy efficiency of our economy is the result of interactions between markets for energy, buildings, vehicles, plant and equipment, appliances and services, which means that we need targeted reforms in each of these areas.

These reforms will only be achieved by building a consensus across the community that they are necessary, and developing a long term, bipartisan commitment to a set of sensible actions.

To this end, the Energy Efficiency Council (EEC) has engaged with experts – both members of the EEC and the broader sector – to develop the *Australian Energy Efficiency Policy Handbook*. The Handbook sets out cross-cutting policies, such as energy market reform, and targeted policies for specific sectors, such as residential buildings and transport.

The Handbook is based on expert views and evidence. Where there is good evidence that a particular policy approach will be effective, the Handbook recommends that policy. Where evidence is more limited, the Handbook generally recommends further research or small-scale trials.

This Handbook identifies a comprehensive suite of actions. These include:

- Ensuring energy markets and energy efficiency schemes encourage an economically efficient balance of investment in energy supply and demand management;
- Protecting consumers through energy efficiency ratings and minimum standards for appliances, buildings and vehicles;
- Improving the energy efficiency of homes and businesses and showing leadership by improving the efficiency of government operations; and
- Developing a globally competitive energy efficiency industry.

A full list of the Handbook's recommendations is provided from pages 6–8.

If you would like to provide input and shape the second edition of the Handbook please register at www.eec.org.au/handbook.

About the Energy Efficiency Council (EEC)

The EEC is Australia's peak body for energy efficiency, cogeneration and demand management. The EEC is a not-for-profit membership association, which exists to make sensible, cost effective energy efficiency measures standard practice across the Australian economy.

We work on behalf of our members to promote stable government policy, provide clear information to energy users and drive the quality of energy efficiency products and services. Our members include governments, experts and businesses that provide smart energy products and services.

Cross-sectoral policy recommendations

Section 3 *Energy market reform*

- Implement fair and efficient electricity tariff structures
- Improve the economic efficiency of electricity networks
- Ensure that Network Service Providers (NSPs) invest in demand-side measures to reduce expenditure
- Establish independent oversight of NSPs' interactions with consumers and other parties
- Provide effective incentives for demand response
- Trial new energy market structures in a number of regional towns

Section 4 *Energy retailer obligations and energy efficiency funds*

- Establish energy efficiency funds in every jurisdiction
- Strengthen and extend energy retailer obligations (energy efficiency schemes)

Section 5 *Greenhouse gas reduction policies*

- Ensure that Australia's suite of climate change policies drive energy efficiency
- Align and integrate energy market and climate change policies

Section 6 *Minimum standards and labels for appliances and equipment*

- Streamline the approval process for new or amended standards
- Ensure the coverage and design of standards is harmonised and up-to-date
- Properly resource the development and enforcement of Australia's Greenhouse and Energy Minimum Standards (GEMS)
- Educate and incentivise appliance retailers to inform consumers about ratings

Section 7 *Minimum standards for new buildings and rebuilds*

- Set a pathway to raise minimum energy efficiency standards over time
- Tighten BASIX in NSW and move towards a nationally consistent standards regime
- Set higher standards for new buildings in specified 'innovation zones'
- Improve compliance with the National Construction Code (NCC)
- Raise awareness about the benefits of energy efficient buildings

Section 8 *Distributed generation, waste heat and district energy*

- Reform the incentives and oversight of NSPs
- Reform charges and payments for network connection, energy use and export
- Allow distributed generators to provide exclusive electricity retail services
- Ensure energy retailer obligations and emission-reduction programs support non-renewable distributed energy
- Set up a fund to support the first 3,000 MW of district energy schemes in Australia

Section 9 *Developing a globally competitive energy efficiency industry*

- Foster a regional market for energy efficiency services and products
- Allocate at least \$80 million over four years to training and certification of tradespeople and energy efficiency specialists
- Review and expand support for energy efficiency innovation

Section 10
Finance for energy efficiency

- Retain the Clean Energy Finance Corporation (CEFC) and investigate expanding its role
- Commission a report into third parties investing in energy management on behalf of energy consumers

Section 11
Governance

- Establish a *National Energy Efficiency and Productivity Agency*
- Increase key institutions' capability and focus around energy efficiency

Sector-specific policy recommendations

Section 12 *Households and vulnerable consumers*

- Develop a national residential energy efficiency disclosure scheme
- Introduce minimum standards for rental properties
- Upgrade public and community housing
- Expand and review partnership programs to support vulnerable households
- Research and trial programs to encourage energy efficient building renovations
- Research and trial programs to improve the efficiency of multi-dwelling buildings

Section 13 *Government operations*

- Establish programs to upgrade government facilities in all jurisdictions, like the NSW Government Resource Efficiency Policy
- Establish facilitation teams in local government peak bodies to help local governments engage and manage the experts that can upgrade their facilities
- Establish requirements for procuring energy efficient vehicles and equipment in all jurisdictions
- Implement a national plan to upgrade streetlights

Section 14 *Commercial buildings*

- Transform offices by investing at least \$10 million a year for ten years through the Council of Australian Governments (COAG) to engage building owners, provide incentives for building upgrades and develop minimum standards for rental offices
- Carry out research to develop 'Ten-year Action Plans' for other key building types, including retail and accommodation
- Leverage government ownership and tenancy to improve building efficiency
- Enhance energy efficiency rating and disclosure programs

Section 15 *Manufacturing*

- Introduce a 'modernising manufacturing' program to link companies to experts that can help them develop and implement multifactor productivity upgrades
- Introduce a *National Energy Productivity Program* for large energy users
- Encourage the installation of sub-metering

Section 16 *Mining and resources*

- Develop sectoral energy-saving targets
- Develop a new *National Energy Productivity Program* for large energy users
- Encourage the installation of sub-metering

Section 17 *Small to Medium Enterprises*

- Establish sector-specific Small to Medium Enterprise (SME) engagement and upgrade programs

Section 18 *Transport*

- Develop fuel efficiency standards for light vehicles
- Commit to purchasing a mix of efficient and electric vehicles for government fleets in all jurisdictions
- Commission a report on preparing Australia for the shift to electric vehicles
- Commission a report on the costs and benefits of improved urban planning and mode shift

Background

2. Background

Benefits of energy efficiency

Raising energy efficiency will strengthen the economy and create jobs while helping address affordability, wellbeing and environmental issues.



Productivity and economic growth

Improving energy efficiency by just one per cent a year will grow Australia's economy by \$26 billion by 2030.² Smart energy use drives economic growth by improving staff productivity and resource efficiency while lowering energy costs. For example, improving the efficiency of offices delivers an increase in staff productivity that is worth much more than the energy savings.



Jobs, investment and innovation

The global market for smart energy products and services is worth more than \$470 billion per annum and growing rapidly.³ If Australia captured just one per cent of the global market it would deliver \$4.7 billion in income every year and create thousands of jobs. California now has more than 321,000 people employed in energy efficiency, with employment growing six per cent per annum in recent years.⁴



Lower energy bills

Energy bills will rise rapidly without real efforts to manage peak demand and improve efficiency. Australia is at the beginning of a new global wave of investment in energy infrastructure. Smart energy use will reduce both peak demand and the volume of energy consumed, reducing energy bills and infrastructure spend.



Cutting edge technologies

Consumers around the world are gaining access to new technologies like electric cars, smart appliances, advanced lighting and energy management. Without key reforms, Australian consumers will pay more for, or even miss out on, innovations.



Major emission reductions

Energy efficiency is the fastest, cheapest way to cut greenhouse gas emissions. Energy efficiency can easily deliver half of Australia's target to reduce emissions by 26-28 per cent by 2030 and save money. Energy management is also essential to accommodate higher penetrations of renewable energy in the energy market.



Consumer protection and health

Minimum standards and ratings for homes and appliances protect consumers and ensure that they get what they pay for. When builders and manufacturers cut corners it can increase households' energy bills, reduce comfort and even affect their health. Building efficiency can impact winter mortality rates, and more than 2,600 deaths each year in Australia are associated with cold weather.^{5,6}

² Climate Institute 2013 *Boosting Australia's Energy Productivity*.

³ Estimates from the International Energy Agency and HSBC.

⁴ Advanced Energy Economy Institute 2016 *Advanced Energy Jobs in California*.

⁵ International Energy Agency 2014 *Capturing the Multiple Benefits of Energy Efficiency*, IEA, Paris.

⁶ Gasparrini A. et al 2015 'Mortality risk attributable to high and low ambient temperature: a multicountry observational study', *The Lancet*, Vol 386, No. 10001, p367-375.

What are energy efficiency and demand management?

Energy efficiency means getting more services for less energy. Demand management means changing energy use from periods of high demand (or low supply) to times when supply is plentiful, which allows reduced expenditure in infrastructure (e.g. poles and wires) to deliver the same service.

Homes and businesses don't directly consume electricity and gas – they use it for 'energy services', such as warm showers, cool homes and computing. The cheapest way for a home or business to meet its need for energy services is through a combination of supply-side and demand-side investment.

For example, the cheapest way to keep an off-grid home cool in summer is a mix of investment in supply (a generator) and demand-side measures (e.g. insulation and an efficient air conditioner). If the owner under-invests in insulation and air conditioner efficiency they will need to invest much more in energy supply. It's also possible to over-invest in efficiency – it's all about finding the right balance.

Trying to achieve the right balance of investments is more complex for the houses and generators connected to a grid. However, the principle is the same - we want the most cost-effective mix of investment in supply (generation and networks) and demand-side measures (e.g. efficient fridges and peak response programs) to deliver the services people want.

Why do we need energy efficiency policies?

The level of energy efficiency in Australia is the result of overlapping markets for energy, products such as fridges, and services such as building design. Distortions in these markets can reduce energy efficiency, such as:

- Electricity tariffs that don't reflect the real long-term costs of supply (e.g. high fixed charges) reduce the incentive for energy efficiency.
- The rules and regulations of the energy market encourage investment in energy supply and discourage investment in energy efficiency.
- Landlords own buildings, but tenants pay electricity bills. This can make it very challenging to upgrade the efficiency of rented homes and offices.
- When consumers can't compare the efficiency of

buildings and appliances, they can't select more efficient options and this reduces the incentive to build better goods.

- Most households and businesses lack the key skills to build a business case, find trusted experts and improve their efficiency.

Problems in energy markets

The cheapest way to meet Australia's energy needs is to balance investment in energy supply with smarter energy use.

Australia's electricity markets aren't delivering the right balance of investment, and this contributed to energy bills jumping more than 70 per cent in many parts of the country between 2008 and 2013. Electricity markets are not 'natural' markets – they are based around monopoly networks that manage the poles and wires. This means that the question is not whether governments regulate energy markets, but how they regulate them.

Governments gave network companies monopoly powers to make decisions on behalf of consumers to invest in supply-side infrastructure. This infrastructure allows generators to sell energy cheaply to aggregated consumers. However, very little effort was made to encourage networks to invest in reducing demand when it was cheaper than expanding the network, and governments didn't set up a competitive market to aggregate energy management services and deliver balanced investment.

In other words, we established electricity systems that enable consumers to access supply with virtually no effort and very little upfront cost, but if they want to manage their energy use they must take the initiative, find experts and pay upfront capital costs themselves. We've made it easy for consumers to access additional energy supply and hard to manage their energy use. In fact, even if consumers want networks to spend less money on poles and wires, networks can still spend more money and boost their income.

While these distortions happen around the world, most countries have made serious efforts to correct them. However, much less action has been taken in Australia, which meant that we wasted billions of dollars on electricity infrastructure that we don't need, energy bills have increased dramatically, greenhouse gas emissions are higher and many buildings are less efficient and comfortable than they should be.

The case for action on energy efficiency is strong and urgent. On economic grounds alone, Australia needs to rapidly reform its energy markets as developments in technology, consumer preferences and global politics are driving a new wave of investment in energy supply and demand. If we get the balance of investment wrong again, it will waste billions of dollars and reduce Australia's productivity.

Prioritisation and market development

The Energy Efficiency Council advocates focusing on priority actions that will deliver multiple benefits to homes, communities and businesses. While there are huge gains to be had from improving our energy efficiency, it's unrealistic to try and capture every single opportunity. Priorities should be based not only on the size of opportunities, by the benefits of tapping into those opportunities and the ease of accessing those benefits. For example, while commercial buildings account for around 8 per cent of final energy use in Australia, energy savings in this sector are relatively easy to access and deliver huge non-energy benefits in terms of increased staff comfort and productivity.

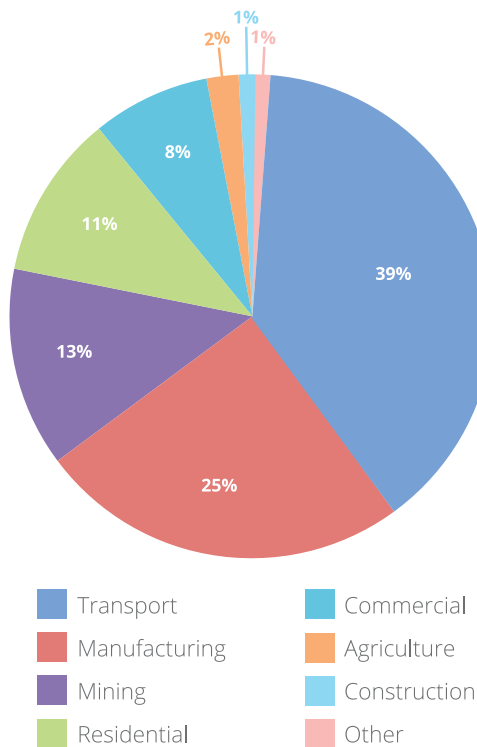


Figure 1. Total final energy consumption by industry.
Source: Department of Industry and Science (2015) Australian Energy Statistics, Table H.

It also makes sense to focus on developing markets that link experts to homes and businesses to help them save energy, rather than trying to make everyone an expert in energy efficiency. While there are real benefits in giving everyone some basic knowledge, economies of scale makes it much more cost-effective to use experts to help energy users.

Strong action is required

While Australian governments have recognised the importance of improving our energy efficiency for many years, key reforms still haven't occurred.

Several national strategies for energy efficiency have been developed, but many proposed actions haven't been implemented, and Australia's rate of energy efficiency improvement has continued to fall behind other developed economies.

In December 2015 governments in Australia signed up to the COAG Energy Council's new 'National Energy Productivity Plan' (NEPP). However, the NEPP will be little more than a document unless governments show leadership, invest in programs and regulate to correct energy market distortions.

Action is needed to ensure that Australia meets its goal to improve energy productivity in Australia by at least 40 per cent between 2015 and 2030.

The Energy Efficiency Council believes that government intervention should be targeted and well-designed in order to unlock the power of the market. While there has been widespread support for action on energy efficiency, there has been a mistaken view in some quarters that energy efficiency policies are 'interventions' that distort existing markets, rather than corrections of well-known market distortions.

The Australian Government's Commercial Building Disclosure (CBD) program is a good example of a program that targets a clear problem; tenants can't select more efficient offices if they can't compare the efficiency of offices. The CBD program corrects this by requiring building owners to display energy efficiency ratings when offices are sold or leased. This has delivered at least \$72 million in energy and carbon savings, and \$168 million in improved office staff productivity.

Sometimes stronger regulations are necessary. For example, builders and residential landlords have little incentive to ensure that homes are efficient.

Minimum standards for construction have been in place in Australia for many years, although they are not well enforced and are weak by international standards. However, we still don't have good minimum standards in place for rented homes, despite many rental properties being unacceptably poor quality.

Ideally, governments should address problems directly, but sometimes alternative approaches are necessary. For example, while we ultimately need to fix supply-side biases in our energy market, it's essential to have energy efficiency funds and energy efficiency certificate schemes in place now because many market distortions will take years to correct.

The Council is committed to evidence-based policy. This Handbook identifies which policies require further research and trialling before they are scaled up, and which policies are ready to go now. The Handbook is accompanied by a 'policy priorities' pamphlet that sets out nine critical actions that can and should be undertaken immediately.

This pamphlet is updated annually, and can be downloaded from www.eec.org.au/handbook.

Australia must take action on energy efficiency to ensure that our homes are comfortable, our workplaces are productive, our economy is competitive and our energy market transforms in a way that benefits the community. We believe that a long-term, bipartisan approach is essential.

Cross-sectoral Policies

3. Energy market reform

The rules and regulations of Australia's electricity markets affect both the level of investment in energy efficiency and the benefits that policies like appliance standards deliver to consumers. The impacts of rules and regulations include:

- Electricity prices and tariff structures. If the majority of a consumer's energy bill is based on the amount of energy they use (a consumption or demand charge) they have a strong incentive to save energy. If the majority of their bill is a fixed charge, they have little incentive to save energy.
- The incentive for energy users to reduce demand during 'peak demand' periods. Reducing demand in peak periods can save all consumers money by avoiding the need to build extra supply infrastructure.
- The incentive that intermediaries have to help consumers save energy (e.g. retailers, networks and energy efficiency providers);
- The cost and time for third parties to obtain energy use data; and
- The cost of connecting generators to the network, and who gets to set this price (e.g. a Network Service Company (NSP) or an independent party).

Australia's electricity systems are not 'natural markets'. Networks (poles and wires) are run by regional monopolies (NSPs) and, while there is some competition in electricity generation and retail, those markets are also highly regulated to protect both consumers and grid stability. Governments built much of Australia's electricity infrastructure and, while some parts of the system are now privatised, governments still own large parts of the system (e.g. networks in Queensland and Western Australia).

Australia has two large energy systems and a number of smaller grids. The National Electricity Market (NEM) covers most of Queensland, NSW, ACT, Victoria, SA and Tasmania. Western Australia has a separate system and, while the rules are different, it suffers many of the same problems as the NEM.

The NEM and Western Australian systems have a number of biases that drive over-investment in energy supply and under-investment in demand management. In 2002 Warwick Parer, a former Coalition Energy Minister, led a review of the NEM for COAG, which concluded that:

"...there is a relatively low demand-side involvement in the NEM because:

- *The NEM systems are supply-side focussed*
- *The demand-side cannot gain the full value of what it brings to the market*
- *Residential consumers do not face price signals."*⁷

A range of other distortions in our electricity systems, including supply-side biases, have been identified in the Productivity Commission's 2013 Inquiry into Electricity Network Regulation and Senate Committee inquiries in 2012 into 'Electricity Prices' and 2014 into 'The Performance and Management of Network Companies.'

These distortions contributed to recent increases in electricity prices. Of particular note, between 2008 and 2013 NSPs spent over \$35 billion on network infrastructure, which contributed to electricity prices rising by more than 70 per cent in many parts of the NEM.

These biases have still not been resolved, and some have actually become worse. For example, tariff structures are critical to encourage the mix of investments in generation, networks and demand reduction that deliver affordable energy. There is a strong case for reforming electricity tariffs to encourage consumers to reduce their use of electricity at peak times. However, several NSPs have used recent tariff reviews to introduce tariff structures with much higher fixed components. These high fixed charges increase NSPs' revenue certainty, but do not reflect the genuine long-run costs of infrastructure and discourage economically efficient levels of investment in demand reduction.

The rapid global transformation in the energy sector has added further pressure for energy market reforms. Changes in consumer preferences and the costs of various technologies (such as energy storage) mean that our energy system will look radically different in 2030. Governments must ensure that the transition to renewables, storage and energy management occurs in a way that is cost-effective, fair and benefits consumers. This will require fundamental changes to the way the electricity sector operates.

Major effort will be required to drive sensible and timely reforms. The governance system for energy in Australia is not designed to facilitate rapid reforms, particularly because major changes require the support of multiple governments. Furthermore, there

⁷ COAG Energy Market Review 2002 Towards a Truly National and Efficient Energy Market, Canberra.

is still considerable debate about what electricity markets should look like in the future.

Nevertheless, there are a number of clear actions that should be undertaken to improve efficiency, benefit consumers and reduce emissions. A full discussion of energy market reform is outside the scope of this document, and the following list sets out just a small number of the reforms that are required.

Recommendations:

- **Implement fair and efficient electricity tariff structures**

Tariff structures must be fair and encourage the right balance of investment in energy supply, networks and demand reduction, in order to deliver lower bills to consumers. However, there is very little guidance about what tariffs should look like. The COAG Energy Council should set up a national process, similar to CSIRO's Future Grid, to bring a wide range of consumers, suppliers and NSPs together to develop 'model tariff structures' that are fair to energy consumers and encourage economically efficient investment. These model tariff structure don't need to be mandatory but should guide tariff design by NSPs and reduce the duplication resulting from each NSP having to consult from scratch with consumers.

- **Improve the economic efficiency of electricity networks**

The current regulatory framework for electricity networks has resulted in overinvestment in networks, high returns for NSPs and rapidly rising energy bills. The rules and regulations of the energy market need to ensure that NSPs plan, invest and operate efficiently and are remunerated at an appropriate level.

- **Ensure that Network Service Providers (NSPs) invest in demand-side measures to reduce expenditure**

NSPs should invest in reducing demand when it is cheaper than supply-side expenditure (e.g. network augmentation). The network planning process should require NSPs to report on overall levels of demand-side management. NSPs should be set targets for demand-side investment and the Demand Management Incentive Scheme must be a genuine incentive to reduce demand (e.g. encouraging demand-side works when they can reduce the cost of replacing ageing assets).

- **Establish independent oversight of NSPs' interactions with consumers and other parties**

NSPs are monopolies but individual consumers, generators and demand-side providers are expected to negotiate with NSPs on the costs for connection to the network or payments for projects that reduce the need for network expenditure. Governments should appoint an individual (potentially within an existing market body) to provide active oversight of interactions between NSPs and third parties. This would include gathering and reviewing information on the speed of NSP negotiations on matters such as connection, and the charges or payments resulting from negotiations.

- **Provide effective incentives for demand response**

The most cost effective way to provide capacity in energy markets is to pay for a mix of generation capacity and demand response (reducing demand during periods of high system demand). To facilitate this, the Australian Energy Market Commission should introduce the Demand-Response Mechanism into the NEM that it is currently considering. Equally, the Western Australian Government should halt its proposal to distort its capacity market by providing much lower payments for demand-response capacity than generation capacity.

- **Trial new energy market structures in a number of regional towns**

Trying to change the NEM rules and regulations incrementally will be extremely slow and challenging. We recommend that governments trial new business models in small regions, in conjunction with regulators, communities, NSPs, retailers, generators and other parties. The aim would be to develop more economically efficient market structures that better suit new technologies (e.g. PV, storage and mini-grids). Due to the higher cost of supply in regional areas, trials in these areas are likely to offer substantial benefits to consumers. While some government funding would be required to support innovation and de-risk these trials for consumers, the aim would be to develop economically efficient market structures that do not need government funding.

4. Energy retailer obligations and energy efficiency funds

The structure of Australia's energy markets increases energy bills, by encouraging too much expenditure on generation and networks and discouraging investment to reduce demand. It is essential to correct these distortions to keep energy affordable, but comprehensive energy market reforms will take decades. Therefore, several governments have partially corrected these distortions by using mechanisms that sit alongside the energy market.

Energy retailer obligations

Energy retailer obligations are often referred to as 'energy efficiency certificate schemes' and 'energy efficiency schemes'.

Australia has established wholesale markets and electricity networks that allow aggregation of supply-side investment, but not demand-side investment. To partially correct this, governments in NSW, Victoria, South Australia and the ACT have introduced obligations for retailers to fund energy efficiency activities. These create small markets for aggregated energy services. Governments specify how much energy various actions will save (e.g. replacing halogen down lights with LEDs), and retailers need to show each year that they have funded a combination of actions that meet their target.

The assessments of these programs show that the benefits of these schemes substantially outweigh their costs. However, there is substantial opportunity to deliver even greater benefits through these schemes by harmonising them, extending them to jurisdictions such as Queensland and ensuring that the administration is efficient and flexible.

Energy efficiency funds

Many jurisdictions place small surcharges on electricity bills to pay for energy efficiency programs, such as the NSW Climate Change Fund. The case for establishing energy efficiency funds is very solid, as consumers pay large regulated sums every year to NSPs to deliver 'capacity'. However, the distorted incentives faced by NSPs mean that network companies over-invest in 'supply capacity' (poles and wires) and rarely fund 'demand-side' projects that can often deliver the same 'capacity' at a much lower cost.

Energy efficiency funds attempt to partly offset this distortion by placing a very small charge on

electricity bills that is allocated to programs that reduce demand. These programs aim to deliver much larger reductions in consumers' electricity bills than this charge. While energy retailer obligations aim to deliver projects that directly reduce demand (e.g. building retrofits), energy efficiency funds also support projects such as business engagement, training and development.

These mechanisms also significantly increase funding certainty for energy efficiency. The NSW Climate Change Fund demonstrates that modest funding over a long period can deliver much greater results than larger funds over short periods of time.

Recommendations:

- **Establish energy efficiency funds in every jurisdiction**

Effective energy efficiency programs will lower all consumers' bills, but these programs need to be funded. Each jurisdiction should place a small surcharge on electricity bills that are used to fund agencies and programs that deliver energy savings.

- **Strengthen and extend energy retailer obligations (energy efficiency schemes)**

Energy efficiency retailer obligations should be:

- » Extended to Queensland, Western Australia, Tasmania and the Northern Territory.
- » Harmonised, potentially with a single body tasked with developing methodologies and registering products for all jurisdictions.
- » Modified to encourage large energy users to undertake efficiency.

5. Greenhouse gas reduction policies

Energy efficiency is one of the largest and cheapest sources of greenhouse gas emission reductions, and this has been confirmed by multiple studies from organisations such as the International Energy Agency and ClimateWorks Australia.

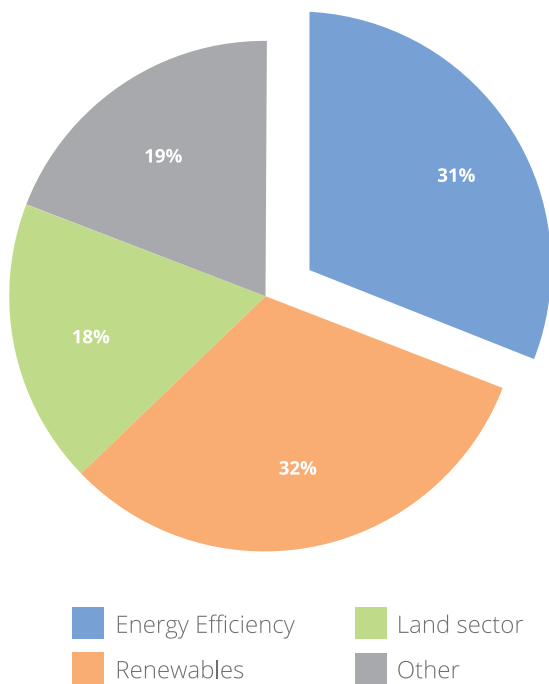


Figure 1. Abatement potential in Australia to 2030

Source: ClimateWorks Australia & WWF 2015 *A prosperous, net-zero pollution Australia starts today*.

In addition to directly reducing greenhouse gas emissions, better energy management is also critical to reduce the cost of the transition to clean energy, as it can:

- Move peaks in energy demand to coincide with periods of peak supply from sources such as solar PV and wind, improving grid stability and reducing supply costs; and
- Reduce the total volume of energy consumed, by reducing the amount of investment required in generation, energy storage and electricity networks. This is particularly critical now, as Australia is entering a major new phase of investment in generation.

Energy efficiency is a 'no regrets' measure to deliver greenhouse gas abatement, as it saves money, strengthens the economy and delivers social

outcomes. Most of the policies in this document should be introduced even if Australia didn't have targets to reduce its emissions. However, Australia's international commitments to reduce its emissions mean that:

- It is even more vital to introduce the energy efficiency policies that should be introduced to deliver outcomes such as consumer protection; and
- Australia's suite of policies to reduce greenhouse gas emissions must drive energy efficiency. If our policy response to climate change fails to drive energy efficiency, the cost of meeting our targets will be substantially higher.

The current designs of the coalition's Emissions Reduction Fund and Safeguard Mechanism, and the ALP's proposed Emissions Trading Scheme, will drive limited energy efficiency. These policies need to be refined and accompanied by specific policies that drive energy efficiency.

Recommendations:

- **Ensure that Australia's suite of climate change policies drive energy efficiency**

Australia will need a suite of policies to address climate change. While many of these policies will not directly support energy efficiency (e.g. the Renewable Energy Target), the suite of policies as a whole should drive a cost-effective balance of energy supply and demand-reduction projects to reduce emissions.

- **Align and integrate energy market and climate change policies**

The current lack of integration between climate change and energy policy creates conflicting incentives that raises the cost of both energy and mitigation. Better aligning energy and climate change policies will deliver lower costs and more abatement.

6. Minimum standards and labels for appliances and equipment

The Greenhouse and Energy Minimum Standards (GEMS) program is jointly run by the Australian, New Zealand, state and territory governments. The GEMS program protects consumers from the ongoing hidden costs of products through:

- Minimum standards for the energy efficiency of goods such as fridges, televisions, air conditioners and electric motors; and
- Energy labels to help consumers identify the efficiency of appliances.

GEMS is one of the biggest drivers of energy efficiency in Australia, annually delivering around \$1 billion in avoided energy costs and cutting emissions by over 1.5 per cent. GEMS saves the average consumer around \$300 per year, and the estimated benefit-cost ratio is between 1.7 and 5.2 for the period 2014-2020.⁸

However, the Office of Best Practice Regulation's (OPBR) inappropriate processes and the broader deregulatory agenda have delayed the introduction of new and updated standards, which are critical to match the evolution of products. Delays in the introduction of standards have significant impacts – the lack of appropriate air-conditioner standards before 2009 contributed to the rapid growth in peak electricity demand and rise in electricity prices.

A report by a consortium of consumer and welfare groups in 2014 noted that GEMS has a low regulatory burden, placing obligations on around 300 Australian businesses, however providing benefit to over 2 million businesses through lower energy bills.⁹ New standards are often simply updating older standards, and most local and global manufacturers support GEMS because they already comply with higher standards in other countries and GEMS prevents poor-quality imports undermining them.

The 2015 NEPP commits to a prioritisation plan for GEMS, but unless the approval process for new standards is streamlined Australia will fall further behind global standards.

Recommendations:

- **Streamline the approval process for new or amended standards**

The COAG Energy Council should endorse an overall business case for appliance standards, so that Regulatory Impact Statements (RIS) for each new or updated standard don't have to re-prosecute the case for appliance standards. The OBPR, or ideally another body, should run streamlined RIS reviews for appliance standards, focusing on pre-determined criteria to ensure that standards deliver a net benefit to the community.

- **Ensure the coverage and design of standards is harmonised and up-to-date**

Australia's major trading partners have standards for a wide range of products that are regularly updated. In order to lower costs for industry and ensure that standards remain effective, the COAG Energy Council should place a mandate on the GEMS administrators and the OPBR to:

- » Keep standards up to date and harmonise them with leading economies.
- » Expand the number of products that are covered by standards and labels, including commercial and industrial equipment.

- **Properly resource the development and enforcement of Australia's Greenhouse and Energy Minimum Standards (GEMS)**

- **Educate and incentivise appliance retailers to inform consumers about ratings**

Many consumers gather information and make decisions about which appliances to purchase at retail outlets. Educating appliance retailers about appliance ratings and providing modest incentives to sell more efficient appliances would deliver significant benefits to consumers.

⁸ DataBuild 2015 Greenhouse and Energy Minimum Standards (GEMS) review.

⁹ Alternative Technology Association 2014 The Future of GEMS – Recommendations from the Community Sector.

7. Minimum standards for new buildings and rebuilds

Improving the standard of buildings when they are built or undergo major refits is the cheapest and most effective way to ensure that these buildings are more productive and avoids poor design being 'locked-in' for decades. Building standards are essential because builders, sub-contractors and some developers face strong incentives to cut corners in the construction phase, while building occupants pay the long-term costs of running a building. As energy efficiency is a 'hidden' feature of a building, almost all developed countries have minimum standards to protect consumers.

It is important to note that, while building standards are critical for new buildings, other policies are needed to improve the efficiency of existing buildings (see sections 12, 13 and 14), and these represent the largest opportunity for energy and greenhouse gas savings to 2030.

Design and level of standards

Minimum standards for new buildings and major rebuilds are set out in the National Construction Code (NCC), which is developed by the Australian Building Codes Board on behalf of COAG. State and territory governments put legislation in place to apply the NCC within their jurisdictions and manage compliance with the NCC alongside local governments.

Governments have agreed through the NEPP that building standards should be raised in 2019 to deliver more comfort and savings. Work should commence immediately in order to tighten the NCC in 2019, including:

- Substantially raising standards for commercial buildings (e.g. offices and retail). Pitt&Sherry estimate that these standards could be cost-effectively raised to save between 58 and 68 per cent more energy than current standards.¹⁰
- Raising standards for residential buildings. Pitt&Sherry estimate that residential standards should be raised to 7 stars in most climate zones.

However, governments should also set a long-term pathway to tighten standards over time to deliver greater savings and more certainty to industry. The

Australian Sustainable Built Environment Council (ASBEC) is developing an industry-led vision for improving the standards for both residential and commercial buildings. The Energy Efficiency Council recommends that governments support the ASBEC process.

There is also evidence that, while the current set of building standards have been very effective at reducing winter energy use, they have been less effective at reducing summer energy use. More work should be undertaken to identify ways to improve energy efficiency in summer and hot climates. Exemptions and variations between jurisdictions should also be removed, such as the lower minimum standard for apartment buildings in Queensland.

Finally, NSW is the only state to use an alternative approach for residential buildings, called the Building Sustainability Index (BASIX). While the NCC focuses on design and building fabric (walls, insulation etc.), BASIX also considers some appliances. As a result, BASIX encourages more efficient appliances, but also allows the construction with less efficient fabric. The Council recommends that the NSW Government tighten the BASIX standards for building fabric to bring them in line with the NCC, and in the long-term governments consider moving to a single national approach.

Compliance

Governments have agreed through the NEPP that compliance with building standards should be tightened. Recent research has found that compliance is a major issue in all states and territories.¹¹ When builders do not comply with the NCC and BASIX, subsequent owners and tenants are left with buildings that are likely both less comfortable and have higher running costs.

To date, compliance has focussed on design, rather than the construction or operating performance of buildings. Assessing the 'as built' compliance of buildings is an important next step. While the actual performance of buildings would ideally be measured, this is more complex (particularly for residential buildings) as performance often can't be measured until a building has been occupied for some time.

¹⁰ Pitt&Sherry 2012, *Pathway to 2020 for increased stringency in New Building Energy Efficiency Standards: Benefit Cost Analysis*. Available for download at <http://www.industry.gov.au/Energy/Energy-information/Documents/pathwayto2020newbuildingenergyefficiencystandards.pdf>

¹¹ Pitt&Sherry 2014, *National Energy Efficient Building Project – Final Report November 2014, produced for the National Strategy on Energy Efficiency*. http://www.sa.gov.au/_data/assets/pdf_file/0004/135544/NEEBP-final-report-November-2014.pdf

Recommendations:

- **Set a pathway to raise minimum energy efficiency standards over time**

Energy efficiency standards in the NCC for residential and commercial buildings should be raised in 2019, and in subsequent revisions. Governments should collaborate with ASBEC to develop a long-term pathway for raising building standards over time, which will provide more certainty for industry and consumers and lower the cost of meeting standards.

- **Tighten BASIX in NSW and move towards a nationally consistent standards regime**

BASIX should be updated to ensure that it has stronger standards for building fabric. Over the long term building standards in NSW and other jurisdictions should be harmonised to create national consistency.

- **Set higher standards for new buildings in specified 'innovation zones'**

The Energy Efficiency Council supports national harmonisation for building standards. However, setting higher standards in specified 'innovation zones', such as the Sydney Central Business District, would encourage innovation and industry development. Higher standards could be set using mechanisms such as 'commitment agreements' to achieve particular NABERS Energy ratings.

- **Improve compliance with the National Construction Code (NCC)**

State, territory and local governments must work together to develop robust, independent compliance processes for the NCC to protect consumers.

- **Raise awareness about the benefits of energy efficient buildings**

Use targeted information campaigns and energy efficiency disclosure schemes to increase awareness among homeowners and commercial building tenants about the value of more efficient buildings.

8. Distributed generation, waste heat and district energy

Energy efficiency can be improved in the process of generating and transmitting electricity and “thermal energy” (heating and cooling). Most Australian coal-fired generators convert less than 35 per cent of the energy stored in the coal into electricity, with over 65 per cent of the energy in the coal lost as heat at the power station. A further 10 per cent of the remaining energy is typically lost in transmission and distribution, and then even more is lost in inefficient end-use equipment.

Energy efficiency in electricity generation and thermal energy can be improved by:

- Increasing the proportion of energy that a generator converts into electricity. Most distributed generators, such as solar PV and gas-fired generators, either use ‘free’ fuel or are more efficient than Australia’s coal-fired generators.
- Locating generation closer to the point of use, so that less energy is lost in transmission and distribution. This can also reduce the need for expenditure on poles and wires, lowering the cost of electricity supply.
- Using the thermal energy that generators normally waste. A ‘cogeneration’ unit generates electricity (typically through combustion of a fossil or renewable fuel) and uses the waste heat to warm or cool buildings or industrial processes. This can turn more than 85 per cent of the energy in a fuel into a useful service. Systems that generate both heating and cooling are sometimes called ‘trigeneration’.
- Developing district energy schemes that provide heating and/or cooling to multiple sites using a network of pipes. The economies of scale from these systems can allow for much more energy efficient heating and cooling in the right situation. These systems generally use cogeneration or grid-sourced electricity to create hot and/or cold water.

District energy systems are very common in other parts of the world. While colder climates improve the economics of district heating systems, the main reason that district energy and cogeneration aren’t common in Australia is the design of our energy markets. Our electricity markets were designed around a system that largely consisted of large generators and transmission and distribution networks. As such, the rules and regulations of our market have created many barriers to the uptake of distributed generation.

Barriers in the connection process

The process for connecting a site that has distributed generation to the grid is run by NSPs, which are regional monopolies whose income can be affected by the use of distributed generation. This process can involve substantial delays, ad hoc processes and inequitable mechanisms for apportioning any necessary costs for augmenting the grid. While there have recently been improvements to the rules, there is still very little independent oversight of the connection process.

Barriers in capturing the value of distributed generation

Distributed generators create multiple forms of value for their owners and other parties, but these values are not reflected in price signals to generators.

Firstly, distributed generation creates energy that can have a much higher real value at a specific time and place. However, the current rules and practices of our electricity sector, such as ‘postage-stamp pricing’ (which means a single price can apply to a large area), eliminate these real variations in the value of electricity at different times and places.

Secondly, distributed generation can reduce the need to augment networks, which reduces other energy users’ energy bills. However, there is no transparent system for working out how much benefit (or cost) it creates, and it is very hard for a distributed generator to secure payments from a network to reflect the services that they deliver to the grid.

Thirdly, those programs that provide payments to reflect the value of cleaner energy and energy efficiency rarely provide support to cogeneration and district energy projects. In effect, these types of technology ‘fall between the cracks’ in Australia, as they can operate across multiple sites and can be characterised as both ‘efficiency’ and ‘generation’ projects.

Innovation and first-mover disadvantages

While distributed generation and district energy technologies are well-established overseas, Australian companies that wish to use them have to face much higher ‘first-mover’ costs. These include the costs of overcoming regulatory complexities and the challenges of operating in an immature market, such as gaps in the knowledge and skills of both clients and industry partners.

Recommendations:

- **Reform the incentives and oversight of NSPs**

It is critical to provide incentives to NSPs that encourage them to act in consumers best interests & to establish an independent party to oversee issues such as network connection.

- **Reform charges and payments for network connection, energy use and export**

Currently, the charges and payments for energy usage, network connection and export charges are designed separately. However, the emergence of distributed generators and 'prosumers' (sites that both generate and consume energy) means that it is essential that they are integrated. Fully integrated tariff reform will take well over a decade, and so we recommend transitional schemes to provide support for distributed generation and district energy schemes.

- **Allow distributed generators to provide exclusive electricity retail services**

The current regulations that require that consumers have a choice of energy retailer, actually force consumers to pay monopoly grid providers who can have a much bigger impact on bills than retailers. In addition, as soon as distributed generators export energy to the grid it makes it very difficult to capture the real time and location-specific value of that energy. If we allow distributed generators to act as exclusive retailers and use parts of the grid as private-wire systems, it will allow them to build up a value-stack that reflects the full value of distributed generation and deliver lower prices to consumers. These reforms should be accompanied by new consumer protections.

- **Ensure energy retailer obligations and emission-reduction programs support non-renewable distributed energy**

While the Renewable Energy Target (RET) supports renewable energy projects and energy retailer obligations support energy efficiency projects, there is currently no support for systems like cogeneration that deliver both emission reductions and electricity market benefits. The Energy Efficiency Council recommends that retailer obligations and emission reduction policies should support some types of non-renewable distributed generation projects.

- **Set up a fund to support the first 3,000 MW of district energy schemes in Australia**

As noted above, there are significant regulatory and other barriers to early developers of district energy schemes. The Council recommends a fund to support the first 3,000 MW of district energy schemes in Australia.

9. Developing a globally competitive energy efficiency industry

Australia has the potential to be a regional hub for specialised energy efficiency services and products. In addition to supporting a wide range of energy-using businesses to improve their competitiveness, this would also create a major export opportunity and local jobs in energy efficiency services and products.

The potential for investment and job creation is enormous. The International Energy Agency and HSBC both estimate that the global market for energy efficiency products and services is around \$470 billion per year,¹² and this market is growing rapidly. A recent survey found that in California alone, over 321,000 jobs involved energy efficiency work and employment in the sector grew six per cent per annum in recent years.¹³ Investments in energy efficiency typically creates more jobs than investments in traditional energy supply, because they involve services and light manufacturing.

If Australia is going to seize this opportunity governments will need to build up our local workforce capability, innovate new technologies and business models and make it easier to export local products and services to the region.

Developing a regional market for energy management

There are substantial differences between countries' markets for energy efficiency services and products, which impedes the export of Australian energy efficiency services and products. Greater harmonisation in metrics, certifications, standards and government programs would create a large, more stable and competitive market and make it easier for Australian companies to export to the region.

The Energy Efficiency Council recommends that the Australian Government focus on harmonisation in the Asia-Pacific region, and alignment between this region and Europe and the US. Key actions to promote trade harmonisation could include:

- Promote the International Performance Measurement and Verification Protocol in the Asia-Pacific region.
- Promote the NABERS Energy rating tool in the Asia-Pacific region.
- Harmonise training and certification programs in the region.

- Accelerate the harmonisation of Australian appliance standards with major developed economies (see Section 6).

Skills and training

Improving energy efficiency involves a variety of decision-makers, including energy efficiency specialists, trades and energy user site managers. While experts (e.g. energy auditors) require deep skills in energy efficiency, others only require specific information, such as how to install certain technologies or engage an energy efficiency specialist.

Programs that train and accredit energy efficiency specialists are essential to develop an export market and support domestic improvements in energy productivity in all areas (including residential, industrial and commercial buildings). The industry is already taking action, and the Energy Efficiency Council launched a comprehensive Energy Efficiency Certification Scheme to support retrofits in commercial buildings in 2014. However, the upfront cost of developing further training and accreditation programs is major barrier for an emerging sector, and requires government support.

Innovation

Major improvements in energy efficiency can be delivered via existing technologies, and much of the innovation that needs to occur is in business models and integration between sectors such as energy management, retail and property management.

However, research, development and demonstration can unlock further opportunities for energy savings, including the development of new technologies (e.g. energy management software), demonstration of new industrial efficiency technologies and integration of demand-side programs and renewables in regional grids. The Australian Government recently expanded the scope of the Australian Renewable Energy Agency (ARENA) and the Clean Energy Finance Corporation to enable them to invest in the commercialisation of energy efficiency technologies. However, there are still significant gaps in the support for research, demonstration and development of energy efficiency technologies.

¹² HSBC Global Research 2014 Sizing Energy Efficiency Investment.

¹³ Advanced Energy Economy Institute 2016 Advanced Energy Jobs in California.

Recommendations:

- **Foster a regional market for energy efficiency services and products**

Create specific trade agreements, promote key Australian energy efficiency programs and harmonise standards and certifications for energy efficiency specialists in the Asia-Pacific and beyond.

- **Allocate at least \$80 million over four years to training and certification of tradespeople and energy efficiency specialists**

Funding should be allocated to specific projects and scoping studies that identify priority areas for training and certification. Examples would include training for electricians in new technologies and certification for experts that deliver energy efficiency audits in line with the AS/NZS 3598 series.

- **Review and expand support for energy efficiency innovation**

The new Clean Energy Innovation Fund will provide finance to support late-stage energy efficiency commercialisation, but will not provide the grants that are necessary to support early stage research and demonstration. The Australian Government should review the support that is currently available for energy efficiency innovation, and fill in any identified gaps with new innovation support programs.

10. Finance for energy efficiency

Investments in energy efficiency can deliver solid returns but require upfront capital. There are several barriers that impede access to capital that include:

- Energy market rules and regulations, which make it relatively simple for large investors to fund energy generation and network expansion but create barriers and risks for demand-side investment.
- Knowledge gaps in the finance sector, which mean that financiers can over-estimate the risks associated with efficiency investments (inflating the cost of capital) and/or fail to offer tailored products to support energy efficiency.
- Knowledge gaps by potential investors (e.g. energy users), which means that investors can lack the skills to upgrade their efficiency, or do not understand the benefits sufficiently to invest in efficiency even if capital is available.
- Misaligned and/or split incentives (e.g. landlords invest in the efficiency of a property, but tenants use the building and pay the energy bill) which makes it hard to coordinate investment in energy efficiency.
- Rules that impede access to capital, such as the limitation on government agencies that they can only borrow funds from their respective treasuries.

Governments have introduced some programs to address barriers to finance and/or use finance programs to address other barriers. These include:

- **Clean Energy Finance Corporation (CEFC)**, which works with the finance sector to provide financial products to support energy efficiency (e.g. loans to local governments to invest in efficiency). This directly overcomes the lack of suitable financial products and gives the finance sector the skills it needs to develop new financial products. The CEFC has also used its position to engage with energy users and educate them about the benefits of energy efficiency.
- **Environmental Upgrade Agreement (EUA)** legislation in NSW, Victoria and South Australia allows banks to loan funds to building owners for energy efficiency upgrades, with repayments made via local government charges. This allows building owners to pass charges on to tenants, helping to overcome the split incentive for energy efficiency.
- **NSW Government Resource Efficiency Policy (GREP)**, which allows government agencies to borrow funds from Treasury outside budget cycles for energy efficiency upgrades that meet set financial criteria.

The details of finance programs are critical. The German Government's KfW bank loans have driven substantial investment to improve the energy efficiency of properties, whereas the UK's Green Deal loan scheme had very poor take-up.

The finance issue can also be looked at in an alternative ways, such as 'on-bill' financing, where electricity retailers offer to pay for energy efficiency upgrades and energy users pay for the works through electricity bills. This highlights an important point - energy users may not always be the best-placed investor for energy efficiency projects. For example, third parties can aggregate projects to minimise financing costs and risk, and then recover their costs from savings.

Utilities could be major investors in energy efficiency. NSPs already invest in poles and wires on behalf of consumers, allowing cheap finance and aligning investment decisions with expertise in network technology. NSPs are also well placed to invest in reducing demand at certain times and locations, given the need for coordination and the system wide benefits. However, in practice this is rare and consumers are largely left to manage demand themselves, creating a supply-side bias in the electricity sector.

Recommendations:

- **Retain the Clean Energy Finance Corporation (CEFC) and investigate expanding its role**
The CEFC should be tasked to investigate whether its role should be expanded to provide loans for home improvements, based on the model used in Germany by the KfW.
- **Commission a report into third parties investing in energy management on behalf of energy consumers**
There is a general assumption that energy users or site owners are the best-placed entities to invest in energy management. However, in the same way that NSPs are tasked to invest in electricity networks on behalf of consumers, NSPs or other third parties may be the best-placed entities to invest in some forms of energy efficiency, particularly where coordination is required across multiple sites. The COAG Energy Council or an individual government should commission a report on third-parties investing in energy efficiency on behalf of energy consumers.

11. Governance

There are significant problems in the governance of energy efficiency policy in Australia. Responsibility for energy efficiency is split between departments within governments (e.g. between agencies responsible for energy and environment issues), between various levels of government and between various ministerial forums and regulatory bodies. While governance arrangements have improved in recent years, they are still far from perfect.

These divisions of responsibility create challenges for accountability, coordination, funding and delivery of energy productivity improvements. These issues are considered at some length in the Report of the Prime Minister's Task Group on Energy Efficiency, which brought together experts from multiple government agencies, the community and industry bodies.

Whilst it is critical for existing bodies, such as the Australian Energy Market Commission (AEMC), to have greater expertise in energy management issues, there are currently no bodies that have an appropriately wide remit to deliver a step-change in energy efficiency. The energy efficiency of the economy is impacted by multiple overlapping markets, including markets for energy and buildings, and coordination between these issues is critical. In recognition of these challenges, jurisdictions such as New Zealand have established semi-independent bodies that coordinate and deliver energy efficiency policy.

Recommendations:

- **Establish a *National Energy Efficiency and Productivity Agency***

A new agency should be established to administer national programs for the COAG Energy Council, such as GEMS and the energy efficiency provisions of the NEPP.

- **Increase key institutions' capability and focus around energy efficiency**

The AEMC and other key bodies have significant gaps in expertise around energy productivity. It is critical to ensure that these organisations have the terms of reference and capacity to focus on these matters. As a priority, the Energy Efficiency Council recommends that both the AEMC and Australian Energy Regulator have one part-time Commissioner appointed with a specific focus on demand-side issues.

Sector-specific Policies

12. Households and vulnerable consumers

Improving the efficiency of Australia's dwellings will not only reduce households' energy bills, but also improve their comfort and health. Numerous studies have found a link between building quality, thermal comfort and health, and a recent study in the *Lancet* found that around 3,000 deaths in Australia were linked to periods of hotter and colder weather.¹⁴

Residential energy efficiency has improved in recent years due to policies like minimum standards for new homes and appliances. However, Australian building standards are still relatively low by international standards, and the existing building stock is still very inefficient.

Significant barriers to energy efficiency in the residential sector include:

- Builders do not bear the long-term costs of decisions that they make (energy and maintenance cost), face incentives to 'cut corners' and many lack critical skills.
- The landlord-tenant relationship splits the control and benefits from improved energy efficiency. Landlords have taken up relatively few free energy efficiency measures offered under government programs, which indicates that incentives are much less effective in rental properties and regulatory approaches are necessary.
- Households have low awareness of energy efficiency issues, limited information and are time-poor.
- Vulnerable households face even greater information barriers and limited access to capital to invest in energy efficiency upgrades.

A number of cross-sectoral policies are critical to support improvements in household efficiency, including: energy market reform, energy retailer obligations, minimum standards for appliances and buildings, finance, and training for trades such as builders, electricians, plumbers and refrigeration mechanics.

Sector-specific recommendations:

- **Develop a national residential energy efficiency disclosure scheme**

Homebuyers and tenants in most states and territories cannot compare how efficient homes are before they buy or lease them. This reduces the incentive for builders and owners to make buildings more efficient. Introducing a scheme to rate the efficiency of buildings would unlock the power of the market, as those buyers and tenants that are willing to pay more for efficient homes create an incentive for building upgrades.

There is a strong case for introducing residential energy efficiency ratings. The ACT Government requires energy efficiency ratings to be disclosed when homes are sold, and research indicates that homes that have higher ratings have higher market values.¹⁵ Nationally, the efficiency of office buildings has increased significantly since the introduction of voluntary NABERS Energy ratings in 1998 and mandatory NABERS Energy ratings for some buildings in 2010 under the Commercial Building Disclosure program.

In 2009 COAG agreed to "Phase in mandatory disclosure of residential building energy, greenhouse and water performance at the time of sale or lease, commencing with energy efficiency by May 2011" under the National Strategy on Energy Efficiency. This commitment has not been delivered. However, Victoria is planning to roll out a state-based voluntary Residential Energy Efficiency Scorecard in 2016, and the NSW Government is collaborating with industry and research organisations through the 'EnergyFit Homes' initiative to investigate the most effective way to give homeowners, buyers and tenants information about the efficiency of buildings.

The Energy Efficiency Council recommends that governments develop a framework for a national residential energy efficiency disclosure scheme to be launched in 2018, and test one or more voluntary tools over the next two years.

¹⁴ Gasparri A. et al 2015 'Mortality risk attributable to high and low ambient temperature: a multicountry observational study', *The Lancet*, Vol 386, No. 1991, p367-375.

¹⁵ Department of the Environment, Water, Heritage and the Arts 2007, *Modelling the Relationship of Energy Efficiency Attributes to House Price: The case of detached houses sold in the Australian Capital Territory in 2005 and 2006, a statistical consultancy report*, Australian Bureau of Statistics.observational study', *The Lancet*, Vol 386, No. 1991, p367-375.

- **Introduce minimum standards for rental properties**

In most jurisdictions tenants can already demand certain repairs to homes, such as fixing leaking ceilings. However, tenants need to drive these changes and in practice it can be challenging for them to demand their rights without facing the risk of eviction. The Energy Efficiency Council recommends a more proactive approach, where dwellings need to meet a set of health, safety and energy efficiency criteria to be legally rented out. Minimum standards should initially focus on basic protections, and be tightened over time to bring all rental properties up to acceptable standards.

- **Upgrade public and community housing**

Governments should upgrade the energy efficiency of public and community housing to provide healthy, safe and affordable homes to vulnerable people.

- **Expand and review partnership programs to support vulnerable households**

A number of organisations are currently delivering programs to support vulnerable households. Funding for these types of programs should be expanded and the impacts of these programs should be evaluated, in order to gradually improve their effectiveness. Programs to support vulnerable households should be delivered through partnerships between local governments, state governments, welfare organisations and energy retailers that have existing links to low-income families and can deliver programs to those that are most in need.

- **Research and trial programs to encourage energy efficient building renovations**

While energy retailer obligations have been effective at improving the efficiency of home appliances, it has proven more challenging to improve the fabric of existing buildings. Governments should research and trial programs to complement energy retailer obligations and support upgrades to existing buildings.

- **Research and trial programs to improve the efficiency of multi-dwelling buildings**

There are significant barriers to upgrading the efficiency of multi-unit dwellings, including the need for collective decisions for changes to common areas. Developing energy efficiency ratings for multi-unit dwellings would likely deliver benefits, but small-scale programs, such as the City of Sydney's 'Smart Green Apartments' program, are essential to identify the best way to upgrade multi-unit dwellings.

13. Government operations

Improving the efficiency of government operations (facilities, vehicles, streetlights and other infrastructure) is critical to deliver:

- Major budget savings from reduced energy and maintenance costs. In 2014 the former Victorian Greener Government Building (GGB) program was on track to save the Victorian Government over \$2 billion over 25 years, with a Net Present Value of \$400 million.
- Improvements to public facilities such as schools and hospitals.
- Jobs, investment and industry development, as governments are large buyers and give the energy efficiency industry the confidence they need to invest in hiring and training staff.
- Reduced greenhouse gas emissions.
- Leadership to the community.

While the case for investment in government efficiency is strong, most government programs to drive efficiency have only delivered limited results, because they have allocated insufficient funds and relied on uncoordinated efforts by agencies and individuals that often lack key skills. Effective facility efficiency programs, like the NSW Government Resource Efficiency Program (GREP) involve:

- A whole-of-government process, with Cabinet considering whole-of-government benefits, which are larger than the benefits that accrue to individual agencies. A whole-of-government process also reduces the need for each agency to spend considerable resources developing their own processes.
- A finance mechanism. Agencies need access to funds to pay for works, but are generally only allowed to borrow funds from Treasury. Requiring each energy efficiency project to go separately through a budget process increases administrative costs and creates delays that undermine efficiency upgrades. Governments should set up a system that pre-approves funding for energy efficiency projects outside the budget cycle, as long as the projects meet specified financial criteria. In effect, this process rolls up a large number of energy efficiency projects into a single budget bid, so that Cabinet can consider the merits of one bid rather than multiple small bids.
- A facilitation unit to help agencies tender for energy efficiency services, as engaging and managing experts requires specific knowledge and skills.
- A mandate on agencies to identify energy saving opportunities in their buildings and invest in projects that meet pre-determined financial criteria (e.g. an Internal Rate of Return over 11 per cent). The incentive across government to invest in efficiency upgrades is much stronger than the incentive for individual agencies, as agencies focus on their key indicators and treasuries typically recoups recurrent savings.

The efficiency of government appliances and vehicles can be much more easily improved as they are replaced over short periods of time. Governments should introduce clear guidelines to ensure that they purchase efficient vehicles and equipment when they are replaced.

Sector-specific recommendations:

- **Establish programs to upgrade government facilities in all jurisdictions, like the NSW Government Resource Efficiency Policy**

Effective programs to improve the efficiency of government facilities require both loans to agencies to fund facility upgrades and mandates on agencies to identify energy savings. Governments should introduce programs based on the Government Property Group & EEC's *Guidance Paper: Integrating Energy Efficiency Retrofits and Energy Performance Contracting*.

- **Establish facilitation teams in local government peak bodies to help local governments engage and manage the experts that can upgrade their facilities**

Local governments can borrow funds for energy efficiency programs from both the private sector and organisations like the Clean Energy Finance Corporation. However, with the exception of some capital city councils, most local governments lack the expertise to engage and manage energy efficiency experts. The Australian, state and territory governments should jointly fund skilled facilitation teams based in local government peak bodies. These facilitation teams would assist local governments to engage and manage experts to upgrade facilities.

- **Establish requirements for procuring energy efficient vehicles and equipment in all jurisdictions**

Procurement rules that encourage the purchase of energy efficiency vehicles and equipment will deliver reductions in governments' expenditure on fuel, gas and electricity and catalyse local markets for energy efficiency products.

- **Implement a national plan to upgrade streetlights**

In most parts of Australia, electricity NSPs operate streetlights on behalf of state, territory and local governments. However, NSPs do not have strong incentives to improve the energy efficiency of streetlights. Governments need to urgently implement a national plan to address the barriers to cost-effective upgrades to streetlights.

14. Commercial buildings

The commercial building sector includes office, retail, accommodation, education, health, industrial and municipal buildings. Commercial buildings are responsible for around 11 per cent of Australia's greenhouse gas emissions.¹⁶ Emissions largely come from electricity, which is used mainly for heating (44 per cent), lighting (24 per cent) and equipment and appliances (18 per cent).¹⁷

Research shows that improving the energy efficiency of commercial buildings delivers multiple benefits. For example, upgrading offices doesn't just lower energy bills – it also improves staff comfort, reduces sick-leave, improves staff retention, increases typing speeds and improves overall staff productivity by 1 to 5 per cent. The Commercial Building Disclosure program upgraded just a fraction of Australia's building stock over four years but delivered an estimated \$168 million in improved office staff productivity.¹⁸ Workers, tenants and building owners all benefit from building upgrades.

However, there are significant barriers to upgrading commercial buildings, including:

- Low demand for energy efficiency among many non-premium tenants due to low awareness of the benefits to staff comfort and productivity.
- The landlord-tenant relationship splits the control and benefits from improved energy efficiency.
- A complex mix of ownership structures, which can limit the incentive for efficiency upgrades and make it difficult to undertake decisions about retrofits.
- Skill and incentive issues in the construction and building management industry (e.g. the substitution of materials in construction can affect building efficiency).

There are significant differences between the office, retail and accommodation sectors, and we recommend that the COAG Energy Council fund the development of separate plans to improve the efficiency of each of these sectors. There are also significant differences within each sector. While the premium grade office sector in Australia has excellent capabilities and is already a global leader in building efficiency, the majority of office

owners require support and some will only improve their buildings if minimum standards for existing buildings are introduced to protect tenants.

A number of cross-sectoral policies are critical to improve the efficiency of commercial buildings, including: energy market reform, energy retailer obligations, minimum standards for appliances and buildings, and training for trades and experts.

Sector-specific recommendations:

- **Transform offices by investing at least \$10 million a year for ten years through the Council of Australian Governments (COAG) to engage building owners, provide incentives for building upgrades and develop minimum standards for rental offices**

There is sufficient knowledge of the office sector to start developing a Ten-year Action Plan to transform the efficiency of the office sector. This Plan would fund targeted research, policy development and policy trials, including:

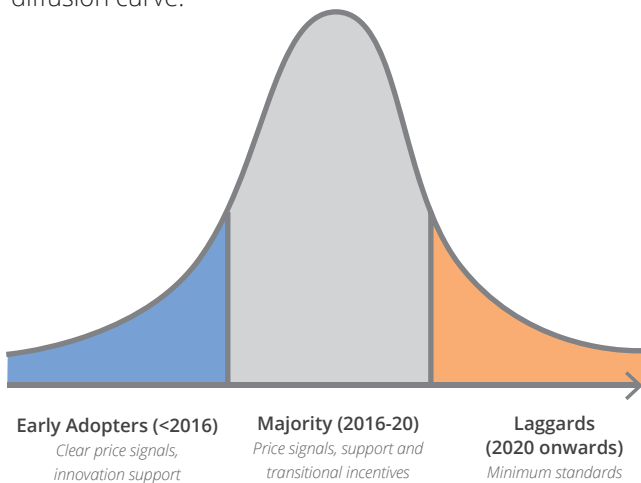
- » **Engagement programs** for the mid-tier office sector. The EEC and Property Council of Australia are currently in the first stage of developing a program that would help local governments and other parties engage and support key parties, including building owners and tenants.
- » **Transitional incentives / levies** to be introduced in 2016-18, potentially based on council environmental charges (e.g. buildings with a NABERS energy rating of 4 stars and above are charged lower Council levies).
- » **Minimum lease standards** to be introduced in 2020 to support consumer protection and worker productivity. The structure of these standards would need to be developed and rigorously tested before introduction, but could potentially stipulate a minimum NABERS Energy rating (e.g. 3 stars) for any building that is leased out.

¹⁶ ASBEC and ClimateWorks 2016 Low Carbon, High Performance.

¹⁷ Department of Climate Change and Energy Efficiency 2012 Baseline Energy Consumption and Greenhouse Gas Emissions In Commercial Buildings in Australia Part 1.

¹⁸ ACIL Allan 2015 Program Review: Commercial Building Disclosure. Report to Department of Industry and Science.

This approach will ensure a gradual transition in the market and provide clear signals to the property sector. This staged approach can be represented as a diffusion curve:



- **Carry out research to develop 'Ten-year Action Plans' for other key building types, including retail and accommodation**

Further research is required before detailed plans can be developed to transform sectors such as retail and accommodation. Governments should allocate funding to improve understanding of these sectors and the policies that are required to support change in these sectors.

- **Leverage government ownership and tenancy to improve building efficiency**

Governments own and occupy a large proportion of the commercial buildings in Australia, and are in a position to catalyse significant change in this sector. These issues are discussed in Section 13.

- **Enhance energy efficiency rating and disclosure programs**

The NABERS program and Commercial Building Disclosure (CBD) program have delivered significant improvements in energy efficiency. These two programs should continue to be refined, expanded and exported to other countries.

15. Manufacturing

Manufacturers are energy intensive, even small sites, and collectively they account for 25 per cent of final energy use in Australia.¹⁹ Recent rises in gas and electricity prices have affected Australian manufacturers' international competitiveness, making it critical to tap into the major opportunities they have to improve their energy productivity.

Many manufacturers use large quantities of gas, and have been seriously affected by the recent increases in wholesale gas prices. This price rise has been largely caused by linkage of our gas markets to international gas markets, and it's unlikely that gas will return to historical prices of under \$4 per Gigajoule. While most homes and offices can respond to rising gas prices by switching to other forms of energy for services like heating and cooking, some manufacturers are dependent on gas, and their only option for reducing their gas bill is improved efficiency.

Manufacturers are also very sensitive to electricity prices and tariff structures, and have been impacted by recent rises in electricity prices and network charges. Large manufacturers can also provide significant value to electricity markets through on-site generation and 'demand-response' (reducing demand during periods of peak demand), which can reduce the need for network augmentation and peak energy supply, reducing energy bills for other consumers.

Site-specific energy assessments and ongoing energy management are both essential and cost-effective for manufacturers, as energy-using processes vary significantly between sites and the size of energy savings dwarf the costs of site-specific approaches. Furthermore, a well-conducted site assessment will typically identify many other forms of productivity improvement, such as reductions in production bottlenecks and improved materials efficiency.

However, there are significant barriers that prevent energy productivity improvements, including:

- Energy market rules, regulations and tariff structures that don't encourage energy management. In particular, many sound investments in energy management have been prevented by uncertainty about future tariff structures and the lack of price-signals for demand-response.

- Many staff lack expertise in energy efficiency, are time poor, focused on other issues and difficult to engage.
- The contractors and consultants that businesses engage for much of their technical work often lack expertise in energy efficiency.
- Many manufacturers lack the structures and processes they need to drive energy efficiency. For example, while site managers typically make decisions that affect energy use, procurement departments often pay energy bills, creating an internal split-incentive. A study in 2013 found that staff in over 70 per cent of participants in the Energy Efficiency Opportunities program (see below) didn't have access to critical information about the energy used in routine operations.²⁰

There is strong global evidence that even large energy users need support to undertake energy efficiency. In Australia the need for support is substantially greater, as low energy prices over a twenty-year period led to a significant reduction in energy management capabilities in industry, making it hard to adjust to the recent rapid rises in energy prices.

However, there are currently very few programs in Australia that support the manufacturing sector to improve its energy efficiency. While there are business-support programs in NSW, Victoria and ACT, these are generally modest in size.

A number of cross-sectoral policies are critical to support improvements in manufacturing efficiency, including: energy market reform, energy retailer obligations and minimum standards for equipment such as motors.

Sector-specific recommendations:

- **Introduce a 'modernising manufacturing' program to link companies to experts that can help them develop and implement multifactor productivity upgrades**

Many manufacturers make efforts to optimise their operations, but gaps in knowledge mean that many hold off on major capital investments, resulting in the use of outdated equipment, production bottlenecks and inefficient use of staff, raw materials and energy.

¹⁹ Department of Industry and Science (2015) *Australian Energy Statistics*, Table E.

²⁰ ACIL-Tasman 2013 *Energy Efficiency Opportunities Program Review*, Prepared for the Department of Resources, Energy and Tourism, Canberra.

The EEC recommends that the Australian Government develop a 'Modernising Manufacturing' program that links manufacturers with experts that can help them to develop and implement major site upgrades. Critically, this program would not just focus on energy productivity, but on upgrades that deliver multiple benefits, including energy efficiency, materials efficiency, automation and the industrial internet.

This program should be designed over a 6 to 12 month period, based on the extensive global literature on this topic and consultation with key stakeholders.

- **Introduce a *National Energy Productivity Program* for large energy users**

The Energy Efficiency Opportunities (EEO) program, which ran from 2006 to 2014, required Australia's largest energy users (around 220 companies) to follow energy management protocols, such as regular energy assessments and reporting major energy saving opportunities to the board. The EEO program helped identify over \$1 billion in annual energy savings, but was closed in 2014, despite ACIL Allan estimating that the program would have delivered \$178 million per annum in net benefits if it had been continued.²¹

The Australian Government should develop a new streamlined program that builds on the best features of the EEO program, but makes key changes that reduce compliance costs. In particular, large users that can demonstrate excellence in energy management should be exempted from the program.

If the Australian Government is unwilling to develop a national program, then state and territory governments should develop programs to replace the state-based programs (such as the Victorian Environment and Resource Efficiency Plans program) that were closed in 2013 to reduce duplication with the EEO.

While the Council supports the development of a voluntary 'energy efficiency challenge' program to showcase leading companies, a mandatory program is still necessary to provide all major energy users with the basic processes that they need to manage energy use.

- **Encourage the installation of sub-metering**

While metering is necessary to identify valuable energy saving opportunities, businesses typically can't see the benefits of metering until after it has been installed. The EEC recommends the development of a national program to overcome this barrier and encourage the installation of sub-metering, which would include incentives and outreach.

²¹ ACIL-Tasman 2013 *Energy Efficiency Opportunities Program Review*, Prepared for the Department of Resources, Energy and Tourism, Canberra.

16. Mining and resources

The resource sector, which includes mining and oil and gas extraction, collectively accounts for 13 per cent of Australia's final energy use.²² The mining sector has reported potential energy saving opportunities through the EEO program that would deliver savings of over \$650 million a year.²³ Improving the energy productivity of this sector will not only improve their international competitiveness, but can also deliver significant benefits to other energy consumers through the wider benefits of on-site generation and demand-response.

Individual resource sites can have very large energy saving opportunities, because they consume large quantities of energy. One Australian oil and gas producer has undertaken projects that deliver over 4 Petajoules of energy savings every year – enough to power more than 100,000 households. Individual energy efficiency projects in the mining sector also often have substantial value, because of the potential size of energy savings, the cost of fuels such as diesel and the costs of fuel transport and grid connection in remote locations.

While many resource companies have invested in projects to boost energy productivity, many have still not implemented what appear to be financially attractive energy saving opportunities. This is partly due to the nature of the resource sector, which faces high costs for staff time and any downtime in production, and business cycles that lead to a focus on increased production during boom periods and reluctance to invest during downturns.

However, the lack of investment in identifying and implementing energy savings by many companies also reflects key skill-gaps, organisational structures and cultural norms, which have been slow to shift in response to rising energy costs and the financial and social imperatives to reduce greenhouse gas emissions.

There are a number of policies that would help to unlock these opportunities. Firstly, the resource sector is sensitive to energy prices and energy market rules, which means that energy market reforms will be critical for this sector. However, the fact that many opportunities to deliver energy productivity improvements already have a good payback means that incentives to encourage projects in this sector are generally unsuitable, with

the exception of targeted grants for areas such as metering and sub-metering.

The technical conservatism of the Australian resources sector also means that investment in large-scale trials of new technologies and dissemination of information on best-practice and benchmarking would be of value. However, the most critical policy approach for this sector would be the reintroduction of a mandatory energy management program, investment in upskilling energy managers and potentially industry agreements for energy saving targets.

Sector-specific recommendations:

- **Develop sectoral energy-saving targets**
In several countries (e.g. Denmark) governments have worked with industry to jointly agree to energy productivity improvement targets. The Australian Government should look at these approaches and consider setting industry-agreed targets.
- **Develop a new *National Energy Productivity Program for large energy users*** (see Section 15)
- **Encourage the installation of sub-metering** (see Section 15)

²² Source: Department of Industry and Science 2015, *Australian Energy Statistics*, Table H.

²³ *ClimateWorks Australia 2013, Industrial Energy Efficiency Data Analysis Project, Mining*, ClimateWorks, Melbourne.

17. Small to Medium Enterprises

Small to Medium Enterprises (SMEs) are defined as businesses with less than 200 employees. The SME category includes a wide variety of businesses, including office-based companies, manufacturers and restaurants. Very different approaches will be required to improve the energy productivity of different types of SME. Office-based and retail SMEs should be addressed through approaches that are suited to those categories of building, and manufacturing SMEs should be supported in a similar way to larger manufacturers.

Non-manufacturing SMEs face a number of barriers, such as:

- Staff lack expertise in energy efficiency, are time poor, focused on other issues and difficult to engage.
- Energy savings are large across a whole sector but modest at individual sites. This means that a completely site-by-site approach would be less cost-effective than identifying common types of equipment and energy saving opportunities that could be rolled out across sectors.
- Electricity tariff structures that do not encourage energy savings. Several NSPs have recently significantly increased fixed charges for SMEs, which reduces the opportunities for SMEs to lower the energy bills through improved energy efficiency.

A number of cross-sectoral policies are critical to support improvements in SME efficiency, including: energy market reform, energy retailer obligations and improving and extending the coverage of standards for equipment and appliances. Programs that link SMEs with energy efficiency experts, such as energy retailer obligations, will be critical. However, this should be accompanied by a sectoral approach to energy-intensive SMEs.

Sector-specific recommendations:

- **Establish sector-specific Small to Medium Enterprise (SME) engagement and upgrade programs**

The EEC recommends that governments work with industry associations to develop sector-specific SME programs that identify and roll-out suitable upgrades to common energy-intensive equipment. Given limited resources, the Council recommends

that governments focus on a small number of energy-intensive sectors, such as laundries and bakeries.

Significant design work needs to be undertaken to ensure that these programs are effective. The EEC recommends that the program would need to have a 12-month design period, and then run until at least 2020 to ensure deep engagement.

18. Transport

Transport is Australia's largest energy user, accounting for 39 per cent of final demand. There are major opportunities to improve the efficiency of Australia's transport systems. Taking up these opportunities would save homes and businesses millions of dollars, improve the quality of urban space and reduce the health and amenity impacts of local air pollution.

While the size of the Australian landmass contributes to our high per capita transport emissions, particularly in trucking and aviation, Australia is actually one of the most urbanised countries in the world. The vast majority of Australians live and work in cities, and the structure of our cities and our transport systems encourage long distance intra-urban car travel. Urban structure and transport systems impact on household budgets, health and urban amenity. Improving urban design and encouraging greater use of public transport, walking and cycling would deliver substantial benefits in improved health, urban landscape and reduced emissions.

Australia is also one of the few developed countries that doesn't have fuel-efficiency standards for light vehicles, and as a result we have one of the least fuel-efficient light vehicle fleets in the developed world. The lack of fuel-efficiency standards raises the cost of travel for homes and businesses, and introduction of standards would likely have the greatest impact in the next ten years in improving transport fuel efficiency.

Finally, electric vehicles are likely to enter the market in reasonable volumes in the next decade. This would have significant benefits in terms of improved air quality, reduced emissions and improved electricity demand profile. While Australia's actions may not have a significant impact on the global development of electric vehicles, we will need to take action to facilitate cost-effective uptake of electric vehicles in Australia.

Sector-specific recommendations:

- **Develop fuel efficiency standards for light vehicles**

Australia is currently one of the few industrialised nations without fuel efficiency standards for light vehicles. Introducing standards would deliver major savings to households and businesses and deliver significant emissions reductions.

- **Commit to purchasing a mix of efficient and electric vehicles for government fleets in all jurisdictions**

Most government vehicle fleets are relatively fuel-inefficient, and include high numbers of large 6-cylinder vehicles. Purchasing a wider range of vehicles will deliver significant fuel and budget savings. Governments should also purchase a small number of electric vehicles in order to catalyse wider market transformation.

- **Commission a report on preparing Australia for the shift to electric vehicles**

Over the next two decades there is likely to be a global shift to electric vehicles. In order to adapt to this transformation in a cost-effective way, Australia may need to upgrade our transport networks, energy markets and standards. The EEC recommends that the Australian Government conduct a review on the actions that are required to prepare Australia for this transformation.

- **Commission a report on the costs and benefits of improved urban planning and mode shift**

Changes in urban structure and the provision of better walking, cycling and public transport infrastructure would likely deliver multiple benefits to the community and economy. The EEC recommends that COAG commission a review into these issues and that the Australian, state and territory governments review their infrastructure funding priorities based on the outcomes of this review.

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