

EXECUTIVE SUMMARY

ENERGY EFFICIENCY EMPLOYMENT IN AUSTRALIA

An analysis of the current and potential jobs created by saving energy in Australia

Report by:



Commissioned by:



Key findings

- Energy efficiency is already a major jobs creator in Australia. At least 500,000 Australians spend part of their time improving homes' and businesses' energy efficiency, including electricians, architects and engineers. The amount of time that they spend on energy efficiency adds up to 59,000 full-time equivalent (FTE) positions. This figure is intentionally conservative, and across the whole economy it could be as high as 236,000 FTE positions.
- An ambitious strategy to improve the energy efficiency of homes, commercial buildings and industry would:
 - Cut households' and businesses' energy bills by \$7.7 billion per annum.
 - Reduce households' gas use by 940 million gigajoules over a decade. This is equivalent to finding an extremely large, untapped and low-cost gas field in Australia that could provide almost a quarter of Australian manufacturing's gas needs.
 - Create 120,000 FTE job-years of employment.
- Australia has a number of energy efficiency schemes, including the Victorian Energy Upgrades Program, NSW Energy Savings Scheme, South Australian Retailer Energy Efficiency Scheme and ACT Energy Efficiency Improvement Scheme. If other jurisdictions adopt similar schemes and existing schemes are expanded and extended, these schemes could conservatively deliver 43,000 FTE job-years of employment.

Background

Energy efficiency has played a key role in improving Australians' wealth, health and wellbeing. More efficient businesses are more productive, and more efficient homes are cooler in summer, warmer in winter, healthier and cheaper to run. Improving the energy efficiency of Australian homes and businesses is the largest opportunity we have to reduce households' energy bills.

To date, very little work has been undertaken to estimate the number of people employed in energy efficiency in Australia. The Energy Efficiency Council and the Energy Savings Industry Association commissioned Green Energy Markets to estimate:

- Upper and lower bound estimates of the number of people currently working in energy efficiency activities in Australia. The estimates of current employment figures are based on a range of existing sources of information; and
- The employment that would be created by government policies that drive the adoption of a series of technologically mature energy efficiency upgrades to homes and businesses.

Green Energy Markets' analysis suggested that there are large numbers of current workers in energy efficiency – in fact there are more FTE jobs in energy efficiency than any other part of the energy sector. This scale of employment makes common sense – Australia has tens of millions of buildings and units of energy-using equipment, and a large workforce is required to build, use and maintain these assets. Green Energy Markets also found that, if Australian governments were to adopt policies aimed at accelerating energy efficiency improvement of this large number of assets, it would generate significant levels of employment.

Our energy efficiency workforce has been hiding in plain sight. This report shines a light into a major part of our economy that is worthy of far more attention.

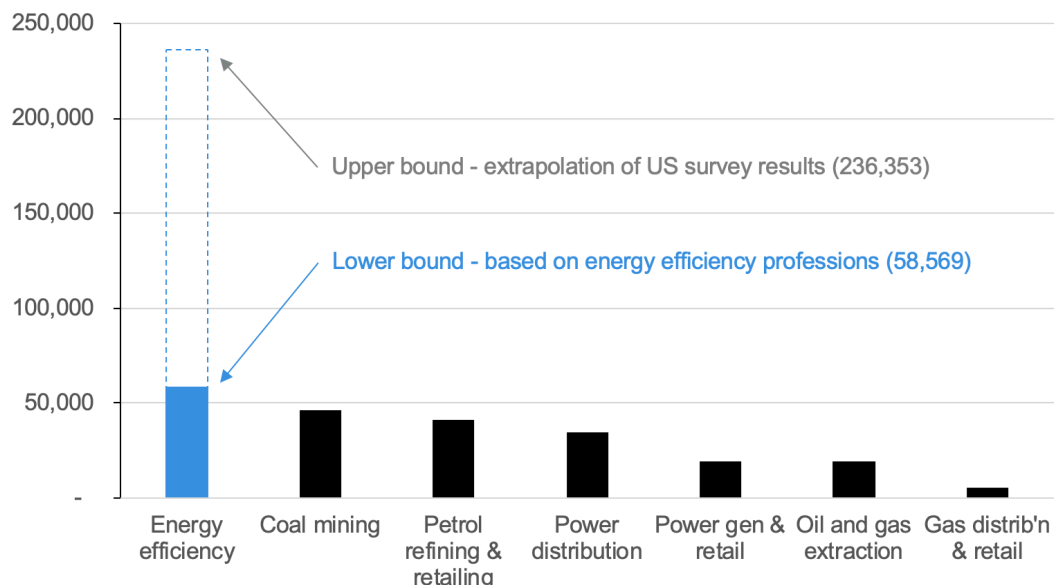
Current employment in energy efficiency

Australian statistical agencies have not yet attempted to evaluate the extent to which members of the workforce are engaged in activities that improve the efficiency with which we use energy. In the absence of such direct survey data, this report employed two techniques that provide guideposts to the potential range of people currently employed in activities that improve energy efficiency:

1. To develop the conservative lower-bound estimate, we identified people working in professions and industry sub-sectors within the 2016 Australia Bureau of Statistics (ABS) Census that are likely to be engaged in designing, specifying, installing, and maintaining equipment that consumes energy. We estimated how much time these professions and sub-sectors spend on energy efficiency based on research by the United States Department of Energy (DOE).
2. To develop the upper-bound estimate we extrapolated the results of a major energy efficiency employment survey by the DOE to the Australian context. This takes estimates of the proportion of workers within different industries that are engaged in energy efficiency activities within the United States and applies those to the number of people employed in these same industries in Australia.

The first methodology estimated that a minimum of 500,000 employees spend part of their time working on energy efficiency. While many of these people wouldn't primarily consider themselves 'energy efficiency workers', their time adds up to around 59,000 FTE of work in energy efficiency. The second methodology estimated an upper-bound of 236,000 FTE of current employment in energy efficiency. It's notable that even the conservative methodology estimates that more people work in energy efficiency than in energy producing sub-sectors than are currently measured by the ABS.

Figure 1. Indicative Australian employment in energy efficiency relative to other energy industry sectors



Sources: Green Energy Markets analysis based on information from the US Department of Energy (2017) US Energy and Employment Report; and Australian Bureau of Statistics Census – 2016. Jobs associated with the construction of new generation (e.g. renewable energy) are captured under the construction industry in the census.

Potential employment from an ambitious energy efficiency strategy 2020-2030

Australia has the potential to significantly improve its energy efficiency to deliver lower energy bills. Green Energy Markets identified a range of technologically mature upgrades that would deliver financial returns in line with or exceeding households and businesses' cost of capital or alternative low risk investments. Green Energy Markets then estimated how many installations could be undertaken in Australia, and the employment required to undertake these measures.

For example, there are an estimated 3.7 million homes in Australia in climate zones that require heating and cooling. An estimated 32 per cent of these homes could benefit from retrofitting draught sealing, which takes around 2 hours of labour per house. This results in a total estimate of 1,388 job-years of potential employment in draught sealing in Australia. The full table of measures is set out in Table 1.

In total, this adds up to over 120,000 job-years of employment.

Table 1. Employment generated from energy efficiency upgrades

Efficiency upgrade	Employment (job years)
Replace electric storage water heater with heat pump	8,056
Replace LPG water heater with heat pump	1,291
Install or top-up insulation	4,339
Draught sealing	1,388
Install single efficient heat-pump heater/cooler in households dependent on electric resistive and/or gas non-ducted heaters	4,827
Replace ducted gas heating with several efficient heat pump heater/coolers	12,146
Replace LV halogen downlights with LEDs	2,265
Commercial building efficiency upgrades	47,545
Mining sector efficiency upgrades	7,627
Manufacturing efficiency upgrades	29,283
Water & Waste Services efficiency upgrades	621
Transport sector efficiency upgrades	1,023
TOTAL	120,411

Potential employment from enhanced market-based energy efficiency incentives

Market-based energy efficiency schemes could play a key role in delivering many, but not all, of the energy efficiency upgrades to homes and businesses analysed in the previous section. Based on global and local analysis, Green Energy Markets estimates that market-based incentives will deliver about one-third of the total employment generated by an ambitious energy efficiency upgrade strategy – around 43,000 job-years of employment.

Table 2. Employment expected from upgrades driven by market-based energy efficiency incentives

Efficiency upgrade	Participation rate	Employment (job years)
Replace electric storage water heater with heat pump	25%	2,014
Replace LPG water heater with heat pump	40%	516
Install or top-up insulation	40%	1,735
Draft sealing	50%	694
Install single efficient heat-pump heater/cooler in households dependent on electric resistive and/or gas non-ducted heaters	50%	2,414
Replace ducted gas heating with several efficient heat pump heater/coolers	30%	3,644
Replace LV halogen downlights with LEDs	85%	1,926
Commercial building efficiency upgrades	35%	16,641
Mining sector efficiency upgrades	35%	2,669
Manufacturing efficiency upgrades	35%	10,249
Water & Waste Services efficiency upgrades	35%	217
Transport sector efficiency upgrades	35%	358
TOTAL		43,077

Notes on methodologies

The methodologies used to develop the figures in this executive summary are set out in the full report.

Notes

ENERGY EFFICIENCY COUNCIL (EEC)

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

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ENERGY SAVINGS INDUSTRY ASSOCIATION (ESIA)

The Energy Savings Industry Association is the peak national, independent association for businesses that are delivering energy-saving upgrades to homes and businesses through energy savings schemes. Members include Australia's leading product suppliers, service providers and certificate creators accredited under energy savings schemes and complementary initiatives across Australia. Our members are at the forefront of the energy savings industry: driving investment in a robust, competitive market that delivers innovative, quality, energy-savings products and services.

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