

Submission to Productivity Commission regarding Creating a more dynamic and resilient economy and Investing in cheaper, cleaner energy and the net zero transformation

Alan Pears AM 15 September 2025

Contents

Submission to Productivity Commission regarding Creating a more dynamic and resilient economy and Investing in cheaper, cleaner energy and the net zero transformation.....	1
Creating a more dynamic and resilient economy.....	1
Investing in cheaper, cleaner energy and the net zero transformation.....	4
Conclusion	7

Creating a more dynamic and resilient economy

The paper makes a number of useful recommendations. However, it fails to focus on a number of important issues that underpin a dynamic, resilient and productive economy:

- The focus on regulatory reform in the paper does not frame regulation as **just one element** of effective policy and strategy. Governments have many policy levers, and effective policy typically involves a mix of measures that evolves over time. Some policy tools include those shown in Figure 1.

Figure 1. List of policy tools (source university lecture by Alan Pears)

Many policy tools available: combinations must be used

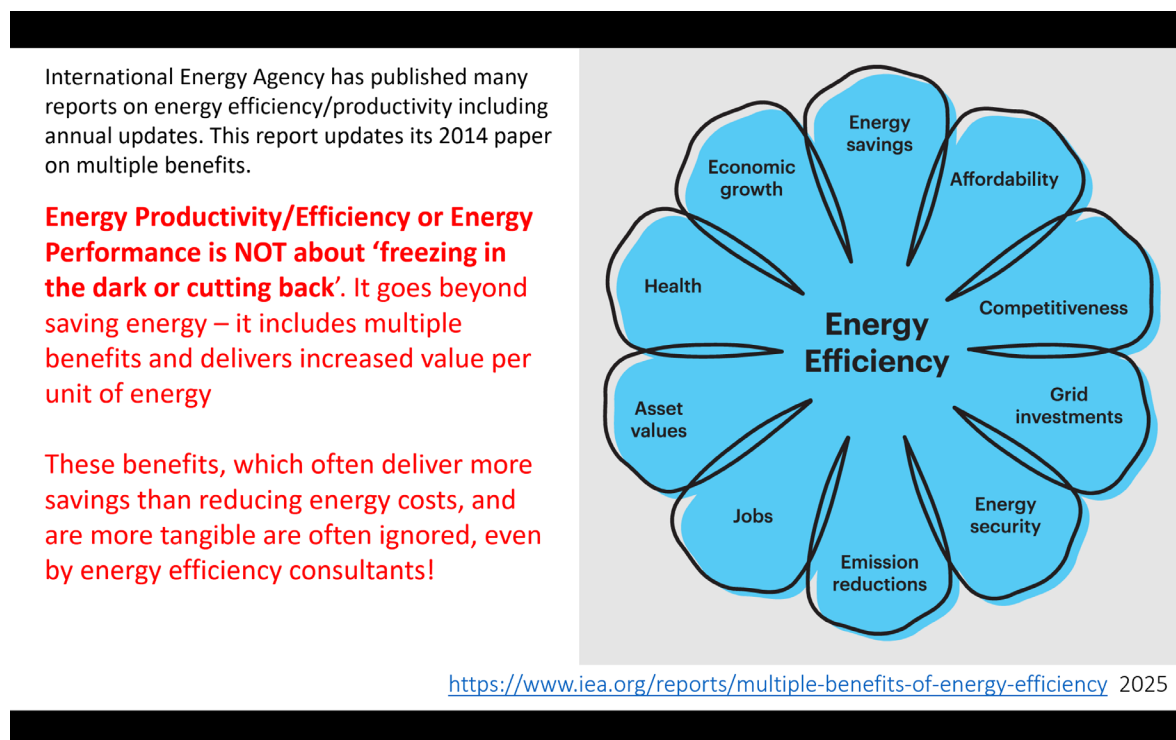
- Strategies and targets – visions, action plans
- Information, promotion, training
- Benchmarking
- Regulation
- Financial mechanisms
 - Taxes and levies
 - Incentives and subsidies
 - Market mechanisms, pricing
- Innovation, RD&D, commercialization
- Government purchase and example
- Institutional frameworks
- Managing access to markets and resources
- Integration of climate abatement/sustainability outcomes into existing policies targeting other areas, especially energy markets and housing

The quality and detail of
policy/program design AND
IMPLEMENTATION shapes
success or failure.
Monitoring and learning from
experience are essential for
long term success.

Energy productivity/performance measures are often poorly funded. For example, the recent Australian National Audit Office review of appliance energy efficiency found that the annual benefit was \$1.3 to 2 billion yet the budget for the Commonwealth operation of the program was under \$15 million. Our appliance efficiency program has fallen well behind global best practice. The European Union provides some examples of how a wider range of products could be covered, performance standards upgraded and promotion expanded. A key weakness is that appliance labels are not mandated for on-line sales.

- The paper fails to recognise the broad role of energy (and resource) efficiency/productivity/performance in driving broad productivity and contributing multiple benefits across the economy and society. The International Energy Agency and many others have highlighted these multiple benefits, which influence resilience, innovation, health and business productivity, as shown below. Indeed, energy efficiency often redefines ‘reality’ by making new options possible and preferable.

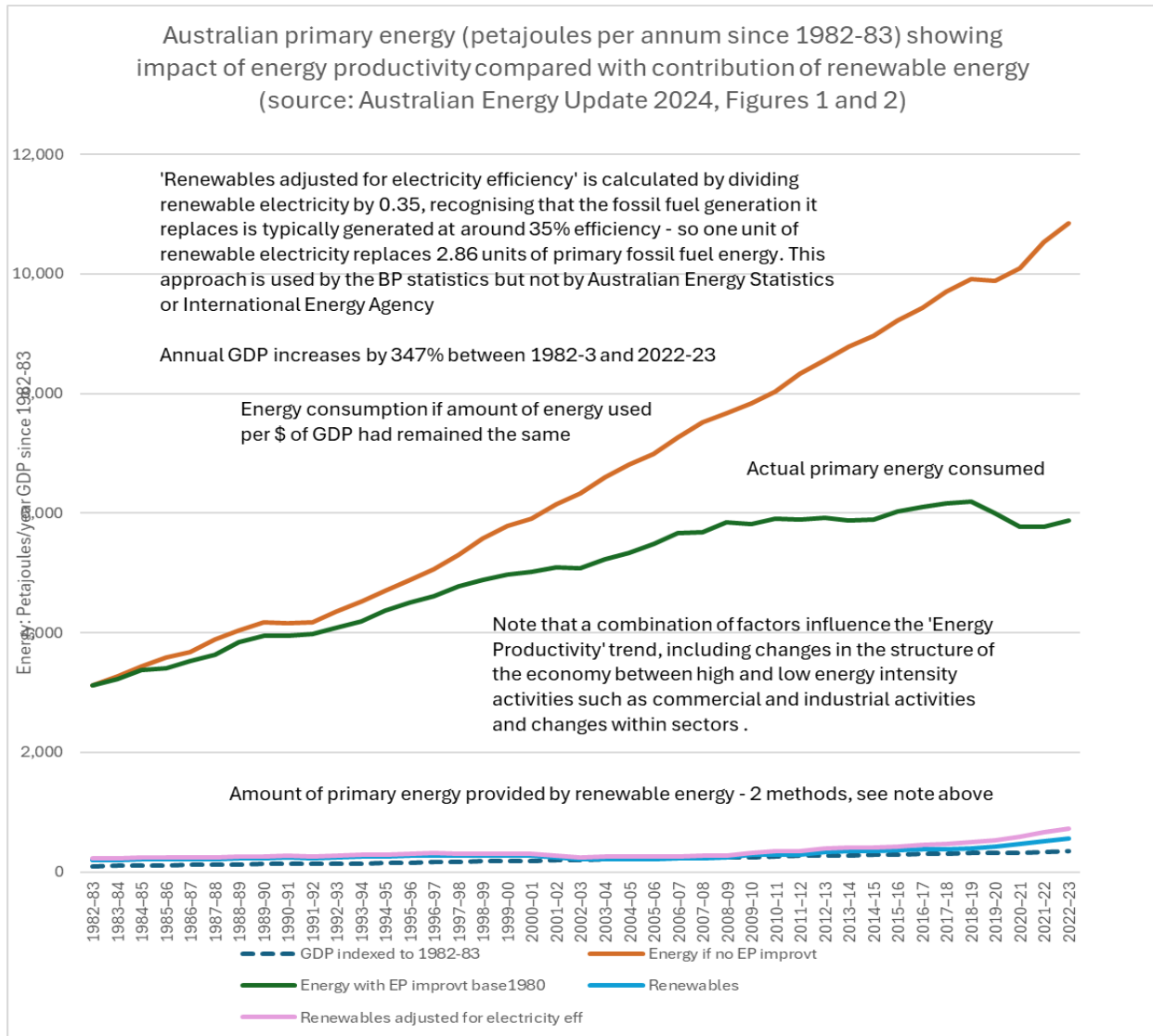
Figure 2. International Energy Agency graphic of multiple benefits of energy efficiency (also described as energy productivity, efficiency or performance by various sources)



See the graph below (Figure 3) showing the contribution of energy efficiency improvement (often described as improvement in energy productivity or reduction of energy intensity per unit of GDP) to reduction in Australian primary energy consumption relative to the contribution of renewable energy. Clearly, energy productivity/efficiency has played a major role in economic efficiency improvement and reduction in carbon emissions, **despite the weak policy focus.**

In practice, energy efficiency measures are often included in decisions with little or no recognition of their existence: few people buy a mobile phone, laptop computer or air fryer because it is energy efficient – they buy them because they provide better, more useful services. And they do this by being more efficient.

Figure 3. Trends in contributions to reduction in energy consumption of Australian energy productivity improvement since 1982 and contribution of renewable energy to total Australian primary energy supply. Source Australian Energy Update 2024 Figures 1 and 2 with additional indicator for renewable energy giving it additional credit for the primary fossil fuels replaced by non-combustion renewable electricity generation

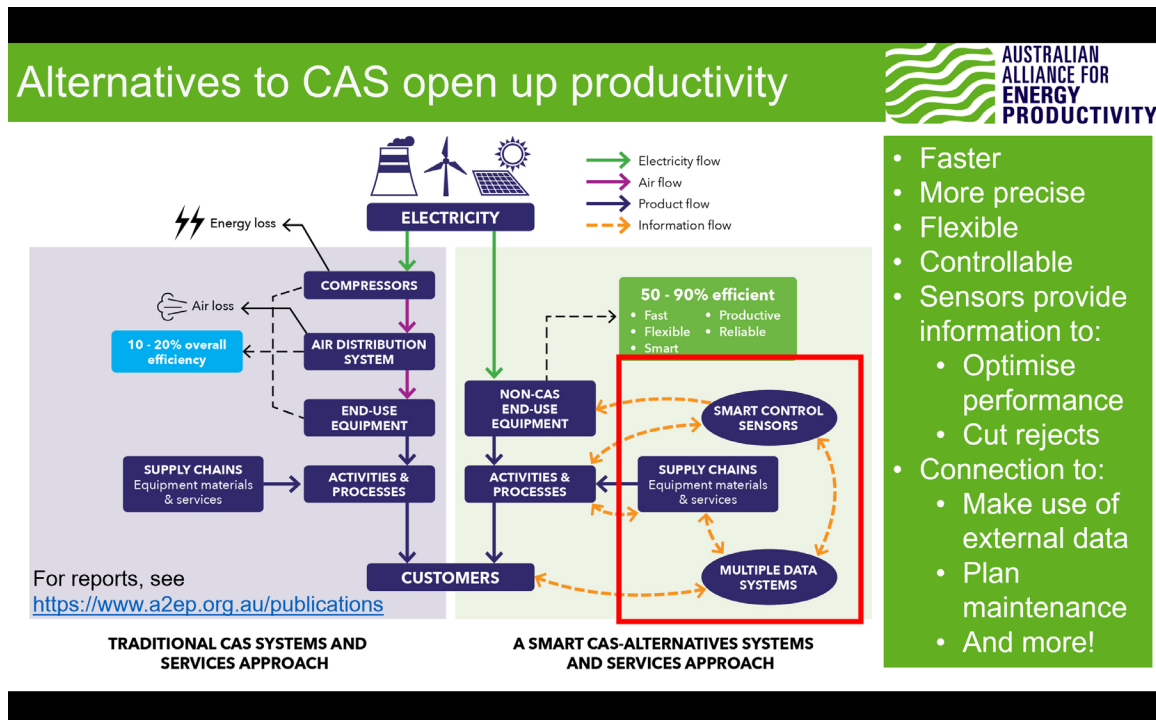


Energy efficient, flexible appliances often deliver multiple benefits, for example:

- Mobile phones are extremely efficient, powerful computers with very efficient screen technologies and batteries.
- The best domestic 8-star refrigerators on the Australian market are now over 80% more efficient than fridges were when appliance energy labelling was introduced in the mid 1980s. They maintain food quality for much longer, reducing food waste.
- Electric heat pumps are four or more times as efficient as gas heaters, and they provide both heating and cooling with one appliance.
- Heat pump clothes dryers are 3 to 4 times as efficient as conventional dryers and dramatically reduce condensation and mould growth in homes.
- A variety of electric technologies can replace compressed air systems in industry, which is considered to consume around 10 percent of industrial electricity at efficiencies as

low as 10-20 percent. Replacements can reduce electricity consumption by up to 90% while being more precise, flexible and able to use and send data to optimise overall process performance and reduce reject rates. See graphic below from my report *Alternatives to compressed air* at <https://www.a2ep.org.au/compressedair>.

Figure 4. Illustration of how smart electric alternatives to compressed air systems in industry can dramatically reduce energy consumption while improving productivity by more flexible and precise operation as well as ability to share and utilise real time data to optimise productivity.



Until the 1990s, public energy utilities including the Victorian Gas & Fuel Corporation and State Electricity Commission had comprehensive RD&D facilities that drove practically oriented innovation in appliances, infrastructure design, installation practices and maintenance practices, including supporting development of policies and programs such as appliance energy labelling, check testing and assistance to innovating manufacturers. Most of this capacity was shut down in the 1990s during energy market reform and privatisation. This has seriously undermined Australian innovation in these areas.

RMIT's Centre for Design developed a world leading efficient dishwasher and drink vending machine among other products. It was closed down around 2012.

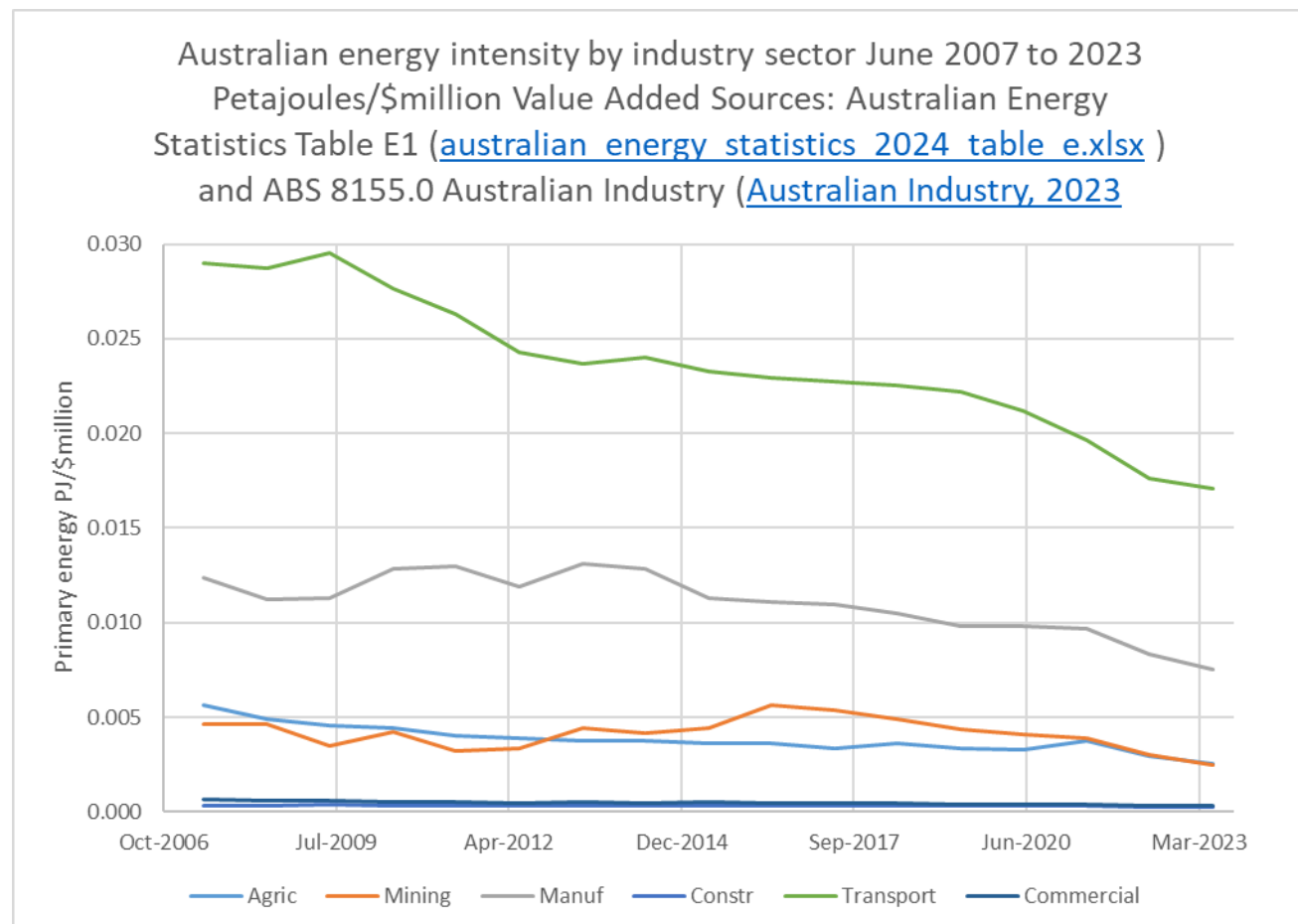
We need stable, well resourced, practically oriented RD&D facilities and training facilities to rebuild an innovation culture.

Investing in cheaper, cleaner energy and the net zero transformation

The comments above apply to the energy situation as well as the broader economy. This paper largely ignores the important role of energy efficiency/productivity/performance in reducing the cost of energy and energy supply infrastructure as well as reducing consumer bills and making buildings more resilient so they can more effectively manage demand.

At an end-use sectoral level, trends in energy intensity (the inverse of energy productivity) have been varied, as shown below.

Figure 5. Trends in end-use energy intensity by business sector. These changes contribute to the overall trend shown in Figure 3.



Residential buildings are a major weak spot. Significant numbers of households have energy bills up to three times the average, with many vulnerable households included, so they are obvious targets for attention and assistance. The graph below (Figure 6) reflects the situation for residential gas and electricity consumers. However, only energy retailers have the details of consumers and ongoing relationships with them. Energy regulators and/or state governments (whose legislation covers retailers) must incentivise or require retailers to act. But they have no incentive to help these profitable consumers to reduce their energy consumption or peak demand.

In southern states, especially Victoria, high demand for gas and, in South Australia, for gas-fired electricity is strongly correlated with cold weather (see Figure 7).

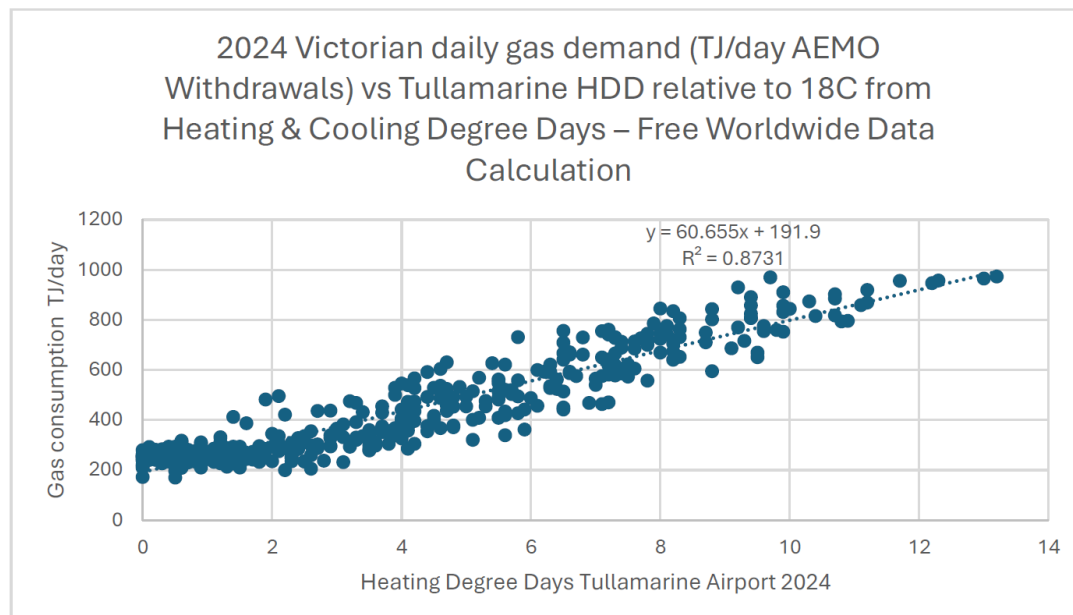
Figure 6. Results of a 2020 Australian Energy Regulator survey of seasonal household electricity and gas use. (source: https://www.aer.gov.au/system/files/Residential%20energy%20consumption%20benchmarks%20-%202019%20December%202020_0.pdf)



State level electricity data from OpenElectricity.org.au and AEMO Gas Statements of Opportunity show strong seasonal variation in southern states mainly driven by building heating and cooling – see for example <https://reneweconomy.com.au/how-electricity-meters-distort-the-role-of-rooftop-solar-generation/>

Southern Australian high daily gas demand (and demand for gas-fired generation) is strongly correlated with cold weather, as shown in Figure 7.

Figure 7. Correlation between Victorian daily gas consumption and space heating requirements, as indicated by Heating Degree Days. For each extra HDD, Victorian gas consumption increased by over 5 percent. (Source submission by Alan Pears to Victorian government consultation on Building Electrification)



I have written numerous submissions to Victorian government consultations and written articles in *reneweconomy*, *ReNew* magazine, *thefifthestate* as well as presenting lectures at RMIT and University of Melbourne and talks to community groups on these issues.

Conclusion

The Productivity Commission papers discussed here require major revision to incorporate the important roles of energy efficiency/productivity/performance in an economically productive low carbon economy.