AUSTRALIAN ALLIANCE FOR ENERGY PRODUCTIVITY

Doing more. Using less.

Mr Peter Achterstraat AM
NSW Productivity Commissioner
c/- NSW Treasury
GPO Box 5469
Sydney NSW 2001

Lodged through http://productivity.nsw.gov.au/your-submission

Dear Commissioner

Re: Kickstarting energy productivity

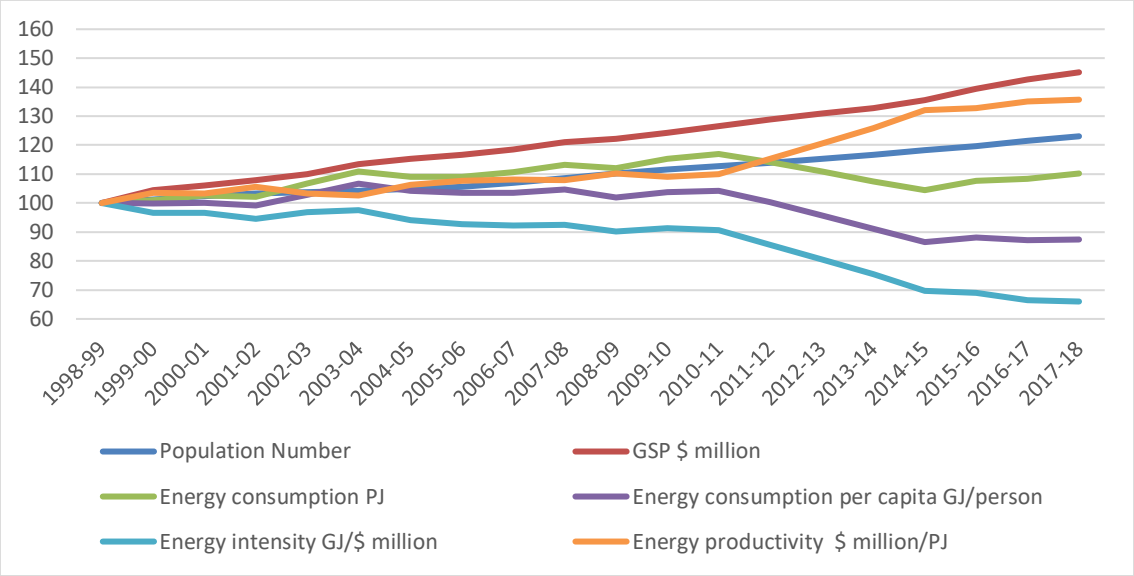
Thanks for the opportunity to contribute to this conversation. Our response to your discussion paper (the Paper) is brief and provided in the spirit of conversation. We'd be pleased to provide further information and to meet with you to canvass our views, concerns and proposals. Our work over the last five years has focused on research, demonstration, engagement and advocacy. We believe that a focus on productivity should drive policy, regulation and investment. At a headline level we are concerned that your Paper continues a fundamental paradigmatic flaw; while framed with a view to energy markets it gives almost exclusive consideration to the supply side.

A focus on the outcomes from energy use, rather than on energy as an input, is critical. A focus on optimising consumption will optimise upstream investments in supply (from the grid to communities of consumers as well as from rooftop solar to individual houses). We currently waste a lot of energy. We currently waste lot of infrastructure. And as a community, we currently pay well more than reasonable prices for energy. The Paper seems to focus overly on grid-supplied electricity and gas and to exclude from consideration liquid fuels, notably those used in the transport sector and for stationary purposes such as pumping for irrigation.

Nonetheless, as energy costs account for nearly nine per cent of Australia's GDP and a likely similar quantum of New South Wales GSP we welcome the inclusion of energy amongst the focus areas of your work. We're of the view that energy productivity improvement is a vehicle for wholistic productivity improvement; in addition to intrinsic benefits it provides a lens for capital and labour productivity, particularly through business process optimisation.

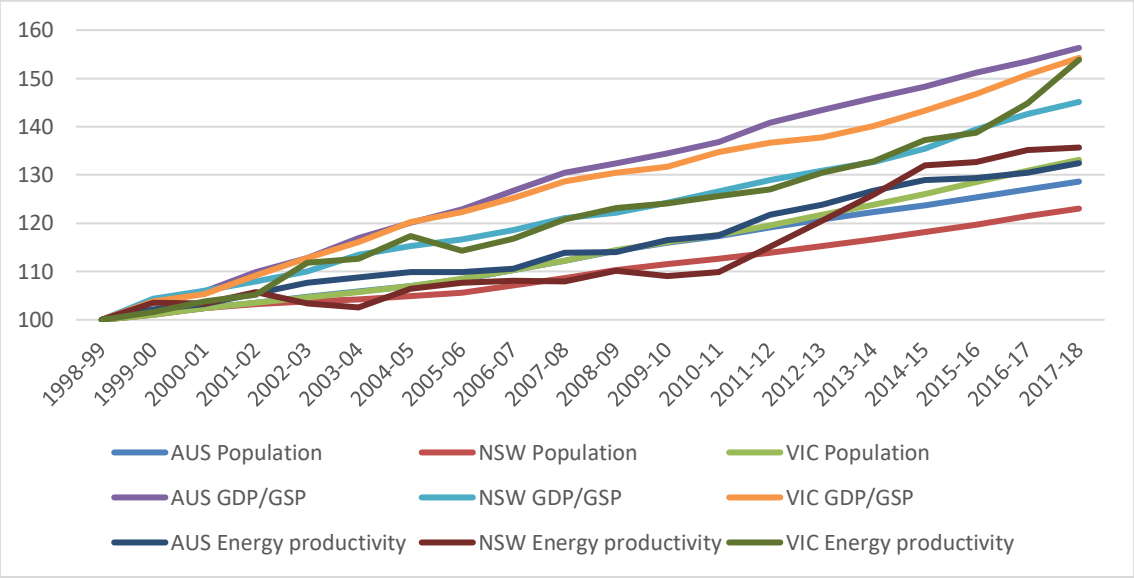
Australian Alliance for Energy Productivity (A2EP)
ABN: 39 137 603 993 ACN: 137 603 993
Level 10, UTS Building 10, 235 Jones Street, Ultimo NSW 2007, Australia
email: info@a2ep.org.au web: a2ep.org.au phone: +61 2 9514 4948

This graph illustrates the decoupling of improvement in New South Wales GSP from increased energy consumption. However it also illustrates a worrying trend. Improvements in energy consumption, intensity and productivity, relative to improvements, in GSP are slowing if not reversing.



Source: Department of the Environment and Energy, Australian Energy Statistics, Table B, September 2019[1]

While at June 2018 energy productivity in New South Wales ($381m/PJ) was better than in Victoria ($319m/PJ) and the national average ($294m/PJ), the rate of improvement in Victoria was stronger and sustained over the last few years.

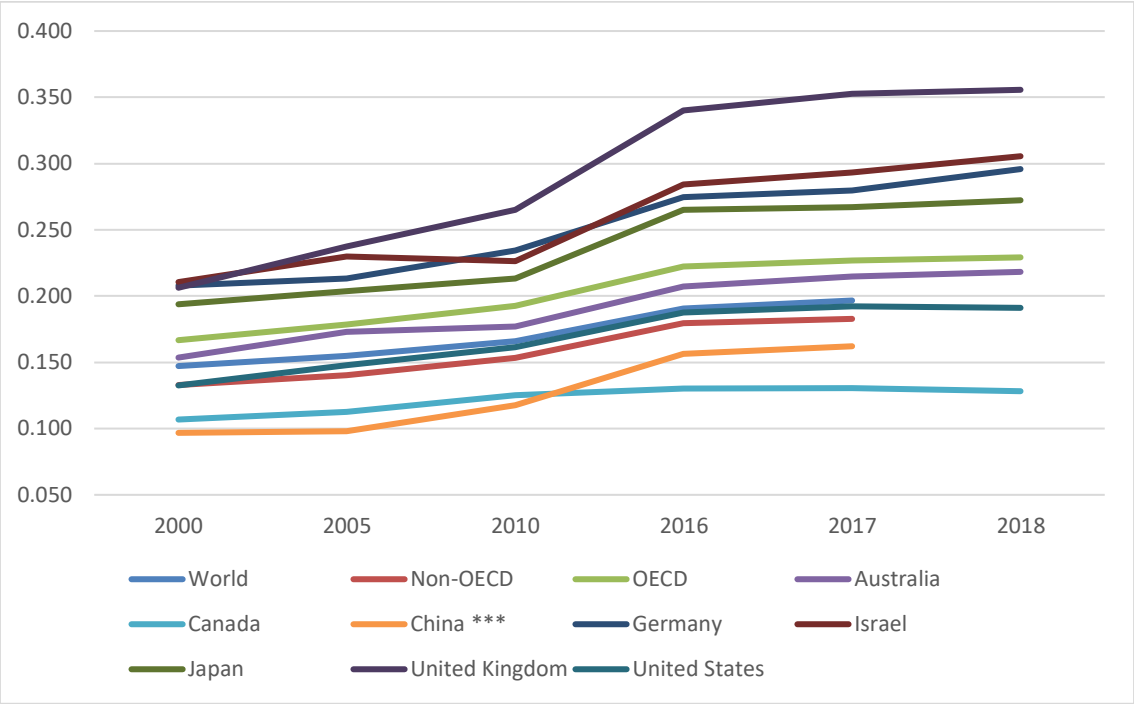


Source: Department of the Environment and Energy, Australian Energy Statistics, Table B, September 2019[2]

[1] Notes: GDP data are chain volume measures, reference year 2016-17, series starts in 1989-90, GSP data are chain volume measures, reference year 2016-17, series starts in 1989-90. Sources: Population data are from ABS cat. no. 3101.0 for 1980-81 onwards, cat. no. 3105.0 for 1960-61 to 1979-80; GDP data are from ABS cat. no. 5204.0, chain volume measures. GSP data are from ABS cat. no. 5220.0. Data for NSW includes ACT

[2] As above

The rate of energy productivity improvement across the Australian economy as a whole is relatively low and flagging in comparison with other economies and is lower than the OECD average.



Source: International Energy Agency, World Energy Balances 2019[3]

We suggest that the reliable, sustainable and productive use of energy can only be achieved if there is:

- optimisation of end-use by maximising the efficiency of equipment and appliances and the thermal effectiveness of buildings, and through engagement with consumers; and
- optimisation of productivity of the built supply system including the existing network through better balancing demand and supply.

Over the last five years - in collaboration with our members, partners and clients - we've built a body of evidence that suggests these priorities for improving energy productivity:

- mapping and managing the energy system transformation that is underway (despite governments) and maximising the benefits to the state and consumers;
- integration of policy and programs for energy with policy and programs for economic development and emissions reduction;
- planning for the opportunities, enterprises and employment of the [near] future and supporting innovation where benefits outweigh costs;
- setting state-government targets for improving productivity aligned with targets for energy consumption and emissions reduction;
- overhauling state government procurement policy and practice including for buildings, vehicle fleets and operations more generally;
- ensuring state government contracts for energy supply achieve best practice for tariff and other terms including demand response;

[3] * 1 Mtoe = 41.868PJ, ** PPP billion 2010 USD, *** Excluding Hong Kong

- address deficiencies in the Energy Savings Scheme such that it evolves to support innovation in markets and policy objectives for productivity;
- action through COAG Energy Council to ensure national harmonisation of objectives and measures;
- implementation of demand management programs in parallel with those being developed through the NEM and its institutions;
- establishment of a fund to support innovation through research, demonstration and consumer engagement;
- accelerating the uptake of digital technologies and the application of data to planning and operations of energy consumption and generation; and
- development of vocational education and training programs to educate trades for the systems of the [near] future.

We've endeavoured to respond to particular questions raised in the Paper. We would be pleased to answer any questions you might have about this brief submission. We would be pleased to meet with you and/or to provide further information about our ideas. We wish you well in your pursuit of better productivity.

Yours sincerely
Australian Alliance for Energy Productivity

[redacted]

28 November 2019

In response to the discussion paper…

Our responses appear in blue

Prioritising productivity reforms

- Do you agree with the six focus areas identified—outlined in Chapter 3 and subsequent chapters—for a productivity agenda?

Some seem to be sector-specific (ie water, energy, housing) and others 'functional' ie regulation and taxation.

- Do you agree with the issues and challenges identified for each focus area? What other issues should we consider?

We've noted our primary concern about the framing of energy as a productivity issue; that it focuses on markets for grid-supply, neglects the demand side and excludes liquid fuels (and, critically, transport as a significant end-user of energy).

- What reform options should we consider (see areas for specific feedback identified throughout the Paper)?

As noted in our introduction, above, and at discussion questions, below.

Productivity levers

The list (Institutions and legal frameworks, Innovation, Infrastructure, Human capital) seems omits 'incentives' or/and 'investment'. There are quite likely circumstances in which it would be appropriate for the state to develop incentives for action by others or/and to invest in action of its own volition (in education for example).

Why we need to focus on water and energy

- Water and energy markets are key determinants of productivity because they are central to the living standards of households and underpin production for firms. At the same time, water and energy policy needs to take account of sustainability objectives.

Energy is a key determinant of productivity regardless of whether it is delivered through energy markets or otherwise. The [relative] energy productivity of an off-grid home or business can determine it's relative productivity to other homes or businesses and to potential productivity. Energy productivity is a determinant of [economic] efficiency, effectiveness, competitiveness, and profitability.

- A range of State Government departments, independent regulators, and state-owned corporations are crucial for reliable, sustainable and productive water and energy markets.

A range of state government actors can also influence (for better and worse) the demand-side of energy markets and systems.

- The past decade has seen significant network investment, rising commodity prices, and plant closures affecting wholesale prices in the National Electricity Market. State-sponsored

initiatives such as the Network Reform Program are putting downward pressure on prices, but there is scope for further gains in efficiency.

There is considerable scope for non-network and demand-side gains in efficiency and productivity. The system should be considered as a whole.

Conversation starters

- Investment in new long-term generation capacity is presently constrained by ongoing uncertainty over emissions reduction for the sector.

Some actors *are* investing in long-term generation capacity (large- and small-scale) precisely *because* of uncertainty over emissions reduction policy and energy supply markets.

- Natural gas is likely to be needed to meet peak demand as intermittent renewable energy generation expands and coal generators close. However, despite New South Wales' substantial gas reserves, there are barriers to efficient exploration and production.

Energy productivity improvements (through - ideally optimised and integrated - equipment and structure efficiency, demand response and load control, the application of data, control and automation systems, distributed generation and storage) should be prioritised over the short-term solution to energy needs provided by natural gas.

- Better electricity network asset utilisation, increased demand management, and emissions policy certainty could all spur investment and contain electricity prices for consumers.

The relationship between the three factors included in this statement is not clear. With regard to network asset utilisation, this statement would be more likely correct if the regulatory frameworks governing and pricing were flexible, fair and consumer-focused. They are not. Care should be taken to make a distinction between prices and bills. They are not interchangeable.

- An improved regulatory framework for energy, including gas, has the potential to generate budget savings while better supporting sector productivity.

It is not clear whose budget or which budget. To the extent that the NSW Government is a consumer of energy, this may well be the case. If household or business budgets are in scope, 'improved' would need to mean impactful in terms of lowering prices and/or consumption and thus bills.

- Achieving higher productivity and more sustainable environmental outcomes can be complementary objectives, given a more productive economy implies producing the same amount of output with fewer input resources.

This statement is correct but would be better expressed in the affirmative; achieving higher productivity and more sustainable environmental outcomes should be complementary objectives.

Problem definition: Energy

- The state has the opportunity to drive reform in this space

This statement is correct. However, efforts by state government actors directed to drive reform in energy systems would likely be most effective if focused on the demand-side and non-traditional supply (whether networked or not). The 'national' mechanisms for energy policy and regulation (notably through COAG Energy Council, the Energy Security Board, the NEM and its institutions) have proved resistant to change in general and integration with emissions reduction efforts in particular. The Energy Security Board Post-2025 Market Design process may result in appropriate and sufficient reform. But they will be a long time coming. The state should focus on opportunities that can be realised quickly, that complement or augment markets as currently and potentially designed, that demonstrate future-state design (in regulatory and technical terms) and that position consumers and prosumers more powerfully than now.

The state government can act effectively to support the demand side of markets, set targets for energy productivity improvement (and resource actions to achieve them). The state government, as a significant consumer in its own right, can back change through procurement.

Notably, since the Paper was published there have been two significant developments 'in this space'. On 20 November NSW Treasury published *NSW 2040 Economic Blueprint - Investing in the state's future*. The *Blueprint* canvasses 'energy policy', literally (and presciently) sandwiched between 'innovation' and 'industry development'. It notes that "there is currently no energy policy at the federal level" and that "this presents an opportunity… to step into the effective policy vacuum and develop a state-specific policy". On 25 November the Hon Matt Kean released the *NSW Electricity Strategy*. The *Strategy* declares that the government has three priorities for the electricity system: reliability, affordability and sustainability. It sets an Energy Security Target, lists four underpinning proposition and ten actions. This submission is not the best forum in which to address either the *Blueprint* or the *Strategy* but we suggest that the Productivity Commission would contribute helpfully to the conversation if only by calling for a coordinated approach when stepping in to the vacuum.

- An incomplete electricity reform narrative

Yes.

- Retail electricity prices have risen over the past decade

Yes.

Environmental policy costs

At page 64 the Paper notes that "the Australian Energy Market Commission (AEMC) has estimated environmental programs contributed $93 to the average New South Wales residential bill in 2018-19", and goes on to observe that "[t]hese impacts on bills underline the need for efficient outcomes that do not place undue costs on electricity consumers The efficiency and equity implications of high electricity prices is [sic] detailed…"

A2EP prioritises affordability as one of three critical concerns for energy policy (alongside reliability and sustainability). We have long decried significant and unwarranted increases in prices and bills. However, we think the tacit suggestion that environmental policy costs

unnecessarily contribute to increases is untested if not unfounded. The Paper details the programs and costs as:

> Commonwealth Renewable Energy Target – $62
> NSW Climate Change Fund – $14
> NSW Energy Savings Scheme – $7.

The Paper incorrectly totals the charges set out by the AEMC (should be $83) and does not mention that in the same report the AEMC suggests the average New South Wales residential bill in 2018-19 was $1294, so that

> Commonwealth Renewable Energy Target – $62 = 4.8% of bill
> NSW Climate Change Fund – $14 = 1.0% of bill
> NSW Energy Savings Scheme – $7 = 0.5% of bill
> Total – $83 = 6.4%.

Nor does the Paper interrogate the benefits ("efficient outcomes" or otherwise) of these programs for consumers, either individually or collectively through system-wide improvements. These 'costs' lead to investments that have benefits. See, for illumination, the report of the Statutory Review of the Energy Savings Scheme.[4] And it could well be argued that the Renewable Energy Target was one of few markers of certainty for markets and investors over the last decade. The Paper's earlier consideration of network costs notes that "rising network costs added $654 to the average bill… *between* 2008 and 2013 [our emphasis]". The AEMC work cited in the Paper suggests that network costs *in* 2018-19 were $607, $46.9% of the average bill. While environmental policy costs are undoubtedly material they rather pale in comparison.

[4] https://energy.nsw.gov.au/sites/default/files/2018-09/ESS-Review-Position-Paper.pdf

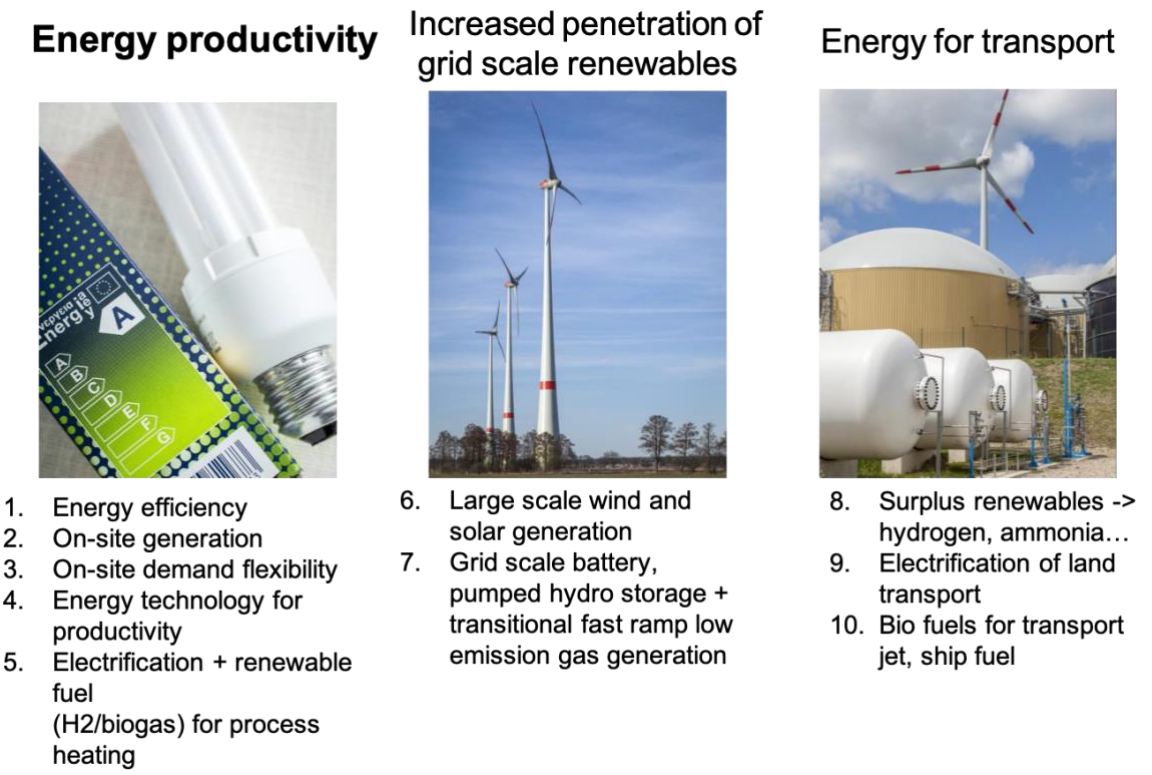
Discussion questions

- Are there further steps we can take to achieve greater efficiency in network businesses and environmental programs in the New South Wales?
- How could electricity demand management be further improved in New South Wales?

Networks can be made more economically and practically efficient through demand management (utilising time targeted efficiency, demand control, storage and optimal use of solar). Pricing is the critical issue – if there is not cost-reflective (network congestion related) pricing at each node of the network then businesses cannot respond and reduce their demand in peak periods and increase demand when there is excess [rooftop] solar generation. The utilisation of networks is currently very poor which is a key factor in price increases, and the state must be careful to avoid overly onerous reliability requirements (as is planned at the moment) and ensure that demand measures are implemented FIRST ie before new investment in supply infrastructure.

- How can New South Wales work to reduce uncertainty in electricity generation and emission reduction requirements to improve the investment outlook?

It is possible to simultaneously achieve reliable, affordable and low carbon/clean outcomes only if there is a policy framework that integrates approaches to generation and emissions over time and through the lens of energy productivity. The graphic below illustrates this integration. Germany has adopted this approach through its *Energiewende*. [5] Notably, *Energiewende* aims in part to correct sustained overemphasis and overinvestment in renewables; energy efficiency has been promoted to the first priority, the 'first fuel'.



[5] https://www.yumpu.com/en/document/read/58096159/the-german-energiewende

By way of example, improved energy efficiency and demand management could manage the closure of the Liddell coal-fired plant without further investment in fossil-fuelled generation and also ensure the best outcome from new generation in the renewables hub announced last week by Minister Kean. For more detail on the particulars of Liddell see the report produced by the Institute for Sustainable Futures at the University of Technology Sydney; *Beyond coal - Alternatives to extending the life of Liddell Power Station*.[6]

- What is the best framework for future evaluations of generation and network reliability?
- What additional measures, if any, can we take to cost-effectively improve reliability?

As a market-driving regulatory concept, 'reliability' does not mean providing 100% certainty of always meeting customer demand and should be seen as a two-way system that encourages and incentivises customers to manage consumption in line with available supply. Unwarranted reliability standards have been directly responsible for so-called 'gold plating' of the grid which has made Australia less competitive for business and caused affordability issues for businesses and households.

- What initiatives could we consider to remove barriers to gas exploration and production?

It is important to note that a lot could be done to accelerate electrification of all kinds of heating which is in many cases a much better and more energy productive option than gas. Electrification can have collateral benefits including a reduction in overall gas consumption and decarbonisation of the economy. It is already economical for most applications and may be a much better option than increasing NSW gas supply – it can be implemented faster, has better economics, and can deliver better environmental outcomes.

- How could we improve the New South Wales energy regulatory framework?

The most stifling regulatory barrier is the lack of effectively implemented cost reflective pricing to facilitate demand flexibility. There is a range of other less critical changes including to the administration of the Energy Savings Scheme (now the Energy Security Safeguard) that we would be pleased to discuss further along in the process.

[6] https://www.uts.edu.au/sites/default/files/article/downloads/Beyond%20Coal-%20Alternatives%20to%20Extending%20Liddell%20Power%20Station%20%28FINAL%29%20Nov%202017.pdf

Australian Alliance for Energy Productivity
Recommended priority measures for New South Wales

1. **Establish infrastructure, targets and budgets**

Set an annual improvement in energy productivity of 4.5%; for a doubling of energy productivity by 2035 (from 2015). Assess and provide resources to achieve the target.

2. **Accelerate transformation through innovation**

Apply a focus to accelerating innovation and technology transfer with dedicated budgets for development, demonstration, deployment and engagement.

3. **Accelerate investment in energy productivity**

Accelerate investment in energy productivity improvement through incentives, improved access to financing and by revamping retailer obligation (white certificate) schemes.

6. **Enlighten consumers: Implement an engagement program**

Design and implement an extensive, long term information and education campaign on smart energy use for improved amenity and reduced energy costs.

10. **Balance energy markets: Empower the demand side**

Apply integrated demand management to manage supply volatility before any commitment to new supply infrastructure. Target 15% of peak load to be met by demand management by 2025.

Australian Alliance for Energy Productivity
Background to recommendations

National Energy Productivity Plan 2.0 >> online here

2xEP Agriculture roadmap >> online here

2xEP Built environment roadmap >> online here

2xEP Mining roadmap >> online here

2xEP Manufacturing roadmap >> online here

2xEP Transport roadmap (Freight) >> online here

2xEP Transport roadmap (Passenger) >> online here

All available online at https://www.a2ep.org.au/reports-publications