

Australian Environment Foundation

**Submission to the Independent Review into the
Future Security of the National Electricity Market**

<http://www.australianenvironment.org/>

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1 The Preliminary Report

The preliminary report issued in December 2016 has:

- inaccurately assessed the Australian electricity market;
- misunderstood the nexus between global and national climate change politics and electricity markets;
- failed fully to recognise the costs being imposed on the market as a result of increasing levels of renewable energy and other greenhouse gas abatement policies; and
- offered guidance that is inappropriate for the market's future development.

The report canvassed different options, but of the seven themes identified as showing a future path, only one of these "Prices have risen substantially in the past five years" can be said unambiguously to be true. Most of the others are palpably false and even the one correct theme is not necessarily a guide to the future unless the policies that have been pursued over the past 16 years continue to be kept in place.

In addressing the seven themes the following points are pertinent:

1.1. Technology is transforming the electricity sector

Technology driving change is a phrase commonly used in the sense that innovation is providing consumers with superior goods and services and the customers are adopting these new technologies and abandoning those that were previously dominant – thus the computer replaced the abacus and the car replaced the horse.

The technology that is being referred to by the panel is renewable wind and solar. The only reason these might be transforming the electricity industry is because governments force their use with subsidies and regulatory requirements on users. To call this technology driven debauches the language.

The panel claims to detect that the transition to wind and solar PV "is reflected in a fall in their costs".

Wind and solar are and, on current knowledge of technological possibilities, are likely to remain three times as expensive as coal as a fuel for electricity generation. If renewable technologies were to make breakthroughs that brought costs down to below those of more established technologies then they might genuinely transform the sector.

As it is, it is misleading to place an emphasis on these technologies' costs since they remain uncompetitive. Doing so provides an unwarranted upbeat image of the technologies that have, after 15 years of subsidies, failed to meet the costs of other, unsubsidised, electricity supply sources.

In predicting a future where wind and solar energy is cheaper than fossil fuel or nuclear energy, the expert group is not alone. Back in 1984, Christopher Flavin, the President emeritus of the Worldwatch Institute, said that in a few years' time wind energy will not need to be subsidised. In 1983, Booz, Allen & Hamilton published a report saying the same thing as did Amory Lovins; and the American Wind Energy Association testified that the California Energy Commission had predicted wind would soon be cheaper than all other plant types.

We are still hearing such views voiced. Thus, BNEF reports on several competitive auctions in 2016 where private companies have offered record low prices to deliver solar power. In August a contract was said to have been won at \$US29.10/MWh in Chile. It is unlikely that a new coal power station in Australia would match that price. That would remain true even if the enterprise did not face the accumulation of regulatory restraints and the inevitable "greenfare" that Australian laws of standing have allowed to develop, bringing long and costly delays. If costs really are that low then there is no need for consumers having to bear the costs of subsidies for green power.

If the panel considers that renewable supplies are now or will soon be competitive, it is duty bound to recommend an immediate cessation of renewable subsidies since these will have become unnecessary costly interventions.

In any event, the panel should identify what the costs of continued and increasing levels of renewable energy will be to Australia. The panel might find the estimates in Table 1 below a useful starting point regarding current costs and these can be estimated for future years.

Table 1 Costs of subsidies to wind and solar

Commonwealth Costs 2016	(\$M)
LRET (wind and large solar subsidies) costs 21,431,000 MWh at \$85per MWh	1822
SRES (roof top solar subsidies) costs 6,000,000 MWh at \$40 per MWh	240
Environment Departmental budget costs	
ARENA	154
CEFC	239
Clean Energy regulator	674
Other	69
Other Agencies (CSIRO, BoM, other depts.)	~500
Total Commonwealth	3698
State	
Queensland Solar Bonus (\$276 per customer in 2015/6)	350
NSW Climate Change Fund/Energy Savings	317
ACT	6
Victoria (schemes twice cost of NSW)	439
SA (schemes three times cost of NSW)	62
State Schemes Total	1172
NATIONAL TOTAL	4870

In addition, there are the costs of transmission systems being built to accommodate the more dispersed and remote wind farms and solar generators and the costs of their asynchronous features.

1.2. Consumers are driving change

Contrary to the expert panel’s assertion, regulations, not consumers, are driving change.

For rooftop solar, consumers are voluntarily installing panels because the installation costs are defrayed by subsidies, unwillingly paid for by other consumers, including \$40 per MWh from the SRES and Feed-in-Tariffs (FiTs) at advantageous rates. Consumers, as the panel says, have invested billions of dollars in these systems but have done so only to benefit from subsidies that have caused wasted expenditures on high cost supplies. Consumers are driving that change only in the sense that government regulations make it profitable for them to do so.

Consumers are clearly not driving change as manifest in wind generators – consumers only accept such electricity because regulations force them to do so through the RET providing subsidies to this intrinsically low quality electricity (asynchronous, poorly located and intermittent) at a rate that provides a price three times that of rival types of supply.

The change is driven by government responding to green propagandists and businesses seeking government funding. Were it not for the subsidies consumers are being forced to pay, wind and solar would all but disappear as a source of electricity.

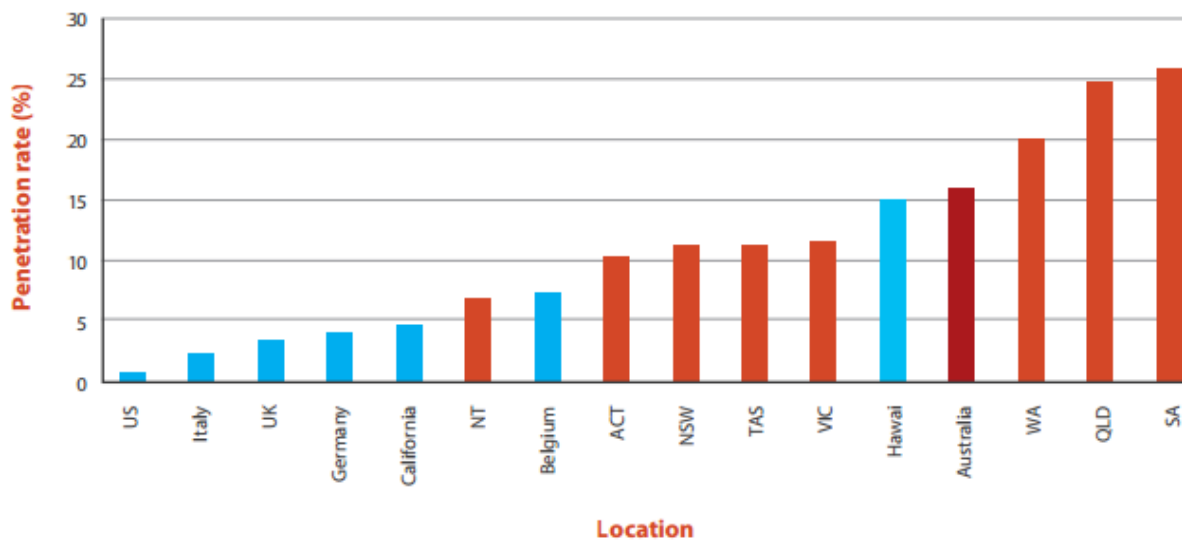
It is certainly true, as the panel says, “Without the right price signals and incentives, there will be inefficient investment by both customers and networks”. The chief implication of this is that governments should cease distorting the market especially since it is not well informed about the

level of the externalities or even whether, given the global nature of greenhouse gas emissions, there are any that are capable of being countered.

Unfortunately, the panel seems not to have digested the implications of its insight into what should drive markets. An illustration of this is the panel's contention regarding solar PVs that limited ability to pay on the part of some potential users is a sort of market failure. Markets depend on people paying for things out of their income or with borrowings from lenders who are confident that they can get their money back with interest. In the case of solar power, the \$40 per MWh subsidy over the installation's life and advantageous terms for Feed-in-Tariffs (FiTs) is already creating a considerable distortion favouring the 15 per cent of households with such installations, at the expense of other consumers, many of whom are poorer.

The panel's argument that there is under-investment in renewables is at odds with the fact that these extensive subsidies are in place and inconsistent with the illustration of Australian rooftop penetration compared with that of other countries that is depicted in its Figure 1.2 reproduced below.

Figure 1.2: Rooftop PV penetration rates as a percentage of households



There is in fact massive over-investment in a product that raises costs of electricity to the detriment of all consumers.

1.3. The transition to a low emissions economy is underway

If such a transition is underway it is only because it is being dictated by government. It will cease to be underway should government policy reverse its support for wind and solar or simply become neutral between different sources of fuel.

World politics is highly volatile. There is no march of history, just political leaders implementing their own policy preferences and responding to the wishes of those who vote for them. The panel notes that Australia has ratified the Paris climate change agreement under which it agreed to reduce its emissions of greenhouse gases by 26-28 per cent of the 2005 levels by 2030. The likelihood of the Paris agreement having any effect is very small as is discussed in section 2. The shift from the triumph of the "Davos man" to "drain the swamp" can be rapid. It is not clear what the expert panel's political forecasting proficiencies are, but it would be most short-sighted not to factor in the change brought about by the Trump election victory and some likely changes in Continental Europe.

The panel states that wind and PV costs have fallen considerably, but those technologies remain far more expensive than coal.

The panel takes some comfort in its preliminary report for what it says is a likely increase in electric cars. But, as it notes, this is presently only 0.2 per cent of the market and even if the AEMO guesstimate of a 10 per cent market share that it quotes were to be realised, this would still not be a major factor in reducing the demand for petrol (especially since the other 90 per cent of vehicles, absent some breakthrough in battery technology, would comprise far more than 90 per cent of the mileage).

1.4. Variable renewable electricity generators, such as wind and solar PV, can be effectively integrated into the system

This is true, perhaps to a level of 50 per cent or more but only at considerably more cost in terms of transmission lines and reserve power to back up intermittency and low reliability of wind and solar.

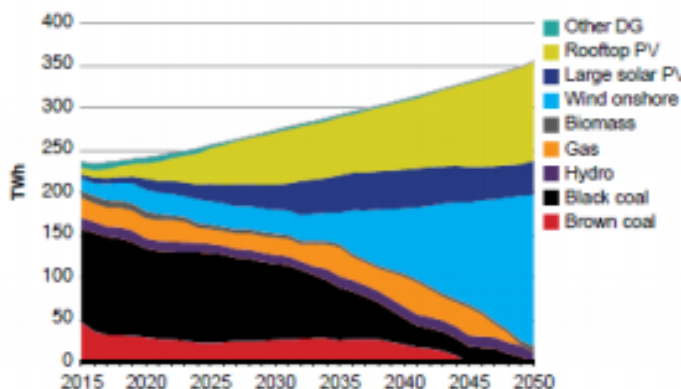
1.5. Market design can support security and reliability.

This is also true but at an additional cost.

The expert committee worked closely with, and drew from, another group set up by the CSIRO with a pre-set agenda which produced a paper, “Energy Networks Transformation Roadmap”¹. Carrying highly optimistic assumptions about technological change, this suggests that, “\$16 billion in network expenditure could be saved by 2050 if the grid buys support services from customers with onsite resources”. This is a groundless assertion and highly implausible. According to the report, shifting to 100 per cent renewables by 2050 would mean \$414 annual saving in average household electricity bills (compared with the roadmap counterfactual, business as usual, pathway).

The “Roadmap” has the usual array of fanciful wavy lines about future energy supply.

Figure 1. Projected Australian electricity supply sources



In the meantime Australian erstwhile low cost supplies have been lost as a result of energy policies.

The Committee sought the advice of the IEA. This is a body with a clear agenda on energy policy. Its head, Fatih Birol has proclaimed that, “we are lagging behind worldwide in development of new technologies” accusing innovators of failing to come up with the solutions he wants to see.

Absurdly, Birol has foreshadowed some possibility of a global carbon tax by repeating the IEA estimates of \$548 billion a year spent on fossil fuel subsidies, which he said equated to a negative carbon dioxide tax of \$110 per tonne, compared with the EU’s existing tax of \$10 per tonne. In fact, almost all the IEA subsidies are from oil rich states to their domestic industries/customers or from

¹ Electricity Network Transformation Roadmap, CSIRO, December 2016, www.energynetworks.com.au/

poor countries subsidising cooking oil and the like. Developed countries are estimated to have subsidies of about one tenth of the total and most of these are incorrectly defined as subsidies since they, like the Australian “subsidy” on diesel, are conventional tax-deductible inputs into production.

Birol and the IEA also have a misplaced faith in breakthroughs in Carbon Capture and Storage. Without this the IEA program, which envisages energy remaining 60 per cent fossil derived by 2050, would have zero credibility. In this respect, some of the expert panel may be sympathetic to the energy policy views of Desmog blog which campaigns for green power and which shows rare insight in making the following assessment of CCS with regard to one of the only such plants in operation,

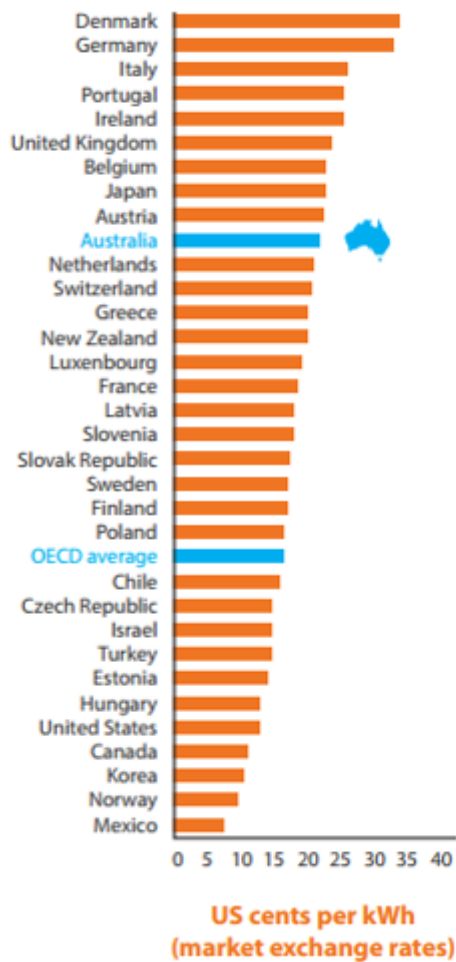
"The retrofitting of SaskPower's Boundary Dam coal-fired power plant with CCS technology is an example of how expensive this can get. The revamp cost of \$1.47 billion effectively doubled the cost of power from \$0.06 per kilowatt hour (kWh) to \$0.12 per kWh from the facility.

"Plus, since its opening, Boundary Dam has been plagued with issues, including frequent shutdowns, a massive leaking storage tank, cost overruns and equipment failures in August and November; the latter, a compressor failure, resulted in only 49 per cent of potential volume capture (the monthly target is 65 per cent)."

1.6. Prices have risen substantially in the last five years

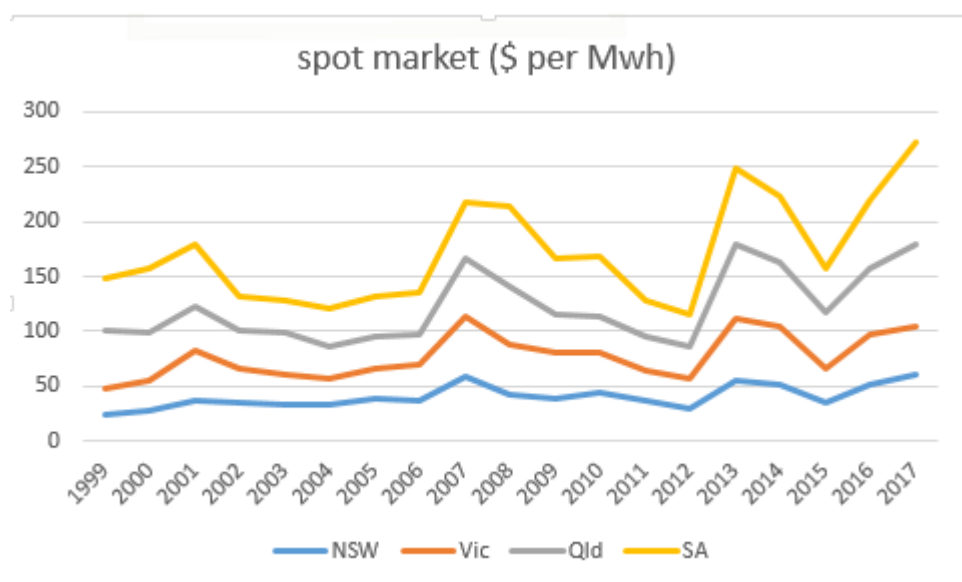
Unfortunately, while the preliminary report reproduced the following IEA data showing Australian prices were higher than those of most other OECD countries, it showed insufficient curiosity to examine the historical pattern of relatively low Australian prices and why this cost advantage had been transformed.

OECD household electricity prices



One reason for the increased costs is the growth of subsidies, most of them forced on customers after being initially levied on suppliers. Some politicians and activists may incorrectly believe that charges on producers and suppliers come out of the pockets of their shareholders or simply disappear. It is of course clear and should be obvious to all that such an outcome is unsustainable. Businesses forced to absorb costs go broke. Costs levied on businesses get passed forward to customers, though the political acrimony can be sometimes avoided because this process is hidden.

Many green groups and lobbyists have maintained that the subsidies on renewables have led to price falls. This is difficult to square with the evidence. Wholesale prices have risen as illustrated below and the large sale renewable certificate prices are now close to \$90 per MWh and would surely rise above this level were it not close to the price ceiling.



Although injecting subsidised goods into a market will likely depress the price of similar goods (all goods in the case of a homogenous product), where the unsubsidised goods' costs include fixed costs the price depression can last only as long as owners are able to avoid replacing or spending major sums on maintaining the fixed element of their costs. Then, as we are seeing with fossil fuel generator closures, supply will decline forcing up prices. For the NEM, this is a process that could lead to prices threefold or more than the level prevailing before the regulatory interventions began.

1.7. Energy Market governance is critical

The panel shows a touching respect for our energy market institutions which it says, "have key insights into the challenges facing the energy system". This may be correct but is somewhat reminiscent of Mr Douglas Jay's assertion that the "gentlemen from Whitehall really does know best" about what is good for consumers (Mr Jay was talking about health, nutrition and education).

If AEMO, AEMC and AER (and Energy Consumers Australia, a lobby involuntarily financed by consumers) really do have such valuable insights, these have not been sufficient to persuade governments to accept them, as evidenced by increases in electricity prices Australian consumers have had to accept, an increase that is demonstrably greater than that in many other jurisdictions. One outstanding institutional leader, Matt Zema, the former head of AEMO clearly had considerable knowledge of the market.

Mr Zema during the course of a private briefing in April of last year, made the following comments²

The renewable developments and increased political interference are pushing the system towards a crisis. South Australia is most vulnerable with its potential for wind to supply 60 per cent of demand and then to cut back rapidly. The system is only manageable with robust interconnectors but these operate effectively only because there is abundant coal based generation in Victoria.

Wind, being subsidised and having low marginal costs, depresses the spot price and once a major coal plant has a severe problem it will be closed. New coal plants cannot be built because governments are hostile and banks will not finance them. Wind does not provide the system security. But the politicians will not allow the appropriate price changes to permit profitable supply developments from other sources. In the end the system must collapse.

Mr Zema made similar comments in more public addresses but these repeated attempts to warn of an impending catastrophe with the growth of wind power fell on deaf ears.

The panel also dismisses such warnings when it is calling for the system to be reformed better to manage renewables. One element of such a reform would however be a step in the right direction if it were to require the asynchronous generators to pay for the costs they impose on the system.

Matt Zema's replacement, Audrey Zibelman, has expressed excitement at achieving 50 per cent renewables and may not have the same perception of the market's malaise.

2. Appropriate policy measures

The appropriate answers to some of the questions the panel raises would not be in accordance with the tendentious nature of the preliminary report. These are referred to under three headings: structural improvements, electricity's role in meeting greenhouse gas emission reductions, and gas supply.

² <http://catallaxyfiles.com/2016/10/06/requiem-for-a-failed-electricity-system/>

2.1 Appropriate NEM structural improvements

There are a series of questions that:

- look to how the NEM (presumably the consumers within the NEM) can take advantage of new technologies;
- ask how the NEM can ensure all consumers have their needs met;
- ask what barriers to investment are there;
- seek answers on the optimal governance structures to support system security, integration of emissions reduction policy and affordable electricity; and
- ask how can we improve the supply of gas to contribute to reliability and security of electricity supply.

2.1.1 *New technologies and meeting customer needs*

The NEM was designed as a system that would be neutral between generation technologies. It was envisaged that all technologies would receive the same price on the spot market for their electricity and that all technologies would pay whatever costs they impose onto the system in terms of transmission and ancillary services.

The NEM has diverged from that under political pressures. Among these are decisions that new transmission costs must be smeared across all consumers rather than have the producer pay. This has resulted in the cumbersome processes whereby regulators determine whether a new transmission line brings in sufficient benefits to justify consumers being required to pay for it. Such an approach applied to, say, new petrol supply infrastructure, new port developments or new telecommunications investment would be considered to be throwbacks to a long disappeared past. Yet we have introduced it into the electricity market (and the ACCC has ambitions to have such regulatory regimes also cover gas).

The departure from NEM neutrality to socialisation of transmission costs has taken place largely because the market controllers have sought to provide benefits to a preferred technology, wind and solar, at the expense of other sources of supply. Not only do these sources obtain a price that is three times that of coal but they receive subsidised transmission support and do not pay for the costs their asynchronous nature imposes on the system. One clear reform directed at the issue of how markets can support additional system security would be to require all generators to provide the ancillary services necessary for this. AEMO appears to have embarked on this route following the South Australian system black.

Returning the market to the undirected and neutral system that was introduced in the mid-1990s would be an enormous reform paying huge dividends in cost reductions. This will allow all consumers to have their needs met in the sense that needs are more than just vaguely desirable wants that consumers would like to have if they could afford them.

2.1.2 *Barriers to investment*

Already addressed is the panel's incorrect assessment that there might be a market failure since consumers have not got sufficient money to buy renewable electricity installations.

A more genuine "market failure" that the panel adverts to is its assessment that no business is considering investing in a major new coal plant and that, in any event, no such proposal would receive financial support from lenders. This may be true but, if so, we have created a market system that is overridden by politics since coal based generation is one third the cost of the renewables that are promoted.

There is an irony in this respect. Governments have taken action in biasing the electricity supply so that coal (and to a lesser degree gas) is relatively disadvantaged and yet expresses surprise and

dismay when coal plant owners announce they have to close. There is a role for government in eradicating the bias in the market place that it has been highly complicit in introducing.

The panel might have noted that the Minister for Energy and the Environment has made some statements supporting a role for new coal based power stations.

2.2 Role of electricity in meeting carbon emission reductions

Australia like other OECD nations agreed to ensure its greenhouse gas emissions were reduced by 26-28 per cent at the Paris climate change agreement. Australia ratified that agreement on the day after President Trump was elected.

Yet that election will unwind the agreement. On election, Mr Trump installed a transition team to effect the dismantling of the program in line with his many pre-election statements. That means that four (China, the US, India and Russia) of the five largest emitters of greenhouse gases will have no emission restraints, leaving the EU as the only sizeable group retaining them.

With Trump, those nations with hard commitments to reduce emissions will account for only 25 per cent of the global total. Moreover, as others have found out and, as Australia is experiencing, those nations that do saddle themselves with expensive energy pursuant of emission reductions, will see their more energy intensive industries migrate to nations not imposing such burdens on their industry. The net global effect of emission control is thereby further undermined.

For the near future, the fact of the Trump victory transforms the Paris agreement from its previous status of being largely ineffective to one of total ineffectiveness. All countries must now consider exit strategies from sets of policies that have, among other outcomes, led to crippling expensive energy.

This will be challenging for the many politicians and policy advisers ideologically wedded to renewable energy and in some cases dependent upon green left support. Furthermore, this is not the time for Australia to be considering integration of electricity supply with the emission reduction targets, in the knowledge that to do so will be very expensive for customers and have no effect in meeting the goal intended of it.

In this respect the panel asks for advice on the optimal governance structures to balance system security, the integration of energy and emissions reduction policy and affordable electricity. Such a complex arrangement is not possible.

Any use of an electricity-specific tax must mean less affordable electricity and, in so far as such a tax does not ensure that favoured supply types are able to impose costs that are uncompensated, they will threaten system security. It addresses a choice between regulated plant closures, an expanded renewable scheme and energy intensive policies that reward low and penalise high carbon emission plant. It concludes that an energy intensive scheme, whereby more highly emitting plant would need to buy rights to emit, with the less highly emitting plant thereby obtaining a financial benefit, may be most cost effective.

Under the UK's energy intensity scheme, energy-intensive industries pay around £20 for every ton of carbon dioxide they emit with the funds used to subsidise green energy firms. This policy has raised prices and is to be dismantled.

In the current context, a carbon intensity dimension of new plant approval, whether or not this was in addition to the subsidies on renewables, would favour gas which has up to 50 per cent less carbon emission intensive than coal. This would add to pressures on gas supply in the context of restraints to new supplies in Victoria, Tasmania, NSW the Northern Territory and prospectively South Australia. It would raise gas prices for all consumers and also raise electricity prices.

The UK compounded the regulatory distress caused by selectivity in approving new generators by also adopting a capacity market, similar to that still in place in Western Australia. Such a market pays for capacity that is said to be available. Often the capacity is not forthcoming when required (which AEMO discovered to be the case in South Australia with its own form of capacity market for ancillary services). Capacity markets are, in fact, a form of regulatory intervention and add no more security than energy-only markets, but they do increase costs.

The energy-only market that is central to the original NEM envisaged all parties receiving the same price and providing a safe and reliable product into the despatch system. Once the objectives depart from neutrality – as they have in the UK – we have a confusion and cost increase. Darwell³ demonstrates an irreconcilability between the three objectives of

- Keeping the lights on;
- Keeping energy bills affordable; and
- Decarbonising energy generation.

He argues

The result is that the energy sector is being transformed into a vast, ramshackle Public Private Partnership combining the worst of all worlds – state direction of investment funded by high cost private sector finance, with energy companies being set up to take the rap for higher electricity bills. The politics of high and rising electricity prices make it convenient for policymakers to blame market failure for what in reality are policy driven outcomes.

Though attracted to further interventions to push renewable energy, the Panel has wisely indicated it does not favour the introduction of a capacity market.

2.3 Gas supply

The Panel is correct in its assessment that we are ill-served by our political leaders in gas policy. It sees gas as essential in the energy market's transition (to renewables).

Gas in a free market in Australia is likely to have a subsidiary role in electricity generation due to the nation's abundant supplies of cheap coal.

Even so, it is a matter of regret that supply is being constrained by governments. It is, however, not true to say, as the panel does, that pipeline shortages add to the costs of this, except to the extent that regulatory interventions create such shortages, including a "chilling" of investment incentives through threats of price control. Pipeline technology is well known and any pipeline seeking to gouge its customers would be bi-passed by a rival (unless government's environment policies prevent this). The aspirations of the ACCC to control gas pipeline prices are most regrettable and though Minister Frydenberg has rejected that approach he does, unfortunately, see a role for some price controls as evidenced by his otherwise excellent article in *The Australian* of 13 January, 2017.

Two million wells using fracking technology have been sunk worldwide – mainly in North America and, though green groups raise scare campaigns, the US EPA has found not one case of harm. Fracking takes place with very little and only temporary disturbance of the land on which it takes place and on its flora and fauna.

Meanwhile the technology has revolutionised the energy positions of the US and Canada, and now accounts for more than half of oil and gas production. Though the Obama Administration was antagonistic, banning fracking on federal lands and opposing pipelines carrying the gas, the technology has transformed the US into a net energy exporter. In Canada it has driven down electricity generation costs – in the case of Ontario from the previous five cents per kWh to two cents – and a tenfold supply expansion is expected over the next 25 years.

³ http://www.reform.uk/wp-content/uploads/2014/11/Energy-Report_text_AW_WEB1.pdf

The Andrews Government in Victoria has built upon the gas exploration embargo of the previous Coalition government by permanently banning fracking and other measures of tapping “unconventional” gas while maintaining in place an embargo of all other on-shore gas exploration until 2020. Such intervention to prevent wealth creation has come a long way in a short time. In NSW, only in some 8 per cent of the state is fracking permissible. Only in Queensland has the government placed few restraints on unconventional gas production.

Even so coal seam gas now accounts for one-third of total Australia production with most of the Queensland supply earmarked for export.

Nobody knows how much potential wealth is being locked away as a result of bans on gas exploration. The US Energy Department puts prospectivity in Australia as comparable to that of the US, and it is certain that the policy will mean dearer domestic gas and electricity prices. It is even possible that the policy is preventing a vast new source of income being created in new processing plant for minerals and agricultural products.

Summary

The expert panel has called for policy measures that provide predictability and stability. It means by this predictability and stability for an on-going and growing increase in electricity from wind and solar or other “renewable” technologies that might arise. This will entail increasing levels of subsidy.

The many changes in renewable energy subsidies that have been effected or mooted over the past 20 years offer little prospect that the predictability and stability the panel has in mind will be seen. Subsidies across industries have, over the course of time, tended to be ephemeral. As former Treasury Secretary once famously said about government handouts, “Favours readily given can just as readily be taken back”. Hopefully, he will be proven right and we shall see an early termination of the wasteful subsidies to renewable energy.

About the Australian Environment Foundation

The Australian Environment Foundation is a not-for-profit, membership-based environmental organisation having no political affiliations, dedicated to informing and educating Australians about environmental issues and solutions to environmental problems.

The Australian Environment Foundation takes an evidence-based, solution focused approach to environmental issues. Many of the Australian Environment Foundation’s members are practical environmentalists – people who actively use and also care for the environment – appreciating that environmental protection and sustainable resource use are generally compatible.

People are an integral part of the natural environment and provide the means to protect and enhance it, recognising that the health of each depends critically on the other.