



Response to the Senate Select Committee into Fair Dinkum Power

Introduction

Climate Action Hobart is a grass-roots organisation campaigning in Hobart and southern Tasmania to address issues related to climate change. Climate Action Hobart have been active in Hobart since 2009. Our activities have included electorate forums, submissions to inquiries, community training and discussion events focusing on climate change and renewable energy and political discourse with elected representatives. Climate Action Hobart view the use by the Prime Minister, Scott Morrison, of the term 'Fair Dinkum Power' as code for coal fired power given his previous behaviour in the Federal Parliament.



There are a number of renewable energy technologies that are both cost effective and meet the definition of 'Fair Dinkum power' as being available when the "sun doesn't shine and the wind doesn't blow". Indeed, there have been a number of recent notable failures of coal-fired power stations that have not been widely reported, but none the less have a significant impact on the electricity grid.

Climate Action Hobart believes the destructive and negative impacts of climate change are already impacting heavily on the Australian community. We believe that there must be a whole of economy response to effectively decarbonise the Australian economy and our community to avoid the rise in global temperatures to 1.5°C of global warming. We define 'Fair Dinkum Power' as power that is both 'dispatchable' and progressing Australia to 100% renewable energy. In the context of increasing climate crisis, new coal is simply not an option.

Response to the terms of reference

- a. *the potential for empowering energy consumers to play a more important role in the National Electricity Market, through providing diverse services in:*

i. **energy generation**

1. As Australia moves to a renewable energy system it is apparent that there will have to be a range of different technologies, as no one technology is suitable in all environments and at all times. Different jurisdictions around the world use geothermal energy, pumped hydro mixed with wind, biomass and similar technologies. These jurisdictions have used technologies based on the particular set of circumstances. Australia should do the same.
2. A distributed energy production system should be based on a number of different technologies.
 - 2.1. The distributed nature of a Fair Dinkum renewable energy would include relatively smaller generation units placed closer to the point of consumption and sized more for the need
 - 2.2. These technologies must be the lowest possible CO₂ emissions, including both in their construction / manufacture and their operation. These technologies should also be cost effective. The different technologies allow each system to cross support each other.
Examples of Fair Dinkum renewable energy sources include:
 - 2.2.1. **Pumped Hydro – Hydro systems** can be deployed quickly [when coal-fired power stations fail], can operate at night, with no wind. However pumped hydro schemes cannot use hydro power to drive the pumps and therefore need either wind or PV to provide energy for pumping. This effectively stores the wind energy or PV energy easily and potentially long term. Using coal fired power to support pumped hydro is simply a waste as the losses due to transmission and pumping losses would mean it is better to simply send coal fired power to end-users.
 - 2.2.2. **Wind/PV -> electrolytic Hydrogen -> combined Gas turbine and CoGen** In this situation, large, utility scale wind farms and PV Solar farms can be co-located on major transmission lines supplying coastal cities or regional centres. Excess power is sent to electrolysis plant producing Hydrogen., The electrolytic Hydrogen plant can provide grid stability and reliability services by turning down rapidly and making power available to the grid. The same facility can then use Hydrogen in a gas turbine / CoGen plant to generate electricity [Fair Dinkum power] and despatch this power to the grid quickly.
 - 2.2.3. **Solar Thermal with storage** – allows solar energy to be stored and power to be dispatched when required, “when the wind doesn’t *shine* and the sun doesn’t *blow*”
 - 2.2.4. **Additional Wind farms and Utility scale Solar PV** Given that Australia still has not replaced all coal and gas fired power stations, there is still a significant opportunity to develop Utility scale solar, wind farms and solar storage.

- a. *.the potential for empowering energy consumers to play a more important role in the National Electricity Market, through providing diverse services in:*

ii. **demand response and energy efficiency,**

The use of *Demand Response* on the NEM is limited in large part by regulation. Software and control systems already exist to make use of demand response practices. The introduction of ‘Demand Response’ should be encouraged by:

- Changes to NEM operating rules and regulations allowing Demand Response. These regulations should be based on careful modelling so as to avoid unintended consequences or poor practices.
- Federal Government education programs for both industrial and commercial users plus domestic users.
- Federal and State government regulations should be changed to allow for domestic users to easily participate in a 'Demand Response' program. These regulation changes should include protection against and exposure to excessively high wholesale prices. These regulations would include requirements for the installation of 'demand response' switching equipment and Energy Management systems for residential properties.

Energy Efficiency – While not an actual energy production system, energy efficiency derived from either, industrial, commercial or domestic consumers effectively reduces the amount of power consumed thereby reducing the amount of CO2 emitted. Similarly, energy efficiency gains in either industry or commercial users will strengthen the Australian economy. Energy efficiency for domestic consumers, particularly in lower socio economic groups will improve their general financial position with reduced energy bills. These energy efficiency measures can be introduced by:

- Interest free loans for low wage and welfare recipients to install proven energy efficient technologies such as LED lighting, housing draft exclusion, energy efficient hot water heating and space heating, allowances to move from gas heating to energy efficient electric heating. These loans and associated programs should be designed to allow the effective participation of renters, either in the commercial market or social housing stock.
- Regulations for residential housing construction should be changed to mandate testing of housing energy performance. Regulations currently allow for designs 'deemed to comply' with energy efficiency rules for housing construction. In practice these houses fail to meet the required standards. Actual tests should clearly demonstrate that the required energy efficiency standards have been met.
- Commercial and Industrial energy users should be given tax incentives to encourage the adoption of proven energy efficient equipment and production facilities. These tax incentives should only operate until the tax payer has recouped sufficient funds to pay for the up-front cost of capital expenditure to install energy efficient equipment.

a. the potential for empowering energy consumers to play a more important role in the National Electricity Market, through providing diverse services in:

iii. grid stability and reliability services

Electrolytic Hydrogen – Production units for electrolytic Hydrogen can respond rapidly to demand requirements. Plants producing Hydrogen by electrolysis can quickly be turned down to a fraction of the design capacity. Available power production would be configured to run normal needs plus the electrolytic Hydrogen production facility. In the event of a failure of one energy production unit, available power would be directed away from Hydrogen electrolysis and back into the grid. In this way the electrolysis plant provides a reverse form of grid stability.

a. the potential for empowering energy consumers to play a more important role in the National Electricity Market, through providing diverse services in:

iv. demand alternatives to conventional network investment,

The Federal Government should facilitate the development of regional based wind farms, utility solar farms, pumped hydro / micro hydro or similar renewable energy schemes. These schemes would be funded initially by a public offering guaranteed by the Federal Government. Members of the local community would be offered to buy shares in the facility. Shares in the facility would be limited to residents of the region. In this way, the money invested in the power generation scheme stays in the region and the power would be consumed in the region. This has several advantages:

- 1.1. Money spent on electricity for local consumption stays within the community rather than being lost to the community when power bills are paid to corporate owners
- 1.2. Any power exported to the grid for consumption outside the region represents an income for the regional community hosting the power facility. This income would reverse the flow of money out of the community and gradually increase the financial capacity within the community.
- 1.3. Introducing community owned and funded, large scale energy production facilities represents an additional competitor in the market thereby reducing the market power of the three large energy companies operating in the Australian market.
- 1.4. Technical advantages to regional distributed renewable energy generation facilities would also increase energy efficiencies by reducing transmission losses.

a. the potential for empowering energy consumers to play a more important role in the National Electricity Market, through providing diverse services in:

v. peer-to-peer trading between households and businesses,

Regulations must be changed to allow for power trading across the grid. No additional government investment is needed. Options for peer-to-peer trading could include:

Trading between domestic households of any kind; such as retirees selling their excess rooftop solar energy to their millennial children for \$0; parents selling their excess rooftop solar energy to their children's school of \$0 or at some discount. Alternatively, domestic producers of rooftop solar can enter the market by 'aggregators' [eg Reposit Power] to trade on the open market. This would encourage additional investment in power generation and battery storage facilities.

b) the potential for these services to deliver lower energy costs and increased energy reliability

Already utility Solar PV and On-shore wind is cheaper than coal. The market has failed to invest in renewable energy even when this situation exists. Coal, nuclear and natural gas peaking plants are all more expensive than renewable energy alternatives.

Gas peaking plants exist to fill the gap during periods of low production from sources such as wind and solar. Gas peaking plants are extremely profitable and therefore private power companies

would not wish to invest in alternatives because they would lose market share to their own investments in gas peaking plants. Solar tower with storage are also cheaper than gas peaking plants. Solar thermal plants offer renewable energy at a lower cost than gas peaking plants but the same monopolistic conditions exist – owners of gas peaking plants won't invest in Solar Thermal plants because they would reduce their profits.

To break this nexus, the Federal Government [or State governments] should step into the market [as they used to be] and build renewable energy power generation facilities. In particular these should include facilities that will compete with gas peaking plants. This will drive the cost of power down. Any construction of renewable energy plants then allows the Government to develop and implement and integrated plan to move to a 100 % renewable energy economy.

c. the changing role of retailers in the National Electricity Market in light of the growing empowerment of consumers;

In a number of markets such as Tasmania there is no facility for consumer to trade on the power supply market through power aggregators

d. the impacts of privatisation;

The impacts of privatization have largely been negative. Large scale power stations owned by the public were sold off at relatively low cost. The sale of these public assets has led to a market driven energy economy but that market has failed to deliver sufficient new generation and has also driven energy prices high. Australia needs to act vigorously and quickly on climate change; but also put real and concerted downward pressure on power prices. Energy availability and high power prices are having negative impacts in both the domestic market and the commercial market. These negative impacts are hurting both the community and the economy.

Energy companies have absolutely no interest in reducing prices or addressing climate change. However addressing climate change and reducing power prices are seen as a 'social good' and are outside the interests of the private market. For this reason governments, both Federal and State need to enter the market in a significant way to drive development in alternative renewable energy sources.

Presently, Australia is dependent on the revenue from coal exports. If the customers of this thermal coal were to change the market conditions, either by developing their own coal energy reserves or developing low cost renewable energy projects for themselves [such as Saudi Arabia has done], Australia would end up with stranded assets with no income. Alternatively, Australia is positioned well to enter the international Hydrogen economy. By developing a Hydrogen economy, Australia is able to maximise the natural advantages we have in a large land mass with abundant wind and solar resources.

e. regulatory reforms which would empower energy consumers, including the following key groups:

i. households, including low income households and renters,

Federally funded programs should be developed to assist 'Fair Dinkum' Australians [all citizens of Australia] to participate in renewable energy projects. These would include:

- A Federally funded program to assist low income households with interest free loans to install PV solar panels on their own home. These programs should be designed so that the recipient sees a halving of their power bill at the start of the program and the term of the interest free loan is extended accordingly.
- A Federally developed and funded program to assist renters where the renter can invest in or purchase a share of a large renewable energy power development. The renter can benefit by a reduction of their power bill. This system should be similar to those for residents who own their own home and any installed PV solar panels. This would include the banking of feed-in tariffs.
- At a minimum, feed In tariffs should reflect the wholesale price of power at the point the power is fed into the grid. Currently a number of jurisdictions pay less than the wholesale cost of power. This occurs in some jurisdictions where the retailer is in a monopolistic position. This underpayment of the Feed In tariff amounts to theft of power and contributes to a disincentive to install PV solar power.

ii. farms,

Farmers are large consumers of power with a pressing need to reduce their power prices. Similarly, farmers are suffering the real and tangible impacts of climate change by reduced rainfall, floods and bush fires. These farmers should be assisted with federally funded programs.

- Farmers should be assisted with Interest free, federally funded programs to assist them to build and develop small to medium sized renewable energy projects in the order of 100 kW to 1 MW. These renewable energy projects would ideally be developed to provide an alternative income to normal farming activity. These small energy producers should be protected from predatory power pricing activities by the energy wholesaler that is purchasing power from the farm producer.
- Farmers should be assisted with a no interest, federally funded program to assist them to build and develop small renewable energy projects to meet on-farm energy needs. In addition, farmers should be assisted with free technical advice and finance to introduce energy efficient practices on their farm activities.
- The federal funds used for interest free loans should be replenished as the loans are repaid. The Federal Government, as a funding agency and developer, should reserve a portion of the revenues from the unsubscribed portion of the development to cover the cost of any interest payments due from Federal Government borrowings.

iii. small businesses, and

Australian small businesses, like Australian farms, experience high energy bills and may also be capital limited.

- Australian small businesses should be assisted with a low interest federally funded program to assist them to build and develop small renewable energy projects to meet their small business energy needs. In addition, small business should be assisted with free technical advice and finance to introduce energy efficient practices into their business activities.

iv. major energy users;

No Comment

f. the likely long-term impacts, including to emissions, reliability and stability, of energy consumers playing a larger role; and

No Comment

g. any other related matters.

Changing the power production system in Australia to an integrated 'Fair Dinkum renewable energy' production will have profound impacts on Australia. These impacts will occur in our economy, our society and our own environment. One of the main objectives of a renewable energy system is to reduce our CO2 emissions as a nation. Australia is also a large energy exporter in the form of coal and LNG. As our trading partners move to low carbon, fossil fuel free economies, Australia risks being isolated from new and emerging energy markets as those economies change to renewable energy and away from coal or LNG. This represents a significant threat to our economy.

- The Federal Government should urgently and vigorously support renewable energy projects in Australia such as electrolytic Hydrogen, wind farms, PV Solar farms, Solar Thermal with storage; together with other forms of renewable energy. These projects should be developed using Australian scientists, engineers and developers with the view to develop and improve Australian expertise in a broad range of renewable energy technologies. While the initial aim of these projects is to develop renewable energy sources for the Australian economy; in the long term Australia should develop expertise, products and services that are marketable on the international market. This should protect the Australian economy as sales of coal and LNG decline.
- Power generation from coal and gas are only one source of CO2 emissions in Australia. Another source of CO2 is the transport system, critical for a nation with a land mass the size of Australia. The Federal Government should support and develop regulations and projects that support the electrification of our transport system using renewable energy sources. This would include:
 - The adoption of Electric Vehicles (EVs) such as light vehicles and bicycles. The Federal Government should immediately move to a 100% Electric Vehicle fleet for their own vehicles. These vehicles should be recharged by PV solar panels or other forms of renewable energy as appropriate. Charging stations should be made available at all places of employment for Federal Government employees to recharge these vehicles.
 - EV charging stations for both light vehicles and bicycles should be mandated for ALL public and commercial carparks, both new and existing. There has been considerable focus on charging stations for long distance trips, however most domestic vehicle use is near to home and availability of charging stations for everyday usage would be of considerable benefit.
 - The Federal Government should set a target for the changeover of the light vehicle fleet from Internal Combustion Engines (ICE) vehicles to EV's. This target should be backed up by effective programs to assist the introduction of EV's.
 - The Federal Government should seek to re-establish an electric vehicle manufacturing industry. This may be focused on parts manufacture, support services or the assembly of complete vehicles or just electric vehicle chassis. The objective here is to base the Australian economy on emerging low carbon and renewable energy technologies.

- The Federal Government should seek to assist companies in the development or manufacture of products and services to support renewable energy technologies. This would include:
 - Manufacture of solar panels in Australia;
 - Design, development and manufacture of wind turbines, particularly using engineering skills currently dedicated to the support and maintenance of coal-fired power stations;
 - Design, development and manufacture of equipment and technical services supporting Hydrogen production and use.
- ‘Fair Dinkum power’ from renewable energy sources is, in large part, seeking to decarbonise the Australian Economy. Independent economists have advised that the cost is lower the sooner Australia does this. Therefore the direction should be to develop energy projects that are based on NO or LOW carbon emissions. Any projects that emit large amounts of CO2 such as coal-fired or LNG power stations, coal mines, LNG production facilities will only diminish the efforts to de-carbonise the Australian economy.
 - Any projects to produce energy, either for consumption in the Australian energy markets or for export must be NO or LOW carbon projects. In this way all coal or LNG projects still in development should be denied any form of government support or approval. The argument that this would open the Federal Government to claims of ‘Sovereign risk’ should be rejected outright. All developers of projects involving coal, LNG or CO2 emitting projects would have been aware that regulations limiting CO2 emissions would be inevitable and imminent. Proceeding with such projects must be seen as economically careless and irresponsible and high risk use of shareholders corporate capital resources.

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