

CLEAN COAL: BRIEFING PAPER

Clean Coal: Briefing Paper

This Climate Council briefing paper on “clean coal” follows the recent release of the Finkel Review report in June 2017.

FINKEL REVIEW

Our energy system needs overhauling.

Australia’s energy system is ageing, inefficient and polluting. It is not coping with escalating extreme weather, like heatwaves and storms. It is not adequately adapted to 21st century, smart technology.

Australia’s Chief Scientist, Dr Alan Finkel (together with a panel of reviewers) has now released the findings of a review into the future of the National Electricity Market (Finkel Review) (Finkel 2017).

The Finkel Review finds the electricity system must achieve four key outcomes:

1. Lower emissions
2. Increased security
3. Future reliability
4. Rewarding consumers (Finkel 2017).

THE PROBLEM

Coal power doesn’t meet the above criteria. Yet the Federal Government has introduced legislation to enable the Clean Energy Finance Corporation to invest in coal with carbon capture and storage (CCS) (Minister

for the Environment and Energy 2017). In addition, some Federal government MPs are pushing to have coal qualify under the Finkel Review’s proposed Clean Energy Target and for taxpayer funding to build new coal power plants (Courier Mail 2017).

Australia’s coal fired power plant fleet is ageing, inefficient and polluting. The Finkel Review acknowledges that by 2035, “approximately 68% of the current coal generating plants will have reached 50 years of age”.

HERE’S WHY

1. There is no such thing as “clean” coal.

When dug up and burned, coal pollutes the environment and damages our health. Burning coal for electricity emits toxic and carcinogenic substances into our air, water and land, severely impacting on the health of miners, workers and communities.

The Australian Academy of Technological Sciences and Engineering (2009) estimated coal’s health impacts cost taxpayers \$2.6 billion every year.

Coal, and new coal mines such as the proposed Carmichael Mine, pose a serious risk to the environment, public health and the economy.

For more details, refer to the Climate Council’s [Risk Business: Health, Climate and Economic Risks of the Carmichael Coalmine](#).

More efficient coal plants labelled “ultra supercritical” (what the Federal Government calls “clean coal”) and coal power plants with carbon capture and storage (CCS) emit significant greenhouse gases.

CCS is a technique to capture, transport and store carbon emissions from fossil fuel power plants and energy intensive industries (eg. cement, steel and chemical production).

A new high-efficiency coal plant run on black coal would produce about 80% of the emissions of an equivalent old plant (Figure 1), while renewables (eg. wind and solar) emit zero emissions.

Coal plants with CCS can result in more emissions than a standard coal plant once this additional extracted oil is burnt. The two coal power plants with CCS currently operating (and the further power plant under construction) all pump their emissions underground to extract more oil.

For more details, refer to the Climate Council’s [Factsheet: 10 Basic Electricity Facts to Help You Navigate the Finkel Review](#).

So-called “clean coal” does not help Australia meet its obligations to reduce its economy-wide emissions 26-28% by 2030 below 2005 levels, and will certainly not help Australia be on track for limiting global temperature rise below 2 degrees Celsius.

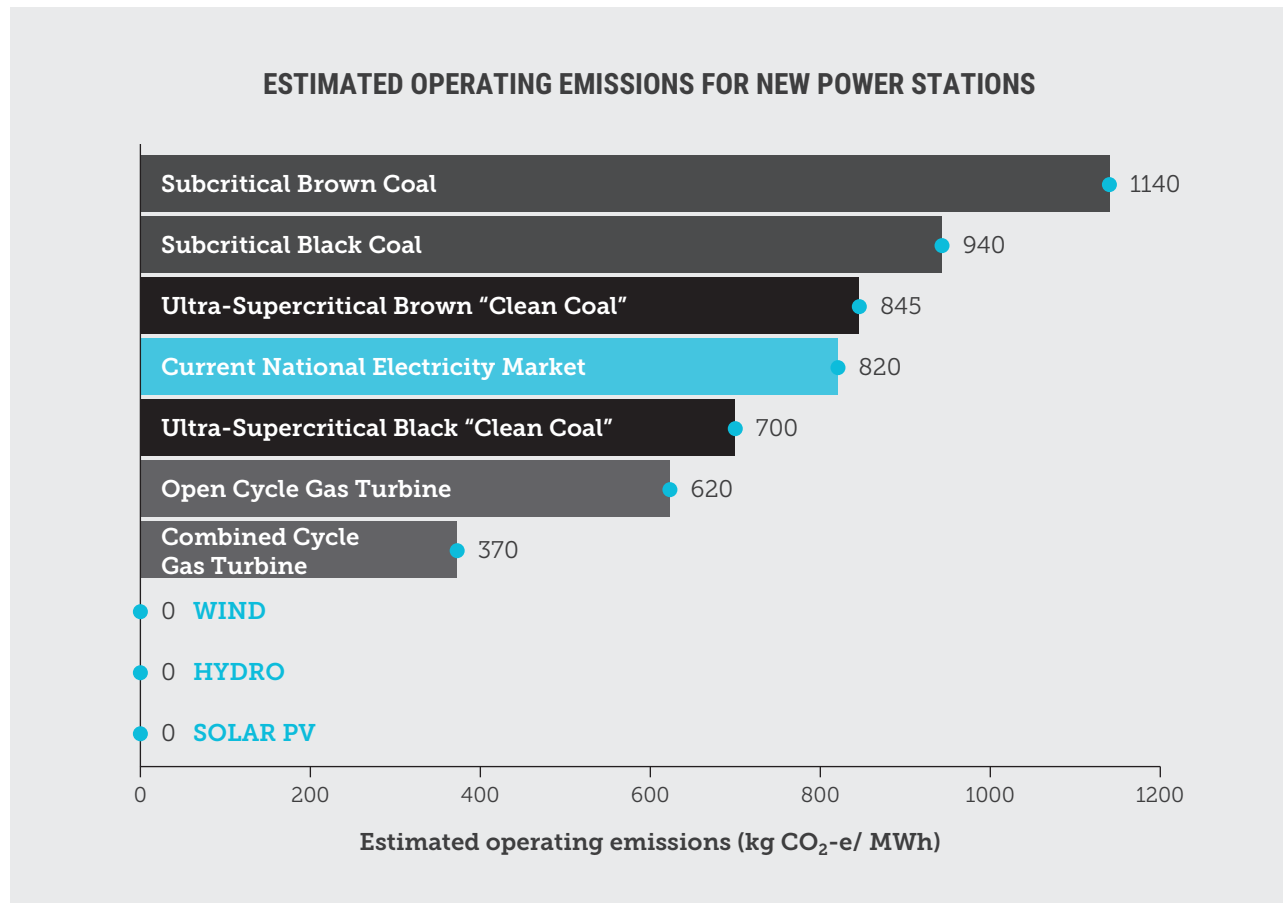


Figure 1: Estimated operating emissions for new power stations. Sources: Commonwealth of Australia 2016; The Climate Institute 2017.

2. Secure power requires smart solutions.

One of the largest long-term risks to energy security is escalating extreme weather, driven by climate change. We have seen the impact of extreme weather on power systems over the past year in Australia. In September 2016, an extreme storm knocked down 23 transmission towers in South Australia causing a blackout. New South Wales and Queensland have experienced record high electricity demand during extreme heatwaves in January and February 2017. In New South Wales, around 3,000MW of coal and gas capacity was not available when needed in the heatwave (AEMO 2017; The Guardian 2017).

Infrastructure relying on long distances and single massive sources of power, like a coal power plant with a long grid, is more vulnerable to extreme weather than a distributed grid with a number of sources of power. Cities that have experienced severe damage to their electricity infrastructure from extreme weather, like New York, have diversified the sources and location of power generation. Modern renewable energy means that power can be generated and stored where it is needed. This can reduce risks for critical infrastructure of grid failure.

The Australian grid has been built for coal fired generation, it must be modernised as new power sources come online. Massive coal fire generation will not be the future. It is simply too expensive, too risky an investment (Energy Council of Australia 2017), and too polluting.

New coal is no more secure than other power plants - these large generators are vulnerable to heatwaves (AEMO 2017), fires (The Australian 2014), floods (The Age 2012), water supply concerns (RenewEconomy 2012; ABC 2016), and mine subsidence (State Government Victoria 2014).

Power security can be improved by, for example:

1. Greater interconnection.
2. Diverse renewable technologies which provide continuous power (like hydro and solar thermal).
3. More household-level battery storage and large-scale energy storage.
4. Improved energy efficiency, demand management and a smarter, more flexible grid.

3. New coal is more expensive.

Building new coal plants is far from the cheapest option for replacing Australia's ageing, inefficient coal fleet.

New wind and solar plants both in Australia and overseas are cheaper than new coal, gas and nuclear plants. **Stockyard Hill Wind Farm will deliver power to the grid at a price of \$55 per MWh (RenewEconomy 2017) compared to new coal potentially costing as much as \$203.**

Bloomberg New Energy Finance (2017) finds the cost of new high-efficiency coal plants would range from \$134 - 203/MWh, compared to wind (\$61-118/MWh) and solar (\$78-140/MWh). The cost of coal with CCS would be even higher, at around \$352/MWh. The cost of new coal power is nearly three times the wholesale cost of electricity recorded last year.

These costs eventually get passed on to households and businesses, through electricity bills, which rules out the Federal Government's proposal of "clean coal" as affordable.

New coal power stations are risky for private investors and expensive for energy users. The Climate Institute (2017) calculated that a new coal plant would only get built with a government-guaranteed subsidy of around \$27-44 billion because, for example, new coal stations will need electricity prices up to four times higher than today to earn sufficient revenue.

4. Fossil fuels drive climate change.

Fossil fuels drive climate change, and that is bad news for all us. It means more extreme weather events such as catastrophic bushfires, severe storms and deadly heatwaves. Climate change endangers homes, our businesses, communities and us. It even led to an entire state being plunged into darkness when storms in South Australia took out over 20 transmission towers.

This is why many countries around the world (eg. Canada, Germany, the UK and China) are moving away from coal. They are shutting down existing coal-fired power stations, and embracing renewable energy.

5. Peoples' choice: Renewables NOT coal.

A Climate Institute survey has consistently found that Australians overwhelmingly support renewable energy both in terms of emission reduction and in ideal energy mix. Solar, wind and hydro are the preferred energy sources. Coal is consistently ranked last, behind nuclear (The Climate Institute 2012, 2016).

6. A renewable energy future.

Australia is a country of huge potential for renewable energy. We have the potential to generate 100% of our electricity from renewables (CSIRO and Energy Networks Australia 2017). Our renewable energy resources are among the best in the world, potentially capable of providing 500 times the amount of electricity we currently use (Commonwealth of Australia 2014; AEMO 2013). Furthermore, the Finkel Review found no barriers to increasing renewables in Australia (Finkel 2017).

Building new fossil fuel power plants is expensive, polluting and damaging for community health.

Investing in coal would be bucking a global trend of transitioning away from fossil fuels to renewable energy. We need to be preparing for – and indeed joining, facilitating and accelerating – the transition to a zero emissions world. The future is in renewable energy, storage, smart grids and energy efficiency.

7. "Clean coal" score card.

1. Clean (low emissions)	FAIL
2. Affordable	FAIL
3. Reliable	FAIL

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