Senate Environment and Communications References Committee

Inquiry into the retirement of coal fired power stations

November 2016

AMMA is Australia's national resource industry employer group, a unified voice driving effective workforce outcomes. Having actively served resource employers for more than 97 years, AMMA's membership spans the entire resource industry value chain: exploration, construction, commercial blasting, mining, hydrocarbons, maritime, smelting and refining, transport and energy, as well as suppliers to those industries.

AMMA works to ensure Australia's resource industry is an attractive and competitive place to invest and do business, employ people and contribute to our national well-being and living standards.

The resource industry is and will remain a major pillar of the national economy, and its success will be critical to what Australia can achieve as a society in the 21st Century and beyond.

The Australian resource industry currently directly generates over 8% of Australia's GDP. In 2015-16 the value of Australian resource exports were $157.1 billion. This is projected to increase to $232 billion in 2020-21[1]. It is forecast that Australian resources will comprise the nation's top three exports by 2018-19. Approximately 50% of the value of all Australian exports are from the resource industry.

Australia is ranked number one in the world for iron ore, uranium, gold, zinc and nickel reserves, second for copper and bauxite reserves, fifth for thermal coal reserves, sixth for shale oil reserves and seventh for shale gas reserve.

AMMA members across the resource industry are responsible for significant level of employment in Australia. The resources extraction and services industry directly employs 222,300 people. Adding resource-related construction and manufacturing, the industry directly accounts for 4 per cent of total employment in Australia.

Considering the significant flow-on benefits of the sector, an estimated 10 per cent of our national workforce, or 1.1 million Australians, are employed as a result of the resource industry.

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[1] Office of the Chief Economist – Resources and Energy quarterly publication

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PART I - INTRODUCTION

1. AMMA welcomes the opportunity to contribute to the Senate's consideration of the retirement of coal fired power stations - an issue of topical importance given recent announcements and the transitions Australia is set to face progressively in coming years.

2. Coal, particularly the thermal coal industry, has been subject to intense scrutiny and debate for some time. The resource industry supports genuine and constructive policy debate on Australia's energy future to ensure:

    a. Australia's ability to maintain access to affordable, reliable energy for industries and the community for decades to come.

    b. There is an appropriate and just transition for industry, employees and communities.

    c. Australia's resource exporters maintain and secure a substantial share of future international energy exports, including for coal.

    d. Australia meets its agreed international environmental obligations.

    e. Australia can play its role in reducing global energy poverty.

3. Some of the loudest voices in this debate to date are environmental groups that are motivated solely by perceived environmental concerns, with seemingly little regard to the economic, employment and living standards concerns of the wider Australian community.

4. However, it is important that the Committee and Parliament take a wide ranging, holistic and fact-based approach to this inquiry and the considerations raised in the terms of reference.

5. Getting policy wrong in this area or framing considerations too narrowly will risk jeopardising:

    a. Long-term energy security for billions of people (in both Australia and internationally) through changes in energy supply and demand equilibriums.

    b. Incomes and living standards through energy price inflation.

    c. Billions of dollars in energy investment into this country.

    d. Billions of dollars in future government revenue streams.

    e. Hundreds of thousands of job.

6. While this inquiry is nominally focused on the retirement of coal fired power stations, the terms of reference raise issues that would also impact the wider coal industry (including producers and exporters) as well as having direct and indirect impacts on coal and allied workforces and communities.

Energy affordability, security and reliability

7. Australia requires a secure supply of adequate and reliable energy at an affordable price, now and into the future. This is imperative for maintaining and advancing Australian's living standards as well as Australia's future economic growth and prosperity.

8. The retirement of Australia's coal-fired power stations will disturb the levels of coal demand required from Australian coal producers, as well as disturb the levels of coal supply available to international markets.

9. In simplified economic terms, if Australia reduces its reliance on coal (through the retirement of coal fired power stations) and if the demand for energy (electricity) were to remain or increase, without the same amount out of supply being brought on to the market by alternative energy sources, the price of energy (electricity) will rise as well as elevating the risk of supply shortages (dependent on inventory levels).

10. This would endanger Australia's energy security; an extraordinary proposition for a developed / OECD economy. As we recently saw in South Australia, risks to supply can create considerable human and community risks as well as economic harm.

11. Energy security is increasingly vital for all governments and societies. Both developed and emerging economies rely on stable, reliable and affordable sources of energy to deliver transport, communication, health, agriculture, defence, etc. At an individual level, reliance on electricity has never been greater for so large a proportion of the world's population.

12. Access to reliable and affordable energy is also of paramount importance for the resources industry.

13. If Australian miners (including coal miners) were unable to secure reliable and affordable sources of energy (electricity), this would cause significant harm and jeopardise some proportion of over 200,000 direct mining jobs[2]. Additionally, it would jeopardise future forecast mining exports potentially worth more than $100 billion per year[3], or 42% of the value of all Australian exports.

14. Disrupted energy supply or energy unreliability would be likely to have significant repercussions for Australia's terms-of-trade and our exchange rate.

[2] Source: ABS 6291.0.55.003 - Labour Force, Australia, Detailed, Quarterly, Aug 2016 – Table 6
[3] Source: Office of the Chief Economist, Resources and Energy quarterly, forecast dataset, March 2016 edition.

15. Further, with mines aging, the intensity of demand for energy in the mining sector is forecast to rise. Given the importance to our society of end products sourced from resource extraction, it is vitally important that mining companies and allied industries are able to secure reliable sources of energy to do business in the future in Australia.

16. It is of the utmost importance that when coal fired power stations do close, there is a proven, reliable, cost neutral, substitute, reliable energy source that can replace the power generation capacity that is lost.

17. Australia is ranked fifth in the world for thermal coal reserves and is the world's largest coal exporter. Countries such as Japan, India, China and South Korea (both companies and citizens) rely on Australia's coal export trade. Based on the 2010 rate of production, "Australia's accessible economic demonstrated resources are sufficient to sustain current black coal production rates for nearly 100 years. Brown coal accessible economic resources are estimated to be able to sustain current brown coal production for over 500 years[4]".

18. According to the International Energy Agency, globally there are 1.2 billion people without access to electricity and more than 2.7 billion people without clean cooking facilities.

19. Access to affordable and secure Australian energy export commodities is of paramount importance to a number of countries and their governments, and can be of increasing importance to more as economic and social development continues to benefit a greater proportion of the world's poor.

20. Various countries (many of which are our regional neighbours) rely on our energy commodities for their national development as well to improve living standards for billions of people that are in various stages of economic development.

21. Not only does Australia gain economically from having a strong export commodity base, Australia also has a humanitarian role to play in exporting a comprehensive suite of energy commodities (including coal, renewables, gas, nuclear – strictly for power generation only) to energy importing nations.

22. As the Committee considers the matters raised in this inquiry, we urge that the importance of future expansion in Australian energy exports, including coal, also be taken into account.

[4] http://www.industry.gov.au/resource/Mining/AustralianMineralCommodities/Pages/Coal.aspx

23. Not only do Australia's future terms of trade and economic prosperity rely on Australia remaining one of the world's leading energy exporters, but potentially hundreds of millions of persons living in poverty in the developing world will also rely on Australia remaining an energy exporter, and seizing future energy export opportunities, including coal.

Energy policy regulation and agreements

24. Australia signed the Paris Agreement on Climate Change on 23 April 2016, joining more than 170 countries in committing to further reduce greenhouse gas emissions. The accord aims to limit the release of greenhouse gases to ensure global warming is kept below 2 degrees Celsius. Australia has agreed to a target of reducing emissions by 26 to 28 per cent below 2005 levels by 2030.

25. Additional renewable energy has been set as follows:

Federal Coalition	23% by 2020
Federal Labor	50% by 2030
Western Australia	No target set
Queensland	50% by 2030
New South Wales	20% by 2020
Victoria	40% by 2025
South Australia	50% by 2025
Tasmania	Currently bordering 90% (hydro and wind)
Northern Territory	No target set
Australian Capital Territory	100% by 2020

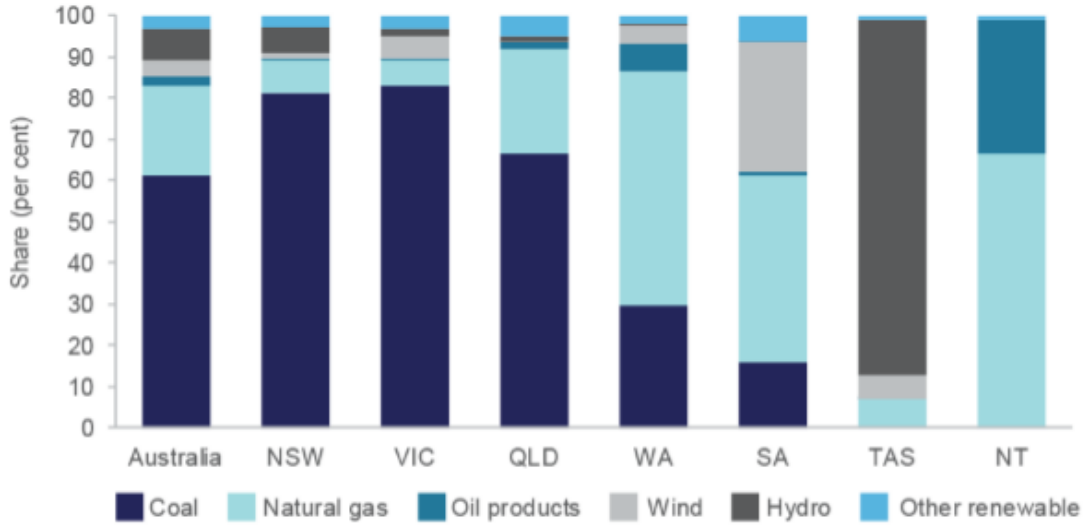
26. Obviously there is variation between these reduction targets and timetables, but the core point is that there will be transitions and that Australia's energy mix is changing and will change further.

27. If Australia does seek to meet ambitious renewable energy targets, logically there will need to be considerable change in Australia's reliance, intensity and consumer habits away from fossil fuels and towards renewable energies.

28. The Office of the Chief Economist of the Department of Industry finds that Australian electricity generation by fuel type, remains dominated by coal, natural gas and oil, particularly in the most populous states[5].

[5] http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Documents/megp/2015-Electricity-Generation-Major-Projects.pdf

Figure 3.2: Electricity generation by fuel type, and by state and territory, 2013–14



Notes: New South Wales includes the Australian Capital Territory.

Source: Department of Industry and Science (2015) *Australian Energy Statistics*, Table O

29. To meet Australia's internationally agreed obligations, government will have an important role to play in promoting and incentivising new, sustainable technologies in the energy (renewable and non-renewable) sector, including:

    a. Battery storage.

    b. Carbon capture and storage.

    c. High efficiency low emission coal-fired power plant technology.

    d. Combined-cycle power plant technology.

30. Disconnection between government 'renewable targets' and state planning schemes will need to be rectified. At the moment, state planning schemes either prevent, delay or prohibit many potential renewable projects that would otherwise help the states reach their renewable production targets.

31. Policy mechanisms (to meet the Paris agreement/renewable targets) will be principally designed to expedite the transition to cleaner energy commodities through the National Electricity Market, however this cannot be the sole consideration.

32. Development of future energy policy in Australia cannot be based solely or myopically on international targets or carbon reduction alone:

    a. Australia's energy interests must be protected and Australia requires reliable continuous capacity to autonomously meet its domestic energy needs into the future, including in times of crises or in the absence of international supply.

b. Australians require a secure supply of adequate and reliable energy at an affordable, predictable and stable price.

c. Australians should on a proportionate basis pay no more of their average incomes on energy than citizens of comparable countries, and marked increases (or volatility) in electricity prices should be avoided.

d. Risks to critical energy infrastructure must be carefully managed:

   i It is vitally is important that during a period of change in technologies, markets, and communities that Australian businesses and consumers do not suffer service disruptions, decreased reliability or significant increases or variability in pricing.

   ii The recent "big blackout" in South Australia should be a salient warning of what will happen in Australia if we do not manage energy transition sensibly and practically.

e. Australia has a humanitarian role to play globally not only in meeting climate change abatement goals, but also in providing energy security (through energy exports) for the billions of people who currently lack access to electricity.

f. Australia has a significant competitive advantage and a major opportunity to be a global powerhouse in the international energy export market.

33. Australia should:

a. Actively pursue a balanced mix of energy sources, including established sources, new and renewable sources, and new technologies for extracting, refining, enriching, generating, etc. established energy sources.

b. Pursue measured, careful, properly planned and stable transitions in our energy mix that take into account the breadth of considerations raised, including those outlined above.

c. Develop a **National Energy Transition Plan** including harmonised renewable energy targets that ensures affordable, reliable and secure energy and delivers just, stable, predictable and measured transitions.

34. The outcome of the recent US election has created geopolitical uncertainty, including in relation to future emission reductions in the US and at a global level. This is a factor weighing in favour of a measured and properly considered approach to transition.

Forecast energy demand - renewables and non-renewables

35. Australia is a net energy exporter, this is expected to continue in the future and the ongoing health and vitality of our resource exports, including energy exports will play a significant role in determining the trajectory of Australia's future economic and community development.

36. There are such opportunities in this area that between 2015 and 2050 it is forecast that we are going to use as much energy globally as we did from the start of the universe till 2015[6].

37. In 2014, prior to the 2015 Paris agreement, the Australian Bureau of Resources and Energy Economics published 'Australian Energy Projections to 2049-50[7]'.

38. It projected that the percentage average annual production growth from 2014-15 to 2049-50 will be higher for the non-renewables sector compared to the renewables sector.

Energy production, by source

	2014-15 (PJ)	2034-35 (PJ)	2049-50 (PJ)	% share 2014-15	% share 2049-50	% average annual growth 2014-15 to 2049-50
Non-renewables	**17009**	**26492**	**27104**	**98**	**98**	**1.3**
Coal	13021	19299	19441	75	71	1.2
black coal	12557	18834	18932	72	69	1.2
brown coal	464	464	509	3	2	0.3
Oil	786	348	161	5	1	-4.4
LPG	93	98	104	1	0	0.3
Gas	3109	6748	7398	18	27	2.5
Renewables	**341**	**441**	**463**	**2**	**2**	**0.9**
Hydro	68	68	66	0	0	-0.1
Wind	59	116	118	0	0	2.0
Bioenergy	195	220	231	1	1	0.5
Solar	19	23	34	<1	<1	1.7
Geothermal	0	14	14	0	<1	
Total	**17350**	**26933**	**27567**	**100**	**100**	**1.3**

Note: Numbers in the table may not add up to their totals due to rounding.

39. It also projected that the percentage average annual electricity generation growth in the non-renewables sector from 2014-15 to 2049-50 would annually rise by half a per cent, compared with renewables at 1.5%.

[6] Paraphrase - Dr Derek Muller – Twisting the Dragon's tail - https://en.wikipedia.org/wiki/Uranium_%E2%80%93_Twisting_the_Dragon%27s_Tail

[7] http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Documents/aep/aep-2014-v2.pdf

Electricity generation, by energy type (TWh)

Energy type	2014-15	2034-35	2049-50	% share 2014-15	% share 2049-50	% average annual growth 2014-15 to 2049-50
Non-renewables	**216**	**252**	**265**	**85**	**80**	**0.6**
Coal	163	200	214	64	65	0.8
black coal	117	153	163	46	49	1.0
brown coal	47	47	51	18	15	0.3
Gas	50	49	48	19	14	-0.1
Oil	3	3	3	1	1	0.0
Renewables	**39**	**63**	**67**	**15**	**20**	**1.5**
Hydro	19	19	18	7	6	-0.1
Wind	16	32	33	6	10	2.0
Bioenergy	2	5	6	1	2	3.7
Solar	2	3	6	1	2	3.0
Geothermal	0	4	4	0	1	
Total a	**255**	**315**	**332**	**100**	**100**	**0.8**

40. It was projected that the percentage average annual primary energy consumption growth from 2014-15 to 2049-50 would by higher for the non-renewables sector compared with the renewables sector.

41. However, these projections became immediately superseded following Australia's COP21 agreement – agreeing to 26-28% reduction in carbon emissions by 2030 on 2005 levels.

	2014-15 (PJ)	2034-35 (PJ)	2049-50 (PJ)	% share 2014-15	% share 2049-50	Average annual growth 2014-15 to 2049-50
Non-renewables	**5675**	**7220**	**8078**	**94**	**95**	**1.0**
Coal	1635	1871	1945	27	23	0.5
black coal	1171	1407	1436	19	17	0.6
brown coal	464	464	509	8	6	0.3
Oil	2431	3304	3879	40	45	1.3
Gas	1610	2045	2253	27	26	1.0
Renewables	**341**	**441**	**463**	**6**	**5**	**0.9**
Hydro	68	68	66	1	1	-0.1
Wind	59	116	118	1	1	2.0
Bioenergy	195	220	231	3	3	0.5
Solar	19	23	34	<1	<1	1.7
Geothermal	0	14	14	0	<1	
Total a	**6016**	**7661**	**8541**	**100**	**100**	**1.0**

a numbers in the table may not add up to their totals due to rounding

42. As a result, it is forecast that there will be a heightened move away from brown (lignite) coal (which is a baseload energy power) towards a greater reliance on currently intermittent renewable energy powers such as wind.

43. Notwithstanding this, in March 2016, the Office of the Chief Economist forecasts that Australia's export energy sector will remain strong, and relevantly to this inquiry, thermal coal demand will remain strong, with export volume for thermal coal set to rise from 204.5mt in 2015 to 216.1mt in 2021.

Thermal coal

	unit	2015	2016 f	2017 f	2018 z	2019 z	2020 z	2021 z
World								
Contract prices b								
– nominal	**US$/t**	**68**	**59**	**57**	**56**	**59**	**61**	**62**
– real c	**US$/t**	**69**	**59**	**56**	**54**	**55**	**56**	**56**
Coal trade	**Mt**	**1,059**	**1,054**	**1,053**	**1,064**	**1,085**	**1,094**	**1,100**
Imports								
Asia	Mt	735	745	762	781	805	818	825
China	Mt	156	148	140	138	130	122	118
Chinese Taipei	Mt	61	62	63	63	64	66	66
India	Mt	191	204	215	229	242	254	260
Japan	Mt	144	138	137	137	136	135	130
South Korea	Mt	102	106	107	107	111	113	114
Europe	Mt	241	228	212	207	201	195	193
European Union	Mt	187	173	155	147	142	135	132
other Europe	Mt	54	55	57	60	60	61	62
Exports								
Australia	Mt	202	203	210	211	212	215	217
Colombia	Mt	81	83	95	112	116	122	123
Indonesia	Mt	296	290	289	286	284	283	280
Russia	Mt	135	137	140	141	142	143	145
South Africa	Mt	76	78	81	83	85	89	90
United States	Mt	25	23	20	18	17	16	15
		2014–15	**2015–16 f**	**2016–17 f**	**2017–18 z**	**2018–19 z**	**2019–20 z**	**2020–21 z**
Australia								
Production	**Mt**	**249.4**	**259.5**	**253.7**	**255.0**	**255.6**	**257.1**	**259.3**
Export volume	**Mt**	**204.5**	**204.6**	**207.0**	**210.4**	**211.5**	**213.5**	**216.1**
– nominal value	A$m	16,057	15,435	13,836	13,697	13,977	14,785	15,407
– real value d	A$m	16,288	15,435	13,644	13,243	13,192	13,589	13,794

Notes:
b Japanese Fiscal Year (JFY), starting April 1, fob Australia basis. Australia–Japan average contract price assessment for steaming coal with a calorific value of 6700 kcal/kg gross air dried.
c In current JFY US dollars.
d In current financial year Australian dollars.
f forecast.
z projection.
Source: Office of the Chief Economist – Resources and Energy Quarterly – March 2016

44. However, looking at Australia's major project energy investment pipeline[8], investment in the renewables sector (particularly wind and solar) appears exponentially higher than investment in the non-renewable energy sector.

[8] http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Documents/megp/2015-Electricity-Generation-Major-Projects.pdf

Table 1.1: Summary of projects in the investment pipeline, as at October 2015

	Publicly Announced *			Feasibility Stage **			Committed ***			Completed			Total		
Energy source	No.	Capacity MW	Value $m	No.	Capacity MW	Value $m	No.	Capacity MW	Value $m	No.	Capacity MW	Value $m	No.	Capacity MW	Value $m
Non-renewable	5	1 830	1 060	11	4 438	3 955							16	6 268	5 015
Gas	5	1 830	1 060	9	3 688	2 855							14	5 518	3 915
Brown coal gasification				1	600	1 100							1	600	1 100
Black coal				1	150	na							1	150	na
Renewable	22	2 964	4 593	74	15 669	25 695	18	3 747	5 525	3	320	936	117	22 700	36 749
Wind	17	2 610	3 968	49	10 938	17 642	9	1 194	2 495	2	220	636	77	14 962	24 741
Hydro	1	30	na	2	367	330	2	40	20				5	437	350
Solar	2	240	625	17	3 014	6 543	7	2513	3010	1	100	300	27	5 867	10 478
Biomass				3	160	1030							3	160	1 030
Geothermal	1	50	na	2	740	150							3	790	150
Ocean	1	34	na	1	450	na							2	484	na
Total	27	4 794	5 653	85	20 107	29 650	18	3 747	5 525	3	320	936	133	28 968	41 764

Notes: * Capital expenditure data for project costs is undisclosed for 9 of the 27 projects in the Publicly Annouched Stage

** Capital expenditure data for project costs is undisclosed for 21 of the 85 projects in the Feasability Stage

*** Capital expenditure data for project costs is undisclosed for 1 of the 18 projects and capacity is undisclosed for 1 of the 18 projects in the Committed Stage

Source: Department of Industry, Innovation and Science (2015)

45. In order to quantify what this may look like (from an international perspective), the World Energy Council in 2013 produced a report titled 'World Energy Scenarios – Composing energy futures to 2050[9]'.

46. This report modelled two distinct energy scenarios.

47. The first is the "Jazz" scenario, which has a focus on energy equity with priority given to achieving individual access and affordability of energy through economic growth.

48. The second, contrasting alternative was labelled the "Symphony" scenario, and focuses on achieving environmental sustainability through internationally coordinated policies and practices. In other words, takes into account international emission cuts (albeit not referenced against a particular emission cut percentage), and a policy position more aligned with promoting renewable energy (similar to the situation we find ourselves in at the moment).

JAZZ

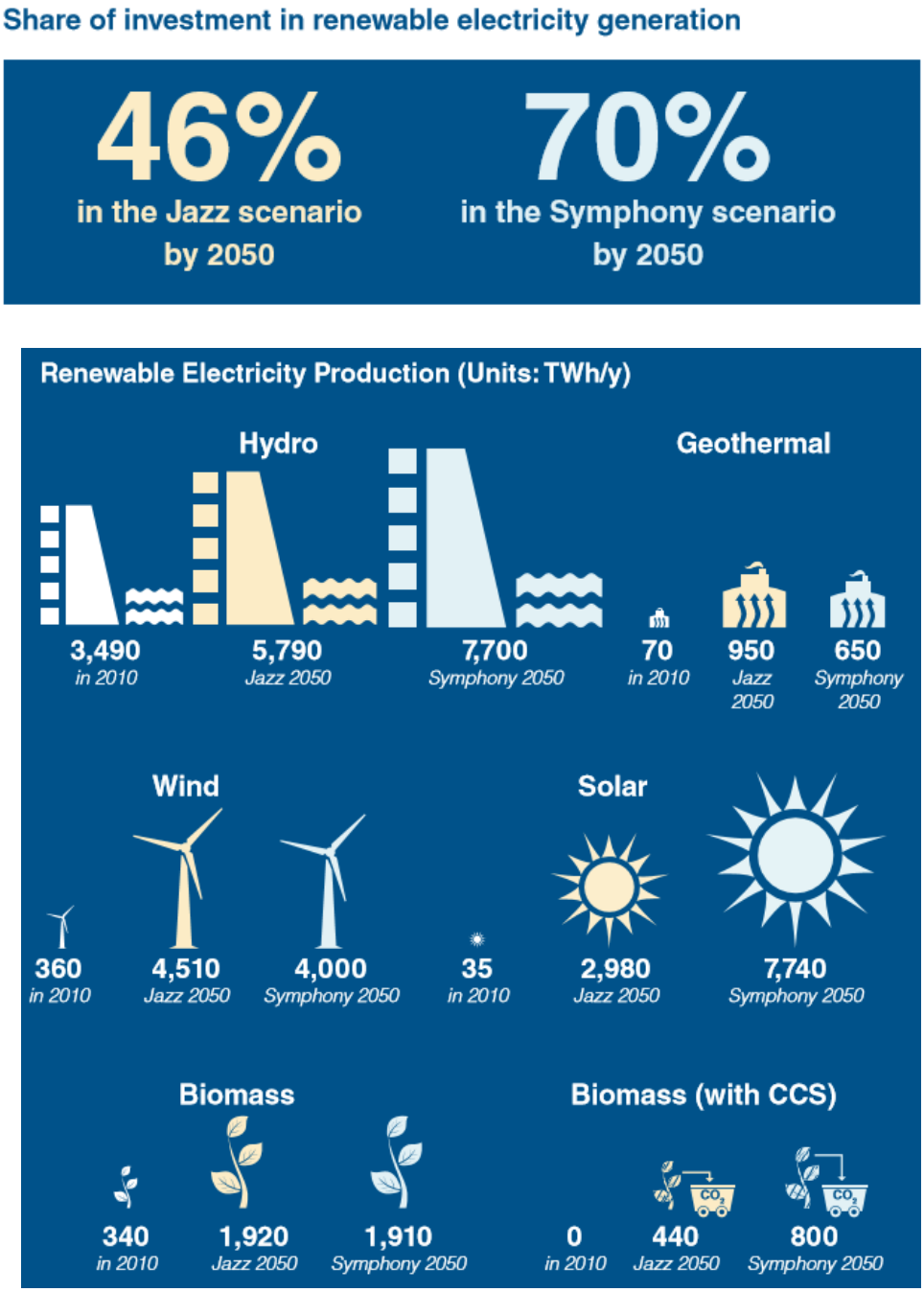
As an energy scenario, Jazz has a focus on energy equity with priority given to achieving individual access and affordability of energy through economic growth.

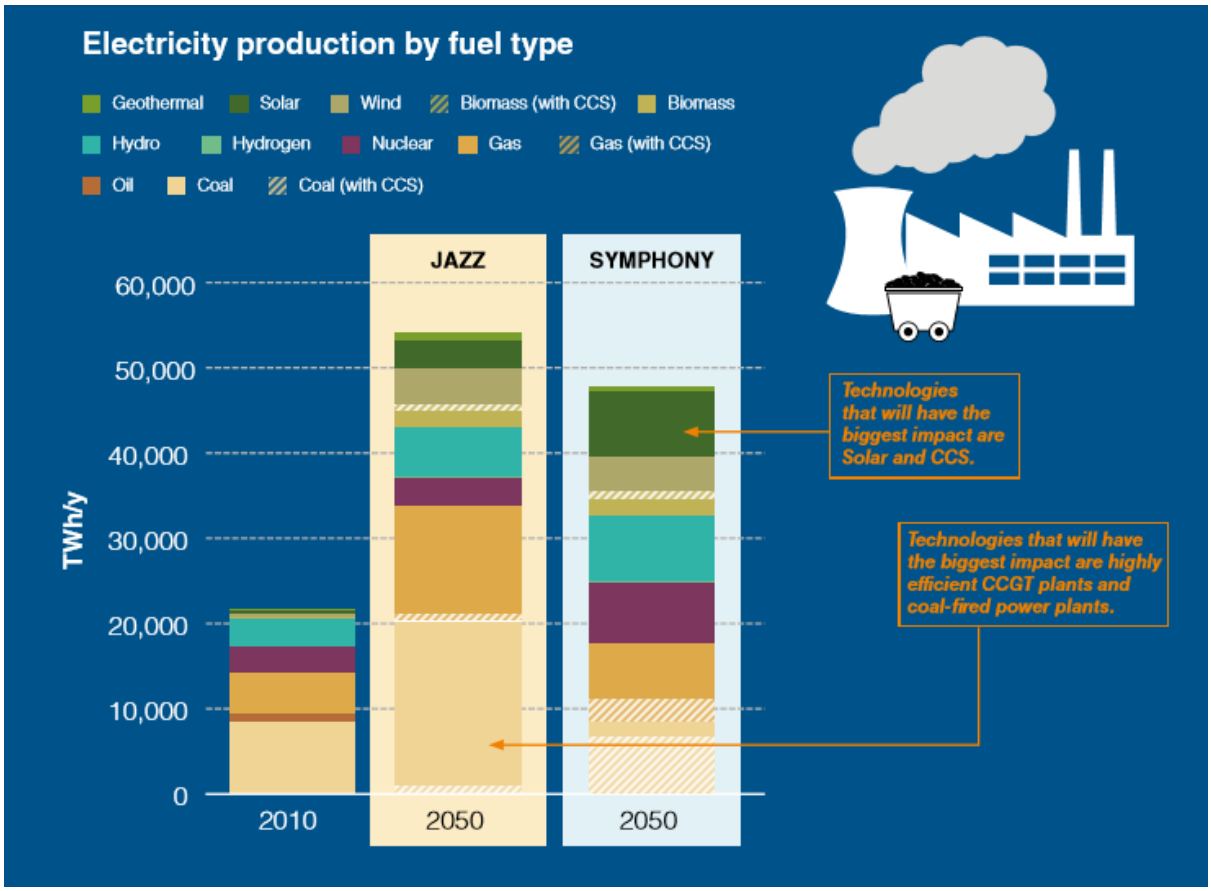
SYMPHONY

As an energy scenario, Symphony has a focus on achieving environmental sustainability through internationally coordinated policies and practices.

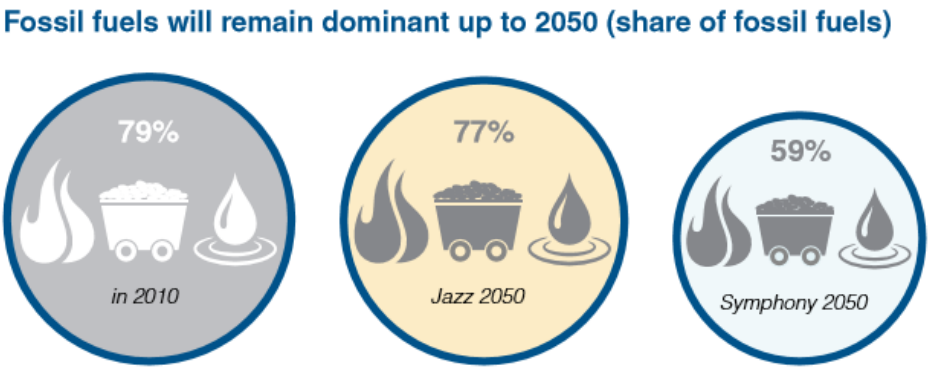
[9] worldenergy.org/wp-content/uploads/2013/09/World-Energy-Scenarios_Composing-energy-futures-to-2050_Full-report.pdf

49. As noted in the infographics below, the World Energy Council is forecasting that by 2050 that there will be a structural shift towards renewable energies, attributable to rises in hydro, geothermal, wind, solar and biomass electricity production, supported by increased levels of investment in renewable electricity generation.





50. However, under either scenarios, 'jazz' or 'symphony', <u>fossil fuel sources will remain dominant up to 2050</u>.[10]



51. It is over a period of decades that renewables are set to dominate, and it is in project investment that we will see a clear change of approach in the more immediate term.

[10] Infographic sourced from the same World Energy Council report.

52. According to Bloomberg New Energy Finance:

    a. Over the next 25 years fossil fuel power will attract $2.1 trillion dollars in investment in coal and gas generation, predominantly in emerging economies.

    b. Renewables are, however, projected to attract $7.8 trillion in investments into green power, $3.1 trillion into onshore and offshore wind power, $3.4 trillion into utility-scale, rooftop and other small-scale solar generation, and $911 billion into hydro-electric generation.

53. With our abundance of renewable and non-renewable energy resources, widely regarded as being high class reserves and resources, Australia should be well positioned to actively pursue its opportunities to be a global powerhouse in the international energy export market.

54. These ongoing opportunities will lie in fossil fuels including coal. What can set Australia apart is the quality of our coal (lower emissions) and our concurrent research and innovation towards lower emission technologies for the usage of traditional non-renewable fuel sources (that can be exported along with our coal).

55. Australian policy setters must ensure that the entire Australian energy sector can best position itself to do business, and to take advantage of our international competitive position that can sustainably capture investment, create jobs and generate economic wealth for the nation.

PART II - JUST TRANSITIONS

A just transition for employees, the industry and community

56. If Australia is to make the energy transitions outlined above, there will be further closures of coal-fired power stations. A key challenge for governments, to which hopefully this inquiry can make a positive contribution, is how best to implement such closures and the losses of existing jobs they create.

57. It is never fair to lose a job when one has worked hard and productively, and it is particularly unfair when your employment must end not due to a lack of demand for the consumable you produce (electricity) or the performance of your workplace, but due to macro-level policy changes in how electricity is to be produced.

58. These transitions need to be just – for employees, communities and the industry.

59. A 'Just Transition' in this context encompasses at least:

    a. Closures as part of a stable, transparent and properly communicated **National Energy Transition Plan** that enjoys bipartisan support and does change markedly with the political cycle (see below). In the Australian vernacular, the goal posts need to be fixed in the ground and not moved.

    b. Avoiding abrupt closures and actively working to minimise uncertainty.

    c. Governments working with industry on well-planned, well-coordinated transitions that do not create commercial harm or abrupt reductions in the value of assets / investments.

    d. Closures, and assistance measures that are strategically and methodically planned well in advance.

    e. Closures that are transparently communicated well in advance in order to reduce (as much as possible) negative implications for employees (both direct and indirect), residents, families, communities and the industry more widely.

    f. Working with employees, the local communities and the industry.

Importance of a National Energy Transitional Plan

60. Justice is not solely about money or alternative employment / opportunity; a genuinely just transition must also provide certainty and predictability.

61. There can be no just transition if the goal posts are moved, and if employees, business people and community members do not have a clear and largely immutable roadmap and timetable for the closure or phasing out of particular operations.

62. Early preparation and ongoing and transparent communication is also critical. This means having a plan that is widely communicated and understood.

63. To limit 'what could go wrong' and minimise the impact to individuals and communities, it is imperative that a comprehensive transitional strategy clearly discloses / encompasses:

a. **Transition / closure plan:** Clarifying when a facility is scheduled to close, and as specifically as possible dates for the closure or winding down / phased closure of particular parts of existing coal fired operations. This should also indicate when jobs are likely to be lost and in what numbers.

b. **Employee profile:** Background details on the socioeconomic demographics of the workers impacted by the closure (Including their age and skills profiles, English proficiency, work experience, etc).

c. **Community profile:** Background details on the socioeconomic demographics of the residents / community that will be impacted on, including the indirect workforce (including age profile). Of note, on average in the mining sector, there is said to be approximately 2.4 to 3 indirect jobs for every one direct job.

d. **Local area labour market / local economic profile**: Allowing policy makers and the community to understand the strengths, weaknesses and opportunities of the local economy into which redundant power workers will need to be integrated. This would include an industry profile of the number of jobs and average wages in the impacted power station shire and surrounding regions.

e. **Education and skills audit:** Indicating how former employees can access educational institutions, and some of the particular challenges involved. This should include identifying what may be required in terms of training and retraining assistance, and perhaps options such as fee waivers or fee discounts.

f. **Assessment of direct and nearby industry sectors to identify opportunities**: Separately and under commercial-in-confidence arrangements, perhaps target and explore alternative employment opportunities with commercial entities (through incentives – e.g. grants, tax concessions) to create business opportunities leading to job creation.

g. Assessment of broadband connectivity.

h. Job search and support (for direct and indirect workers).

i. Employment and relocation assistance (for direct and indirect workers).

j. Commuting assistance (for direct and indirect workers).

k. Financial planning assistance (for direct and indirect workers).

l. Financial options for early retirement.

m. Financial options (integration with financial institutions and government) to assist workers (direct and indirect workforce) to service their mortgage(s) as a result of highly probable changes in remuneration and disposable income levels.

n. Sound economic modelling on the forecast flow-on industrial effects on local purchases – and the impact to the local and nearby communities.

o. Assessment of the quality / useability of local infrastructure (i.e. roads and public transport).

p. Third party (reliable) economic modelling to quantify:

i The impact of lost wages and salaries.

ii Training costs to re-skill employees.

iii Average residential debt / asset positions (forewarning banking institutions of potential mortgage stress).

iv Impact on house prices, rental incomes and occupancy rates of investment properties in surrounding areas.

v Development of new industry sectors.

vi Identification of short, medium and long term initiatives with indicative implementation timeframes.

64. Only after the economic and jobs situation is properly modelled and understood, should any government (state and federal) announce their 'formal' (not temporary) assistance package (if required). Such transactional assistance will also only be effective as part of a broader, overarching National Energy Transition Plan.

65. Plucking numbers out of thin air, as the Palaszczuk Queensland government did for its North Stradbroke Island Economic Transition Strategy should be avoided, as this creates a significant risk of 'short changing' workers requiring assistance, as well as risking future economic benefits for impacted region(s).

66. All involved, including politicians, must have the courage to signal that a transition will be made and to assemble the necessary facts prior to attempting to make political announcements about assistance.

67. If planning has been done correctly under an agreed framework, ideally at the national level through the COAG Energy (Ministers') Council, then State and Commonwealth ministers will be equipped with quite enough political announcements and money to respond to the next closure announcement, but

this will not be knee jerk and responses will stand the best possible chance of being effective.

68. Equally, employees and communities will need to realise that knee jerk pots of money style announcements are no substitute for a reasoned and thorough examination and understanding of:

a. What is going on.

b. What is actually required.

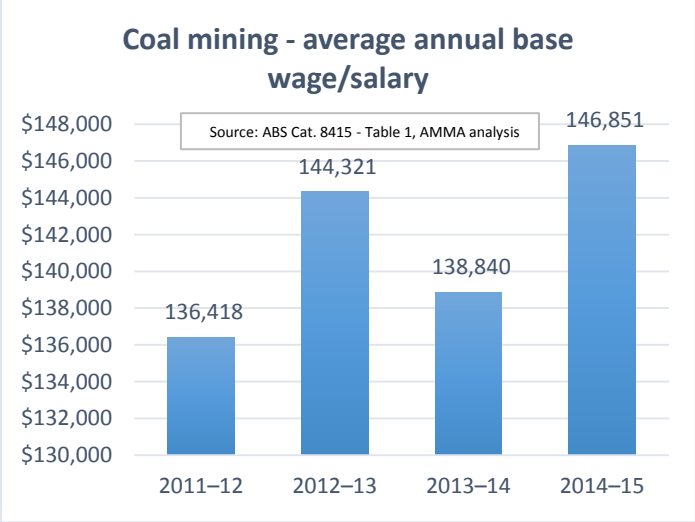
c. What can practically be achieved.

d. How best to go about actions to remediate the impacts of closures and to achieve a just transition (and specific and measurable goals / targets for the transition should be part of the plan).

A just transition will see wages fall

69. It is well-documented that following the most recent 'commodity high price-boom event', that resource employees and allied industry employees were (and still are - see below) receiving salaries and wages significantly above the all-industry average of $78,832[11].

70. Of note, workers at the Latrobe Valley power plant through the CFMEU this year demanded "$180,000 a year for a four-day week, pay to walk to work from a carpark, and generous superannuation contributions.[12]"



[11] Or $1,516 a week according to the ABS Cat 6302.0, Average weekly earnings, Australia, May 2016
[12] http://www.heraldsun.com.au/news/victoria/la-trobe-valley-power-plant-workers-demands-may-drive-up-electricity-prices/news-story/6523ca01bd0f278a09fabf5a70a4bd69

71. However, the average salaries in like industries where displaced coal fired workers may seek employment are considerably lower.

72. For example, according to the Committee for Gippsland 'our region our future' the average mining wage is $141,615. However, the average wage in the same locality for construction is $83,758 and manufacturing is $75,652.

73. So the likelihood is that many coal fired power station workers if they are able to attain work in these fields will be required to take a ~40% pay cut. The justice in future transitions away from coal fired power in this industry will lie in opportunities for alternative careers, not necessarily in the maintenance of coal industry terms and conditions of employment.

74. Mental health: It is also important that prior, during and following transition (of the retirement of a coal fired power stations) that mental health practitioners in surrounding areas are adequately and properly equipped to help deal with any mental health challenges employees, families (etc) may encounter. It appears that many coal employees will fall into the males of median to middle age demographic that can suffer particular mental health challenges and risks.

75. Mental health support is precisely the breadth of support, beyond direct payments, that a properly developed National Energy Transitional Plan can identify and foster. A nationally coordinated approach will also support learnings in this area from preceding closures in different parts of the country.

Relocation

76. Not every area (where there is a coal fired power station) will be able to deliver sufficient job opportunities to replace those lost through the retirement of such power stations – perhaps few will.

77. Australians, while well-travelled, are not known for relocating (for example, in the height of the recent mining boom, the government offered incentives to relocate to Western Australia to help meet the skills gap; and even with financial incentives this was not well picked-up – people remained put, and FIFO was widely used).

78. A proper and effective transition plan must tackle difficult questions for displaced workers and the indirect workforce, including relocation. In some cases, on a dispassionate analysis, relocation may need to be supported as the best measure.

Workplace relations

79. Coal employees are employed under awards and agreements (overwhelmingly agreements) made under the Fair Work Act 2009 (Cth). The sector is generally heavily unionised through the Energy Division of the CFMEU.

80. Collective industrial agreements with each mining and energy company will contain redundancy terms and conditions. These will be complied with during the course of closures, and redundancy payments will form a significant part of the overall budget for the closure of any further coal operations.

81. Therefore, in addition to any governmental financial assistance for transition:

    a. Coal companies will need to make substantial payments to employees to close existing operations.

    b. There will be a significant transference of monies to former coal industry employees / families from their (ex) employer, before any assistance packages or government payments come into consideration.

82. Specific agreements or side arrangements with unions may also provide further to assistance to employees beyond redundancy pay.

83. However, in some cases employers may be able to obtain "adequate alternative employment" either within their operations or in those of another employer. Victoria's Latrobe Valley, for example, contains multiple power generation operations, and in some cases alternative employment arrangements may be able to be secured by an outgoing employer, or as part of wider dialogue between employer, employees, unions, and the community, including other employers.

84. Under s120 of the Fair Work Act 2009, the amount of redundancy pay may be varied by the Fair Work Commission (FWC) where the employer arranges other acceptable employment and the terms and conditions offered with respect to the other employment are deemed fair. This section applies if an employee is entitled to be paid an amount of redundancy by the employer under s119 of the Act and the employer obtains other acceptable employment for the employee.

85. On application by the employer, the FWC may determine that the amount of redundancy pay is reduced to a specified amount (which may be nil) that it considers appropriate[13].

[13] http://workplaceinfo.com.au/termination/redundancy/analysis/acceptable-alternative-employment-and-redundancy-pay-issues#.WCVJxMlySpo

86. Scope to reduce redundancy pay in such situations may also be regulated by the terms of an enterprise agreement for a specific workplace.

87. There is complex precedent as to what constitutes adequate alternative employment. However, to the extent possible, this should be navigated by consent / without litigation in the best interests of employees, without recourse to tribunal or court determinations.

88. Any future closures and closure programmes should include analysis of scope for re-employment or redeployment, and active incentives for employers to explore this avenue on behalf of employees.

89. Securing a 'redundancy package' should be seen as less desirable than retaining a job, and coal employers should be encouraged to explore opportunities to have their workforces re-employed. Where adequate alternative employment is secured, redundancy pay should be reduced or not payable, whether regulated by an award, legislation, agreement or any mix of them.

90. There may also be potential 'transfer of business' considerations if a potential incoming (new) employer is to pick up any of the existing employees along with plant and equipment. This may arise as an issue, for example, where a new employer seeks to hire ex-coal employees for the mine rehabilitation process.

91. Again, the incentives should be to deliver jobs to the former coal power workers, and if there are perverse disincentives to taking them on, as there have been under the transfer of business provisions of the Fair Work Act 2009[14], these should be exposed, examined and addressed in the interests of coal communities.

92. AMMA is on record saying the transfer of business provisions of the Fair Work Act do need to be reformed to remove disincentives to re-employ ex-staff when ownership of a facility changes.

93. There are numerous other workplace relations considerations in such massive transitions / mass job losses. As with other considerations, these should be identified in advance in a proper planning process, and dealt with as effectively as possible through dialogue and engagement.

94. The coal industry also has the recent examples of the car industry closures to look to and learn from.

[14] Sections 307-320

Role of alternative mechanisms in ensuring just transitions

95. Point (b) of the terms of reference queries: *the role that alternative mechanisms can play in alleviating and minimising the economic, social and community costs of large electricity generation and other industrial asset closures, drawing on experiences in Australia and overseas.*

96. The most widely touted alternative is that the renewable energy industry will have the capacity to directly alleviate and minimise the impact of the coal fired asset closures, and will both:

    a. Generate new offsetting power supply; and

    b. Be able to recruit a sizeable proportion of displaced coal fired power station workers.

97. Coal fired power stations are located generally in regional areas (not CBD centres).

98. The reality is that in most of these localities:

    a. The power station is the main driver of employment for local residents.

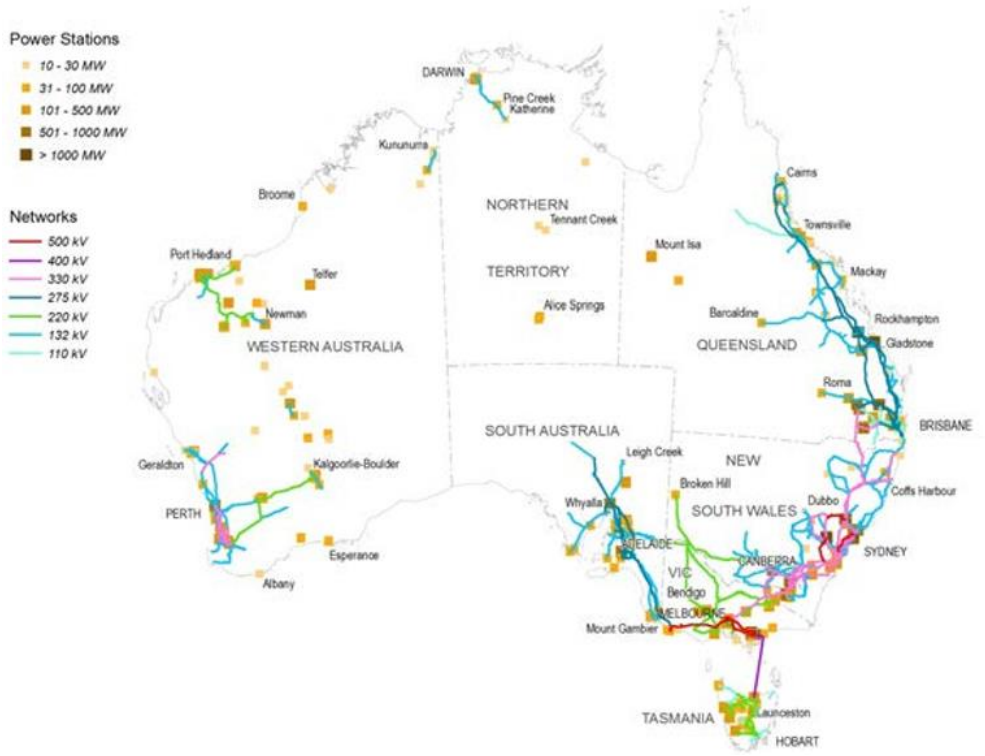
    b. Many supporting small-to-medium 'mum and dad' sized companies have grown up in proximity to power stations to service:

        i The industry (e.g. through speciality engineering, electrical, trade services).

        ii The people working in the industry (e.g. catering companies, hairdressers, trading stores, dentists, bakeries, car dealerships, etc.).

    c. Regional towns and communities have grown up around power generation facilities (as the following map illustrates):

Australia's electricity infrastructure and power plants[15]

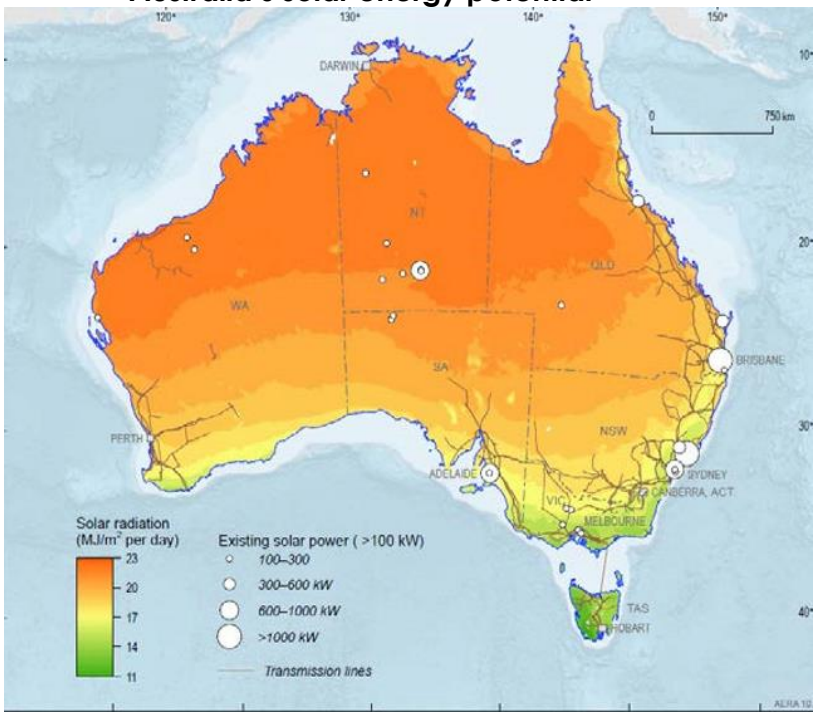


99. The reality is that when you overlay the location of the current coal fired power stations (above) with Australia's solar energy potential, Australia's geothermal energy potential and Australia's wind energy potential (below), there is limited geographical commonality.

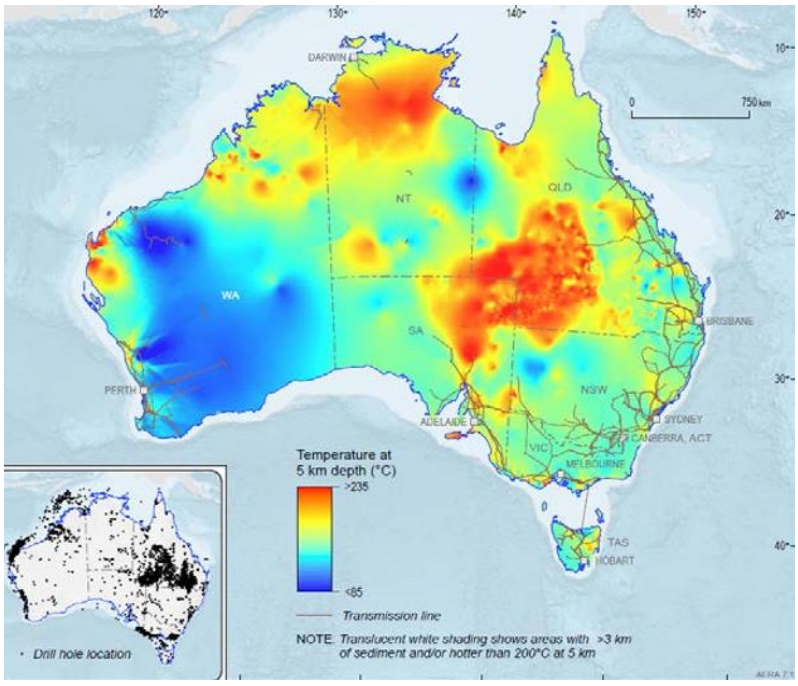
100. In other words, the majority of the coal fired power plants are not located in areas where future renewable energy projects (e.g. windfarms, solar plants) are likely to be developed.

[15] http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Documents/energy-in-aust/Energy-in-Australia-2015.pdf

Australia's solar energy potential[16]

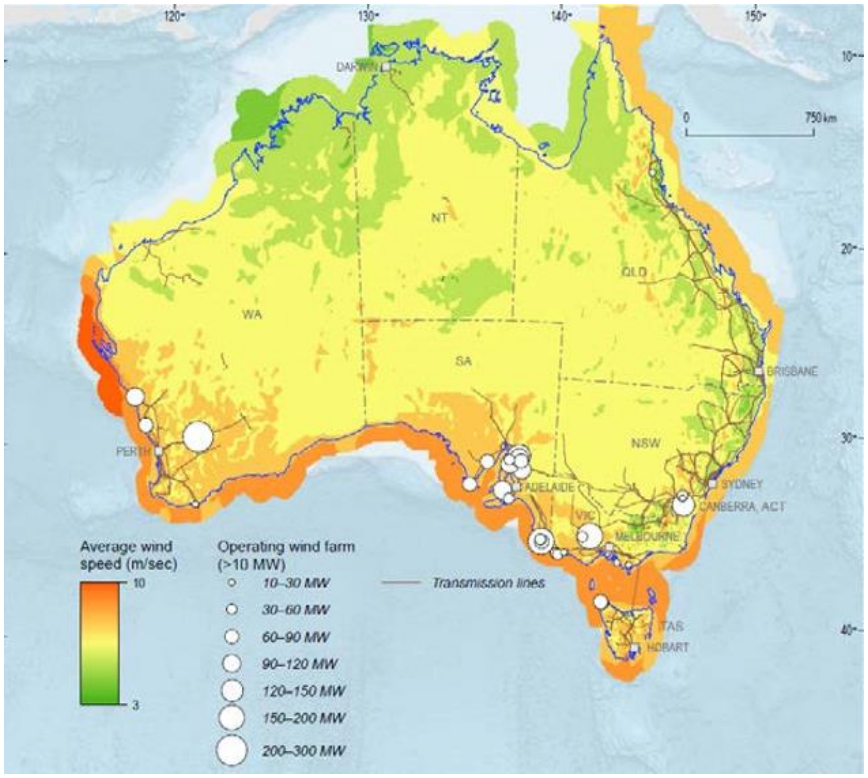


Australia's geothermal energy potential[17]



[16] http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Documents/energy-in-aust/Energy-in-Australia-2015.pdf
[17] http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Documents/energy-in-aust/Energy-in-Australia-2015.pdf

Australia's wind energy potential[18]



101. This effectively means there will be limited employment opportunities for former coal fired power station employees that are unwilling or unable to travel, to be employed on renewable energy projects (even if they are suitably qualified, trained have the right cultural fit, etc.) This puts to one side issues of skills transplantability.

102. It is also important to note that renewables (e.g. wind) are significantly less labour intensive than coal.

    a. To put it crudely, even where employee skills are perfectly interchangeable, it takes fewer people to build a wind farm than it does to fuel and operate a coal fired power station.

    b. Looking beyond the immediate, even where there may be employment opportunities in the construction of renewable facilities, the post-construction, operational workforce will be much lower than the operational workforce for an ageing coal fired power station.

103. For example, if Australia was to meet Labor's 2030 50% renewable policy target, up from the Coalitions policy for the Paris agreement's 26-28% carbon emission cut via wind power alone – it is estimated that this would be the equivalent of two to three years construction work for 20,000 to 30,000 workers to build 7,000 to 10,000 new wind turbines; dependent on whether the turbines are onshore or

[18] http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Documents/energy-in-aust/Energy-in-Australia-2015.pdf

offshore.

104. However, once in operation, a considerably smaller (and a differently skilled workforce) will be required to run the new wind operations.

105. This needs to be taken into consideration when assessing transition opportunities for directly affected employees, indirect employees and the local community.

106. It cannot be assumed that the renewables sector that is set to play a greater role in our power generation can necessarily also play a direct role in taking up the jobs that will be lost from the mining of coal and the operation of coal fired power stations.

107. Even to the extent that skills and experience may be transferable, and that displaced former coal employees could relocate to where the wind, sun and geothermal opportunities are (the maps above), the vast bulk of the jobs are going to be short-run and not provide alternative long-term careers.

Be cautious in assuming government services can take up the slack

108. Another alternative often discussed is deliberately moving government jobs into a region losing its major employer and anchor industry, such as a coal fired power station. In Victoria government has relocated labour intensive state agencies, including the new NDIS administration and Work Safe to Geelong following cumulative high profile workplace closures in that region.

109. AMMA urges caution in assuming government can step in and offer re-employment. Any replacement employment needs to be properly planned and to follow critical analysis. Employees are not interchangeable widgets, and not only do any replacement industries need to be ones in which ex-coal employees will want to work and can work, but the relocation has to be in the interests of the government agencies concerned and their clients (in the above cases employers and injured employees and persons with disability, their families etc).

110. Governments need to be locating and delivering services in the best locations for service delivery and for clients. This must remain the paramount consideration regardless of the challenges for transitioning coal communities. In some cases government jobs may help provide re-employment options for ex-coal employees, however in most cases they will not. Wider harm created by shoehorning in ex-coal workers into government work to the detriment of services and budgets should be avoided. Government's need to avoid knee jerk responses too coal closures that risk compromising the services they offer the wider community.

111. We might add to this:

a. A major city such as Geelong has a diverse pool of skilled and experienced potential employees that makes the relocation of government services practical. This may not be the case in many smaller and more remote communities presently significantly reliant on the operation of coal fired power stations.

b. If Australia had rail and other intercity/interregional transport infrastructure more reflective of the world's 13th largest economy, there would be greater scope for ex-coal employees to commute to expand their job options. More trains from regional areas, running quicker and to more reliable timetables could help meet the human challenges that will be created by coal fired power station closures.

112. AMMA would be pleased to answer any questions in relation to this submission at any time, should it assist the committee.