To be read in conjunction with the companion Presentation Slides

SLIDE 1 – title page

I thank the Independent Planning Commission New South Wales (IPCN) members for the opportunity to speak here today.

My name is **Geoff Miell**. I have no political affiliations.

I am a resident and rate payer in the Lithgow Local Government Area (LGA).

SLIDE 2 – *BPSRoWE-2019*: "an unsustainable path"

Last week BP released its 68th annual edition of the *BP Statistical Review of World Energy*. Launching this comprehensive collection and analysis of global energy data was Bob Dudley, BP's group chief economist, who said:

"*The longer carbon emissions continue to rise, the harder and more costly will be the necessary eventual adjustment to net-zero carbon emissions.***"**

"*There is a growing mismatch between societal demands for action on climate change and the actual pace of progress, with energy demand and carbon emissions growing at their fastest rate for years.* ***The world is on an unsustainable path.***"**

This presentation today highlights recent compelling evidence of the growing risks to our energy security and prosperity, and **why the Ulan Coal MOD 4 is highly likely to be a "stranded asset".**

I oppose the Ulan Coal Mine MOD 4. I strongly urge you to do so too.

SLIDE 3 – Global oil production and consumption … increasing …

Global oil production and consumption in 2018 continued to increase.

Production growth was heavily concentrated in the US, with 2.2 million barrels per day growth, Canada (0.41), and Saudi Arabia (0.39), offset by significant declines from Venezuela (-0.58) and Iran (-0.31).

SLIDE 4 – 2018 world oil + top 5 country rankings

In 2017, USA was the world's largest oil producer, yet it's estimated that USA has a proved Reserves-to-Production of only 11 years. The Russian Federation was the world's third largest oil producer, and it has an R/P estimated at only 25.4 years.

This suggests global oil production is unlikely to be sustainable at current rates for much longer. Global oil prices are likely to continue to rise. Some energy analysts suggest crude oil prices could exceed US$100 per barrel soon.

Rising petroleum fuel costs will increase production and transport costs of coal.

SLIDE 5 – US conventional and shale (tight) oil

For roughly the last ten years all US oil production growth has come from shale (tight) oil, as indicated by this graph.

Despite EIA predictions for further US shale oil production growth, the Norwegian consultancy Rystad Energy has calculated that only 10% of US shale oil companies are cash flow positive.

SLIDE 6 – US shale (tight) oil's major limitations

US shale oil is a light oil, not easily converted to diesel, which is the most important transportation fuel, nowadays. It's also ill-suited for producing jet fuel and the higher-octane grades of gasoline (or petrol), unless extensively blended with heavy crude oils.

Additionally, there's a dearth of heavy oil, the fuel of choice for marine vessels.

So, US shale oil production growth is beginning to create headaches for US refineries, leading to diesel fuel becoming scarcer and more expensive.

SLIDE 7 – Have diesel fuel supplies peaked?

Have global diesel fuel supplies peaked? Perhaps it's too early to tell yet.

Rather than waiting for declining global oil supplies being forced upon us, humanity needs to leave oil before oil leaves us.

Scarcer and costlier diesel fuel supplies will likely increase Ulan's coal mining and transportation costs.

SLIDE 8 – Global gas production and consumption … record-high…

In 2018, global gas production and consumption registered record-high volumes, as indicated here.

SLIDE 9 – 2018 world gas + top 5 country rankings

But is further global gas production growth sustainable? Global gas prices are likely to rise higher as US unconventional (i.e. shale and CSG) gas productions peak, then begin sustained declines.

Australia's rising gas production, now ranked world's 7th largest, is also not sustainable, with a reported diminishing Reserves-to-Production of 18.4 years at the end of 2018.

SLIDE 10 – Australia vs Qatar LNG exports

Australia is now on track to export more than 80 million tons per year of LNG, surpassing Qatar as the largest global LNG producer. But can it last for long?

SLIDE 11 – Global coal production and consumption … grew…

In 2018, global coal production increased by 4.3%, significantly above the 10-year average. Production growth was concentrated in Asia-Pacific (163 million tonnes oil equivalent) with China accounting for half of growth and Indonesia production up by 51 Mtoe.

Global coal consumption increased by 1.4% in 2018, the fastest growth since 2013. Growth was driven by Asia-Pacific (71 Mtoe), and particularly by India (36 Mtoe).

SLIDE 12 – 2018 world coal + top 5 country rankings

This table indicates how heavily concentrated the global coal industry is.

China produced almost half the world's coal in 2018, yet it's estimated R/P at the end of 2018 is only 38 years – clearly not sustainable.

Indonesian and Indian coal production surpassed Australia's production in 2018.

SLIDE 13 – The pipeline of proposed new coal … capacity shrinking

This bar chart indicates planned coal power capacity pre-construction status shrank from 1069 gigawatts in 2015 to 339 gigawatts, with the biggest falls in China and India.

Japan has cancelled over 7 GW of proposed coal capacity since 2017, while South Korea has stopped issuing permits for new coal plants.

In 2018, Japan bought around 39% of Australian-mined thermal coal exports, China acquired 21%, South Korea at 15%, Taiwan at 11%, and India at 2%.

SLIDE 14 – Near record coal-fired power capacity retirements…

This chart indicates coal power capacity additions (above the zero line) and retirements (below the zero line) as coloured columns between years 2000 and 2018, and global net change (black line).

Net new global coal power was 19 GW in 2018 – the slowest rate of growth on record, and the fourth straight year of decline. **If trends continue, the global coal power fleet will begin to shrink, perhaps by next year, meaning coal demand is likely to then decline with it.**

SLIDE 15 – New renewables are now cheaper than new nuclear…

This chart indicates how Lazard has tracked unsubsidized Levelized Cost of Energy analysis showing significant historical cost declines for utility-scale Alternative Energy generation technologies.

SLIDE 16 – Energy technology deployment: wind fast, solar faster…

This chart shows how long it takes to deploy a range of different types of electricity supply technologies.

Batteries can be operational in less than one year;
Solar-PV: 1 to 2½ years;
Solar-thermal: 2 to 3½ years;
Wind: 2½ to 3½ years;

Gas: 3 to 5 years (plus gas resource development);

Geothermal: 5 to 8 years;

Coal: 6 to 9 years (plus coal resource development);
Nuclear: 8 to 15 years (plus fuel resource development).

Renewables can be deployed substantially quicker than coal and nuclear.

SLIDE 17 – *IPCC SR1.5°C* warns: Climate change is existential threat

Climate change is an existential threat to humanity. **Current pledges are not on track to limit global warming to 1.5°C above pre-industrial levels.**

Approving the Ulan Coal Mine MOD 4 contributes to increasing an existential risk to humanity. Why risk our families' futures; our lives?

If Australia does nothing to reduce emissions, why should anyone else do anything? The IPCN has a fiduciary duty to protect New South Wales citizens.

SLIDE 18 – Can we think in new ways about the existential … risks?

A foreword to a policy paper published last month that was written by Retired Admiral Chris Barrie, who was Chief of the ADF from 1998 to 2002, stating:

David Spratt and Ian Dunlop have laid bare the unvarnished truth about the desperate situation humans, and our planet, are in, painting a disturbing picture of the real possibility that human life on earth may be on the way to extinction, in the most horrible way.

… without immediate drastic action our prospects are poor.

What's retired Admiral Chris Barrie referring to?

SLIDE 19 – A 2050 scenario: global … GHG emissions peak … 2030

David Spratt and Ian Dunlop have compiled a policy paper that outlines a scenario, based on the latest climate change science, where global human-caused greenhouse gas emissions don't peak until 2030, and have projected the **possibilities** of what could be experienced by 2050.

The slide here outlines some of the key points given in the scenario, and I'll add:

"*This scenario provides a glimpse into a world of "outright chaos" on a path to the end of human civilisation and modern society as we have known it, in which the challenges to global security are simply overwhelming and political panic becomes the norm.*"

Do you have children and grandchildren? Do you wish to play Russian roulette with their futures by approving the Ulan Coal Mine MOD 4? Humanity needs to stop burning fossil fuels – this is as good a place as any to begin doing so.

SLIDE 20 – In conclusion

The energy transition is not a question of technical feasibility or economic viability, but one of political will.

Repeating what I stated at my presentation at the IPCN public meeting for the Bylong Coal Project Determination last November, new thinking is required that is informed by **evidence, science and economics.**

And it requires urgent effective action, akin to wartime, to reduce the risk of human extinction within this century.

The Independent Planning Commission New South Wales has a fiduciary duty to protect New South Wales citizens.

The proposed Ulan Coal Mine MOD 4 is highly unlikely to remain viable with the emerging realities and challenges highlighted here in my Presentation.

I strongly urge the IPCN to stop this project before more damage is done!

Please don't ignore the existential risks this project contributes toward dangerous climate change.

Thank you for your attention.