Good afternoon, and thank you Mark for the invitation to speak today, and Sue for arranging the logistics.
In this presentation, I am to talk about the massive transformation currently underway of the world’s electricity markets towards a more sustainable, lower carbon structure. To me this is an inevitable transition.

Inevitable not so much because of the pressing and critical need for the world to address climate change, but for shorter term reasons of self-interest. Air and water pollution and the associated health costs are a driver, but so is energy security as a national imperative for key countries like China, America, Germany and India. Economics and technology advances also make the transition entirely inevitable given the progress achieved in the last decade.

I will aim to cover off on the state of the thermal coal markets, both physical pricing and as this is reflected in the equity market.

Coal has historically been the mainstay fuel of the world’s main electricity markets.

However, with ever increasing amounts of gas, nuclear, hydro, wind and solar power being installed globally, plus the curtailment of electricity demand growth by greater energy efficiency impacts, the need for more coal is highly questionable.

My biggest forecast last year was that China would see peak coal consumption by 2016 – 15-20 years ahead of the IEA’s timeframe. Coal consumption is down 1% YTD in 2014, despite 7.3% GDP growth and 4% electricity system demand growth. Something has changed fundamentally in 2014!
The global coal price has been free-falling, and there is no evidence this process is slowing as yet.

Thermal coal is down 60% in six years, but interestingly, and bad for Australia, so is coking coal, in conjunction with a similar fall in iron ore prices.

Massive oversupply and a massive overestimation of the rate of growth in demand for coal are the two collective reasons.
The average global thermal coal mine is currently operating at a gross cash breakeven position, and the Average Australian thermal coal mine at a marginal loss on current pricing of US$63/t Newcastle benchmark.

Rather than seeing major supply cutbacks, the coal industry has instead focused on cost reductions, partly driven by economies of scale involving ramping up production – the individual company reaction is to drive down costs which works against an industry solution to oversupply. This is part reflects the relatively new advent of take-or-pay rail and port contracts.
Woodmac, the IEA, BP and EIA all suggest the future for coal looks bright, pointing at historical volume growth rates.

We would put forward a very different and pessimistic forecast – we see the global seaborne thermal coal market as having entered structural decline post 2011.

The global equity market has increasingly reflected this scenario. Most global coal companies have seen their equity capitalisation slashed by 70-90% over the last four years be it in America, Australia or HK – refer charts over the next three pages.

In part, this reflects the usual short sighted corporate stupidity of expanding aggressively when coal prices are at their peak. Most Western Coal companies undertook expensive M&A at the top as well, leaving most in financial distress now.
Australian coal companies

Whitehaven Coal at its peak in 2012 was a $5bn company – now reduced to $1.4bn after a 80% decline since Nov’2010.

The green line represents New Hope Coal – its stellar performance (down only 50% in a market flat) reflects the $1bn net cash on its balance sheet.

Cockatoo Coal is suspended from trading – having fallen 90%. Bandanna Energy has gone into Administration in Sept’2014.
US Coal Companies

In US equity bull market, coal companies have totally missed out. Most are down 80-90%.

Peabody Energy was invited by PM Abbott to talk to the G20, the only private company invited to do so. Yet its shares are down 80%, destroying US$14bn of shareholder value in just four years. A wealth hazard. Even worse if you are a retired worker of Peabody, they forgot to fund the retirement pension plans of the 10,000 odd workers, so if and when they go in Chapter 11, their ex-workers will lose their pensions. But before you worry, the board has looked after the bosses, their pension plan is separate and according to the annual report, almost fully paid up.
China may protect its domestic coal companies ahead of foreign firms, but this hasn’t stopped the coal companies massively underperforming there too!

You get the picture.
As I mentioned in the introduction, the electricity sector transformation is occurring due to the increased recognition of the unsustainable externalities of coal fired power plants in terms of air and water pollution and the inevitable health consequences.

However, at least as important a driver of government’s strategic plans is the need for energy security through energy system diversity.

Another drive is pure economics – the technology developments in electricity sector rival the mobile phone’s impact on the telecommunications sector two decades ago.
While there has been a very stop-start, on-off policy program for renewables and energy efficiency within individual countries, the global picture is pretty robust – not fast enough, but plenty of growth over a sustained period of time.
Renewables have seen massive technology innovation which has combined with massive economies of scale to drive costs down, to the point where grid-parity on an apples vs apples basis is now a real and immediate threat to incumbent fossil fuel companies.

Source: Citi Commodities, Tony Yuen, June 2014; *Energy Markets in Transformation*
Tesla is an example of a company driving this transformation. Tesla didn’t exist five years ago, today it has a market capitalisation of US$32 billion.

It is transforming the automotive industry single-handedly – driving the commercialisation of the electric vehicle.

In doing so, it is also commercialising the development of the battery market for use as a store of power for the electricity grid.

Tesla is building a US$5bn factory that will produce more batteries than every existing battery factory in the world today. Tesla’s aim is to drive the cost of a battery down 30-40%.
We forecast the global thermal coal market as having entered structural decline post 2011.

Today I will briefly talk about China and India.

We forecast a peak in total Chinese coal consumption by 2016, driven by

1. slower economic growth of 6-7% beyond 2014;
2. economic transition towards lower electricity intensive sectors such as consumer goods and services;
3. Reduced use of coal in direct household and industrial heating applications;
4. A continued emphasis on energy efficiency; and
5. Greater deployment of renewable energy, hydro electricity, gas and nuclear.

### 4. Peak Coal Demand

Four regions account for 80% of global demand:

1. China 50% - peaking in 2016?
2. US 14% - down 20% since the 2007 peak
3. India 11% - still growing strongly
4. Europe 5% - flat since 2000 – but will steadily decline given existing policy framework.
This week our Prime Minister mistakenly said that because China was forecasting 20% of their energy to come from renewables by 2030, this mean coal would still produce 80% China’s energy. Unfortunately Mr Abbott confused energy and electricity, a subsector of energy. He forgot there is oil, hydro, gas and nuclear.

China is massively diversifying their electricity generation base. More of everything, but importantly, a significantly lower percentage of coal in the composition – 48% by 2020 vs 69% in 2010.

But capacity utilisation factors differ across technologies – so if we talk in terms of electricity generation rather than capacity, China is still rapidly moving away from coal.
This is becoming a more accepted central scenario with the world’s leading investment banks and commodity forecasters. Here is Citigroup’s forecast.
Goldman Sachs’s last month cut their forecast for China’s 2017 coal consumption by 20%, with a forecast now based on coal consumption having peaked this year in China. My forecast now looks conservative!
4. India

- India was the great white hope of the export coal industry. The next big market for sustained growth in coal demand.
- However, India’s Energy Minister Goyal last week said his plan is for India to cease thermal coal imports within 2-3 years.
- India plans a US$250bn investment in electricity by 2019, including US$100bn in solar and wind, and US$50bn in grid upgrades.
Stranded Assets is the focus on my work.

My hypothesis is that global thermal coal demand will peak in 2016 and decline steadily thereafter.

Should that prove correct, the merit in Australia building new coal mines, plus the associated rail and port infrastructure is absent. In fact, the very development of massive excess capacity will cause the more rapid downturn of the coal industry, leaving Australia with tens of billions of dollars of investments in single purpose assets that redundant and unable to generate a commercial return.

WICET – Wiggins Island Coal Export Terminal – is just one example. It is yet to be commissioned, that will occur next year. At a total capital cost of $4bn, this 27Mtpa coal export facility is the most expensive coal export port in Australia, double or triple the Australian average. A white elephant that is stranded before it is even commissioned, it has already caused Bandanna Energy to go into administration, and Cockatoo Coal is down 90% and suspended from ASX trading due to its liabilities to WICET.
6. Australian Electricity Markets
This chart is somewhat outdated, but I reference it to show how the Australian electricity market operator has totally balls up its forecasts for Australian electricity demand over the last decade. If this wasn’t used as the basis for some $50bn of investment across the East Coast of Australia in this period, it would be laughable.

To be clear, the black line at the bottom is the actual demand, declining each year since 2008.
This is the current forecast for per capita electricity demand for Australia – a steady decline.
Another forecast that went wrong.

Gas is the transition fuel of choice – right?

Wrong. AGL and Origin both said this five years ago, and invested tens of billions on the back of this forecast.

Now AEMO sees gas-fired electricity generation in Australia halving in three years.
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