Submission to the Senate Inquiry into the performance and management of electricity network companies. 17 December 2014

Author: Bruce Robertson BEc FFin

About the Author: Bruce was involved in the successful community campaign to stop Transgrid, the NSW state owned Transmission provider building a 330,000v transmission line down the Manning Valley on the Mid North Coast of NSW. It was this project that popularised the term Gold Plating.
He has appeared on Australian Story, A Current Affair and on Prime 7 news regarding Energy issues. He has made many national radio interviews on Energy issues including on the ABC's Background Briefing.
He has backgrounded, been quoted in, or written over 60 newspaper articles many of which have appeared in National and Regional Newspapers. He has backgrounded a series of articles on the industry by Michael West of the Sydney Morning Herald and the Age.

The format of this submission will follow the Terms of Reference for the enquiry.

Executive Summary

Energy costs are a fundamental building block of any economy.
Australia should have cheap energy. We do not.
Electricity and Gas prices are globally uncompetitive and have risen so rapidly that they are causing social damage as retail customers simply cannot afford the product. The current explicit high energy price policies being followed by the government are hollowing out the Australian economy. Mineral processing industries are leaving our shores, manufacturing has been decimated and our economy is being reduced to a "houses and holes" economy, reliant on mining and housing to drive the economy.

The key conclusion of this submission is that the bloated, inefficient electricity network companies are in urgent need of reform.

They have claimed returns that are way in excess of their actual costs of capital. In the five year period ending 2014, just one network company, claimed interest costs that were between 2.25% and 3.20% pa above the costs they actually incurred. Furthermore they claimed an equity Beta of 1, a Beta any reasonable person would find way in excess of what they should have claimed, grossly inflating the return they received.

The network companies spend a disproportionate amount of time, executive effort, and consultants reports on gaming the regulator.

The network companies have engaged in unnecessary expenditure on infrastructure that, in all likelihood will never be used.

The valuation methods for the Regulated Asset Base, on which these companies are paid, are extremely unfavourable for consumers of electricity.

There is an urgent need to write off all the unnecessary expenditure. As technological change is rolling like a wave over the power sector we are seeing a change in the entire model of electricity generation and consumption. Increasingly power is being produced where it is consumed. With the advent of economic solar panels there is simply less need for expensive infrastructure. The industry must adapt, write off over investment, and welcome the change in model. We are moving to a decentralised model whether the network companies like it or not. Technological change has seen to that.

Assets have been, and are being built on forecasts that in my opinion are professionally negligent. To make mistakes in forecasting is human. To make the same mistakes year after year after year, and fail to recognise clear generally accepted trends is inexcusable. There needs to be new organisations put in charge of forecasting electricity demand in the National Electricity Market. Forecasts are important as Electricity networks are planned based on long term demand projections. These demand projections have been hopelessly inaccurate.

The need for reform is urgent. Australia simply cannot afford this bloated and inefficient industry. The future of the Australian economy and society relies on taking decisive action to remedy the current situation.

Introduction

This enquiry was born out of the fact that we have experienced unprecedented rises in electricity prices over the last 5 years with electricity bills in the state that I come from having essentially doubled. Rises in prices for those of us who live in the countryside have been substantially in excess of this.

Over half of the increases in electricity bills can be attributed to the massive increases in network charges.

The effect of these increases, which far exceed the consumer price index, has been to make energy unaffordable to large sections of our community and make business globally uncompetitive.

According to the Australian Energy Regulator, in my home state of NSW, over a staggering 100,000 residential customers can't pay their bills and have an average electricity debt of $542.

This industry is extraordinarily inefficient and becoming more so as it collects a return on assets that are essentially useless in a falling demand environment. The Productivity Commission has highlighted this clearly when it stated:

''Over the period June 1995 to the present, productivity across all workers increased by 33.6 per cent, while in the electricity sector it declined by 24.9 per

cent.''
In other words, while everybody else has been lifting their productivity by one-third, productivity in the cosseted electricity sector has declined by one quarter.

For industry the results of globally uncompetitive energy costs have been seen already with closures in energy intensive industries such as Aluminium smelting occurring in Victoria and near my home at Kurri Kurri in NSW. Fully half of this industry is expected to disappear before 2050 according to the Treasury.

There once was a widely held view that we should value add to our commodity exports and that this was a way to build national wealth into the future. Gone is that vision sacrificed by the explicit high energy cost policies being followed by governments at all levels.

The situation that we currently find ourselves in has been born out of the perverse incentives that exist in the way electricity network companies are paid. Essentially they are paid based on their assets. The more they spend the more money they make. There is no incentive for them to spend less or be more efficient. This applies whether they are Australian State owned or privatised to be owned by another government albeit foreign.

The perverse incentives in this industry do not end there. Many of the network companies are State owned either by Australian governments or overseas governments. The incentive is very strong for them to pay large and increasing returns to their owners. In my home state of NSW the Network companies paid $872m in Dividends in 2014, to the NSW Government (according to the NSW Auditor General). What is less well known is that the government in Sydney collects a further $829m in "income tax equivalent" payments. The total take by the government from the NSW electricity consumer is $1.7billion per annum. There is strong incentive for these payments to increase over time. This hidden tax on the electricity consumer has increased over time and caused tremendous harm to the economy and social fabric of the country.

Preface

Throughout this submission I have used the example of Transgrid the NSW state owned electricity transmission service provider. It is meant as an example only. Similar excesses have occurred in all network companies be they state or privately owned. The proof of this is in the extraordinary rises in bills for all consumers at a time of falling demand.

a)
(i) **The Weighted Average Costs of Capital**
The amount of time, effort and expense that goes into network companies wrangling with the Australian Energy Regulator over appropriate returns for their networks is extraordinary.

Transgrid is just one network company out of 4 in NSW alone.

Its Revenue proposal for 2014/15-2018/19 contains 20 pages of complex, technical arguments about the calculation of the rate of return. It is backed up by no fewer than 6 consultant reports. These reports were by expert economic advisors NERA , Incentia Economic Consulting, Corporate finance and valuation experts SFG Consulting, independent corporate advisory group Grant Samuel & Associates and banking corporation Westpac. The total pages written by consultants is 301pages.

In total the rate of return calculation involves 6 organisations and 321pages of complex expensive reports to calculate an appropriate rate of return for just one network company in Australia!

Given that a similar process is followed by each of the network companies in Australia the costs involved are prohibitive. It is a consultants and advisors picnic. The duplication of this process across all Australian network companies adds up to a massive amount of money a figure that the Senate enquiry should ascertain.

It must be remembered that the cost of this duplication is placed onto electricity bills.

Recommendation 1 – That the Australian Energy Regulator (AER), determines the rate of Return for the Networks with appropriate input from both private sector and the public sector.
To avoid the duplication and waste of effort involved above I propose that the AER has sole power to determine the regulated rate of return for the networks. For too long the AER has not been able to regulate effectively. It needs to be given more power.

While I will not enter into the esoteric economic arguments postulated in this plethora of reports I would like to state that they bear no actual resemblance to what actually occurs within the businesses and is an extremely favourable regime to the network companies. The regulated return allows for outsized returns to be garnered by the network companies be they private or public.

Using the example company Transgrid:

From their revenue proposal 2014/15 to 2018/19 we find:
Transgrid proposes a rate of return calculated by use of a Weighted Average cost of capital of 8.83%. The rate of return is derived from a 10 year historic cost of debt for a benchmark efficient business of 7.72%. The cost of equity is estimated at 10.5% from financial theory models.

However these theoretical rates of return bear absolutely no relationship to Transgrids actual cost Weighted Average cost of capital.

Starting with the Cost of debt. In 2014 Transgrid had an average debt of $2,587.2m. Its finance costs were $151.9m. The implied interest rates on

borrowings were 5.87%. Well below the rate that they are claiming for the upcoming regulatory period of 7.72%.

While Transgrid enjoys access to cheap debt through the NSW Treasury it should not be forgotten that many privatised network business are majority owned by other governments and may have access to favourable rates of finance.

As I stated this actual cost of debt for Transgrid is 5.87 % or $151.9m for the 2014 year. It is claiming 7.72% not on its actual debt burden of an average of $2587.2m but on a theoretical debt burden of $3900m (Source page 175 of the Transgrid Revenue Proposal).

The difference between the actual rate it is paying on its debt of 5.87% in 2014 and what it is claiming (7.72%) on its theoretical debt burden on $3900m over the next five years is a staggering $72m pa over the five year regulatory period or **a total of over $360m**.

The rates of return being garnered by network businesses are set according to financial theory that bears no relationship to actual costs incurred.

Recommendation 2 – That the AER test the proposed Weighted Average Cost of Capital against actual costs incurred. The two should be reasonably similar.

Has the Regulator been misled as to the appropriate Weighted Average Cost of Capital (WACC) ?

In the previous regulatory period (2009-14) Transgrid claimed a Weighted Average Cost of Capital of 10.19% as per the table below.

TransGrid Revised Revenue Proposal – January 2009

Figure 4.5: WACC parameters

Parameter	TransGrid Proposal
Nominal risk-free rate	5.86%
Inflation rate	2.58%
Debt risk premium	3.21%
Market risk premium	6%
Corporate tax rate	30%
Value of imputation credits	50%
Proportion of equity funding	40%
Proportion of debt funding	60%
Equity beta	1
Nominal vanilla WACC	**10.19%**

Source: Transgrids Revised Revenue Proposal – January 2009 page 63

I first started looking at this industry in 2012 and what struck me was the extraordinarily high rate of return they made. Essentially in the five years to 2014 the industry was paid 10%. My years of financial experience taught me to expect a rate of return of around 7-8% for such an extremely low risk business.

I could take issue with many of the parameters listed in Figure 4.5 above however for the sake of brevity I would like to take issue with equity beta.

Now before the eyes of any non finance types glaze over let me explain in laymans terms, what an equity Beta is. From Investopedia we find this readily understandable definition.

β – Beta **- This measures how much a company's share price reacts against the market as a whole. A beta of one, for instance, indicates that the company moves in line with the market. If the beta is in excess of one, the share is exaggerating the market's movements; less than one means the share is more stable. Occasionally, a company may have a negative beta (e.g. a gold-mining company), which means the share price moves in the opposite direction to the broader market.**

The Weighted Average Cost of Capital formula is extremely sensitive to the Beta input.

As we have seen in the definition above the Equity Beta is a measure of how a companies share price reacts against the market as a whole. Many electricity service companies are not listed so a Beta has to be estimated to make the WACC calculation. Transgrid estimated their Beta at 1 ie the same as the market in general.

Let us examine this claim. The Australian stock market is dominated by the major bank shares (ANZ, Westpac, Commonwealth Bank and National Australia Bank) the resource and energy stocks (BHP, RIO and Woodside) and the major Telco Telstra.

Looking at the business risks of these major Australian Listed companies we can see that all of them have financing risk, All have interest rate risks, all have customer risk (non payment), All have currency risk to some extent, some have resource price risk, all have operational risk (mine collapse, computer fraud for banks etc,) All operate in a competitive environment to a greater or lesser extent.

Turning to the government owned network operators we see:
- almost non existent financing risk as the state treasury can back them
- interest rate risk is low as the returns are regulated
- no customer risk – they always get paid the regulated return
- no currency risk – that is born by the customer as they get paid a regulated return on their assets no matter the cost of those assets.
- no mining risk
- All network companies operate in a competition free environment, they are regulated monopolies.

One would intuitively think that the network companies would have extremely low Beta values and yet Transgrid claimed a Beta the same as the market. They have claimed an equity Beta of 1.

By claiming such a high Beta they have inflated the returns that they are paid.

Let us have a look at some Betas of firstly the major components of the market and secondly some companies that share some of the attributes of the network companies.

Major Austalian Companies Betas (a selection)

	5 year Weekly Beta
RIO	1.43
Westpac Banking Corporation	1.28
BHP	1.25
National Australia Bank	1.2
ANZ Banking Group	1.18
Woodside Petroleum	1.11
Commonwealth Bank of Australia	0.97
Telstra Corporation	0.43

Source: A Major Australian Broking house.

Now let us look at some companies that I have selected as a comparator group

Comparable Companies Equity Betas

	5 year Weekly Beta
Sydney Airport	0.63
Ausnet Services	0.60
APA Group	0.51
ERM Power	0.49
AGL Energy	0.44
Transurban	0.41

Equity Betas do change over time and I have taken these Betas from a report dated October 2014. However the order of magnitude tends to stay reasonably constant.

What this would indicate is that an appropriate beta for Transgrid would be around 0.5 not the 1 that they claimed.

As I have previously indicated the Weighted Average Cost of Capital is very sensitive to the Beta.

The Senate enquiry has asked the question "Have electricity network companies misled the Australian Energy Regulator in relation to their Weighted Average Cost of Capital". In my opinion the answer is unequivocal. Yes. The network company, Transgrid, has misled the Australian Energy Regulator in relation to their Weighted Average Cost of Capital. It is highly likely that other network companies have done likewise.

Recommendation 3 - That the returns for the regulatory period 2009-14 be recalculated using more reasonable Beta values. The difference to be paid back to the consumer over the 2014-19 regulatory period.

(ii) **The necessity for infrastructure proposed**

I was heavily involved in the successful community campaign to stop Transgrids proposed 330,000 v Transmission line project from Stroud to Landsdowne on the Mid North Coast of NSW. I live in the beautiful Manning Valley where this line was to be built. It is a classic case of a network company building infrastructure for no earthly purpose. It is the project that popularised the term "Gold Plating". Gold plating refers to the building of unnecessary infrastructure.

It was a $126m project that was part of a much larger project from Tomago near Newcastle to Coffs Harbour or Armidale. It was first proposed in December 2011. The total cost of the project I estimate was in excess of $750m.

The project was pulled following the commissioning of a report for the NSW Minister for Resources and Energy. The Report entitled the Mid North Coast Review was authored by Robert Rowlinson a prominent businessman. http://www.resourcesandenergy.nsw.gov.au/__data/assets/pdf_file/0006/467448/MNC-Review-Final-Report.pdf Date of report May 2013

The key finding of this review was contained on page 29

"The forecast demand for electricity in the study area is such that the current electricity transmission infrastructure has sufficient capacity to provide an adequate electricity supply for a period out to at least the 2030s."

Transgrid was proposing to build a piece of infrastructure that would not be necessary for at least the next 18 years

Transgrid's Stroud to Landsdowne project was a totally unnecessary piece of infrastructure that would have been built if not for a community campaign to stop it.

It is interesting to note that the first section of this unnecessary line was built the Tomago to Stroud Section. It remains on the regulatory asset base of Transgrid and NSW electricity consumers are paying for it today.

(iii) **Regulated Asset Valuations**

See David Johnstone's submission. It basically reveals that the asset base that the return is determined upon is not based on depreciated cost as any rational person would expect. The Regulated Asset Base or RAB is based on a Depreciated Optimised Replacement Cost. The net effect of this is that as consumers of electricity we are essentially paying for the assets more than once. Again this is extremely favourable to network companies.

Recommendation 4 - That the AER use Depreciated Cost in determining the Regulated Asset Base not the currently used Depreciated Optimised Replacement Cost.

(iv) **Actual interest rates claimed against actual borrowing costs**

For the purposes of this section we will examine the regulatory period 2009 to 2014 for Transgrid.

Over this period Transgrid claimed a cost of debt of **9.07%** (see table 4.5 page 4)

If we examine the Transgrid annual reports from 2009 to 2014 we find the actual cost of debt was as follows:

Transgrid's Actual cost of Debt against rates claimed in 2009-14 Regulatory Period								
	Current Debt ($M)	Non Current Debt ($M)	Total Debt ($M)	Average Debt for the Year ($M)	Financing costs Costs($M)	Implied Interest Rate (%)	Rate Transgrid Claimed (%)	Excess Return on Debt(%)
2009	375.7	1613.2	1988.9					
2010	302.4	1891.9	2194.3	2091.6	138.7	6.63	9.07	2.44
2011	216.7	2053.9	2270.6	2232.5	152.2	6.82	9.07	2.25
2012	148.2	2115.3	2263.5	2267.1	150.6	6.64	9.07	2.43
2013	296.3	2139.6	2435.9	2349.7	140.9	6.00	9.07	3.07
2014	365.2	2373.3	2738.5	2587.2	151.9	5.87	9.07	3.20

What can be seen is that the AER has been misled as to the actual borrowing costs incurred in the period and the claimed rate by Transgrid by between 2.25 and 3.20%pa over the period 2009-2014.

This calculation could be repeated for every network company and while the results may vary it is a very good bet that it is the electricity consumer who is paying too much and the network companies are making excess returns.

Recommendation 5 - That a complete audit of actual costs versus claimed costs of debt be undertaken for the regulatory period 2009-14 and that the network companies repay the differences in the regulatory period 2014-19.

(d) **to ascertain whether state owned network companies have prioritised their focus on future privatisation proceeds above the interests of energy users**.
Using the Transgrid example.
As seen in section (ii) Transgrid were proposing to build a $126m line down the Manning Valley which was not needed according to an independent NSW Government report authored by Robert Rowlinson.

In his interim report (Mid North Coast Interim report January 2013 page 10) it was stated that :

"These TransGrid reports provided reasons for the developments and options for solving potential constraints. Based on those reports, the Review has found it difficult to gain a complete understanding of the reasons for the promotion of a 330kV solution that was originally proposed by TransGrid."

Transgrid has prioritised their needs over those of the energy users by constructing infrastructure that simply was not needed.

Furthermore Transgrid proposed to build the $227m Lismore to Tenterfield 330,000v line that was cancelled shortly after the cancellation of the Stroud to Landsdowne line. In total Transgrid proposed to build $353m of Transmission line projects that were unnecessary gold plating.

Transgrid clearly favoured their own interests in expansion of their assets and profits over the needs of electricity users for an affordable and reliable supply of electricity. As I have stated previously, Transgrid is not alone in this.

e)Whether the arrangements for the regulation of the cost of capital are delivering rates of return above the actual cost of capital

Yes. The current arrangements are delivering rates of return above the actual cost of capital. State owned enterprises have access to debt that is well below levels allowed by the Australian Energy Regulator resulting in unsustainably high electricity prices for all consumers. Only the Federal government can make a material difference to electricity prices by implementing regulations that allow electricity companies a reasonable rate of return not the excessive rates they are currently enjoying.

f) Whether the AER has actively pursued lowest cost outcomes for energy consumers

The AER has not pursued lowest cost outcomes for consumers as it is operating within the existing rules which are set in favour of the electricity network companies. Evidence of this can be found in the AER publication State of the Electricity Market 2011 where it was stated:

> "But the regulatory framework—the national energy Rules that set out how the Australian Energy Regulator (AER) must regulate electricity and gas networks— **has led to some price increases that are difficult to justify**. The framework was introduced in 2006, when capacity issues were emerging after many years in which Australia had lived off the legacy of historical overinvestment in energy infrastructure. New Rules were drafted to stimulate network investment by locking down the regulatory decision making process. While this approach has successfully increased network investment, it restricts the regulator from making holistic assessments of how much of that investment is efficient or necessary. **This restriction has led to consumers paying more than necessary for a safe and reliable energy supply.**"

Source AER State of the Electricity Market 2011 page 4

g) Whether network monopolies should have the right to recover historic overspending that has delivered unwanted and unused infrastructure.

All businesses make poor investment decisions from time to time. When this occurs the excess capital expenditure is written off. This is a very common occurrence in everyday business from the smallest companies to the very largest corporations.

The electricity industry is unique in its ability to make unnecessary investments and carry those investments on their books, and garner a return on those investments. This places an unnecessary cost burden on consumers and does not provide any discipline to the capital expenditure decision making process for the network companies.

Using the Transgrid example, significant costs were incurred in the advancing of the two transmission line projects on the north coast of NSW that were cancelled.
NSW consumers are still paying for these costs incurred for Transmission lines that are unlikely to ever be built in the foreseeable future. Furthermore, Transgrid succeeded in building the first part of the project from Stroud to Lansdowne the Tomago to Stroud section. Again useless infrastructure spending that we are all still paying for.

The need for write offs is urgent. The bloated balance sheets of the network companies are placing an intolerable cost burden on the Australian economy.

Recommendation 6
That a complete Audit of all Network assets is undertaken for the entire National Electricity Market and all unnecessary expenditure is written off.

h) How the regulatory structure and system could be improved .
See all the recommendations throughout this report

i) Whether the arrangements for the connection and pricing of network services is discriminating against households and businesses that are involved in their own electricity production.

Layered on top of the over-investment in grid infrastructure is technological change. Technological change is rolling over the electricity industry and will be transformational. Solar power is, like the internet, a truly disruptive technology. The media and retail industries were at first dismissive of the internet and resisted change. This proved to be a costly mistake. Solar will change the whole model of the way we generate, store and use electricity. There simply will be less need for grid infrastructure as many people generate their own power. This is already occurring and many in the financial world are warning of the changes that will beset the electricity industry. In late May 2014, Barclays Bank downgraded the entire electricity sector of the US high-grade corporate bond market, stating that it sees long-term challenges to electric utilities from solar energy. Technological change is coinciding with unprecedented investment in

the network, much of this investment may ultimately prove to be useless as the entire model of generation and consumption changes.

The electricity network companies are attempting to fight back against the tide of technological change by changing the way that they charge for their bloated network assets. To recoup the excessive investment network companies are looking to charge for capacity, capacity that with falling consumption will never be used. This capacity charging system comes mainly in the form of a very high fixed network charge. This discriminates against those generating their own power as they do not use much electricity.

The change in method of charging from usage to high fixed charges will only hasten the demise of network companies as people will defect from the grid as soon as reliable and cheap batteries are available. Many commentators see this happening around 2018.

j) Whether the current system provides adequate oversight of electricity network companies.

It would appear from the results of the system of regulation that it has failed miserably in its goal of providing a safe and reliable electricity supply at a reasonable cost.

k) Any other related matter

Over estimation of demand by the Australian Energy Market Operator (AEMO)

One of the principal causes of overinvestment in the network has been the persistent over estimation of demand both for annual energy and for peak demand by the official forecaster the Australian Energy Market Operator (AEMO)

Please view the graph on the following page. What it shows is actual annual energy in blue followed by the forecasts for 2010, 2011, 2012, 2013 and 2014.

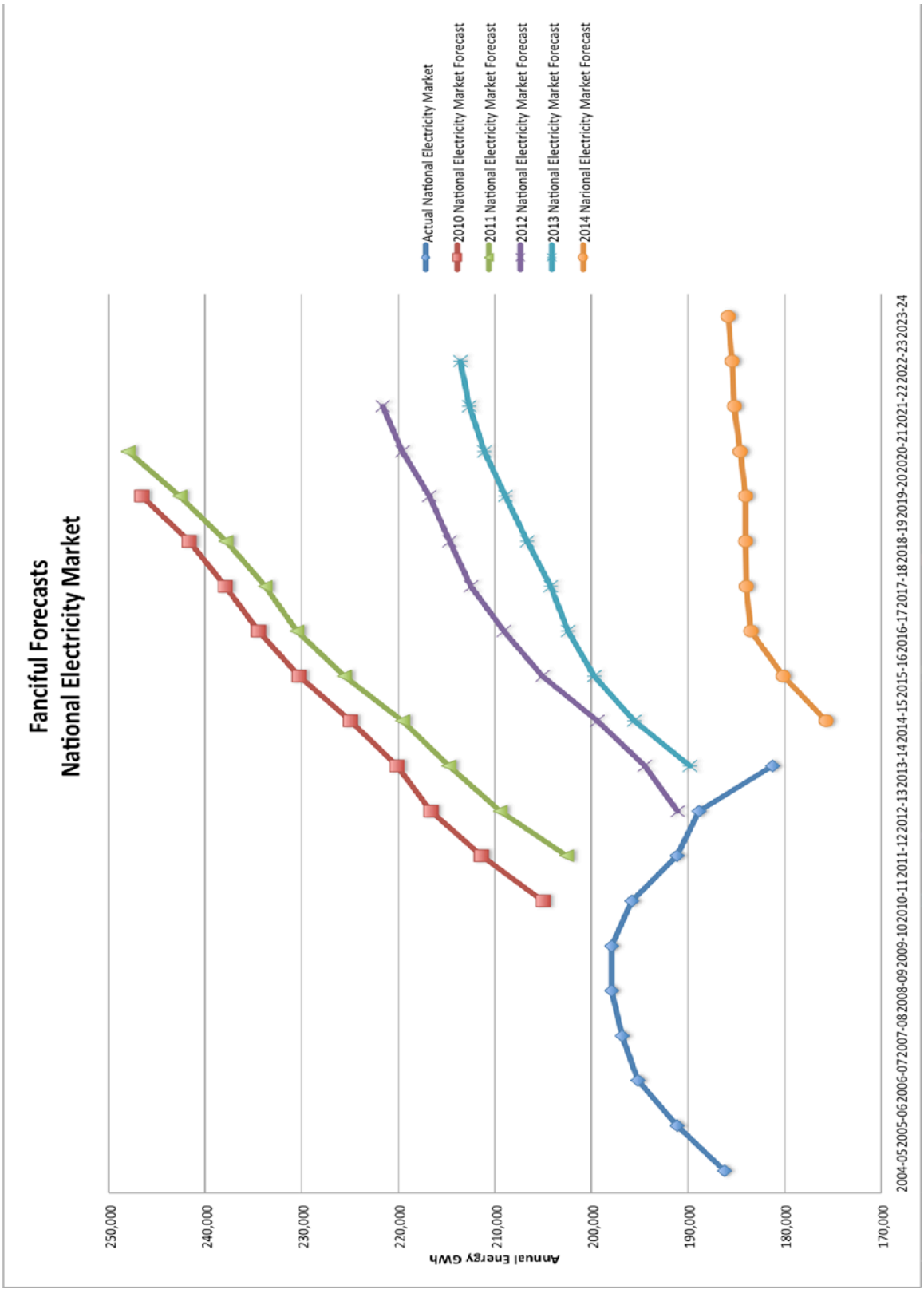
The AEMO has persistently over estimated demand. It constantly forecasts large rises in demand in the face of falling actual demand.

Demand is falling for the following generally accepted reasons:

1. Extreme rises in energy bills. Bills for many consumers have doubled over the recent past. Consumers of all types are now acutely aware of energy bills and are far more conscious than they were just five short years ago.
2. The de-industrialisation of Australia – aided by high energy costs
3. Mineral/ energy processing moving offshore again aided by high energy costs
4. Changes in technology of appliances – lighting and household appliances have become far more energy efficient.
5. Changes in technology – generation- the advent of cost competitive renewable energy sources.
6. Energy poverty – the realisation that energy demand is price sensitive. At a level of 10% of disposable income the consumer simply cannot afford any more energy.

All of these factors are in place today and are unlikely to moderate in the foreseeable future.

Recommendation 7 – That the AEMO be removed as the official forecaster for the electricity industry and be replaced by an independently funded university research institute. One possibility is the Melbourne Energy Institute headed by Professor Mike Sandiford.



Sources for the figures are all from the relevant National Electricity Forecasting reports or the Electricity Statements of Opportunity.