Goanna Energy Consulting Pty Ltd

Tasmanian Small Business Council
Uniting Small Business

Tasmanian Wholesale Electricity Market Study

Final Report

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We would like to thank the TSBC for giving us the opportunity to undertake this project.

KEY POINTS

- The report begins by describing the National Electricity Market (NEM) wholesale market, how it works, its key features and competition within the market (including highlighting its gaps).
- The structure of the Tasmanian wholesale electricity market is then examined, including its lack of competition, the dominance of Hydro Tasmania, the Tasmanian market's strong links to the Victorian market and the former's high degree of regulation.
- The study describes how Tasmanian wholesale electricity prices are determined and examines historical wholesale prices in Tasmania and the NEM, noting price volatility, its causes and the close links between Tasmanian and Victorian prices.
- Tasmanian wholesale electricity prices have a significant bearing on retail electricity prices for small business, accounting for about 37 per cent of small business electricity bills.
- Tasmania is the most regulated and least competitive wholesale electricity market in the NEM and is also the only NEM State with near total Government ownership of electricity assets.
- Following an extended period of (almost a decade of) relatively benign wholesale electricity prices, they began to increase significantly in Tasmania in 2015 in response to low dam levels and a prolonged outage of the Bass Strait interconnector.
- Then in 2017 wholesale electricity prices increased rapidly across the NEM, including Tasmania, due to factors such as major coal and gas electricity generation plant closures (due in part to subsidy driven renewable energy capacity flooding into the NEM), tight gas supply and high gas prices, the exercise of market power by generators and significant uncertainty in policy settings.
- Wholesale market power and regulation are strong barriers to competing electricity retailers entering Tasmania. Structural reform is needed to change this and give small business access to competing retailers and price discounting.
- Whilst this is challenging, e.g., because any change to Hydro Tasmania's ownership and the inclusion of 'head room' in regulated retail electricity tariffs is likely to be initially unpopular, major benefits are possible, especially if reforms in Tasmanian and the NEM succeed in making the market more competitive.

- Nevertheless, wholesale market regulation has provided Tasmanian small businesses with some benefits including: regulated retail electricity prices that contain only limited 'head room', albeit with retail costs that are inflated by the inclusions of retail costs reflecting a (non-existent) competitive Tasmanian market: and government intervention in 2017 to cap the increases in wholesale costs in 2017/18 regulated retail electricity prices.
- The large increases in Tasmanian wholesale electricity prices in 2015 and the first half of 2017 are described and assessed. Record high prices were experienced in both periods. Causes include: the closure of significant baseload capacity in the NEM; associated changes in interconnector flows; changes in the bidding behaviour of generators; tight gas supply and higher gas prices (gas is a significant fuel for power generation in the NEM).
- Forward wholesale prices for 2018 and 2019 remain historically high but have softened somewhat on 2017 levels.
- Consistent with the forward prices, our modelling of the wholesale electricity price outlook shows high prices remaining in 2018, 2019 and 2020, but with some softening apparent. Victorian prices generally soften by more and faster than do Tasmanian prices.
- Regulation of Tasmanian wholesale electricity prices is via Hydro Tasmania's wholesale contracts and application of Victorian wholesale prices (adjusted for transportation losses) in setting regulated retail tariffs for small business and households.
- As already mentioned, the Tasmanian Government intervened in this process in 2017 to prevent large increases in Victorian wholesale prices from being fully reflected in Tasmanian regulated retail tariffs.
- It also signalled its intent to do so again if future wholesale price increases warrant.
- This has benefitted Tasmanian small businesses (and households) by keeping electricity prices lower than they otherwise would be, but also raises important issues about the independence of price regulation, has increased the risks to retailers of entering the Tasmanian market, which is a barrier to competition and raises numerous potential unintended consequences.
- Meanwhile, the Tasmanian Department of Treasury and Finance is reviewing the regulation of wholesale electricity prices. The review will report by mid 2018 and will need to examine the efficacy of price regulation and its impacts on consumers, including small business.
- This report is an important basis for information, advocacy and capacity for the TSBC which should advocate strongly on wholesale market reforms (national and Tasmanian) that would benefit Tasmanian small businesses.

Executive Summary

- The NEM Wholesale Market
- The Tasmanian Wholesale Market
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- Tasmanian Wholesale Market & Energy Security
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- Conclusions & Findings

Goanna Energy Consulting Pty Ltd

Tasmanian Small Business Council
Uniting Small Business

Executive Summary

This study examines the role, purpose and performance of the Tasmanian wholesale electricity market and its relationship to and impacts on small business in Tasmania. It was commissioned by the Tasmanian Small Business Council (TSBC).

There are three important reasons for the study. First, the role of the Tasmanian wholesale market in a small business context has never been examined before. Secondly, wholesale electricity prices have been rising rapidly across the National Electricity Market (NEM), including in Tasmania, and electricity futures prices remain high. Finally, the results of the study will allow the TSBC to build its capacity on the Tasmanian wholesale electricity market and to advocate for its further development and reform.

The NEM wholesale market

There are important relationships between the NEM and Tasmanian wholesale markets, including similar pricing outcomes that reflect electrical interconnection and associated trade.

The Australian wholesale electricity market comprises a physical market for electricity and an associated financial derivatives market. The physical market is an electricity spot market into which generators sell and retailers buy electricity to on-sell to consumers. The Australian Energy Market Operator (AEMO) dispatches generation so that supply and demand are met instantaneously.

The electricity spot market is extremely volatile due to factors, such as available capacity and demand, the need to continuously and instantaneously meet demand, unexpected generator outages, network constraints and weather. Volatility exposes wholesale market participants to considerable financial risks. To manage volatility, generators and retailers negotiate financial contracts (known as derivatives or hedges) that lock in a price for a specified volume of electricity bought in the future. This process is independent of the spot market, as either ASX energy market or over-the-counter trades. Derivatives generally include a premium for risk over the expected spot market price. NEM participants may therefore choose to retain some exposure to the spot market.

Although there is competition between generators and retailers in the NEM, many parts of the NEM are highly concentrated (and becoming more so) through the vertical integration of generators and retailers into so-called ‘gentailers’, due to thermal generation plant closures, tight gas supply and high gas prices. This is confirmed by the Australian Energy Regulator’s (AER) competition indices and its analysis of generator market behaviour. NEM retail markets are also concentrated with ‘the big three’ retailers – AGL, Energy Australia and Origin Energy – dominating. The Australian Competition and Consumer Commission (ACCC) have also raised serious competition concerns about the NEM.

Wholesale prices in all parts of the NEM increased significantly in 2016/17, following a sustained period of relatively benign prices. By May 2017, Victorian base futures prices had reached around $120/MWh, having risen from a level of around $40/MWh a year earlier. This reflects the closure of a significant thermal generation capacity (coal and gas), a flood of new subsidised renewable energy capacity, tight gas supply and rising gas prices, uncertainty over government energy and climate policies, and strategic bidding by some generators with market power.

The Tasmanian wholesale market

The Tasmanian wholesale electricity market is different to the rest of the NEM. It is even more concentrated and regulated with competition all but absent. This structure is not just a product of the small size of the market, but also reflects past policy choices.

Changes to wholesale contract regulation were introduced in 2014 to assist new entrant retailers manage the risks of entering spot and contract markets dominated by Hydro Tasmania, to help counteract Hydro Tasmania's market power, and to facilitate the introduction of Full Retail Competition (FRC).

Hydro Tasmania, a government owned business, owns, or otherwise through Joint Ventures controls, 96 per cent of generation capacity. Measures of generator concentration show Tasmania to be by far-and-away the most concentrated region of the NEM. Moreover, Hydro Tasmania also exercises significant influence over the Basslink interconnector, so that the competitive role that inter-regional trade plays elsewhere in the NEM is all but absent in Tasmania.

The Expert Panel on the Tasmanian Electricity Supply Industry (Expert Panel), which reported in 2012, found that: Hydro Tasmania controlled both the spot and derivatives markets in Tasmania; it could set prices at will; its output is required to meet Tasmanian demand under virtually all market conditions, giving it a unique ability to 'give less and take more'; it has the ability to determine a new entrant's retail margin through its unilateral pricing decisions, thereby creating a squeeze between the cost of supply and regulated retail prices; growth in on-island supply from Hydro Tasmania controlled wind farms has added to an oversupply of electrical capacity; and its low historical costs and economies of scale mean that any new generation would suffer from a cost disadvantage.

The Expert Panel recognised that Hydro Tasmania did not always use its market power and described it as having a high degree of *latent* market power, but found that the above conditions were sufficient to deter new entry into Tasmania, especially by the larger mainland retailers, who it recognised would be needed for retail competition to take hold in Tasmania.

Moving beyond the current regulatory approach to the Tasmanian wholesale market is critical to improving the opportunities for competition in Tasmania. The Expert Panel raised for consideration a range of structural reform options starting with the separation of the Tamar Valley Power Station (TVPS) from Hydro Tasmania, but found this to be insufficient to deal with Hydro Tasmania's market power, whilst being a worthwhile step to consider as part of deeper structural reforms. Its preferred 'gentrader' recommendation would see Hydro Tasmania's trading functions hived off into three government-owned trading entities, which it found would deal effectively with Hydro Tasmania's market power. However, some of the larger mainland retailers expressed the strong view that to either selling the 'gentraders' to potential new entrants, or selling Hydro Tasmania's joint physical and trading functions as three separate businesses, was necessary to attract them to Tasmania. This option is therefore more likely to stimulate retail competition.

Tasmanian retailers serving small business and residential customers can either enter into market based wholesale contracts or use Hydro Tasmania's regulated contracts. Tasmanian retailers can also buy electricity from the NEM spot market. In actuality, retailers will adopt a mix of these.

The presence of a single retail buyer and (more importantly) a single seller of generation products in the Tasmanian wholesale market is a major reason for the lack of competition in the State's retail electricity market. Potential new entrants, including large mainland retailers, have consistently raised Hydro Tasmania's dominance as a significant barrier to entry.

This has deterred new retailers from entering Tasmania and placed FRC in a 'Clayton's choice' framework. Consequently, small businesses have very limited access to competitive market pricing and miss out on the benefits of competition enjoyed by their peers elsewhere in the NEM, such as discounting.

Structural reform is, in our view, needed to stimulate retail entry so that small business gets access to a competitive retail market and competitive prices.

Tasmanian wholesale market regulation

The current regulated wholesale market framework has been in place for three years and retail competition, including for small businesses, has largely failed to materialise. As a result, small business is virtually excluded from retail choice and competitive prices, and the Tasmanian wholesale electricity market is the most regulated wholesale market in the NEM. This is achieved through the regulation of Hydro Tasmania's wholesale electricity contracts by the Tasmanian Economic Regulator (TER). Regulated contracts must be offered to retailers operating in Tasmania that closely resemble derivative contracts commonly used in the NEM. This is to ensure consistency with other parts of the NEM so that the risks of operating in Tasmania are no greater than those in other parts of the NEM and limit Hydro Tasmanian's market power so as to encourage new retailers to enter Tasmania.

This has been a forlorn hope. The failure of any new retailers to enter the Tasmanian market in response to wholesale market regulation is undoubtedly due to the continued existence of structural impediments in the Tasmanian wholesale market, which the regulatory approach has not overcome. This is as predicted by the Expert Panel.

There are some positive aspects to wholesale market regulation in Tasmania, such as its stability, the familiarity of the regulated contracts used, the 'safety net' they offer against Hydro Tasmania's market power and oversight by an independent regulator. However, regulation has failed to deliver its main objective of retail competition and must be judged a failure. Even 'hit and run' niche entry has not materialised and there is no sign of any additional new entrants in the foreseeable future.

Second Bass Strait interconnector and Hydro Tasmania expansion proposals

Two prospective projects that could impact on the Tasmanian wholesale market are a second Bass Strait interconnector and expansion of Hydro Tasmania's hydro system, including pumped storage.

A second interconnector has recently been assessed as materially net benefit positive but only under two restrictive scenarios. If built as a regulated link, consumers would pay additional transmission charges in proportion to their use of the link, but could benefit if lower Victorian wholesale prices are reflected in Tasmania. If unregulated, consumer benefits would depend on the owner's bidding strategy, as well as on spot price differences between the Victorian and Tasmanian regions, the volume of the flows between them and competitive conditions in wholesale and retail markets.

Possible Hydro Tasmania expansion is being assessed. Whilst Tasmanian consumers could benefit, e.g., when exports to the NEM are not profitable, the additional electricity supply could be in the hands of Hydro Tasmania with its already substantial market power. Moreover, Tasmania already has significant excess electrical "capacity" (as opposed to "energy" in storage), which is already a barrier to new entry.

Pumped storage would compete to buy low priced "off peak" energy alongside irrigators, supermarkets, aged care providers, dairies and other small businesses, whilst seeking to arbitrage the value of this energy during "peak" price times. In essence, pumped storage reduces peak prices, at the expense of increasing off peak prices, with an inbuilt energy loss of about 20 per cent.

The Tasmanian wholesale market and energy security

Energy security is important to small businesses in Tasmania given their heavy reliance on electricity for their operations. The current wholesale market structure in Tasmania could pose some threat to energy security. The threat to energy security in the first half of 2016 highlighted possible deficiencies in present arrangements, including conflicts or tensions in Hydro Tasmania's energy security (water management) and commercial roles. Spot prices spiked to historically high levels in response to the supply shortages that followed. There were suggestions in a Goanna Energy report and in evidence to the Public Accounts Committee that Hydro Tasmania had placed its desire to maximise revenue during and after the carbon price period above the need for prudent water management. Its approach to the TVPS, which can play an important role in energy security, was also called into question, especially its attempted sale of the main closed cycle baseload turbine just before the emergency, then having to reverse this in the face of the energy security threats.

The Tasmanian Energy Security Taskforce (TEST) was established by the Government in the aftermath of the emergency and it has recently recommended some changes intended to strengthen Tasmania's energy security arrangements. This includes a degree of separation of Hydro Tasmania's commercial role through independent oversight, a new energy security framework and assessment process (including competitiveness criteria), more prudent water management, confirming the important roles of Basslink and the TVPS, timely negotiation of new gas supply arrangements for the TVPS (which are yet to be concluded but are now subject to compulsory arbitration) and ensuring that the Tasmanian gas market does not falter. However, the TEST did not make any recommendations to improve competitiveness in Tasmanian electricity, other than supporting new entrant renewables. The Government has accepted all the TEST's recommendations in full or in principle and has commenced the implementation of some.

Tasmanian wholesale prices and their drivers

Wholesale prices are an important component of regulated retail standing offer prices. The TER determines the Wholesale Electricity Price (WEP) as a key input to determining the Wholesale Electricity Cost (WEC) in Aurora's annual regulated revenue. The WEP is set with reference to Hydro Tasmania's regulated Load Following Swap (LFS) contract, which is then used along with a load forecast and (distribution and marginal) network loss factors to determine the WEC.

Wholesale costs make up around 37 per cent of the delivered cost of electricity to smaller Tasmanian consumers who are on regulated tariffs. This includes the vast majority of the 37,000 small businesses. Recently, wholesale costs have increased significantly right across the NEM, including Tasmania. The reasons for this were discussed earlier. Wholesale prices (2017/18 Flat Swaps) in Tasmania increased significantly from around $60/MWh in mid 2016 to reach a high of around $125/MWh in April 2017. Whilst they have fallen somewhat since then, they remain historically high. Wholesale prices in Victoria are comparable, albeit somewhat higher. Prices for 2018/19 remain high at around $90/MWh.

The Tasmanian wholesale electricity spot market is characterised by repeated dramatic and short-term price spikes with prices heavily influenced by water storage levels and Hydro Tasmania's latent market power. Opportunistic or unexpected events can also have a major bearing on Tasmanian

wholesale prices, for example, the carbon tax drove prices up as did the extended six-month outage to Basslink from December 2015. Under normal conditions, wholesale prices closely approximate those in Victoria due to interconnection via the Basslink cable and its ACCC approved operating conditions, but if the link is constrained, local generation sets the spot price unfettered by competition from Victoria.

There have been numerous examples in the past where Hydro Tasmania has reduced non-scheduled generation during periods of high demand, with a cutback in the amount of low-priced generation capacity offered and an ensuing dispatch of high-priced generation, or where it has used outages in the TVPS (when owned by Aurora) to offer high prices. The most recent and significant of these high price events was prior to Basslink failing in late December 2015, and then during the interconnector's outage, which ended in June 2016. Hydro Tasmania had preceded this by running down storages during and after the carbon tax period (e.g., it created almost 1 million Large Electricity Certificates (LGCs) in 2015, valued at around $60M by late 2015), illustrating its conflicting commercial and energy security priorities and poor water storage management.

High wholesale electricity prices and price outlook

The average annual spot price in Tasmania for 2017 has been the highest on record, even including 2016 (when Basslink was out-of-service for six months). Victoria has also had record spot prices. Tasmanian forward wholesale prices for 2018 and 2019 remain historically high, but have declined somewhat from their record 2017 levels. The outlook for Victorian prices is marginally softer.

The cause of the 2017 record wholesale prices (and of the price outlook remaining high) reflects multiple local and national factors. First, there have been many coal and gas plant closures since 2009, amounting to a total of 6,000 MW, with replacement capacity around one-third of this, insufficient to maintain low prices. The impact of the closure of the large baseload Hazelwood Power Station in Victoria has been especially pronounced.

Secondly, interconnector flows have changed due to generation closures. Since Hazelwood closed, Victoria has been a net importer of (higher cost) generation from NSW and SA and this has lifted wholesale prices. At the same time, NSW has imported more electricity from Queensland and NSW's situation could worsen early next decade when the 2,000 MW Liddell power station closes.

Thirdly, there is evidence of strategic bidding of capacity in both Tasmania and Victoria impacting Tasmanian wholesale prices outside their competitive market levels. From January 2017, Hydro Tasmania re-priced its hydro generation and substituted more expensive gas generation. This turned around in May, which contributed to a softening of spot prices. Related to the closure of Hazelwood, generators in Victoria and Tasmania have also reduced low-priced capacity and replaced it with more expensive offers, with a significant impact on spot prices. Furthermore, during the second half of 2016, Hydro Tasmania generated above the baseline and created 1.7 million Large Generation Certificates (LGCs) under the RET, at an estimated value of some $140M.

Fourthly, high gas prices have led to gas-fired generation making offers at higher prices than in previous years. Gas prices in Victoria spiked in the first half of 2017 and they remain high in Queensland, albeit having softened somewhat. Gas prices may continue a downward trend as reports emerge of new coal seam gas being detected in NSW and Victoria and as other measures to increase supplies impact.

Finally, we also analysed demand to see if it has had any impact on the high wholesale prices. This showed that there was no discernible impact of demand on spot prices in Tasmania and Victoria.

Based on forecasts undertaken for this report, the outlook for Calendar Years 2019 and 2020 is for spot prices to soften further from 2018 levels due to an increase in generation supply, with Victorian spot prices to soften at a faster rate than in Tasmania. By 2019 and 2020, Victoria is expected to have a lower average spot price than Tasmania.

A recent wholesale price outlook published by the AEMC confirms these broad trends but suggests that Tasmanian wholesale prices could fall even further based on an anticipated large influx of renewable energy capacity into the NEM. However, the AEMC also warn that this will eventually result in thermal generation exiting the market, putting upward pressure on prices.

The Federal Government expects that the successful negotiation of the National Energy Guarantee (NEG) will reduce electricity prices further, but this policy has been criticised as being a disincentive to renewable energy investment and likely to put more market power into the hands of large incumbent retailers and generators, which could include Hydro Tasmania.

Some NEM businesses have responded to high electricity prices by searching for new ways to both save energy and contract for electricity. Energy efficiency efforts have become more commonplace, buying groups have been formed and some businesses, especially larger ones, have contracted to purchase renewable energy capacity either directly or indirectly. However, forecast softer wholesale prices and the lack of a competitive market in Tasmania may reduce the incentives to do so.

Tasmanian Government's response

Changes in wholesale electricity prices are normally passed through into retail prices. In the past, benign wholesale pricing has benefitted Tasmanian small electricity consumers due to this relationship in the determination of regulated retail prices. However, the Tasmanian Government recently legislated so that the wholesale price can be set by Ministerial Order rather than using the Victorian contract price. It did this because of an expected 15 per cent increase in regulated retail prices for small consumers due to large wholesale price increases in Victoria, with the aim of holding prices to no more than the CPI. It flagged its intent to do so again if future wholesale price increases warrant.

Notwithstanding the Ministerial Order, the WEP in this year's pricing approval has still increased by 35 per cent. Typical small business bills are still expected to fall by between 4.1 and 5.7 per cent due to significant reductions in network charges. If wholesale prices increase again in future, there may be no significant reduction in network charges to offset these (as occurred this financial year).

Whilst small business should welcome the Tasmanian Government's decision to insulate them from the full impact of the large increase in wholesale electricity prices, and acknowledging that the Government has placed a significant priority on keeping electricity prices affordable, there are broader and longer term implications from the Government's actions that should also be considered by the TSBC. These include: intervention in the previous method of determining wholesale prices in standing offers; a risk of prolonged, or uncertainty about, intervention if large increases in wholesale prices persist or return; detailed intervention in an independent regulatory process that helps to lower the risks of entry by potential new retailers; it might be perceived as a form of 'forum shopping' that increases the regulatory risks of retail entry; it represents intervention in the commercial decisions of Hydro Tasmania and Aurora and could impose a cost-price squeeze on them; higher wholesale costs have been accepted in other jurisdictions, albeit with some signs of greater intervention in future; it could raise unintended arbitrage opportunities; and it raises the

already high sovereign and regulatory risks associated with a lack of retail competition in the Tasmanian electricity market.

A Department of Treasury and Finance review of wholesale electricity market regulation now underway will need to consider these and other factors in developing Tasmanian wholesale electricity market reforms that help small business gain access to competitive electricity prices on a sustainable basis.

Conclusions and Findings

Tasmania has the most regulated and least competitive wholesale market in the NEM. It is also the only NEM State with near total government ownership of electricity. To date this has still benefitted small businesses to some extent thanks to a prolonged period of benign wholesale prices followed by intervention (once wholesale prices increased) based on government policy that is supportive of energy users, including small business. However, the wholesale market structure and its regulation have also prevented competition emerging and small business has missed out on the benefits of competition, such as price discounting, that is a feature of other parts of the NEM – even though there are market imperfections.

The Tasmanian wholesale market will need to change if small business is to get competitive pricing benefits on a sustained basis and be encouraged to innovate in their electricity use and purchasing. But such change is very challenging due to community scepticism about a sale of Hydro Tasmania and the presence of regulated tariffs that are a disincentive to new entrant retailers. Nevertheless, the TSBC should seek out and advocate for Tasmanian (and NEM) reforms that will benefit small business.

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Abbreviations

ACCC	Australian Competition and Consumer Commission
ACT	Australian Capital Territory
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ARENA	Australian Renewable Energy Agency
ASX	Australian Securities Exchange
COAG	Council of Australian Governments
Expert Panel	Expert Panel on the Tasmanian Electricity Supply Industry
FRC	Full Retail Competition
GJ	Giga joule (of gas)
HHI	Herfindahl–Hirschman Index
IRSR	Inter Regional Settlement Residue
JV	Joint Venture
kWh	kilo Watt hour
LFS	Load Following Swap contract
LGC	Large Generation Certificates
MPC	Market Price Cap
MW	Mega Watts
MWh	Mega Watt hour
NEG	National Energy Guarantee
NEM	National Electricity Market
NSW	New South Wales
OTC	Over-the-counter
QLD	Queensland
RET	Renewable Energy Target
RSI	Residual Supply Index
SA	South Australia
TAS	Tasmania
TER	Tasmanian Economic Regulator
TEST	Tasmanian Energy Security Task Force
TSBC	Tasmanian Small Business Council
TVPS	Tamar Valley Power Station
TW	Terra Watts
TWh	Terra Watt Hours
VIC	Victoria
WEC	Wholesale Electricity Cost
WEP	Wholesale Electricity Price

1

Introduction

- Background
- Purpose of Report
- Wholesale Market & Small Business
- Report Outline

1 Introduction

1.1 Background to and purpose of study

This study examines the role, purpose and performance of the Tasmanian wholesale electricity market and its relationship to and impacts on the small business sector in Tasmania. It also considers the relationship of the Tasmanian wholesale electricity market to the retail electricity market in Tasmania and the National Electricity Market (NEM) wholesale market.

There are three essential reasons for this study.

First, the role of the Tasmanian wholesale market in a small business context has never been examined before and the report will allow the Tasmanian Small Business Council (TSBC) and the broader small business sector in Tasmania to better understand how their electricity prices and supply are impacted by the wholesale market. In fact, wholesale costs are the second biggest component of small business electricity bills in Tasmania behind network (transportation) charges and make up 37 per cent of their bills.

Secondly, wholesale electricity prices have been rising rapidly over the past couple of years across the NEM, including Tasmania, and are forecast to remain high for the foreseeable future. As a result, the wholesale cost share of small business electricity bills has also increased. It is important for the small business sector in Tasmania to understand the reasons for this, how it has impacted their electricity bills (and might impact their bills going forward) and what steps could be taken to help alleviate the large increases in wholesale prices. As a supplementary point, the closure of the large baseload coal-fired Hazelwood Power Station in Victoria in March 2017, added impetus to the desire of the TSBC to increase its understanding of the impacts of this decision on electricity prices for Tasmanian small businesses.

Finally, the results of the study will allow the TSBC and Tasmanian small businesses to build their capacity in relation to the Tasmanian wholesale electricity market and to advocate on its further development and reform to the Tasmanian Government, the Tasmanian Economic Regulator (TER) and bodies such as the Australian Competition and Consumer Commission (ACCC), Australian Energy Market Commission (AEMC) and Australian Energy Regulator (AER).

1.2 Commissioning of Goanna Energy Consulting

The TSBC commissioned Goanna Energy Consulting Pty Ltd (Goanna Energy) to undertake the study. This was in recognition of our work and involvement in, and knowledge of the Tasmanian electricity sector, including the wholesale market, our work with Tasmanian small and medium sized businesses, our knowledge of the small business sector and our past electricity work for the TSBC.

1.3 Tasmanian Wholesale Electricity Market and Small Business

As alluded to earlier, wholesale electricity costs make up close to 40 per cent of small business electricity bills.

Small business electricity prices in Tasmania increased significantly from 2008/09 until 2012/13 driven mainly by large increases in network charges, the introduction of a carbon tax and rising

renewable energy subsidies. Wholesale electricity prices remained relatively flat through most of this period.

Thereafter, there was a short period of flat electricity prices as network charges peaked and began to decline to some extent, wholesale prices remained flat and the carbon tax was abolished. However, this was offset to some extent by rising renewable energy and retail charges.

From 2015/16, wholesale prices began to increase significantly although overall price increases for small business were somewhat offset by further reductions in network charges, and relatively constant retail charges and renewable subsidies. (It should also be noted that intervention by the Tasmanian Government in the setting of wholesale prices in regulated retail tariffs for 2017/18 has prevented the large increases in wholesale prices from flowing through to small business tariffs.)

These trends underlie a growing concern amongst Tasmanian small businesses about their electricity prices and a concern that they will increase further in future with significant impacts on their operations and ability to invest in Tasmania and employ Tasmanians. Partly as a result of this, the TSBC has significantly increased its interest in and advocacy on energy issues.

1.4 Outline of Report

This report is structured as follows.

Chapter 2 examines the Tasmanian wholesale electricity market. It considers its relationship to the NEM wholesale market, the structure of the Tasmanian wholesale market, its regulation, proposals to expand interconnection and hydro-electric capacity, the market's impacts on small business and the links between the wholesale market and energy security. There is also discussion of possible reform of the Tasmanian market and options for doing this.

Chapter 3 discusses NEM and Tasmanian wholesale electricity prices, key drivers for recent increases in wholesale prices, the outlook for wholesale prices and the results of some modelling of future wholesale prices. It further examines how wholesale prices in Tasmania are regulated and their impacts on small business retail electricity prices. There is also discussion of the recent decision by the Tasmanian Government to cap retail electricity price increases for small business and residential consumers for 2017/18 in order to avoid otherwise large increases in wholesale prices.

Finally, Chapter 4 presents our findings and conclusions for our client, the TSBC

2

The Tasmanian Wholesale Electricity Market

- NEM Wholesale Market
- Structure of the Tasmanian Wholesale Electricity Market
- Key Points

2 The Tasmanian Wholesale Electricity Market

This Chapter discusses the Tasmanian and NEM wholesale electricity markets, how the Tasmanian market relates to the NEM, how the Tasmanian wholesale market is regulated, the role of interconnection and its possible expansion in the Tasmanian wholesale market, the impact of possible expansion of Tasmania's hydro-electric capacity on the wholesale market and the relationship between the Tasmanian wholesale market and energy security. It includes commentary on the impacts of the Tasmanian wholesale electricity market on the State's small business sector.

2.1 Description of the NEM Wholesale Market

Central to the generation of electricity in the NEM is a wholesale spot (real time) market into which generators above 30 MW capacity must sell their electricity (unless exempted). The NEM covers New South Wales, Victoria, Queensland, South Australia, Tasmania and the ACT. Each State forms a separate region within the NEM with separate spot prices. The Australian Energy Market Operator (AEMO) schedules the lowest cost generation to meet demand every five minutes in its five regions and despatches generation up to the highest bidder. Financial settlement takes place every 30 minutes. This is a 24/7 operation. The production of electricity, which cannot be easily or economically stored[1], must be matched with its demand in real time. Table 1 below provides a snapshot of the NEM.

Table 1: The NEM at a Glance

PARTICIPATING JURISDICTIONS	QLD, NSW, VIC, SA, TAS, ACT
NEM regions	Qld, NSW, Vic, SA, Tas
Installed capacity	47 148 MW
Number of registered generators	336
Number of customers	9.6 million
NEM turnover 2015–16	$11.7 billion
Total energy generated 2015–16	198 TWh
National maximum winter demand 2015–16	31 977 MW[a]
National maximum summer demand 2015–16	32 859 MW[b]

MW, megawatts; TWh, terawatt hours.

a The maximum historical winter demand of 34 422 MW occurred in 2008.

b The maximum historical summer demand of 35 551 MW occurred in 2009.

Source: Australian Energy Regulator, *State of the Energy Market, May 2017,* Table 1.1., p. 24.

[1] The viability of storage is being impacted by technologies such as large-scale batteries, the costs of which are reducing, and Government interest in pumped storage hydro-electric generation.

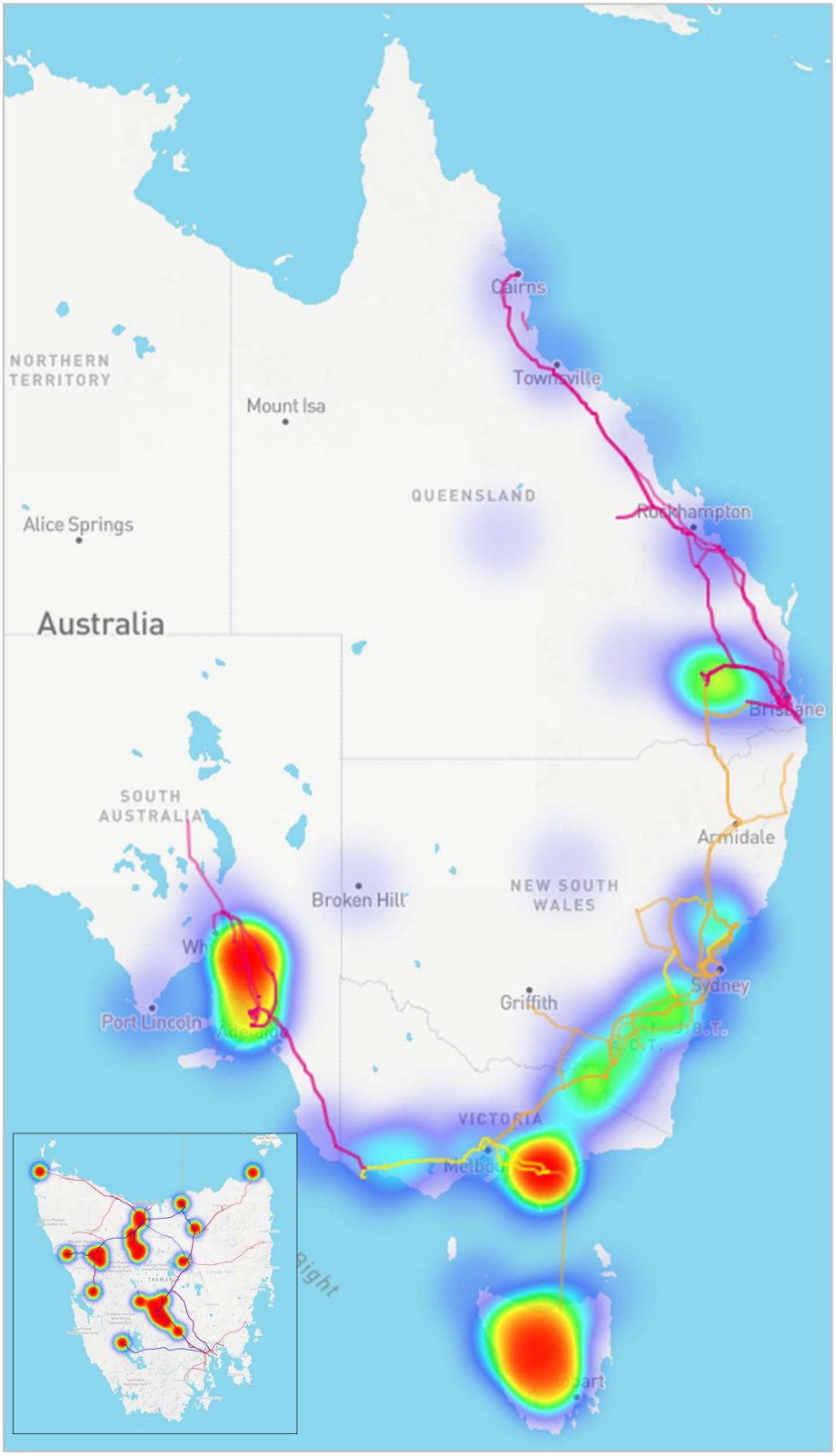
The NEM operates at both physical and financial levels. Power flows physically from generation plants (supply) to load centres where it is consumed (demand). Buying and selling of this physical electricity takes place in the NEM spot market. As the spot market can be very volatile, sitting alongside it is a financial hedging market that allows buyers and sellers to manage this volatility.

A map of the NEM with transmission lines and the density of generation assets (warmer colours indicate greater density) is shown in Figure 1 below. An inset providing greater granularity for the Tasmanian transmission system and generation density is also included. As can be seen, it covers eastern and south-eastern Australia, stretching from far north Queensland, south to southern Tasmania and west as far as Port Lincoln in South Australia. The NEM is based on one of the largest and longest lateral transmission networks in the world. Losses of electricity transported over such a long and skinny network can also be substantial, rising up to around 10 per cent.

Each State forms a separate region within the NEM. High voltage transmission interconnectors link all five NEM regions together and facilitate power flows and wholesale market trade between the regions. Trade enhances the reliability and security of the NEM by allowing each region to draw on generation plant from across the entire market, especially adjoining regions through interconnectors (i.e., transmission links). It also allows high cost generating regions to import electricity from lower cost regions. These were central considerations leading to the establishment of the NEM in late 1998, along with a joint market enabling greater resource efficiency in the use of existing generation and transmission resources and future investment in new ones.

Historically, Queensland and Victoria are the NEM's principal electricity exporters, while South Australia and NSW typically import electricity. Tasmania's trade position fluctuates, depending on market and weather conditions. Due to market changes, the energy flows have changed following significant power station closures, which are discussed further in Section 3.5.2.

Figure 1: Map of the National Electricity Market



Source: AEMO

Key aspects of how the NEM is structured and operated are shown in the Box 1 below.

Box 1: Key Aspects of the NEM

- AEMO manages the spot market and transmission system and is responsible for energy security ('keeping the lights on') in conjunction with jurisdictional agencies.
- To maintain system security, AEMO operates and procures separate markets for ancillary services to maintain a safe electrical frequency range, to correct minor deviations in load or generation and to correct for major electricity supply or demand events.
- AEMO can instruct network service providers to temporarily cut electricity supply to some customers if protection of the power system is urgent.
- Most customers, including small business, buy electricity from a retailer and are not directly involved in the wholesale market, or directly exposed to its volatility, though their prices reflect the cost of retailers managing wholesale market volatility.
- A few large customers also buy some of their electricity from the wholesale market, reflecting their greater resources, sophistication and ability to manage its risks.
- Demand varies significantly by time of day (morning and evening peaks), season (summer and winter peaks, with most of the NEM summer peaking but Tasmania has a winter peak) and ambient temperature (very high or low). This can impact significantly on spot prices.
- NEM maximum demand rose up to 2009, then flat-lined or declined before beginning to rise again in 2015/16. AEMO forecast demand to remain flat over the next decade.
- The NEM contains a mix of generation technologies, but is dominated by coal (52 per cent of capacity and 76 per cent of power generated in 2015/16). There is also gas-fired plant (19 per cent of capacity and 7 per cent of power generated), hydro (17 per cent and 10 per cent), wind (7.5 per cent and 6.1 per cent) and roof-top solar (9 per cent and 3 per cent).
- The fastest growth in capacity is occurring in the renewable space (wind and solar), which accounts for 92 per cent of new capacity (mainly wind) installed over the past five years, driven heavily by Federal Renewable Energy Target (RET) and State feed-in-tariff subsidies.
- AEMO forecast that rooftop solar will contribute 11 per cent of NEM energy by 2035/36.
- Renewable energy subsidies are paid for by customers through higher retail electricity prices. They are not levied at the wholesale level, but impact wholesale prices as renewable energy is bid (low) into the spot market reflecting the subsidy. This has created a major distortion in the market as renewables first drove down wholesale prices but then helped to drive thermal plant (coal and gas) out of the market, contributing to wholesale price increases.
- Wind generation is traded in the market, but rooftop solar is treated as a demand reduction.
- Rooftop solar is reducing grid demand around midday and shifting peaks to later in the day.
- There have been no new baseload (coal or gas) investments in the NEM since 2013.
- The combined impacts of age, low demand growth, subsidised renewables and rising gas prices have seen significant spare capacity withdrawn from the market. Between 2011/12

and 2016/17 a total of 6,433MW of capacity was retired or mothballed, all of it coal or gas fired[2, 3], significantly more than the 2,000 MW of renewable capacity added to the NEM.

Source: Goanna Energy Consulting Pty Ltd

The permanent closure of the brown coal baseload Hazelwood power station in Victoria (1,600MW) in March 2017 has been a controversial decision, which has impacted not just Victoria but also adjoining regions, including Tasmania. This station provided about 20 per cent of electricity generated in Victoria. AEMO has projected that its retirement, without any market response, may lead to insufficient capacity to meet maximum demand in Victoria and South Australia by summer 2017/18. The AEMC has also projected an impact on wholesale electricity prices with flow through to retail prices, with wholesale prices forecast to rise by $204 in Tasmania by 2018/19 due to this closure.[4]

To date, beyond the subsidy driven 'dash for renewables', there has been a muted market response to plant closures.[5] This reflects high and rising gas prices, threats to future gas supply for power generation, the continuation of the RET enacted in 2015 (albeit with a reduced target), uncertainty about carbon pricing, how Australia will meet its international commitment to reduce its emissions by 28 per cent by 2028 and (perhaps) a desire by the owners of existing generation to hold wholesale prices at higher levels following a sustained period of stagnant prices.

One consequence has been an unprecedented level of intervention in the market, including announcements for government investment in new gas generation capacity in South Australia, and government sponsored feasibility studies for upgrading hydro-electric capacity in the Snowy Mountains (by 2,000 MW) and Tasmania (2,500 MW of pumped storage).

2.1.1 How Competitive is the NEM?

Competition between generators and retailers is a key building block for well-functioning electricity markets. As such, it is also important to the NEM. Competitive tension between wholesale market players is intended to deliver competitive prices to electricity consumers on a sustained basis.[6]

The competitive dynamics of the NEM are assessed in Box 2. It draws on analysis by both the Australian Energy Regulator (AER) in its 2017 *State of the Energy Market* Report and the Australian Competition and Consumer Commission (ACCC) in its recent *Retail Electricity Prices Inquiry Preliminary Report*.

[2] Early in 2017 it was announced that one of the two units at the Pelican Point gas-fired plant in South Australia was being brought out of mothballs (249 MW).
[3] A further 2,446 MW of capacity has been announced as permanently or temporarily closed between 2017 and 2022 (all coal or gas fired). This includes the 208 MW Tamar Valley Combined Cycle Gas Turbine (CCGT) in Tasmania, which has since been restored to service.
[4] AEMC, *2016 Residential Price Trends Report*, 14 December 2016.
[5] AGL announced on 7 June 2017 that it would build a 210MW reciprocating engine power station in South Australia, but this will replace two of the four units at the aged Torrens Island A Power Station.
[6] Competitive prices refers to the lowest possible prices given the most efficient costs possible, where profits are kept at a minimum to sustain production and are bid down to this level by firms competing with one another. In the longer term, firms' ownership, market structures, resource endowments, technologies and government involvement may change and impact on competitive price levels.

Box 2: How Competitive is the NEM?

- Simple generation market shares show that the NEM is highly concentrated across its regions, with AGL holding a particularly strong market position in South Australia, NSW and Victoria. Government owned generators hold a strong position in Queensland and dominate in Tasmania.
- The *Herfindahl–Hirschman index* (HHI)[7] shows that all four mainland NEM regions are at or above the level of the index (1,800) often taken to signal the threshold between a competitive market and market power. In Tasmania's case, the index would be close to the level that signifies a monopoly market (10,000).
- Moreover, recent trends in the HHI driven by factors such as mergers and acquisitions and the closure of large coal-fired generating units have pushed the index up in Queensland, South Australia and Victoria. The latter, in particular, has an impact on Tasmania given its links to the Victorian market.
- The *Residual Supply Index* (RSI)[8] shows that the largest generator in each mainland region became more pivotal in *every* region in 2015–16, due to a recovery in peak demand, plant closures, mergers and changes in plant availability.
- The AER also examines behavioural indicators to gauge not only market power in generation but also the incentives on generators to exploit their market power.[9] It found that generators sometimes reduce their output as prices increase above $100/MWh. The AER noted that "this behaviour may be explained by deliberate capacity withholding to tighten supply and thus influence prices."[10] Other possible explanations include the inability of some plant to respond quickly to sudden price movements, network congestion, and maintenance and outages.
- Vertical integration of generators and retailers has attracted significant commentary, particularly noting that this reduces competition and wholesale contract price discovery. In this regard, three retailers—AGL Energy, Origin Energy and Energy Australia—supply 70 per cent of retail electricity customers in the NEM. The same entities expanded their market share in NEM generation capacity from 15 per cent in 2009 to 48 per cent in 2017.
- In its Retail Electricity Prices Inquiry Preliminary Report, the ACCC found that the NEM wholesale (generation) market is highly concentrated, that concentration has increased with plant closures (so far not matched by offsetting new capacity although this may change in future) and with a demand-supply balance that has tightened significantly. Hazelwood's closure has contributed to higher wholesale prices. It noted that uncertainty in policy

[7] The *Herfindahl–Hirschman index* (HHI) accounts for the relative size of firms by tallying the sum of the squared market shares for all firms in a market. The index can range from zero (in a market with many small firms) to 10 000 (that is, 100 squared) for a monopoly. The higher the HHI, the more concentrated and less competitive is a market. It provides a useful starting point for assessing how competitive a market is.

[8] The *Residual Supply Index* (RSI) measures the extent to which one or more generators are 'pivotal' to clearing the market. A generator is pivotal if market demand exceeds the capacity of all other generators. In these circumstances, the generator *must* be dispatched (at least partly) to meet demand. The RSI–1 measures the ratio of demand that can be met by all but the largest generator in a region. An RSI–1 *below* 1 means the largest generator becomes pivotal to meeting demand.

[9] A generator's incentives will link to its exposure to spot or contract prices, and to its strategies to deter competition. Behavioural indicators explore the relationship between a generator's bidding behaviour and market outcomes.

[10] AER, *State of the Energy Market*, May 2017, p. 51.

settings was contributing to a lack of investor confidence. Moreover, generator market power is assisted by the ability of generators to shift capacity from low to high prices when circumstances suit and certain generators also have the ability to set price through their effective control of regional residual demand. Some reforms are under consideration that may help to offset these bidding strategies to some extent.

- It also found that vertical integration may be limiting access to risk management products for non-vertically integrated retailers and that it allows 'gentailers' to reallocate costs between their generation and retail arms.
- The ACCC concluded that high levels of concentration are a risk to wholesale prices and barrier to effective competition.
- Furthermore, the ACCC found that high gas prices and tight supply had impacted both the wholesale market and high wholesale prices. Existing generators were finding gas difficult to obtain and having to pay higher prices for it. Gas prices have a significant impact on the costs of gas generation and gas generation often sets the marginal price when demand is tight. Some gas generation had exited the market due to a lack of gas supplies.
- Overall, these indicators show clear evidence of market power in NEM generation, that market power has increased over time and that it has increased wholesale prices.

Source: Goanna Energy Consulting Pty Ltd, AER, *State of the Energy Market*, May 2017 and ACCC, *Retail Electricity Prices Inquiry – Preliminary Report*, 22 September 2017.

2.1.2 Hedging and Management of Exposure to Wholesale Market Risk

As alluded to earlier, wholesale market participants in the NEM (generators, retailers and a few of the largest customers) manage their exposure to the volatile spot market by hedging their positions. Several retailers have also acquired or built generation assets as a means of internally managing this risk through the direct access this provides to physical generation assets (they are often referred to 'gentailers').

Wholesale market hedging involves either:

- Over-the-counter (OTC) trades whereby counterparties contract with each other; or
- Exchange traded products traded on the Australian Securities Exchange (ASX).

Box 3 below sets out key aspects of wholesale market hedging in the NEM.

Box 3: Key Aspects of NEM Hedging Products

- Futures such as swaps, or contracts for differences, lock in a fixed price to buy or sell a specified amount of electricity in a region for a nominated time of day at a pre-set date.
- These products include quarterly base contracts (covering all trading intervals) and peak contracts (covering specified times of peak demand) for settlement in the future.
- Futures are traded as calendar or financial year strips covering four quarters.
- Options give the holder the right—without obligation— to enter a contract at an agreed price, volume and term in the future. The buyer pays a premium for this added flexibility.
- Caps set an upper limit on the price that the holder will pay for electricity in the future and floors set a lower price limit. Both are traded as both futures and options.

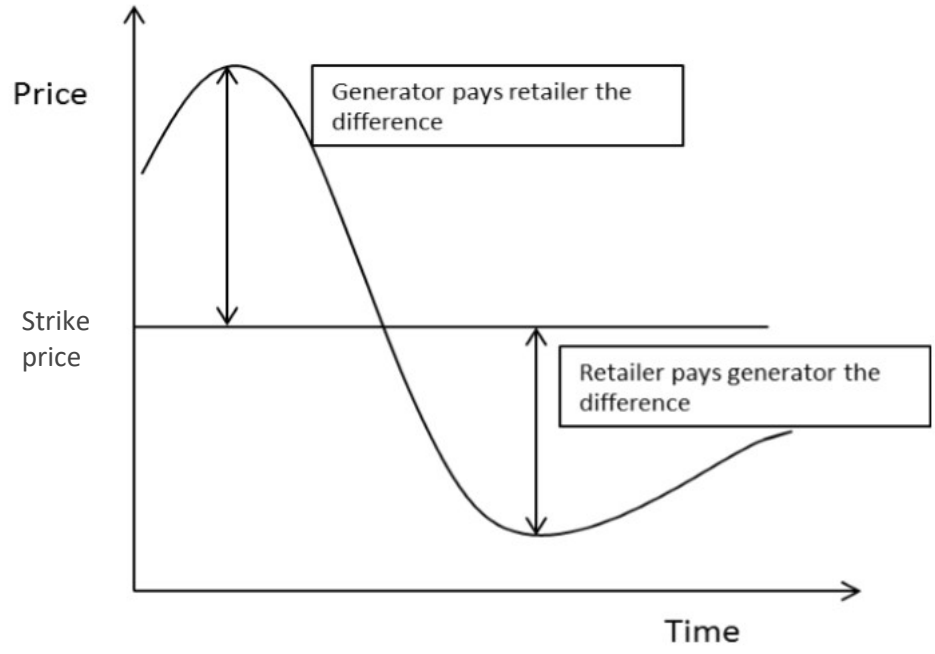
- Over-the-counter (OTC) trades are confidential between parties and have little transparency.
- Exchange traded products are publicly reported and available.
- ASX exchange traded products are standardised.
- OTC products are sculpted to suit counterparties.
- In 2015/16, contracts covering 396 TWh of electricity were traded on the ASX, equivalent to twice NEM demand.
- Victoria accounted for 36 per cent of ASX traded volumes in 2015/16, followed by Queensland (33 per cent) and NSW (30 per cent). Liquidity in South Australia is low, accounting for only 1 per cent of overall volume.
- The most heavily traded ASX products in 2015/16 were baseload quarterly futures (55 per cent of traded volume), followed by options (25 per cent) and cap futures (13 per cent).
- Liquidity is mostly in products traded 12–24 months out.

Source: Goanna Energy Consulting Pty Ltd from various sources

Figure 2 below shows a diagrammatic representation of a basic hedging contract in the NEM.

Figure 2: A Basic Hedging Contract in the NEM

It is not possible for parties to trade in electricity directly, because in the National Electricity Market (NEM), all electricity must be bought and sold through the central pool. However, it is possible for generators and retailers to agree to a contract that effectively delivers the same outcome. That is, if the spot price is 'high', the generator agrees to pay the retailer; and if the spot price is 'low', the retailer agrees to pay the generator.



Source: http://www.pc.gov.au/inquiries/completed/electricity/report/28-electricity-appendixc.pdf p. 834

2.2 Structure of the Tasmanian Wholesale Electricity Market

The Tasmanian wholesale electricity market is different to the rest of the NEM. It is a far more concentrated and regulated market with competition all but absent. This structure is not just a product of the small size of the market but also reflects past policy choices.

In Tasmania, in addition to the derivatives contracts negotiated by NEM participants, authorised retailers operating in the small customer market (currently only Aurora Energy and ERM Business Energy) have access to a set of regulated derivatives contracts provided for in the *Electricity Supply Industry Act 1995* (ESI Act) and approved by the Tasmanian Economic Regulator (TER). Hydro Tasmania is required to offer prices for these regulated derivative products. It should be noted that market participants (that is, generators and retailers) are also free to negotiate their own market derivative contracts.

Wholesale contract regulation dates from 1 January 2014, forming part of the former Tasmanian Government's electricity reform package. It was intended to:

- Assist retailers in mitigating against the contracting risks associated with Hydro Tasmania's dominance in the Tasmanian wholesale market;
- Reduce the risk faced by Tasmanian market participants to a level comparable with that facing retailers in other regions of the NEM; and
- Facilitate the introduction of full retail competition (FRC) on mainland Tasmania.

The TER approves the types of regulated derivatives contracts offered, the prices at which the contracts are offered and monitors the sale of these contracts.

These arrangements are part of the Tasmanian wholesale regulatory framework.

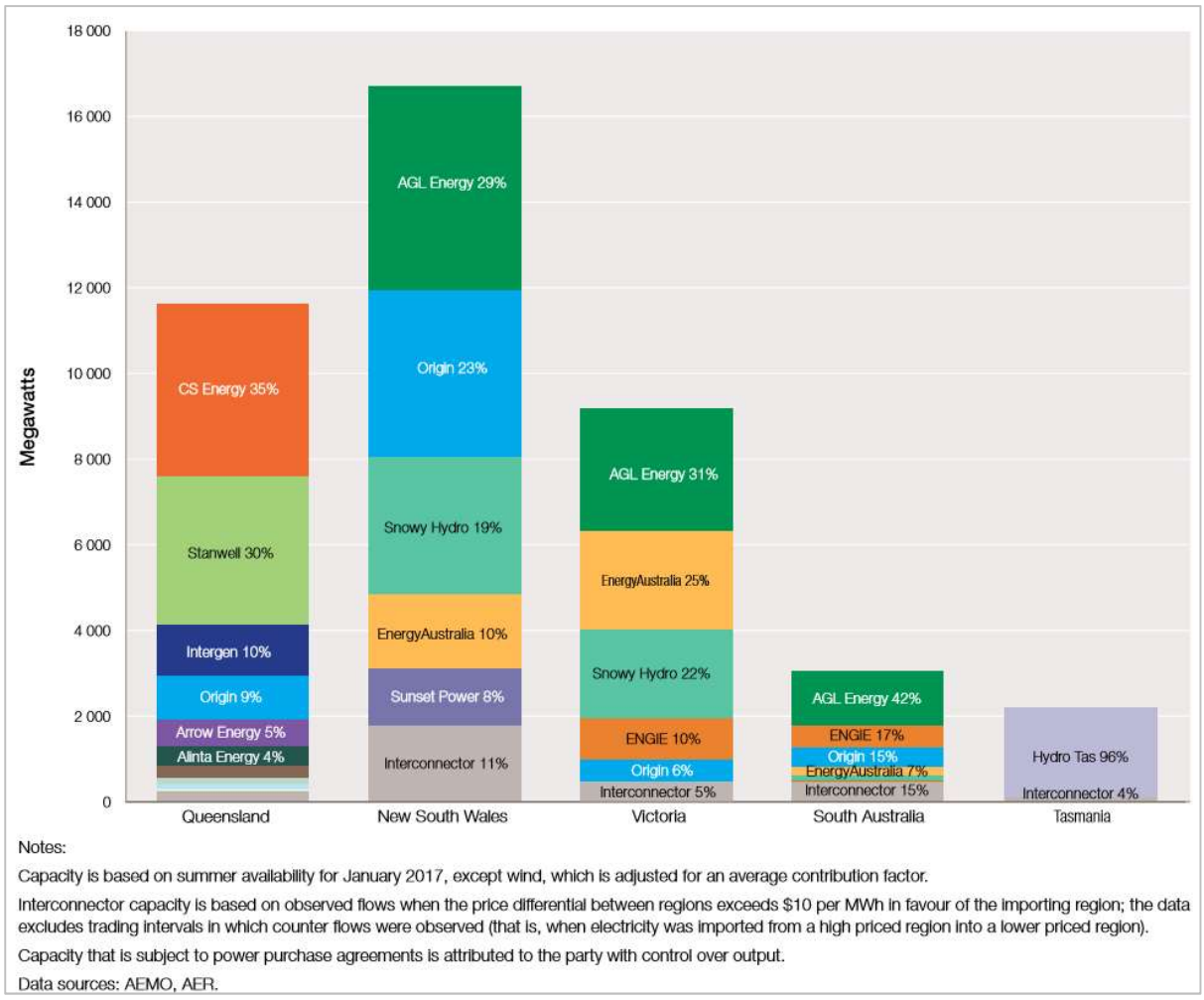
2.2.1 Tasmanian Electricity Generation

As the provider of capacity, generation plays a critical role in the performance of wholesale electricity markets. The need to consume an essential service like electricity and difficulties in storing it increases the potential market power of generators.

Electricity generation in Tasmania is highly concentrated in the hands of Hydro Tasmania, a government owned electricity generation business, which owns or through joint ventures (JVs) otherwise influences, 96 per cent of capacity (see Figure 3 below). This makes Tasmania by far and away the most concentrated generation sector in the NEM. Hydro Tasmania owns all of the hydro-electric capacity in Tasmania and either fully or jointly owns all of the wind capacity. Hydro Tasmania also has an agreement with Basslink covering its significant use of this facility, the sole link Tasmania has to the mainland. This limits the competitive influence that interconnectors provide in other parts of the NEM. It also limits the extent to which retailers can hedge their positions with parties other than Hydro Tasmania and therefore makes new entry less appealing to retailers.[11]

[11] The only on-island capacity not owned by Hydro Tasmania is 106 MW of unscheduled capacity (e.g., cogeneration plant, land fill generation, etc), which accounts for only 3.9 per cent of on-island generation capacity. As this plant is unscheduled, it does not participate in, or influence in any meaningful way, the Tasmanian wholesale electricity market.

Figure 3: Market Shares in NEM Generation Capacity by Region, 2017



Source: AER, *State of the Energy Market*, May 2017, Figure 1.20, p. 44

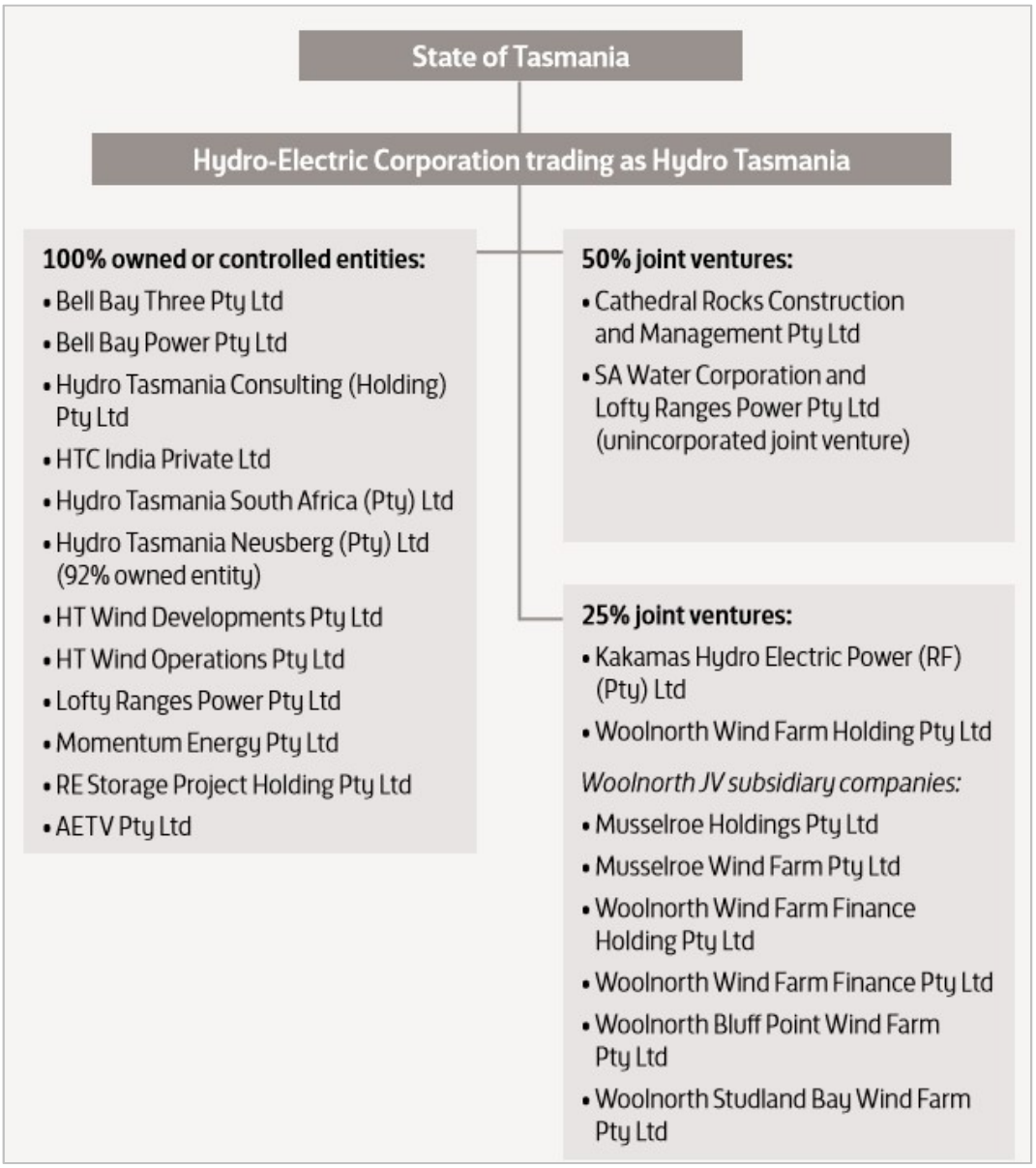
In terms of the competition metrics used by the AER, Hydro Tasmania's dominance is clearly evident. The *Herfindahl–Hirschman Index* (HHI) is around 9,200, which makes Tasmanian generation close to a monopoly (HHI = 10,000). The next most concentrated NEM region is South Australia with a HHI of 2,500, which is considered to possess substantial generator market power. Moreover, the HHI for Tasmania assumes that Basslink provides competition for Hydro Tasmania and does not take into account that Hydro Tasmania's agreement with Basslink restricts trade and access to inter-regional hedges in the wholesale market to Hydro Tasmania.

Other competition metrics used by the AER include the Residual Supply Index (RSI) and behavioural indicators[12]. The AER did not assess these indictors for Tasmania in its most recent *State of the Energy Market* report. *Prima facie*, it appears that both the RSI and behavioural indicators would confirm the extreme market power of Hydro Tasmania in the State's wholesale electricity market.

[12] A generator's *ability* to exercise market power is distinct from its *incentives* to exploit that power. A generator's incentives will link to its exposure to spot or contract prices, and to its strategies to deter competition. This behaviour may be explained by deliberate capacity withholding to tighten supply and thus influence prices, but could also relate to the inability of some generation plant to respond quickly to sudden price movements, network congestion or even maintenance and outages.

The ownership structure of the Hydro Electric Corporation (which trades as Hydro Tasmania) is shown below in Figure 4. As well as its considerable hydro-electric resources, Hydro Tasmania also owns the Tamar Valley Power Station (TVPS), has significant interests in Tasmanian and inter-state wind generation, overseas interests, owns a mainland retailer that sells its Tasmanian capacity in other parts of the NEM (but does not operate in Tasmania), a consulting arm and international interests.

Figure 4 Ownership Structure of the Hydro Electric Corporation



Source: Hydro Tasmania, *Annual Report*, 2016 p. 7

The Expert Panel on the Tasmanian Electricity Supply Industry (Expert Panel) undertook a detailed examination of Hydro Tasmania's market power and its main findings are in Box 4 below.

Box 4: Expert Panel's Findings on Hydro Tasmania's Market Power

- Hydro Tasmania's output is 'pivotal' in the spot market and it can control the spot price.
- As Hydro Tasmania is the only provider of hedge contracts, retailers are put in a position where they must choose between entering into hedge contract arrangements with Hydro Tasmania or be left exposed to a spot market price that Hydro Tasmania controls.
- Hydro Tasmania's discretion over its level of contracting, combined with its dominant spot market position, mean that has is a unique level of market power in the NEM.
- Hydro Tasmania can increase spot and contract prices on a sustained basis. This is because, notwithstanding the contribution of Basslink and the TVPS (owned by Aurora when the Expert Panel reported), Hydro Tasmania's output is required to meet Tasmanian demand under virtually all market conditions, giving it a unique ability to 'give less and take more'.
- Hydro Tasmania has an ability to profitably raise the spot price under a wide range of conditions and, in the past, has been particularly willing to exercise this ability at times when its contract position is relatively low and Aurora Energy is under-hedged.
- Moreover, given the absence of alternative counter-parties, the terms and conditions under which contracts are offered are also largely a matter of internal pricing policy, rather than being shaped by outside forces. Occasional demonstrations of Hydro Tasmania's capacity to bid spot prices to high levels in off-peak periods and the knowledge that it is a pivotal generator most of the time, serves as a signal to market participants that unhedged entry into the Tasmanian region involves risks over and above those elsewhere in the NEM. This is particularly so given the means of managing these risks, contracts, can only be sourced from the entity that creates them in the first place.
- Hydro Tasmania can determine a new entrant's retail margin through its unilateral pricing decisions, thus creating a squeeze between the cost of supply and regulated retail prices.
- Hydro Tasmania has generally not exercised its wholesale market power to the full extent.
- For the above reasons, the Panel described Hydro Tasmania as possessing a high degree of *latent market power* and found that its periodic signalling of that power through spot and contract market outcomes is a serious barrier to retail entry by efficient, large scale, mainland retailers.
- While the Expert Panel found that the threat of intervention may have been reasonably effective in deterring widespread exercises of market power to date, the effect and future dependability of such restraints is not predictable enough to give potential new entrants and their financier's confidence to invest in the Tasmanian market.
- Growth in on-island supply from Hydro Tasmania owned wind farms is adding to oversupply (though driven by Hydro Tasmania's commercial strategy to source renewable energy certificates required by its mainland retail business).
- Hydro Tasmania's efficiencies associated with low historical costs and economies of scale are desirable in themselves but have the additional effect of deterring new entry.
- Hydro Tasmania has an absolute cost advantage over any new entrant because any entrant would need to secure supplies of fuel, most likely for a gas-fired power station. Hence, Hydro Tasmania could, if it wished, sustainably set prices in excess of its own costs but below any new entrant's costs. This is likely to deter entry.

Source: Expert Panel, *An Independent Review of the Tasmanian Electricity Supply Industry*, Final Report, 29 March 2012 at http://www.electricity.dpac.tas.gov.au/final_report.

The above confirms the almost complete absence of competition in Tasmanian electricity generation, which translates into the wholesale electricity market. Having dismissed structural reform options, this is the main reason why the Tasmanian Government introduced the regulation of Hydro Tasmania's wholesale contracts mentioned earlier and explained in Section 2.2.6.

2.2.2 More Competitive Generation Options

For this situation to change there would need to be significant reform of the Tasmanian generation sector.

As a minimalist option, some competition could be introduced through separate ownership of the gas fired TVPS, which has a combined capacity of 356 MW, 13 per cent of total Tasmania capacity.[13] Such a move would reduce the HHI to 6,850, still the most concentrated generation sector in the NEM standards but would still represent a small step in a more competitive direction. The important role of the TVPS in helping to ensure energy security in Tasmania was recently confirmed by the Tasmanian Energy Security Task Force (TEST) (see Section 2.2.11).

If Hydro Tasmania's wind generation interests were divested in addition to the TVPS, it would provide some additional competitive stimulus with the HHI falling to around 5,000, still double the HHI in South Australia, a State with acknowledged market power issues. Moreover, the Expert Panel's finding that Hydro Tasmania is pivotal to supply under virtually all market conditions, even allowing for the output of the TVPS, Basslink and wind turbines, means that even divestment of all of Hydro Tasmania's non-hydro-electric assets is unlikely to deal with market power issues sufficiently to create a competitive wholesale market and encourage new entry.

The Expert Panel recommended that the TVPS be sold as part of its broader suite of structural reforms (see
Box 4) to help improve the attraction of Tasmania to new electricity retailers. As an alternative option, the Expert Panel proposed its allocation to one of the three separate trading entities it recommended, or as a last resort, its transfer to Hydro Tasmania, but only on the basis that its capacity would be allocated across these separate trading entities. In the event, the then Tasmanian Government transferred the TVPS to Hydro Tasmania but failed to establish separate trading entities.

The Expert Panel's recommendation to separate Hydro Tasmania's wholesale trading functions into three stand alone entities (termed 'gentraders'), who would trade its capacity into the market, would provide the pre-conditions for a more competitive approach. The Expert Panel saw this as being attractive to mainland retailers in terms of making their entry to the Tasmanian electricity market more likely.

Mainland retailers supported the option of not only the separation but also the sale of Hydro Tasmania's trading functions, or even the separation of Hydro Tasmania's capacity and trading

[13] It is worth noting that the TVPS was initially built as a privately owned generator, but prior to its completion it was sold to Aurora Energy, who operated it frequently as a hedge against the dominance of Hydro Tasmania in the contract market. Since acquiring the facility, Hydro Tasmania has made sparse use of it, with the TVPS spending a long period in mothballs and its combined cycle gas turbine (CCGT) base load generator being offered for sale at one point. Since then, the CCGT has been withdrawn from sale and returned to service following the threat to Tasmanian energy security in the first half of 2016 and it was initially used purely as a standby generator, although Hydro Tasmania has recently begun operating it more frequently so that it can store more water in anticipation of higher spot prices over the coming summer.

functions into (say) three generation entities prior to their sale as necessary for them to consider Tasmanian entry as this would remove Hydro Tasmania's market dominance and allow new entrant retailers to effectively hedge their Tasmanian positions. However, this option was not assessed by the Expert Panel.

Assuming for illustrative purposes, separation into three generation entities of about equal size, the HHI would fall to around 700, making Tasmania the most competitive generation market in the NEM. For electricity consumers, including small businesses, this offers improved prospects of wholesale and retail market competition with access to competitive pricing behaviour.

2.2.3 Tasmanian electricity retailers and the wholesale market

Retailers in Tasmania serving small business and residential customers have the option of either entering into market based wholesale contracts or using Hydro Tasmania's regulated contracts. Tasmanian retailers can also buy electricity from the NEM spot market and pay the prevailing Tasmanian spot price. Retailers will adopt contracting strategies using a mix of wholesale contracts and spot exposure depending on factors such as prices, supply-demand conditions, seasonal and weather patterns, their hedging position/risk appetite, and their view of future prices and demand.

In the residential customer market, Aurora Energy, a State Government owned retailer, enjoys a monopoly. In the small business segment, it enjoys a virtual monopoly. This has implications for Aurora's position in and strategies for the wholesale market. For example, in the small customer segment, Hydro Tasmania has very little choice other than to sell its power to Aurora (and in a small number of cases ERM), and this is underpinned by a requirement for it to provide this electricity via its regulated retail contracts (if necessary). Aurora on the other hand, is virtually captive to Hydro Tasmania in buying electricity for its small customer load.

As with other electricity markets, in Tasmania generators will often hold the whip hand as far as wholesale market contract outcomes are concerned, particularly as supply gets tighter. Retailers tend to be price takers, even ones like Aurora with a virtual monopoly over the entire small customer load.

2.2.4 Wholesale Market Barriers a Major Reason for Lack of Retail Competition

The presence of a virtual single retail buyer and (more importantly) a single seller of generation products in the Tasmanian wholesale market is a major reason for the lack of competition in the State's retail electricity market. Consequently, small businesses are unable to exercise choice of retailer (despite the Government's adoption of FRC), have no real access to competitive pricing and miss out on the fruits of competition enjoyed by their peers elsewhere in the NEM, such as price discounting.

The barrier to retail competition created by the Tasmanian wholesale market was confirmed in a study for the TSBC by Goanna Energy Consulting entitled, *The Final Step: Moving to full retail contestability in the Tasmanian electricity market.*[14] As part of this study, Goanna interviewed six retailers with potential to enter the Tasmanian market. Limited liquidity and competition in the wholesale market were the primary factors in reducing their interest in and appetite for entering the Tasmanian market, including supplying the small business sector.

Conversely, significant wholesale market reform and the breakup and sale of Hydro Tasmania were mentioned as important factors in increasing their interest in Tasmania.

[14] Copies of *The Final Step* Report are available by contacting Goanna Energy Consulting.

The lack of wholesale market reform as a significant impediment to retail competition in Tasmania is also apparent from the deliberations and final report of the Expert Panel[15], which concluded that:

> *"Simply put, the Panel considers that a failure to address the current wholesale energy market structure would effectively 'lock in' an absence of effective competition and customer choice indefinitely, denying Tasmanian small businesses and households the clear benefits of competition and choice that have been delivered to consumers elsewhere in Australia.*
>
> *Structural reform is necessary – and it is achievable."*[16]

The Expert Panel recommended a range of reforms aimed at increasing interest by mainland retailers, especially the larger ones, in the Tasmanian market (see Box 5 below).

Box 5: Expert Panel Recommended Reforms to Improve Wholesale and Retail Market Competition

The Expert Panel on the Tasmanian Electricity Supply Industry recommended the following reforms as necessary to increase wholesale and retail electricity market competition and improve the attractiveness of the Tasmanian market to the larger mainland retailers:

- Separating the financial trading functions of Hydro Tasmania from its physical operations and transferring these functions to three independent government-owned entities ('gentraders').
- The declaration of full-retail contestability, accompanied by the sale of Aurora Energy's retail customer book in three similar-sized parcels.
- Alternative options for the TVPS, preferably its sale to a private operator.

Source: Expert Panel, *An Independent Review of the Tasmanian Electricity Supply Industry*, Final Report, 29 March 2012 at http://www.electricity.dpac.tas.gov.au/final_report.

In the event, the then Tasmanian Government did not follow through with most of these recommendations. It opted instead to:

- Maintain Hydro Tasmania's trading and physical operations as a single entity but introduce regulation of its wholesale contracts. The Expert Panel had considered this option but more-or-less rejected it as a basis for wholesale market reform adequate to stimulate interest in Tasmania from larger mainland retailers.
- Introduce FRC from 1 July 2014.
- Whilst it attempted to sell Aurora's retail customer book as two separate parcels, it withdrew them from sale due to a lack of interest.
- Transfer ownership the TVPS from Aurora to Hydro Tasmania, an option that the Expert Panel had considered beneficial but only as part of the creation of gentraders.

[15] The TER also found that there was a need for wholesale market reform in a review of FRC in 2008.
[16] Expert Panel, *An Independent Review of the Tasmanian Electricity Supply Industry*, Final Report, vol 1, p. vii at http://www.electricity.dpac.tas.gov.au/final_report

This has essentially left the Tasmanian wholesale and retail electricity markets devoid of any interest from larger inter-state retailers and placed FRC in a strictly 'Clayton's choice' framework of no choice at all for smaller customers, including small business.

In the intervening years, apart from the pre-existing presence of ERM, no new retailers or generators have entered the Tasmanian electricity market, unfortunately making a reality of the Expert Panel's predictions – supported by the views of larger retailers – that wholesale market reform is essential for retail competition and that regulation of Hydro Tasmania's wholesale contracts would not be sufficient to stimulate new entry by the larger retailers.

It is also worth noting that the existing wholesale market framework has proved so unattractive to new retailers that only ERM (and one smaller niche retailer) has entered (and in the case of the latter apparently exited from) the Tasmanian market. The Expert Panel had contemplated 'hit-and-run' entry and exit might occur on an opportunistic, basis without its recommended wholesale market reforms.

The current Government has maintained the framework adopted by its predecessor and is yet to consider more meaningful wholesale or retail market reform.

2.2.5 Competitive Market Reform Options

It is difficult to disagree with the views of the Expert Panel that if Tasmanian small businesses are to benefit from real retail choice and competition, then meaningful reform of the wholesale market will be needed. It would also seem that proposals similar to the recommendations of the Expert Panel (see Box 5 above) are the minimum needed to stimulate retail entry.

We note that a number of mainland retailers expressed the view to the Expert Panel that they would find it more attractive enter the Tasmanian market if the creation of gentraders as privately-owned businesses, which they could bid for, was the approach taken to reform as this would give them greater control over their exposure to risks in the Tasmanian market. Some said that the creation of three government owned gentraders was not sufficient to allay their concerns about entry to the Tasmanian market as they would have insufficient control over their destiny and would not be convinced that separate government owned gentraders would compete fairly and head-to-head.

Moreover, the sale of Aurora's retail book would not stimulate mainland retailer interest in Tasmania (as shown by the previous aborted attempt at sale) unless it was accompanied by the sale of Hydro Tasmania's trading functions and/or its generation assets.

Deeper structural reform would also increase the currently low level of liquidity in the market and (from a consumers' perspective) would improve competition in both the generation and retail markets, and help provide smaller consumers with a meaningful choice of retailer.

2.2.6 Regulation of Hydro Tasmania's Wholesale Electricity Contracts

The current regulated wholesale market framework has been in place for three years and retail competition, including for small businesses, has demonstrably failed to materialise. As a result small business is excluded from retail choice and competitive prices. We note that the current approach to setting wholesale costs in regulated retail prices is being reviewed by the Government (see Section 3.9).

Box 6 below summarises the regulation of Hydro Tasmania's wholesale contracts.

Box 6: Key Aspects of the Regulation of Hydro Tasmania's Wholesale Electricity Contracts

- The TER regulates the electricity contracts that Hydro Tasmania must offer for sale to other electricity market participants. Hydro Tasmania can (and does) also offer unregulated contracts.
- Regulation includes the setting of maximum prices that Hydro Tasmania can charge.
- Hydro Tasmania is required to: offer retailers operating in Tasmania a number of contract products that are broadly consistent with standard products offered in the NEM; offer standard terms and conditions for each; offer these contract products at prices that are based on an approved pricing methodology; and make available sufficient volume of regulated contract products to enable Tasmanian retailers to adequately manage the wholesale spot price risk associated with their Tasmanian customers.
- The TER is responsible for regulating Hydro Tasmania's wholesale contracting activity and approves the types of regulated contracts offered, the prices at which the contracts are offered and monitors their sale.
- The TER is also responsible for: administering and monitoring the pricing of regulated wholesale derivative contracts; investigating and determining future wholesale contract pricing instruments; and collecting information from Hydro Tasmania to support the regulatory framework and development of FRC.
- A *Statement of Regulatory Intent* outlines how the TER will deal with: Hydro Tasmania failing to correctly apply the approved pricing methodology, or a supply disruption event, which can include investigating and substituting its own pricing methodology; and updating the input values in the Wholesale Pricing Model.

Source: Goanna Energy Consulting and TER, various documents.

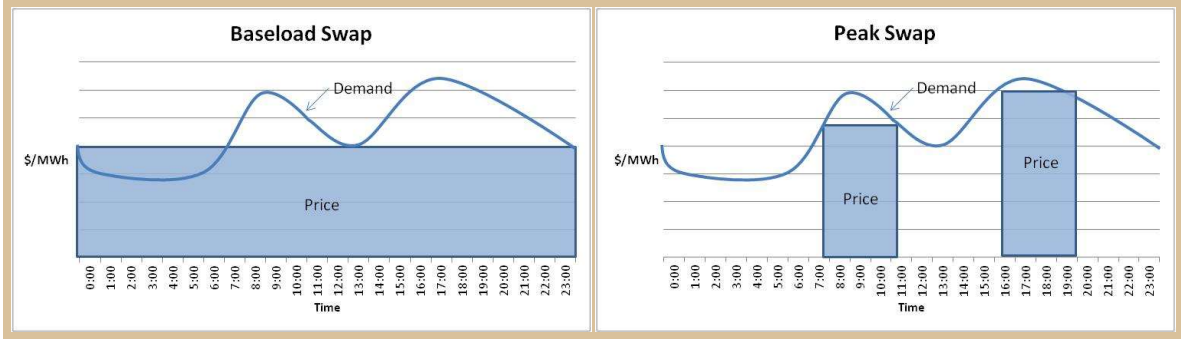
There are four types of regulated wholesale contracts offered by Hydro Tasmania. These are described in Box 7 below and they have remained unchanged since the commencement of the current approach to regulation of Hydro Tasmania's wholesale contracts in 2014.

Box 7: Types of Regulated Wholesale Contracts Offered by Hydro Tasmania

Baseload Swap Contract & Peak Period Swap Contract

Swap contracts (also known as 'contracts for differences') fix the cost of electricity for a purchaser (e.g., a retailer) and a seller (e.g., a generator) for a defined volume of energy. If the spot price is greater than the agreed regulated weekly offer contract price, the seller (generator) pays the difference between the spot and regulated weekly offer contract price to the purchaser (retailer) for a defined volume of energy. If the spot price is less than the agreed regulated weekly offer contract price, the purchaser pays the difference between the two prices for the defined volume of energy to the seller.

A Baseload Swap Contract covers a set volume of electricity for every half hour of each 24 hour period, seven days a week for a calendar Quarter. A Peak Period Swap Contract covers a set volume of electricity for every half hour between 7am and 10pm Monday to Friday for a calendar Quarter. These are shown in the Figure below.



Baseload $300 Cap Contract

This cap contract (also known as an options contract) specifies two prices:

- An agreed strike price: the spot price at which the cap applies, i.e., $300/MWh; and
- An option fee: the premium or price payable to the seller for the contract itself.

The cap contract only comes into effect if the spot price, for a specified volume of electricity, reaches or exceeds $300/MWh. If the spot price exceeds $300/MWh, the seller of the cap (the generator) must pay the buyer of the cap (the retailer) the difference between $300/MWh and the spot price for a specified volume of electricity. Cap contracts help protect a retailer from high spot prices.

Load Following Swap Contract

Load Following Swap (LFS) contracts are generally structured to meet an individual retailer's load profile and tend to be more expensive, but allow the purchaser to manage 'volume risk' (the risk that the retailer's customers' demand is higher than the retailer expected, requiring the retailer to pay spot prices for the additional electricity required to meet that demand), as well as 'price risk' (the risk that the spot price is higher than the retailer expected).

In Tasmania, the regulated LFS contract is a contract that is based on the Tasmanian Net System Load Profile (NSLP) as determined AEMO. The NSLP is an approximation of Tasmanian load after subtracting the load from all customers with half hour meters (i.e., customers on market contracts, typically larger ones). It therefore represents the load profile for all small (regulated tariff) customers in Tasmania. Retailers may still be exposed to volume risk if their customers' actual usage is greater than that allowed for in the regulated LFS contract.

The LFS contract was included as a regulated contract to counter the perception that Hydro Tasmania had both the incentive and means to spike spot prices, thereby exposing retailers to potentially significant price risk.

Source: Goanna Energy Consulting and TER, *Review of the Wholesale Contract Regulatory Instrument*, Final Report, December 2016, p. 8.

Given the volatility of wholesale prices, the then Government decided it was not feasible to regulate wholesale electricity prices directly and opted instead to regulate Hydro Tasmania's wholesale contracts.

The types of regulated contracts Hydro Tasmania is required to offer to counterparties (see Box 7

above) are modelled on equivalent contract products used by retailers across the NEM. The then Government considered it important to ensure consistency with current wholesale contract practices elsewhere NEM as it was attempting to encourage new retailers to enter Tasmania by ensuring that the risks to retailers of operating in Tasmania were no greater than those in other jurisdictions in the NEM. It was also mindful that Hydro Tasmania's dominant position as a generator and wholesale market participant in Tasmania was seen as a barrier to entry by mainland retailers and it attempted to counteract this by giving potential new entrants access to a 'safety net' of regulated wholesale contracts which they could fall back on, if necessary.

However, as outlined in Section 2.2.7, the availability of regulated wholesale contracts has failed to encourage any new retailers to enter the Tasmanian market. This is most likely due to the continued existence of structural impediments in the Tasmanian wholesale market as manifested by Hydro Tasmania's absolute dominance, Aurora Energy's dominance of smaller load customers, the continued regulation of retail prices for smaller customers and the fact that both Hydro Tasmania and Aurora remain in Government ownership.

The combined impact of these factors, along with others such as the small size of the market, creates 'a bridge too far' for mainland retailers to enter the Tasmanian market. The failure to deal with the structural flaws in the Tasmanian wholesale market is the main contributor and provides the single largest barrier to entry.

The Expert Panel considered the option of wholesale market regulation through an auction of derivative hedges by Hydro Tasmania as part of its deliberations. This has similarities to the approach to wholesale market regulation currently applied but with the addition of a competitive auction for hedging products. However, the Expert Panel did not recommend the regulatory approach.

Larger national retailers indicated to the Expert Panel that:

> *"They are not prepared to make the material level of capital investment required to enter the market with the level of sovereign and regulatory risk they would be exposed to from potential gaming of, changes to, or reversal of the regulatory arrangements."*[17]

The Expert Panel considered that, under the regulatory approach, some retail competition in the form of 'hit and run' entry by niche retailers could emerge, but that the sale of Aurora's retail customer book would be futile as there would simply not be enough incentive to make the sale attractive to potential bidders. In the event, there has been almost no new entry, even on 'hit and run' terms, under the current regulatory approach and the former Government, after attempting to sell Aurora's retail book on the basis of wholesale market regulation, had to abandon the sale due to a lack of interest. The Expert Panel's expected outcome from wholesale market regulation has largely proven to be correct.

2.2.7 Assessment of Tasmanian Wholesale Market Regulation

The positive aspects of wholesale market regulation in Tasmania include that:

[17] Expert Panel, *An Independent Review of the Tasmanian Electricity Supply Industry*, Final Report, vol. 1, p. 133.

- It requires Hydro Tasmania to offer to any authorised and complying market participant a limited number of types of wholesale market derivative contracts that closely resemble contracts commonly used in the NEM. This provides for a degree of wholesale contract predictability, standardisation and familiarity to any retailer seeking to enter the Tasmanian market.
- It provides some discipline on Hydro Tasmania regarding the exercise of its unbridled market power in generation and contracting, and a form of safe haven for counterparties exposed to Hydro Tasmania's market power.
- The current arrangements have been in place for three years and over this period they have remained more-or-less unchanged and (based on a recent review by the TER) will stay that way until 2024. It is possible that this may have dissipated the sovereign or regulatory risk issues for potential new entrants, although not sufficient for any actual new entry to occur. Moreover, the recent intervention of the Tasmanian Government in capping wholesale prices in the determination of 2017/18 regulated tariffs, whilst beneficial to small business electricity prices for 2017/18, would have increased the risks of entry and the fears of potential new entrant retailers about being exposed to regulatory change (see Section 3.9).
- The TER has independent oversight of the arrangements, which may also impact regulatory uncertainty and risk, although again not sufficient for any actual new entry. Again, the recent intervention of the Government would have increased retailer concerns about the independence of regulation.

Based on 2015 TER analysis[18], by and large, price outcomes for Hydro Tasmania's regulated products also seem to be as anticipated, with prices for both baseload and peak period swaps tracking Victorian prices, albeit at a significant premium. However, baseload $300 caps were at a very high premium to Victorian contracts (as were unregulated contracts).

The TER also reported that there was a significantly greater use of unregulated contracts, with little use of cap and LFS contracts across both regulated and unregulated products.

The TER concluded that:

> *"In summary, it appears that the pricing and trading outcomes of wholesale regulation are currently meeting the objectives of the Instrument, in that:*
>
> - *prices are largely reflective of the pricing patterns experienced in an established derivatives market (the Victorian market) associated with the NEM; and*
> - *regulated contracts are not being relied upon by market participants."*[19]

However, as the arrangements have failed in their key objective of encouraging new entry into the Tasmanian retail market and did not attract sufficient buyers for Aurora's retail business, they must be judged to have failed to deliver their key objective.[20] Moreover, there are no indications that any new retailers will enter the Tasmanian market in the foreseeable future. The chief lesson from

[18] TER, *Review of the Wholesale Contract Regulatory Instrument*, Issues Paper, December 2015.
[19] TER, *Review of the Wholesale Contract Regulatory Instrument*, Issues Paper, December 2015, p. 18.
[20] ERM Business Retail, a pre-existing retailer focused mainly on larger business customers and with some interest in market contracts for small businesses has continued its presence but with a small and declining customer base.

wholesale market regulation is that, if retail competition is to become a reality in Tasmania, including for small business, then wholesale contract regulation is insufficient – and structural change in the wholesale market is necessary – for competition to emerge.

2.2.8 Tasmanian Wholesale Electricity Market Different from the NEM

There are a number of important ways in which the Tasmanian wholesale electricity market differs from the NEM wholesale market. These can be summarised as:

- The Tasmanian wholesale market is dominated by Hydro Tasmania on the seller side and Aurora Energy on the buyer side, whereas most other parts of the NEM are characterised by competition between several generators and retailers, albeit imperfect competition.
- Both the Tasmanian entities belong to the same owner, the Tasmanian Government, which heightens concerns about the market structure, whereas private ownership is more common elsewhere, albeit in concentrated and vertically integrated markets.
- Hydro Tasmania has the ability to control both the spot price (which is the source of retailers' principal commercial risk) and the contract price (which is how they insure against that risk). Unlike other NEM regions, the option of managing basis risk between NEM jurisdictions with the aid of Inter Regional Settlement Residue (IRSR) units is unavailable, as all IRSRs from the Basslink interconnector are allocated to Hydro Tasmania. Similarly, with the current excess of generation capacity, and the continued investment in wind generation on the basis of the RET subsidy, a new entrant retailer is likely to be deterred from building its own costly and unnecessary generation in Tasmania. This locks out generation ownership risk management options available to competing retailers elsewhere in the NEM.
- Spot price volatility in the Tasmanian market can be 'unpredictable' compared to other NEM jurisdictions. This is because Hydro Tasmania can utilise its ability to control spot price outcomes to influence Basslink flows and Baseline Renewable Energy Certificate generation to maximise arbitrage opportunities. This is sound commercial behaviour but gives rise to unpredictability in Tasmanian spot market prices.
- This situation has resulted in the Tasmanian Government introducing a framework that regulates Hydro Tasmania's wholesale contracts and intended to allay the fears of potential new entrant retailers about the market power of Hydro Tasmania and provide them with a safety net of regulated contracts modelled on the NEM derivates market. However, this has failed to stimulate any new entry.

2.2.9 Impacts of Tasmania's Wholesale Electricity Market on Small Business

A key implication of Tasmania's unique wholesale electricity market for consumers, including small business, is that potential new entrant retailers perceive that their entry to the Tasmanian electricity market carries too many risks and is not worthwhile. As a consequence, electricity consumers, including small business, have been denied access to retailer choice and the benefits of a competitive retail market, including competitive prices and price discounting. On the other hand, wholesale market and retail price regulation have helped to keep electricity prices for small consumers in Tasmania under regulated control and mitigated against exposure to unbridled market power.

2.2.10 Second Bass Strait Interconnector and Hydro Tasmania Expansion Proposals

Two prospective projects that could impact on the Tasmanian wholesale market and small business are a second Bass Strait interconnector (sometimes referred to as 'Basslink 2') and major expansion of Hydro Tasmania's system (sometimes called 'Hydro Tasmania 2.0'), including pumped storage[21].

A major independent assessment of the potential costs and benefits of a second Bass Strait interconnector has recently been completed.[22] This found that such an interconnector only had positive net material benefits under certain restrictive scenarios, namely, if a second interconnector between Victoria and South Australia was built, or if there was a substantial reduction in Tasmanian demand (e.g., the departure of one or more of the Major Industrial users).

If the second interconnector was regulated, Tasmanian consumers would bear transmission costs in proportion to imports across the link but would also benefit from reduced inter-regional constraints, resulting in a convergence of wholesale energy prices. For a merchant (unregulated) interconnector, the impact on consumers would depend on the owner's bidding strategy. Cost impacts would also depend on spot price differences between the regions, the volume of the flows between them, the ancillary services market and competitive conditions in wholesale and retail markets. The lack of competition in the Tasmanian wholesale and retail markets could limit any consumer benefits.

The possible expansion of Hydro Tasmania's hydro-electric capacity involves a combination of enhancements to the Tarraleah hydropower scheme and the Gordon Power Station, and new pumped hydro energy storage schemes that could deliver up to 2,500MW of pumped hydro capacity.[23] The Australian Renewable Energy Agency (ARENA) is in the process of assessing applications from Hydro Tasmania to support feasibility work. Such expansions appear to be based more on electricity exports from Tasmania, especially if a second interconnector were constructed, than aimed at benefitting Tasmanian electricity consumers, although it is possible Tasmanian consumers could derive some price and energy security benefits. As with all such projects, net impacts also depend on the costs involved, which remain to be determined and could be considerable.

Whilst Tasmanian consumers could also benefit from the additional capacity, e.g., when exports to the NEM were not profitable, the additional electricity supply would be in the hands of Hydro Tasmania with its substantial market power. Moreover, Tasmania already has significant excess electricity capacity, which is already posing a barrier to new entry (as discussed in Section 2.2).

Of particular concern is the number of small or medium sized businesses which rely heavily on cheap 'off peak' energy as the main energy input into their business operations. These include independent supermarkets, aged care facilities, irrigators and dairies, where more than 60 per cent of the energy consumed is 'off peak' energy and significant capital investment has been sunk in response to this price signal.

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[21] Pumped hydro storage makes use of two vertically separated water reservoirs, using low cost electricity to pump water from the lower to the higher reservoir and running as a conventional hydro power plant during high electricity cost periods.

[22] Dr John Tamblyn, *Feasibility of a Second Tasmanian Interconnector, Final Report*, April 2017 at https://www.environment.gov.au/system/files/energy/files/preliminary-report-feasibility-of-a-second-tasmanian-interconnector.pdf.

[23] Hydro Tasmania, *Supporting Australia's energy transition, Media Release*, 20 April 2017 at https://www.hydro.com.au/about-us/news/2017-04/supporting-australia%E2%80%99s-energy-transition.

Pumped hydro energy storage schemes that could deliver up to 2,500MW of pumped hydro capacity, means Hydro Tasmania pumps competing with such businesses for access to low priced 'off peak' energy which will inevitably drive up 'off peak' rates. In essence, pumped hydro reduces peak prices, at the expense of increasing 'off peak' prices, with an inbuilt energy loss of 20 per cent in the process of pumping.[24] However, the extent to which this happens may be impacted by the considerable over-supply that often characterises off peak periods.

2.2.11 Energy Security and the Wholesale Market

Energy security is important to Tasmanian small businesses. This point was clearly enunciated in the TSBC's submissions to the Tasmanian Energy Security Taskforce (TEST).[25] Simply put, small business needs a secure and reliable supply of electricity to maintain its operations and also needs it to be priced competitively.

Energy security also has an important relationship with the wholesale electricity market. There will be costs associated with any given level of energy security and a need to balance energy security with preparedness of the community to pay for energy security. To the extent that energy security involves wholesale market measures, these costs will be reflected in wholesale market costs (and prices). An efficiently operating and competitive wholesale market is also likely to deliver energy security more efficiently.

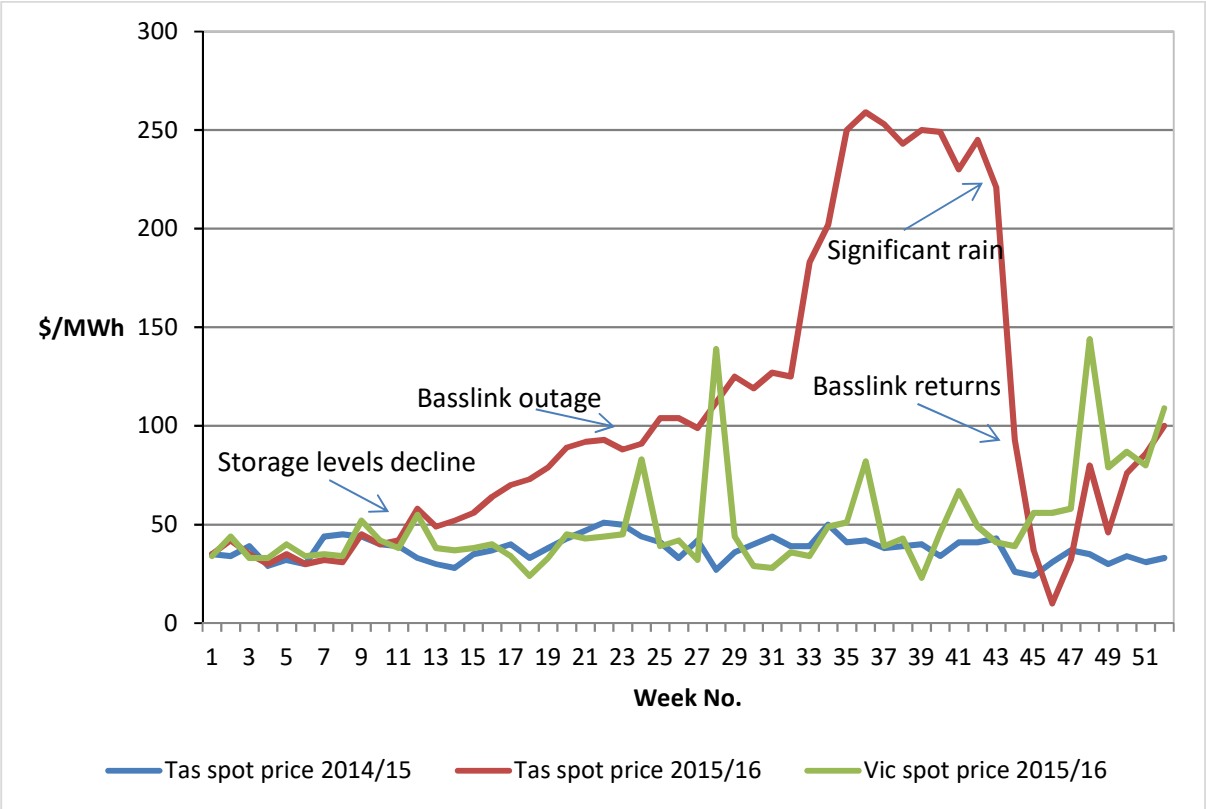
Moreover, if electricity supply is secure and well managed and seen as such by the market, this will be reflected in wholesale prices being lower than they would otherwise be. Alternatively, if electricity security is compromised, is poorly managed or if decision making is not transparent, the market will price in the associated higher risks.

This situation was observed in Tasmania from December 2015 until May 2016 when the combined impact of low storage levels due to drought conditions and a prolonged outage of Basslink resulted in a threat to Tasmania's energy security requiring an emergency response (the *Energy Supply Plan*) comprising more careful storage management, bringing the TVPS CCGT back into operation (after it was decommissioned and being prepared for sale by Hydro Tasmania), securing significant demand-side response from some of Tasmania's major electricity users and temporary installation of around 220 MW of portable diesel and dual fuel generators. During this period spot prices increased significantly, as can be seen from Figure 5, and then fell abruptly as significant rain replenished storages and Basslink returned to service. Tasmanian spot prices for 2014/15 and Victorian spot prices for 2015/16 are also shown to help demonstrate the significant impact of the Tasmanian energy security threat on wholesale prices. The divergence of Tasmanian spot prices for 2015/16 from both the other series is clearly evident. These spot price increases were, in fact, even more significant than those seen in 2016/17 in response to NEM wholesale market pressures (see Figure 6).

Although these wholesale price increases did not pass through into regulated retail prices, as the Tasmanian Government committed that electricity prices would not increase due to the emergency, Hydro Tasmania had to absorb price increases and the costs of the *Energy Supply Plan* in its bottom line. The Government accepted lower dividends and taxation payments by Hydro Tasmania. Moreover, there was an associated cost in terms of damage to Tasmania's business reputation and community confidence in the electricity industry.

[24] Mercury Newspaper, *Can Tasmania be the battery of the nation*?, Chris Gwynne, Hydro Tasmania, 8 September, 2017.
[25] TSBC, *Tasmanian Energy Security Taskforce Response to Consultation Paper*, 16 September, 2016.

Figure 5: Tasmanian Weekly Average Electricity Spot Prices During the 2015/16 Electricity Security Threats



Source: AER website at https://www.aer.gov.au/wholesale-markets/wholesale-statistics/weekly-volume-weighted-average-spot-prices.

The threats to Tasmania's energy security that emerged in this period were due to a combination of:

- Questionable risk management and energy security practices by Hydro Tasmania prior to drought conditions (2015 produced the lowest spring inflows ever recorded) and the extended Basslink failure beginning in December 2015 when Hydro Tasmania appeared to generate particularly aggressively so that it could export heavily into Victoria in pursuit of additional revenue from Large Generation Certificates (LGCs) under the RET;[26]
- A relatively low starting point for dam levels on 1 January 2015 as Hydro Tasmania had used the Carbon Tax period to expand its generation and revenue, but (it can be argued) at the expense of prudent risk management and without due weight being given to Tasmania's energy security;
- The non availability of the 208 MW TVPS CCGT, which had been decommissioned by Hydro Tasmania and was being prepared for sale, notwithstanding its importance to Tasmania's energy security (as later confirmed by the TEST).

These threats served to highlight energy security as a serious issue for Tasmania.

[26] Goanna Energy Consulting Pty Ltd, *Tasmanian Energy Security Taskforce, Energy Crisis Market Impact Study, Energy Crisis, or Risk Management Crisis?,* 16 September, 2016.

They also served to shine a light on the important role that on-island generation (hydro-electric, thermal and renewable), interconnection to the NEM, Hydro Tasmania's interregional trading opportunities and the wholesale market play in shaping Tasmania's energy security.

The current wholesale market structure in Tasmania could pose some threat to energy security. The recent threat to energy security highlighted possible deficiencies in present arrangements, including conflicts or tensions in Hydro Tasmania's energy security (water management) and commercial roles.

There were suggestions that Hydro Tasmania had placed a desire to maximise its revenues during the carbon price period and thereafter a desire to generate LGC's from above "Baseline" dispatch of Hydro generation, on top of the need for prudent water management.

Its approach to the TVPS, which can play an important role in energy security, was also called into question, especially in its attempted sale of the CCGT communicated in its media release of 12th August 2015,[27] just seven weeks before "hitting the brakes" and going to zero export to Victoria on 8th October 2015. This required a reversal of its decision to sell as the unit was restored to operations to assist with energy security (having been partially dismantled).

In response to the energy security threats of 2015/16, the Tasmanian Government formed the TEST, the final report of which was released in September 2017.[28] The TEST made important recommendations aimed at improving Tasmania's energy security arrangements so that (hopefully) a repeat of the threats of 2015/16 can be either avoided or better managed (should they occur). This includes some separation of energy security from Hydro Tasmania's commercial operations, where there was clear potential for conflicts of interest to emerge. The TEST clearly recognised the important role that a competitive electricity market can play in ensuring secure supplies of energy and recognised Tasmania's gaps in this area, but did not recommend any remedial actions. Their recommendations also make clear the important role of more prudent storage management, Basslink's availability, the continued presence of the TVPS and need to negotiate new gas supply and transportation arrangements for the TVPS in a timely way in ensuring that Tasmania's electricity supplies remain secure in future. It also pointed to the desirability of having more on-island generation available especially through new entrant renewable generation.

However, the TEST has not presented any estimates of what its recommendations will cost, including their impact on electricity prices, although it did recognise that its recommendations would have a cost and canvassed the need for industry to pay for some of them (which could be passed on to consumers). The Tasmanian Government has either supported or provided in-principle support for all 36 of the TEST's recommendations, with a number of the recommendations having either been implemented or close to being implemented.[29]

2.3 KEY POINTS

Key points to emerge from this Chapter include:

[27] Hydro Tasmania, "*Changes to operation of Tamar Valley Power Station*", Media Release, 12 August 2015.
[28] See https://www.stategrowth.tas.gov.au/energy_and_resources/tasmanian_energy_security_taskforce/final_report.
[29] The Hon. Matthew Groom, Minister for Energy, 'The Tasmanian Energy Security Taskforce Report', *Media Release*, 16 August 2017.

- The Tasmanian wholesale electricity market is different to the rest of the NEM. It is a far more concentrated and regulated market with competition all but absent.
- Electricity generation in Tasmania is highly concentrated in the hands of Hydro Tasmania, which owns or controls 96 per cent of capacity, making it by far-and-away the most concentrated wholesale market in the NEM.
- The Expert Panel looking into the Tasmanian electricity industry described Hydro Tasmania as having a high degree of latent market power, and found that this was sufficient to deter new entry into Tasmania, especially by the larger mainland retailers, who are critical to introducing retail competition into Tasmania.
- Wholesale electricity market shortcomings have essentially left the Tasmanian wholesale and retail electricity markets devoid of both competition and any prospects of competition emerging due to a lack of any interest from larger inter-state retailers. This has placed FRC in a strictly 'Clayton's choice' framework of no material choice for small business.
- Consequently, small businesses have no access to competitive pricing and miss out on the benefits of competition enjoyed by their peers elsewhere in the NEM, including price discounting, albeit in an imperfect setting which is restricting some of the benefits.
- There are some positive aspects to wholesale market regulation in Tasmania, however, it has failed to deliver its main objective for small business of encouraging retail competition and therefore must be judged a failure.
- Moving beyond the current regulatory approach to the Tasmanian wholesale market is critical to improving the opportunities for competition in the Tasmanian electricity market (wholesale and retail).
- The option of either selling the 'gentraders' to potential new entrants or of going a step further and separating and selling Hydro Tasmania's physical and trading functions as three separate businesses is the approach most likely to stimulate new entry. However, as discussed in the following Chapter, current wholesale price pressures in the NEM (including Tasmania) and their damaging impact on retail prices make the immediate environment for competitive reform more challenging.
- In the longer term, structural reform of Tasmania's wholesale electricity market is still likely to bring the biggest and most sustainable gains to small business.
- Tasmanian small businesses could derive some wholesale price benefits from proposals such as a second Bass Strait interconnector and expansion of Hydro Tasmania's hydro-electric capacity, but these seem aimed more at exporting electricity from Tasmania and may also pose some price risks for small business due to their uncertain costs and market impacts.
- Energy security is important to Tasmanian small businesses given their heavy reliance on electricity. Energy security also has important impacts on the wholesale market and *vice versa*. A poor approach to energy security imposes costs and risks on the wholesale market which can impact prices. An illustration of this was the energy security threats to Tasmania in 2015/16 resulting from the combined impacts of drought conditions that left storages low, a prolonged outage of Basslink, the need to restore the TVPS to full operations and less than prudent management of energy security by Hydro Tasmania. Spot prices increased very significantly as a result, although the Government committed to no price increases and some of the costs of the response were absorbed by Hydro Tasmania. This has resulted in 36 recommended changes to Tasmania's energy security arrangements which the Government has either supported or provided in-principle support for.

3

Tasmanian Wholesale Electricity Prices

- Description of Wholesale Electricity Prices
- Historical Wholesale Electricity Prices – Tasmania & the NEM
- Recent Wholesale Prices
- Forward Market Prices
- Causes of 2017 Record Spot Prices
- Wholesale Price Outlook
- Regulation of Tasmanian Wholesale Prices
- Impact of Tasmanian Wholesale Prices on Retail Prices for Small Business
- Recent Changes in Tasmanian Wholesale Price Regulation
- Key Points

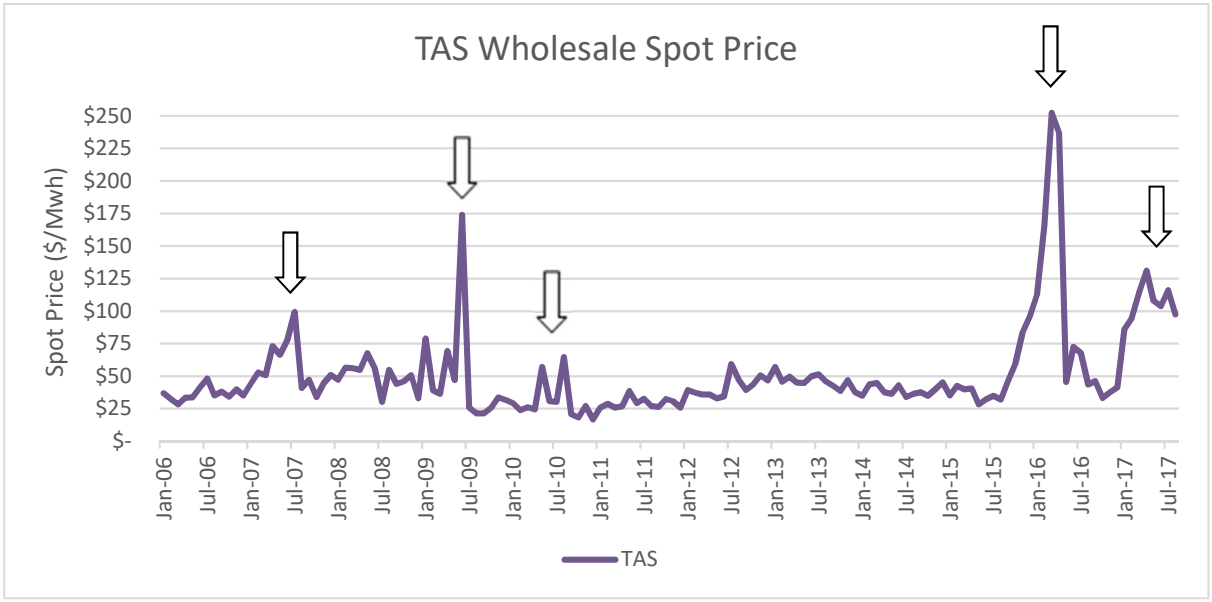
3 Tasmanian Wholesale Electricity Prices

This Chapter examines Tasmanian wholesale electricity prices. It begins with a description of Tasmanian wholesale prices and their historical volatility, examines their proximity to Victorian prices, considers current and future prices and the wholesale price outlook (including the main influences on these prices) before discussing the regulation of Tasmanian wholesale prices and recent changes in Government policy on wholesale prices.

3.1 Description of Wholesale Electricity Prices

The Tasmania wholesale electricity price is characterised by the numerous influences detailed in the previous chapter. The principal influence being Hydro Tasmania's latent market power, which has historically allowed them to heavily impact spot prices and influence Basslink flows to maximise arbitrage opportunities. The resultant unpredictable and volatile behaviour of the Tasmanian wholesale electricity market can be seen in Figure 6 below where, repeatedly over the past decade, there have been dramatic and short-term price fluctuations.

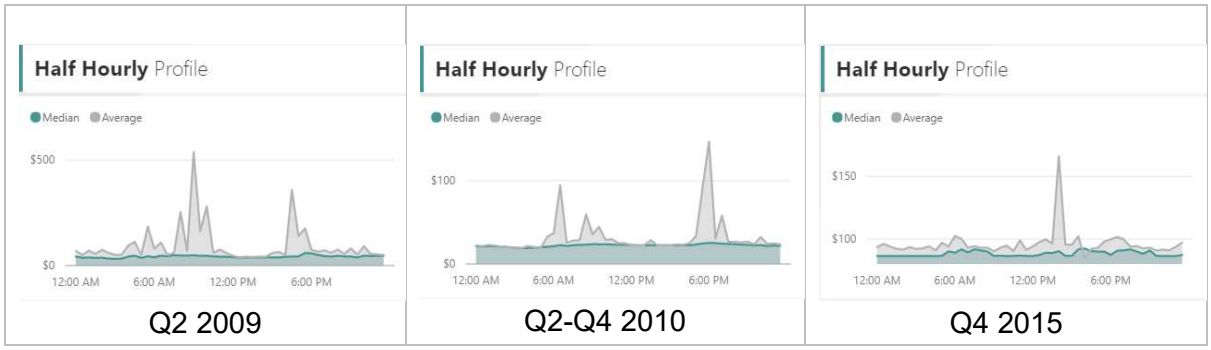
Figure 6: Tasmanian Wholesale Spot Price 2006-2017



Source: SavvyPlus Consulting BI

This unpredictable nature of the Tasmanian wholesale market was evident in instances of particularly volatile periods during 2001, 2009, 2010, 2015/16 and 2017 (shown by the arrows in Figure 6), where very sudden surges in the wholesale spot price were observed. The particularly volatile and singular nature of these events can be seen in the deviation of the average half hourly spot price from the median price for that period. Figure 7 shows examples of the significant volatility for a few of the quarters in the history of Tasmanian spot prices.

Figure 7: Tasmania Half Hourly Wholesale Price Profile: 2009, 2010 and 2015.



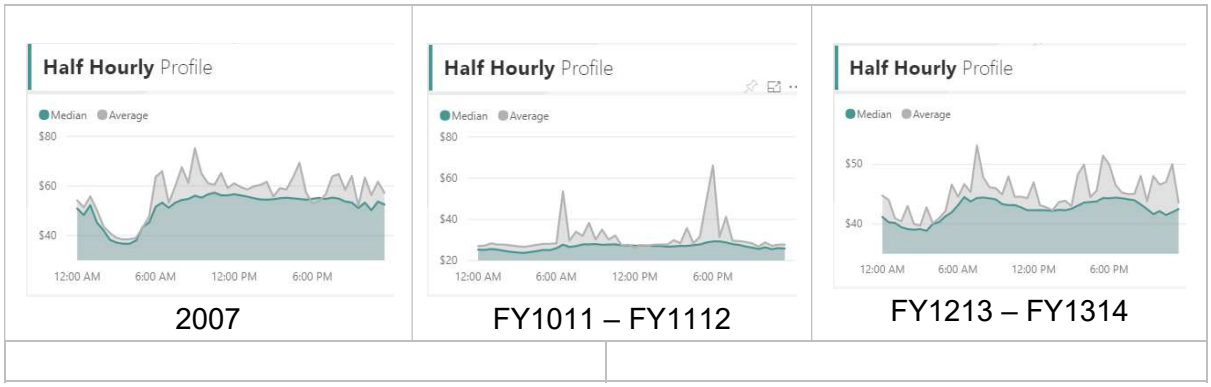
Source: SavvyPlus Consulting BI

As shown in Figure 8, more sustained price increases can be seen during periods of uncertainty surrounding future supply and pricing, as was the case in 2007/08 where drought conditions brought Hydro Tasmania's water storages to low levels. In the first half of 2007, drought conditions were experienced across the NEM, so there was a sustained price elevation to the underlying price, caused by the closure of water-cooled base load generators in Queensland, and the fear of lack of water for other water-cooled coal-fired plants, plus Snowy Hydro being concerned about water reserves. After 1 July 2007, strategic behaviour of key generation players changed and the drought conditions eased, leading to a softening of the spot price by year end.

In July 2012, the Carbon Tax was introduced and remained in place until it was repealed in July 2014. During this Carbon Tax period, the spot price experienced an upward shift in the underlying price which remained in place for the carbon impacted period (see Figure 8).

More recently over the past year, we have seen a similar steady rise in the spot price (see Figure 8) following the announcement of recent closures, including significantly the Hazelwood plant, the substantial reduction in energy imports across the Basslink, increased utilisation of more expensive gas-fired generation, a revaluation of the gas price and other factors that are looked at more closely in Section 3.5.

Figure 8: Tasmania Half Hourly Wholesale Price Profile: 2007, 2010-2012, 2012-14, 2016/17.

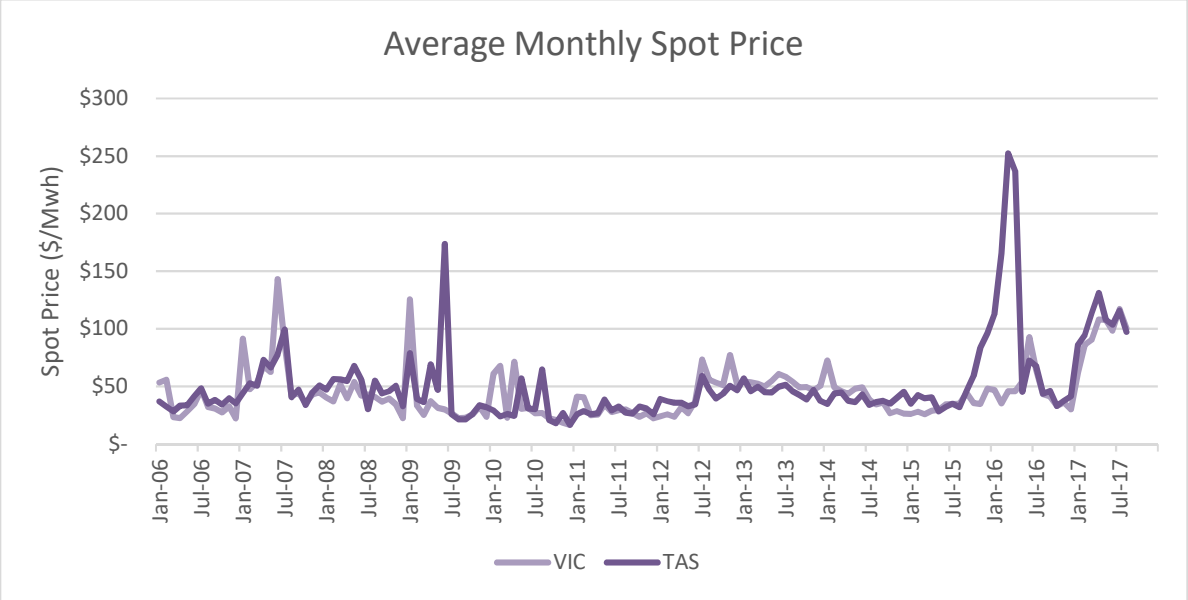


Source: SavvyPlus Consulting BI

3.2 Historical Prices and Trends - Tasmania and the NEM

Typically, the general trend of the Tasmania wholesale spot price follows that of the rest of the NEM and in particular its closest neighbour, Victoria. The spot prices differ between the two regions either due to line losses across Basslink, or when Basslink flow is constrained in either direction, and the local generation sets the spot price unfettered by competition from the constrained region. The trace of the spot price of Tasmania and Victoria from the time Tasmania entered the NEM is shown below in Figure 9.

Figure 9: Tasmanian and Victorian Average Monthly Spot Prices



Source: SavvyPlus Consulting BI

As shown in Table 2, since 2006 when Tasmania entered the NEM, the statistical correlation between Tasmanian and Victorian spot prices when the two regions are connected is 63 per cent (excluding the period of the Basslink failure). This correlation is lower than the correlation between other neighbouring regions in the NEM but is still strong. Looking at the other regions, as expected, they all show a stronger correlation with regions with a shared interconnector.

For 2017 the panorama has changed, with the spot price in the southern States of South Australia, Victoria and Tasmania breaking away from the northern states, which can be seen by the stronger

correlation between Tasmania and Victoria, and negative correlation between both Tasmania and Victoria with the two most northern states (see Table 3).

Table 2: Statistical Correlation of NEM Regions, January 2006 to July 2017

	TAS	VIC	SA	NSW	QLD
TAS	100%	63%	43%	47%	43%
VIC	63%	100%	65%	71%	53%
SA	43%	65%	100%	51%	44%
NSW	47%	71%	51%	100%	72%
QLD	43%	53%	44%	72%	100%

Source: SavvyPlus Consulting BI

Table 3: Statistical Correlation of NEM Regions, Jan-17 to Jul-17

	TAS	VIC	SA	NSW	QLD
TAS	100%	73%	11%	-15%	-55%
VIC	73%	100%	12%	-11%	-71%
SA	11%	12%	100%	90%	49%
NSW	-15%	-11%	90%	100%	69%
QLD	-55%	-71%	49%	69%	100%

Source: SavvyPlus Consulting BI

The pie charts in Figure 10 below represent the percentage of time that interconnectors were constrained. The significant increase in times the Vic-NSW interconnector was constrained in 2017 supports the evidence above that the southern States are breaking away from the northern States more often due to the market changes, including Hazelwood's closure. At the same time, the interconnectors linking Victoria with South Australia, and Tasmania and Victoria have been constrained less. In a similar fashion, the NSW-Qld interconnector has been constrained less in 2017 than in previous years.

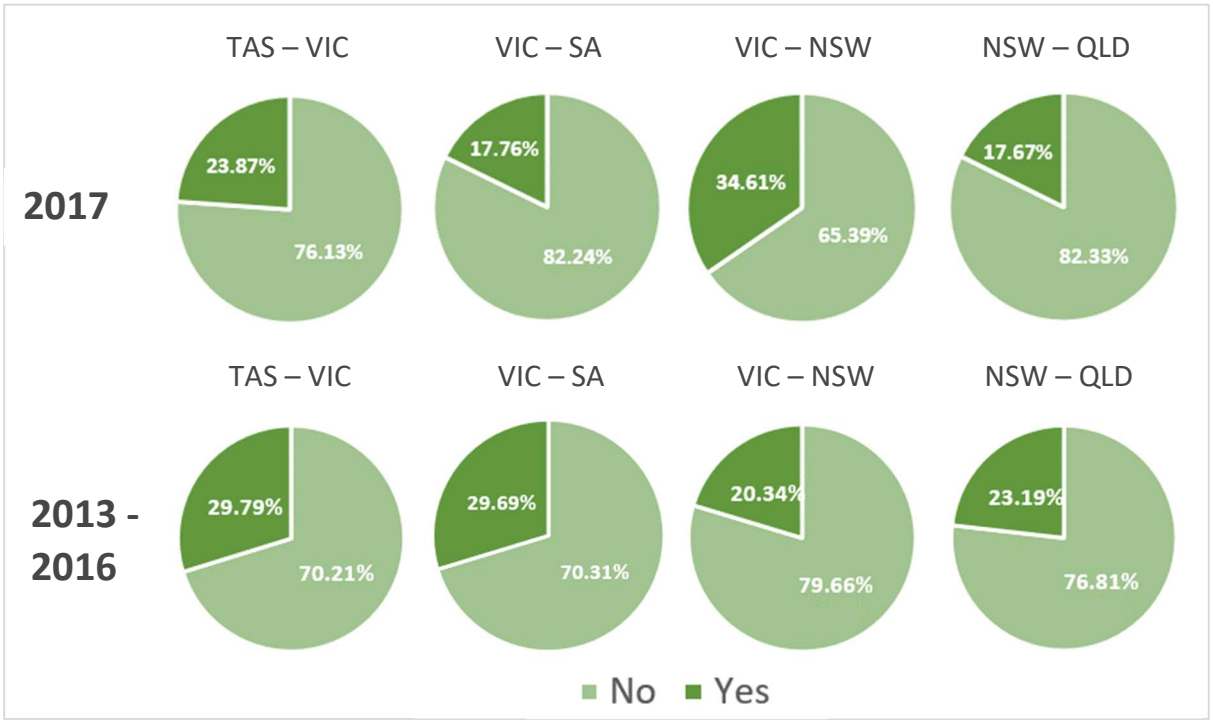
Instances where the Tasmanian spot price has deviated sharply from the Victorian Spot Price can be seen in Figure 11 below displaying the deviation between the two Regional spot prices (with prices shown from a Tasmanian perspective).

The factors affecting price variation are numerous, but as the AER acknowledges in its response to the Expert Panel's Issues Paper reviewing the Tasmanian electricity sector[30], Hydro Tasmania's reduction in non-scheduled generation during periods of high demand, with a cutback in the amount of low-priced generation capacity offered and an ensuing dispatch of high-priced generation, has

[30] AER, *Response to Electricity Supply Industry Expert Panel's Issues Paper*, 15 August 2011.

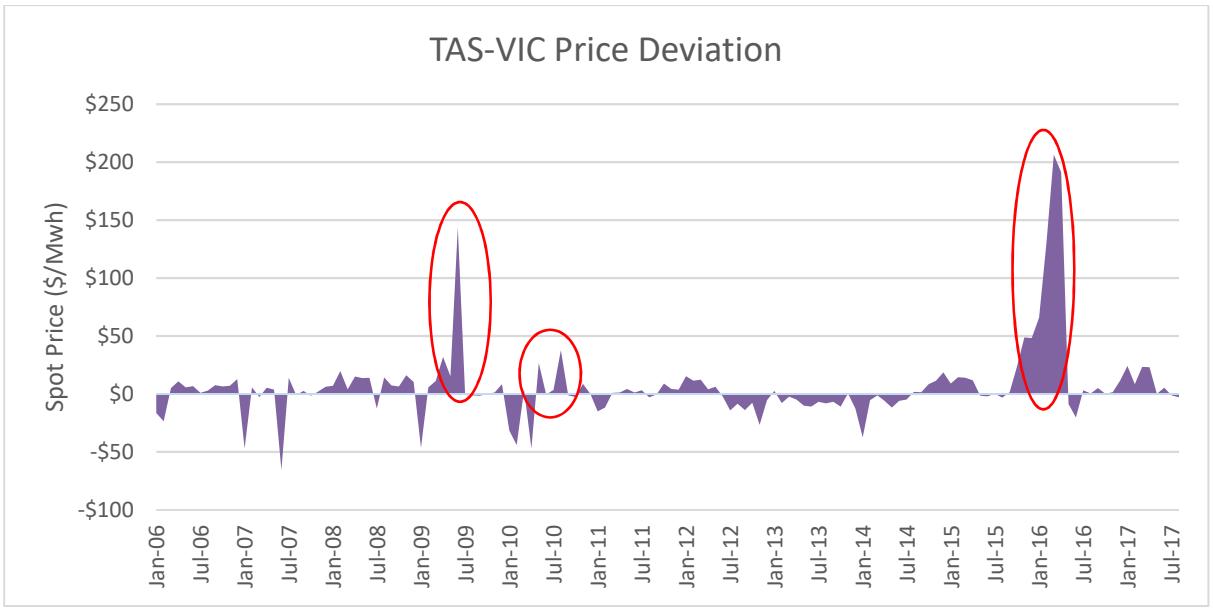
contributed to such periods of high spot prices. In the same paper, the AER points out that there are numerous examples of where Hydro Tasmania has offered higher prices during the outages experienced by its competitors, as was the case in the TVPS outages of May 2010.[31]

Figure 10: Time the Interconnectors were Constrained



Source: SavvyPlus Consulting BI

Figure 11: Relative Difference between TAS and VIC Spot Prices



[31] The TVPS was managed by Aurora Energy at this time through a fully owned subsidiary company "AETV Power". On 1 June 2013, the State Government transferred the ownership of the power station from Aurora Energy to Hydro Tasmania.

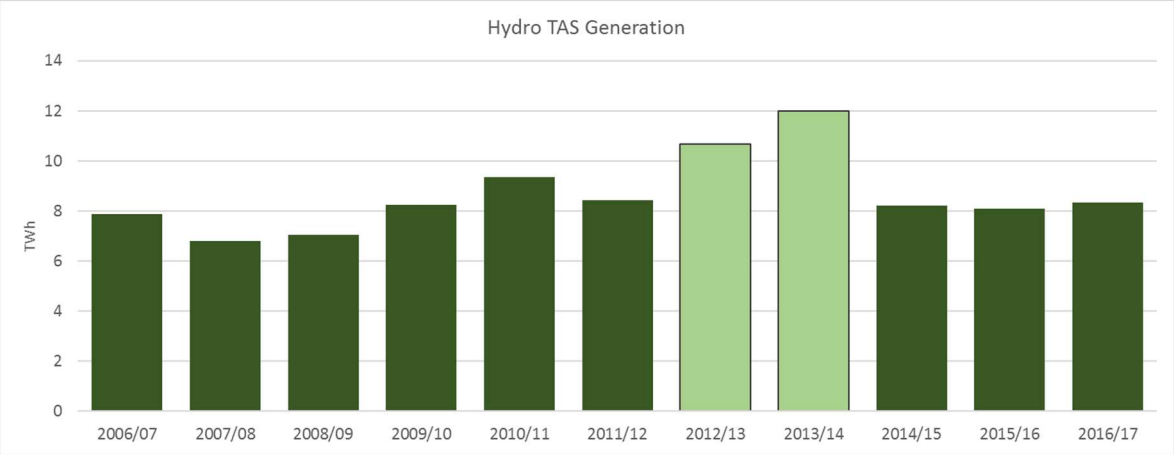
Source: SavvyPlus Consulting BI

The most recent and significant of these events was prior to Basslink failing in late December 2015, and then during the interconnector outage which ended in June 2016. In the case of the period before the Basslink failure, Hydro Tasmania water storage levels had been depleted significantly to barely above the lower revised minimum target storage level of 25 per cent. The low storage level at December 2015 was the result of:

1. Two years of exporting a record amount of energy across Basslink to the higher priced Victorian region during the Carbon Tax years without sufficient storage recovery time; and
2. In our view, poor water storage management in the period late April 2015 to September 2015, which was subject to a separate study undertaken by Goanna Energy in September 2016[32], which concluded that the risk management practices of Hydro Tasmania were questionable.

Figure 12 below shows the annual generation of Hydro Tasmania grouped by financial year, with the Carbon Tax years marked (by the lighter bars), which demonstrates the increased energy generated by Hydro Tasmania from its hydro stations.

Figure 12: Hydro Tasmania Annual Generation 2006/07 to 2016/17



Source: SavvyPlus Consulting BI

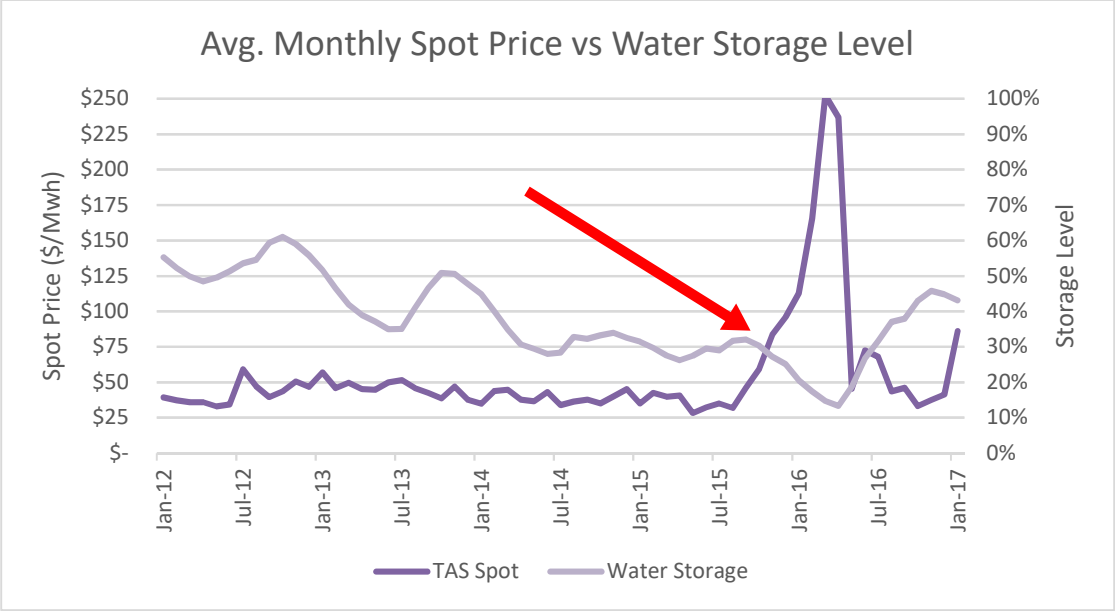
Figure 13 shows the monthly spot prices and the corresponding water storage levels. The impact of declines in storage levels on rising spot prices is particularly evident for 2015/16 (see arrow in chart). The increase in spot prices in 2017 has been mainly driven by non-hydrological factors (see Section 3.5).

Leading up to the failure of the Basslink connector, Hydro Tasmania was already relying heavily on energy imported from Victoria (see Figure 14 especially the circled area) because of the record low spring inflows.[33] By the time Basslink was restored in June 2016, water storage had reached a low of 12.8 per cent in April 2016 with spot prices reaching a record high the month before.

[32] See Goanna Energy, *TEST Energy Crisis Market Impact Study*, 16 September 2016.

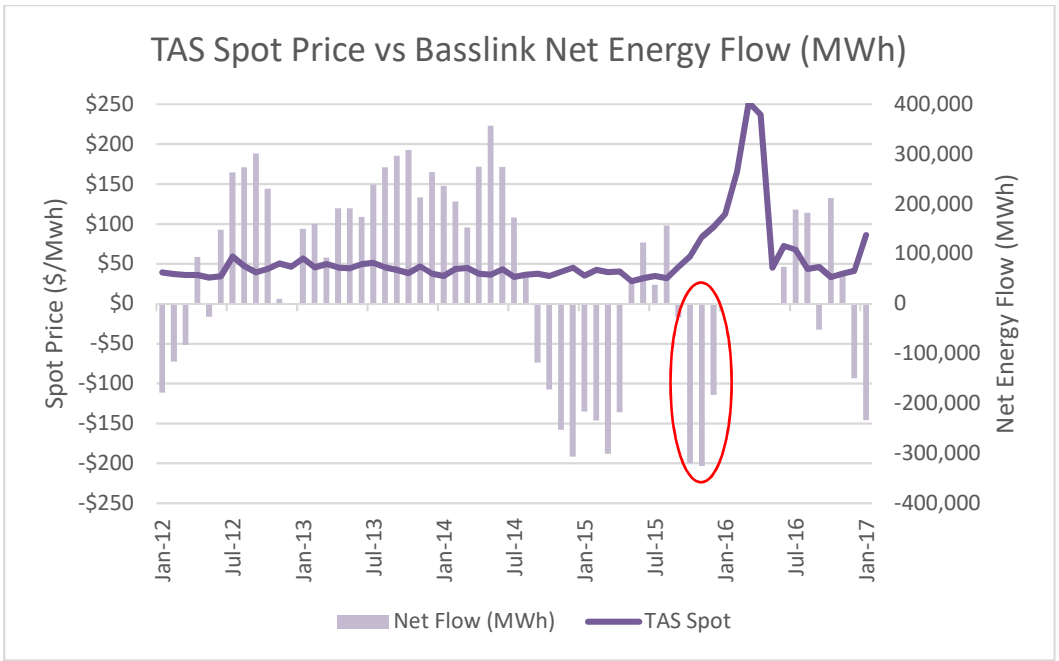
[33] "In Spring last year [2015] Tasmania experienced the lowest rainfall in over 100 years of recorded history. History proves that the spring dry was worse than a one in 100 year event. The inflows to the Hydro Dams

Figure 13: Tasmanian Average Monthly Spot Price vs Hydro Tasmania Water Storage Levels



Source: SavvyPlus Consulting BI

Figure 14: Tasmanian Spot Price versus Basslink Net Flow from Tasmania to Victoria.



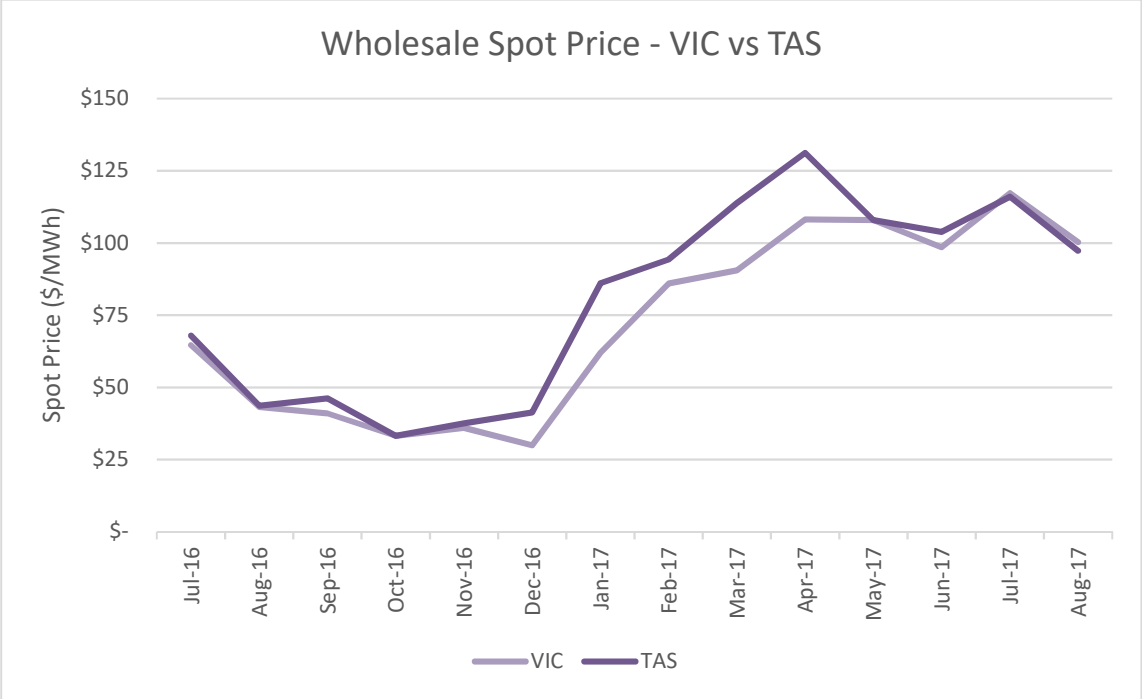
Source: SavvyPlus Consulting BI

during spring were also the lowest in Hydro's records. In fact, the inflows were not just the lowest on record, they were less than half the previous record low in the last 30 years of Hydro records", The Hon. Matthew Groom, Minister for Energy, *Ministerial Statement on Energy Security*, 8 March 2016 (our parenthesis).

3.3 Recent Prices

Since early this year, wholesale spot prices have risen sharply throughout the NEM due to a range of factors explored in Section 3.5. Figure 15 below traces the monthly average spot prices for Tasmania and Victoria since Basslink's restoration.

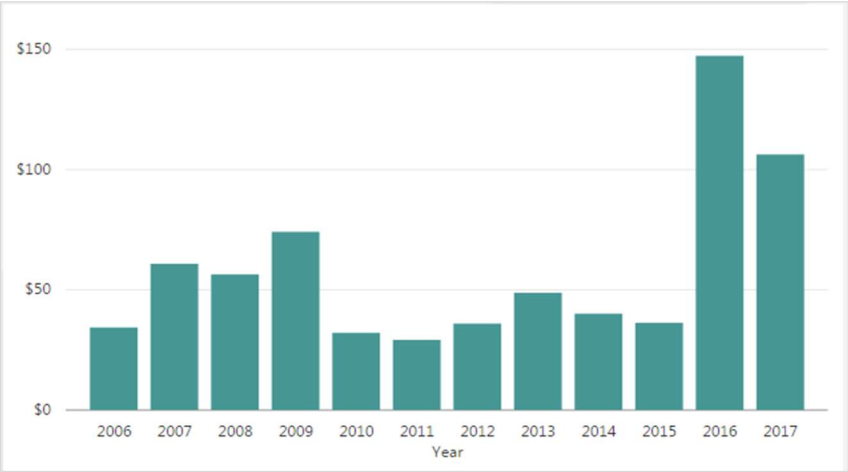
Figure 15: Recent Tasmanian and Victorian Electricity Spot Prices



Source: SavvyPlus Consulting BI

Average calendar year spot prices since Tasmania joined the NEM are shown in Figure 16. Except for when Basslink was out-of-service from late December 2015 to May 2016, the average price in 2017 has been the highest on record in Tasmania.

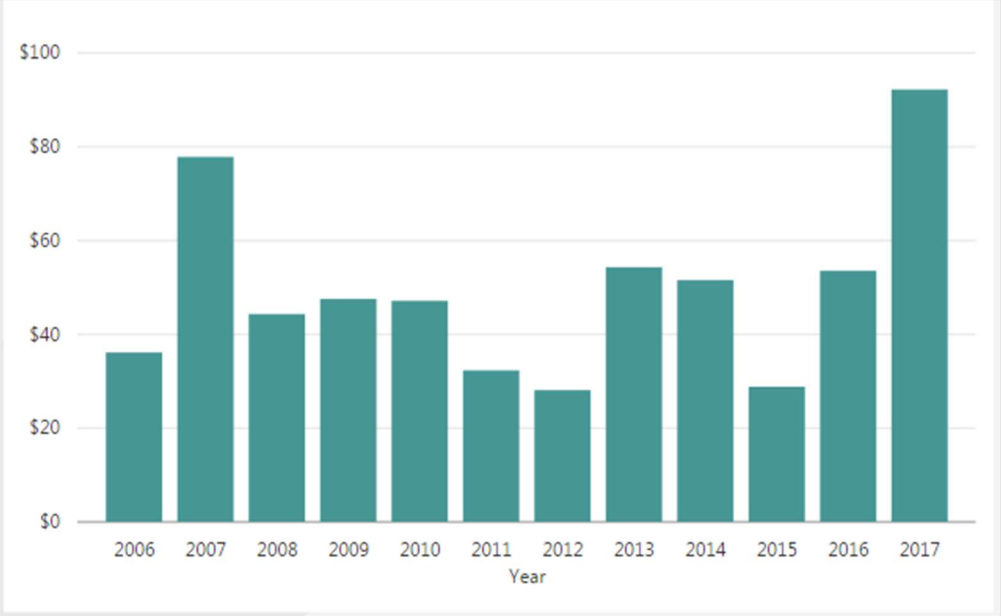
Figure 16: Tasmanian Average Annual Spot Price for Q1 and Q2 Since 2006



Source: SavvyPlus Consulting BI

Repeating the analysis for Victoria (see Figure 17), 2017 has been the highest average calendar year spot price since Tasmania joined the NEM; and indeed, was the highest on record since the commencement of the NEM.

Figure 17: Victorian Spot Price Q1 and Q2 Since 2006

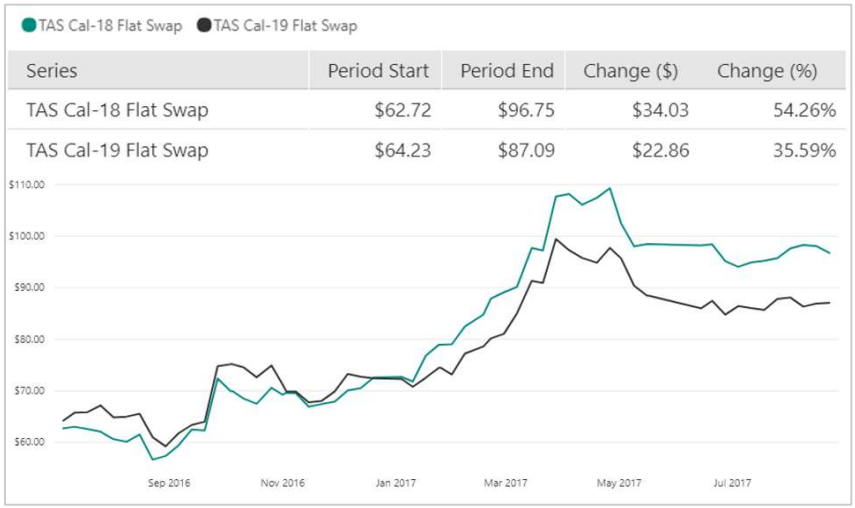


Source: SavvyPlus Consulting BI

3.4 Forward Market Prices

Wholesale forward prices in Tasmania for the calendar year 2018 (Cal-18) increased significantly from 2016 levels and reached a high of around $109/MWh in April 2017 (see Figure 18). Whilst they have fallen somewhat since then, they remain historically high at around $96/MWh. The forward price for Cal-19 Flat Swaps remains similarly at a high level, albeit slightly lower at $87/MWh.

Figure 18: Wholesale Forward Prices – Tasmania



Series	Period Start	Period End	Change ($)	Change (%)
TAS Cal-18 Flat Swap	$62.72	$96.75	$34.03	54.26%
TAS Cal-19 Flat Swap	$64.23	$87.09	$22.86	35.59%

Source: SavvyPlus Consulting BI

Wholesale forward prices in Victoria are comparable, although higher for Cal-18 (see Figure 19). However, Victorian forward prices for Cal-19 did not peak as high as Tasmania and have a slightly softer outlook at $84/MWh.

Figure 19: Wholesale Forward Prices – Victoria

Source: SavvyPlus Consulting BI

3.5 Causes of the Record 2017 Spot Prices

In our view, the main causes for the elevation of spot prices has been a range of factors which are discussed in the following sections. Some of these factors are common across the NEM, which reflects that Tasmanian prices are a function of national factors, as well as local ones.

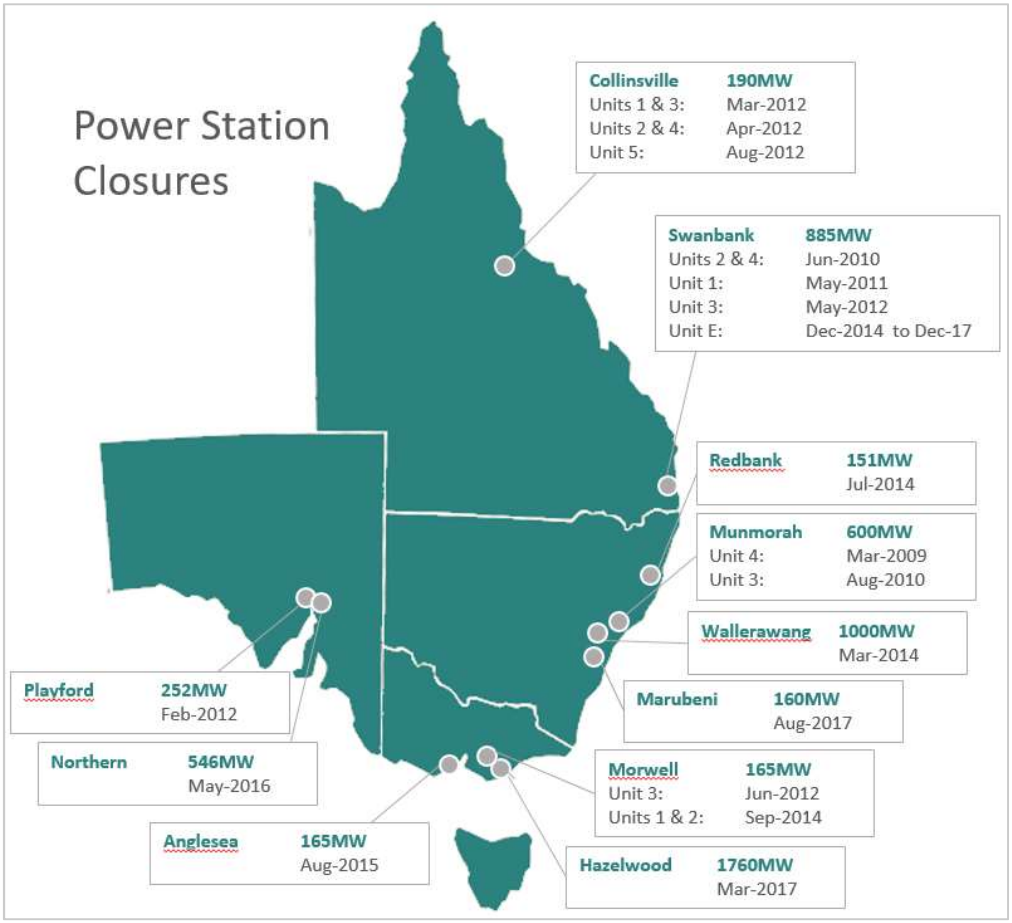
3.5.1 Baseload Closures

One of the principal contributors to the rise in wholesale electricity prices across the NEM has been the many coal and gas-fired plant closures, with almost 6,000 MW closed down in the last decade. The associated price rises were particularly felt by Victoria and Tasmania following the announcement of the closure of the Hazelwood power station during the last week of March 2017, but which was speculated on back as early as late September 2016.

A map of NEM power station closures is shown in Figure 20.

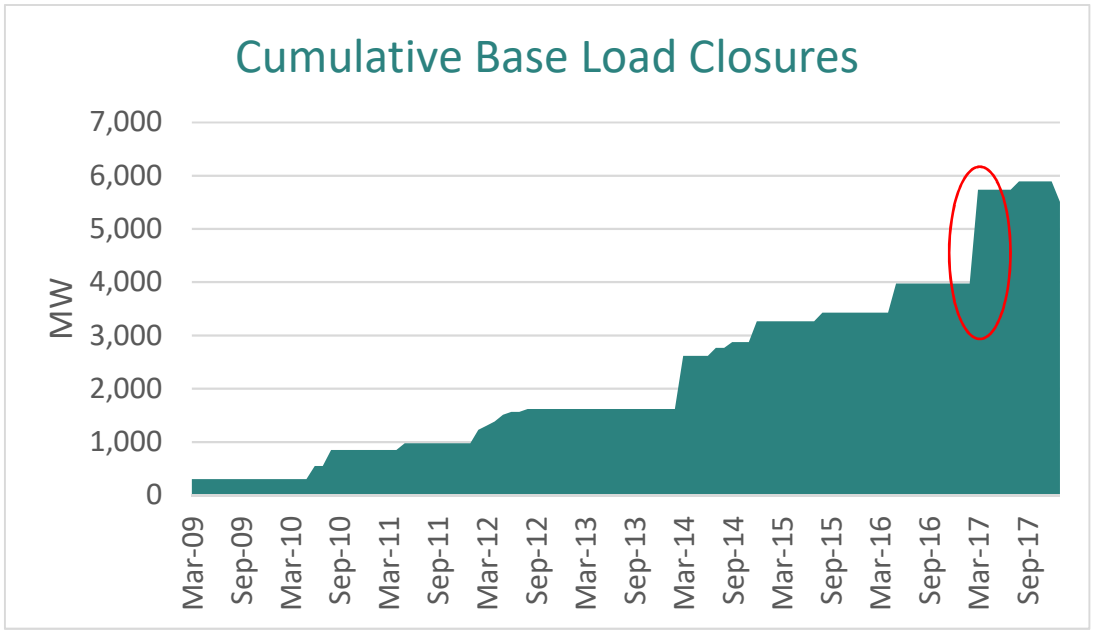
The significance of the Hazelwood power station closure can be appreciated in the graph below showing the accumulated base load closures across the NEM (see area circled in Figure 21).

Figure 20: Map of NEM Power Station Closures



Source: SavvyPlus Consulting BI

Figure 21: Cumulative Base Load Closures Across the NEM

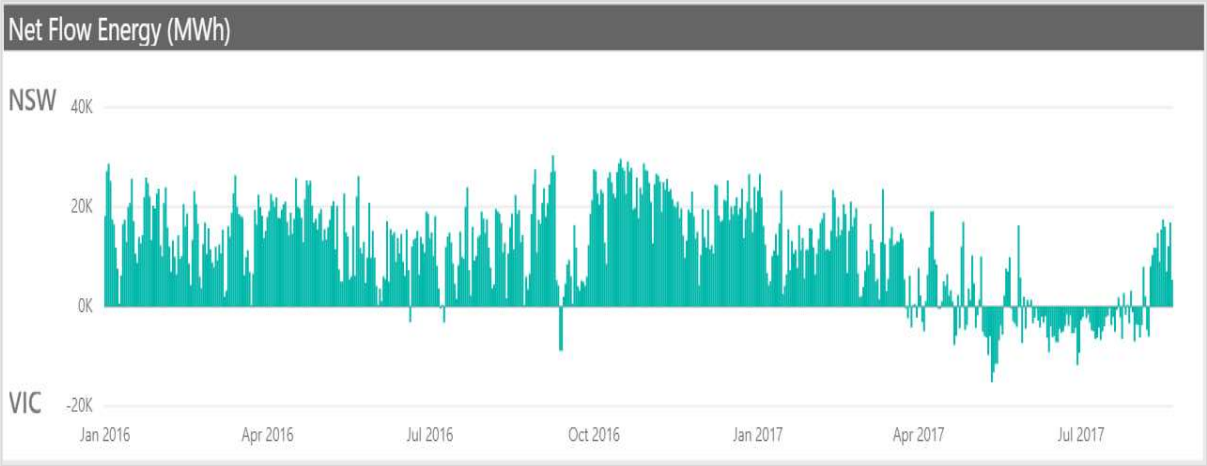


Source: SavvyPlus Consulting BI

3.5.2 Interconnectors Flows

With the closure of Hazelwood Power Station, the energy flows between the regions have been impacted. Up until the closure of Hazelwood in March 2017, Victoria has been a net exporter of energy to NSW, but from that point forward the VIC-NSW interconnector has imported energy into Victoria far more frequently (see Figure 22).

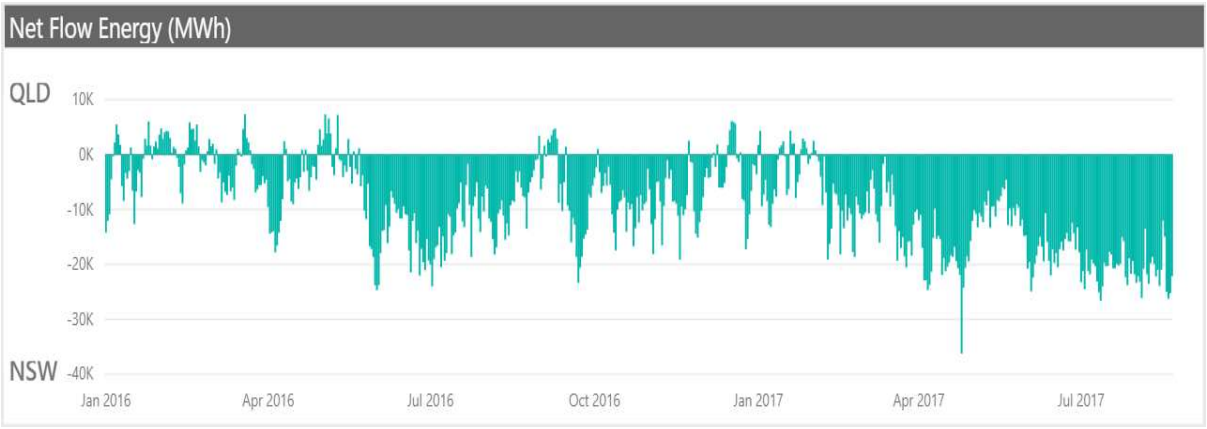
Figure 22: VIC-NSW Interconnector Net Energy Flow



Source: SavvyPlus Consulting BI

Consequentially, the net flow from Queensland to NSW has increased to compensate for the reduction in energy imported to NSW from Victoria (see Figure 23). It is likely that the situation might be exacerbated by 2022 when the Liddell power station in NSW shuts down, losing a further 2,000MW of capacity.

Figure 23: NSW-QLD Interconnector Net Energy Flow

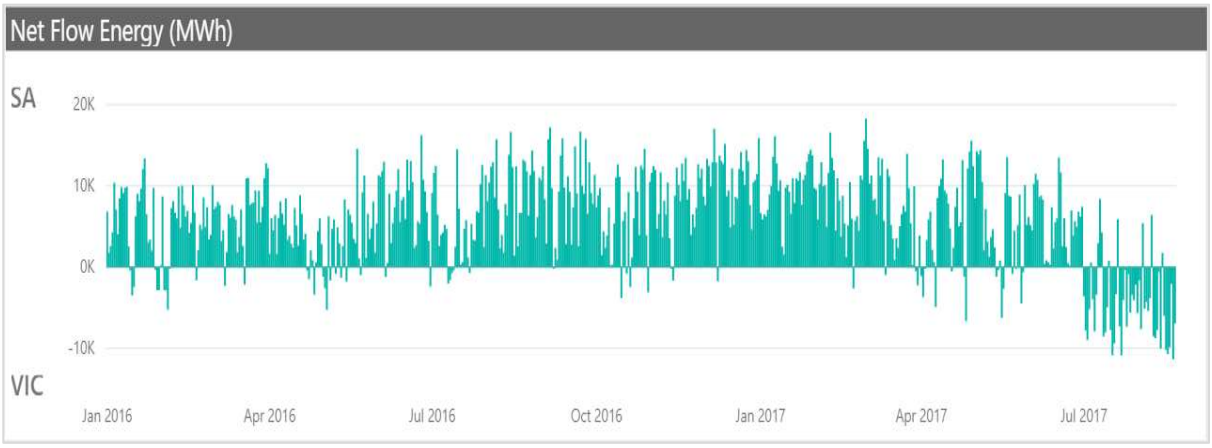


Source: SavvyPlus Consulting BI

From Figure 24 and Figure 25 below it can be seen that there was a reduction in the net energy flow from Victoria to South Australia following the closure of the Hazelwood power station. More recently, since July 2017, Victoria has been a net importer of energy from South Australia, as a result

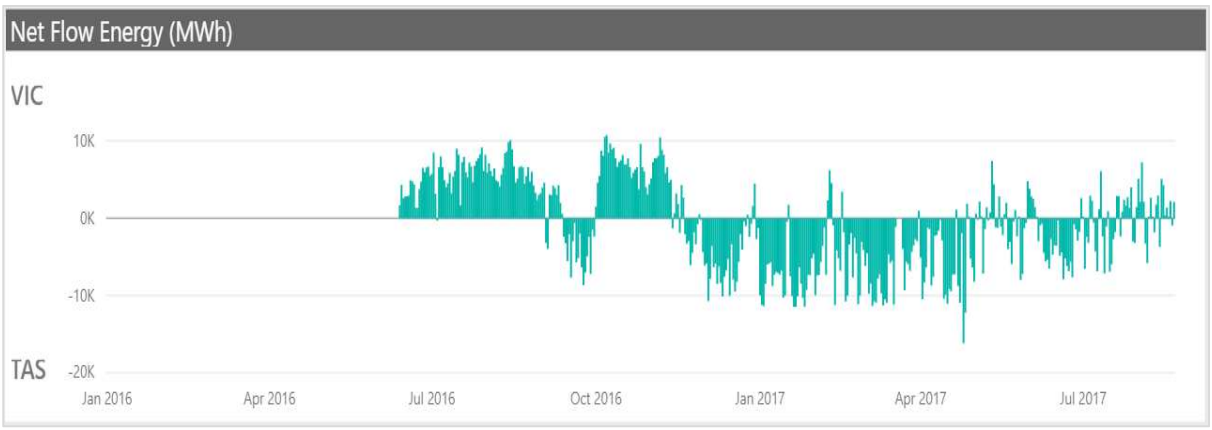
of the constraining of the VIC-NSW and VIC-TAS interconnectors, and significant wind generation in South Australia.

Figure 24: VIC-SA Interconnector Net Energy Flow



Source: SavvyPlus Consulting BI

Figure 25: TAS-VIC Interconnector Net Energy Flow

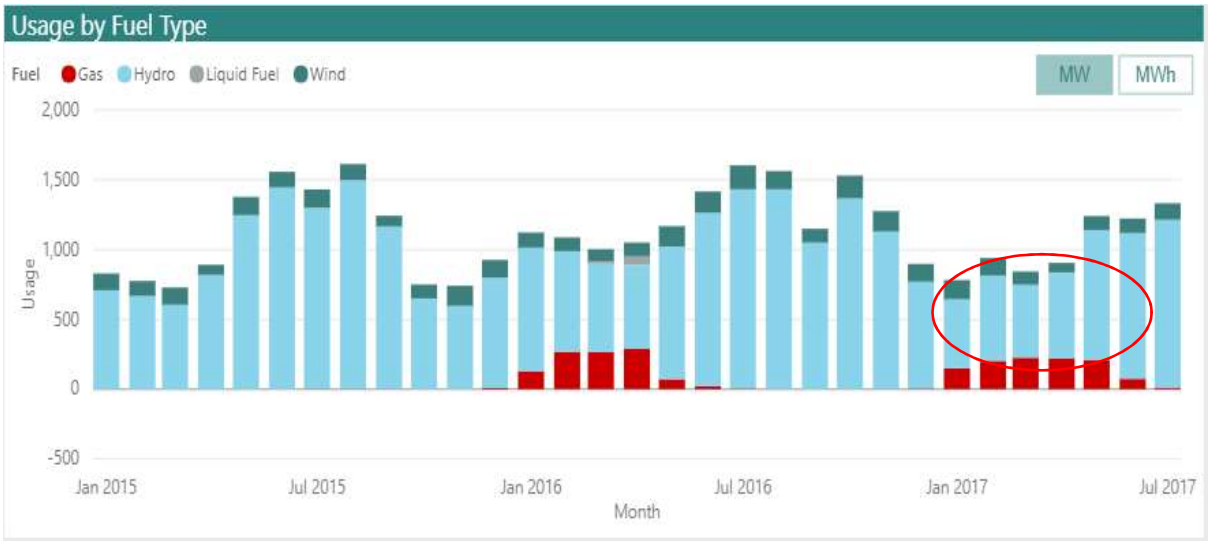


Source: SavvyPlus Consulting BI

3.5.3 Strategic Behaviour of Generators

From January 2017, Hydro Tasmania has re-priced their hydro generation which was substituted by more expensive gas generation (see Figure 26). This trend turned around in May, which has contributed to a softening of the relative electricity spot prices.

Figure 26: Tasmanian Energy Generation by Fuel Type



Source: SavvyPlus Consulting BI

Snowy Hydro's Victorian generation followed a similar profile with a reduction in generation and the firing-up of gas generation over the January to April period (see circled areas in Figure 27). The 'tap' was turned back on at Snowy Hydro in May this year.

We are of the belief that during the second half of 2016, both Hydro Tasmania and Snowy Hydro ran hard in order to generate above the baseline energy levels required to earn LGCs under the RET. The sudden change in behaviour effective on 1 January 2017 reflects the commencement of a new LGC year when it is unlikely that both parties would have sufficient water reserves to run two consecutive LGC earning years.

Figure 27: Snowy Hydro Energy Generation by Fuel Type

Source: SavvyPlus Consulting BI

Recently, generators in Victoria and Tasmania have reduced low-priced capacity and replaced it with more expensive offers, making a significant impact on the spot price. Since the closure of the Hazelwood power station, Victoria has seen a substantial reduction in offers below $35/MWh and a corresponding increase in offers between $35-$350/MWh (see circled area in Figure 28).

Figure 28: Distribution of Generation Offers, Victoria

Source: SavvyPlus Consulting BI

From Figure 29 it can be seen that Tasmania saw an even more notable reduction in offers below $35/MWh, and corresponding increase in offers, particularly over $500/MWh.

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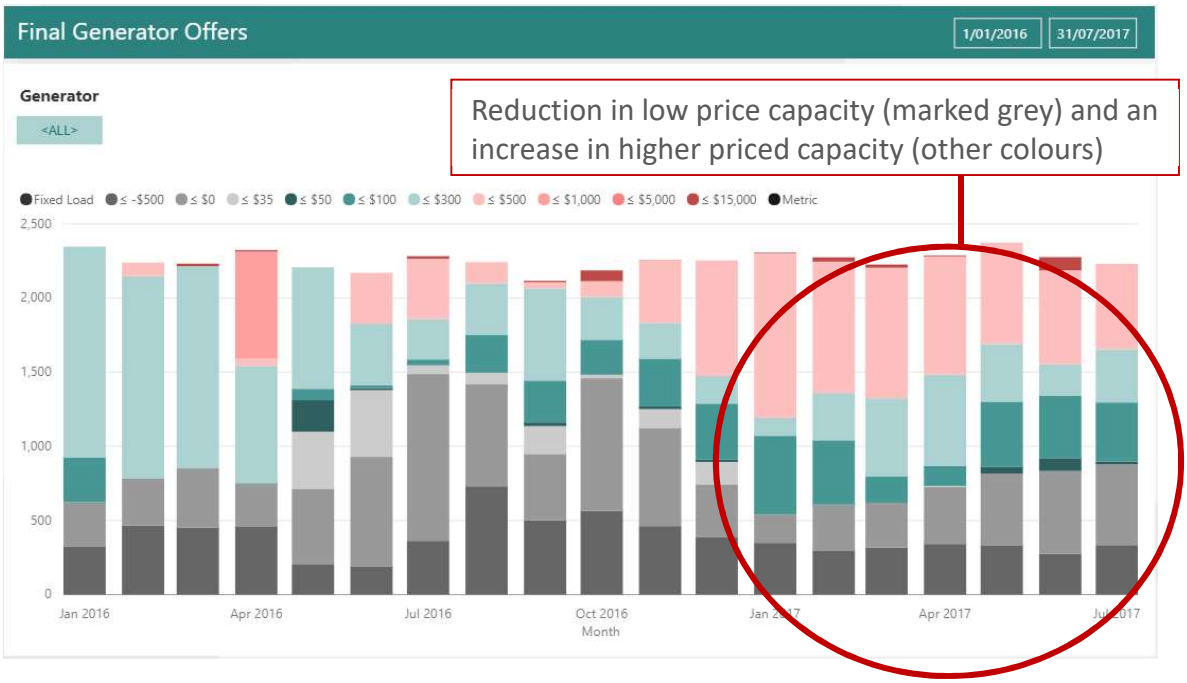
Figure 29: Distribution of Generation Offers for Tasmania



Source: SavvyPlus Consulting BI

3.5.4 Re-Valuation of Natural Gas Prices

The greater reliance on gas generation has aligned with a revaluation of the gas market on the east coast of Australia due to the connectivity with the global gas market via the LNG processing facilities at Gladstone in Queensland. In Victoria spot gas prices have risen from $3.22/GJ in January 2017 to $9.31/GJ in July 2017 (see Figure 30). The change in value has led to gas-fired generation making offers at higher prices than in previous years.

Queensland gas prices peaked at over $12/GJ in February 2017, after Origin increased the output from its APLNG project at Gladstone after announcing late last year that it plans to sell its LNG operation. Gas prices experienced an 8 per cent rise on the previous quarter and a 47 per cent increase on the same quarter last year.

Figure 30: Victorian Gas Spot Price

Source: SavvyPlus Consulting BI

Since then, Queensland gas prices have continued to soften to just below $7/GJ (see Figure 31) and look to continue the downward trend as reports emerge of coal seam gas being detected in the NSW and Victorian markets for the first time in years, following completion of LNG Plant Proving and other means of increasing domestic gas supply, such as the Federal Government's threatened use of export controls to divert gas to the domestic market.

More recently, the ACCC has issued a new report on the gas market that confirms a softening in domestic gas prices but also that they remain at the upper end of or above the ACCC's estimates of competitive gas prices. Box 8 below summarises its main points.

Figure 31: Brisbane Gas Spot Prices

Source: SavvyPlus Consulting BI

Box 8: ACCC Interim Report on Wholesale Gas Market - Main Findings

- Prices offered to large commercial and industrial (C&I) users have come down from a peak of $16/GJ in early 2017 to within an $8-12/GJ range since July 2017.
- Queensland's three LNG producers have delivered more gas into the domestic market, and prices have come down.
- Despite increased supply providing important short-term improvements in conditions, the market is still not operating as well as it could.
- Prices remain higher than they would in a well functioning and competitive market. The estimated benchmark prices for 2018 range between $5.87/GJ to $7.85/GJ (Queensland) and for the southern states, they range between $6.55/GJ (South Australia) and $9.93/GJ (Victoria).
- The picture for smaller C&I users remains bleak; generally facing higher prices than larger users with fewer competing offers.
- Some suppliers may be finding it difficult to obtain access on the key pipelines used to send gas south.
- Gas users in the southern states already face higher gas costs due to declining local production and significant limits on new exploration, with moratoria in place contributing to the shortages.

Source: ACCC, Gas Inquiry, 2017-2020, Interim Report, December 2017.

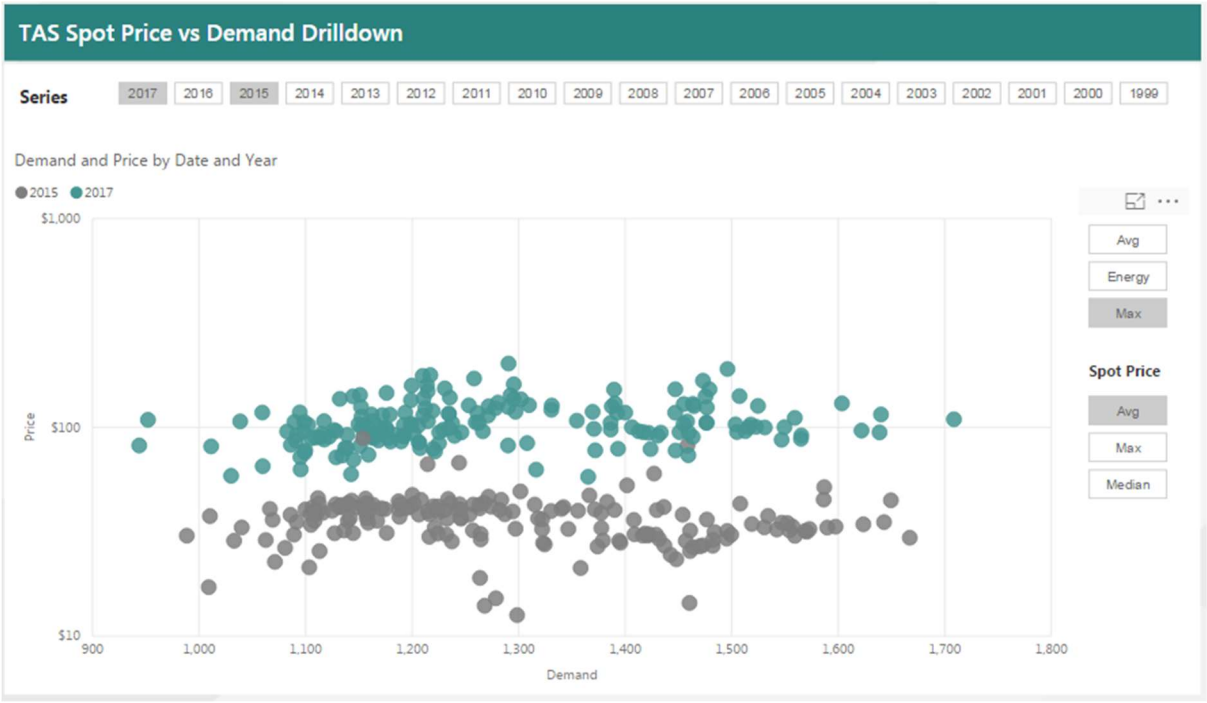
3.5.5 Demand

Demand increases in Qld, NSW and SA during January and February 2017 were a contributor to high spot prices, although this trend has not continued.

For Tasmania, the daily maximum demand for 2017 and 2015 were compared by plotting the daily maximum demand and daily energy against the log of the spot price to determine trends more easily. Basslink was not operational during the first half of 2016, hence this period was omitted from the analysis.

As shown in Figure 32, there was a single day (27 June 2017) when the maximum demand exceeded other days, but otherwise no notable maximum demand growth was evident to explain an elevation of spot prices. For the same demand, much higher prices were evident in 2017.

Figure 32: Tasmanian Daily Maximum Demand (2017 versus 2015)



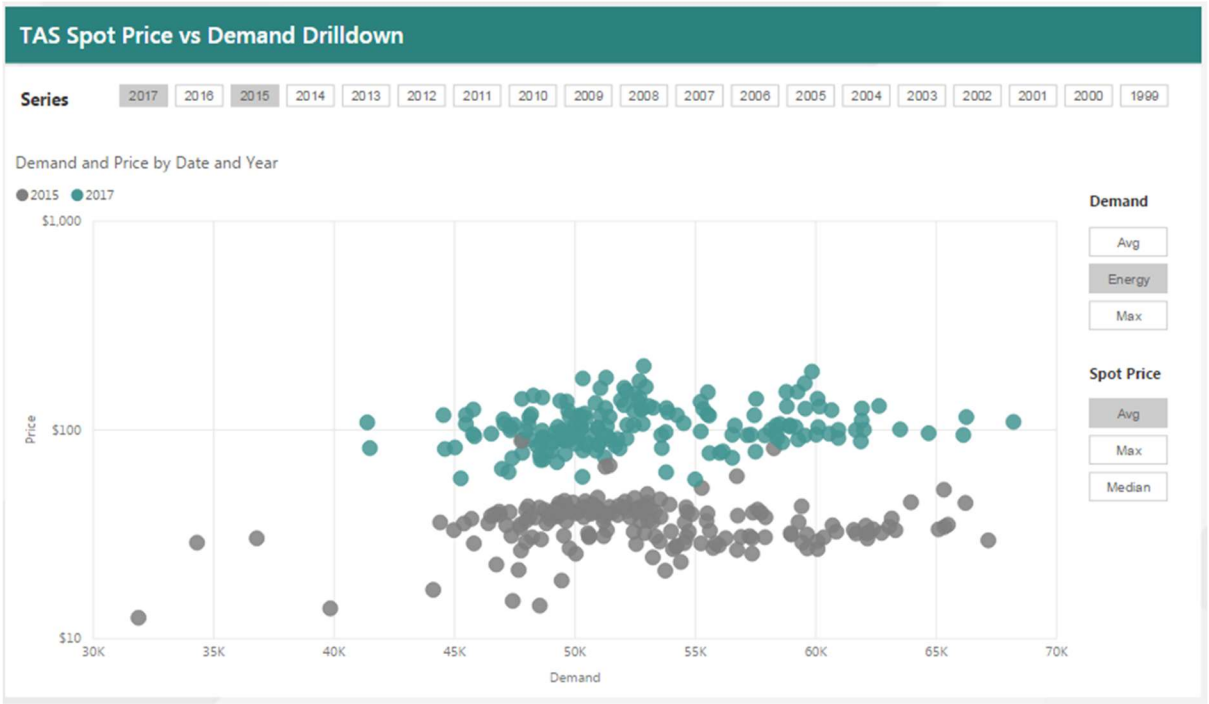
Source: SavvyPlus Consulting BI

The daily energy is compared in Figure 33 and shows that the very low usage levels in 2015 are not matched in 2017. Otherwise there does not appear to be a shift in daily energy notwithstanding a sustained elevation of prices.

Performing the same analysis of the daily energy for the other States (not shown graphically), the conclusions are:

1. Victorian daily energy has reduced over the last three years.
2. South Australia daily energy increased on three extreme days in February, but otherwise was very similar to previous years
3. NSW daily energy was much higher in 2017 than previous years on seven occasions in January and February
4. Queensland had a systematic increase in energy consumed in Q1 2017, but less than other years in Q2. It is believed the record Q1 prices have had an impact on the demand for electricity.

Figure 33: Tasmania Daily Energy (2017 versus 2015)



Source: SavvyPlus Consulting BI

3.6 Wholesale Price Outlook

In this section we consider the wholesale price outlook for the NEM with a focus on Tasmania. Tasmanian small businesses will be impacted to the extent that wholesale price trends find their way into retail electricity prices.

3.6.1 Introduction

Our approach for forecasting is to use a probabilistic approach, as this recognises that the future is uncertain and that there are many factors that can influence the outcome. It is better to develop outlooks that recognise the potential distribution of the resultant uncertainty. Probabilistic modelling provides an expected distribution, which then provides an insight into the most likely, as well as the upper and lower but still plausible outcomes.

3.6.2 Methodology

Historical spot prices from the period 1 January 2002 to 15 August 2017 were normalised to account for the increase in the Market Price Cap (MPC) through the years and also to adjust for the impact of carbon pricing from 1 July 2012 to 17 July 2014. This adjusted spot price trace was then used to derive the statistics needed to develop the Monte Carlo simulations for forecasting spot prices.

Ten thousand simulations were performed at a daily resolution with stochastic variables of flat and peak spot prices, as well as $300/MWh cap payouts. Days were grouped into three different day types; working weekdays, Saturdays and Sundays/Public Holidays. The correlations between the variables were based on the historical data set; both for different variables in the same simulation for the same day types, and for the same variable in the same simulation between day types (serial correlation).

The spot price simulations are projected forward and replicated and scaled three times so that the average quarter simulated price equals the target average price for each quarter. The targets consisted of the normalised historical quarterly average price outcome, the average spot price for each quarter over the last 12 months, and finally the forward price for each quarter going forward. The forward price is most useful for dealing with unprecedented changes, such as the Hazelwood closure and the Tasmania Government's recent intervention in wholesale price regulation.

A forward market captures the collective perceived future value which would consider all the potential market changes. A significant factor affecting perceptions is the natural demand-supply balance, which will undergo significant change in the next few years. Listed below in Table 4 are those generation projects which are under construction or have financial commitment.

Table 4: List of Committed Renewable Projects

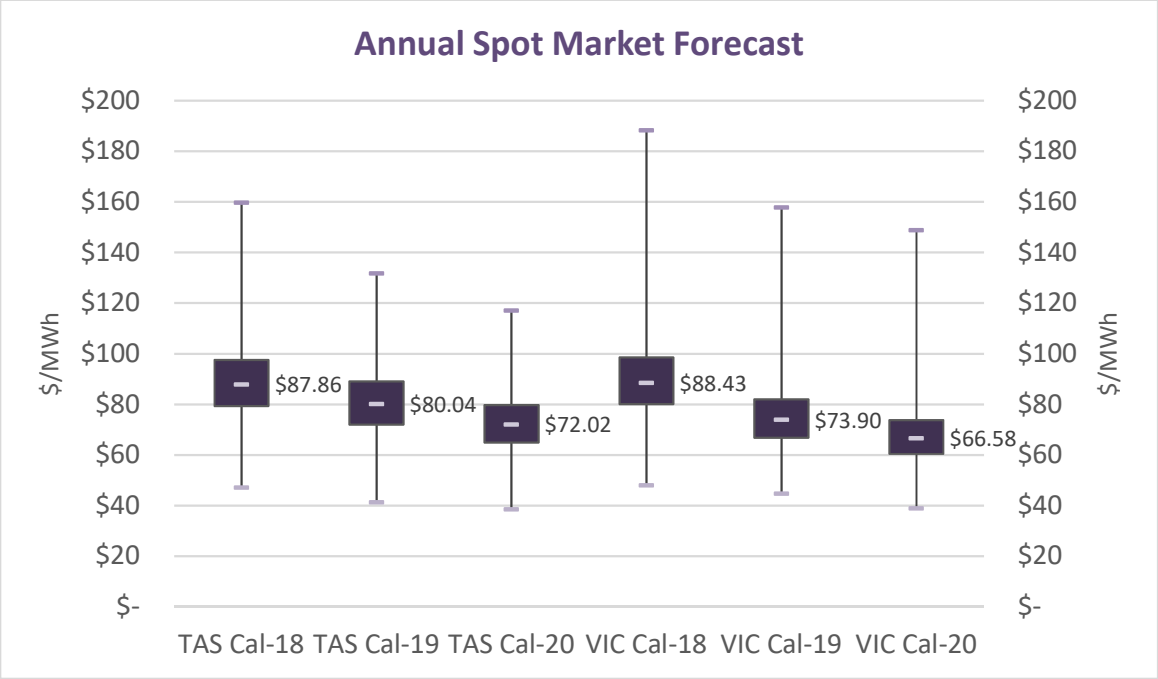
Status	Location	Capacity (MW)	Cost (million $)
Commissioned	Ararat Wind Farm, VIC	240	$ 450
Total Commissioned		**240**	**$450**
Under Construction	Sapphire Wind Farm, SA	270	$588
	Hornsdale Stage 2 Wind, SA	100	$800
	Hornsdale Stage 3 Wind, SA	109	
	White Rock - Stage 1 Wind, QLD	175	$400
	Mt Emerald Wind Farm, NSW	180	$380
	Townsville Sun Metals Solar, QLD	125	$155
Total Constructing		**959**	**$2,323**
Financial Commitment	Coopers Gap Wind Farm, QLD	453	$850
	Riverland Solar, SA	330	$950
	Stockyard Hill Wind Farm, VIC	530	$900
	Silverton Wind Farm, NSW	200	$460
	Yatpool, Iraak, Wemen Solar, VIC	320	$500
	Wild Cattle Hill Wind Farm, TAS	144	$300
	Granville Harbour Wind Farm, TAS	112	$200
	Torrens Island Gas Plant, SA[34]	210	$295
	Port Augusta Solar Thermal Plant, SA	150	$650
Total Committed		**2,449**	**$5,105**
TOTAL		**3,648**	**$7,878**

Source: SavvyPlus Consulting BI

The future spot prices obtained from the simulation are represented in the Box-Plot graph below (Figure 34). The graph displays the different series of data in quartiles. The box represents the range between the 25th and 75th percentiles with the median represented by the line in the box. The box therefore represents 50 per cent of the results. The lines extending from the box ('whiskers') indicate the upper and lower quartiles.

[34] Partially replaces Torrens Island A.

Figure 34: Tasmanian and Victorian Spot Price Forecast 2018-20



Source: SavvyPlus Consulting BI

The forecast for the 2018 Tasmania spot price is for softer prices than 2017 of around $88/MWh, just slightly below the Victorian price, although the Victorian forecast has a much larger tail extending towards $190/MWh. The outlook for Calendar 2019 and Calendar 2020 is to soften further due to the increase in generation supply with Victoria to soften at a faster rate than Tasmanian spot prices. By Calendar 2019 and Calendar 2020, Victoria is expected to have a lower average price than Tasmania.

Typically, the 75th percentile of the forecast spot price is a good indicator for the respective forward price. From Figure 35 below we can see significant correlation between the 75th percentile of the forecast prices and the current forward prices. Based on our current view, we would expect Victorian Calendar 2018 forward prices to more than likely soften further, and for Tasmanian Calendar 2020 to more than likely strengthen.

Figure 35: Comparison of Current Forward Market Prices with 75th Percentile of Forecasted Spot Prices.

	TAS			VIC		
	Cal-18	Cal-19	Cal-20	Cal-18	Cal-19	Cal-20
Flat Swap	**$ 96.75**	**$ 89.09**	**$ 74.64**	**$ 105.00**	**$ 84.00**	**$ 74.01**
75%	**$ 97.49**	**$ 89.04**	**$ 79.73**	**$ 98.55**	**$ 81.97**	**$ 73.70**
50%	$ 87.86	$ 80.04	$ 72.02	$ 88.43	$ 73.90	$ 66.58

Source: SavvyPlus Consulting BI

3.6.3 AEMC Wholesale Price Outlook

The AEMC has recently released its outlook for wholesale prices in the NEM, including for Tasmania.[35] Broadly consistent with the above, they find that wholesale prices in Tasmania should reduce in the 2018/19 and 2019/20 years, but that the reductions are more pronounced (21 and 31 per cent respectively) with flow on falls in retail prices. The reductions are primarily due to a large injection of new renewable capacity, with flow on wholesale price reductions from Victoria to Tasmania. However, the AEMC also make the point that this injection is likely to result in excess generation capacity in the NEM, which will result in some thermal generation being forced to exit the market, putting upward pressure on wholesale prices again beyond 2019/20.

3.6.4 Potential Impacts of National Energy Guarantee

The Federal Government is pursuing the introduction of a National Energy Guarantee (NEG), which would place legislative reliability and emission reduction obligations on NEM retailers to deliver a certain amount of dispatchable power, as well as emission reductions that contribute to Australia's international commitment to reduce its carbon emissions by 26-28 per cent on 2005 levels by 2030.[36] The Government has said that the NGC will reduce electricity bills principally through removing investment uncertainty. Details are yet to be fully worked out and much uncertainly still surrounds the NEG.

The NEG has also been subject to scepticism, including that it will reduce the incentives to invest in renewables, will increase the market power of incumbent retailers and generators, including Hydro Tasmania, and will end up increasing, not reducing, electricity bills.

As alluded to above, substantial work and consultation needs to be undertaken before the NEG is implemented and the TSBC should take a close interest in this process advocating on behalf of Tasmania's small businesses.

3.6.5 Business Response to High Wholesale Prices

With rising electricity costs for businesses in the NEM, some businesses have also sought out more innovative ways to combat the price increases.

Finding ways to save on energy use has become more common, with the Tasmanian Government assisting this through its Tasmanian Energy Efficiency Loan Scheme.

Some NEM businesses have also begun to contract for at least some of their electricity directly with renewable generators or with them through intermediaries using devices such as Power Purchase Agreements (PPAs). Origin Energy is known to have recently secured electricity in Victoria for $50/MWh through a PPA with the Stockyard Hill wind farm, although smaller contracts for business users would likely be at a premium on this. Others have formed buying groups to leverage off purchasing larger blocks of electricity. To date this has mostly been confined to larger electricity users, though there are reports of some smaller users now also getting involved. The usefulness of these approaches often relies on the presence of a competitive market and the ability of electricity

[35] AEMC, *2017 Residential Electricity Price Trends*, 18 December 2017, http://www.aemc.gov.au/Markets-Reviews-Advice/2017-Residential-Electricity-Price-Trends/Final/AEMC-Documents/2017-Residential-Electricity-Price-Trends-Report.aspx.

[36] See http://www.coagenergycouncil.gov.au/publications/energy-security-board-update.

users to manage the associated risks, which differ from more traditional approaches to purchasing electricity.

3.7 Regulation of Tasmanian Wholesale and Retail Prices

The regulation of wholesale prices in Tasmania is via the requirement that Hydro Tasmania must offer a range of wholesale contract products on standard terms and conditions. This was discussed in Section 2.2.6.

Retail prices for smaller customers (consumption below 150 GWh pa) are set as standing offer prices for Aurora Energy (the regulated offer retailer). Regulated wholesale contract and retail standing offer prices are both regulated by the TER.

Wholesale prices are an important component of retail standing offer prices. The TER determines the Wholesale Electricity Price (WEP) as a key input to this process and then uses this as a key input to determine the Wholesale Electricity Cost (WEC) as part of Aurora's Notional Maximum Revenue (NMR) for its annual standing offer prices. Until this year, the WEP has been set with reference to Hydro Tasmania's regulated LFS contract (using a weighted average formula), which is then used along with a load forecast and (distribution and marginal) loss factors to determine the WEC.

3.8 Impact of Tasmanian Wholesale Prices on Retail Prices for Small Business

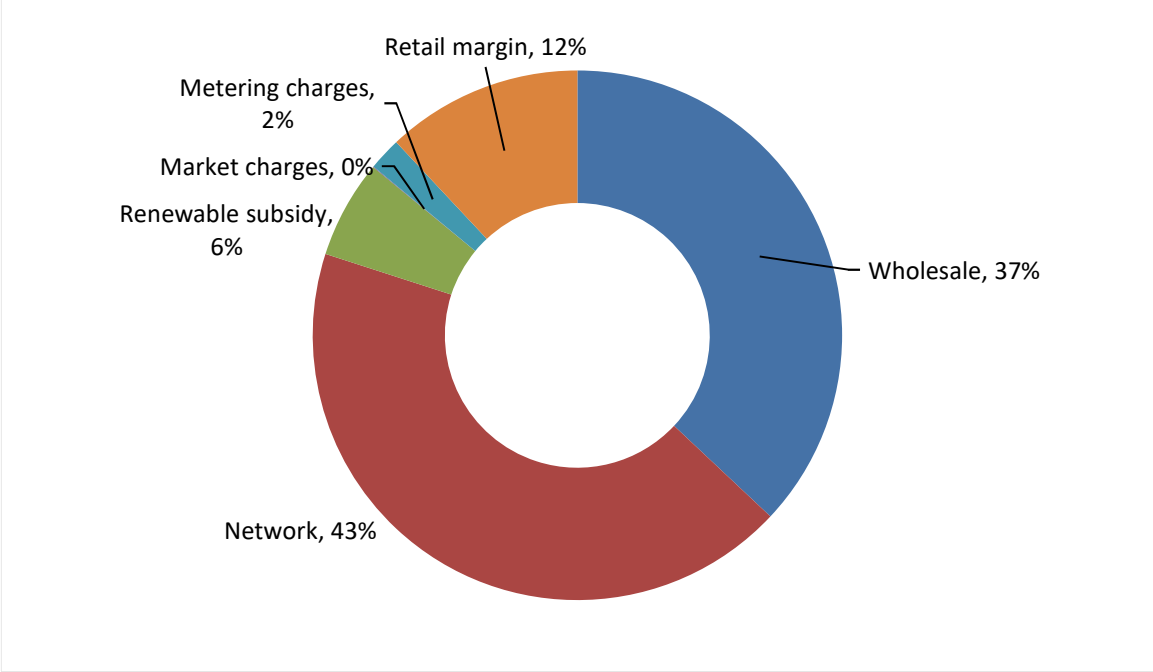
Tasmanian wholesale prices have a significant impact on the retail electricity prices of small businesses.

Wholesale costs make up around 37 per cent of the delivered cost of electricity to smaller Tasmanian consumers who are on regulated standing offer tariffs (see Figure 36). This includes the vast majority of small businesses.

Moreover, wholesale costs have increased significantly in recent years right across the NEM, including in Tasmania. The reasons for this are principally:

- The retirement or mothballing of thermal (coal and gas) generation plant (some of it premature), which has seen 6,000 MW of capacity exit the market since 2011/12.
- The dash for renewable energy created by the RET subsidy, which has flooded the market with new renewable investment and contributed to the exit of thermal plant referred to above. Over the five years to 2017, around 1,800 MW of new wind and solar generation has been added to the market, well below the generation retired.
- The price and supply pressures in the Eastern Australian gas market, which have impacted the economics of building and operating gas-fired generation. As a consequence, no new gas generation has been built since 2011/12, little is presently committed, and 865 MW has been withdrawn and another 238 MW has been announced as to be withdrawn.
- The uncertainties around the direction of energy and climate policies, which have made it difficult for any potential new thermal projects to secure finance, with none currently committed.

Figure 36: Components of a Tasmanian Electricity Bill for Smaller Customers



Source: Aurora Energy, *Pricing Proposal for Period 2 of the 2016 Standing Offer Price Determination, 1 July 2017 to 30 June 2018*, Figure 1, p. 2.

The reasons for the large increases in wholesale prices were discussed in more detail in Section 3.5.

Tasmania has not been immune from these impacts. It is linked to the Victorian wholesale market via the Basslink interconnector and has been impacted by the closure, in March 2017, of the large (1,600 MW) brown coal-fired Hazelwood Power Station in Victoria. Wholesale contract and spot prices had spiked in anticipation of the closure. Moreover, reductions in capacity, especially in Victoria, along with the growth in LGCs have also created commercial opportunities for Hydro Tasmania to benefit from higher prices by exporting across Basslink and within Tasmania through its hydro-electric and wind generation plant. These factors were discussed in more detail in Section 3.5

Regarding regulated standing offers, including those for small business, increases in wholesale electricity prices would flow through using the method of retail price regulation described in Section 3.7, that is, through the use of the regulated LFS Contract to establish the WEP used to calculate Aurora's WEC. Given the large increases in wholesale prices experienced in 2016/17, including in Victoria, this would have resulted in large increases in Tasmanian regulated retail tariffs for 2017/18, including for small business, absent the other components of a retail bill used in Aurora's NMR (see Figure 36). According to the Tasmanian Treasurer:

> *"The Government has been advised that price increases of up to 15 per cent are likely to occur for residential and small business customers on regulated tariffs from 1 July [2017] unless action is taken."*[37]

[37] The Hon. Peter Gutwein, MP, Treasurer, *Electricity Supply Amendment Pricing Bill 2017, Second Reading Speech*, 4 May 2017, p. 2 at http://www.parliament.tas.gov.au/bills/Bills2017/26_of_2017.htm, our parenthesis.

It should be noted, however, that in the past flat wholesale prices in Victoria have helped to keep electricity price increases in Tasmania lower than they otherwise might have been. Indeed, the use of the regulated LFS contract in setting the WEP in Aurora's annual NMR has ensured that a sustained period of flat wholesale prices flowed through to small business customers and this helped to dampen the impact of some other areas where components of the bill had increased (e.g. network and retail charges).

It should also be noted that the 15 per cent price increase referred to by the Treasurer is similar to retail price increases elsewhere in the NEM in 2017/18, which have ranged up to 20 percent. Nevertheless, increases of this magnitude (had they been passed on) would have been difficult for Tasmanian small businesses to absorb and may well have placed some of them under financial pressure with flow on economic consequences.

Given recent steep wholesale price increases, their flow through into retail prices, the outlook for continued high future wholesale prices, a series of reports highlighting shortcomings in the NEM retail market and uncertainties around future electricity supply and policy, it is not surprising that high and rising electricity prices are front-of-mind for electricity consumers. Hence, Governments are starting to respond to this situation, with the threat of re-regulation one possibility.

In Victoria, a State Government commissioned review of retail prices has recently reported. Responding to recent price increases and concerns about shortcomings in retail competition, it has recommended action to place retail electricity pricing under a higher level of regulation and scrutiny than has hitherto existed in that State, including through a Basic Service Offer, a kind of 'no-frills' standard offer.[38]

However, re-regulation is not without its critics. According to one analysis, deregulation is not the cause of high retail prices in Victoria but rather increasing network prices and sustained pressures in more recent years in the wholesale market. The assessment went on to say that:

> *The Basic Service Offer would kill competition in the energy market and shut down retail businesses. It will likely result in a 'one size fits all' retail offer for customers which is completely at odds with the energy market of the future. It will also act as a disincentive to potential investment in Victoria's wholesale market, which is critical to bring downward pressure on prices.*[39]

3.9 Recent Developments in Tasmanian Wholesale Price Regulation

In response to the significant wholesale price pressures facing Tasmania, the State Government moved in May 2017 to protect small business and residential electricity consumers in Tasmania from the expected retail price increases referred to above.[40] Accordingly, the Government amended the legislation that determines how the TER sets standing offer prices. The amendments allow "the Treasurer to determine an alternative wholesale electricity price if it is deemed that current

[38] Independent Review into Retail Electricity and Gas Markets in Victoria, *Final Report*, August 2017 at https://www.energy.vic.gov.au/about-energy/policy-and-strategy.

[39] Sarah McNamara, Australian Energy Council, *Thwaites Review of Retail Markets in Victoria – the good, the bad and the ugly*, p. 3 at https://www.energycouncil.com.au/analysis/thwaites-review-of-retail-markets-in-victoria-the-good-the-bad-and-the-ugly/.

[40] At the same time, Hydro Tasmania announced in May 2017 that it had capped wholesale contracts for 2017/18 at the 2018/19 Victorian price, a reduction of about $20/MWh, with potential benefits to market customers who had not yet renegotiated contracts, but not those who had. The Government later announced that it would be providing rebates to those on market contracts who had already renegotiated their deals.

market based processes will deliver unsustainable increases to regulated tariffs."[41] Henceforth, Hydro Tasmania and Aurora will enter into wholesale contracts at the determined price for the regulated load when this provision is activated. The Treasurer made clear that the Government "will be targeting an average price increase for 2017-18 of around 2 per cent, consistent with the current Consumer Price Index."[42] He also made clear that these arrangements could continue if future Victorian wholesale price outcomes warrant.

The Treasurer referred to questions that still remain "as to the appropriateness and effectiveness of the current Tasmanian Wholesale Regulatory Framework that seeks to mirror the market movements of the wholesale electricity contract market in the NEM" and announced that the Department of Treasury and Finance would conduct a review of the framework in 2017/18, including consultations with all key stakeholders.

The Terms of Reference for the Review (and the Guide to Submissions) provide for consideration of wholesale market issues and (importantly) refer explicitly to the Government's vision, as outlined in its *Tasmanian Energy Strategy*, to restore energy as a competitive advantage by delivering affordable energy at competitive and predictable prices that are amongst the lowest in Australia, empowering consumer choice, ensuring an efficient energy sector that is customer focussed and utilising energy to facilitate State growth.[43]

It should be noted that the Ministerially determined WEP in this year's standing offer pricing proposal lodged by Aurora with the TER was $83.79/MWh (8.379 cents/kWh). This compares to $61.901/MWh (6.1901 cents/kWh) for 2016/17 in the 2016 Standing Offer Pricing Proposal lodged by Aurora Energy, an increase of 35 per cent. However, significant reductions in distribution charges following an AER review ensured that the annual bills of small businesses on the most common tariff still fell by between 4.1% and 5.7%, depending on their usage profile.[44] Moreover, small business network charges in 2018/19 are forecast to remain relatively flat. If wholesale prices were to increase further, then the Government could need to intervene again if changes in regulated retail prices are to be kept at what the Government would deem to be sustainable.[45]

Small business should welcome the Tasmanian Government's actions to ensure that the full impact of the large increase in wholesale electricity prices is not passed on to them for 2017/18. In taking this step, the Government is acknowledging that it places a significant priority on keeping electricity prices affordable and competitive and is responding in a timely way to community angst about rising electricity prices. This could be seen as an appropriate and legitimate immediate response to the prevailing circumstances facing Tasmanian electricity consumers, many of which emanate in Victoria and the broader NEM and are matters over which Tasmania has no control but still experiences the impacts of.

Nevertheless, there are broader and longer term implications from the Government's actions that should also be considered by the TSBC. These include that:

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[41] The Hon. Peter Gutwein, MP, Treasurer, *Electricity Supply Amendment Pricing Bill 2017, Second Reading Speech*, 4 May 2017, p. 3 at http://www.parliament.tas.gov.au/bills/Bills2017/26_of_2017.htm.

[42] Ibid.

[43] See http://www.treasury.tas.gov.au/government-businesses/strategic-reviews/review-of-the-tasmanian-wholesale-electricity-market-regulatory-pricing-framework.

[44] Aurora Energy, *Pricing Proposal for Period 2 of the 2016 Standing Offer Price Determination, 1 July 2017 to 30 June 2018*, p. 19.

[45] Present indications regarding 2018/19 Victorian and Tasmanian wholesale contract prices are for a level about the same as the current Ministerially determined WEP (see Figure 18 and Figure 19).

- The Government intervening in a method of determining the WEP that was based on market fundamentals and approaches to retail price regulation adopted in New South Wales, Queensland and the ACT. This method ensured that the benefits of a sustained period of flat wholesale prices flowed through into retail tariffs (at a time when network prices were increasing rapidly). In the volatile wholesale market it was inevitable that higher wholesale prices would prevail when market conditions changed. It is also quite possible that flat or lower prices could emerge again in future and the current outlook for wholesale prices suggests some price softening is likely (see Section 3.6). Appropriate policy and regulatory responses to the problems being experienced by the NEM retail and wholesale markets could also allow future prices to soften further, with issues under consideration by the COAG Energy Council, ACCC, AEMC and several other reviews.
- A close relationship exists between Tasmanian and Victorian wholesale prices by virtue of interconnection and trade in electricity. Intervention is contrary to this, will not change it and may be unsustainable.
- A risk of prolonged use of Ministerial Order beyond 2017/18, or the threat of it, if increases in wholesale prices persist or return. Indeed, the Treasurer has alluded to this as a possibility if the Government believes that wholesale price increases are unacceptably high. This would act as a significant deterrent to potential new entrants and competition in both the Tasmanian generation and retail markets.
- It requires a level of detailed involvement by the Government in retail price regulation beyond the establishment of broad principles and objectives that had hitherto applied. The Expert Panel warned that this "raises potential concerns about the actual or perceived level of 'functional' independence that the TER is afforded in making pricing decisions."[46] The Expert Panel went on to stress the importance of complete regulatory independence to the entry of private capital into the Tasmanian market.
- If the Tasmanian Government was to 'switch' Ministerial Orders on and off as the circumstances suit, it could be perceived as a form of 'forum shopping' based on price outcomes that do not appeal to the Government, further raising the regulatory risks of retailer entry into Tasmania.
- Ministerial wholesale price setting could create a squeeze between wholesale costs and retail prices, which could impact Aurora's financial situation, or alternatively it could squeeze wholesale prices and impact Hydro Tasmania's commercial position, notwithstanding that the Government says that it has set the wholesale price with reference to Hydro Tasmania's costs (but has not outlined how this was done).
- It can be perceived as interference in Hydro Tasmania's and Aurora's commercial and financial decisions, which raises further market risk issues.
- The approach is contrary to the full pass through of higher wholesale prices thus far adopted in other parts of the NEM in the face of similar, or even higher, price increases.
- A future Government may seek to claw back some past 'losses' with small consumers being asked to pay higher prices as a result.
- Setting a lower wholesale contract price for the regulated load could open up unintended arbitrage opportunities for other retailers to leverage off and benefit from outside of Tasmania.
- Such interference in the regulatory process raises the risk of a perceived increase in sovereign and regulatory risks by retailers considering entry to the Tasmanian market, which could further delay retail competition.

[46] Expert Panel, *An Independent Review of the Tasmanian Electricity Supply Industry*, Final Report, vol. 1, p. 64, December 2012.

The now underway Department of Treasury and Finance review of wholesale regulation will be important in the consideration of all matters to do with future wholesale market regulation in Tasmania, including the Governments price intervention and should consider the costs and benefits, the short and longer term implications and the unintended consequences of intervention.

3.10 Summary of Key Points

Key points to emerge from this Chapter are:

- The Tasmanian wholesale electricity market is characterised by repeated dramatic and short-term price spikes with prices heavily influenced by water storage levels and Hydro Tasmania's high degree of latent market power. Opportunistic or unexpected events can also have a major bearing on Tasmanian wholesale prices, for example, the carbon tax drove prices up as did the extended six-month Basslink outage from December 2015.
- Under normal conditions wholesale prices closely approximate those in Victoria due to interconnection via the Basslink cable, but if the link is constrained, local generation sets the spot price unfettered by competition from Victoria.
- There have been numerous examples in the past where Hydro Tasmania has reduced non-scheduled generation during periods of high demand, with a cutback in the amount of low-priced generation capacity offered and an ensuing dispatch of high-priced generation or where it has used outages in the TVPS (when owned by Aurora) to offer high prices.
- The most recent and significant of these high price events was prior to Basslink failing and then during the interconnector's outage which ended in June 2016. Prior to this, Hydro Tasmania had run down storages during the carbon tax period illustrating its conflicting commercial and energy security priorities and poor water storage management.
- Except for 2016 (when Basslink was out-of-service), the average annual spot price in 2017 has been the highest on record in Tasmania. Victoria has also experienced its highest ever spot prices.
- Tasmanian forward wholesale prices for 2018 and 2019 remain historically high but have declined somewhat from their 2017 levels. The outlook for Victorian prices is somewhat softer.
- The cause of the 2017 record wholesale prices (and outlook for these prices remaining high) reflects multiple local and national factors. First, there have been many coal and gas plant closures since 2009, amounting to a total of 6,000 MW, with replacement capacity around one-third of this, insufficient to maintain low prices. The impact of the closure of the large baseload Hazelwood Power Station in Victoria has been especially pronounced.
- Secondly, interconnector flows have changed as a consequence of generation closures. Especially since Hazelwood closed, Victoria has been a net importer of (higher cost) generation from NSW and SA and this has impacted wholesale prices. At the same time NSW has imported more electricity from Queensland and the former's supply situation could worsen early next decade when the 2,000 MW Liddell power station closes.
- Thirdly, there is evidence of strategic bidding of capacity in both Tasmania and Victoria impacting Tasmanian wholesale prices. From January 2017, Hydro Tasmania re-priced its hydro generation and substituted more expensive gas generation. This turned around in May, which has contributed to a softening in electricity spot prices. Related to the closure of Hazelwood, generators in Victoria and Tasmania have reduced low-priced capacity and replaced it with more expensive offers, making a significant impact on the spot price. Furthermore, during the second half of 2016, Hydro Tasmania ran hydro hard in order to generate above the baseline to earn LGCs under the RET.
- Fourthly, high gas prices have led to gas-fired generation making offers at higher prices than in previous years. Gas prices in Victoria spiked in the first half of 2017 and they remain high

in Queensland, albeit having softened somewhat. Gas prices look to continue a downward trend, albeit still at high levels, as reports emerge of new coal seam gas being detected in NSW and Victoria and measures to increase domestic supply begin to have an impact.

- Finally, we also analysed demand to see if it has had any impact on the high wholesale prices seen in Tasmania and elsewhere in the NEM during 2017. The results showed that there was no discernible impact of demand on high spot prices in Tasmania and Victoria.
- Based on forecasts undertaken for this report, the outlook for Calendar 2019 and 2020 is for spot prices to soften further from 2018 levels due to an increase in generation supply, with Victorian spot prices to soften at a faster rate than in Tasmania. By 2019 and 2020, Victoria is expected to have a lower average spot price than Tasmania.
- A recent wholesale price outlook published by the AEMC confirms these broad trends but suggests that Tasmanian wholesale prices could fall even further based on an anticipated large influx of renewable energy capacity in the NEM. However, the AEMC also warn that this will result in thermal generation exiting the market putting upward pressure on prices.
- The Federal Government expects that the successful negotiation of the NEG will reduce electricity prices further, but this policy has been criticised as being a disincentive to renewable energy and putting more market power in the hands of large incumbent retailers and generators, including Hydro Tasmania.
- Some businesses have responded to electricity price increases by searching for new ways to save energy or contract for electricity. Energy efficiency drives have become more commonplace and some businesses, especially larger ones, have contracted to purchase renewable energy capacity either directly or indirectly.
- Wholesale prices are an important component of small business electricity bills as they account for 37 per cent of the regulated small business standing offer price.
- Wholesale prices (2017/18 Flat Swaps) in Tasmania increased significantly from around $40/MWh in mid 2016 to reach a high of around $125/MWh in May 2017. They have abated somewhat since (as have 2018/19 prices) but remain very high.
- Faced with a 15 per cent increase in regulated electricity prices for 2017/18, the Tasmanian Government has recently intervened in the regulatory process to allow it to set the regulated wholesale price by Ministerial Order with the aim of keeping regulated retail price increases for 2017/18 to about the CPI.
- Despite this, the wholesale price in regulated tariffs for 2017/18 still increased by 35 per cent.
- Small business electricity prices for 2017/18 fell but mainly due to a significant reduction in network charges. If wholesale prices increase again in 2018/19 or beyond, there may be no scope for a reduction in network or other charges to offset these.
- Small business should welcome the immediate impact of the Ministerial intervention in keeping wholesale prices used to set small business tariffs below their extreme levels of early 2016.
- Notwithstanding this, there are broader implications from the intervention. These should also be considered by the TSBC in developing its position on Tasmanian retail and wholesale electricity prices, including that intervening may have added to the already considerable barriers to retail competition in the Tasmanian electricity market by increasing sovereign and regulatory risks, and may have other unintended consequences.
- The current Department of Treasury and Finance review of wholesale price regulation is an opportunity for the TSBC to advocate further on wholesale price issues. The outcome of this review would be especially meaningful to small business if it included not only consideration of wholesale contract and retail price regulation, but also the costs and benefits of such regulation, and alternative approaches.
- The competitiveness and performance of the NEM wholesale and retail markets is under intense scrutiny due to extraordinary electricity price pressures, and revealed shortcomings

and uncertainties in the operation of these markets. Significant reform is required to overcome these shortcomings and it would be in Tasmania's interests (given its important links to the Victorian market in particular) to support such reform. This would also improve the prospects of reform in Tasmania.

- Reliance on a well functioning competitive market rather than Government regulation and intervention is likely to be most beneficial to Tasmania's small business sector in the longer term. This provides the best path to the delivery of sustained price and other market benefits to electricity consumers. However, to achieve this and for Tasmania to advance towards a competitive market requires the NEM to deliver more competitive wholesale and retail electricity markets than exist at present that Tasmania can leverage off.

4

Conclusions & Findings

- Tasmania is the most regulated and least competitive wholesale market in the NEM
- It is also the only NEM State with near total Government ownership of electricity
- But the current arrangements have still benefitted small businesses to some extent
- However, small businesses have missed out on competitive offers and discounting because of them
- The wholesale market needs to change for small business is to get these benefits; whilst this is challenging, there are major benefits in prospect
- This report is an important basis for information, advocacy and capacity for the TSBC

4 Conclusions and Findings

Tasmania has the most regulated and least competitive wholesale electricity market in the NEM. It is also the only NEM State with its main electricity assets still entirely in Government ownership and, other than Queensland, the only one with generation assets still government owned. Tight regulation has been necessary – a consequence of almost no competition, the extreme market power of Hydro Tasmania and near total State ownership.

It must be said that regulation has provided some benefits to small business as wholesale prices used in determining regulated retail tariffs for small business have been explicitly linked to those in Victoria, which has only comparatively recently emerged from an extended period of subdued wholesale prices. However, a competitive market in Tasmania would also have a strong link to Victorian prices and would additionally offer the prospect of benefits such as discounting and innovation (both largely absent in Tasmania at present).

With large increases in wholesale electricity prices throughout the NEM in 2017, the Tasmanian Government's intervention in the retail price setting process has avoided excessive retail electricity price increases for small business consumers. The Government has also indicated a willingness to intervene again if wholesale price increases warrant.

Nevertheless, the absence of competition in the Tasmanian wholesale electricity market and its continued dominance by Hydro Tasmania has not been all good for Tasmania's small businesses. One important drawback is that the uncompetitive structure of the wholesale market has been a major obstacle to new electricity retailers entering Tasmania. As a result, small business has access to FRC but no means of exercising the choice that is fundamental to benefitting from FRC. They have also had very limited access to the price discounting that has accompanied retail competition in most other parts of the NEM. Discounting has benefitted their peers in other parts of the NEM, notwithstanding some shortcomings in current market arrangements and energy policy settings. This will not change unless there is reform of the Tasmanian wholesale electricity market that will allow competition to take hold.

Relying on the regulation of wholesale electricity prices is unlikely to provide a sound long term substitute for a competitive wholesale market and will not encourage new retailers into Tasmania.

The available evidence suggests that wholesale market reform would need to go beyond the measures recommended by the Expert Panel in 2012. Larger mainland retailers have expressed the view that their gaining direct access to some of Hydro Tasmania's trading capacity would be a necessary pre-condition for their entry to the Tasmanian electricity market. Mainland retailers have essentially 'voted with their feet' on the current market arrangements as none have entered the market under these arrangements. For small business and other consumers to benefit, a competitive wholesale market structure would need to accompany structural change.

It is also likely that retail price regulation would have to be either removed or 'head room' created in retail standing offers to give new retailers room to compete and offer discounts, which is likely to push regulated standing offers beyond present levels but with the prospect of access to discounted prices. Small business and households would then need to rely on retail and wholesale competition to deliver lower overall prices to them. Creating sufficient 'head room' in Tasmanian regulated standing offers has proved difficult to implement even though regulated prices are inflated by the

artificial inclusion of retail margins and costs to serve that reflect (non-existent) competitive market conditions. In any case, the uncompetitive structure of the wholesale market is a formidable barrier to new retailers making 'head room' a moot point.

A reliance on regulation creates difficult to manage risks for small businesses. It places wholesale charges – which make up around one-third of what small business pays for electricity – in the hands of governments (present and future). One such risk is that the benevolence of government seeking to protect small business from increases in electricity prices can quickly come to an end because circumstances have changed (e.g., because of the financial needs of government-owned businesses or of the State budget). The desire of Government's to always intervene so that small business enjoys lower electricity prices is problematic and not guaranteed. Government involvement in electricity markets also brings with it the risks that the costs of inefficiencies, poor risk management and poor regulation will find their way into electricity prices. These costs will not be obvious to consumers – perhaps only once they become extreme and are subject to public scrutiny.

Reliance on regulation and government intervention also raises risks that responses to changes in market conditions – which can emerge quickly and unexpectedly – will not be timely enough. For example, Tasmanian small businesses on market contracts who had already negotiated new deals before the Government intervened to peg 2017/18 prices, had to wait for many months before the Government worked out a system of rebates to compensate them for the higher wholesale prices that were part of their new deals. Meanwhile, their operating costs and cash flows were impacted by the uncompensated high electricity prices they paid in the first half of 2017.

As another example, the outlook for wholesale prices presented in this report suggests that Victorian prices will soften more rapidly than Tasmanian prices and that by 2019 they will be below Tasmanian prices. This would make the approach to determining wholesale prices based on current Victorian prices more attractive again. However, a 'pick and choose' approach based on what suits best at any particular point in time would be a significant deterrent to new retailer entry and therefore electricity competition in Tasmania.

In a competitive market, small businesses manage electricity price risks through access to competitive price offers, which is more within their own control, and not so subject to the changing priorities of governments. In other parts of the NEM, higher electricity prices have provided an incentive for businesses to seek out greater energy efficiency, to form buying groups and to contract for renewable capacity (mostly confined to larger users). However, buying groups tend to rely on a common purpose, an ability to avoid sudden exits and on members having similar load profiles. Contracting for capacity is unconventional in the NEM, carries unique risks for businesses and relies on the presence of a competitive market. The TSBC could inform itself in more detail about such developments and monitor their potential for application to Tasmanian small businesses, noting that a softening in wholesale prices may reduce their attractiveness and the lack of electricity market competition in Tasmania may well limit their use.
We have not made specific recommendations on reform in this report but have set out a path of desirable directions. This allows the TSBC to remain flexible in its advocacy. It recognises that circumstances can change and that significant uncertainty surrounds the NEM at present, which is leading to a considerable body of work on how the NEM needs to change in response to its various market shortcomings and changing circumstances. Many view it as a market in transition. The TSBC should monitor these developments, their impacts on Tasmania's wholesale electricity market and how small business can take advantage of new realities.

It should also be recognised that the general community and (hence) political appetite to move Hydro Tasmania away from public hands appears to be low, though there may well be greater

acceptance of selling Aurora Energy and TasNetworks. This is a formidable obstacle to reform and necessary precondition for more retailers entering Tasmania. The presence of regulated tariffs is a further disincentive to new entrant retailers. This makes the structural change necessary to encourage entry by new retailers into Tasmania challenging. Nevertheless, this should not prevent the TSBC from both advocating for increased competition and supporting the types of wholesale market reform that appear to be a necessary precursor to new retail entry.

We have little doubt that, with an appropriate wholesale market structure and related reforms outlined in this report, there would be new retail entry into Tasmania and small business would gain access to competitive electricity prices, including discounts. However, this would appear to require the inclusion of 'headroom' in regulated retail prices (assuming price regulation remains). Action on the shortcomings that have recently been found in the NEM wholesale and retail markets and to reduce investment uncertainty in the NEM would also be beneficial to small business in Tasmania. The TSBC should advocate on these matters to ensure that Tasmanian and small business interests are fully considered.

Should reform be forthcoming, small business consumers not accustomed to a competitive electricity market would benefit from education to accelerate their knowledge of competitive electricity markets. Again, TSBC advocacy in this area would be beneficial.

We expect that the TSBC will be able to use this report to advocate for wholesale market reform that will benefit Tasmanian small businesses.

We also expect that the TSBC will be able to use this report as a source of information on the Tasmanian wholesale market that can help to build its advocacy capacity and that of its members.

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