Tasmanian Energy Security Taskforce

Consultation paper

August 2016

Contents

Foreword

The Tasmanian Energy Security Taskforce is aware of the broad community concerns that arose earlier this year as dam storage levels fell to historically low levels and energy security became a "front and centre" issue for all Tasmanians.

Accordingly, we have decided that an early step in examining energy security would be for us to consult widely in gathering all the relevant information and knowledge.

We have designed this Consultation Paper to seek the views of all interested stakeholders.

In this consultation, we have provided a succinct outline of the key issues we will be examining to encourage submissions on all or any part of our scope.

If energy security is important to you, your business or your interests then we would appreciate you taking the time to share your views with us.

Please note that, in any submission to the Taskforce, evidence based material will generally be more valuable and more readily verifiable for our purposes.

We look forward to a valuable contribution from interested stakeholders.

Geoff Willis AM

Chair

Tasmanian Energy Security Taskforce

3 August 2016

1. Introduction

During 2015-16 Tasmania experienced one of the most significant energy security challenges in its history. The combined impact of two extreme events – the record low rainfall over the Spring/Summer period combined with the Basslink cable being out of service – resulted in Hydro Tasmania's water storage levels falling to historically low levels. An Energy Supply Plan ("Plan") was implemented that included the rapid commissioning of 200 MW of temporary diesel generation facilities. The Plan slowed the rate of decline in water storages through the dry period. Since May 2016 there has been heavy rainfall and water storages have risen quickly to above 35 per cent by the beginning of August, from a low point of just below 13 per cent at the end of April.

As a result of these events, and in parallel with the Plan, the Government established the Tasmanian Energy Security Taskforce ("Taskforce") to advise Government on how it can better prepare for and mitigate against the risk of future energy security threats.

The Terms of Reference for the Taskforce require it to undertake an independent energy security risk assessment for Tasmania having regard to:

- best practice water management including consideration of water requirements across a range of stakeholders;
- Tasmania's future load growth opportunities and risks and likely impact on projected energy supply and demand;
- the opportunity for further renewable energy development in Tasmania, including in wind, solar, biomass and other renewable technologies considered in the context of anticipated transition of the national electricity market and the potential for a second interconnector;
- likely developments in technology including battery storage and electric vehicles;
- Tasmania's future exposure to gas price risk;
- the potential impact of climate change on energy security and supply; and
- a review of energy security oversight arrangements.

More information on the Taskforce and its Terms of Reference can be found on the Taskforce's webpage at www.stategrowth.tas.gov.au/tasmanian_energy_security_taskforce.

The Taskforce is approaching its work with an open view on how Tasmania's future energy security can be strengthened, and at what cost. The Taskforce intends to engage early with interested stakeholders to seek input, guidance and perspectives to help the Taskforce's thinking on key issues. The Taskforce has released this consultation paper to support this engagement.

While the Taskforce welcomes input from all interested persons, the Taskforce anticipates that input is more likely to come from those who are in the energy industry or who rely significantly on it. The Taskforce has purposefully kept the consultation paper succinct to focus on the key issues on which it is seeking input.

For readers who wish to access more detailed background information and facts on Tasmania's energy sector, there are many existing sources that can be easily found. The Tasmanian Economic Regulator's *Energy in Tasmania – Performance Report 2014-15* and the Department of State Growth's Energy Strategy Issues Paper both provide useful information on Tasmania's energy industry. These documents can be found at www.economicregulator.tas.gov.au/domino/otter.nsf/LookupFiles/Energy_in_Tasmania_-_Performance_Report_2014-15.pdf/$file/Energy_in_Tasmania_-_Performance_Report_2014-15.pdf and www.stategrowth.tas.gov.au/energy/strategy/energy_strategy_issues_paper.

The consultation paper is part of a broader work program for the Taskforce. Key milestones include:

- August 2016 – Consultation paper released
- September 2016 – Submissions close on consultation paper
- December 2016 – Interim Report to the Minister for Energy
- June 2017 – Final Report to the Minister for Energy

The Taskforce's work program will be concurrent with related activities, including:

- Implementation of the State Government's Energy Strategy;
- The joint Commonwealth-Tasmanian feasibility study into the second interconnector between Tasmania and Victoria;
- Development of the State Government's Climate Change Action Plan; and
- National policy reforms, particularly those relating to the significant transformation occurring in the National Electricity Market (NEM), which covers all the Eastern states (including Tasmania) and represents about 85 per cent of Australia's total electricity demand.

The Taskforce will seek to liaise with the relevant parties involved in these related works to obtain synergies with their activities, where appropriate.

The consultation paper is organised into key themes that relate to the Taskforce's Terms of Reference. These themes are:

- Energy Security;
- Water Management for Hydro-electric Storages;
- Interconnection with the NEM;
- The Tasmanian Gas Market;
- Renewable Energy and Emerging Technology;
- Impact of Climate Change; and
- Scenario Planning.

The Taskforce recognises there are complex inter-relationships between these themes and so its work will include the examination of credible scenarios.

The Taskforce looks forward to engaging with interested persons on this important work.

2. Energy Security

The term 'energy' covers a broad range of uses from supply and production of fuel for transportation (non-stationary) and electricity generation (stationary). The Taskforce's Terms of Reference focus predominantly on the stationary sector in Tasmania.

The management of energy security in Tasmania needs to meet long term energy demand (whether it increases or decreases) but to a level of energy reliability which customers are prepared to pay. The costs associated with maintaining energy security include potential opportunity loss of reduced Basslink exports at high prices in Victoria, costs of competing fuel sources for generation, and the costs associated with development of new generation and the associated system reinforcements.

If a very high level of 'insurance' is desired, it would result in higher energy prices over the long term, which in turn has economic and social impacts. Too low a level of 'insurance' could also have economic and social impacts, if supply disruptions became prolonged and/or there are regular occurrences. Getting the right balance is key.

The Taskforce acknowledges existing reliability standards that have been determined through previous consultation processes both locally and nationally, which attempt to strike the right balance. While this is the case, the Taskforce is interested in exploring the balance between reliability and cost with stakeholders.

Defining and assessing energy security for Tasmania will be an important matter for the Taskforce and is central to its Terms of Reference. There are particular features of the Tasmanian system in the National Electricity Market (NEM) which require consideration in the context of assessing energy security, including:

- approximately 90 per cent of generation *capacity*[1] of around 3 000 MW is renewable (with around three quarters of this capacity being hydro-electric);
- System load is seasonal, with maximum demand varying from around 1 300 MW in mid-summer to almost 1 800 MW in mid-winter (as opposed to mainland states where peak demand is in summer);
- the hydro-electric system is energy constrained not capacity constrained. This means that unlike the rest of the NEM, Tasmania has a significant portfolio of generation assets to meet Tasmanian peak demand, but the primary fuel source (namely water) creates a risk to reliable electricity supply if there is insufficient water reserves (this is explored further in the next section);
- annual consumption is around 10 000 GWh, with four large major industrial customers accounting for close to 55 per cent of this consumption;
- it only has one gas supply interconnection, which services a small gas market of around 12 000 customers (compared with around 270 000 electricity connections).

Energy security can also be threatened when major faults or events (such as floods or bushfires) create outages to both generation and network assets. In the case of the latter, while there may be sufficient generation available to meet Tasmanian demand, a critical disruption to the Tasmanian electricity network could disrupt supply to some customers. Indeed this is relatively common in Tasmania, albeit generally for very short periods of time, when storm or fire events occur.

The Taskforce will be considering these factors as it determines how best to define and assess Tasmanian energy security. The Taskforce proposes to examine and adopt a credible and accepted framework to be used in the assessment and ongoing monitoring of energy security risk.

The Taskforce will also be mindful of how to align a 'technical' definition and measurement of energy security, with how such a definition and measure can easily be understood by businesses and consumers. In the recent Basslink outage and dry Spring event, energy security was maintained through the period. However, the Taskforce acknowledges the high level of concern expressed by the residential and business communities at that time and this indicates the importance of transparency and information with regard to how Tasmania's energy security is managed.

The Taskforce acknowledges there is already a significant architecture in place to support Tasmania's energy security. The Australian Energy Market Operator (AEMO) is responsible for maintaining energy security in the NEM under a national legislative framework. In order to model the risks associated with hydro-electric power in the NEM, AEMO conducts the Energy Adequacy Assessment Projection. This modelling determines the risk of breaching unserved energy reliability standards using a range of rainfall scenarios. AEMO, Tasmanian Government officers and TasNetworks also have prescribed regulatory roles and responsibilities to manage energy security threats, though these tend to be organised mostly around 'capacity' emergencies that arise from sudden events, rather than a deficit in available energy sources.

Because of Tasmania's unique energy constrained system, successive Tasmanian Governments have placed formal requirements on Hydro Tasmania to prudently manage water storages to ensure long term energy security in Tasmania.

Advice independent of Hydro Tasmania is also provided through Government departments and statutory positions and committees. Under the requirements of the Tasmanian Annual Planning Statement, TasNetworks is required to assess the adequacy of electrical energy availability for low, medium and high rainfall scenarios and is also required to assess significant risks to the security of Tasmania's energy supply from extreme events.

[1] NEM Historical Market Information Report, AEMO 2015

The Taskforce will review governance arrangements to ensure they are robust and cost-effective to support Tasmania's energy security.

The Taskforce is considering the merits of assessing energy security according to different timeframes. In the current context, the short term outlook (around the next 1 to 5 years) requires some immediate responses to rebuild water storages and to ensure plans are in place to deal with another unexpected extreme event. The medium term outlook (around 5 to 10 years) may need to consider what should be done to strengthen Tasmania's long term energy security, which can be implemented within the next few years. The longer term outlook (over 10 years) is more difficult to determine, given projecting too far into the future is always problematic and the energy sector is undergoing rapid change, particularly technological change. Nevertheless, the long term outlook could include consideration of what should be planned for when considering a range of plausible scenarios.

While energy (primarily petroleum products) for transportation purposes is also critical to Tasmania's energy security at present, the Taskforce proposes that it will not undertake a detailed assessment of this sector. However, the definition and framework to assess and monitor Tasmania's energy security may be adaptable to transport fuels.

Question 1: What are the specific risks to Tasmanian energy security that you think the Taskforce should consider?

Question 2: What risks are acceptable to you or your business in terms of energy security and the risk/cost trade off? How well are you or your business able to manage energy supply disruptions?

Question 3: What level of reliable electricity supply is required by customers? Do customers consider reliability should be as close as possible to 100 per cent at all times, or would, for example, reliable supply closer to 99 per cent of the time be acceptable if the cost is significantly less?

Question 4: How well are Tasmania's energy security risks understood and communicated to the community?

Question 5: What existing frameworks for assessing and monitoring energy security might the Taskforce wish to consider?

Question 6: Which potential energy security solutions should the Taskforce consider?

3. Water Management for Hydro-electric Storages

Due to the prominence of hydro generation in Tasmania's electricity generation mix, rain and subsequent inflows into Hydro Tasmania's storages is the most critical component of Tasmania's energy security. Annual inflows are currently budgeted by Hydro Tasmania to provide 9 000 GWh[2] into storages.

Wind energy, Basslink imports, gas fired generation and network embedded generation (small generators and solar panels) also add to the available supply mix in Tasmania. Whether the Basslink interconnector imports or exports energy is subject to NEM market dynamics and Hydro Tasmania's trading strategy. This includes assessment of factors such as water storage levels and inflows, electricity prices in Victoria and Tasmania, and the availability and use of other generation sources.

The majority (77 per cent) of Tasmania's energy storage capacity exists in two storage lakes: Great Lake and Lake Gordon. The capacity of these lakes represent the long term storage capacity of the State. These storages are generally referred to as major storages. Run of river storages have very little capacity for water storage and the hydro power stations associated with these storages generally operate whenever inflows into the storages

[2] 2016 Inquiry into government-owned energy entities: Hydro Tasmania submission

require a reduction in the risk of spilling. Intermediate storages have a capacity for water storage greater than run of river storages but far lower than that of the two major storages.

Hydro Tasmania has developed prudent storage management guidelines for managing the system as a whole. The guidelines establish a preferred operating minimum level for storages and associated risk levels. Both the preferred operating minimum and risk levels change through the year, based on an assessment of seasonal rainfall variation.

These guidelines provide a basis to assess the health of the current storage situation across the entire hydro system. As storages fall below the preferred operating minimum level there is an increasing risk of being unable to generate from the hydro system to its long-term capability. When the guidelines were originally adopted in 2006 they established a preferred minimum operating level for 1 July each year. This was originally set at 30 per cent but was revised down to 25 per cent in September 2012 following a review by Hydro Tasmania.

Hydro Tasmania's storage levels, and how they are managed, gained significant prominence during the energy security challenge experienced from Spring 2015 to late Autumn 2016. Understandably, the Taskforce's Terms of Reference require it to have regard to best practice water management and, consistent with this, the Taskforce intends to review Hydro Tasmania's storage strategy. The Taskforce has already engaged with Hydro Tasmania and understands that Hydro Tasmania has initiated its own internal review of its water management strategy following the recent Basslink outage and record dry Spring of 2015. The Taskforce welcomes this action and will take the outcome of that review into its assessments.

To support an assessment of 'best practice', the Taskforce intends to investigate water management undertakings in international energy systems where hydro power is the dominant form of energy generation. These practices will be compared against the situation in Tasmania to consider where enhancements could be made. While international practices are expected to be informative, the Taskforce acknowledges that no two hydro power systems are alike and that learnings from international systems will need to be balanced against Tasmania's specific circumstances.

The Terms of Reference require the Taskforce to consider water requirements across a range of stakeholders. The Taskforce has interpreted this requirement in the context of its energy security focus, and intends to concentrate its assessment to the impact other water uses have on the availability of water for the purpose of electricity generation.

Question 7: What international examples of water storage management practices should be considered by the Taskforce when reviewing Hydro Tasmania's approach?

Question 8: What governance arrangements might be useful to consider in strengthening water storage management in Tasmania?

4. Interconnection with the NEM

The Basslink interconnector connecting the Tasmanian electricity network to Victoria was commissioned in April 2006. The interconnector has the capacity to export 630 MW (500 MW continuous) of electricity from Tasmania to Victoria and the capacity to import 478 MW from Victoria to Tasmania.

The operation of Basslink allows the import of electricity into Tasmania at times of low water storages (and/or low wholesale energy prices in Victoria), and the export of electricity from Tasmania at times of high inflow and/or high wholesale energy prices in Victoria.

The addition of a carbon price signal into the NEM from July 2012 to June 2014 elevated wholesale electricity prices in Victoria allowing Hydro Tasmania additional export opportunities, which were supported by an increase in water storages in preceding years to historically high levels (in the post Basslink period).

On 20 December 2015 Basslink experienced an unplanned outage which continued until June 2016. Difficulties identifying the location of the fault and poor weather conditions in Bass Strait in May 2016 contributed to a longer than anticipated outage. This was the first major outage of Basslink since its commissioning in April 2006. Prior to this outage, Basslink had experienced 65 outages in its nearly 10 years of operation, lasting from less than hours and up to a maximum outage of just over 9 days. The majority of the outages had a duration of less than a day[3].

In April 2016, the Commonwealth and Tasmanian governments announced a joint feasibility study of whether building a second interconnector would help address long-term energy security issues. The study will also provide advice on how best to use and develop Tasmania's current and prospective large-scale renewable energy resources. The Taskforce understands that the feasibility study is effectively the next phase of work that will take into account, and build on, work done by the Tasmanian Government as part of its election and budget commitments to investigate the case for a second Bass Strait interconnector.

The joint feasibility study's interim report indicates that the case for a second interconnector is not only linked to Tasmania's energy security and renewable energy potential, but also to how the NEM manages the transition to a lower carbon intense generation future. There is considerable national focus on energy security issues associated with the replacement of traditional carbon intense generators with intermittent renewable generation, and the potential role for greater interconnection in the NEM to assist deal with these issues.

The Taskforce has been working with the joint feasibility team to ensure mutual areas of relevance to the respective Terms of Reference are identified and synergies are maximised. The joint feasibility study is understood to be scheduled for completion by the end of 2016.

A second interconnector would have significant implications for whether or not other contingencies are required to support Tasmania's energy security. Therefore, the Taskforce intends to await the outcome of the feasibility study work before it finalises its assessment of the impacts a second interconnector would have on energy security or enabling additional sources of supply.

Question 9: What economic opportunities and risks are there for Tasmania associated with a second Bass Strait interconnector, and how would it improve Tasmania's energy security?

[3] 2016 Inquiry into government-owned energy entities: Tasmanian Government submission

5. The Tasmanian Gas Market

Tasmania's natural gas market is relatively small, in the national context, reflecting the comparatively recent introduction of natural gas into the State and the limited extent of the reticulation network. The local demand for gas in Tasmania is dominated by the Tamar Valley Power Station (TVPS), when operating, but gas is also supplied to industrial, commercial and residential customers.

Gas is supplied to Tasmania via the Tasmanian Gas Pipeline (TGP) which transports gas from Longford in Victoria to Bell Bay in Tasmania. From Bell Bay the pipeline runs west along the north coast to Port Latta (via Deloraine and Railton) and south to Bridgewater.

The gas supply industry in Tasmania is a fully contestable, predominantly private market, and subject to minimum regulation.

Australian gas markets are experiencing a period of rapid transition relating to all aspects of the gas supply chain from reserves, production, storage and transmission. The market is also being influenced by international gas prices (which in turn is linked with oil prices) because material LNG exports now occur from both the Eastern States (Queensland) and Western Australia. Consequently, there will need to be a significant increase in gas production in Australia to meet future gas demand due to contracted LNG exports and gas use in Australia.

Tasmania has a particular issue with respect to its gas market. While gas demand is high in the rest of the East Coast gas market, meaning that demand for pipeline access is also high, Tasmania's gas market remains small and as a result the TGP is significantly underutilised relative to its capacity. The Taskforce understands this is now a critical issue as major users of gas in Tasmania face uncertainty with respect to their gas transportation arrangements and pricing beyond current contracts, which most are understood to cease in late 2017.

When the TVPS operates, it is a significant user of gas. The partly constructed TVPS was purchased through the retail energy business Aurora Energy. The valuation advice provided to the Government when it decided to acquire the power station indicated a difference between its acquisition and completion costs and its market value, under normal hydrological conditions, of around $150 million. The Electricity Supply Industry Expert Panel in 2012 interpreted this as an energy supply risk 'insurance premium' paid by the then Government to avoid what it believed would be significant potential economic damage in the event of a supply shortfall[4].

Responsibility for the TVPS was transferred to Hydro Tasmania on 1 June 2013. After a period in dry lay-up from July 2013 the CCGT was returned to service on 20 January 2016 as part of the Energy Supply Plan response.

As with Hydro Tasmania's water storages, much attention has been focussed on the history of the TVPS, and the CCGT in particular, as well as its future. The Taskforce acknowledges these are complex and current issues that will need to be considered in assessing energy security from both a generation and consumer level perspective.

Question 10: How might the Taskforce consider the role for gas generation in Tasmania relative to other options to maintain energy security and the associated costs and risks?

Question 11: What can be done to strengthen the Tasmanian gas market without significant subsidy from Government and costs on taxpayers or consumers?

[4] Electricity Supply Industry Expert Panel: An Independent Review of the Tasmanian Electricity Supply Industry, 2012.

6. Renewable Energy and Emerging Technology

Over the past decade there has been a shift in the overall generation profile within the NEM, with a reduction in generation from coal fuel and a large increase from renewable sources such as wind and solar. However, coal is still the dominant fuel source and, as at 2014-15, coal represented 71.5 per cent of the annual energy generation in the NEM. Other fuel sources are gas at 10.7 per cent, water at 6.1 per cent and wind at 4.5 per cent. Other generation sources including diesel generation and interconnectors[5] make up the remaining[6]. It is important to note that the generation profile in each NEM jurisdiction is different by varying degrees from the national profile.

The contribution of solar power is presented in NEM statistics as reduced load rather than generation as solar power is a highly distributed non-scheduled generation. On a national level existing solar generation was approximately 6 000 GWh in 2015 according to the Clean Energy Council[7]. This represented approximately 2.5 per cent of total generation in Australia in 2015.

A large reason for the economic viability of renewable energy sources in the recent past has been the Renewable Energy Target (RET) scheme, together with a number of state-based incentives. Any future Commonwealth Government changes to the RET, carbon policy or other incentive schemes will greatly influence the viability of future renewable energy projects. The Commonwealth Government has currently committed to reducing greenhouse gas emissions to 26-28 per cent on 2005 levels by 2030[8]. It is expected that the energy sector will need to make a large contribution in order to help reach this target and the Taskforce understands that Governments, including through the COAG Energy Council, regard managing the transition of the energy sector to a lower carbon emissions future as a key strategic priority. It is a complex problem given the transition will need to manage potential customer reliability and price impacts.

Tasmania is well placed in this context given that its energy sector is already predominantly renewable and has achieved what the rest of the NEM is attempting to transition to. In 2014-15 the annual generation profile in Tasmania was over 99 per cent renewable energy. Even with extensive operation of the TVPS the generation profile in Tasmania was around 85 per cent renewable in 2012-13 (the last year in which significant gas generation occurred). This level of renewable energy generation could create brand value and opportunities for Tasmania in an environment where sustainability and a low carbon footprint is valued by consumers, investors and businesses.

Renewable energy comes in both large scale and small scale sizes. Large scale renewable energy includes hydro electricity, wind farms and solar farms. Small scale renewable energy predominantly relates to consumer led distributed generation such as household solar panels, small wind turbines and to a lesser extent mini hydro systems.

Outside of hydro power generation the most significant large scale renewable energy generation capability in Tasmania comes from wind farms. Wind Power is an intermittent generation source as it is only available when the wind is present and cannot be scheduled for operation on an individual half hour basis. Whilst it cannot be scheduled in the manner typical to most generation sources, wind power is reasonably reliable in Tasmania over time to meet a portion of Tasmania's electricity consumption. Tasmania currently has 308 MW of installed capacity from three wind farms in the North West and North East of the State. This installed capacity translated to approximately 1 000 GWh of generation in 2014-15, or about 10 per cent of Tasmanian consumption.

There are currently 369 MW worth of proposed wind farm developments in the State: Granville Harbour Wind Farm, Cattle Hill Wind Farm and Low Head Wind Farm.

---

[5] AEMO includes interconnectors as a generation source in this data to reflect individual NEM regions relative reliance on imported energy to meet demand.
[6] NEM Historical Market Information Report, AEMO 2015
[7] Clean Energy Australia Report 2015
[8] www.environment.gov.au/climate-change/publications/factsheet-australias-2030-climate-change-target

While Tasmania has significant wind resources, there are complex issues that need to be considered. For example, the TasNetworks Annual Planning Report identifies connection issues and integration issues. Then there is also the impact on other generation sources in Tasmania and electricity prices, particularly given the already high level of installed capacity in Tasmania relative to domestic demand and the limits of Basslink export capacity.

The Taskforce will be considering the role of wind generation in the context of the outcomes of the feasibility study into a second Bass Strait interconnector and the role of wind in optimising the generation mix needed for Tasmania's energy security.

While wind power currently appears to be the most likely avenue of further renewable energy development in Tasmania, other sources such as large scale solar farms, wave energy and geothermal energy are all possibilities in Tasmania. Large scale solar farms, for example, could become more viable as the cost of solar products continues to fall. While Tasmania currently has a relative disadvantage to most of the mainland with respect to solar PV (due to the cooler climate), cost reductions could see solar farms become viable particularly in the summer months where Tasmania enjoys longer days. The Taskforce intends to explore Tasmania's potential beyond existing fuel sources.

The small scale end of the market is driving the energy sector into a period of rapid and dynamic transformation, and there are many forecasts and predictions by a range of experts. Consumer driven technologies have a significant capacity for rapid change in the right conditions. Tasmania's energy sector will be influenced by customer driven energy choices such as solar energy and emerging technologies like household battery storage and electric vehicles. The timing and extent of these changes is not yet clear in the Tasmanian context.

According to AEMO, it is anticipated that household solar connections will continue to grow at a steady rate[9] in the absence of any large changes in the feed in tariff structure. AEMO also expects that household battery storage will remain at low levels until the cost of the technology becomes more viable for Tasmanian households. Electric vehicles are similarly expected to remain a niche product until infrastructure that supports the vehicles becomes more ubiquitous and the cost of the vehicles themselves becomes more comparable to that of a petrol driven vehicle. AEMO anticipates there will be negligible impact on the daily load profiles in each NEM region in the 20 year outlook[10].

The Taskforce acknowledges that other technology changes such as demand side management and advanced metering technology also have the potential to change the energy sector, and in turn impact the outlook for energy security.

The Taskforce will need to consider how it factors this high level of uncertainty into its assessments.

Question 12: How could the potential expansion of renewable energy generation in Tasmania help long term energy security without creating increased costs for consumers?

Question 13: Which renewable energy technologies and products present the best opportunity for Tasmania and why?

Question 14: Is there a limit on the level of intermittent renewable generation that Tasmania can sustain without affecting the reliability of the network, or requiring significant cost to strengthen the network?

Question 15: Are there material barriers to the take up of emerging energy products and services in Tasmania?

[9] Projections of uptake of small scale systems – attachment to 2016 AEMO National Electricity Forecasting Report (NEFR)
[10] Emerging Technologies Information Paper, AEMO 2015

Question 16: Is there a timeframe where renewable energy developments could be more favoured in Tasmania than elsewhere?

Question 17: What impact will the national commitment to reduce carbon emissions have on renewable energy development in Tasmania and in the wider NEM?

7. Impact of Climate Change

The previous section discussed policy responses to climate change threats, such as the Commonwealth Government's commitment to reducing greenhouse gas emissions to 26-28 per cent on 2005 levels by 2030 and the drive to increase renewable energy generation. There is an additional context in Tasmania, however, in that the prevalence of significant rainfall in Hydro Tasmania's catchment areas around the State is key to maintaining energy security in Tasmania. As such, it is important to understand the impact that climate change could have on rainfall patterns.

The Antarctic Climate and Ecosystems Cooperative Research Centre (ACE CRC) completed a study titled *Climate Futures for Tasmania* (CFT) in 2010. The results of this study showed that total annual rainfall is unlikely to change greatly but the seasonality of the rainfall is likely to change. It is expected that summer rainfall will reduce and winter rainfall will increase. Additionally, it is expected that there will be less rainfall over central Tasmania and more rainfall in coastal regions.

The Bureau of Meteorology's studies into climate change broadly align with those of the CFT but also add the prediction that rainfall events will happen with increased intensity.

These factors will all increase the challenges associated with managing water storages in the State and hence the challenge of maintaining long term energy security. Similarly, an understanding of the frequency and intensity of storm and bushfire events will also be relevant to the security of energy assets.

While work such as the CFT has proved informative to possible future climate implications, there still appears to be insufficient capacity to confidently forecast weather beyond short periods of a week or two. Consolidating long term assessments of climate change with accurate short to medium term weather forecasts is a challenge.

The Taskforce intends to engage with organisations such as the CSIRO and the Bureau of Meteorology to understand up to date thinking on the climate change impacts in Tasmania and what future studies or work will be undertaken, which could improve planning.

The Taskforce also understands that the Tasmanian Climate Change Office is in the final stages of developing a Climate Change Action Plan. The Taskforce will consider how the Plan may interact with its Terms of Reference.

Question 18: Are there other climate change related implications for energy security in Tasmania?

8. Scenario Planning

The Taskforce expects that the modelling of selected, credible scenarios will be required in order to reach an informed view of long term energy security management in Tasmania. The discussion throughout this consultation paper points to a number of potential scenarios that should be considered. The Taskforce considers that the following scenarios have merit:

- The impact of a second interconnector;
- Significant change in Tasmanian demand (both increase or decrease);
- The potential impact of a carbon market;
- The impact of significant changes in the spot market price in the NEM and gas prices;
- Changes to storage inflows as a result of climate change;
- Rapid technological change with distributed generation and storage; and
- The impact of changing minimum operating levels for storages.

Question 19: Are there other scenarios with energy security implications in Tasmania that the Taskforce should be considering?

9. Submissions

The Taskforce welcomes evidence-based submissions or comments from all interested parties on any matter within the scope of this consultation paper. To assist with the preparation of submissions, the paper contains questions of particular interest which are located at points throughout the paper. Respondents need not feel obliged to comment on all questions, as the Taskforce will also welcome responses to selected questions.

To promote transparency, the Taskforce intends to publish submissions on its webpage. The Taskforce may decline to publish certain submissions (or parts of submissions) where there are issues concerning appropriateness or confidentiality. If the author of a submission wishes to claim confidentiality in relation to a submission or a part of a submission, this should be clearly indicated and justified, and will be respected. Where only parts of a submission are requested to be confidential, they should be submitted as an attachment to that part suitable for publication.

To facilitate the publication of submissions on the website, submissions should be electronic where possible.

Submissions should be lodged by Friday 9 September 2016, and may be emailed to:

energysecuritytaskforce@stategrowth.tas.gov.au

or marked confidential and posted to:

Energy Security Taskforce Secretariat

c/- Department of State Growth

GPO Box 536

Hobart, Tasmania, 7001