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TESLA Corporation

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Dear Matthew,

Public Submission

Response to Consultation Paper: Improving Reserve Capacity pricing signals – alternative capacity pricing options

1.0 Introduction

Thank you for the opportunity to comment on the Consultation Paper[1].

Tesla Holdings Pty Ltd and its subsidiaries (Tesla) operates four 9.9 MW diesel generators in the South West Interconnected System (SWIS) that are mainly used to provide electricity to meet peak demands.

Tesla invested in these units based on initial design of the Reserve Capacity Mechanism (RCM), as well as encouragement by successive WA Governments for increased private sector participation in the SWIS. Tesla relied on capacity demand forecasts provided by the Independent Market Operator (IMO) that indicated that additional capacity (especially peaking capacity) was required.

The ongoing financial viability of the units is highly dependent on the revenue earned by providing Capacity Credits under the RCM. Proposed reforms that impact capacity certification (i.e. constrained network access and capacity certification processes) and Reserve Capacity Prices (RCP) have the potential to significantly impact the profitability of the Tesla units.

Given the above, we have a significant interest in the development of capacity pricing options in the Wholesale Electricity Market (WEM) and provide this submission to ensure that decision makers consider the impact of proposed reforms on Market Participants and put in place arrangements that maintain the viability of dispatchable generation in the SWIS (such as Tesla's generation units) that is

[1] Department of Treasury | Public Utilities Office, *Improving Reserve Capacity pricing signals – alternative capacity pricing options*, Consultation Paper, 9 April 2018

important in maintaining a reliable and secure electricity system in the South-West of Western Australia.

2.0 What is the problem that we are addressing?

The consultation paper seeks comments on alternative options to capacity auctions; the latter was previously proposed by the Electricity Market Review[2]. The assessment of alternative options to a capacity auction is based on concerns that in a small, isolated and lumpy market like the WEM, capacity markets may not result in competitive outcomes given the current market structure (e.g. dominant role that Synergy plays in both retail and wholesale markets).

As a result, complimentary market power mitigation measures will need to be developed and administered to ensure competitive market results. This could include the development of price caps (e.g. Benchmark Reserve Capacity Price or BRCP), a downward sloping capacity demand curve (like the RCM) and bidding rules that ensure market participants can only bid in regulated price ranges (or be excluded from the bidding altogether). In effect, after all the capacity auction reforms are implemented, you end up with something that bears a close resemblance to an administered pricing arrangement, but at a much higher cost of implementation and ongoing administration.

Market power concerns, as well as the requirement to provide price certainty to encourage private sector investment in long-lived generation assets, were key design considerations for the initial design of the RCM (implemented in 2006). Fundamentally, the current RCM is based on an administered pricing formula and according to the consultation paper is unique when compared to much larger capacity markets operating in Europe and North America (e.g. PJM). The uniqueness is because market participants are not required to make competitive bids for building new capacity.

However, this uniqueness is *"superficial"*. While AEMO sets a regulated price cap for capacity (BRCP) and a downward sloping capacity demand curve, which indicates that the market will value capacity less if excess capacity increases, market participants then make commercial decisions as to how much they will invest in the SWIS. They will factor in demand forecasts made by AEMO (via the Electricity Statement of Opportunities) and the amount of capacity (and capacity credits issued by AEMO) that is likely to enter the market and what the level of excess capacity is likely to be in future years and the resultant RCP price path. In effect, the amount of excess capacity in the market and the resultant capacity price is *market driven*.

In our view, it doesn't matter whether capacity auctions are implemented or administered pricing arrangements are in place, resultant prices and quantities are *market driven*. This is counter to the claim by the PUO in the consultation paper that the current RCM does not deliver a *"market discovered"* price (p.2.).

It is the PUO's view (p.2) that the fundamental problem that they are attempting to address via reforms of the capacity pricing mechanism is *"the lack of a price response to surplus capacity – so that excess capacity is significantly overvalued. Conversely, when there is a looming shortage, it is likely that capacity will be under-priced. This results from a pricing formula that delivers a shallow sloping capacity price curve, rather than a market discovered price from competitive offers."*

If this is the fundamental problem, wouldn't you simply change the slope of the capacity demand curve under current arrangements rather than adopting new capacity pricing mechanisms for setting capacity prices in the WEM.

Of course, this has already commenced under the transitional arrangements (increasing slope of the capacity demand curve so that prices fall more sharply with excess capacity). However, the current

[2] Department of Finance - Public Utilities Office, Final Report: *Reforms to the Reserve Capacity Mechanism*, Office, April 2016

transitional price formula for capacity does not adequately address potential capacity shortages (e.g. higher prices required if there are looming capacity shortages).

3.0 Our Support for Capacity Market Reforms in the WEM

Contrary to the claim that the fundamental problem is the slope of the capacity demand curve, there have been other more fundamental problems with the RCM. This included:

- Over-forecasting of capacity requirements by the IMO;
- Permitting Demand Side Management (DSM) to participate in the RCM when it clearly cannot provide the same level of availability as generation; and;
- Decisions by Synergy to refurbish old, inefficient coal-fired units (Muja AB) when they were not required to meet energy requirements or increase supply reliability in the SWIS.

To date, Tesla has been broadly supportive of capacity market reforms that have been both implemented and proposed to address some of the problems mentioned above.[3] This included the following:

- The transitional pricing arrangements that better respect the value of investments made by the private sector in response to the current RCM arrangements;
- The differential pricing approach for DSM facilities;
- The introduction of a capacity auction process by 2021 with appropriate market power mitigation measures and a capacity demand curve that enables existing generators to remain viable under a range of future scenarios;
- The increased availability requirements for DSM resources participating in the capacity auction helps to improve fairness in the treatment of both generation and DSM facilities (i.e. technology neutral).
- Moving to a regime of dynamic capacity refunds, whereby refunds are recycled to high availability generation units, will hopefully provide incentives for old, inefficient generation to retire, and provide incentives for market participants to make generation available on an ongoing basis.
- The retirement of 386 MW of Synergy generation plant that was announced by the WA Government, in conjunction with the anticipated reduction of DSM resources (around 300 MW at the time) would go a long way to ensuring that the WEM has an efficient amount of and the right mix of plant (i.e. peak, mid-merit and baseload) to meet future capacity requirements.

However, this support was conditional on the WA Government providing satisfactory transitional arrangements or compensation specific to the requirements of Tesla. Investments made by Tesla, including arranging debt funding of long lived generating plant, were based on significantly different policies promoted by the WA government and its agencies than what is being considered today.

4.0 Alternatives to Capacity Auctions

The PUO has proposed two alternative options to capacity auctions in the WEM. This includes the following:

Option 1: Administered pricing

Retain the current administered capacity procurement arrangements administered by AEMO, with a revised pricing formula that more closely reflects the value of capacity at various levels of excess capacity (or shortfall).

[3] Tesla Corporation, Reforms of the Reserve Capacity Mechanism: Tesla Corporation Response, 3 May 2016.

The PUO emphasises that the revised pricing formula would need to provide sufficient certainty for new capacity investment, but also encourage the removal (or retirement) of surplus capacity.

Option 2: Retailer led contracting with a bulletin board trading mechanism

This option would impose a requirement on each electricity retailers to contract sufficient capacity to meet its Individual Reserve Capacity Requirement (IRCR). A penalty regime would be put in place to ensure that retailers did not breach their obligations.

In effect, retailers would underwrite capacity via ownership or bilateral contracts. There would be no central procurement of capacity or capacity pricing mechanism. It is proposed that AEMO would administer a (voluntary) trading platform to provide some level of price transparency and enable parties to trade around their capacity contract positions.

If parties failed to secure sufficient capacity, the AEMO would operate a capacity procurement mechanism (last resort) to ensure the reliability standard was met in the WEM with any costs passed onto to non-compliant retailers.

This option has the potential to reduce price transparency and contract liquidity in the WEM since most capacity traded will be via bilateral contracts and would require the implementation of market power mitigation measures (like requirements under the capacity auction approach).

5.0 Assessment of Retailer led contracting

As outlined earlier, if the fundamental problem is the simply the slope of the capacity demand curve under administered pricing arrangements, wouldn't it be logical to change the slope of the curve to address these concerns. Developing an alternative option (such as retailer led contracting) is not required to achieve this result.

It is likely that the introduction of retailer led capacity contracting could reduce competitive outcomes in the WEM. Only larger players (i.e. Synergy and Alinta) would be able to underwrite significant investment in generation plant via ownership or long-term Power Purchase Agreements (PPAs). Capacity prices would no longer be easily discoverable as most capacity contracted in the WEM would be via bilateral contracts. Trade in capacity credits would reduce and this would limit opportunities for smaller retailers to obtain capacity credits so that they could make contract offers to contestable electricity customers.

If these larger players (e.g. Synergy and Alinta) end up with a surplus of capacity credits via bilateral contracting, then market rules would need to stipulate that the capacity credits must be traded (either bilaterally or via the capacity credit bulletin board).

However, given that Synergy and Alinta would have market power, how would they behave when offering capacity credits to third parties? Would they provide capacity credits at reasonable prices? Both would have incentives to offer higher prices (exceeding cost of new entry) to independent retailers. Would the AEMO have to now step in and establish maximum price caps for capacity traded in the WEM? Given that parties have market power, would they then simply offer capacity credits at the AEMO price cap?

Retailer led contracting raises more questions than it answers in helping to address current problems with the RCM and there is a risk that it could result in higher capacity prices and reduce competition in the WEM. For these reasons we argue that it is not an option that should be seriously considered.

In Tesla's opinion, current administered pricing arrangements should remain in place, but the capacity demand curve be altered to achieve the dual objectives of:

- Providing signals to ensure that the capacity market is in balance in most years;
- Price certainty so that generation developers can secure finance (equity and debt) to build dispatchable plant in the SWIS that will be necessary to meet reliability targets in the future.

6.0 Preferred Administered Pricing Approach

In our view, an Administered Pricing Approach should be retained. However, some changes should be made to the shape of the capacity demand curve and what facilities can qualify for capacity certification in the future.

6.1 Compartmentalised Capacity Demand Curve

As outlined in the PUO Consultation paper, there are problems with having a constant slope capacity demand curve. Currently, the transitional price formula provides a strong signal for market participants (and future investors) not to increase the amount of excess capacity, otherwise the RCP will fall sharply. The slope of the transitional formula increases each year until an auction was to be implemented (2021), which increases this signal further.

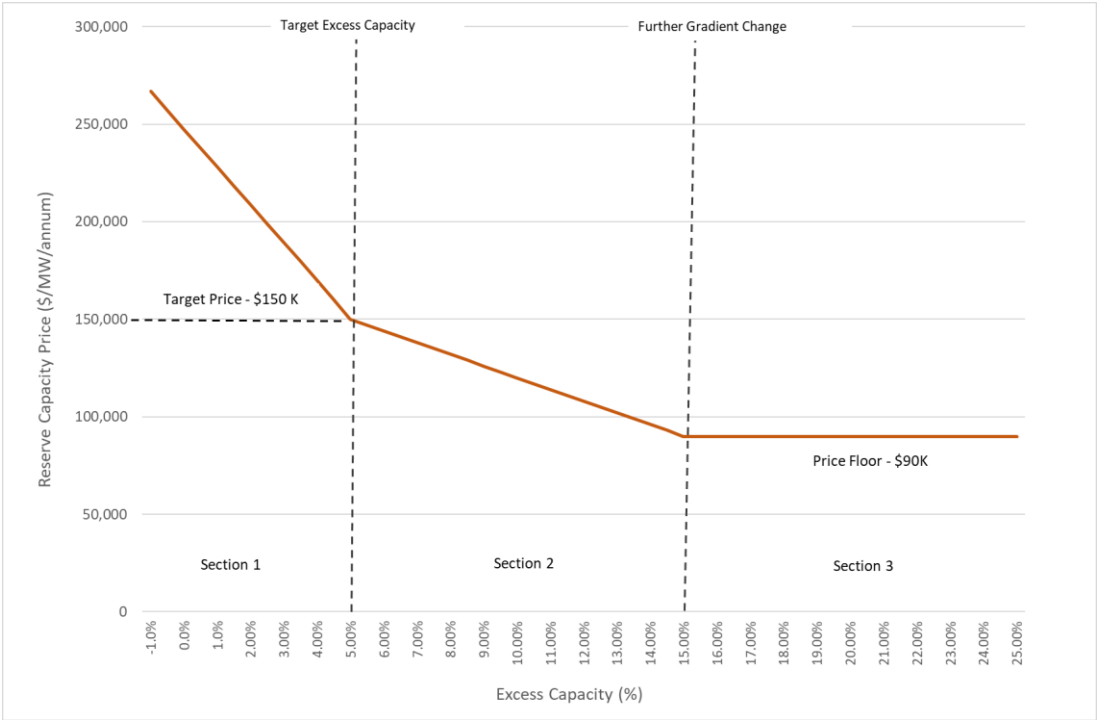
However, the transitional price formula does not provide a strong signal for investment if there is a shortage of capacity in the WEM. The maximum RCP can only be 1.1 times the BRCP, which may not always provide sufficient incentives for new investment. However, the value to users of avoiding load shedding is significantly higher than just 10% above the BRCP (~$165,000/MW/annum). If the value of lost load in the WEM is around $30,000/MWh and the WEM was short 100 MW, resulting in 6 hours of load curtailment in a year, then customers would be prepared to pay around $360,000/MW/annum to avoid the load shedding – more than double the current maximum RCP.

Clearly the transitional price formula does not reflect the value of capacity when there is a potential shortage.

To overcome the shortfalls with the current transitional price formula, the PUO has suggested developing a compartmentalised capacity demand curve with three sections that reflect the changing value of capacity at different levels of excess capacity.

Tesla has developed a compartmentalised capacity demand curve that it views as consistent with the dual objectives outlined above.

Figure 1: Proposed Capacity Demand Curve for the WEM



The three sections of the capacity demand curve are discussed below:

- Section 1 – In this range the RCP should be able to exceed the BRCP (set at $150,000/MW/annum) if there is a risk of supply shortfalls. For example, if excess capacity is negative (or zero), the RCP can be more than 1.65 times the BRCP (exactly 1.65 times the BRCP when excess capacity is zero). As outlined above, this reflects more closely the value of load shedding in the WEM. The gradient of the curve is relatively steep in this region until we achieve the 5 per cent excess capacity level (target level).
- Section 2 – In the region of 5 to 15 per cent excess capacity, the slope of the capacity demand curve should be more gradual providing some stability and certainty to market participants. In addition, a gradual slope will help to mitigate price volatility created by the exercise of market power in this range.
- Section 3 – Above 15 per cent we have set the capacity price at the price floor of $90,000/annum. At this level, no supplier of dispatchable generation or intermittent generation with energy storage will be encouraged to enter the market. It is not necessary to drive prices to zero to discourage further investment (or plant retirements) in the SWIS.

There are several potential shortfalls with our proposed approach. A price floor of $90,000/annum may still encourage DSM facilities to enter the market (given their relatively low costs to enter the RCM) and may not discourage older generation facilities to retire.

As outlined in the next section, in our view, DSM facilities should not be permitted to re-enter the RCM. DSM facilities effectively reduce load and should be used to reduce a customer or retailer's IRCR. DSM is not dispatchable generation and should not be treated as such in the RCM.

Decisions on the retirement of older plant is based on a range of factors which include future energy prices, reliability of the units (and potential capacity refunds), efficiency of the units, capital required to continue to operate the plant, and capacity prices. We should not be relying on extremely low capacity prices (e.g. $50,000/MW/annum) to accelerate retirement plant decisions, but should rely on all the market settings in combination.

6.1 Qualifying Facilities

It is our view that the amount of intermittent generation in the SWIS is likely to increase significantly in the SWIS. This includes rooftop PV, large-scale wind and solar farms. As a result, the peak demand for dispatchable generation is likely to change significantly in future years and may result in more variation as to when peak dispatchable generation occurs (e.g. by time of day, week and season).

In addition, the Reserve Capacity Requirement (RCR) is also meant to accommodate the loss of the largest generating unit in the SWIS, which can occur anytime. Given the aging nature of the SWIS fleet, it is likely that forced plant outages will increase in the SWIS.

Increased reliance on intermittent plant (without storage) and older generating units implies that there is likely to be more substantial variation in generation levels (including weather-related events for example), which then requires dispatchable plant to be on standby and ramped up or down rapidly in response to system operator instructions.

Given the future difficulty of reliably measuring the peak demand for dispatchable generation in the SWIS and the fact that the loss of older generating units is more likely, we need to provide strong signals for dispatchable plant to remain and enter the SWIS.

Providing capacity credits to DSM facilities that have limited availability to help manage peak dispatchable demand events (e.g. consecutive hot days or sustained transmission outages) or providing capacity credits to intermittent plant that cannot replace the loss of multiple generating units on forced outages does not improve reliability outcomes in the SWIS.

DSM facilities and intermittent plant (without storage) do provide some value to retailers in reducing peak demand on average. In our view, these facilities help reduce customer or retailer's IRCR, but do not constitute capacity that can be relied upon to meet peak demand for dispatchable generation. It is our view that to ensure that capacity credits are a truly homogenous product (one MW is just like another), then capacity credits should only be awarded to generation or intermittent facilities with storage that can meet a standard set of qualifying criteria. For example, able to respond to system operator instructions, can ramp up or down, can provide up to 10 hours of dispatch per day, can operate for consecutive days, etc.

The real advantage of this approach is the capacity market would provide a signal to renewable energy developers to consider investing in energy storage to help increase the amount of dispatchable facilities in the WEM. This can also increase the availability of ancillary services (e.g. inertia, regulation etc) in the WEM at a time when many dispatchable generating units are likely to retire over the next 10 years (e.g. mixture of coal and gas fired generation in the SWIS).

In the same way that the National Energy Guarantee (NEG) is attempting to maintain system security and reliability in the NEM while providing some incentives for emission reduction, changes to the qualification requirements for facilities that can earn capacity credits will help to maintain security and reliability in the WEM.

We thank you for your kind attention to our feedback.

Best Regards,

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