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26 November 2018

Ms Jessica Shaw MLA  
Chair  
Economics and Industry Standing Committee  
Parliament House  
4 Harvest Terrace  
West Perth, WA 6005



Dear Ms Shaw,

**E&ISC Inquiry into Electricity Microgrids and Associated Technologies in Western Australia – Questions taken on notice**

Thank you for the opportunity for Horizon Power to further contribute to the Economics and Industry Standing Committee's (the Committee) Inquiry into Microgrids and Associated Technologies in Western Australia through participation in a public hearing on 31 October 2018.

During this hearing Horizon Power Executives Mr Curro, Mr Mohn and Mr Paterson took four questions on notice, and in subsequent correspondence the Committee has asked an additional five questions.

Please find attached Horizon Power's response to the Committee's questions.

Should you have any additional questions or wish to discuss any of the matters outlined in Horizon Power's submissions in further detail, please do not hesitate to contact my office.

Again, thank you for the opportunity to participate in and contribute to this important inquiry.

Regards,

A handwritten signature in blue ink, appearing to be "MH", is written above the name Mike Houlahan.

**Mike Houlahan**  
**A/Chief Executive Officer**  
**Horizon Power**

## **ATTACHMENT A:**

### **Economics and Industry Standing Committee Inquiry into Electricity Microgrids and Associated Technologies in WA - Responses to questions taken on notice**

#### **Question 1:**

Information on the PUO working groups to do with the pricing of Horizon's network, constraints around investment signals fringe of the SWIS etc. (p5)

#### **Response:**

Horizon Power has developed a modernised funding model to provide incentives for it to drive the lowest sustainable costs across its electricity supply system. The modernised funding model includes some critical new concepts to strengthen the incentives for Horizon Power to transition to the lowest cost electricity supply system by reducing generation, network investment by working with the end customer.

A conceptual framework for the modernised funding model was developed in November 2016. A working group, with representatives from Horizon Power and the Department of Treasury, was convened in July 2017 to develop the funding model in more detail for introduction to Gascoyne Junction from 1 July 2018. The objective of introducing the modernised funding model to Gascoyne Junction is to test the following hypotheses.

The modernised funding model:

- Facilitates lower investment across the electricity supply system, which leads to lower costs and a reduction in subsidies over time with the appropriate tariff structure.
- facilitates customer participation to deliver more efficient outcomes, which increases competition in the supply of services
- appropriately balances the interests of the Government (as subsidy payer), Horizon Power and consumers
- appropriately balances the costs of administering the funding model with the risks
- provides the flexibility to adapt to changes in circumstances, such as a different mix of generation, and to changes over time, including technological changes, environmental changes and changes in consumer preferences
- avoids cross-subsidies, between classes of customers and between customers in the towns in which the modernised funding model is applied and other customers.

Horizon Power is currently working with customers in Gascoyne Junction to implement the proposed model. Options are being explored to incentivise customers to take up renewables and to actively participate as prosumers, whilst still providing a return on investment to the state to reduce subsidies.

The long-term strategy of implementing the model in Gascoyne junction is to promote a lower cost system by leveraging on the declining cost of renewables, battery solutions and thereby minimise / eliminate expensive fossil fuel generation. Leading to a reduction in customer bills and government subsidies.

The above model has potential to reduce investment and provide the correct investment signals for fringe of grid SWIS investments, which share similarities to remote towns in Horizon Powers footprint in terms of the significant investment needed to serve a small number of customers.



A separate document is attached to this submission to provide further detail.

#### **Question 2**

On page 26 of your submission you state "The above problems are conflated by the high cost of any proposed capital works upgrades (such as the \$22M to be invested in Tjuntjuntjara Community, east of Kalgoorlie) and limited funding. Horizon Power suggests a different approach to these communities." Can you provide more detail about what that different approach entails and what does Recommendation 5 mean in "Recognise remote communities as microgrids"? (p11).

#### **Response:**

Horizon Power proposed a multi-utility approach to the delivery of electricity, water and wastewater services in its bid to take on delivery of the Remote Area Essential Services Program (RAESP) in 2017. The RAESP proposal did not proceed.

The context of Recommendation 5 in Horizon Power's submission was not based on Horizon Power offering a multi-utility model, but to highlight the value of a coordinated local approach to the provision of services in remote communities. Working with the communities to incorporate energy efficiency measures will reduce the overall cost and provide lasting value. Specific initiatives highlighting the value of this approach are:

- supporting high uptake of localised, renewable energy resources, coupled with customer/retail technologies; and
- providing localised community engagement and economic development opportunities.

Examples of Horizon Power's work with these remote communities follow.

- **Solar Incentives Scheme:**

In a partnership with Horizon Power, the remote communities of Djarindjin and Lombadina have installed 110 kilowatts of solar panels on community buildings which will save thousands of dollars each year on their electricity costs. In addition, Horizon Power's costs of supplying these communities will be lowered.

The offer is open to six other remote communities under Horizon Power's Solar Incentives Scheme. Horizon Power is investing up to \$1 million in these projects, which will result in 900 kilowatts of solar installed if the option is taken up by all eligible communities. The offer expires in June 2019.

Horizon Power would also like to work with the Department of Communities to install solar on the roofs of houses rented from the Department in these communities to lower the electricity costs for individual residents. This approach could be extended to water infrastructure, such as bores, treatment plants and pumps, with potential joint venture partners joining Horizon Power to invest in solar installations to reduce electricity costs for water.

- **Remote Community Utilities Worker Program:**

Four men from some of the most remote Aboriginal communities in Western Australia are the pioneers in a unique national apprenticeship developed by Horizon Power to improve outcomes in remote communities.

Horizon Power's Remote Community Utilities Worker (RCUW) trade qualification was

designed to improve the reliability of power supplies in remote Aboriginal communities by reducing the length and duration of outages, and importantly to create jobs and boost the economic development and sustainability of these communities.

Early next year all RCUWs are due to commence the first tranche of training in renewable energy for regionally and remote based employees. The benefits of the RCUW program include: improved reliability and electrical safety (because of availability of trained RCUWs who are skilled to fix basic electrical faults); improved community education around electricity-related matters and skilled job creation, and providing long term prospects in remote communities.



**Question 3:**

Horizon Power's response to the Curtin Economics Centre report on a trial of tariff structure changes for energy vulnerable households. (p11)

**Response:**

The research paper, "POWER PLANS FOR ELECTRICITY - The impact of tariff structure changes on energy vulnerable households", BCEC Research Report No. 16/18, September 2018 (Report) was a collaboration between Bankwest Curtin Economics Centre, WACOSS and Horizon Power. The work that was undertaken used a data set and customer experiences from Horizon Power's trial of an electricity demand tariff product.

The trial tested a number of aspects including consumer ability to respond to peak demand reduction targets, which ranged from quite easy to very challenging. The report correctly notes that the vast majority of vulnerable customers will be better off, without requiring changes to behaviour, under the proposed pricing model. The report also notes concern for vulnerable households if they were to have an increased bill.

The trial moved into the deployment of the *MyPower* as an opt-in product in Port Hedland and Broome during the summer of 2017/18.

In conjunction with a Working Group from the Public Utilities Office, Treasury and the Energy Ministers Office, the *MyPower* product was explored and developed. The product development identified a number of assistance programs that may be required to support any further rollout of the product.

If structured correctly, electricity demand tariffs can align (in a more equitable fashion) the fixed cost structure of the electricity supply chain with the revenue streams that Horizon Power receives. It is this long term benefit that will lead to a more efficient and equitable electricity supply.

Horizon Power supports the key findings of the report which are summarised at page 'v' of the report, noting that the findings regarding a reduction in demand do not necessarily apply to the *MyPower* product, or prospective changes to the product.

**Question 4:**

Why did Horizon support Western Power's proposal to rollout advanced metering in its submission to the ERA AA4 process, and why did the ERA not support the proposal, and what are the implication of the ERA's decision? (p13)

**Response:**

Horizon Power has seen significant benefits from the installation of Advanced Metering Infrastructure (AMI) in its portfolio including:

1. Reduced cost of meter data collection;
2. More accurate and timely billing;
3. Monitoring and visibility of power quality data and fault management, reducing the risks of neutral integrity incidents in the customer's home; and
4. Flexibility to offer innovative tariffs and product pricing.

On this basis, Horizon Power would suggest that there is both economical and network safety benefits to the roll out of AMI in the South West Interconnected System (SWIS). We understand the ERA's recommendation only considered the benefits of (1).

The greatest economic benefits for the State and customers would result from (4), with innovative tariffs that may encourage efficient deployment of DER.

We believe one of the greatest benefits of AMI resides in the ability to improve the safety of customers, by reducing the risks of neutral integrity incidents (resulting in electric shocks) in the network. Horizon Power has developed neutral integrity fault detection algorithms through its advanced meters. Several incidents, which could have potentially resulted in electric shocks are detected and fixed in a timely manner.

Horizon Power is willing to collaborate with Western Power as advanced meters are deployed to roll-out these algorithms and immediately improve the safety of the customers.

**Question 5:**

Can you please provide an update on the progress of your Carnarvon DER energy storage project?

**Response:**

The Carnarvon DER trials consists of two distinct projects, the ARENA funded DER trial and the Horizon Power funded Low Voltage Microgrid trial.

The ARENA funded DER trial is slightly behind schedule with the projected completion of 10 customer PV & Battery with Feed in Management devices (Reposit) installations and eight PV inverter upgrades and Reposit installations due by 31 January 2019 (the previous target was October 2018). ARENA has granted an extension to the timeline. This delay is not expected to cascade to the other deliverables in the timeline which are associated with the experiments and Murdoch University Research & Development deliverables.

Development of the DER Operating Control platform, the precursor to DER management system (DERMS), and Reposit interface is complete. At-scale testing in NSW of the feed-in management function has been successfully completed.

Over 80 Wattwatchers, a device that monitors and analyses control circuits in real time, have been installed on customer premises and the data is being captured in Horizon Power's core database, along with weather station data and sky camera imaging. The richness of solar PV production data has already increased our understanding of how cloud events impact on the fluctuation of solar output, and how the geographical spread of solar provides for diversity of these impacts. These findings have informed our calculation of PV hosting capacity on our networks.

Even prior to the full commissioning of the systems, many lessons have been learned primarily around installation of the DER and communications links, and the upskilling of installers who are unfamiliar with battery and communications installations.

The Gibson Street LV Microgrid trial leverages information from the above solar/battery installations, and includes the installation of a network battery and microgrid controller which will isolate the Gibson Street feeder from the main grid. The installation of the network battery is complete and is being commissioned as at 8 November 2018.



**Question 6:**

A number of the generators in the NWIS are gas-fired, have you had any discussions with ATCO about the possible future use of hydrogen in the NWIS?

**Response:**

Horizon Power either owns or purchases energy from a number of gas fired generation assets in the NWIS and outside of the NWIS.

While we have not undertaken direct discussion with ATCO on the use of Hydrogen in Karratha, Horizon Power has undertaken a study to examine the economic benefits of using Hydrogen generated from renewable sources for electricity production.

The results of that study indicate it is not economically viable at present. However, as the technology solutions are becoming more prevalent and the cost of the infrastructure is reducing, Horizon Power will revisit this in 2019.

**Question 7:**

Has there been any progress in the development of a Centre of Excellence for Microgrids in WA?

**Response:**

Since commencing work on what Horizon Power refers to a Centre of Excellence in July 2018, there have been a number of developments. Completion of The Microgrid Hub (Hub) roadmap was the first step within the Centre of Excellence strategy and identified in Horizon Power's submission to the Inquiry into Microgrids and Associated Technologies in Western Australia:

- Identification, engagement and recruitment of 12 foundation members for the Hub, from respected companies across the microgrid value chain. This includes Horizon Power, who will provide representation in the Hub as the Western Australian microgrid owner and operator.
- The inaugural Hub foundation meeting, was held on 26 September 2018 in Perth with the 12 foundation members present.
- A survey of foundation members was undertaken to build their valuable feedback into the development of the Hub - in preparation for the formation workshop.
- A Hub formation workshop was held on 9 November 2018, with collaboration towards clarifying the following:
  - The mission, purpose, value proposition
  - Objectives and roadmap
  - The board, management structure and charter
  - Working groups and key activities to achieve objectives in the first 12 months

The next steps are to finalise incorporation of the Microgrid Hub which is a standalone not for profit organisation, via the signing the charter by the foundation members. The Hub will in 2019 then independently commence planning of activities and initiatives.

**Question 8:**

Your submission says (p71) that “smart meters are essential to demand-based tariffs”- how many ‘smart meters’ has Horizon now rolled out in the NWIS, and how useful have you found them to be in encouraging the further take-up of DER by your customers?

**Response:**

All Horizon Power customers have Advanced Meters installed, with the exception of 14 customers. The information available from these meters enables Horizon Power and its customers (through the Horizon Power app and online account portal *MyAccount*) to understand electricity used every hour of every day. This means that tariffs based on the electricity used (hourly demand) can be considered. There is a raft of other information also available for tariff development.

This information also allows a customer to develop an understanding of the benefit of installing a DER solution. Further development of the tools that examine the metering data with the incorporation of sunlight hours (and other data) will allow for an accurate calculation on the benefit of a DER solution for each customer. This information will form appropriate mechanisms to understand customer and incentives appropriate products.

**Question 9:**

Is Horizon Power planning changes to prepare its NWIS transmission and distribution systems for the greater use of electric vehicles? How many EV charging stations are there in the region covered by the NWIS?

**Response:**

There are approximately 90 designated public EV charging stations in Horizon Power’s service area. While there is no single repository that has vehicle charging stations listed (according to [plugshare.com](https://www.plugshare.com)) there are six installed on Horizon Power’s network in the NWIS.

Horizon Power has installed three stations in its service area in Fitzroy Crossing, Halls Creek, and Warmun. The reason for these locations was that nothing had been installed by the private sector, and the lack of charging points would be problematic for electrical vehicles should they want to drive on Highway 1. In addition we have installed a charging station at our office in Bentley.

While no impacts have yet been seen from the adoption of EV’s, Horizon Power has developed a programme to:

- Understand the impact and risks of this EV infrastructure on Horizon Power’s and IPP’s operating procedures and systems.
- Assess technical rules and standards that may restrict the adoption of EV’s.
- Develop a policy for Horizon Power’s on EV charging infrastructure.