

DISCUSSION PAPER

Horizon Power supplies the following public discussion paper raising matters to inform debate on the issues that might be considered by the Public Utilities Office in developing the Issues Paper to be released by the Minister. The matters set out in this paper are put forward for discussion purposes and do not represent a submission:

- in response to the application by Alinta Sales Pty Ltd under section 3.8 of the *Electricity Network Access Code 2004 (WA) (Code)* for coverage of Horizon Power's electrical transmission and distribution network in the East Pilbara (**Alinta Coverage Application**); or
- in support of Horizon Power's application under section 3.8 of the Code for coverage of Alinta DEWAP Pty Ltd's an electrical transmission network located in the East Pilbara.

Access to Horizon Power's transmission network (66kV and above)

Horizon Power currently provides open access to customers seeking network services to its networks at 66kV and above in the Pilbara. In offering access on this basis, Horizon Power has adopted the following mechanisms that have been developed to be consistent with the Code to the fullest extent possible given the particular physical and geographic limits of the network. The mechanisms have been developed by appropriately qualified and independent legal, economic and engineering consultants.

1. An Electricity Transfer Access Contract (**ETAC**) that addresses both the provision of network services and the management of ancillary services in the absence of any electricity market mechanisms.
2. A Network Pricing Model including the definition of bare reference services. This pricing model can demonstrate minimal cross subsidy between the various users of the network.
3. A pricing policy that requires Horizon Power to negotiate pricing that, "*is equal to, or is less than, the stand-alone cost of service provision*" if an applicant for network services can demonstrate that the Network Pricing Model is not achieving this outcome.
4. Technical Rules discussed further in this paper.
5. A capital contribution policy
6. An application and queuing policy of first in, first processed.

When developing these mechanisms and policies Horizon Power has followed two guiding principles.

1. The policies and mechanisms must not be inconsistent with the Code.
2. The cost of establishing and maintaining these mechanisms should reflect the size of the market and the number of customers (comparatively small in both cases).

Horizon Power is willing to have these mechanisms reviewed by independent third parties and has demonstrated a willingness to adjust these mechanisms if stakeholders identify any material inconsistency with the Code. The most recent example of this was a request from Alinta to update the Weighted Average Cost Code (**WACC**) applied in the pricing model as part of negotiations for the revision of Alinta's current Access Arrangement.

The mechanisms above have been applied in the recent ETAC entered into by Fortescue Metals Group for the supply from the proposed TransAlta Power Station and in the negotiations for Network Access with Alinta to transport power to BHP Billiton loads in the Port Hedland area. Horizon Power will apply the same pricing policy and ETAC to all applicants for its defined reference services.

In these circumstances, coverage of the Horizon Power transmission network will not result in a material practical increase in competition as all of the transmission-connected customers currently

have open access, Code-consistent ETACs in place and Horizon Power is prepared to commit to offering access on this basis to any potential future customers. Horizon Power is of the view that the above mechanisms achieve the intent of the Code in the context of transmission assets in the Pilbara at an appropriate cost given the size and scale of the customer base and market. These costs are significantly less than the regulatory, administrative and compliance costs incurred by the SWIS market as a result of Western Power's initial access arrangement submission, review and approval (understood to be in the order of \$2 million) and the costs of subsequent Access Arrangement revisions. In addition to these regulatory costs, coverage will also result in the cost impacts of ring fencing obligations and the service standard payments under the Code.

The cost burdens discussed above will all be passed through to the following public stakeholders

1. Horizon Power customers in the Pilbara through increased network changes.
2. Customers in the South West through the Tariff Equalisation Scheme.
3. Western Australian taxpayers, through a reduced return from Horizon Power and increased government CSOs.

Increasing the financial burden on public stakeholders is considered by HP to not be in the public interest.

Access to Horizon Power's distribution network (below 66kV).

Horizon Power does not currently offer open access to network services for connections below 66kV. This is on the basis that the cost burden on the following stakeholders (**public stakeholders**) would not exceed the benefits generated by offering such access:

1. Horizon Power customers in the Pilbara;
2. Customers in the South West through the Tariff Equalisation Scheme; and
3. Western Australian taxpayers, through a reduced return from Horizon Power

In summary, Horizon Power is of the view that it is in the public interest for any evolution to open access to its Pilbara distribution system to be supported by a considered, planned and staged transition, that incorporates all of the mechanisms required to support positive outcomes from competition in electricity markets, and does not result in an increase in costs to public stakeholders. Coverage of the Horizon Power distribution system under the Code in isolation will not achieve these outcomes.

The distribution system does not currently have any market mechanisms for efficient dispatch, ancillary services or technical rules. If the distribution network is covered without any market mechanisms addressing these issues then either:

- Horizon Power must continue to address these matters, at increased cost; or
- Horizon Power must require the additional users of the distribution network to share the burden of addressing these matters, which will still be at an increased cost.

There will be an increased cost for the following reasons.

In the absence of effective market mechanisms, the economic efficiency of power generation, including to meet demand and provide ancillary services, is highly dependent on the scale of the portfolio of customers being supplied. To illustrate this point the chart below demonstrates the total cost of electricity generation against the size of the customer base across Horizon Power's supply areas.

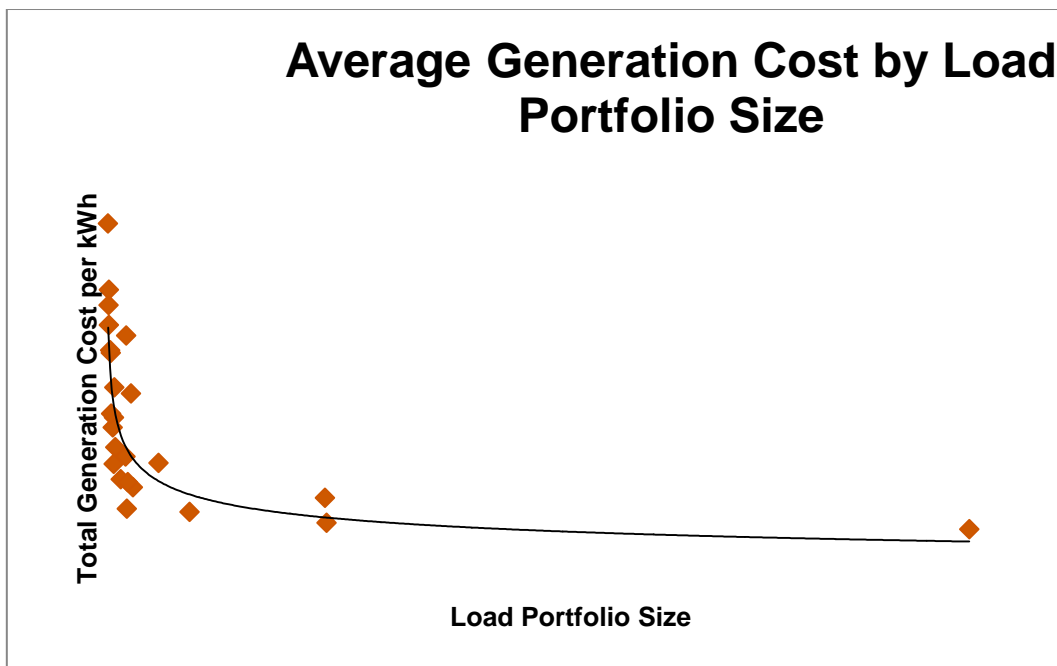


Figure 1: Total Generation Cost by Load Portfolio Size for Horizon Power Systems

The customers supplied by Horizon Power represent a very small component of the energy supplied to customers from electricity networks located in the Pilbara. Table 1 below provides a summary of Horizon Power customer base.

Market Segments (Current Financial Year)	Number of accounts	Sales Volume GWH
Residential (A2,K2)	14,505	184
Small Enterprise (L2)	1,307	45
Medium Enterprise (L4)	379	143
Large Enterprise (including FMG)	27	137
Government - Medium Enterprise (P2)	172	34
Other Tariff Classes	77	5
Total NWIS	16,467	549

Table 1: Size of Horizon Power market in the Pilbara.

This customer base results in a minimum load of 35MW and a maximum load of 130MW. This load is supplied by individual gas turbines of the size of 35-40MW. With 1 generator required online for spinning reserve this portfolio requires a minimum of 2 generators at 50% load and a maximum of 5 generators at 75% load. To maintain a N+1 level of reliability a single 35MW generator is required as reserve capacity.

To illustrate the point, if the Horizon Power retail portfolio was to be split across two competitors evenly, both competitors would have a minimum load of 17.5MW and a maximum load of 65MW. In the absence of any market mechanisms such as are in place for the SWIS, using the same installed generators to meet this load would require each supplier to have 2 generators at minimum load at 25% loading and 3 generators at 62% load at maximum load.

This reduction in machine average load is across the full dispatch and materially impacts the efficiency by which the machine converts gas to electricity (as demonstrated by the generation efficiency curve provided in Attachment A to this letter). Thus, 2 competitive parties supplying the same customer base will use materially more gas to supply the same customers. Further, in the absence of wholesale and ancillary service mechanisms, either the network operator would have to arrange ancillary services, at a cost, or each supplier must have their own ancillary services and reserve capacity, resulting in a duplication of the 35MW of reserve capacity required for each party to achieve N+1 security.

In markets such as the Wholesale Energy Market (WEM) and the National Electricity Market (NEM) the inefficiencies of splitting portfolios are addressed through highly liquid spot trading markets, centralised ancillary service mechanisms and, in the case of the WEM, a centralised reserve capacity mechanism. The Pilbara does not have any of these market mechanisms and, as a result, the cost inefficiencies of multiple independent parties supplying a small market are passed through to the public stakeholders.

In addition to the cost burden of lower generation conversion efficiency there is also material upfront investment and ongoing operating costs required in metering and billing systems to implement and manage a large number of open access connections, particularly on the distribution network.

If Horizon Power were to be covered the cost burdens discussed above would be added to the costs of regulatory compliance and ring fencing and be directly passed through to the public stakeholders.

To quantify the order of magnitude of the additional costs discussed above for multiple parties supplying the small Horizon Power customer base through a covered distribution system, the following is provided¹:

1. Coverage under the Code results in additional cost to Horizon Power in the order of \$1 million per annum.
2. The capital and operating costs of new metering and billing systems is in the order of \$0.2 million per annum
3. Dispatching to multiple smaller portfolios (as opposed to dispatching to one larger portfolio) results in incremental inefficiency in generation conversion efficiency of 10%(see attachment A) resulting in an increased fuel cost of approximately \$5 million per annum.
4. Reserve capacity of 35²MW is required for 2 separate portfolios (as opposed to for 1 portfolio) resulting in an increase in annual cost of \$4.2 million³.
5. Ancillary services costs that Horizon Power has not considered at this time

This is likely to result in a total annual increase of costs in the order of \$10.4 million or an average increase in cost to customers in the Pilbara of 1.9c/kWh or an average cost per customer of \$631 per annum.

These generation portfolio size cost impacts can partly be mitigated with different approaches to generation and ancillary services. However, this requires long term certainty on offtakes. This certainty can be generated through the long term PPA for large transmission connected customers. However, this certainty is not available for distribution connected customers because those retail contracts are materially shorter in duration and subject to potentially significant churn.

Open access to the distribution system may become appropriate on a public interest basis if:

- the market is expanded to include access to other loads in the Pilbara, thereby dramatically increasing the volume available to competitors, including after existing generation; and/or
- an electricity market mechanism is introduced to avoid the inefficiencies in dispatch/ancillary services and increased requirements for reserve capacity.

Horizon Power is not aware of any circa 130MW peak load, stand alone, distribution system that that is supported by competitive retail electricity market globally.

All electricity customers in the SWIS contribute to the state government uniform tariff policy through network tariffs in the SWIS. Horizon Power suggests consideration be given to how to address anything that increases the cost burden on the TEC, including mechanisms to recover increased costs.

¹ These costs are provided for illustrative purposes only and have adopted conservative assumptions. More detailed modelling is required to determine the full cost impact

² Extra capacity required to maintain N+1 capacity in a port folio given the typical generation unit size in the Pilbara

³ Calculated using published annual cost of capacity calculated by the IMO for the reserve capacity mechanisms of \$ 120,000 per annum

Technical Rules in the NWIS

The Alinta Coverage Application specifically refers to the inadequacy of the Horizon Power Technical Rules. These Technical Rules have been established with extensive industry consultation since the Technical Code under the previous regulatory regime. Specifically, this engagement has included:

- The initial draft established by a working group which included Horizon Power, Rio Tinto, Alinta and BHP as participants. The initial draft was based on the Western Power Technical Rules requirements at the time with changes to meet the technical and commercial realities of the Pilbara.
- Detailed comments on the working draft received from Alinta (drafted by SKM) on or about 2/5/2005 on the version of the Interim Technical Rules sent out for comment on 7 December 2004. These comments were considered in following working drafts.
- In 2013, Alinta, and a range of other electrical infrastructure owners in the Pilbara region, were engaged in scoping of work completed by SKM on the Critical Fault Clearing Time determinations for the network that are a key technical parameter in the Technical Rules.

Horizon Power has implemented the Technical Rules through bilateral contracts with all generators and major load connections. Horizon Power and Alinta agreed to implement the Technical Rules, with some derogations, in a Power Supply Agreement in 2010 that continues today.

Horizon Power remains open to stakeholder feedback on the efficacy of the Technical Rules.

Horizon Power has in the past supported the following recommendations:

- that the Economic Regulation Authority (ERA) be asked to engage with stakeholders to develop a set of Technical Rules for the NWIS that are based on the rules developed for the South West Interconnected System (SWIS); and
- that these Technical Rules, when complete and ratified, become a license condition or license exemption condition for electricity infrastructure owners and operators in the NWIS.

Attachment A: Part load efficiency of gas turbine for dry low emissions machine extracted from General Electric LM6000 Product Specification December 2008.

Dashed line is for the Dry Low Emissions Machines used in the Pilbara

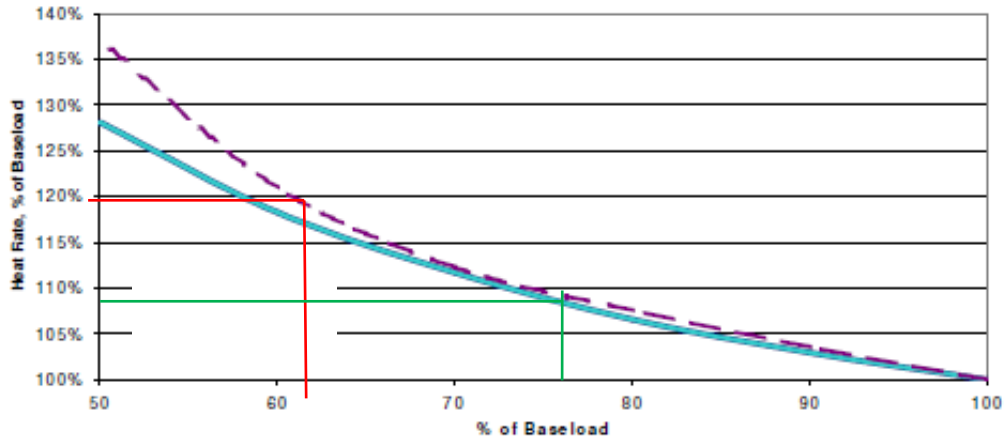


Figure 5- 6: LM6000 50Hz with SPRINT® part power heat rate (LHV)

Basis of Performance: RH of 60% with 0 mm H₂O inlet exhaust losses at 0m ASL, Fuel: Natural Gas (44,194 kJ/kg), 50Hz, 11.5kV, 0.85pf. Not for guarantee. Nox Water, and DLE are to 51 mg / Nm³.