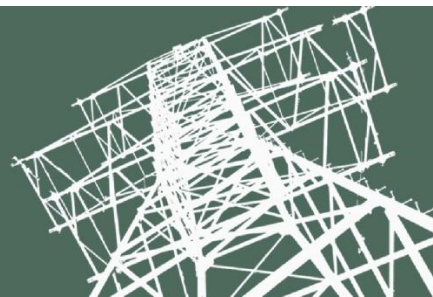




Pilbara Electricity Infrastructure Project – Stage One Report

Department of Finance | Public Utilities Office

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Executive Summary

The North West Interconnected System (NWIS) is an electricity system in the Pilbara region with multiple owners of network and generation assets. The majority of customers are located in the coastal strip between Port Hedland and Cape Lambert in an area serviced by a transmission and distribution network owned by Horizon Power. Rio Tinto owns an extensive and “loosely connected” network to the south and east of this region servicing port facilities and mine sites. There are also many large users of electricity that have opted to use stand-alone generation despite being within or close to the areas serviced by the electricity network.

The NWIS has developed in an *ad hoc* manner over several decades as resource and energy companies have made individual investments in generation capacity and network infrastructure, and established operational practices to meet the requirements of their particular projects. At the same time, the State Government has developed network and generation assets to service towns and small-use customers.

As a consequence of *ad hoc* development, the electricity system of the Pilbara is inefficiently constructed and operated. Opportunities exist to improve the availability, security and cost of electricity services through better integration of network investment, generation investment and system operation. Achieving these opportunities will benefit economic development of the Pilbara region. There is also the potential for competition to deliver lower electricity prices for some customers in the medium term.

Cabinet approved establishment of the Pilbara Electricity Infrastructure Project in December 2014, to develop and implement a new model for the operation and the development of electricity infrastructure in the region. The Project is overseen by a Committee comprising Lyndon Rowe (Chair), Ray Challen (Department of Finance, Public Utilities Office), Steve Wood (Department of State Development) and Kaylene Gulich (Department of Treasury).

The Project Committee has looked at the broader reform opportunities within the context of projections of limited medium-term growth in electricity demand and generation investment. Accordingly, the focus of the Project Committee has been to consider reforms to governance arrangements for the NWIS that will best enable customers to benefit from a competitive market for electricity services to develop in the medium term, and that in the longer term will promote a more integrated and cost-effective development of electricity infrastructure when the next major demand and supply expansions occur.

To achieve these objectives, the Project Committee recommends that government implement the following package of three reforms.

1. *Establishment of a separate and independent owner of the Horizon Power electricity network*

Integrated development of the NWIS can be promoted by having network infrastructure owned by an entity that is motivated and able to aggressively compete for the delivery of energy services against the alternatives of stand-alone generation and the gas pipeline networks.

This will require the network to be owned by an entity that is commercially motivated to expand the network; is adequately capitalised to finance investment in network expansion; and is commercially motivated and nimble in offering and providing network connection to mining and energy-sector customers as an attractive alternative to stand-alone generation. The Project Committee considers achieving this outcome will best be realised by privatisation of the network assets currently owned by Horizon Power.

2. Establishment of a light-handed regulatory regime that provides necessary protections to network users but is conducive to investment in network expansion

Generators and electricity users require a formal network access regime to ensure access to network services on fair and reasonable terms. However, the access regime should also support the network owner investing in network assets.

The Project Committee considers this will best be achieved by implementing a light-handed access regime that can be modelled on the regime for gas pipelines that currently exists under the National Gas Law and National Gas Rules. The arrangements do not involve price oversight or regulation; rather the model relies on transparency of information and the imposition of timelines for negotiation, with timely commercial arbitration in the event of a dispute.

This access regime should initially cover the network assets owned by Horizon Power and Alinta Energy.

3. Establishment of an independent system operator for the electricity system to improve efficiency of system operation

An independent Pilbara System Operator should be established with formal powers and responsibilities to undertake core system operation functions, with provision for other market-related responsibilities to be undertaken over time. Two options for the Pilbara System Operator should be further examined: either the major network operator (assuming this is no longer Horizon Power) having this role, or by a separate entity owned cooperatively by market participants (generators, network owners and retailers).

The reforms recommended by the Project Committee could be progressively implemented over a two year period. An access regime could be developed and implemented within six to twelve months. Establishing an independent network owner and an independent system operator could be achieved within two years.

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1. Introduction

The need for reform of the North West Interconnected System

In December 2014, Cabinet approved establishment of the Pilbara Electricity Infrastructure Project (the Project) to develop and implement a new model for the operation and development of electricity infrastructure in the Pilbara region.

The Project is overseen by a Committee comprising Lyndon Rowe (Chair), Ray Challen (Department of Finance, Public Utilities Office), Steve Wood (Department of State Development) and Kaylene Gulich (Department of Treasury). The Project Committee is supported by staff from the Public Utilities Office (including a Project Director seconded to the Office).

The electricity ‘grid’ in the Pilbara region essentially consists of two large transmission networks, loosely interconnected to form the North West Interconnected System (NWIS) – Attachments One and Two.

The first is the coastal transmission and distribution network owned by Horizon Power that primarily extends from Karratha to Port Hedland – 132 kilovolt (kV) line from Karratha to Cape Lambert, then 220 kV to Port Hedland; interspersed with 66 kV lines. This system interfaces with electricity transmission and generation assets owned by Alinta Energy (Alinta), ATCO, BHP Billiton (BHPB) and Fortescue Metals Group (FMG).

The second is the 220 kV Rio Tinto owned network from Dampier to Pannawonica, then to Paraburdoo and across to Yandi. There is a connection between the two electricity systems at the distribution level of 33 kV, with a maximum transfer limit of 30 megawatts (MW).

Currently, there is no formal governance framework for administration of the Pilbara electricity system. In this respect, the NWIS is unique compared to best practice power systems. Best practice systems rely on strong open access to an electricity network, with multiple users accessing available supplies through the sharing of outputs from electricity generation facilities. This model promotes efficient investment in, and use of, electricity infrastructure, and therefore affords the best prospects for the lowest possible energy costs for end-use consumers.

Within the Pilbara region most major electricity network users consider overall supply reliability and security to be acceptable at this point in time. Notwithstanding this, the historic and current *ad hoc* approach to system planning and development has resulted in a network characterised by fundamental design and operational deficiencies.

For example, power system stability is considered marginal with the existing arrangements¹, and ancillary services (required to maintain system stability and security of supply), such as frequency control services and network control services, are replicated in each individual network rather than being optimised across the whole electricity system. There is also excess generation capacity within the network. These deficiencies will lessen the potential for economic development in the region if not addressed over the medium to long-term.

¹ EMCa, Pilbara Electricity Infrastructure Project – Pilbara NWIS Technical Assessment, 15 May 2015, p. 7

Past reform studies/proposals and current context

Previous studies have generally considered the NWIS to include all electricity infrastructure located in the Pilbara region and have focussed on the benefits that might accrue from connecting stand-alone generation capacity with its associated loads; and proposed new loads (generally related to resource projects) into one big “Pilbara Grid” through a large-scale investment in the transmission network.

The approach of considering interconnection of the entire grid to meet forecast demand growth across the system, based on the most efficient size of generation plant, has generally resulted in positive benefit-cost at a high level. However, this approach would require support from diverse stakeholders; which has not been forthcoming and is unlikely to be realised. These studies were also undertaken prior to the substantial build of new generation facilities across the Pilbara region and in the context of an expanding iron ore sector and expectations of sustained population expansions.²

The Pilbara Planning and Infrastructure Framework,³ released in 2012, quoted a 2011 Chamber of Minerals and Energy (CME) report that electricity demand in the Pilbara from the minerals and energy sectors was projected to reach almost 12,000 gigawatt hours (GWh) by 2015, with the majority of this demand to be met from self-generation supply sources using natural gas, in the absence of any reform. The report noted that *“coordinated development of the North West Interconnected System would present capital and operating efficiencies and increased opportunities for risk management, energy efficiency and renewable energy generation”*.

An earlier report (2008) suggested there was potential for growth in energy requirements of *“hundreds of megawatts”* due to unforeseen expansion of resource industries and associated population growth, provided *“sufficient power could be delivered...reliably and efficiently”*. This report also noted that *“continuation of the current approach of fragmented, uncoordinated and non-integrated power system development would result in lower power availability and reliability, and higher costs to potential projects in the region”*.⁴

It was also noted that *“there is no overall coordination of planning, business decisions and operation, and no single body is accountable for the security and reliability of electricity supply”*, and that reform should include *“creation of an effective governance framework”*.

Despite the reasonably short timeframe since these studies were undertaken (five to ten years), the current situation in the Pilbara is vastly different. In the last five years, there has been a rapid expansion of the resources sector and subsequent entry of new mining businesses, the development of additional electricity generation capacity and associated infrastructure, followed by a more recent deterioration in economic conditions within the region. Similarly, the State Government itself is also facing a more constrained fiscal position such that investments in large-scale infrastructure, as proposed in these studies, are unlikely to be supported.

² In 2010, the State Government announced the *Pilbara Cities Vision*, which aims to build the population of Karratha and Port Hedland into cities of 50,000 persons, and Newman to 15,000 persons, by 2035. Part of this vision is to also foster greater economic diversification in the region. This would require the sufficient development of essential infrastructure.

³ <http://www.planning.wa.gov.au/publications/6661.asp>, PPIF Part 3, Section 4.4, p. 70, accessed 7 July 2015.

⁴ The Allen Consulting Group, *Power for the Pilbara Region - Final Report, Executive Summary*, v and vi – report prepared for the Department of Industry and Resources and not released.

With the development of the 150 MW TransAlta electricity generation facility⁵ and associated network infrastructure upgrades, minor transmission investments currently planned, and an expected easing of future increases in load requirements; system security and reliability requirements should be maintained at the current (adequate) level for the next five to ten years.

The CME has suggested a feature of future electricity supply arrangements in the region will be a decline in the use of diesel as the main energy fuel source for the resources sector. This will be replaced by natural gas as pipeline infrastructure is extended to supply stand-alone generation facilities. In particular, the recently completed 270 kilometre Fortescue River Gas pipeline will initially supply Fortescue Metals Group's (FMG) Solomon Hub power station, but has been deliberately oversized to allow for the future needs of FMG and potential third party users.⁶

As noted above, the economic conditions in the region are heavily influenced by the resources sector, particularly the iron ore industry. This sector has moved from a period of rapid expansion and new development, to a focus on the operation of existing projects and attaining productivity improvements, due to falling commodity prices.⁷

For these reasons, the expectation that reform should concentrate on major investment in new and existing infrastructure to form an "integrated transmission network" to support a rapidly expanding resources sector is no longer valid.

What is being proposed

As noted above, the previous focus on investment in expanding transmission infrastructure was based on forecasts of rapidly increasing electricity demand and a need to invest in substantial new generation capacity to support resource project developments and an expanding population in the region.

Given the changing economic conditions and current state of the electricity system in the Pilbara, the Project focused on developing a suitable regulatory and governance framework to allow open access to existing infrastructure and govern the safe and efficient operation of the electricity system to meet the needs of its users.

This is expected to move the NWIS towards a model more in line with best practice electricity systems, and set the framework in place so that when the next major energy supply expansion occurs, it does so in an integrated and more cost-efficient manner.

The proposed reforms comprise three initiatives to be implemented concurrently as a total package.

⁵ The Pilbara Power Procurement Project oversaw the development of a privately financed large-scale generation facility to deliver aggregated electricity requirements of multiple users, introduction of a new third party independent power producer and better utilisation of the network infrastructure in the region.

⁶ <http://www.lnggroup.com.au/news/fmg-gas-pipeline-opens/5805/> - accessed 17 July 2015.

⁷ <http://www.cmewa.com/policy-and-publications/annual-reports-special-publications/preview?path=2015-2025%2BWA%2BResources%2BSector%2BOutlook%2BFull%2BReport.pdf> – accessed 7 July 2015.

Successful implementation of the reform measures is predicated on the sale of Horizon Power's network assets in the NWIS. Horizon Power has conflicts of interest in its current vertically-integrated form; creating an incentive for restricting access to its distribution network in order to limit the potential for retail competition. Horizon Power is also the author and arbiter of the Technical Rules for its electricity networks.

There is also a need for a third party network access regime that is fit-for-purpose and flexible. The regime contained in the *Electricity Networks Access Code 2004* (the Code) is considered to be unnecessarily burdensome for the size and composition of the NWIS.

The access model in the Code is based on five-yearly reviews to establish revenue requirements for the service provider, an intensive, costly and time consuming process. In contrast, the proposed model includes an investment friendly (light-handed) access regime, based on that under the National Gas Rules.

Introducing an access regime will provide a means for third party access to Horizon Power's electricity network assets under commercial terms and open up the potential for competition for some customers. In the model proposed the network assets would, in any case, need to be segregated from other areas of the business.

The current institutional arrangements, or lack thereof, for governance of the NWIS are not consistent with operating the power system in a secure, reliable and efficient manner. To address these deficiencies, a formal, legally-based governance structure for overall operation of the system is proposed. This would include establishment of a new Pilbara System Operator, responsible for operation of the interconnected system in the "coastal" region of the NWIS, particularly during specified events (for example, system emergencies).

An independent system operator would be responsible for developing a single agreed set of Technical Rules which apply equally to all participants; overseeing changes to the Rules in accordance with an agreed process and dealing with disputes as required. Divestment of Horizon Power's network assets would enable the system operator role to be undertaken by the majority network owner and avoid conflicts of interest in undertaking these functions.

2. Establishing the case for reform

How and why has the current situation developed

Electricity-related infrastructure in the Pilbara region has historically developed in an uncoordinated manner, driven not by the most economical, technically feasible development path, but by the individual needs of the large resource companies operating in the region. These individual sections of network are loosely connected to the Horizon Power network, which has evolved to meet more “general purpose” usage.

The loose integration of the transmission system imposes limitations on users in one part of the system accessing excess generation capacity that may be available elsewhere in the system. Also, as power supply arrangements in the region have not facilitated load aggregation, this has led to a predominant focus on the development of stand-alone generation facilities, based on diesel or natural gas depending on location.

Due to this approach, the gas-fired facilities are generally small-scale, open-cycle generation (OCGT). If there was greater aggregation of electricity supply requirements, access to the superior heat rate efficiencies of larger scale, closed cycle gas turbine facilities would provide a major cost advantage over OCGT and diesel facilities.

This approach is ongoing, with both electricity network and generation infrastructure continuing to be established on an individual company basis. The size of this infrastructure is generally targeted to the scale of power supplies required by these companies, and operated to meet their specific requirements.

Why has the self-generation model become so common

The majority of electricity infrastructure in the Pilbara has been developed around individual generation investments over a long period of time as a consequence of State Agreements and the desire of resource companies to control their assets.

State Agreements are legal contracts used to secure major resource projects, with the State Government locking in agreed terms and conditions with proponents, including responsibility for developing infrastructure specific to the project, to underpin development of the resource.⁸

Resource sector companies seek to control assets, such as electricity and rail infrastructure, to limit the risk of supply chain disruptions, which can be extremely costly in terms of the associated effects of foregone production. The constant nature of mining operations generally requires access to a stable, ongoing electricity supply to ensure continuity in production.

Electricity supply is also essential for port facilities, which may be operating at capacity, meaning that any delays have a direct and substantial effect on the revenue stream and hence commercial return for operators. Port operations do however have a more variable load profile than that for mining operations.

⁸ <http://www.dsd.wa.gov.au/what-we-do/manage-state-agreements/what-is-a-state-agreement> - accessed 9 July 2015

Also, as investment in supporting infrastructure can be a substantial part of project costs, mining companies will generally seek to optimise timing of delivery of this infrastructure to support the financial viability of the resources sector projects. There are long lead times associated with construction of new generation capacity and associated supply infrastructure, as well as the potential for delays and duplication in approvals processes.

Securing electricity supplies is generally a pre-requisite for obtaining finance for the project. Unless there is sufficient spare capacity available at a suitable cost, the resource company will prefer to manage the timing of electricity supply delivery through the establishment of generation facilities as part of the overall project.

The Pilbara Planning and Infrastructure Framework⁹ noted that the resources sector will generally continue to invest in self-owned and operated electricity infrastructure due to “*uncertainty around common user infrastructure*” (p. 70); and that a “*broader integrated approach to long-term Pilbara power supply planning*” is required (p. 73).

The CME’s *2015-2025 Resources Sector Outlook*,¹⁰ released in November 2014, noted that increases in electricity consumption in the Pilbara will still largely be met by self-generation, but there is a “*growing trend towards purchased sources*” (p. 80). This report also noted that “*there is room for improvement in infrastructure planning*”, as the current framework “*does not optimise collaboration between the public and private sectors*” (p. 110). Both reports noted the importance of “commercial arrangements” in driving development of an integrated system that is supported by stakeholders.

Stakeholder consultation has highlighted a strong view that Horizon Power, as an unregulated vertically integrated entity owned by government, is not as commercially focussed as a private sector network service provider. The current fiscal constraints of government are well known and present a barrier to investment that may otherwise be deemed commercially viable. Additionally, stakeholders raised concerns that a government-controlled network is subject to unnecessary interference, with political interests potentially taking precedence over economic/commercial considerations.

What reforms are required

The reforms should further support the recent shift from investment in individual electricity supply requirements towards alternative solutions (such as power supply off-take agreements with third party providers with a core business in the energy sector), as noted in the *2015-2025 Resources Sector Outlook*.

⁹ <http://www.planning.wa.gov.au/publications/6661.asp>, PPIF Part 3, Section 4.4, accessed 7 July 2015.

¹⁰ <http://www.cmewa.com/policy-and-publications/annual-reports-special-publications/preview?path=2015-2025%2BWA%2BResources%2BSector%2BOutlook%2BFull%2BReport.pdf> – accessed 7 July 2015. This report predicts that 70 per cent of growth in energy consumption in the resources sector to 2020 will be in the Pilbara. By 2020, it is expected that electricity supplied via self-generation will be 2,300 GWh higher and purchased electricity will be 1,750 GWh higher, compared to 2013 levels.

The recommended reform package requires development and implementation of an investment friendly (light-handed) access regime for the coastal section of the NWIS to facilitate market competition; establishment of an independent Pilbara System Operator to take day-to-day operational responsibility for system security, and possibly other market-related functions over time; and divestment of the State-ownership of the electricity network in the region.

This is expected to allow for the introduction of network service provider(s) with strong commercial incentives to sell the benefits of interconnection in competition with stand-alone generation and gas pipelines; to coordinate interconnected solutions that meet the timing requirements of large loads; and have ready access to the capital required for infrastructure investment.

Reform Principles

The principles underpinning the suggested reforms are as follows:

Recognition of existing property rights

The network access arrangements should provide a return to an asset owner who meets the efficient costs of operating this infrastructure, including a suitable return on investments made.

Safety of the network and security of existing supply arrangements

The proposed system operation arrangements should ensure the electricity network maintains a high level of supply reliability. Core responsibilities of the system operator are to initially focus on oversight of the safe operation of the electricity system to meet the needs of end-users.

Open access with light handed regulation

Access arrangements proposed should support the ability of third parties to negotiate network access on reasonable terms and conditions within a suitable timeframe. The access regime should also cater for transmission network assets owned by multiple parties.

Cooperative approach to system operation

A new set of technical rules for managing and operating the system should be developed in collaboration with relevant stakeholders. These agreed rules and protocols must however be implemented through a formal process with accountability.

Technical standards applied should also not present a physical constraint to potential future interconnection of the Pilbara grid, or a barrier to any particular technology type.

Contractual and regulatory certainty

Existing contractual or other arrangements by network owners for self-use of the network infrastructure must be preserved. New users of the network must also be able to obtain contractual certainty through access contracts.

Any opting-out of the new model by a network owner (or a subsequent change in the grid management model) must preserve all access contracts for that owner's segment of the grid.

Greater transparency of energy demand and forecast requirements of the transmission network

Increased transparency will require an agreed process for the provision of information to assist energy demand forecasting, and also public reporting on the current and future load requirements for the transmission network.

Third-party Network Access Regime

In late 2014, Alinta and Horizon Power made applications for access to each other's networks under the Code. This was a primary driver for the decision to investigate the feasibility of a new NWIS governance model. Both parties subsequently withdrew their coverage applications in preference of a more flexible alternative access approach being developed.

These two stakeholders own most of the electricity infrastructure assets in the coastal strip from Dampier to Port Hedland. This is also where the majority of end-use customers are located. This location therefore offers the greatest potential benefits in terms of market competition. Other stakeholders generally consider themselves separate from the NWIS as they have established electricity supply arrangements solely to meet their own needs. These circumstances therefore determined the focus of reform on this area of the NWIS, at least initially.

The proposed regulatory framework is intended to allow for lower cost access to existing network infrastructure, as well as providing incentives for additional investment over time. The proposal that there should be a voluntary 'opt-in' for light access regulation provides an incentive for owners of network infrastructure to participate in the NWIS on a more cooperative basis.

Providing a regulatory framework for third party access to network infrastructure will open up the NWIS to retail competition.

Retail Competition

Outside the South West Interconnected System, retail electricity sales in Western Australia are notionally fully contestable. There are no legal impediments that would prevent new entrants in the retail space. In practice however, there are two factors that make real competition problematic.

Under the State Government Uniform Tariff policy, regulated electricity retail tariffs are below the cost of supply in most of Horizon Power's service area, creating a barrier to entry for competing retailers.

Horizon Power also does not currently offer third party access to its distribution network, limiting access to the bulk of end-use customers in the NWIS.

Alinta has excess, uncontracted generation capacity in the NWIS and is seeking access to medium to large energy users in order to sell these supplies. These customers are currently supplied by Horizon Power. Alinta appears confident it can win market share by delivering lower priced electricity, however it requires access to the Horizon Power distribution network to do so.

Given that Horizon Power currently holds exclusive access to these customers, introduction of retail competition will have implications for its financial position, flowing through as reduced tax and dividend payments to the State.

Both Alinta Energy and Horizon Power have suggested a staged approach to the introduction of competition – but with different timelines. A staged approach is not supported given that the NWIS is at present notionally fully contestable.

Secure and Reliable System Operation

As mining companies have typically designed their networks and operational practices to advantage their specific industrial requirements, this may result in downstream effects to other users. Horizon Power currently assumes the role of de facto system operator, making best endeavours to keep the electricity system operating reliably using both formal and informal agreements.

There are instances where network reliability and security is compromised and/or where costs are imposed inequitably on other parties. Due to the lack of a clear governance structure, outcomes can be driven by commercial interests, rather than from an overall system security perspective.

This deficiency will be more of a concern over time as more stakeholders are involved due to load increases, new generation supplies or block load connections. It may also present a disincentive to private investment. The risk is that without formal processes being implemented, the future development of the NWIS will be technically and economically sub-optimal.

3. Elements of reform

The proposed reform comprises three initiatives to be implemented as a package. This is intended to establish the governance framework required to support development of a more integrated electricity network which operates more in line with best practice electricity systems over time.

Divestment of State-owned electricity network assets

Horizon Power, as a State-owned, vertically integrated entity, does not face the same commercial drivers as a privately-owned network service provider. While such entities are required to borrow funds to support investment decisions in a similar manner to private enterprises, they are also often required to undertake activities on non-commercial terms that may in some, but not all cases, be funded through additional subsidy payments.

These drivers foster cross-subsidisation between customers, such that charges are often not levied on a purely commercial basis. These influences are further compounded by the fact that Horizon Power is a vertically integrated entity, including generation and retailer functions.

This is considered to be inconsistent with the proposed reforms.

As noted in Alinta's application for coverage of Horizon Power's NWIS network under the Code, while full retail contestability exists in the NWIS, any new entrant seeking to retail electricity to prospective customers currently supplied by Horizon Power, must also negotiate an agreement with Horizon Power for access to the NWIS network¹¹. Alinta applied for coverage after unsuccessfully attempting to negotiate terms and conditions for access with Horizon Power for around eight months.

Stakeholders have indicated the view that Horizon Power is more concerned with protecting revenue from electricity customers, than negotiating a commercial agreement for access to its network assets.¹² Alinta's coverage application noted that the introduction of competition will result in lower prices for customers through Horizon Power reducing prices offered to its own customers.

State-owned entities also face the implications of the wider fiscal constraints of government, which are well known and present a barrier to investment that may otherwise be deemed commercially viable. Prudent investments (as determined by regulatory processes) may be deferred indefinitely due to a perceived need to focus on other expenditure priorities of government, regardless of the longer-term consequences to the reliability of electricity supplies.

Stakeholders have also indicated concern that a government-controlled network provider is subject to unnecessary interference, with political concerns potentially taking precedence over economic/commercial considerations.

¹¹ http://www.finance.wa.gov.au/cms/uploadedFiles/Public_Uilities_Office/Energy_Initiatives/Alinta-Energy-Coverage-Application.pdf - accessed 13 July 2015.

¹² In contrast, under Clause 3.12 of the Application and Queuing Policy, Western Power notes that it will process applications from electricity retailers to use the network "expeditiously and diligently" because it is in its commercial interest to provide access to its network services for a fee.

In contrast, a commercial, privately-owned holder of network assets would be well placed and suitably incentivised to provide innovative and cost-effective solutions to energy supply requirements, thus increasing, or at least maintaining, usage of the network.

A commercial asset owner will also likely have ready access to the capital required to deliver incremental transmission and distribution network enhancements over time. While it is not anticipated that sizeable investments in the NWIS electricity network infrastructure will be required in the medium term, as economic conditions improve there will be a need for investment in infrastructure expansions and asset reinforcements.

Divestment of State ownership of the electricity networks in the Pilbara region is considered a pre-requisite for the success of the other reform measures detailed below.

Implementation of a fit-for-purpose open access regime should be progressed in line with the divestment process. Regulatory certainty would be seen as a benefit to a potential purchaser and avoid time consuming and costly access processes should a future private owner seek to exercise market power.

Investment friendly access regulation

As electricity networks are generally considered to be natural monopolies, regulation generally enables third party access while at the same time placing an upper limit on the prices for such access and/or the return on investment that may be earned. Where regulation is not in place, the owner of a network asset is under no obligation to provide third party access, but may have an economic or commercial incentive to do so.¹³

Investor friendly arrangements for access regulation that provide sufficient flexibility and also consistent rights and obligations for network asset owners, and a consistent process for the consideration of new network developments is required. A light-handed approach that provides scope for continuity of any bilateral contract relationships is likely to provide a cost-effective means of addressing the need for access.¹⁴

Again, this will assist in making the electricity system ready to handle any future load increases with expansions in mining or other industrial activities, as well as promoting greater competition in the retailing of electricity supplies to reduce cost pressures for end-use customers.

The relatively “heavy-handed” regulation that applies to the electricity network comprising the South West Interconnected System under the Code is considered to be unnecessarily burdensome and generally targeted at a more “mature” network than the NWIS.

In contrast, a light regulation model similar to that applied under the national gas access regime would be suitable, as it applies to comparable energy infrastructure, has been added recently to the National Gas Rules after considerable industry consultation, is accepted by policy makers and understood by the energy sector, and has practical application.

¹³ EMCa, Pilbara Electricity Infrastructure Project – Pilbara NWIS Technical Assessment, 15 May 2015, p. 35.

¹⁴ Ibid.

Under this light-handed access regime, there is no price oversight or regulation; rather it is reliant on transparency of information and the imposition of timelines for negotiation, with timely commercial arbitration in the event of a dispute.

The light regulation access regime would:

- require the service provider to publish terms and conditions for access to covered services;
- allow the service provider to seek regulatory approval of terms and conditions (exclusive of price) for a prescribed period by submitting to the Economic Regulation Authority (the Regulator) a limited access agreement;
- require a prospective user, who reasonably seeks access to a covered service, to be provided with a price for this access;
- if required by the Regulator, the service provider needs to provide an access seeker with information to enable the prospective user to decide whether to seek access;
- not involve regulation of the proposed or agreed prices for access;
- require the service provider to keep the Regulator informed on access negotiations for light regulation services;
- require the service provider to maintain on its website a register of spare capacity and respond to requests for access within prescribed timelines; and
- provide an avenue for a new greenfield infrastructure development to seek a regulatory “holiday” for a specified period.

In the event of a dispute between the service provider and access seeker, the Regulator would be responsible for referring the dispute for resolution by commercial arbitration.

The proposed approach would involve a once-off deeming of certain assets (proposed to be those currently owned by Horizon Power and Alinta) to be covered by the access regime. The prescribed assets could be exempted from full regulation for a specified period (potentially 10 to 15 years), provided the service provider is not breaching the light regime arrangements. Other service providers would be able to elect to opt-in assets for light regulation; and expansions and extensions of covered assets would be covered under the relevant regime.

Independent System Operator

The technical assessment completed as part of the Project found that stakeholders are generally satisfied with the current supply reliability across the NWIS. This is primarily due to recent investments in network upgrades, including the Pilbara Underground Power Project; and the installation of new electricity generation capacity. However, certain components of the transmission network are relatively unreliable, with performance limitations that present challenges to system operation and may limit further developments within the electricity system.

More particularly, there is no single, final and agreed set of technical requirements for electricity generation and network operations that applies consistently across the NWIS. Rather there is a perception that technical requirements for network connections can be negotiated and that Horizon Power uses technical rules for its own commercial advantage.

There is also no one party responsible for system operation with authority to coordinate system recovery following any marked disruption to power flows. Similarly, from a system operation perspective there is no single body with overall visibility of network power flows. Unlike other electricity systems where there is visibility of information regarding system operation in real time, Horizon Power infers what is occurring through experience or communicating with other network operators.

While there is a cooperative approach to managing contingency events, these often result in sub-optimal outcomes, and commercial settlements are made ex-post in good faith. Horizon Power claims that this arrangement acts to its commercial disadvantage. The lack of formality around managing contingencies and emergency events falls short of power system best practice and will become more complex with new stakeholders joining the network.

Managing ancillary services is sub-optimal, protocols for under-frequency load shedding are loosely established and there is inference of non-adherence.

Good industry practice involves formalised planned outage coordination and unplanned outage management policies and procedures; and requires that major outage incidents be investigated to attempt to identify the root cause and rectify these matters where economically practicable.¹⁵ Within the NWIS there are no formally agreed outage coordination procedures in place, and there is no formal process for investigating outage incidents at present.

The proposed Pilbara System Operator would be established with formal powers and responsibilities to undertake core system operation functions. It is recommended that provision for other market-related responsibilities that could be undertaken (subject to certain triggers) be included in these arrangements. This would provide flexibility for an energy market to evolve based on commercial agreements, rather than formal market rules.

Core system operator functions would be day-to-day operation of the power system, outage and contingency management, procurement of services ancillary to the operation of the system and budget management (which would include cost allocation and recovery).

In order to undertake this role, the Pilbara System Operator would require a high level of visibility over the electricity system, and would have increased data and information requirements to support real-time decision making to maintain system security. This may require a small capital investment.

Establishing the Pilbara System Operator

There are two options for implementing the Pilbara System Operator function which will be further considered as part of Stage Two of the Project.

The first option involves establishing the Pilbara System Operator as a separate entity from the network businesses, via a cooperative approach involving all market participants.

¹⁵ EMCa; Pilbara Electricity Infrastructure Project – Pilbara NWIS Technical Assessment; 15 May 2015; p. 23, 24.

An independent system operation role would deliver benefits by way of a more secure and efficient operation of the system and, importantly, cooperative ownership should facilitate a mind shift from the existing “self sufficiency approach” to more of a whole-of-system approach to network development. This approach would also require a high level of involvement from stakeholders, without which timely implementation would be problematic.

The other option would confer the role to the majority network owner, which would also need to ensure the system operation role is segregated from any broader business activities that may be in conflict with these functions.

Currently, this would entail Horizon Power continuing its current (de facto) role as system operator but on a formal basis, backed by requisite legislative powers. While Horizon Power would need to segregate its system operator functions, this would not be a material departure from the status quo and may not be seen by stakeholders as sufficiently independent. Utilisation of Horizon Power’s existing system operation capability may also be the lowest cost option, although this would depend on the level of investment necessary to allow system integration with the operations of other networks.

While the cooperative model for establishment of the independent system operator is preferable, it is unlikely there would be support for the Pilbara System Operator to be implemented in the near term using this option. Stakeholder views may change if the State makes it clear that it intends to sell Horizon Power’s network assets, however this is far from certain.

Divestment of Horizon Power’s network assets would enable the system operator role to be the responsibility of the new major network owner in the NWIS. This is the recommended approach as the State would have a high level of control over implementation and would also enable the establishment of the system operator to be progressed in line with the divestment process.

More detail regarding the proposed Pilbara System Operator arrangements is in Appendix One.

4. Implementation/Next steps

Legislative process

Implementation of the preferred governance model will require legislative amendments, and drafting and establishment of a new NWIS Access Code.

Access Regime

In order to give effect to the recommended access regime, the *Electricity Industry Act 2004* would need to be amended to insert the enabling provisions for a light regulation alternative to the full regulation required under the Code. Establishment of a new stand-alone access code for the NWIS only, rather than including it in the Code, would also require amendment to the enabling power under the Act.

The NWIS access regime will need to be certified as an “effective access regime” under the Commonwealth Competition and Consumer Act to ensure that it has exclusivity over other access legislation; in particular, to ensure that an access seeker has no recourse to seek access by way of an application for “declaration” under Part IIIA of this legislation.

Certification would involve an application by the State to the National Competition Council, with an expected timeframe of six to eight months.

Legislative changes are also required to allow for specific assets (those owned by Alinta and Horizon Power), to be “deemed” as covered by the NWIS access regime and to allow for the owners of other NWIS infrastructure to voluntary opt-in to the light-handed regime.

Pilbara System Operator

Establishment of the Pilbara System Operator will require drafting of legislation to describe the core system operation functions, and other market-related functions that could be undertaken subject to certain triggers, and provide sufficient powers to the entity which is to undertake this role.

Asset Sales Program

It is understood Cabinet assigns specific assets for investigation for divestment to the Strategic Projects and Asset Sales section of the Department of Treasury, which is responsible for managing the planning, delivery and governance of the Asset Sales Program.

Appendix One – Proposed Pilbara System Operator powers and functions

In order to adequately execute its role, the Pilbara System Operator would require increased access to data/information, including power flows at entry and exit points; generator, transformer, circuit breaker and line status information; network ratings and constraints; and power station and network operating constraints and controls.

Depending on design of the Pilbara System Operator functions, there would be a small capital investment requirement to establish the systems operation facility and data systems (including access to systems control data and communications).

Establishing the Pilbara System Operator

A first option would be to establish a Pilbara System Operator as a separate entity from the network businesses. The entity would be “owned” by the NWIS stakeholders but operate independently pursuant to formally agreed protocols and operating procedures. The model to establish the Gas Market Scheme in the Western Australian gas retail market (the Retail Energy Market Company model) provides an example of this approach.

The State would need to legislate powers and functions for the system operator – in the form of a statutory instrument similar to, or a modification, of the *Energy Coordination Act 1994*. Stakeholders would then establish the entity to assume those functions.¹⁶

An independent system operation role should deliver benefits by way of a more secure and efficient operation of the system and, importantly, cooperative ownership should facilitate a mind shift from the existing “self-sufficiency approach”, to more of a whole-of-system approach to network development. This requires a high level of involvement from stakeholders, without which timely implementation would be problematic.

The second option would be to mandate this role on the major network owner, assuming this is no longer Horizon Power. Under this option, the network owner would have to ensure the system operation role is segregated from any broader business activities that may be in conflict with these functions.

Under both approaches to the establishment of a Pilbara System Operator, individual network owners would continue to manage and operate their network assets. The Pilbara System Operator should have full visibility over power flows across the entire coastal network, and have control over the system in declared emergencies. The Pilbara System Operator could also be the custodian of a new set of Technical Rules and system operation rules.

Depending on which option is chosen to establish the Pilbara System Operator, there will need to be further consideration of the design and cost implications of the physical location, human resources and communications technology required to support the effective execution of this role. This would be considered as part of Stage Two of the Project.

¹⁶The new Pilbara System Operator entity could contract out the system operation role, just as REMCo contracts out most of its functions. Another possibility is for the existing Horizon Power system operations team – now located at Bentley – to be subsumed by the new entity. These would be matters for consideration in Stage Two of the Project.

Pilbara Electricity Infrastructure ATTACHMENT 1

