Regulatory framework for the Pilbara electricity networks

Design Report

Department of Treasury | Public Utilities Office

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Glossary

Term	Definition
Access Code	Electricity Networks Access Code 2004
AEMO	Australian Energy Market Operator
Ancillary services	Services related to the provision of energy related service required to maintain a power system in stable operation. These services include Spinning Reserve, Frequency Control, Balancing Energy, Reserve Capacity and Black start capability
Balancing	Where each generator dispatches generation to match the load it is contracted to provide in each interval
Balancing energy	The energy provided or absorbed in an interval by a generator as the result of another generator not Balancing
Black start capability	Sufficient small standby generation units (typically diesel generators) that can be started independently and can then be used to start/re-start one or more large (multi-MW) generating units in the absence of supply from the electricity system (because it is 'black')
Covered	The legislative mechanisms by which a network owner is required to provide network transport services to third parties. This could be under the Access Code or other legislative mechanism such as proposed in this paper
Credible contingency event	An event affecting the power system, likely to involve the failure or removal from operational service of one or more generating units and/or transmission elements, and which is considered to be reasonably possible
Dispatch	Dispatch of generation to satisfy supply obligations and/or to support secure and reliable operation of the network
Economic dispatch	The outcome of generation being dispatched to deliver the lowest operating cost across an interconnected system
ERA	Economic Regulation Authority of Western Australia
Frequency control	The online reserve of electrical generation that is capable of responding immediately to small changes in system frequency in real time. Frequency Control is the first of a suite of controls to maintain system frequency within predetermined limits
Full access regulation	With regards to network access agreements, the form of regulation where a full access arrangement setting out terms of access, including pricing, must be submitted and approved by a regulator and in the event of dispute the arbitrator must apply the approved access arrangement
ISO	The proposed NWIS independent system operator
Light Handed Access Regulation	With regards to network access agreements, most terms of network service are open to negotiation between the network service provider and the user with the ability for binding arbitration if the parties cannot agree an outcome
Market Carriage Regime	In a market carriage regime, reference tariffs for network services can be established and published for entry services and exit services at specific locations, as well as for any 'common services' that the network service provider may define and quantify.

NEM	The National Electricity Market
Network / asset owner	The owner and maintainer of network assets
Network operator	Operates a network on behalf of the network owner – there are currently several network operators in the NWIS
Non-credible contingency event	An event affecting the power system that is not a credible contingency event, for example simultaneous disruptive events such as: (i) multiple generating unit failures; or (ii) double circuit transmission line failure (such as may be caused by tower collapse)
NWIS	North West Interconnected System
NWIS Interconnected Network	Comprising the NWIS Coastal networks, and the Rio Tinto inland network
NWIS Rules	Proposed replacement for the current versions of the Technical Rules applied by Horizon Power and others (in various forms). Will incorporate procedures and obligations relevant to the proposed Light Handed Access Regulations and the introduction of an ISO
Participants	The collective of NWIS network owners and users
Reserve capacity	Installed generation capacity required to meet the maximum load on the system plus a margin to account for generation failures and variations in load forecasts
Spinning reserve	The online reserve of electrical generation required to respond to credible contingencies on the system
Secure operation	For any credible contingency event the power system remains stable (synchronised, damping of power system oscillations is adequate, and voltage stability criteria are satisfied) and the frequency, voltage magnitudes, current flows, and fault levels are within defined limits
Network service provider	The operator of an electricity network. This may or may not be the same entity as the network owner.
SWIS	South West Interconnected System
Technical Rules	The standards, procedures and planning criteria governing the construction and operation of an electricity network, and the performance and technical specifications for User equipment connected to the network. There are various versions of the Technical Rules in the NWIS and there are Western Power Technical Rules applicable to the SWIS
Users	Users of the NWIS that use services provided by Network Owners, including generators, retailers and large consumers
WEM	The wholesale energy market that exists in the South West Interconnected System
WEM Rules	These market rules detail the roles and functions of the AEMO, System Management and other governance bodies, and guide the operation wholesale electricity market in the SWIS

Executive summary

In August 2017, the Minister for Energy (the Minister) announced the Western Australian Government's intention to implement a light handed regulatory regime to facilitate fair and reasonable access by third parties to the North West Interconnected System (NWIS). The objective of this reform initiative is to put in place a fit for purpose regulatory framework that can deliver better outcomes for electricity consumers and assist in driving regional development in the Pilbara region.

The Public Utilities Office was requested to develop the design of a new regulatory framework and associated arrangements for an independent system operator for Government's consideration by March 2018.

This paper sets out the proposed core Design Elements for a new regulatory framework for the Pilbara electricity networks. These provide for:

- a fit-for-purpose light handed regulatory regime designed to facilitate third party access to designated electricity network assets in the NWIS, with the capability to cater for expanded application via an opt-in provision or coverage application; and
- a proposal for establishing an independent system operator to formalise this function and enhance network security, manage ancillary services and facilitate overall network coordination and planning in the region.

Light handed access regime

The proposed light handed third party access regime for the NWIS is largely based on the access regime for non-scheme pipelines under the National Gas Rules and the National Gas Law scheme.[1] The Public Utilities Office is proposing a third party access regime for the NWIS that consists of the following design elements for covered electricity networks.

- Pricing principles that are consistent with the outcomes of a workably competitive market to guide price setting and to provide reasonable assurance that any network access pricing dispute will be successfully and cost-effectively determined;
- The requirement for a network service provider to establish, maintain and publish reference tariffs and standard access terms as a starting point for negotiations;
- Commercial negotiation as the principal vehicle for establishing access agreements, including applicant specific pricing; and
- Clear and binding arbitration to be administered by the Economic Regulation Authority should negotiations reach an impasse.

The proposed third party access regime provides for network access in the NWIS to be based on a 'market carriage' regime, with generators connected at commencement of the scheme to be grandfathered with existing network access terms and conditions, and with new generators or expanded capacity of existing generators to be allowed access on a potentially constrained basis.

Under the proposal, electricity networks covered by the light-handed access regime will need to separately identify their non-regulated activities and functions.

[1] Part 23, Division 1, rule 546 of the National Gas Rules. Version 36.

It is proposed that the Horizon Power and Alinta DEWAP[2] networks will initially be covered by the new network access regime. Applicants for network access may seek coverage of other electricity networks and the Minister would assess these applications using the same criteria as the current *Electricity Networks Access Code 2004* (Access Code) coverage test. At the same time, the Minister will also decide whether to adopt the full regulatory regime in the Access Code or the proposed NWIS light handed access regulatory regime for those networks.

The proposed regulatory framework also allows other electricity networks in the region to choose to opt-in to be covered by the proposed third party access regime.

Independent System Management

The Public Utilities Office is proposing the introduction of an independent system operator (ISO) with the overarching objective of improving the effectiveness and efficiency of system operations and system development. The ISO will operate in accordance with obligations and procedures that will be set out in a new 'NWIS Rules' document.

The primary objectives of the ISO will be to improve system security and reliability and, through the independence and stability of the regime, to facilitate efficient operation of and investment in the NWIS.

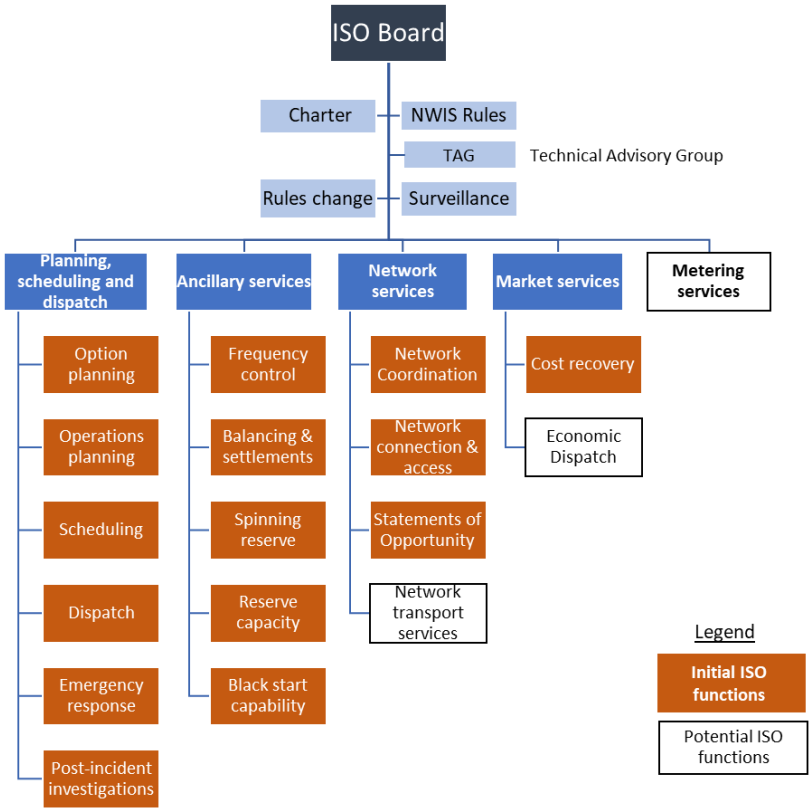
The key features of the proposed ISO upon commencement would be as follows:

- The ISO should be a stand-alone entity.
  - The Public Utilities Office has approached the Australian Energy Market Operator to take on this role.
- The ISO's scope of operations should encompass the entire NWIS, including those electricity networks that are not covered by the light handed regime.
- The ISO must not disclose commercially sensitive information.
- The ISO should be immune from any damages claims.
- The ISO should function in accordance with newly created 'NWIS Rules'.
  - The NWIS Rules to be developed in conjunction with NWIS participants prior to ISO commencement and should be based on the current versions of Technical Rules applied in the NWIS by various entities.
- The ISO should be governed by an independent board.
- The ISO should undertake planning, scheduling and limited dispatch functions.
- The ISO should manage provision of ancillary services, including procurement of frequency control, balancing and settlements, spinning reserve, reserve capacity and black start capability.
- The ISO should provide the network services limited to network coordination, network connection and access and produce 'statement of opportunity' documents.

[2] Alinta Energy owns two separate companies in the Pilbara. Alinta DEWAP is a network and generation owner and operator in Port Hedland and has as an existing agreement with Horizon Power for network access to supply BHP over the Horizon Power network. Alinta Sales is separately seeking access to the Horizon Power network so it can access a broader customer base historically supplied by Horizon Power.

The ISO should have the necessary powers to undertake its designated responsibilities, including access to necessary system information. The ISO will also need to recover its operating costs from NWIS participants according to an equitable cost recovery methodology.

The proposed governance structure and functions for the ISO is summarised in the schematic below.



Design Elements

Below are the key design elements of the light handed access and system management regimes for the NWIS.

Design Element 1

The following interconnected networks in the Coastal Region of the NWIS will be covered at commencement of the light handed third party access regime in the NWIS:

- the Horizon Power interconnected network; and
- the Alinta DEWAP interconnected network.

Design Element 2

Uncovered NWIS Interconnected Networks can 'opt-in' to the third party access regime at any time. Networks that 'opt-in' will be immune from subsequent more onerous coverage applications that could otherwise lead to imposition of a different regime. A network that has opted in to the NWIS third party access regime can also opt out of the regime if their circumstances change.

Design Element 3

Coverage will be extended in the future to networks not covered at commencement by application of the existing Access Code coverage test.

An assessment for coverage is triggered by a coverage application that must be assessed by the Minister in accordance with current coverage criteria.

If a network is found to meet the coverage criteria, then the Minister will be required to make an additional decision as to whether the network should be subject to the light handed or full regulation access framework, using principles similar to those in the National Gas Law.

Provision will be made for the Minister's decision to be revoked if a network's circumstances change such that the coverage criteria is no longer satisfied.

Design Element 4

Pricing principles will be developed to guide price setting and dispute arbitration.

Design Element 5

The onus will be on networks to develop, negotiate and defend their pricing methodologies in accordance with the Pricing Principles.

Design Element 6

In setting Reference Tariffs, the covered network businesses will be required to demonstrate that they meet the Pricing Principles, and either: (a) describe how they have applied the pricing guidelines; or (b) describe the alternate methodology and key assumptions they have used in developing their Reference Tariffs.

Design Element 7

By mutual agreement, an access applicant and the relevant network could agree on a Non-Reference Tariff.

Design Element 8

Network access in the NWIS will be designed as a 'market carriage' regime, in which it is envisaged that Reference Tariffs will be established for entry, exit and common services, as applies in the SWIS.

Design Element 9

Generators connected to the NWIS networks at the commencement of the new regime will continue to receive access that is unconstrained, or not constrained to a greater extent than at regime commencement. These grandfathered requirements will be codified in a set of 'NWIS Rules' relating to scheduling and dispatch and relating to any new connections and expansions of existing generators and loads.

Design Element 10

New generators or expanded capacity of existing generators will be allowed network access on a constrained basis, with such generators being appraised (without guarantee) of the likely extent of constraints and the options for relieving those constraints. Generators would be liable for the cost of any options they choose to relieve constraints.

Design Element 11

Loads will be provided with access at default security levels to be defined, but with provision for specific loads to request bespoke access and connection point security criteria to apply to them.

Design Element 12

The networks will be responsible for managing the connection process, including specifying connection asset requirements and commercial terms for the provision of such assets.

Design Element 13

The ISO will be responsible for dealing with the 'electricity transfer and access' aspects of new connections and applications for expanded capacity, including the matters described in Design Element 10. The ISO will also design any changes to scheduling and dispatch resulting from constraints to new or expanded generators, in accordance with the NWIS Rules, and will accordingly manage constrained dispatch where required.

Design Element 14

Information disclosure requirements will be developed as part of the NWIS access framework. These will be developed in consultation with stakeholders and will specify the information that must be published by covered networks and the timetable for publication.

Design Element 15

A negotiation framework will be developed as part of the NWIS access framework, setting out requirements for each covered network to produce and publish:

- a user access guideline;
- the process for making an access request;
- the process for making access offers, and
- the process for negotiating access, pricing, and access terms and conditions.

Design Element 16

A dispute resolution framework will be developed, that is clear and binding, based on a modified version of the non-scheme pipeline arbitration mechanism in the National Gas Rules modified as outlined in this Design Consultation Paper for the specific circumstances of the NWIS. It will be administered by the ERA.

Design Element 17

Covered networks' regulated activities and functions will be required to be structurally or functionally separated from their non-regulated activities and functions. Business-specific requirements will be defined, following competition analysis.

Design Element 18

A transition plan for the new NWIS third party access regime will allow timelines that permit service providers to efficiently meet new obligations, and also to ensure that existing contractual positions and operating positions are suitably protected.

Design Element 19

The interim objective of the NWIS ISO should be consistent with the National Electricity Objective, namely:

'To promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers of electricity with respect to price, quality, safety, reliability, and security of supply of electricity; and the reliability, safety and security of the NWIS.'

Design Element 20

The design principles for the ISO are:

1. the ISO's core function is to ensure the reliability and stability of the system;
2. the ISO should act with impartiality and transparency;
3. the ISO should act to maximise overall system efficiency;
4. the cost of establishing and operating the ISO should be kept to a practical minimum;
5. proposed arrangements should consider the commercial interests and priorities of privately-owned electricity network assets in the NWIS;
6. technical standards should not present a physical constraint to potential future interconnection of the NWIS, or a barrier to any technology type; and
7. the effectiveness of the ISO should be reviewed periodically.

Design Element 21

The ISO will:

- undertake planning and outage scheduling;
- develop and manage a full NWIS simulation model;
- have lead accountability for managing emergency response and undertaking post-incident investigations; and
- issue dispatch instructions in limited circumstances including:
    - where contractual arrangements with the ISO require it – for example:
        - for ancillary service provision; and
        - for providing a dispatch service;[3] and
    - to step in to preserve or restore system security and reliability – for example:
        - following equipment failure; and
        - to manage a network or system constraint (consistent with the NWIS Rule).

Design Element 22

The ISO will take over the role of procuring and allocating the costs associated with the following Ancillary Services: frequency control, spinning reserve, balancing & settlements, reserve capacity, and black start capability.

[3] i.e. where a generator contracts with the ISO to dispatch its generators (i.e. rather than have its own operators)

Design Element 23

The ISO will provide the following Network Services for the NWIS in conjunction with Network Owners, Generators, and End Customers: network coordination, technical oversight of connections and access, and publication of statements of transmission development and generation opportunities (whilst protecting commercially sensitive information)

The suite of ISO functions will be reviewed as part of the mandatory post-implementation review to ensure the model is meeting the specified objectives.

Design Element 24

The ISO will at initiation provide limited Market Services, with economic dispatch of generation unlikely to be justified in the NWIS for the foreseeable future. The ISO needs to be provided with an ability to cover its NWIS-related administrative costs and the costs of any Market Services that it provides.

Design Element 25

With the recommended functions of the ISO in this document, the ISO will need to be regarded in the *Electricity Industry (Metering) Code 2012* as the equivalent of the Independent Market Operator/AEMO for the NWIS with similar rights, obligations and responsibilities. The ISO is not initially positioned as a Metering Services provider.

Design Element 26

The ISO will have sufficient powers to effectively enact and enforce its obligations and undertake its functions. The powers of the ISO will not extend to daily operational control of interconnected networks in NWIS unless such control is transferred to the ISO by agreement.

Design Element 27

The ISO will be a stand-alone entity, with the proposed functions undertaken by AEMO as an extension of its current Western Australian operations, noting that it may choose to contract with other network service providers for provision of some services.

Design Element 28

The ISO's annual revenue and capital expenditure forecast will be independently approved by the ERA.

Design Element 29

The ISO capital and operating costs will be recovered from market participants.

Design Element 30

The ISO will be governed by the AEMO Board on the basis that AEMO undertakes the ISO role for the NWIS. Its charter will be established with the involvement of key stakeholders.

Design Element 31

The ISO surveillance functions will be provided to the ISO governing body by the ERA.

Design Element 32

Changes to the NWIS Rules will be a service provided to the ISO governing body by the ERA.

Design Element 33

The ISO will have coverage of the entire NWIS Interconnected System, with powers limited to those necessary to undertake its assigned functions consistent with the design objective.

For the avoidance of doubt, the ISO will not have powers to interfere with the efficient operations of networks, other than to protect the security and reliability of the NWIS and these powers do not necessarily require direct control of all network elements.

Any changes to the powers of the ISO will be subject to rigorous analysis with stakeholder input to ensure that there is a material net benefit of any proposed changes.

Design Element 34

The ISO will have the same immunity from damages claims as AEMO has for its operations in the SWIS.

Design Element 35

Transitioning to the new ISO will allow timelines that permit the ISO and participants to efficiently meet new obligations and functions and for stakeholder participation in the development of the various design elements.

1. Introduction

1.1 Policy Objective

The Pilbara region is a significant driver of Western Australia's economic and export performance, yet the electricity infrastructure that is vital to support maintaining this key advantage is becoming increasingly fragmented, high-cost and uncompetitive.

Unlike the State's South West, electricity infrastructure in the Pilbara region has largely evolved in an ad-hoc manner with multiple owners and operators of generation assets and loosely connected electricity networks. The electricity networks in the Pilbara have particularly suffered from not having a formal framework to allow a secure and efficient electricity system to evolve.

The NWIS is not centrally planned or operated and has developed in an uncoordinated manner over several decades as resources and energy companies made individual investments in generation capacity and network infrastructure to meet their own needs, with Government meeting the needs of other users in the major towns of Port Hedland and Karratha through Horizon Power. As a result, there has been little potential for shared use of common electricity infrastructure to avoid wasteful duplication. This has meant that the cost of electricity supply has become very high and risks affecting the future economic development of the region.

Removing barriers to network access on the NWIS and creating an environment that facilitates multiple parties to provide electricity services will pave the way for future growth in the Pilbara region and assist with development opportunities in preparation for the next round of economic expansion.

Establishing a regulatory framework for the NWIS is likely to enhance the availability, security, and lower the cost of electricity services through better integration of network investment, generation investment and system operation in the NWIS. In turn, a more secure and efficient electricity system will contribute to the future economic development of the Pilbara.

The fundamental policy objective for the proposed reforms is providing a framework that delivers efficiency and improved security and reliability for the region. Specifically:

- improved security and reliability of power supply through better coordination between the major market participants;
- efficiency for industry and energy producers to make prudent investment decisions by creating the potential for shared use of common infrastructure and avoiding wasteful duplication;
- efficiency that will boost regional economic growth and development and create jobs, whether that be by lowering the operating cost of local business, lowering the cost of electricity as an investment hurdle for expanding mining and other industry operations in the Pilbara; or creating new opportunities and jobs in the energy sector, including investment in renewable generation; and
- an efficient process that is not overly burdensome or introduce undue costs. The NWIS, as it stands today, is not equivalent to the South West Interconnected System (SWIS) in terms of size or relative market development and as such, the framework that is developed must be fit-for-purpose today as well as cater for the growth and development of the NWIS in the future.

These are not novel ideas. A number of reports over the last decade have identified broad benefits to the region from creating a framework that provides incentive for greater interconnection of, and access to, electricity assets in the NWIS.[4] These reports have outlined a number of benefits for reform, including:

- enabling a competitive retail market that results in lower prices for electricity consumers;
- more efficient capital investment resulting from greater planning and coordination;
- the ability for smaller mining and industrial loads to connect to lower cost centralised generation;
- efficient dispatch of power stations, lowering the cost of electricity to consumers; and
- the ability of new renewable generators to add to the supply mix, taking advantage of abundant renewable resources in the region.

Some benefits can be achieved quickly by putting in place regulatory and legislative solutions. Other approaches would require far greater cooperation and coordination between industry stakeholders than exists at present, while full integration and market development would require significant capital investment and time.

1.2 Urgency

The reform proposal has a high degree of urgency, as it is intend to replace current default arrangements mandated to commence from 1 January 2020 under the *Electricity Networks Access Code 2004* (Access Code), which will require Horizon Power to submit an access arrangement proposal to the Economic Regulation Authority by 30 June 2020.

This outcome would be suboptimal relative to the proposed reforms because:

1. it involves a higher regulatory cost relative to the proposed light handed regime; and
2. the lack of formal arrangements for an ISO would need to be accounted for via expensive insurances or other commercial agreement, which would not address the underlying system security and reliability issues.

Due to the long lead time required to draft the necessary legislative provisions and attain passage through Parliament, obtaining a high legislative priority will be necessary to meet implementation timeframes.

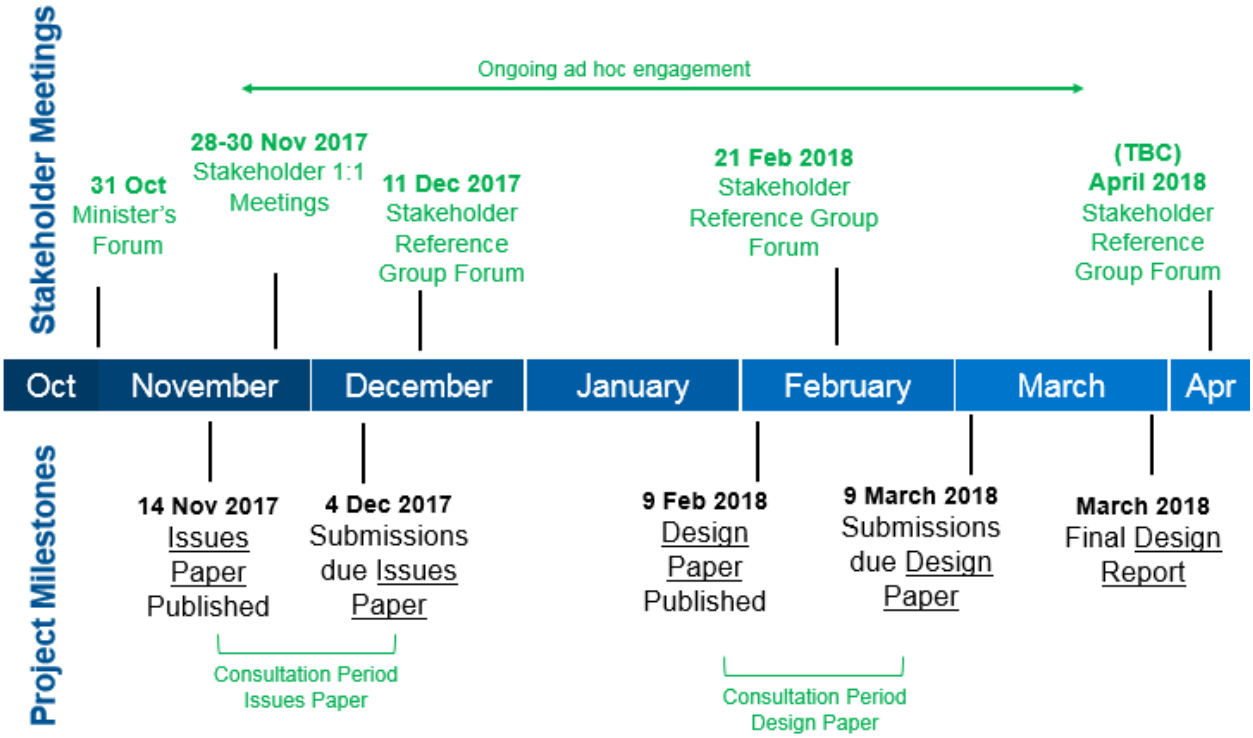
1.3 Consultation

The Public Utilities Office has undertaken an extensive stakeholder consultation process in developing this proposal. Consultation has involved two stages of formal public submissions and intensive one-on-one stakeholder engagement. This has resulted in a strong consensus on the need for reform and support for the framework proposed in this report.

Figure 1 illustrates a timeline of the design consultation process that was undertaken by the Public Utilities Office. A total of 24 submissions were received from 14 stakeholders in response to the publication of the Issues Paper and Design Consultation Paper.

[4] Power for the Pilbara – Report of the North West Interconnected System Taskforce (WA Govt 2002), Electricity Reform Task Force – Discussion Paper on the Reform of the Electricity Supply Industry in Western Australia (WA Govt 2002), Pilbara Coast Petroleum and Minerals Study (SMEC 2005), Power for the Pilbara Region (Allen Consulting 2008), Pilbara Cities (WA Govt 2012), Pilbara 2050 (Curtin University 2014) Pilbara Planning and Infrastructure Framework (WA Govt 2012, 2015), Pilbara Electricity Infrastructure Project (WA Govt 2016).

Figure 1. Design Consultation Process



Intensive one-on-one stakeholder engagement was undertaken with key market participants, including large miners, independent power providers, local government authorities and government agencies.

Full details of the consultation process, including the Public Utilities Office's consultation papers and stakeholders' submissions are available on the Department of Treasury's website.[5]

[5] www.treasury.wa.gov.au/Public-Utilities-Office/Open-consultations-reviews/NWIS-Regulatory-Reform/

2. Third party access regime

The proposed design of a light handed third party access regime in the NWIS is based on the objectives and design criteria as described in Section 2.1 below. It has taken into account the findings of previous studies, responses by stakeholders to the Issues Paper and Design Consultation Paper, the Minister's recent final decision on Alinta Energy's coverage application, the current Access Code requirements and consultation with stakeholders.

The Public Utilities Office is proposing a light handed third party access regime that is largely based on the access regime as set out in the National Gas Rules under the National Gas Law scheme relating to access to non-scheme pipelines.[6]

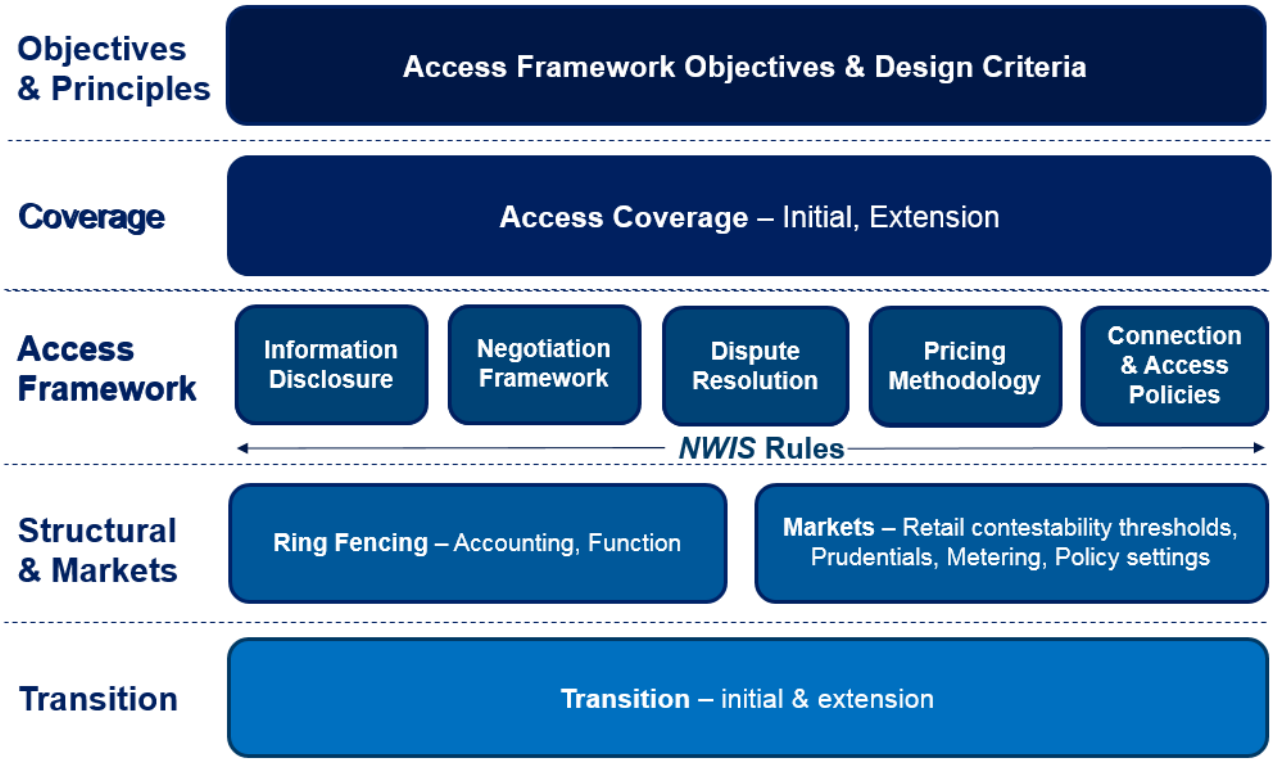
The proposed third party access regime includes:

- a framework for access pricing, including pricing principles to guide price setting and that the arbitrator must have regard to when determining access disputes, and which are consistent with the outcomes of a workably competitive market;
- a process for access requests and negotiations;
- connection and network access policies;
- requirements for the publication and exchange of information to facilitate timely and effective commercial negotiations for access to covered networks; and
- a commercially-orientated binding arbitration process to resolve access disputes in a cost-effective and efficient manner.

The access regime is the key element of the broader regulatory framework proposed for third party access to the NWIS. As illustrated in Figure 1, the regime includes coverage, structural and market arrangements, as well as transition arrangements.

[6] Part 23, Division 1, rule 546 of the National Gas Rules. Version 36.

Figure 2: Overview of proposed third party access regime in the NWIS



The features of the proposed third party access regime are discussed in more detail below.

2.1 Third party access regime objectives and design criteria

The objective of introducing third party access through a light handed access regime for the NWIS is to provide a more effective and efficient alternative to the current regulatory framework in the Access Code.

In developing the proposed third party access regime, the following design criteria have been adopted:

- clear delineation of connection, access, network development and operational rights and responsibilities between network owners, current and intending connected parties and the proposed ISO;
- allowing generators currently contracted to specific loads and supplying them through NWIS networks, to maintain existing supply terms and conditions;
- a pro-competitive bias that provides a level playing field for new entrant generators to connect and supply their own or third party loads and minimises the extent to which network owners can use their network service role to favour their own generation or supplies to customers; and
- a bias in favour of low-cost regulatory requirements that do not impose a regulatory burden on networks in advance of and disproportionate to any reasonable network connection and access requirements.

2.2 Coverage

A key issue for the development of a third party access regime in the NWIS is the assessment of which assets should be 'covered' by the access regime.

Options of coverage for network access span a continuum ranging from Horizon Power's assets through to all interconnected network assets in the Pilbara. This review has not considered non-interconnected network assets in the Pilbara, but as suggested in some submissions, these assets could be considered for coverage in the future.

The coverage criteria for facilitating third party access to electricity networks in Western Australia are set out in Chapter 3 of the Access Code. The Access Code contemplates arrangements where electricity networks may be initially or subsequently 'covered'. Coverage of an electricity network triggers an ongoing obligation on the network operator to have an access arrangement in place for third party access that is approved by the Economic Regulation Authority (ERA) in accordance with the regulatory requirements in the Access Code.

Under the Access Code, a covered network provides one or more 'covered services', defined as follows:

> **covered service** means a service in relation to the transportation of electricity provided by means of a covered network, including:
>
> 1. a connection service; or
> 2. an entry service or exit service; or
> 3. a network use of system service; or
> 4. a common service; or
> 5. a service ancillary to a service listed in paragraphs (a) to (d) above but does not include an excluded service.[7]

Western Power's SWIS network is the only covered network under the Access Code. The Minister published a final decision on 2 February 2018 to cover Horizon Power's NWIS network in response to the coverage by Alinta Energy under the Access Code. However, coverage of Horizon Power's network will not commence until 1 January 2020.

2.2.1 Coverage at commencement of the new access regime

To realise the full benefits of an open access regime in the NWIS, an option is for all interconnected networks in the NWIS to be covered at commencement. The full benefits of such an open access regime in the NWIS would include:

- enabling a competitive retail market that would be expected to result in lower prices for electricity consumers;
- more efficient capital investment resulting from improved coordination of network development and greater utilisation of existing network assets;
- the ability for smaller mining and industrial loads to connect to lower cost centralised generation; and
- the ability of new renewable generators to add to the supply mix, taking advantage of abundant renewable resources in the region.

[7] Electricity Networks Access Code 2004.

The potential benefits of widespread competition in the region were noted by many stakeholders in their responses to the Issues Paper. For example, ATCO Australia in its submission stated that:

> ATCO Australia believes strongly that competitive retail markets deliver real benefits for consumers and the broader economy. The introduction of competition in the retail gas market in Western Australia has delivered substantially lower gas prices for consumers, with some retailers offering discounts as high as 35 per cent off regulated gas usage charges (retail gas prices are subject to a regulated price cap in Western Australia).
>
> Similarly, ATCO Australia expects that retail competition in the Pilbara electricity market would also deliver real benefits for consumers, including lower prices and more innovative energy products and services. Retail competition would also deliver economy-wide benefits by incentivising efficiency improvements across the Pilbara electricity supply chain.[8]

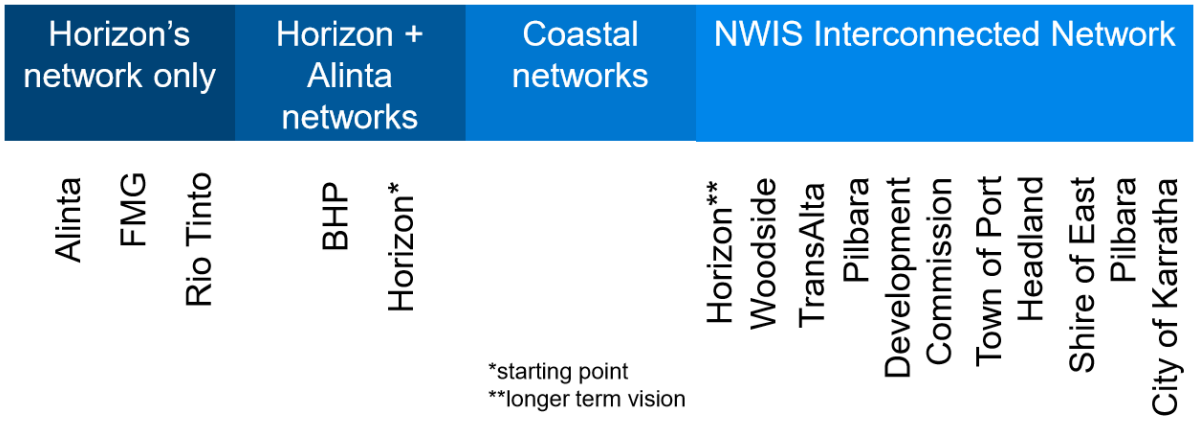
Horizon Power also stated the benefits of coverage applying to all interconnected networks in the NWIS, as follows:

> Limiting competition and restricting access to Horizon Power's network would be detrimental to current and future energy users in the Pilbara. It would limit their ability to assess their options and determine the best energy provider to suit their needs. This would commercially disadvantage those customers as they may still be required to participate in a monopolistic market or be required to install costly non-interconnected generation. Allowing access to Horizon Power's network only enables the incremental benefit for incumbent energy providers without enabling a whole of Pilbara approach and benefit sharing. This approach would greatly reduce the likelihood of investment and viability of new small to mid-tier projects.
>
> Additionally, it wouldn't incentivise energy providers to improve service provision outside of Horizon Power's network, which would not realise one of the key benefits associated with competition. However, a broader integrated network would enable universal access to more cost-effective generation, allowing Economic Dispatch to occur on the basis of a hierarchy of the most efficient generation on the system and for greater penetration of renewables.[9]

The figure below illustrates the positions on coverage of stakeholders that responded to the Issues Paper.[10] It is noted that the majority of stakeholders consider that coverage should include the entire NWIS Interconnected Network, however barring Horizon Power, none of the stakeholders preferring full coverage are network owners themselves in the NWIS.

[8] ATCO Australia 4 December 2017 submission in response to the PUO Issues Paper, p 2.
[9] Horizon Power 4 December 2017 submission in response to the PUO Issues Paper, p 21.
[10] For the purposes of this paper, NWIS Coastal is defined as the coastal networks in the NWIS comprising Horizon Power, Alinta DEWAP (in Port Hedland) and BHP (in Port Hedland). The NWIS Interconnected Network is a reference to the NWIS Coastal networks, and the Rio Tinto inland network.

Figure 3: Stakeholder positions on coverage, as presented in responses to the Issues Paper



It is acknowledged that there is almost universal support for the Horizon Power interconnected network to be covered at commencement of any new third party access regime in the NWIS, including support from Horizon Power itself. The submission from Alinta Energy noted that "[T]he Government should focus on the areas where the most net benefits will result from implementation of a light-handed regime. Currently this is in Port Hedland and Karratha (the Horizon Network) which has the largest load by customer numbers and volume and where the savings from competition will drive the largest economic benefits."[11]

Stakeholders were generally of the view that limiting coverage of an access framework in the NWIS to Horizon Power would not achieve the full economic benefits of increased competition in the region. For example, TransAlta stated that "competition should be facilitated at all levels across the region and limiting coverage and reform outcomes to only those assets owned by Horizon Power may not ultimately be in the best interests of all consumers and potentially unfair to generators connected to the Horizon Power network such as TransAlta."[12]

Submission from the City of Karratha also noted that:

> If optimum value is to be obtained from power infrastructure throughout the Pilbara, the scope of discussions regarding NWIS needs to be expanded to include inland townships and mine sites. While moving in the right direction, the narrow emphasis that is currently placed on NWIS potentially limits the overall effectiveness of the future NWIS scheme as opportunity for holistic planning are potentially lost.[13]

There was also support from stakeholders that coverage in the NWIS should also include the interconnected Alinta DEWAP assets in order to achieve the economic benefits of increased competition in the region. For example, BHP stated that "[A]ny new arrangements should be limited in the first instance to the network access required to support retail contestability and new entrant connections (third party access regime) on the NWIS interconnected network assets owned by Alinta DEWAP and Horizon Power."[14]

[11] Alinta Energy, 4 December 2017 submission in response to the PUO Issues Paper, p 10.
[12] TransAlta 4 December 2017 submission in response to the PUO Issues Paper, p 2.
[13] City of Karratha 4 December 2017 submission in response to the PUO Issues Paper, p 1.
[14] BHP 4 December 2017 submission in response to the PUO Issues Paper, Q4, p 4.

An alternative view, whereby only Horizon Power is covered, was put forward by Fortescue Metals Group Ltd (Fortescue), suggesting that coverage at commencement should only apply to publicly owned networks.[15]

The Public Utilities Office considers that including the Alinta DEWAP interconnected network assets at the commencement of the third party access regime supports the NWIS access regime objectives and is consistent with the design criteria. Furthermore, it is considered that restricting the access regime only to the government-owned Horizon Power network would significantly limit achievement of the design objective and it is unlikely that other networks would choose to opt-in to the regime, if it opened their own generation or their supplied loads to competition.

While there are benefits associated with all interconnected networks in the NWIS being covered as suggested by some stakeholders, the impact on the integrated nature of mining operations of the other interconnected networks would need to be carefully considered.

Rio Tinto has stated that it sees no clear benefits for its electricity network to be covered and has highlighted the risk that coverage has the potential to significantly impact on its iron ore operations, as stated below.[16] In its submission, Rio Tinto noted that:

> Introducing a third party user onto Rio Tinto's infrastructure will inevitably interrupt the necessary flexibility and coordination of our integrated supply chain and create inefficiencies. Our current single-user power system is characterised by flexibility, which enables Rio Tinto to respond in real time to operational variations that occur during the normal course of production activities. This dynamic management response is readily apparent from the way we structure and manage our electricity network as part of an overall integrated production system through the Operations Centre in Perth.
>
> …
>
> We therefore do not support further interconnection of the Rio Tinto electricity network with other providers or customers on the basis that it poses a significant risk to our operations and the communities to whom we supply power.
>
> …
>
> We consider that having to accommodate the requirements of other users on our integrated electricity network would materially constrain the flexibility which currently exists within our network's operation and result in significant diseconomy costs that would be imposed on an integrated producer, such as Rio Tinto. These costs would likely flow through to the Western Australia economy in the form of lower royalties associated with reductions in shipped tonnes from disrupted power supplies or impacts on future expansions.
>
> In our view, the costs and disruptions to RTIO's integrated operations would far outweigh any potential benefits.[17]

The Public Utilities Office is of the view that there is currently insufficient evidence to support an argument for Rio Tinto's network to be deemed included at the commencement of the third party

[15] Fortescue 4 December 2017 submission in response to the PUO Issues Paper, Q4, p 4.
[16] Rio Tinto 6 December 2017 submission in response to the PUO Issues Paper. response to Q's, p 5.
[17] Rio Tinto 6 December 2017 submission in response to the PUO Issues Paper, p 9.

access regime. However, Rio Tinto has indicated it supports the adoption of an 'opt-in' arrangement for future coverage for networks not covered at commencement.

BHP has a number of smaller operations around Port Hedland in the coastal region which are connected to the NWIS and are provided with electricity from the Horizon Power and Alinta DEWAP networks. FMG also has a small network in this region which supplies its own operations, through interconnection with the Horizon Power and Alinta DEWAP networks.

In considering whether its assets should be covered, BHP states its transmission infrastructure is not critical to achieve the desired outcomes for the access regime, and therefore should not be covered at the commencement of the NWIS regime.[18]

Both BHP and FMG networks are purpose-built and currently supply only their own mining loads. Generators wishing to compete to supply the FMG or BHP loads, would only require access to Alinta DEWAP and Horizon Power's networks to do so. While there is a possibility that new loads could arise and which could potentially be served from the BHP or FMG networks, or that new generators may wish to connect directly to the BHP or FMG networks, these possibilities are best addressed through future coverage applications, as discussed below.

BHP's line from Goldsworthy to Shay Gap could also reasonably be considered a 'stand-alone' line with a specific purpose, not tightly integrated with other networks. For the same reasons, it is considered that there is no need to cover non-interconnected (with NWIS) inland lines such as BHP's Yandi – Newman line and Alinta DEWAP's Roy Hill – Newman line. These could be subject to a future coverage test if triggered by a future application.

In the Design Consultation Paper, the Public Utilities Office's view was that coverage at commencement should apply to the following interconnected networks in the coastal region:

- the Horizon Power interconnected network; and
- the Alinta DEWAP interconnected network.

The Public Utilities Office considered that applying coverage to the Horizon Power and Alinta DEWAP networks would achieve the maximum economic benefits of competition at commencement of the third party access regime in the NWIS, while not jeopardising the integrated nature of the mining operations (particularly in the absence of any bona fide user applications for coverage).

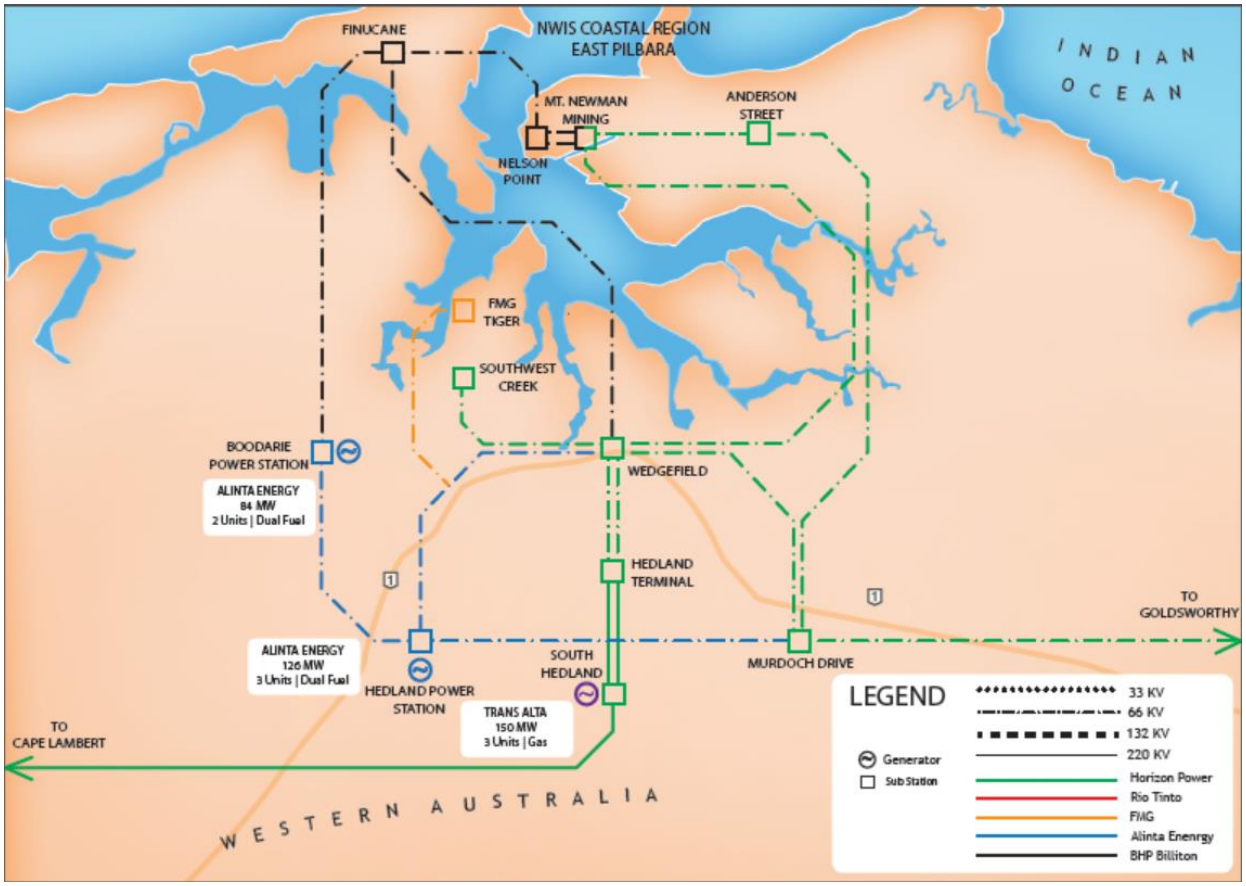
The Public Utilities Office is still of the view that there is insufficient evidence to support broader coverage at commencement. There are costs involved for networks that are covered by the third party access regime, and at present without customers actively seeking access to other NWIS networks, a positive economic case for broader coverage cannot be made. In addition, the regime includes incentives for the networks to opt-in to the regime (see Design Element 2) and a mechanism to allow parties to apply for a network to be covered (see Design Element 3). As such the regime allows coverage to be extended when it can be justified.

[18] BHP 4 December 2017 submission in response to the PUO Issues Paper, Q4, p 4.

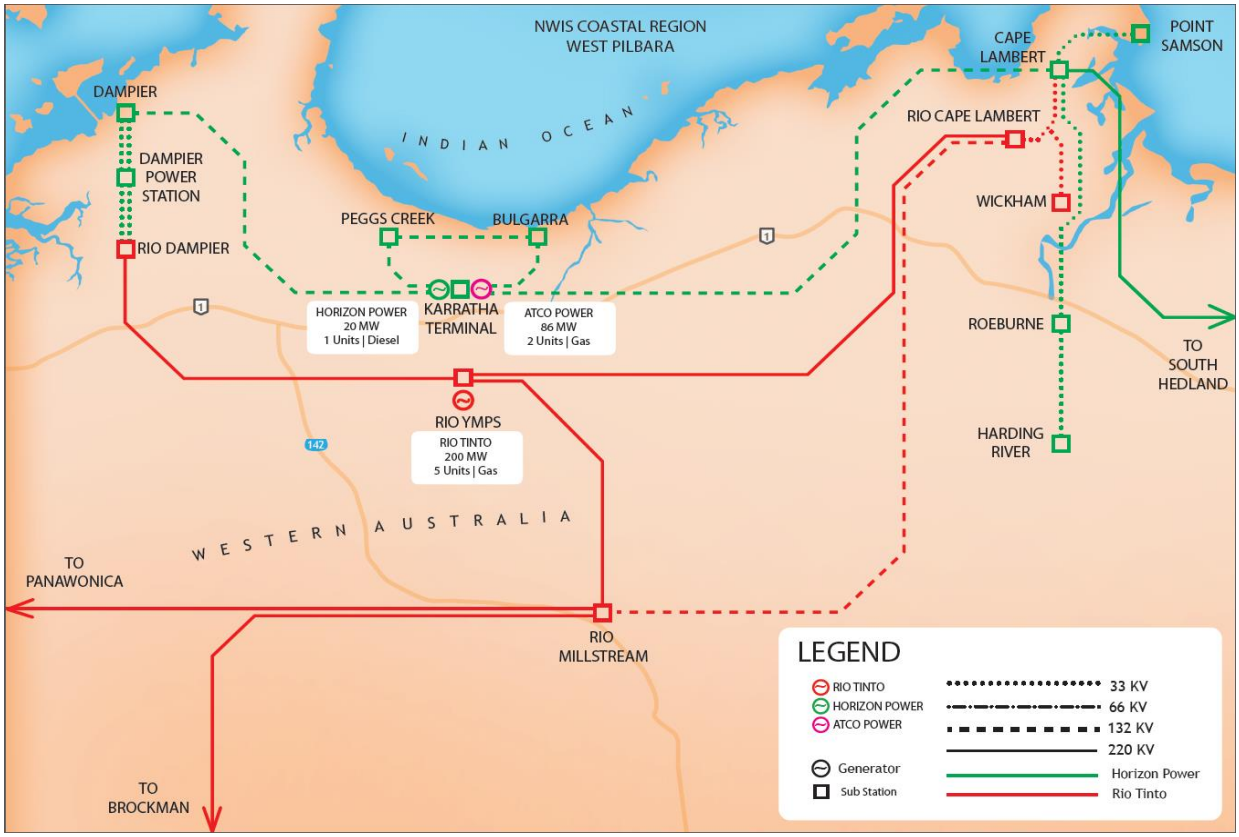
Stakeholder submissions to the Design Consultation Paper generally supported Design Element 1, including the decision on coverage at commencement of the third party access regime, with the exception of Woodside and Shire of Ashburton that argued for wider coverage. Alinta Energy also submitted that the Alinta DEWAP network should not be covered at commencement.

The figure below illustrates the networks around Port Hedland that would be covered at commencement of the third party access regime in the NWIS[19]. Horizon Power's transmission and distribution assets in Karratha will also be covered.

Figure 4: Network assets in Port Hedland and Karratha area – Horizon Power and Alinta Energy networks deemed coverage at commencement



[19] For the avoidance of doubt, the BHP and FMG networks shown in the diagram will not be covered at commencement of the third party access regime.



Design Element 1

The following interconnected networks in the Coastal Region of the NWIS will be covered at commencement of the light handed third party access regime in the NWIS:

- the Horizon Power interconnected network; and
- the Alinta DEWAP interconnected network.

2.2.2 Future coverage test

An effective third party access regime in the NWIS must also cater for the possibility of future coverage of other networks to enable the potential benefits to be realised. This can be triggered by an application for coverage by a user seeking access to a non-covered network in the region.

The Public Utilities Office considers that the current coverage test in the Access Code is appropriate for establishing a framework for assessing future coverage. The coverage criteria in section 3.5 of the Access Code are reproduced below:[20]

> A coverage decision must be that a network be covered if the Minister determines an affirmative answer to each of the following questions:
>
> (a) Would access (or increased access) to covered services provided by means of the network promote a material increase in competition in at least one market (whether

[20] Electricity Networks Access Code 2004, pp 41-42.

or not in Western Australia) other than the market for the covered services provided by means of the network?

(b) Would it be uneconomic for anyone to develop another network to provide the covered services provided by means of the network?

(c) Would access (or increased access) to the covered services provided by means of the network not be contrary to the public interest?

As is the case under National Gas Law, the coverage decision for the NWIS will include a decision on the form of regulation. The option for 'full regulation' is already allowed for under the Access Code; however, it will be open to the Minister, in approving coverage, to determine that the proposed third party access regime should apply to any newly-covered networks.

It is envisaged that the decision on the form of regulation will be made based on principles that are equivalent to those that are set out in National Gas Law.[21] Assuming that the light handed option is adopted for the foundation covered networks, it is envisaged that this option is likely to also best meet the criteria for regulation of a newly covered network. However, the possibility of full regulation would not be precluded in a coverage decision and would be tested against the relevant principles.

An interconnected network in the NWIS will also have the option to 'opt-in' at any time and to be a covered network in the NWIS third party access regime. This may have advantages, for example, through the limitation of liability that will be part of the declared access regime.

The proposed coverage process, including the decision on the form of regulation, is summarised in Figure 5 below.

Stakeholder submissions to the Design Consultation Paper were generally supportive of Design Elements 2 and 3, including the mechanisms for extending coverage in the future.

Rio Tinto sought confirmation that networks that 'opt-in' will be immune from subsequent coverage applications under the Access Code (that could potentially result in heavy handed regulation) and are regarded as foundation network assets for the purposes of the light-handed regulatory framework and can operate on an unconstrained basis. The Public Utilities Office is supportive of the suggestion that networks that 'opt-in' should be immune from subsequent coverage applications as this will incentivise networks to 'opt-in' to the third party access regime. The Public Utilities Office considers issues relating to connection in Design Elements 9 and 10.

The Public Utilities Office does not support BHP's suggestion that the Minister should not be able to apply heavy handed regulation for the reasons outlined above (i.e. the possibility of heavy handed regulation incentivised networks to opt in to the light-handed regime).

The Public Utilities Office considers that there should be a mechanism to allow networks to exit the third party access regime if their circumstances change. Networks that 'opt-in' to the third party access regime should have the ability to also 'opt-out', and there also should be a revocation path for the networks subject to a Minister's coverage decision. The details of these mechanisms will be developed during the regime development phase of the NWIS reform project.

[21] National Gas Law, section 122 – Principles governing the making or revoking of light regulation determinations.

The Public Utilities Office has considered stakeholder feedback to the Design Consultation Paper and has made the following changes Design Elements 2 and 3.

1. Confirmed that networks that 'opt-in' to the third party access regime will be immune from subsequent coverage applications under the access code, and their assets at the time of opting in will be treated as foundations assets under the NWIS Rules; and

2. Provided for a mechanism for the networks to exit the third party access regime.

Design Element 2

Uncovered NWIS Interconnected Networks can 'opt-in' to the NWIS third party access regime at any time. Networks that 'opt-in' will be immune from subsequent more onerous coverage applications that could otherwise lead to imposition of a different regime. A network that has opted in to the NWIS third party access regime can also opt out of the regime if their circumstances change.

Design Element 3

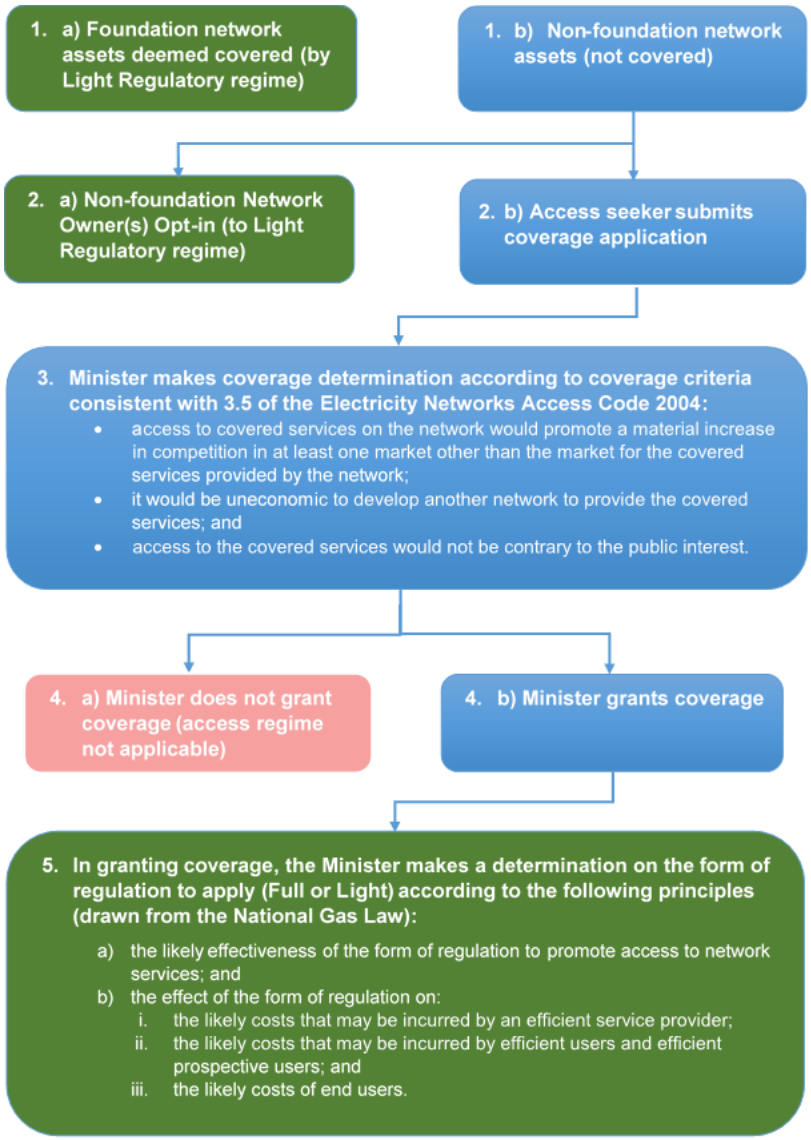
Coverage will be extended in the future to networks not covered at commencement by application of the existing Access Code coverage test.

An assessment for coverage is triggered by a coverage application that must be assessed by the Minister in accordance with current coverage criteria.

If a network is found to meet the coverage criteria, then the Minister will be required to make an additional decision as to whether the network should be subject to the light handed or full regulation, using principles similar to those in the National Gas Law.

Provision will be made for a Minister's decision to be revoked if a networks circumstances change such that the coverage criteria is no longer satisfied.

Figure 5: Coverage application process including decision on form of regulation



2.3 Light handed access framework

Facilitating third party access to the electricity infrastructure in the NWIS under the current Access Code involves a 'full regulation' access arrangement process, with extensive and prescribed submission information requirements and regulatory approval processes. Getting an approved access arrangement in place can typically take two years or more from initial preparation through to the ERA's final decision.

Given the relatively small size of the NWIS Interconnected Network, some form of 'lighter handed' economic regulatory regime will be more appropriate for the specific circumstances in the region. While it is recognised that economic regulation is an effective tool for addressing issues around market power and facilitating third party access to electricity network infrastructure, the form of economic regulation that is available under the current Access Code is considered unnecessarily burdensome for the size, composition and maturity of the NWIS.

In place of the 'heavier handed' form of regulation currently under the Access Code, a fit-for-purpose 'light handed' regulatory regime can balance the need for facilitating open access to the NWIS network while minimising the regulatory burden and costs imposed on market participants.

There was widespread support for a light handed regulatory framework that materially delivers the benefits of a regulatory framework, but with less regulatory burden and associated costs. Since there is no light handed regulatory option for electricity networks within Australia, the Public Utilities Office looked to other sectors in Australia (such as gas pipelines or rail) and other jurisdictions internationally to find examples of a workable framework, noting that differences in commodity types and country-specific factors may significantly impact on the transferability of such frameworks to the NWIS and its circumstances.

In order to establish a light handed regulatory framework for third party access in the NWIS an overarching objective was established against which the framework could be measured. The following objective was as considered:

> *The overarching objective of the new fit-for-purpose light handed framework is to facilitate access on reasonable terms to services provided by covered networks – which for the purposes of the framework, will be taken to mean at prices and on terms and conditions that so far as practical reflect the outcomes of a workably competitive market.*

The overarching objective mirrors the overarching objective from the Gas Market Reform Group's (GMRG) June 2017 final design recommendation on its review of the Gas Pipeline Information Disclosure and Arbitration Framework of the non-scheme pipelines under the National Gas Rules.[22]

For the proposed third party access regime for the NWIS, the Public Utilities Office has used the access framework for non-scheme pipelines in the National Gas Rules[23] as a starting point. The GMRG recommendations addressing greater information disclosure by gas service providers and access to commercial negotiation with binding arbitration are features that the proposed NWIS third party access regime incorporates. Notwithstanding, the Public Utilities Office will monitor any further outcomes from the GMRG review of the non-scheme pipeline information and arbitration framework for consideration in finalising the design of the NWIS third party access regime.

At the core of the proposed third party access regime is an assumption that the parties in the NWIS have sufficient economies of scale and scope and are sufficiently sophisticated to be able to negotiate fair and reasonable terms of access. While economies of scale and scope and possessing a level of sophistication may be necessary preconditions for negotiating access, they are not sufficient to ensure that negotiations will lead to fair and reasonable terms of access without some additional regulatory terms and conditions to facilitate the access negotiation process.

[22] Gas Market Reform Group's (GMRG) June 2017 final design recommendation on its review of the *Gas Pipeline Information Disclosure and Arbitration Framework* of the non-scheme pipelines under the National Gas Rules. http://gmrg.coagenergycouncil.gov.au/publications/gas-pipeline-information-disclosure-and-arbitration-framework-final-design

[23] Part 23, Division 1, rule 546 of the National Gas Rules. Version 36.

In order to meet the overarching objective, the proposed framework for the NWIS third party access regime includes:

- a framework for access pricing, including pricing principles to guide price setting and that the arbitrator must have regard to when determining access disputes;
- a process for dealing with connection and access requests;
- requirements for the publication and exchange of information to facilitate timely and effective commercial negotiations in relation to access to covered networks;
- a negotiation framework; and
- a commercially-orientated binding arbitration process to resolve access disputes in a cost-effective and efficient manner.

Each of these features are discussed in the following sections.

2.3.1 Access pricing

Of all the elements of access, perhaps the most challenging element relates to access pricing. The role (if any) of an economic regulator in the setting of network revenues or prices is one of the primary distinguishing features between fully-regulated more prescriptive pricing and light-handed forms of economic regulation.

While a covered network regulated under the Access Code would necessarily be required to develop a full access application for approval by the ERA including access tariffs, a third party access regime could rely on commercial negotiation between a network service provider and prospective users, with binding arbitration available in the event of a dispute.

A fully-regulated pricing approach imposes on networks the regulatory burden and associated cost of developing and obtaining regulatory approval on a full set of access tariffs, removing all such transaction costs for case-by-case access. By comparison, light handed regulation provides the opportunity for a less prescriptive approach, without the up-front burden of a propose/respond regulatory determination process, but will require some effort by the network and the access applicant to establish that access prices are reasonable, when access is sought.

In a third party access regime, where the methodology to determine regulated network prices is not specified in rules or regulations, it is essential to establish pricing principles that the arbitrator must have regard to when determining access disputes. These pricing principles are designed to be consistent with the outcomes of a workably competitive market and to provide a high degree of certainty that any access pricing dispute will be successfully and cost-effectively determined.

The pricing principles provide a touchstone for the arbitrator to have regard to when making a determination on a dispute in order to promote the achievement of the light-handed framework objective and the benefits of economic reform and competition.

Degree of specificity

During consultation to the Issues Paper, stakeholders offered mixed views with respect to the level of specificity required for access pricing for the light-handed framework for the NWIS, with the views generally falling in one of the following three camps.

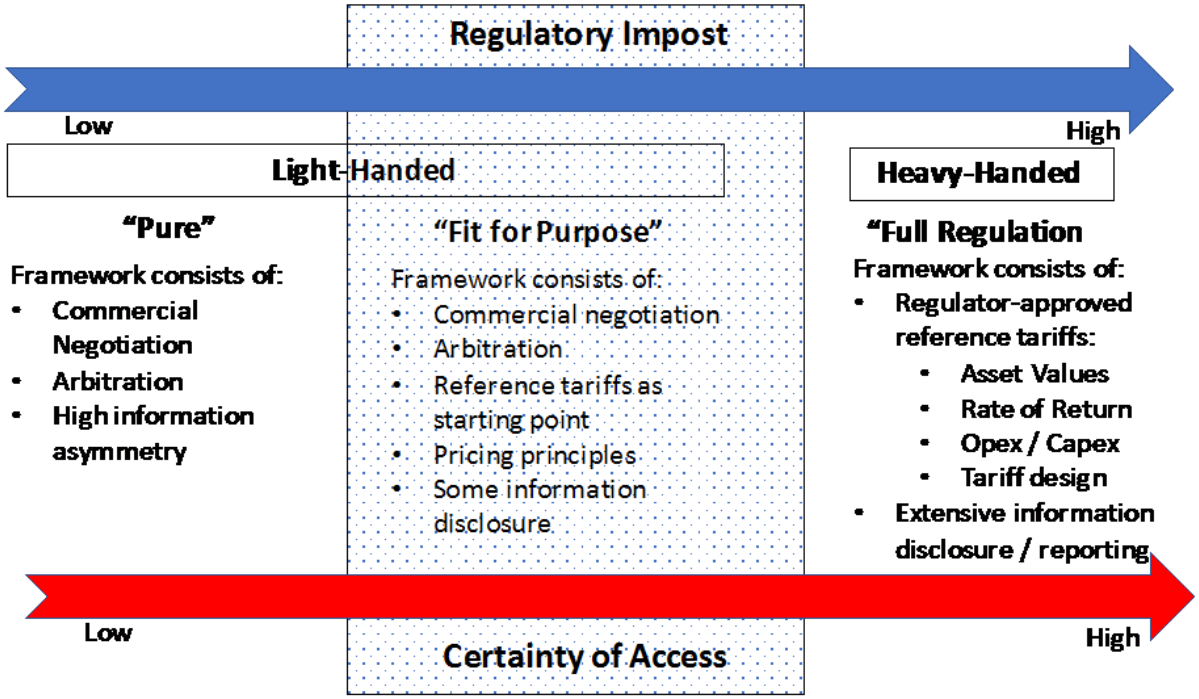
1. The network service provider prepares, and the regulator approves, a set of 'reference' tariffs for the network service provider at commencement.

2. The network service provider prepares and publishes a set of reference tariffs as the starting point for negotiations with little, if any, guidance from the framework.

3. The network service provider prepares and publishes a set of reference tariffs as the starting point for negotiations with some guidance from the framework on key issues.

The continuum of pure light handed to full regulation models of access pricing and their associated features is illustrated in figure 6 below. While the regulatory impost increases as an access regime moves towards full regulation there is also a corresponding increase in the certainty both of access and the associated terms and conditions, which is important for prospective users and networks alike.

Figure 6: Continuum of access pricing models



While a 'pure' light handed access pricing framework may have some attraction in terms of low regulatory costs, it may suffer from a high risk of 'no decision' or lack of certainty for networks and prospective users at each contract renewal. This would be untenable if it (1) does not support efficient investment by network owners of long lived infrastructure, or (2) does not provide prospective users with medium term certainty to support investment in generation or retail infrastructure (e.g. customer management and billing systems).

Conversely, a more prescriptive access pricing framework necessarily contains a higher regulatory impost that may be excessive for the size and scale of the NWIS Interconnected Network and the currently uncertain extent to which parties may seek network access.[24] The improved certainty of

[24] The potential circularities in this aspect of the argument need to be noted however; a fuller regulatory regime may draw more access applications.

access and the associated terms and conditions is nevertheless attractive to prospective users and networks.

On balance, the Public Utilities Office considers that a fully-regulated prescriptive approach to network access pricing, of the form used in the SWIS and for regulated reference tariff determinations for covered gas pipelines under the National Gas Rules, would not be warranted for the NWIS.

The Public Utilities Office is proposing the adoption of a fit-for-purpose access pricing framework for the NWIS that recognises the features and limitations of the pure light handed and fuller regulatory frameworks. As is the case for Light Regulation under the national gas access framework, the covered networks would be required to establish, maintain and publish Reference Tariffs. The onus is on the network owner to ensure the Reference Tariffs comply with a set of mandated pricing principles.

Proposed pricing principles

The Public Utilities Office is proposing the following pricing principles to support the third party access regime in the NWIS.

The price for access to a network service on a covered network should reflect the cost of providing that service, including a commercial rate of return that is commensurate with the prevailing conditions in the market for funds and reflects the risks the network service provider faces in providing the network service.

1. Prices are to signal the economic costs of service provision, by:

- being subsidy free (equal to or greater than incremental costs, and less than or equal to standalone costs), except where subsidies arise from compliance with legislation and/or other regulation;
- having regard, to the extent practicable, to the level of available service capacity; and
- signalling, to the extent practicable, the impact of additional usage on future investment costs.

2. Provided that prices satisfy (1) above, prices should be responsive to the requirements and circumstances of stakeholders in order to:

- discourage uneconomic bypass;
- allow for negotiation to better reflect the economic value of services and enable stakeholders to make price/quality trade-offs or non-standard arrangements for services; and
- where network economics warrant, and to the extent practicable, encourage investment in transmission and distribution alternatives (e.g. distributed generation or demand response) and technology innovation.

3. A covered network service provider should be provided with a reasonable opportunity to recover at least the efficient costs it incurs in:

- providing covered network services; and

- complying with a regulatory obligation, other obligations or requirements for making a regulatory payment.

4. Regard should be had to the economic costs and risks of the potential for under and over investment by a covered network service provider in, as the case requires, a distribution system or transmission system with which the operator provides covered network services.

5. Regard should be had to the economic costs and risks of the potential for under and over utilisation of a distribution system or transmission system with which a covered network service provider provides covered network services.

6. Regard should be had to the regulatory asset base with respect to a distribution system or transmission system, with an accepted method being used for the initial valuation and for rolling forward that valuation to future years.

7. When applying the above principles to a network service that when used affects the capacity of the covered network available for other network services and is priced at a premium or a discount to the price for a firm service on the relevant covered network – the premium or discount must:

- take into account any opportunity cost or benefit to the network service provider of providing the network service, having regard to any effect on the cost of providing firm services or the capacity of the covered network; and
- be consistent with the price for the network service providing a reasonable contribution to joint and common costs.

8. A covered network service provider should be provided with effective incentives in order to promote economic efficiency with respect to covered network services the operator provides. The economic efficiency that should be promoted includes:

- efficient investment in a distribution system or transmission system with which the operator provides covered network services;
- the efficient provision of electricity network services; and
- the efficient use of the distribution system or transmission system with which the operator provides covered network services.

9. Development of prices should be transparent, promote price stability and certainty for stakeholders, and changes to prices should have regard to the impact on stakeholders.

10. Development of prices should have regard to the impact of transaction costs on retailers, consumers and other stakeholders and should be economically equivalent across retailers.

Pricing methodology and disclosure

The Public Utilities Office is of the view that the onus for developing, negotiating and if need be, defending the pricing methodology at binding arbitration should be placed squarely on the network providers' shoulders. The principle underpinning this light handed approach is one that balances the need for transparency and certainty with the commercial realities of the businesses involved. Rather than applying a prescriptive regime upfront, the proposed framework relies on the real threat of binding arbitration to enforce pricing discipline from network owners.

It is noted that access regimes for covered electricity (and gas) networks elsewhere in Australia contain various forms of pricing guidance such that access prices can be built up from an Allowable Revenue Requirement (ARR) that is based on a building block approach. In the simplest terms, this involves inputs such as:

- a Regulated Asset Base (RAB) valuation;
- a Weighted Average Cost of Capital (WACC);
- direct and indirect operational expenditure;
- network capital expenditure and any non-network capital expenditure that relates to provision of the service (and which is thereby rolled in to the RAB);
- depreciation; and
- tax.

The Public Utilities Office is of the view that the threat of binding arbitration obviates the need for prescription in the setting of Reference Tariffs. However, the Public Utilities Office considers that in disclosing their Reference Tariffs, the networks would need to disclose (in general terms):

1. the methodology and key assumptions used to arrive at their equivalent of an 'Allowable Revenue' cap; and

2. how they have allocated Allowable Revenue to usage of their network, to determine their Reference Tariffs.

Stakeholder submissions to the Design Consultation Paper were generally supportive of Design Elements 4 to 7, including decisions on network pricing.

BHP, Alinta Energy, FMG and TransAlta commented on the proposed pricing principles and guidelines, including for some stakeholders a preference for more rather than less prescription in the pricing guidelines. The pricing principles and relevant guidelines will be finalised during the regime development phase of the NWIS reform project and the Public Utilities Office will consider all feedback on the pricing principles and guidelines during that phase.

In response to Design Element 6, BHP suggested that networks should be required to comply with both requirements of the design element, that is demonstrate that (a) they meet the Pricing Principles, and (as the case may be) to attest that they have applied the pricing guidelines or (b) to otherwise describe the methodology and key assumptions they have used in developing their Reference Tariffs. The Public Utilities Office agrees with BHP and has amended Design Element 6 so that networks are required to describe their methodology whether it is consistent with the pricing guideline or not.

In response to Design Element 7, Alinta Energy suggests that the Design Report should clarify that it is important that the network service provider assesses all access requests equally and does not discriminate against access seekers who may present a competitive threat to other parts of their business. The Public Utilities Office agrees with Alinta Energy's point and considers that this is covered by Part IV of the *Competition and Consumer Act 2010*.

The Public Utilities Office has modified Design Element 6 consistent with the approach outlined above.

Design Element 4

Pricing principles will be developed to guide price setting and dispute arbitration.

Design Element 5

The onus will be on the network service provider to develop, negotiate and defend their pricing methodologies in accordance with the Pricing Principles.

Design Element 6

In setting Reference Tariffs, the covered network businesses will be required to demonstrate that they meet the Pricing Principles, and either: (a) describe how they have applied the pricing guidelines; or (b) describe the alternate methodology and key assumptions they have used in developing their Reference Tariffs.

Design Element 7

By mutual agreement, an access applicant and the relevant network service provider could agree on a Non-Reference Tariff.

2.3.2 Connection and access policies

Market carriage and contract carriage

The covered Australian electricity networks (in the SWIS and under the National Electricity Law framework in the Eastern States) provide access on a 'market carriage' basis. These arrangements are generally considered to be appropriate for integrated electricity networks. They allow for the various services provided to, and obtained from, an electricity system to be unbundled and they avoid the need to deem electricity to be 'transferred' between entry and exit points according to a particular path, and which is in any case an artificial construct.[25,26]

Under a market carriage regime, and as applies already in the SWIS, Reference Tariffs for network services can be established and published for entry services and exit services at specific locations, as well as for any 'common services' that the network service provider may define and quantify. A 'contract carriage' regime would not be compatible with a requirement to publish Reference Tariffs, because of the complexity of the different point-to-point entry and exit permutations and deemed flow paths involved under such a concept.[27]

It is considered that the NWIS access regime should be designed as a market carriage model, consistent with other Australian power systems.

Generator access

Generators need to obtain access to supply loads that are interconnected remotely through the network. This may be through a 'gross pool' such as exists in the National Electricity Market (NEM)

[25] In providing 'open access' the relevant networks will be providing access to inject electricity at an entry point and to draw electricity from an exit point. In describing electricity and gas network access regimes, the term 'contract carriage' is sometimes used to refer to point-to-point transfer arrangements, while the term 'market carriage' tends to be used to refer to arrangements whereby the injection of electricity into a 'system', and its withdrawal from the system, are dealt with individually.

[26] The contentious identification of 'loop flows' in US transmission rate setting is an example of such an artificial construct, and does not enter into market carriage tariff setting.

[27] Contract carriage regimes are more applicable in linear gas pipeline systems.

or through some other form of market with 'balancing' arrangements such as exists in the Wholesale Electricity Market (WEM) in the SWIS, or it may simply involve matching a single injection to an offtake from the network.

The form of access refers to the terms under which access is provided: hence the terms constrained and unconstrained access. Network access cannot be guaranteed at all times, therefore the term 'unconstrained access' is taken to mean 'normally unconstrained', being defined by normal system operating conditions with a given (required) level of network security, such as N, N-1, or N-2[28]. Constrained access is taken to imply that generation may be constrained off when it would otherwise choose to run (or, in a market, be economically dispatched to run), or constrained on when it would otherwise not run.

Providing network access only on an unconstrained basis, requires assessment as to whether adequate 'spare capacity' exists and, if not, what augmentation would be required to provide 'unconstrained access' to a particular (codified) level of security. This tends to lead to a policy that requires a form of 'queuing', allocation of spare capacity and mechanisms to allow augmentations on a 'user pays' basis that recognises the 'common service' element of a network, and minimises free-rider opportunities. This form of access applies in the SWIS.

In the NEM, generator access is allowed on a constrained basis, and new and existing generators may find themselves 'constrained' from time to time, through the scheduling and dispatch processes.

In the Issues Paper, the Public Utilities Office proposed two guiding principles that are relevant to the form of access to be provided:

- (to) 'respect the commercial interests and priorities of privately-owned electricity network assets in the NWIS'; and that,
- 'existing contractual and other arrangements by network owners for self-use of the network infrastructure should be preserved.'

Stakeholders in their submissions have tended to go further than the above, and have proposed that the terms of existing contractual arrangements generally should be preserved, not just those relating to self-use by networks or to the commercial interests of the networks. This recognises that for the most part the NWIS networks have been developed with specific purposes in mind – namely, the supply of specific loads by specific generators. It would be inconsistent with the guiding principles for the new regime to allow access for these parties to be degraded below a level that is reasonably required and commercially contracted, and submissions have reinforced this.

The Public Utilities Office therefore proposes that the new access regime will apply to new and expanded generators in a way that does not constrain generators that exist at the commencement of the regime, other than to the extent that they might already be constrained under certain system conditions and network security levels.

In order not to inhibit competition, it is proposed that new and expanded generators should be able to obtain access on a constrained basis. That is, it should not be a requirement for any network to augment its system, in order to allow a generator to connect (or to expand its capacity). Generators may nevertheless enter into commercial agreements to fund or otherwise contribute to network or

[28] Unconstrained access is not equivalent to 'firm access' – it does not imply any guarantee by or compensation liability from a network for the effects of network constraints.

non-network investments or ongoing operational costs, to the extent that they perceive benefit in doing so (i.e. through reduced constraints).

The way in which generators will be constrained will be handled by the ISO operating under the rules for system operations, to be developed as part of the proposed 'NWIS Rules'.

The Public Utilities Office notes general support in submissions for the need to (a) preserve the rights of incumbents and (b) to allow constrained access, as above.

Access for loads

It is envisaged that a Technical Code for the NWIS will provide default access standards for loads. In broad terms these will:

- define security levels for general supply, e.g. to the city and towns of the region;
- maintain the reasonable and contractually committed security levels of existing loads; and
- allow for bespoke security levels for new loads, and which will allow these loads to balance their security requirements against the cost of providing for them.

In the absence of information to the contrary, it would be expected that Horizon Power's loads will be supplied under general supply security standards, and that bespoke arrangements that require grandfathering will apply to large loads and loads on other networks.

Connection

By allowing access on a constrained basis, the connection process should require only two elements:

- provision of information and relevant plant and system analysis to define the technical requirements for the connecting generator or load; and
- specification of the requirements and commercial arrangements for the relevant network to recover the cost of constructing, maintaining and operating any connection assets that it provides.

This should be governed by processes similar to those currently prescribed in the NEM, and by Part C (Connection Applications) in Western Power's Applications and Queuing Policy (AQP). An equivalent queuing and associated provisions in Part B of Western Power's AQP will not be required as part of the connection process for the NWIS.

Process governance

In the SWIS, Western Power's standard access agreement is the Electricity Transfer Access Contract (ETAC). This agreement combines terms of connection to the network, with electricity 'transfer' terms that provide for 'access' between generators and loads.

Operationalising constrained access is a function for the ISO and, accordingly, it is considered that the access provisions of the ETAC should be administered by the ISO. The ISO would be responsible for:

- interacting with a prospective new or expanded load or generator, to determine the extent to which the relevant network(s) can provide for them, the extent to which they may be constrained and the investment and/or operational options for relieving those constraints; and

- once connected, scheduling and dispatching the new or expanded generation or load, consistent with the Rules and, in particular, consistent with the aspects of those Rules that preserve the security and reliability of supply for parties connected at the commencement of the regime and whose terms of access are grandfathered.

The process of connection to the network would be administered by the network, including provision of the (shallow) connection assets (or specifying the requirements for those assets, where the connecting party chooses to provide them). The network would also therefore enter into the necessary commercial arrangements for Connection, Use-of-System (UOS) and any other services that the network provides.

Horizon Power has submitted that the ETAC should be administered by the ISO under the 'ISO+' model[29] and our proposed design is consistent with Horizon Power's submission in regard to the 'transfer and access' provisions. However, it is considered preferable that the connection process is handled through direct negotiation between the connection applicant and the network.

Furthermore, it is considered that the element of Horizon Power's ISO+ model that would appear to place the ISO commercially between the network user and the network has a number of drawbacks. Two drawbacks of these aspects of Horizon Power's proposal are the commercial transaction burden it places on the ISO, and also the prudential requirements for the ISO arising from the financial liabilities of network users.

Stakeholder submissions to the Design Consultation Paper were mostly supportive of Design Elements 8 to 13, including decisions relating to network connection, subject to the issues or concerns outlined below.

Horizon Power, Alinta Energy and Rio Tinto raised concerns with the market carriage model proposed at Design Element 8. Horizon Power questioned how networks with no loads or generators connected, but that provide an interconnection and/or reinforcement service to other networks, be paid, and suggested a clearing house function for the ISO to manage network transport services payments.

In questioning how network users will be paid, such as in the two scenarios it illustrates in its submission (Scenario A and B),[30] Horizon Power appears to be referring to how networks will define 'Use of System' (UoS) for the purpose of setting charges for network service. As described in the Design Elements, the networks will be responsible for establishing their charging structures (which are likely to be include 'UoS charges'). In Horizon Power's Scenario B, for example, it would appear that the 'new third party investor' would build such a network element only if a 'user' required it and was prepared to contract for relevant usage charges.

Horizon Power queries "*how [network payments] will be delivered in the NWIS under the market carriage model used in gas networks eastern states."* While Horizon Power has drawn on a gas market example, the Public Utilities Office notes that a market carriage model for network charging has been used in the NEM and in the WEM, since their inception and is therefore universally used in Australia up to now for electricity network open access.

[29] Horizon Power 4 December 2017 submission in response to the PUO Issues Paper, p 16.
[30] Horizon Power submission on Design Consultation Paper, pages 9 and 10

The Public Utilities Office's rationale for establishing market carriage as a Design Element can be summarised as follows:

- it allows the ISO to operate the system based on its application of the Rules, and without commercial implications for any connected party's network charges, other than what arises by application of the relevant networks' tariffs to the measured load offtakes and/or generation injection at exit and entry points respectively;

- it similarly allows ancillary services to be priced by potential service providers and dispatched by the ISO as required, without the complication of network charges being affected by network conditions at the time they are (or are assumed to be) dispatched;

- it does not require deeming of 'flow paths', which are an artificial construct in an electricity network with limited controllability for the participants involved and which, as Horizon Power illustrated in its submission on the Public Utilities Office's Issues Paper, can involve a complex set of permutations; and

- as described above, NWIS open access would be consistent with the regime for the other Australian electricity networks.

As with its submission on the Public Utilities Office's Issues Paper, Horizon Power suggests the ISO acting as a "*clearing house for network transport services*"[31] charges. Horizon Power has not explained how this assists with network charging. The ISO will be responsible to provide metering data as per Design Element 25 (where the network does not already have this), and so each network will have the information it needs to support invoicing for its services.

Horizon Power refers to "*delivering*" against a "*Market Carriage Objective*" in its submission. The Public Utilities Office notes that market carriage is not an objective of the reform, but rather has been defined as a Design Element of the regime.

Rio Tinto queries how the market carriage regime works if an element of the network is out of service and a load and generator with an agreement that involves balanced dispatch, are unable to do so[32]. This is a standard scenario of a network constraint affecting contractual obligations, and which applies equally in the NEM and in the WEM. Depending on the opportunity cost of curtailing the relevant load, the 'standard ' options apply, regardless of a 'market carriage' model, namely: (a) having a commercial arrangement with other generation that is not network constrained at that time, (b) purchasing balancing energy (assuming there is physical capacity for the ISO to dispatch it), (c) having a load curtailment arrangement with another customer, or (d) investing in (or contracting for) network augmentation that has the effect of improving the security level to minimise the risk of such curtailment.

Alinta Energy supports the market carriage model as long as the rights of existing generators are grandfathered and in no way impacts existing contractual rights. As with other Design Elements, matters on market carriage raised in submissions will be taken into account in developing the NWIS regime.

In response to Design Element 9, Rio Tinto offers its support on the basis that it also applies to existing network operators who 'opt-in' or are covered by the light-handed regulatory framework after

[31] Ibid, page 10
[32] RTIO submission on Design Consultation Paper, page 13

commencement in 2019. The Public Utilities Office proposes that all generators connected to the NWIS at regime commencement, to be grandfathered their access that they had at that time regardless of whether they are part of a network covered by the third party access regime or not. This is because the ISO will have the power to issue dispatch instructions to new and expanded generators to manage network and system constraints regardless of whether they are part of a network covered by the third party access regime. Also, asset owners have made investment decisions for existing assets on the basis that access would be unconstrained. The risk and costs of network constraints for all new or expanded assets should be considered in future investment decisions.

Alinta Energy offered support for Design Element 10, however suggested that the design should allow for independent assessment of network constraints by the ISO, effective ring-fencing, and the ability for independent assessment & arbitration of the costs to relieve the constraints. The Public Utilities Office considers Alinta Energy's suggestion to be reasonable and will consider them further during the detailed implementation phase.

In response to Design Element 12, Rio Tinto sought confirmation that new connections would be required to comply with the network's existing standards. The NWIS Rules will provide common Technical Rules for the NWIS, including standards for connection assets, however the Public Utilities Office appreciates that network specific requirements will need to be allowed for in some circumstances. Whilst the Technical Rules will cater for the specific requirements of each network, the rules will not burden access seekers with unreasonable costs, where they have already invested on a different basis.

In response to Design Element 13, stakeholders (both through written submissions and at the Stakeholder Reference Group Forum on 21 February 2018) sought clarification of the ISO's proposed role relating to dispatch, which have been clarified in Section 3.

The NWIS Rules will specify the extent to which any generators have been grandfathered a given level of access at regime commencement (e.g. 'unconstrained', or up to a level that follows a specific load), and this will be taken into account by the ISO in managing any network constraint.

Design Element 8

Network access in the NWIS will be designed as a 'market carriage' regime, in which it is envisaged that Reference Tariffs will be established for entry, exit and common services, as applies in the SWIS.

Design Element 9

Generators connected to the NWIS networks at the commencement of the new regime will continue to receive access that is unconstrained, or not constrained to a greater extent than at regime commencement. These grandfathered requirements will be codified in a set of 'NWIS Rules' relating to scheduling and dispatch and relating to any new connections and expansions of existing generators and loads.

Design Element 10

New generators or expanded capacity of existing generators will be allowed network access on a constrained basis, with such generators being appraised (without guarantee) of the likely extent of constraints and the options for relieving those constraints. Generators would be liable for the cost of any options they choose to relieve constraints.

Design Element 11

Loads will be provided with access at default security levels to be defined, but with provision for specific loads to request bespoke access and connection point security criteria to apply to them.

Design Element 12

The network service providers will be responsible for managing the connection process, including specifying connection asset requirements and commercial terms for the provision of such assets.

Design Element 13

The ISO will be responsible for dealing with the 'electricity transfer and access' aspects of new connections and applications for expanded capacity, including the matters described in Design Element 10. The ISO will also design any changes to scheduling and dispatch resulting from constraints to new or expanded generators, in accordance with the NWIS Rules, and will accordingly manage constrained dispatch where required.

2.3.3 Requirements for publication of information

In order to facilitate timely access to a covered network, and consistent with the access regime for non-scheme pipelines under the National Gas Rules, it is proposed that information must be published and maintained by the network during (or prior to the commencement of) the negotiation process.

In order to minimise reporting costs and associated regulatory burden for covered networks, and in order to place downward pressure on network prices, it is envisioned the information to be published draws on information that is already reported by the network where possible, noting that some additional information requirements may be unavoidable.

The final form of the information to be published is outside the scope of the draft design and need to be the subject of further stakeholder consultation prior to commencement of the third party access arrangements.

Stakeholder submissions to the Design Consultation Paper generally supported Design Element 14, including the decision on information disclosure. Submissions from BHP, Alinta Energy and Rio Tinto raised concerns regarding commercially sensitive information. The Public Utilities Office will take account of the commercially sensitive nature of information, in developing fit for purpose information requirements during the regime development phase of the NWIS reform project.

Design Element 14

Information disclosure requirements will be developed as part of the NWIS access framework. These will be developed in consultation with stakeholders and will specify the information that must be published by covered networks and the timetable for publication.

2.3.4 Negotiation framework

In order to facilitate timely access to a covered network, the following items or activities are proposed to be undertaken by the network and or prospective users as part of the process for seeking access:

- Covered networks must develop, maintain and publish in a publicly accessible part of its website a User Access Guide.
- A prospective network user may submit an Access Request to a covered network to provide access to a network service.
- The covered network in receipt of an access request must prepare and make an Access Offer that complies with relevant rules and within the period determined.
- A prospective user who has made an access request for a network service on a covered network may, by notice to the covered network, request Negotiations in relation to any aspect of access to a network service including on whether access can be granted and the price and other terms and conditions of an access offer. Each party to the negotiations must, in requesting or providing access negotiation information, do so in a manner and at a time consistent with the duty of the party to negotiate in good faith.

A negotiation framework will be developed covering the items above.

Stakeholders' submissions to the Design Consultation Paper generally supported Design Element 15, including the decision on a negotiating framework.

Design Element 15

A negotiation framework will be developed as part of the NWIS Regime, setting out requirements for each covered network to produce and publish:

- a user access guideline;
- the process for making an access request;
- the process for making access offers, and
- the process for negotiating access, pricing, and access terms and conditions.

2.3.5 Dispute resolution

Key features of the proposed dispute resolution framework of the third party access regime for the NWIS are summarised below.

- The dispute resolution framework is based on the non-scheme pipeline arbitration mechanism in the National Gas Rules, modified as appropriate for any GMRG recommendations and specific circumstances of the NWIS.
- The ability for parties to negotiate access with binding arbitration as a fall-back should negotiations lead to an impasse.
- Procedures and timelines are established for the dispute resolution process.
- A scheme administrator, the ERA, is to be appointed for:
  - establishing a pool of arbitrators;
  - publication of guides, including the covered arbitration guide;
  - referring access disputes to arbitration and appointing the arbitrator;
  - correcting errors in access determinations; and
  - publishing information about access determinations.
- The ERA itself may act as the arbitrator for a dispute or may elect to appoint an arbitrator from the established pool. The pool will be comprised of appropriately resourced, cost effective and capable bodies, with the legislative right to bind third party organisations to the outcomes of decisions.

For issues relating to the anti-competitive behaviour or other matters relating to the potential breaches of the *Competition and Consumer Act 2010*, matters could be referred to the ACCC.

Stakeholders' submissions to the Design Consultation Paper generally supported Design Element 16, including the decision on a dispute resolution process. The Public Utilities Office considers there might be merit in establishing an additional preliminary dispute resolution process as suggested by BHP, and also a 'fast-track' process as suggested by Alinta Energy and will consider these proposals further during the implementation phase of designing the framework.

The Public Utilities Office will work with stakeholders in the implementation phase on details of the dispute resolution framework.

Design Element 16

A dispute resolution framework will be developed, that is clear and binding, based on the non-scheme pipeline arbitration mechanism in the National Gas Rules modified as outlined in this Design Consultation Paper for the specific circumstances of the NWIS. It will be administered by the ERA.

2.4 Structure and markets

2.4.1 Separation of regulated activities and functions

A common theme in submissions from stakeholders was the need for the separation of regulated and non-regulated activities and functions when introducing a third party access regime in the NWIS.

The separation of regulated and non-regulated activities and functions (or 'ring fencing') can take many forms, but is fundamentally targeted to address the following two risks:

1. the risk that a regulated network service provider cross-subsidises other services with revenue earned from the provision of regulated services; and

2. the risk of a regulated network service provider favouring an affiliated entity's services in contestable markets.

The Australian Energy Regulator recognised these risks when it recently developed its distribution ring fencing guidelines for distribution electricity networks (DNSPs) in the NEM:

> The Guideline addresses two potential harms with two separate sets of obligations for DNSPs. First, the Guideline addresses the **risk of a DNSP cross-subsidising other services with revenue earned from provision of distribution (and transmission) services**. It does this through legal separation of the DNSP, which may only provide distribution (and transmission) services, from affiliated entities that may provide other electricity services. The legal separation obligation is supported by other obligations for the DNSP to maintain separate accounts, follow defined cost allocation methods (CAMs) and be able to report on transactions between itself and its affiliates [emphasis added].
>
> Second, the Guideline addresses the **risk of a DNSP favouring its own negotiated services or other distribution services, or an affiliated entity's other electricity services, in contestable markets**. The Guideline does this by imposing behavioural obligations on DNSPs, including restrictions on sharing and co-locating staff, information and on co-branding of advertising materials [emphasis added].[33]

The concern over the operation of Horizon Power's vertically integrated business and the impact this may have on competition was noted in numerous submissions. In particular, Alinta Energy stated that:

> Horizon is a vertically integrated, State Government owned business. Vertical integration creates a conflict of interest because Horizon is incentivised to operate its network business in a manner that is to the advantage of its retail business and to the disadvantage of potential retail competitors. Horizon has no incentive to enter into transmission and distribution access arrangements with any third party since, to do so

[33] Australian Energy Regulator, Ring Fencing Guidelines, December 2016.

> would enable new entrants to supply electricity to its retail customers, undermining Horizon's monopoly position as the retailer of electricity to all customers in the NWIS region other than the large load customers that Alinta currently supplies.[34]

Roy Hill also expressed a view that: "…there would probably need to be some ring fencing by very light touch regulation in order to introduce a framework under which Horizon Power as a vertically integrated business has at least two different business areas which cannot share information, namely its network and retail functions."[35]

BHP suggested that …"network owner and retail functions should be segregated, and network access be facilitated via a regulatory framework overseen by an independent system operator on items relating to system security, reliability of supply and existing customer impact." [36]

BHP further suggested that any ring fencing arrangements should be supported by appropriate reporting and audit requirements by an appropriate body such as the ERA in order to ensure compliance.[37]

Horizon Power noted the importance of ring fencing and pointed out that any additional ring fencing measures are likely to come at a cost. In particular, Horizon Power suggested that the additional costs and inefficiencies from it being required to ring fence would include:

- duplication of administrative resources;
- separation of information systems including access; and
- additional rental costs if physical ring fencing is required.[38]

Accounting separation

Some form of regulatory accounting separation will be required for networks covered by the new regulatory arrangements to protect against potential cross-subsidisation of covered network services from other services (e.g. the separation of retail / generation services from covered network services).

While more detail on the form of accounting separation would be required through further consultation, it is proposed that accounting separation for a covered network will, at a minimum, require a covered network service provider to maintain separate regulatory accounts, follow defined cost allocation methods (CAMs) and to report on transactions between itself and its affiliates.

Structural or functional separation

Some form of separation of function and relevant information is required by networks in the new regulatory arrangements to ensure they are not favouring their own services in a contestable market (such as through dispatch merit order / load shedding, by constraining access via planned outages, or using information obtained through provision of network access to advantage their retailing and generation operations).

While many of the risks of a covered network service provider favouring its own affiliated business are addressed through the establishment of an ISO, there are risks such as the sharing of information

[34] Alinta Energy, 4 December 2017 submission in response to the PUO Issues Paper, p 13.
[35] Roy Hill 4 December 2017 submission in response to the PUO Issues Paper, p 3.
[36] BHP 4 December 2017 submission in response to the PUO Issues Paper, p 5.
[37] BHP 4 December 2017 submission in response to the PUO Issues Paper., p 5.
[38] Horizon Power 4 December 2017 submission in response to the PUO Issues Paper, pp 26-27.

between regulated and competitive affiliates in a vertically integrated organisation that could lead to a covered network favouring its own affiliate in a competitive market (e.g. sharing of staff and co-branding.).

It is proposed that the separation of regulated and competitive activities in the NWIS is undertaken on a 'fit-for-purpose' basis. This may mean that a different application of functional vs structural separation is appropriate depending on the size and scope of the covered network's affiliated operations. As an example, it may be that vertically or horizontally integrated covered networks with a high proportion of regulated network income from the NWIS relative to retail / generation income from the NWIS should be subject to structural (or legal) separation. Conversely, functional separation may be appropriate for covered networks with a low proportion of regulatory income compared to total income on the NWIS.

On this basis, structural separation of Horizon Power's covered network may be appropriate (unless Horizon Power is able to demonstrate existing or proposed ring fencing arrangements are sufficient to address stakeholder concerns), while limited separation of certain functions may be appropriate for the Alinta DEWAP covered network at commencement.

Stakeholder submissions to the Design Consultation Paper generally supported Design Element 17, including the decision regarding structural or function separation.

Alinta Energy and Rio Tinto stated that requirements for structural or functional separation must be designed specifically for each network based on its unique nature of its operations. The Public Utilities Office agrees with Alinta Energy and Rio Tinto, as this was the intent of the reference to business-specific requirements.

The Public Utilities Office will work with stakeholders during the implementation phase to ensure appropriate separation.

Design Element 17

Covered networks' regulated activities and functions will be required to be structurally or functionally separated from their non-regulated activities and functions. Business-specific requirements will be defined, following competition analysis.

2.5 Transitional issues

Any changes to a regulatory regime requires time for affected network service providers to efficiently take action to become compliant with the requirements under the new regime. Setting tight timeframes for network service providers to become compliant can result in inefficient regulatory compliance costs. Existing contractual arrangements should also be considered in establishing implementation timeframes.

An implementation timeline will be developed taking account of these considerations.

Stakeholder submissions to the Design Consultation Paper generally supported Design Element 18, including the decision regarding transition.

Design Element 18

A transition plan for the new NWIS third party access regime will allow timelines that permit network service providers to efficiently meet new obligations, and also to ensure that existing contractual positions and operating positions are suitably protected.

The Government may also choose to implement transition measures to minimise any financial implications for the State and flow on consequences. As articulated in the Minster for Energy's Final Coverage Decision, the decision to cover Horizon Power's NWIS Network raises a number of important policy implications for Government. Foremost among these are the policy implications that arise as a result of potential competition for Horizon Power's retail business – assuming that Alinta Energy and/or other parties do ultimately take up access to the Horizon Power NWIS network (once access agreements are established) and are able to compete for customers in the retail market.

The existing policy settings for regional electricity supply in the NWIS are based on an assumption of Horizon Power as sole supplier. These policy settings will need to be reviewed in light of coverage and its consequences, including consequences that flow as a result of adverse financial outcomes for Horizon Power.

The Government will need to review and determine the extent of the policy changes that will be needed to address a number of issues, including but not limited to:

- any adverse impact to State finances and SWIS customers if Horizon Power is unable to recover its high fixed costs;
- whether contestability thresholds may be an appropriate way to stage the development of retail market competition over time;
- whether the current policy settings for the Tariff Equalisation Contribution remain appropriate in an environment where Horizon Power would face retail market competition;
- the eligibility thresholds for customers in being able to access subsidised tariffs under the Uniform Tariff Policy if they are able to choose a competitive market retailer; and
- ensuring appropriate default retailer arrangements are in place for continued electricity supply to customers where competitive retailers enter or exit the market and the appropriate recovery of the cost of those arrangements.

3. System management regime

3.1 Issues without a formal system operator in the NWIS

3.1.1 Current arrangements

The NWIS currently does not have a formally-appointed central system operator with legislated powers to undertake the typical functions and activities of a system operator and recover its costs. No one party is responsible for conducting and reporting the findings of post-incident investigations either.

Horizon Power acts as a de facto system operator and absorbs the costs of doing so, including managing:

- planning and scheduling;
- emergency response coordination;
- frequency control;
- spinning reserve; and
- energy balancing.

3.1.2 Security and reliability

Whilst the performance of a small number of lines may be unsatisfactory and there are a number of constraints within the physical network infrastructure, the overall reliability of supply and the inherent security of the network in the Coastal Region is satisfactory. This is due to the following factors:

- the location of sufficient generation in the East Pilbara and West Pilbara to support continuity of supply under most circumstances;
- the extent of investment in transmission infrastructure – particularly in the East Pilbara;
- the mutually beneficial connection of Rio Tinto's and Horizon Power's assets in the West Pilbara – without this interconnection, the Horizon Power network in the West Pilbara (Cape Lambert-Karratha–Dampier) would be significantly more susceptible to security of supply risk;
- the generally cooperative approach to outage management and emergency response; and
- the investment in the Pilbara Underground Project, which has improved distribution customer reliability.

3.1.3 Inefficient costs

The current performance of the network has been achieved at a sub-optimal overall cost because:

- there is significant excess generation capacity in the NWIS Interconnected System primarily because generation assets have been installed to meet contractual obligations without consideration of the benefits of sharing generation capacity;[39]
- the electrical infrastructure has developed in an ad hoc fashion, driven by the security and reliability concerns of individual companies;

[39] Due to competition between resource companies and the absence of an ancillary services market.

- there is a lack of coordination of ancillary services across the network, leading to higher than necessary operating costs;
- the physical configuration of the network renders it susceptible to stability risks and fault level constraints which have required extra capital expenditure to overcome; and
- individual network elements (such as the 220kV line between the East Pilbara and West Pilbara) are relatively unreliable and require extensive preventative and reactive maintenance.

There are also apparently inefficient cost outcomes following system outages (planned and unplanned) due to:

- the informal approach to network management across the network owner/operators;
- the ex-post manner in which commercial compensation for planned and unplanned outage management is derived;
- the 'default supplier' role that Horizon Power has been required by Government to undertake, which in some circumstances can lead to excessive costs falling to Horizon Power;
- the lack of system-wide visibility of network status by any one operator;
- the reliance on co-operation to minimise supply disruption, with such goodwill not being guaranteed at all times due to competing commercial and operational objectives amongst network owners/operators and generation owners/operators; and
- the apparently selective implementation of system controls (such as Under Frequency Load Shedding) by some operators which can result in (a) inequitable and unnecessary costs falling to other operators, and (b) customers being unnecessarily and inequitably subject to loss of supply.

3.1.4 Risks

There are several network constraints that over time will either manifest in unacceptably high reliability and security risks and/or constrain efficient operation of the network (e.g. by restricting economically optimal power transfers between generators and loads).[40] Unexpected generator location, configuration, or characteristics may exacerbate existing system stability and fault level issues, triggering the need for unplanned additional investment.

3.1.5 Barriers to entry

There appear to be unnecessary barriers to entry for small renewable generators due to a lack of a coordinated approach to provision of ancillary services and the apparent ambulatory nature of the Technical Rules (the relevant network operator is at liberty to change the rules).

The fact that the de facto System Operator is also the major vertically integrated utility in the region, would also be of concern to a competing generator or supplier to load customers.

3.2 The solution

Establishing an Independent System Operator (ISO) for the NWIS would enable a 'whole-of-system' approach to the operation of the power system, outage and contingency management, procurement

[40] For example, by replacing under fault-rated equipment; upgrading transformer capacity, adding overhead lines.

of ancillary services and budget management (cost allocation and recovery). Stakeholders have been generally supportive of establishing an ISO.[41]

The issues and opportunities in the NWIS will also require the development and implementation of an agreed set of 'NWIS Rules'[42] that can be applied consistently and transparently to the NWIS with oversight by the ISO.

3.2.1 Benefits of ISO versus an independent system coordinator

The Public Utilities Office has considered whether an independent system coordinator model may be more appropriate than an ISO. The principal difference between an ISO and an independent system coordinator is a question of authority/powers.

An independent system coordinator would undertake a similar role to that currently performed by Horizon Power – it would have sufficient access to information to *recommend* actions to NWIS participants (i.e. generators, network owner/operators, and loads), but it would not have the power and authority to *require* compliance with procedures and other provisions of the (proposed) common NWIS technical rules. Conversely, as proposed, the ISO will be established under enabling legislation with powers and authority to:

- approve or withhold approval for access to the network[43] or for planned outages[44] (i.e. where there is an unreasonable risk to system security and/or reliability);
- instruct dispatch of generation and switching of network elements to preserve or restore system security in response to emergency conditions;
- acquire the necessary information to undertake its functions (but not to disclose commercially sensitive information);
- enter into contractual arrangements for the procurement of various services[45] and equitably allocate costs amongst market participants; and
- enforce the NWIS Rules with appropriate disciplinary action in the event of breaches.

The benefits of establishing an ISO with adequate powers and authority include:

- existing and prospective NWIS participants can have confidence that the ISO has access to the necessary information to undertake its primary objective: 'keeping the lights on'; and
- acting independently and equitably, it has the necessary authority to:
  - lawfully enforce compliance with agreed NWIS technical rules to ensure the security and reliability of the system; and
    - ensure costs are equitably allocated amongst participants.

[41] For example, FMG 4 December 2017 submission in response to the PUO Issues Paper, p 2.
[42] Based on the current versions of the Technical Rules applied in various contracts between NWIS counterparts and the Western Power Technical Rules (on which the NWIS versions were based).
[43] For example, connection of new loads and generators.
[44] For example, of network elements or generation plant.
[45] For example, ancillary services.

To help ensure the ISO acts appropriately at all times, it will be subject to an overarching governance structure, which will include objective obligations and requirements in pre-determined[46] NWIS technical and market rules (i.e. the NWIS Rules).

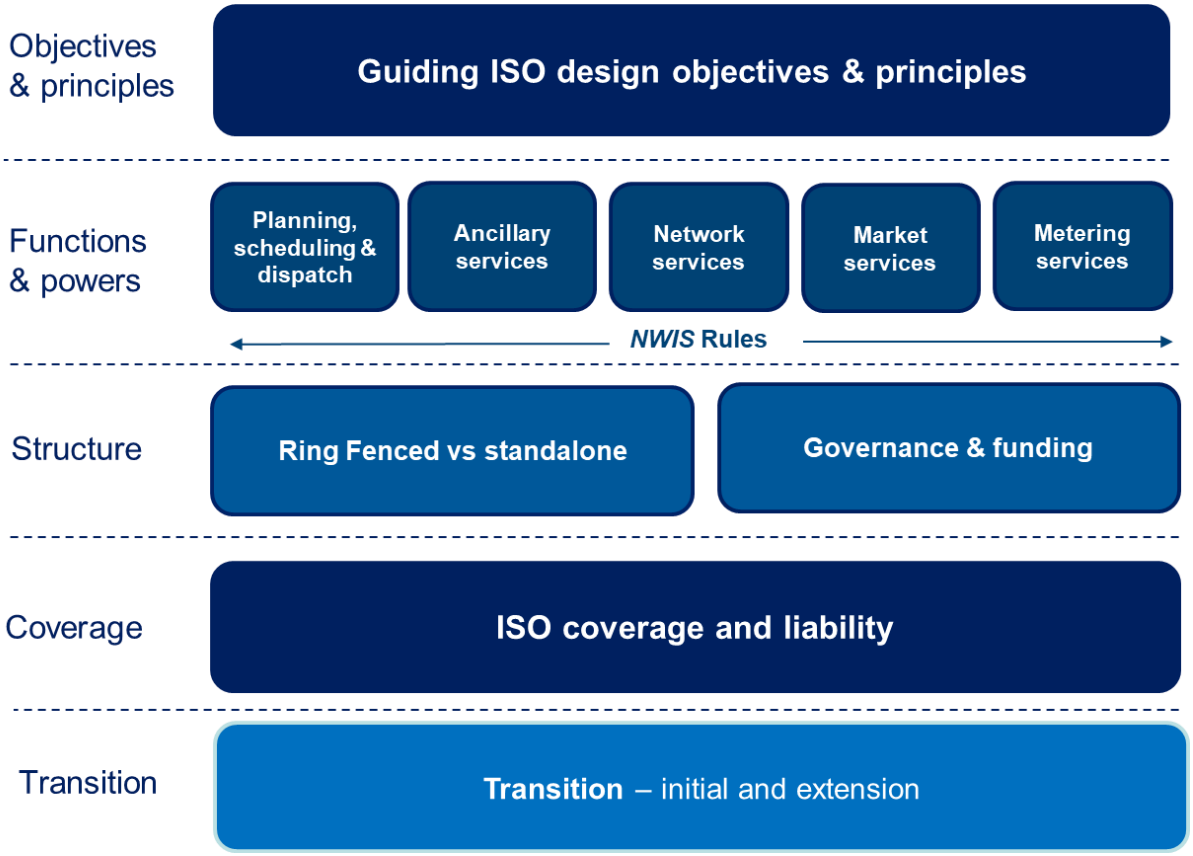
3.3 Proposed ISO framework

The framework proposed by the Public Utilities Office for the ISO include:

- a set of guiding objectives and operating principles to assist with the development of the other elements of the framework;
- the extent of the networks covered by the ISO, noting that historically there has been explicit reluctance of network owners to cede any degree of operational control over their respective networks to another party;
- the functions & powers that the ISO could undertake, including identifying the information and powers it will require to successfully undertake its role and responsibilities;
- the structure of the ISO and governance of the ISO; and
- transition matters.

The figure below provides a schematic of the proposed ISO framework and each aspect is discussed in more detail in the following sections.

Figure 7: Proposed NWIS framework for establishing an Independent System Operator



[46] That is, the proposed new NWIS Rules would not be developed by the ISO.

3.4 Design objectives and principles

In the absence of an ISO governing body (which would develop its own set of objectives and principles), interim objectives and principles have been developed to guide the design of ISO. The expectation is that the interim objectives and principles will be reviewed by the proposed ISO governing body in due course (in conjunction with key stakeholders).

3.4.1 Design objectives

Four sources were considered for developing the design objectives for the ISO, as listed below.

- The policy objective for the Pilbara electricity network to deliver efficiency.
- The National Electricity Objective (NEO), which is to:
  - *"promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers of electricity with respect to price, quality, safety, reliability, and security of supply of electricity; and the reliability, safety and security of the national electricity system."*
- The Wholesale Electricity Market Objectives, which are to:
  - *"Promote the economically efficient, safe and reliable production and supply of electricity and electricity-related services in the SWIS.*
  - *Encourage competition among generators and retailers in the SWIS, including by facilitating efficient entry of new competitors.*
  - *Avoid discrimination in that market against particular energy options and technologies, including sustainable energy options and technologies such as those that make use of renewable resources or that reduce overall greenhouse gas emissions.*
  - *Minimise the long-term cost of electricity supplied to customers from the SWIS.*
  - *Encourage the taking of measures to manage the amount of electricity used and when it is used."*
- Feedback from stakeholders: the various responses to the Issues Paper included suggestions regarding objectives and principles relevant to the design of the ISO. The suggested objectives for the ISO include:
  - ensure the security and reliability of supply of the system;
  - efficient use of excess generating capacity;
  - alternative suppliers of ancillary services; and
  - lowest cost supply of ancillary services.

The NEO is focused on outcomes, and it:

- is consistent with the core function of system operators and NWIS stakeholders' strong feedback that the focus of the system operator should be to 'keep the lights on' – providing security and reliability of supply;
- addresses the fundamental objective of the Western Australian Government (efficiency); and

- is consistent with the other functions that are contemplated in the ISO design framework and that are consistent with the objectives of light handed regulation.

On this basis, the Public Utilities Office is proposing to adopt a modified version of the NEO as the guiding objective for designing the ISO framework, which is denoted in Design Element 19, below.

3.4.2 Design principles

The ISO design principles have been developed that reflect (i) the proposed modified version of the NEO, (ii) the core function of a system operator ('keep the lights on'), and (iii) the current deficiencies in the NWIS and the opportunity to address them.

The Issues Paper identified the following principles relevant to the design of the ISO.

- 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.
- recognition of existing property rights – It should respect the commercial interests and priorities of privately-owned electricity network assets in the NWIS.
- 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 be implemented through formal process with accountability. Technical standards applied should not present a physical constraint to potential future interconnection of the NWIS, or a barrier to any technology type.
- greater transparency of energy demand and the forecast requirements of the system (i.e. generation and transmission) – 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 generation and transmission opportunities (e.g. for augmentation).

Feedback from stakeholders generally acknowledged these principles, with several stakeholders suggesting others relevant to the design of the ISO, including:

- full independence/structural separation;[47]
- efficient utilisation of NWIS resources;[48]
- low cost;[49]
- cost-benefit analysis as the basis for change;[50]
- leveraging existing capabilities;[51]
- distinguish between the responsibility for the operation of the system and the delivery of system management services;[52]
- preservation of existing commercial interests and contractual arrangements;[53] and

[47] Alinta Energy p 24; ATCO p 3; BHP p 5 in responses to the PUO Issues Paper.
[48] Alinta Energy, 4 December 2017 submission in response to the PUO Issues Paper, p 3.
[49] *Ibid*
[50] *Ibid*
[51] ATCO, 4 December 2017 submission in response to the PUO Issues Paper, p 3.
[52] *Ibid*
[53] *Ibid*

- periodic review of the effectiveness of the ISO.[54]

The principles in the Issues Paper and the supplementary principles proposed by various stakeholders are not mutually exclusive and some are not design principles (rather they are strategies or tactics). A consolidated set of design principles is denoted in Design Element 20 below.

Stakeholder submissions to the Design Consultation Paper generally supported Design Elements 19 and 20, including the ISO objective and design principles. The Public Utilities Office agrees with BHP's view that the technical standards within the NWIS Rules must evolve such that reliability and security of the NWIS is not degraded over time.

Design Element 19

The interim objective of the NWIS ISO should be consistent with the National Electricity Objective, namely:

'To promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers of electricity with respect to price, quality, safety, reliability, and security of supply of electricity; and the reliability, safety and security of the NWIS.'

Design Element 20

The design principles for the ISO are:

1. the ISO's core function is to ensure the reliability and stability of the system;
2. the ISO should act with impartiality and transparency;
3. the ISO should act to maximise overall system efficiency;
4. the cost of establishing and operating the ISO should be kept to a practical minimum;
5. proposed arrangements should consider the commercial interests and priorities of privately-owned electricity network assets in the NWIS;
6. technical standards should not present a physical constraint to potential future interconnection of the NWIS, or a barrier to any technology type; and
7. the effectiveness of the ISO should be reviewed periodically.

3.5 ISO functions

3.5.1 Planning, scheduling, and dispatch

Overview

Figure 8 below shows a functional map for integrated power system operation, with:

- typical system operator functions encompassing planning (which includes security analysis) scheduling, dispatch and security analysis;
- generators responsible for their own planning, forecasting, bidding and supply activities;

[54] BHP, 4 December 2017 submission in response to the PUO Issues Paper, p 7.

- end-users/consumers (who create the demand for the electricity) participating actively in the power system by offering interruptible load to assist with contingency management, - forecasting their own requirements and what interruptible load they can afford to offer and on what commercial and technical terms; and
- network operators separately responsible for ensuring they have adequate capacity to meet forecast consumer requirements and performance standards, cognisant of planning criteria that account for planned and unplanned contingencies (outages) and generation configurations.

The system operator is shown in Figure 7 to be active in option planning, operational planning, scheduling and dispatch, spanning (approximately) two years ahead of real time through to real time.

Overall system security and reliability is typically threatened by certain unplanned single contingencies. Systems security can also be at a heightened level of risk with uncoordinated planned outages. Contingency analysis also considers very low probability, high consequence events, such as coincident planned and unplanned outages.

The NWIS consists of multiple network owners being supplied by a variety of generators, across networks that act in parallel and support each other. A lack of coordination between these parties, including the timing of their individual outage activities, can leave the NWIS security and reliability at risk.

In the NWIS, each network currently takes accountability for its own options planning, operational planning, and dispatch. Whilst there is generally a cooperative approach between operation control 'centers' to coordinate outages and to respond proactively and reactively to emergencies (i.e. that threaten overall security and reliability), as noted by Horizon Power:

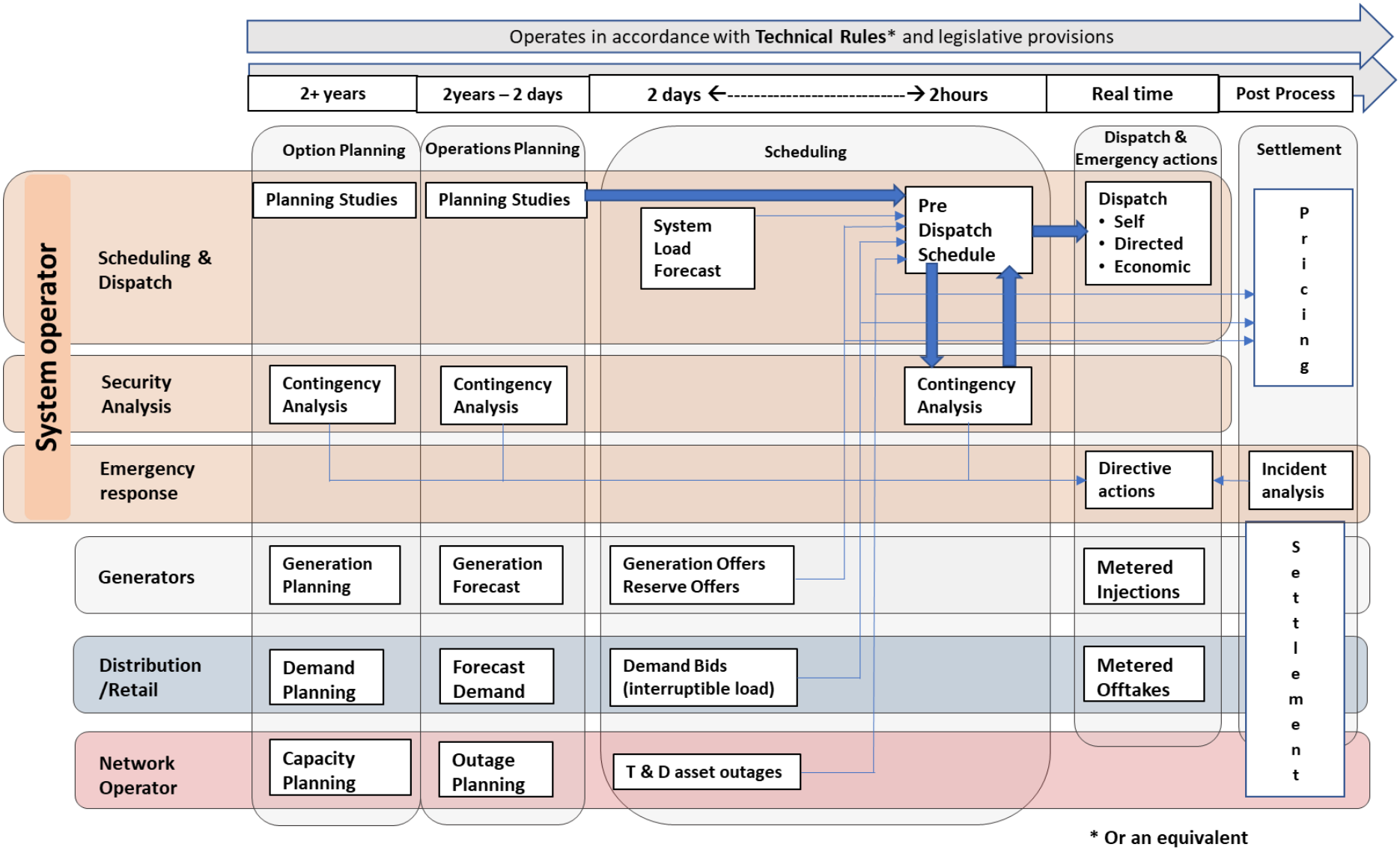
> The existing Network Owners all have different strategies, objectives and methods to operate and maintain their parts of the NWIS. They also have different sets of Technical Rules which guide them individually. This leads to inefficient operation of the NWIS as a whole and presents a missed opportunity for increased efficiency in the current system.'
>
> … Horizon Power currently sits in the middle of the Network Owners and takes on the proactive role of the de facto System Operator, trying to maintain the security and reliability of the NWIS for the benefit of all Participants.[55]

One of the advantages of a single, independent system operator is that it is not influenced by commercial or other incentives to override the rules which define system security[56] and take excessive risk that may exist within self-managed systems.

The proposed approach is therefore to establish the ISO with, among other things, the role of overarching NWIS Interconnected System planner and scheduler. As discussed below, this does not necessarily mean that the ISO takes over day-to-day operations of each network. Generator dispatch is discussed separately.

[55] Horizon Power Response to Issues Paper pp 28-29.
[56] Such rules need to be established and agreed for the NWIS and will include, among other things, power system security standards.

Figure 8: Typical functions – integrated power system operation



Option planning/investigation (2 years ahead)

To enable the ISO to successfully manage the system in real time, it needs to plan well in advance of real time to ensure that the system is likely to be in a secure state at all times, and to be cognisant of planned changes to the system configuration (i.e. including planned and unplanned outages, new connections, and plant retirements and replacements). It needs contingency plans in place for credible and non-credible events. The advanced planning considers the long-term requirements of customers (demand), generators, and networks[57] so that there is time to study the potential threats to system security, reliability, and efficiency.

The threats to system security and reliability are identified through contingency analysis which considers the capacity of the system to withstand scheduled and unplanned (but credible) contingencies given the forecast operating conditions (such as demand and weather conditions). Steady state and dynamic stability studies are carried out with the objective of understanding the network response to various loading and network configurations (i.e. including various types of system faults).

To undertake contingency analysis, the ISO will require access to:

- a fit-for-purpose system simulation model;[58]
- real time power flows in selected network elements;
- load and energy forecasts; and
- outage plans (network and generation) of the various asset owners.

The ISO will need reference performance criteria, information from system participants about the networks, loads, and generators, and a comprehensive, accurate, system simulation model (among other things).

The ISO's resources may be made available to participants to explore development options, however there are issues with commercially sensitive information that will need to be resolved during the regime development phase of the NWIS reform project.

As identified by Horizon Power:

> Each Network Owner has a model of their electrical infrastructure which can be used for system studies or assessing the impacts of future connections/expansions. However, because of commercially sensitive information within the models, these models cannot be shared between Participants. Given that an interconnected network functionally operates as one unit, any changes made by one party introduces material risks to other Participants.[59]

With the appropriate confidentiality protocols in place, the ISO is a logical entity to manage the development of a complete, robust system simulation model without compromising commercial-in-confidence material. Without access to an overarching system model, the ISO will not be able to undertake its core functions.

[57] Primarily transmission, but increasingly distribution networks will influence system stability and security.
[58] Network and generator owners will be required (obligated) to provide information to support the information to support the simulation model.
[59] Horizon Power response to Issues Paper p13

Operations planning (2 years ahead to 2 days ahead)

These are processes focused on the secure and reliable operation of existing network and generation assets and is the primary role of the ISO. The aim is to continually refine operational planning as new and/or updated information is made available. As with the higher-level Option Planning, the Operations Planning phase relies upon steady-state and dynamic stability studies (i.e. contingency analysis).

The ISO will be responsible for coordinating outages through consultation with each of the NWIS Participants. NWIS Participants would need to obtain the ISO's approval before intentionally taking an asset offline for planned maintenance. The ISO will therefore require the power to approve or defer planned outages in consultation with the participants and should be obliged to clearly communicate its decisions and the rationale for them.[60]

Scheduling (2 days to 2 hours ahead of dispatch)

The specific scheduling of outages and (in capacity or energy markets) pre-dispatch scheduling of generators is progressively refined. As indicated in Figure 7, the system operator keeps reviewing possible threats to system security and the approach to ensuring efficient operation is managed by:

- coordination and assembly of load, generation forecasts and network assets and outages;
- determination of required ancillary services;
- daily constraint analysis and management; and
- confirming the schedule.

Scheduled outages may need to be cancelled within the scheduling phase due to unforeseen circumstances (such as weather changes and unplanned events).

Dispatch (real time)

The real-time responsibilities of a system operator typically include:

- generation dispatch, which could be one or more of:
  - directed dispatch (i.e. in the case of declared system emergencies, directing generators to change their output with the objective of restoring or maintaining system security); and/or
  - economic dispatch – as discussed later in this document, economic dispatch is not contemplated for the foreseeable future;
- ancillary services dispatch;
- system status monitoring and management (frequency, reserves, balancing);
- contingency management; and
- logging and reporting.

The NWIS does not have a wholesale electricity market[61] - each generator self-dispatches to meet its contractual obligations or it contracts with another operator to do so on its behalf. Inherently the

[60] The National Electricity Rules has a very extensive set of obligations on AEMO, as system operator, and the network service providers and generators in particular to provide information, work cooperatively, and explain decisions, among other things.
[61] Therefore, economic dispatch is not practicable

secure and reliable dispatch of a power system must incorporate the constraints imposed by the physical characteristics of the network in stable and contingency operating states but will also incorporate the constraints imposed by contractual and grandfathered agreements.

The ISO will be responsible for ensuring that system planning, scheduling and dispatch incorporates known constraints and planned outages. However, the proposed role of the ISO with respect to generation dispatch is for it to only become involved in the following circumstances:

- where contractual arrangements with the ISO require it – for example:
  - for ancillary service provision; and
  - for providing a dispatch service;[62] and
- to step in to preserve or restore system security and reliability – for example:
  - following equipment failure; and
  - to manage a network or system constraint (consistent with the NWIS Rules).

Emergency response

The core purpose of the ISO is to take all reasonable and prudent steps to maintain system security and reliability proactively. However, there will be occasions when despite the options and operational planning, reactive intervention may be required to overcome unexpected threats or to restore supply security if system stability is lost.

To fulfil its objective and key function, the ISO must have necessary functions and powers to implement the necessary actions through network operators, generators, and interruptible loads to maintain or restore security of supply. Horizon Power proposes that 'the ISO must have necessary functions and powers to implement the necessary switching programs on both transmission and generation assets to maintain system stability during planned and unplanned events. In this respect, the ISO must be permitted complete control of switching activities on all assets of all participants connected to the NWIS.'[63]

However, as discussed above, direct control of the switching activities and generators is not required, but the *power to direct* the switching and dispatch of all networks, generators (including black-start facilities[64]) and interruptible loads connected to the NWIS is required to ensure as much of the NWIS is kept as stable as possible.

Post incident analysis

The key purpose of post-incident analysis is to understand the sequence of events and decisions that led to a system incident to provide the basis for improvement to systems, procedures, training, etc. System incidents typically have a material commercial impact on one or more participants and the sensitive nature of the system incidents. In the NEM and the WEM, the system operator (AEMO) reviews the sequence of events and decisions that led to significant system incidents. In the responses to the Issues Paper, there was broad support for the ISO to undertake the lead role in post-incident analysis. However, there was also concern expressed that the lead role of the ISO may compromise the quality of findings if the ISO has acted inappropriately, either by omission or

[62] i.e. where a generator contracts with the ISO to dispatch its generators (i.e. rather than have its own operators)
[63] Horizon Power, 4 December 2017 submission in response to the PUO Issues Paper, p 10.
[64] An independent power generator able to provide excitation for an unpowered AC generator. Located appropriately in a network, a small number of black start generators can meet the restarting requirements of several generators when the system (or an island within a system) is 'black' (i.e. when all large generators are shut down).

commission. A similar concern has been directed at AEMO regarding its NEM role and (the former) System Management and the Independent Market Operator in the WEM.

Stakeholder submissions to the Design Consultation Paper generally supported Design Element 21, including that the ISO should have the power to issue dispatch instructions to preserve or restore system security and when contracted to do so. However, stakeholders were concerned that it was not clear that this was the limit of the ISO's role in relation to dispatch.

The Public Utilities Office disagrees with Alinta Energy's suggestion that the contractual rights of customers must still be respected by the ISO when issuing dispatch instructions during an emergency event. The ISO must have scope to do what is necessary to restore system security as expeditiously as possible. Dispatch can then be restored to pre-event arrangements. Contracts with customers need to account for this requirement, noting that the ISO's actions will be governed by its obligations under the NWIS Rules, as will the actions during emergencies of generators, Network Owners, and customers.

BHP suggested that the NWIS simulation model should be developed to a similar detail to other jurisdictions, and made available to NWIS networks, and existing and intending customers. The Public Utilities Office agrees in principle with BHP's suggestion, subject to cost and confidentiality issues being satisfactorily resolved.

Rio Tinto queried whether the ISO can decline the request for an outage. The Public Utilities Office confirms that this is the intent. It is important that the ISO has this power to prevent a planned outage from creating a material risk to system security and performance. Cooperative, long range planning, coordinated by the ISO according to procedures common in the SWIS and the NEM, should avoid unnecessary restrictions on network or generator owner/operators for planned outages.

The Public Utilities Office has considered stakeholder feedback to the Design Consultation Paper and has amended Design Element 21 to clarify the ISO's role in relation to issuing dispatch instructions.

3.5.2 Ancillary services

Electrically connected power networks require ancillary services to be made available to ensure system stability and reliability. Ancillary services include Frequency Control, Spinning Reserve, Balancing Energy, and Reserve Capacity. There are several approaches to sourcing ancillary services, including mandated provision, competitively tendered and negotiated contracts, and fully competitive markets. As discussed below, Horizon Power currently manages the procurement of Ancillary Services for the NWIS and bears the cost of doing so as the de facto system operator. The procurement process is not transparent (due to commercial constraints) and cost allocation is not equitable.[65]

The requirement for ancillary services will vary in real time as the configuration of the interconnected transmission, loads (demand) and generation fleet changes. The ISO will require information in near real time and real time to assess the appropriate levels of ancillary services and the ability to dispatch providers of the service.

[65] Multiple NWIS users benefit from the ancillary services, but Horizon Power customers and, through the TEC, SWIS customers, pay.

Frequency control

The normal variation in load on a system will cause perturbation of the system frequency. Fast responding generators are tasked with maintaining system frequency within the normal (specified) range. In small systems such as the NWIS, there can be only one frequency 'keeper' as multiple frequency keepers will interact causing system instability. Frequency Control for the NWIS is currently procured and paid for by Horizon Power through a negotiated bilateral contract with Rio Tinto.

A logical function of the ISO would be to procure Frequency Control services on behalf of all NWIS Participants, based on some form of competitive process. The costs associated with providing these services would be allocated equitably to all NWIS Participants,[66] not borne solely by Horizon Power.

Balancing energy & settlements

Energy 'sent out' from generators needs to equal to the contracted demand (including network electrical losses) at the end of each trading interval.[67] In the absence of an energy market, balancing energy is required from one or more generators to make up for the shortfall or excess of generation compared to contracted quantities. The cost of providing and/or receiving this energy must be settled amongst generators at an agreed price.

Horizon Power currently coordinates Balancing Energy in the NWIS on an informal basis, but '*due to lack of engagement from Participants and impending coverage / reform processes',*[68] the price is not competitively set. As identified by Horizon Power:

> *If the agreed price for this Balancing Energy is set competitively and reasonably frequently, the opportunity for this mechanism to be used by generators in place of dispatching their own generation on an economic basis is increased. The most detailed competitive arrangement for setting Balancing Energy price is to establish a full set of bids and offers in every trading interval, such as exists in the STEM and Balancing Markets in the WEM and NEM.*[69]

Based on the time and cost to establish and maintain a real-time Competitive Balancing Market in the WEM, the cost is unlikely to be justifiable for the NWIS in the first instance.

As part of the proposed regulatory reforms, the ISO is the logical provider of Balancing Energy services in the NWIS, with the price for Balancing Energy set via a competitive process.

Spinning (instantaneous) reserve

System frequency can vary outside of the normal (tight range) in the event of contingency events.[70] In the absence of sufficient response by generators to restore frequency to within the normal limits, load must be shed.[71] Good operating practice requires sufficient instantaneous or spinning generator capacity[72] to be held in reserve to respond to move the system frequency back to within the normal range. Spinning reserve requirements are sized to meet the loss of the largest generator or transmission resource on the system. Spinning Reserve can be provided by all generators, including

[66] According to a cost allocation methodology that would need to be developed.
[67] Typically, 30 minutes.
[68] Horizon Power, 4 December 2017 submission in response to the PUO Issues Paper, p 12.
[69] *Ibid*
[70] That is, the impact of the system perturbation (usually the unplanned outage of one or more generator units) is beyond the capacity of the frequency control service to manage.
[71] Via automatic, pre-set under frequency load shedding protection at strategic points in the distribution network.
[72] Synchronised with the system.

those that are directly dispatching to their commercial obligations (balancing mode). In a competitive market, the Spinning Reserve can be dispatched by the system operator to the generator bidding the lowest cost.

In the NWIS, there is typically excess spinning reserve as an outcome of (a) generators running sufficient units to meet their commercial obligations, and (b) lack of a competitive market. As advised by Horizon Power (from its 'role' as de facto system operator) 'In less common instances, maintaining Spinning Reserve requires one party on the system to bring a generator online. Rather than an arbitrary unit being brought online, through its relationships with the generators the ISO can select the generator offering the lowest cost to connect an additional unit, resulting in economic benefits for all NWIS Participants.'[73]

Formalising the requirements for procuring, funding and dispatching spinning reserve is a logical ISO function on behalf of the NWIS that should, over time, lead to cost efficiency and enhanced system security.[74]

Reserve capacity

Reserve capacity is the margin of installed generation capacity above that required to meet the maximum load on the system to account for generation failures and unexpected load variations in load forecasts beyond the capacity of spinning reserve.

Adding generation capacity to a network in a prudent and economic way requires lead times of at least two years and, often, up to five years when planning, finance, and approvals are factored into the project development cycle. System planning studies based on load and energy forecasts and generator development plans[75] are required to optimise the system reserve capacity margins for cost efficient maintenance of system stability and reliability. The outcome of inadequate generating capacity is failure to supply customers (i.e. load shedding) which '…cannot technically be isolated to the customers of the generators that fail to maintain adequate Reserve Capacity.'[76]

In the NWIS there are no price signals for generators or retailers to maintain adequate capacity to meet their customers' peak load plus a portion of reserve to address contingencies.[77] On the contrary, generator/retailers are commercially driven to fully utilise capacity and to rely on balancing energy if for some time intervals they have inadequate generation. However, the bilateral contract arrangements and overall lack of integrated ancillary services management in the NWIS means that there is a relatively large proportion of reserve capacity currently on the NWIS.

The ISO would be well-placed to provide a reserve capacity service to the NWIS. It would centrally and independently contract for, monitor compliance with, and make payments for reserve capacity. This will provide the opportunity to, over time, reduce current reserve capacity on the NWIS to a more efficient level. Horizon Power estimates that this approach 'could allow the peak load in the Pilbara region to grow by 20-30% without need for additional investment in generation'.[78]

[73] Horizon Power Response to Issues Paper p 12
[74] The ISO, as proposed, will have greater visibility and understanding of real-time, near real time, and forecast system conditions.
[75] Proposed additional, replacement, and retirement plans, and the electro-mechanical characteristics of each unit, is required.
[76] Horizon Power, 4 December 2017 submission in response to the PUO Issues Paper, p 13
[77] The Commonwealth Government now requires NEM retailers to contract for adequate installed capacity to meet their peak load requirement, recognising the price signals in the NEM's gross pool market to trigger capacity investment result in pricing that is to volatile (Horizon Power, 4 December 2017 submission in response to the PUO Issues Paper Response, p 13)
[78] Depending on which loads and generators become interconnected over time. 20% for current connections, 30% for all loads and generators interconnected; e.g. those with lower fuel costs (Woodside / North West Shelf) and those with highly efficient generation (Citic Pacific)., Horizon Power, 4 December 2017 submission in response to the PUO Issues Paper, pp 13, 33.

Black start capability

The ISO will need to ensure there is sufficient black start capacity in the NWIS to be able to start larger generators (i.e. which are shut down) when auxiliary power is not available from the network. The ISO may need to enter into contracts for black start capability services.

BHP and Rio Tinto in their responses to Design Element 22 of the Design Consultation Paper stated that centrally procured ancillary services must be of an appropriate quality, including to ensure performance of the NWIS is in line with the NWIS Rules. The Public Utilities Office agrees with this view.

Alinta Energy expressed concern about the central procurement of ancillary services due to networks needing to have their own ancillary services available if its network is islanded. The Public Utilities Office considers that in undertaking its system management role, the ISO will be responsible for procuring a range of ancillary services, including those necessary to manage system islanding and resynchronisation, and system restoration from system black conditions. Individual generators and networks may separately require ancillary services or network support services to manage their specific risks. Meeting the requirements of the ISO (at a system level) and the requirements of individual generators and networks need not be mutually exclusive.

3.5.3 Network services

In this section, a series of potential ISO functions that are not normally within the purview of the system operator are explored – network (transmission and distribution) services.

The Public Utilities Office has identified potential ISO functions to address NWIS issues (as described in the Issues Paper) and from stakeholder submissions to the Issues Paper. The guiding principles of cost minimisation and economic efficiency are important considerations in this section.

Network coordination

The Issues Paper reiterated the results of a number of reports over the last decade that have identified the benefit of (among other things) '*more efficient capital investment resulting from greater planning and coordination*.[79] The Issues Paper and responses from stakeholders refer to several examples of transmission and distribution infrastructure projects that, in a centrally planned network, would probably have been developed more cost effectively – for example:

- the construction of the 132kV BHP line from Newman north crossing over the 220kV inland line If this asset had been constructed at 220kV and interconnected with the existing 220kV line, significant investment in inland generation by Rio Tinto and BHP (in excess of $200 million) may have been avoided or significantly reduced;
- development by Roy Hill and FMG - The separate inland mine developments owned by Roy Hill and FMG have resulted in significant investment in generation, transmission lines and gas pipelines…; and
- existing backup each of the systems provide to each other - the existing networks (owned by different parties) reinforce each other at various locations in the network. The result of this is that any one Network Owner cannot currently provide a traditional network service (consistent with its own Technical Rules) in the areas of its network that it receives reinforcement from the other networks.[80]

[79] Issues Paper, p 1.
[80] Horizon Power, 4 December 2017 submission in response to the PUO Issues Paper, p 24.

It is apparent that the electrical infrastructure has developed sub-optimally, driven by (i) the paramount reliance on the security and reliability of electricity supply to support resource companies' production and transport needs; and (ii) competition between resource companies.

It is also very clear from submissions from the same resource companies that these issues remain at the forefront of their positions regarding the proposed NWIS regulatory reforms, which can be paraphrased as: *do not compromise our operations, nor our autonomy to act in the best interests of our core corporate objectives*.

Nonetheless, there is some support from resource companies for a coordinated approach to network development. For example, BHP stated that "depending on the nature and extent of the ISO's role in the NWIS, it would seem logical for that entity to be involved in forecasting and planning for the development of the NWIS."[81] Roy Hill also suggested that:

> There should be economic benefit to coordinated development. First, if there are existing assets (whether connected to the NWIS or not) with spare capacity, it may/should be possible for those assets to be utilised rather than develop other further new assets. For example, as mentioned in the Issues paper, Rio Tinto has off grid assets at present. If it has spare capacity either generally which can be called on or which could be called on during NWIS emergencies that should be of overall benefit to electricity supply in the seaboard Pilbara region.[82]

Given the importance of these companies to the State and the enormous cost of even an hour's lost production, their positions are understandable and need to be respected in finding a way to increase overall NWIS network investment efficiency for the 'greater good'. The goal is instead to promote efficient use of infrastructure, without compromising the commercial decision making of the asset owners or imposing full regulatory oversight. This goal is consistent with the ISO design principles.

Unless, in the unlikely event that Network Operators choose to delegate network development decisions to the ISO (and the ISO accepts such a role), the Network Operators should remain responsible for network investment decisions.

Nonetheless, the ISO is well-placed to derive and publish information on the long-term development of the transmission network, assessment of current and potential future capability and to facilitate consultation with the broader market on constraints and potential energy solutions. As discussed elsewhere in this report, to perform its proposed system planning and scheduling functions the ISO requires access to all the information and skills necessary to undertake the planning work.

Horizon Power has proposed an extension of the ISO network coordination role into a 'Central planning and third party investment' function in which the ISO would be responsible for assessing the need for future investment and releasing, in an invitation to tender: "Potential Network Owners could then 'bid' on key terms (such as RAB requirement and operating costs) to establish and operate the specified assets. Or, if constrained operation is an option, generators can bid to constrain the operation of existing or new generation assets."[83] Under Horizon Power's proposal, this approach would apply to investments that deliver benefits to multiple parties, not customer-funded works (i.e. where the benefit is to one customer).

[81] BHP, 4 December 2017 submission in response to the PUO Issues Paper, p 10.
[82] Roy Hill, 4 December submission in response to the PUO Issues Paper, p 2.
[83] *Ibid*, p 15.

This approach is aligned with the objective of supporting growth in the Pilbara, however there are considerable challenges to overcome in proceeding with the narrower 'network coordination' role. The challenges to agreeing and implementing a 'central planner and third party investment' function are considerable and the Public Utilities Office is not convinced that the need is there at this point of the NWIS's development.

Network connection and access

The proposed third party access regime includes the development of a Negotiation Framework for covered networks which includes, a framework for covered networks to produce, maintain, and publish a user connection guideline. The connection guideline will include a process for making a connection request; a process for making connection offers, and a process for negotiating pricing and related terms and conditions.

Connection negotiations will occur between applicants and the owners of the covered network and will, among other things, require the connection to be compliant with the proposed 'NWIS Rules'. The NWIS Rules will also apply to connections to uncovered networks.

The proposed role of the ISO is in the connection process for covered and uncovered networks. The ISO's role in this process is to assure itself (on behalf of all other customers) that the NWIS Rules are consistently and appropriately applied such that the connection of the new or replacement generator, load or network will not compromise system security and reliability. The ISO will ultimately certify that the connection may proceed.

The advantage of this approach is that the independent operator with the overarching objective of assuring system security and reliability is positioned to assure that potential technical threats to the system are identified as early as possible and rectified before connection occurs. In dealing with a connection application, a network owner therefore does not need to concern itself with the system access implications either for the applicant or for other parties, or how the new load or generator will be dispatched or may be constrained – since that is the ISO's role, administered in accordance with the proposed NWIS Rules.

By referencing an obligatory standard set of technical rules (embedded in the NWIS Rules), the grounds for dispute should be limited to matters relating to technical compliance with those Rules. The recent dispute between Alinta Energy and Horizon Power is a relevant case study where a beneficial outcome would have been better facilitated by an ISO with such a role and powers.

Statement of opportunity

Two important documents may be developed by the ISO and should form part of the dialogue amongst stakeholders. These should be considered in the design of any resultant protocols:

- a *Transmission Development Plan*, that describes the current transmission network, areas of constraint, future capability, priority development plans and options for private investment; and
- by trending collated load forecasts, the ISO would be in an ideal position to assess the suitability of currently installed generation capacities. Once load growth in the Pilbara exceeds predetermined capacity margins, the ISO can release a *Generation Statement of Opportunity* advising developers to begin discussions with customers about their future power requirements to determine the viability of new generation projects.

The potential downside to these forms of information disclosure is the potential for compromising competitive positions. For example, Rio Tinto stated that:

> Companies should not be put into a position where they are required to disclose to their competitors likely future developments as might be required if an Electricity Statement of Opportunities approach is adopted. For example, if the system was constructed such that the major iron ore players were all required to provide longer term forecasts that reveal potential future production profiles, then there will be significant issues that would need to be addressed in relation to confidentiality and competition concerns.[84]

Recognising this concern, the challenge is to derive an approach that protects commercial interests whilst realising the potential significant investment efficiency benefits of a more coordinated approach to network and generation planning.

Network transport services

Horizon Power has proposed a ISO model (ISO+) in which it contracts with each Network Owner for full use of their assets. Horizon Power identifies the following benefits:

- network owners will only need a single commercial arrangement for the full use of their asset, being paid by the ISO+ for its use;
- it will facilitate fair, reasonable, predictable and stable commercial access arrangements for the users of the network through an independent party; and
- users will only need a single commercial arrangement with the ISO+ for their electricity transport needs, regardless of how many different networks are used. The user would then pay the ISO+ for the use of the assets.[85]

Whilst the further explanation of the ISO+ model in Horizon Power's submission[86] explains the potential benefit of such an arrangement qualitatively, it will not proceed without the Network Owners handing over a material degree of control of their networks to the ISO. It is possible that contract terms and conditions can be negotiated to achieve satisfactory outcomes, including efficient balance of risk.

However, based on the feedback from the resource companies that are Network Owners, it would appear unlikely that the network transport service concept will be adopted in the near term.

In Alinta Energy's response to Design Element 23 of the Design Consultation Paper, it indicated that it does not support Horizon Power's ISO+ model being investigated in the future. The Public Utilities Office review the suite of ISO functions as part of the mandatory post-implementation review to ensure the model is meeting specified objectives

Rio Tinto stated in its response to Design Element 23 in the Design Consultation Paper that the ISO should only be responsible for planning studies that relate to 'whole of system' planning, and also noted that the Design Consultation Paper does not clearly identify how any studies would be scoped, who will conduct them and how any costs would be apportioned. The Public Utilities Office agrees in principle with Rio Tinto's points, and notes the details of the planning function will be confirmed during implementation.

[84] Rio Tinto 6 December 2017 submission in response to the PUO Issues Paper, pp 11-12.
[85] *Ibid,* p 15.
[86] Refer for example to Figures 2 and 3 in Horizon 4 December 2017 submission in response to the PUO Issues Paper and the associated descriptions

3.5.4 Market services

Cost recovery

A mechanism will be required to recover 'market' costs from all parties connected to the NWIS. It is expected that this will need to include recovery of:

- that component of AEMO's administrative costs that relate to managing the NWIS ISO function. This would be recovered through a simple levy, such as applies in the WEM; and
- a cost recovery mechanism for ancillary services costs. A pricing basis for ancillary services that reasonably reflects the extent to which each party imposes costs on the system.

Economic dispatch

As noted by Horizon Power:

> An ISO cannot dispatch generation without a supporting mechanism to set a price and agreement from dispatched generators to sell, and loads to purchase, at that price. Typically, this is delivered through the implementation of a wholesale market. [87]

The NWIS does not have a wholesale electricity market and it is unlikely that the cost of establishing and maintaining one will be cost effective in the foreseeable future given the current approach, which is a combination of:

- self-dispatch (which Horizon Power refers to as 'customer driven Economic Dispatch)[88] and which requires no direct involvement from the ISO in day-to-day (non-contingent) operations; and
- the energy balancing arrangement currently facilitated by Horizon Power.

As discussed section 3.5.2, a recommended ISO function for the whole of the NWIS is to manage balancing energy and settlements. Stakeholder submissions to the Design Consultation Paper generally supported Design Element 24, including that the ISO will at initiation will provide limited Market Services only.

3.5.5 Metering services

Initial role of the ISO

Initially the proposed approach is for the ISO to be a 'taker' of metered data, *not* a provider of metering services.

In Western Australia, the *Electricity Industry (Metering) Code* 2012 ('Metering Code') sets out:

- the rights, obligations and responsibilities of Metering Code participants associated with the measurement of electricity and the provision of metering services;
- the rules for the provision of metering installations at connection points, and
- the rules for the provision of metering services, standing data and energy data.

[87] *Ibid*, p 31.

[88] Horizon Power's ETAC allows for each entry / exit point to supply or be supplied under more than one other ETAC through an Allocation Deed arrangement. This mechanism allows for any consumer to be supplied by more than one generator or retailer, and for any generator to supply to more than one ETAC holder. This is not the case in the WEM.

Depending on the conditions of their respective licences (including exemptions) under Part 2 of the *Electricity Industry Act* 2004, the Metering Code applies to network operators, retailers, generators, metering data agents, and users, AEMO and the ERA[89] (i.e. the Metering Code Participants).

Among other things, the Metering Code dictates the obligations on participants to provide energy and other metered data to the market operator (which, in the context of this Design Consultation Paper, would be the ISO).

A task (preferably prior to establishment of the ISO) will be to determine whether the obligations on relevant participants and capability of relevant participants to supply energy and other metered data of suitable quality (accuracy, frequency, location) will allow the ISO to undertake its proposed functions. If not, additional expenditure will be required.

Possible future ISO services

If the NWIS is to move beyond a calculated notional charging regime for ancillary services and energy as envisaged, then:

- the ISO would require metering data and other notices as provided for with respect to the market operator in the Metering Code;
- the ERA would continue to provide the approval role under the Metering Code for these documents;[90] and
- a review of the suitability of the current meter infrastructure and meter data to enable the ISO to undertake its proposed current (and future functions) would be required.

Whether or not there is net overall benefit in the ISO providing metering services in the NWIS will require detailed consideration in the future. However, such a role for the ISO is not proposed at present.

Stakeholder submissions to the Design Consultation Paper generally supported Design Element 25, including that the ISO will need to be regarded in the *Electricity Industry (Metering) Code 2012* as the equivalent of the Independent Market Operator/AEMO.

3.5.6 Powers of the ISO

To achieve its objective and to fulfil its proposed functions, the ISO is likely to need the powers and authority to undertake the following.

1. As part of its planning, scheduling and dispatch functions:

    a. direct network operators, network owners, generators and loads to protect the safety, security and reliability of the NWIS during system emergencies;

    b. manage the enhancement and maintenance of a fit-for-purpose, NWIS model;

[89] i.e. the ERA has an approval role under the Metering Code to approve network operators' Model Service Level Agreement; Communication Rules; and Metrology Procedure & Mandatory Link Criteria.

[90] In accordance with design principles, it keeps additional costs to a minimum if an existing entity with the skills and capacity to undertake a role for the NWIS continues in this role.

c. approve or otherwise coordinate planned outages of network or generation elements on all interconnected networks to mitigate material risk to system security and performance;[91]

d. set and monitor load shedding facilities;

e. access data from participants to support the development of generator, load and energy forecasts and all necessary real-time and near real-time information to undertake its schedule and dispatch functions;

f. develop and implement power system operating procedures.

2. As part of its network services functions:

   a. oversee the compliance of new connections and modifications to existing installations (loads, generators, networks) in all networks in the NWIS Interconnected System in accordance with agreed, common NWIS Rules,[92] to help ensure the performance and security of the NWIS; and
   b. publish 'statements of opportunity' for transmission and generation development with the appropriate adherence to approved confidentiality protocols

3. Access information necessary to support ISO's other functions (to the extent they are initially assigned), including:

   a. ancillary services management;
   b. market services; and
   c. metering services.

4. Enter into contractual and other arrangements to manage its functions.

5. Recover its reasonable costs from those who benefit from ISO's services.

Each of these aspects of the proposed ISO powers will be subject to review during the regime development phase of the NWIS reform project. In the case of Rio Tinto, for example, contractual and other arrangements can be established to enable the ISO to largely fulfil the intent of its role,[93] without unduly interfering with Rio Tinto's day-to-day operations.

Stakeholder submissions to the Design Consultation Paper generally supported Design Element 26, including that ISO will have sufficient powers to effectively enact its obligations and undertake its functions. The Public Utilities Office notes that Rio Tinto considers that the proposed ISO powers are excessive and advises that the necessary ISO powers will be developed in accordance with the policy intent and design principles described above during the regime development phase with stakeholder consultation.

[91] Yet to be developed and ratified but are expected to contain power system performance and connection standards that are similar to those in the Horizon Power Technical Rules
[92] Noting that grandfathering of existing installations may be necessary in some cases.
[93] Including during system emergencies and/or where network security is being put at risk.

3.5.6 Compliance and enforcement

The obligations of participants under the third party access regime, as well as the functions and powers of the ISO will be backed by a compliance and enforcement regime similar to the approach applied in the South West Interconnected System, including:

- powers to make regulations to provide for the application of civil penalties on market participants for non-compliance;
- the ability to prescribe details as to who can (and cannot) bring proceedings to enforce the rules, the forum in which such relief may be pursued, what other relief is available (instead of or in addition to imposition of a penalty) and so on; and
- various machinery provisions to support the above.

Consistent with the enforcement regime for access to the South West interconnected system, it is not proposed to make contravention of the NWIS regime a criminal offence.

Design Element 21

The ISO will:

- undertake planning and outage scheduling;
- develop and manage a full NWIS simulation model;
- have lead accountability for managing emergency response and undertaking post-incident investigations; and
- issue dispatch instructions in limited circumstances including:
    - where contractual arrangements with the ISO require it – for example:
        - for ancillary service provision; and
        - for providing a dispatch service;[94] and
    - to step in to preserve or restore system security and reliability – for example:
        - following equipment failure; and
        - to manage a network or system constraint (consistent with the NWIS Rules).

Design Element 22

The ISO will take over the role of procuring and allocating the costs associated with the following Ancillary Services: frequency control, spinning reserve, balancing & settlements, reserve capacity, and black start capability.

[94] i.e. where a generator contracts with the ISO to dispatch its generators (i.e. rather than have its own operators)

Design Element 23

The ISO will provide the following Network Services for the NWIS in conjunction with Network Owners, Generators, and End Customers: network coordination, technical oversight of connections and access, and publication of statements of transmission development and generation opportunities (whilst protecting commercially sensitive information)

The suite of ISO functions will be reviewed as part of the mandatory post-implementation review to ensure the model is meeting specified objectives.

Design Element 24

The ISO will at initiation provide limited Market Services, with economic dispatch of generation unlikely to be justified in the NWIS for the foreseeable future. The ISO needs to be provided with an ability to cover its NWIS-related administrative costs and the costs of any Market Services that it provides.

Design Element 25

With the recommended functions of the ISO in this document, the ISO will need to be regarded in the *Electricity Industry (Metering) Code 2012* as the equivalent of the Independent Market Operator/AEMO for the NWIS with similar rights, obligations and responsibilities. The ISO is not initially positioned as a Metering Services provider.

Design Element 26

The ISO will have sufficient powers to effectively enact and enforce its obligations and undertake its functions. The powers of the ISO will not extend to daily operational control of interconnected networks in NWIS unless such control is transferred to the ISO by agreement.

3.6 ISO structure and operating cost

3.6.1 Stand-alone vs ring-fenced

Submissions to the Issues Paper supported establishment of a standalone ISO rather than a ring-fenced function within an existing entity to help ensure impartiality.

Horizon Power suggested that the ISO should be a separate commercial body but that it could deliver its function by contracting with network service providers (such as Horizon Power's[95] or Rio Tinto's Control Centre).[96]

In the interests of impartiality and transparency, and because of the requirement for the ISO to manage commercially sensitive information daily, the Public Utilities Office considers that the ISO should either be truly stand-alone as a separate entity, or an extension of an existing system operator that is not conflicted in any way.[97]

[95] Which not only operates the Horizon Power system, providing 'de facto' system operator services to the NWIS as a whole
[96] Horizon Power, 4 December 2017 submission in response to the PUO Issues Paper, p 45.
[97] Such as AEMO.

Physical location, HR and operational technology

The two models for establishing the ISO each require:

- visibility of all the networks in the NWIS, and either directly or indirectly, the ability to control elements of the NWIS to deliver a secure and reliable system;[98]
- operational technologies to enable secure and reliable communication between other NWIS system and network controllers; and
- access to, or control of, a fit-for-purpose system simulation model.

The necessary visibility and control can be provided (with the appropriate operational technology) from just about any location, noting that AEMO, Rio Tinto's, Horizon Power's and others system and/or network control centres are based in the Perth metropolitan area.

The standalone approach to establishing the ISO will require the appropriate human resources to undertake its functions, noting that the skill sets are specialised, and the complexity of the physical network, generation and load interconnections and interdependencies and the commercial and competitive sensitivities are challenging, but not insurmountable.

The alternative of leveraging off the capabilities (facilities, operational technologies, and human resources) of an existing non-participant operator is likely to be the cheaper alternative.

Most stakeholders nominated AEMO as the provider of ISO functions because it would be a logical extension of its current functions in Western Australia, and not dissimilar to the role that AEMO now has in the Northern Territory.

Stakeholder submissions to the Design Consultation Paper generally supported Design Element 27, including that AEMO undertake the ISO role. The Town of Port Hedland said ISO operators should be locally based to undertake timely maintenance and support local employment, whereas Rio Tinto considers that the ISO should be based in Perth. With AEMO as the ISO, the Public Utilities Offices considers there would be considerable cost savings locating the ISO in Perth to achieve synergies with AEMO ISO function for the SWIS, noting also that Rio Tinto and Horizon Power network operation control centres are located in Perth. The Public Utilities Office also agrees with Rio Tinto that the ISO must be appropriately resourced such that AEMO can operate the NWIS as a primary function to ensure timely response to system events.

3.6.2 Governance

The ISO will need to make decisions that balance competing objectives including cost, security and safety considerations and will need guidance at a policy level as the decisions will have a material impact on the downstream operations of network owners, generators, and end customers.

The governance of the ISO, including establishment of its objectives, policies and procedures, and oversight mechanisms to ensure its effectiveness are fundamental aspects of establishing the ISO.

Governance of the ISO is likely to include the following responsibilities:[99]

- setting the ISO's objectives and approving its strategy;

[98] With integration with other systems' operational technology an as yet undefined issue.
[99] These are based on current AEMO Board's responsibilities.

- overseeing the NWIS Rules change procedure;
- oversight of the ISO's activities, including by ensuring there are effective controls and procedures to enable key risks to be identified, assessed, and managed;
- determining the financial, operational, human, technological, and administrative resources the ISO needs to meet its objectives and implement the approved strategy;
- monitoring compliance with legislative and regulatory requirements;
- approving the ISO budget;
- approving reports to members and stakeholders, including publicly disclosed information; and
- appointing senior staff and assessing their performance.

Governance models

The Public Utilities Office has considered two governance models for the ISO, as follows:

- *Option 1*: AEMO Board (if the ISO functions are delivered by AEMO).
- *Option 2*: Board of Participants.

Option 1 – AEMO Board

On the assumption that AEMO performs the role of the ISO, the advantages of seeking the agreement of the AEMO Board to govern the ISO are:

- it is independent of the NWIS participants, and is unlikely to experience internal conflict of interest in governing the ISO according to its charter;
- it has in place many of the required resources, policies and procedures to undertake the role by extension of its current activities (and as such minimising establishment cost);
- if the ISO's objective is, as proposed, similar to the NEO, there will be general alignment between the overarching NEO (for the NEM) and the NWIS objective;
- its core expertise is in market management, and although, initially, establishment of a NWIS market is not recommended, it is well placed to govern the NWIS market operations if required in the future; and
- the costs of establishing the AEMO Board to govern the ISO activities will be relatively low.

The disadvantage of the AEMO Board assuming the governance role for the NWIS is that its focus is likely to be on the NEM and (to a lesser extent) the SWIS, given the size and criticality of these markets. This may jeopardise timely provision of strategic direction, approvals and other NWIS-related board actions.

Option 2 – Board of Participants

A Board comprised of market participants, with members selected or elected from amongst generators, network owners, and customers. Other than possible representation from government-owned participants, there would be no government membership of the Board. The Board would essentially be self-funded with in-kind and/or proportion contributions from members to support its activities.

To help ensure that the Board acts in the best overall interests of the system and its end-use customers, the Board of Participants is likely to require an independent chair and policies and procedures as part of a governance framework, including for example:

- a Board Charter which would, among other things, be based on an overarching objective and operating principles, and include a dispute resolution mechanism;
- Conflict of Interest Guidelines;
- Risk Management Policy;
- Privacy Policy;
- Compliance Policy;
- Market Surveillance Procedures; and
- Technical Rules Change Procedures.

The ISO Board of Participants could contract with others to provide services, for example:

- AEMO to provide ISO functions;
- ERA for compliance services;
- Rule Change Panel for managing the change process to NWIS Technical Rules; and
- Electricity Review Board for dispute resolution.

The advantages of the Board of Participants approach to governing the ISO are:

- it should cost less to operate the Board (once its policies and procedures are established) than other options;
- its primary focus would be on the security, reliability and efficiency of the NWIS; and
- its members are likely to be very familiar with the NWIS.

The disadvantage of Option 2 is that it may be subject to multiple internal disagreements about the discharge of its responsibilities under its Charter because of the competitive interests of the likely key members. This is likely to reduce the overall effectiveness of the Board.

The Public Utilities Office is proposing the adoption of the AEMO Board as the governing body for the ISO.

Stakeholder submissions to the Design Consultation Paper generally supported Design Element 30, including that the ISO will be governed by the AEMO Board. The Town of Port Hedland in its submission suggested that ISO Board membership should include people that are located in Port Hedland and that understand the region. Given the advantages of the adopting the AEMO Board as the governing body for the ISO, the Board won't always have direct representation from the Pilbara region. The Public Utilities Office does however recognise the importance of local input into the operation of the NWIS and supports local input on working groups for establishing the NWIS ISO, and an ongoing representation in a formal role of monitoring and providing feedback on the operation of the ISO. This is consistent with the suggestion by Rio Tinto in response to Design Element 31 for a participants' forum and the Technical Advisory Group outlined below. This will be further considered during the regime development phase of the NWIS reform project.

Surveillance

NWIS surveillance functions are likely to include:

- monitor ISO performance – typically the ISO (and its network service providers) would self-report according to a pre-determined framework;
- monitor aspects of participant business conduct that comes under Rules (e.g. ancillary service payments/usage);
- exercise disciplinary powers defined under Rules;
- recommend Rule changes; and
- investigate issues within its operational scope, as mandated by Rules.

Two options have been considered for providing surveillance functions as part of the ISO governance structure.

The first option is the ERA, which currently undertakes market surveillance activities for the SWIS. The second option is a dedicated sub-committee of the ISO's governing body, or, if the ISO is self-governing, then a sub-committee of the ISO.

The advantages of contracting with the ERA to provide surveillance services are that it is already established and proficient in this work, and it would be an extension of its current core activities. It would need to be ensured that the ERA is resourced to undertake this role, in conjunction with its current SWIS workload.

The advantage of the sub-committee approach is that it would be within the full control of the ISO's governing body and it could therefore set its priorities and establish the necessary resources to ensure it provides the required services. The disadvantages of a sub-committee include possible loss of independence (i.e. from self-assessment) and challenges with securing the necessary competencies at a reasonable cost.

On balance, the Public Utilities Office considers that contracting with the ERA to provide the necessary independent NWIS surveillance functions is likely to be a better approach.

Rule changes

Technical Rules are a requirement for all covered networks under the Access Code. An important design element for the new regulatory framework is to establish uniform, agreed NWIS Rules to apply to covered and uncovered networks and incorporating requirements similar to the Technical Rules) and be implemented and managed by the ISO.

In the SWIS, whilst the Technical Rules were developed by and are owned by Western Power, proposed changes and exemptions to the Technical Rules are considered and approved (or otherwise) by the ERA. It undertakes this function by supplementing its in-house knowledge (largely regulatory economic) by technical consultants to review the proposals.

As with the surveillance function discussed above, the Public Utilities Office considered the option of the ERA or an ISO sub-committee undertaking this task. For the same reasons, the Public Utilities Office considers the ERA to be better placed to provide the necessary Rule change services.

Stakeholder submissions to the Design Consultation Paper generally supported Design Element 32, including that the ERA provide NWIS Rules change services. Rio Tinto in its response suggested

that the Rule change process needs to be efficient and agile enough to ensure the various participants' interests are properly taken into account and that network operators are appropriately consulted and involved in any proposed change. Rio Tinto also suggested that the NWIS Rules should be largely based on the existing Horizon Power and Rio Tinto Technical Rules, given these networks represent the majority of the NWIS. The Public Utilities Office agrees with Rio Tinto's views regarding the Rule Change process and acknowledges Rio Tinto's views on development of the Rules which will be undertaken during the implementation phase.

Technical Advisory Group

Given the unique characteristics of the NWIS and the Pilbara more generally, both the ISO and its governing Board would benefit by being able to access participants' advice on technical (i.e. as opposed to commercial) matters. This could be achieved via a 'NWIS Technical Advisory Group' or similar which would include suitable participant representatives. As suggested by BHP in its response to Design Element 32 of the Design Consultation Paper, the Technical Advisory Group should also support the Rule change process.

3.6.3 Funding

Regardless of the ISO functions and structure, its operations will need to be supported by a budget and, possibly, by in-kind support from NWIS participants (network owners and generation owners).

It is proposed that the ISO governing body establish the funding of the ISO budget according to the following principles:

- it provides for the efficient and effective operations of the ISO based on a fee for service structure;
- all NWIS interconnected network operators and generators contribute equitably; and
- the fee structure is transparent.

These costs would include:

- governance – a proportion of the cost of the AEMO Board (if this design element is adopted);
- system operations personnel, systems (including SCADA), data, and procedures;
- engineering and planning services, including for system simulation model management – likely to be outsourced; and
- establishing and maintaining energy settlement software and interfaces with metering data.

The funding and cost allocation methodology is yet to be developed but it is likely to be the same as applied in the SWIS, namely:

- funding – the AEMO will need to apply to the ERA for its 'Allowable Revenue and Forecast Capital Expenditure' which will incorporate its NWIS-specific costs on a triennial basis; and
- cost allocation – system operator costs can be charged on a per-MWh basis, to loads and generators, as with the NEM and WEM. The cost allocation methodology will be equitable and fit-for-purpose for the NWIS.

Stakeholder submissions to the Design Consultation Paper generally support Design Element 28, including that the ERA will approve the ISO budget. BHP in its submission suggests giving

participants the ability to dispute the ISO budget. The Public Utilities Office does not consider this necessary, noting that the ERA's approval process will allow for stakeholder consultation.

TransAlta in its submission noted that Horizon Power currently operates under various subsidies, and to the extent that its functions are transferred to the ISO, a portion or all of the value of these subsidies should also be transferred, so that NWIS participants are kept whole and do not end up subsidising those activities. The Public Utilities Office acknowledges this issue and advises that it will be considered when designing the ISO budget and cost allocation methodology during the regime development phase of the NWIS reform project.

3.6.4 Cost of operating

Several stakeholders have cautioned against adding excessive net costs in designing and implementing the ISO. For example, Roy Hill noted that:

> There is a need to make sure that existing customers like Roy Hill are not disadvantaged due to such introduction of an independent system operator. Cost is also a general issue. Roy Hill's fees with Horizon include Horizon's costs for acting as the system operator. We assume that any changes (whether it is Horizon acting in two roles (retailer and network operator) or in one role (retailer) with a new person as system operator, then this will be at no net extra cost for Roy Hill. Also, for the network operator to be successful, it will need to be able to demonstrate it can undertake the role with the right attitude i.e. light touch; and not drive outcomes which are 'gold plated'.'[100]

The approach proposed by the Public Utilities Office for establishing the ISO should ensure costs of establishing and operating the ISO are kept to a minimum by:

- leveraging off existing entities for provision of services to the NWIS, which should mean costs attributable to the NWIS ISO should be incremental;
- leveraging off existing documents, procedures and systems; and
- drawing on in-kind support from key stakeholders to provide their expertise to development of necessary processes, procedures, and systems such as the proposed NWIS Rules.

The estimated cost of operating the ISO will be established during the regime development phase of the NWIS reform project. It is noted that Horizon Power presently provides network operations services for the safe and reliable operation of its network that interconnects with Rio Tinto and the Alinta Energy /BHP/FMG transmission networks. Horizon Power estimates this cost to be approximately $5 million per year with the main cost items being the procurement of frequency control and the operating cost of its control centre.

Another reference point is the allowable revenue for the AMEO to perform the equivalent functions in the SWIS, which are approximately $15 million per year.

Ultimately, both the implementation costs and ongoing operating cost of the prosed ISO will be subject to a detailed due diligence assessment once the final model has been confirmed.

[100] Roy Hill, 4 December 2017 submission in response to the PUO Issues Paper, p4

A fundamental priority will be to ensure the costs are efficient and avoid any price shocks for participants and that the cost allocation methodology is fair and equitable for participants relative to the benefits that will be derived from overall improved network security and operating reliability.

BHP, Alinta Energy, and Rio Tinto, in their responses to Design Element 29 of the Design Consultation Paper considered that more work is required on the ISO cost methodology. BHP considers that all setup costs should be borne by the WA Government, and Alinta Energy considers that the ISO role should be limited to minimise cost. The Public Utilities Office generally agrees with these views. The ISO cost methodology will be finalised during the regime development phase of the NWIS reform project. Regarding establishment costs, costs for developing the ISO Framework and establishing the ISO will be mostly borne by the Government. Participants' involvement in the design of the ISO Framework, through working group involvement and reviewing material, is voluntary and will be borne by each individual participant. The costs of ISO systems will likely be capitalised and recovered from participants over time.

BHP further states that more work is required on fair cost allocation based on utilisation, and Rio Tinto considers that costs should be allocated based on benefit derived. The Public Utilities Office will develop the cost allocation methodology during the implementation phase.

Design Element 27

The ISO will be a stand-alone entity, with the proposed functions undertaken by AEMO as an extension of its current Western Australian operations, noting that it may choose to contract with other network service providers for provision of some services.

Design Element 28

The ISO's annual revenue and capital expenditure forecast will be independently approved by the ERA.

Design Element 29

The ISO capital and operating costs will be recovered from market participants.

Design Element 30

The ISO will be governed by the AEMO Board on the basis that AEMO undertakes the ISO role for the NWIS. Its charter will be established with the involvement of key stakeholders.

Design Element 31

The ISO surveillance functions will be provided to the ISO governing body by the ERA.

Design Element 32

Changes to the NWIS Rules will be a service provided to the ISO governing body by the ERA.

3.7 Coverage and liability

3.7.1 Network coverage

The scope of ISO's functions and powers can be considered as applying to either all interconnected systems in the NWIS (Option 1) or interconnected systems in the 'Coastal Region' (Option 2)

What could be called a third option, is establishing the ISO in accordance with Option 2 and progressing it to Option 1 over time, provided certain criteria[101] are satisfied. However, as discussed below, this is likely to be unworkable.

Stakeholders have generally supported the ISO covering the entire NWIS, however, Rio Tinto was an exception. The primary reasons behind stakeholder support for the ISO covering the entire NWIS are:

- the ISO will not deliver significant cost efficiency or safety, reliability or system security outcomes if it does not have the authority to deliver centralised system management, ancillary services management, and technical coordination (i.e. through consistent application of agreed Technical Rules); and
- given that Rio Tinto's network is electrically connected to Horizon Power's network,[102] it has the potential to both detrimentally affect system security (i.e. impacting all other networks, generators, and customers) and benefit from interconnection.

The Public Utilities Office understands from information provided by Rio Tinto[103] that it has spent considerable time and effort to integrate its mine, rail, port and power assets in the Pilbara as a single integrated system and that its sole objective is maximising the efficiency of iron ore production and shipments. Rio Tinto questions the value of introducing an ISO, for the following reasons:[104]

> While some of the elements of this System Operator proposal (such as the application of consistent Technical Rules) make good sense in relation to the NWIS, they are largely outcomes that are already being provided in a de facto sense by Horizon or through the long-standing cooperative technical arrangements between existing NWIS players.
>
> We are concerned that an Independent System Operator will not be agile enough, or knowledgeable enough of Rio Tinto's integrated electricity network and business model, to deliver the operational or financial efficiencies suggested in the Issues Paper';
>
> '…we are concerned that… establishment of an Independent System Operator will result in significant risk of:
>
> - inefficient processes being put in place that disrupt how our system is currently operated;
> - delays in decision making, especially during emergency or contingency events; and
> - additional and unproductive costs associated with compliance to a new regulatory regime, including the costs of establishment and sustaining the new organisation in the Pilbara.
>
> We are also concerned that this will result in delays arising from the interaction between our business and the Independent System Operator that currently do not apply, and that the establishment of new processes will ultimately increase outage duration, delay restoration and result in inefficient operation of our electricity network.
>
> '…perhaps the most significant component of the risk proposition to Rio Tinto in relation to the Independent System Operator is the risk of commercial and contractual factors

[101] Such as a net benefits test
[102] At two points in the West Pilbara at 33kV.
[103] Including on a visit by the representatives of the PUO and others on 28 November 2017 to Rio Tinto's operational control centre.
[104] Rio Tinto, 4 December 2017 submission in response to the PUO Issues Paper, p 10.

causing a suboptimal outcome by taking priority over safety and system security, reliability, economic dispatch, and maintenance coordination.'

Rio Tinto has assumed that the proposed operating model is for the ISO to be 'appointed to oversee the day-to-day management of its electricity network…'.[105] The involvement of the ISO in Rio Tinto's network under Option 1 does not require Rio Tinto to transfer its entire electricity network operational functionality to the ISO at all times.

The only circumstances in which the ISO may need to direct Rio Tinto's operations are:

i. in response to declared system emergencies initiated in the rest of the interconnected network (i.e. that threatens the security of the interconnected NWIS);

ii. if a planned outage or other change to Rio Tinto's network threatens the security and reliability of the interconnected system; or

iii. if Rio Tinto has agreed to provide services on contractual terms which the ISO needs to call upon (e.g. the provision of frequency control), such as exists currently with Horizon Power.[106]

Rio Tinto states that the ISO 'should only have power to direct system participants in an emergency situation or where network security is being put at risk',[107] noting that this is the basis for the current arrangement with Horizon Power. Therefore, there is alignment between Rio Tinto's perspective and the intent of Option 1 in this respect.

The risk of the first and second situation described above occurring should be materially diminished by establishing the ISO and the accompanying coordinated approach to scheduling, security analysis, and ancillary services across the entire interconnected network, including by application of, and by participants' adherence to, a common set of NWIS Rules.

Rio Tinto has stated that it benefits from being connected to Horizon Power's network (i.e. in addition to the commercial compensation it receives for providing frequency control services). It is reasonable to consider that Rio Tinto would not knowingly jeopardise the security and reliability of the NWIS through its planned actions. Horizon Power and Rio Tinto have worked cooperatively for several years to coordinate planned outages based on good engineering and operational practice and mutual net benefit.

The Public Utilities Office also recognises the concerns expressed by Rio Tinto regarding the disclosure of competitively sensitive information to enable the ISO to undertake some of the proposed functions, particularly with respect to long term forecasting and network planning.

Cognisant of the ISO design objectives and principles, and Rio Tinto's concerns, the ISO should have coverage of all the NWIS Interconnected System (i.e. including Rio Tinto's network) but unless there is a proven and substantial net benefit,[108] the ISO should not require powers that will potentially interfere with the efficient operations of connected, uncovered networks other than to protect the safety, reliability and security of the NWIS.

[105] *Ibid*, p 11.
[106] As Rio Tinto currently performs this service for the NWIS, minimal changes to its current operations are required.
[107] Rio Tinto, 4 December 2017 submission in response to the PUO Issues Paper, p 11.
[108] The risk/cost/benefit assessment will need to account for the extensive cost penalty of materially compromising primary production (i.e. mining, transport, loading) of any of the resource-based participants.

The ISO should work cooperatively with asset owners who manage the day-to-day operations of their assets, establishing, for example, operating protocols and contracts to:

- help ensure the overall safety, reliability and security of the system;
- minimise interference with the day-to-day operations of the owner's assets;
- minimise costs; and
- maximise net benefits.

The establishment of and consistent application of a unified set of NWIS Rules will be a key element in underpinning the secure, reliable and efficient operation of the NWIS interconnected system.

Stakeholder submissions to the Design Consultation Paper were generally supportive of Design Element 33, including the decision that the ISO will have coverage of the entire NWIS Interconnected System. Rio Tinto considered that the proposed ISO functions and powers exceed this and seem excessive when compared to the functions and powers currently undertaken by Horizon Power as the de facto system operator. As described earlier, Public Utilities Office considers that the limitations prescribed on the ISO's role address this concern.

3.7.2 Limitation of liability

As discussed earlier, the intention is to establish the ISO as a small entity which recovers its costs on a 'fee for service basis' without recourse to a substantial balance sheet (i.e. the same as AEMO, which does not undertake any work or roles for which there is an unacceptable risk profile).

Except for FMG, all submissions to the Issues Paper supported the proposal to provide the ISO with statutory immunity from damages claims from third parties that may arise from the ISO undertaking its functions. FMG concern extended to the asset owner's actions as well as the system operators, in that it noted that:

> The performance of these assets is critical to the State, and to the parties that use them. Therefore, at this stage, Fortescue would not support the removal of liability for the failure of the transmission and distribution assets, to the extent that such failure is caused or contributed to by the actions of the system operator or the asset owner, including as a result of poor operations and maintenance practices. Performance incentive schemes, such as those in place on the NEM, may be appropriate to assist system operator and asset owner to manage liabilities.'[109]

Several stakeholders noted that the ISO should have the same protection as afforded to AEMO in undertaking its functions in the SWIS. It is also noted that it is extremely unlikely that any system operator (and individuals therein) would take on the risk of third party claims.

In relation to the question of immunity, Roy Hill noted that if there are existing arrangements under contracts, those rights should be preserved or else the commercial reasons for the customer who entered into that arrangement will be lost. It is considered that the transition of contractual terms that may affect the liability of the proposed ISO will need to be considered on a case by case basis.

Stakeholder submissions to the Design Consultation Paper were generally supportive of Design Element 34, including the decision to make the ISO immune from damages claims.

[109] FMG, 4 December 2017 submission in response to the PUO Issues Paper, p 2.

Design Element 33

The ISO will have coverage of the entire NWIS Interconnected System, with powers limited to those necessary to undertake its assigned functions consistent with the design objective.

For the avoidance of doubt, the ISO will not have powers to interfere with the efficient operations of networks, other than to protect the security and reliability of the NWIS and these powers do not necessarily require direct control of all network elements.

Any changes to the powers of the ISO will be subject to rigorous analysis with stakeholder input to ensure that there is a material net benefit of any proposed changes.

Design Element 34

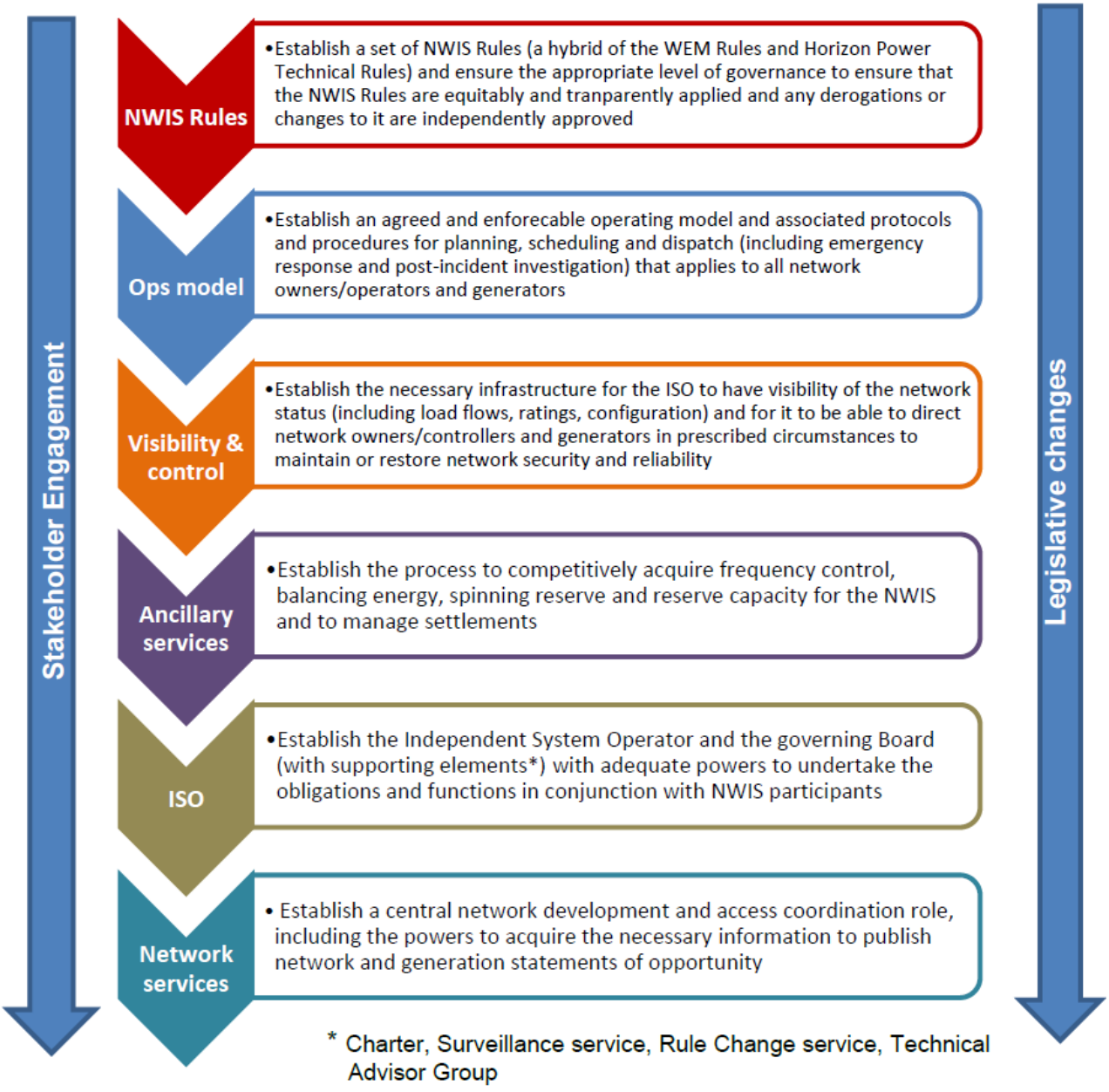
The ISO will have the same immunity from damages claims as AEMO has for its operations in the SWIS.

3.8 System management and operations implementation process

A number of design elements have been identified as being developed prior to commencement of operation of the ISO. The figure below shows the proposed steps to establishing the ISO.[110]

[110] Although the steps are indicated as occurring sequentially, several of these steps could be undertaken in parallel – the key is that the ISO should implement rather than develop the procedures according to the NWIS Rules.

Figure 9: Proposed steps to establish the initial functions of the ISO



Design Element 35

Transitioning to the new ISO will allow timelines that permit the ISO and participants to efficiently meet new obligations and functions and for stakeholder participation in the development of the various design elements.