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## Improving access to the Western Power network

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### Implementing a constrained network access regime

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## Executive Summary

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Transmission networks transport electricity from generators to consumers, transmitting large quantities of electrical energy over long distances. These networks have physical limits, or constraints, to how much power can be transmitted at any one time, to maintain the secure operation of the power system. A network is 'congested' when a particular element on the network reaches its limit and cannot carry any more electricity than it is carrying already. How congestion is managed has important implications for unlocking the value of existing investment in the electricity network.

The current connection and access framework for Western Power's network is based on an unconstrained design, under which Western Power has contractually agreed to provide some generators with unrestricted access to the network subject to the power system remaining in a normal operating state. This means Western Power must ensure that new generation connections do not affect the access rights of other generators already connected to the network, even if the risk of this occurring is limited to a few periods during the year.

Up until the mid-2000s, the likelihood of new generation connections affecting the unrestricted access rights of existing generators was minimal as Western Power invested in network capacity to meet increasing peak demand. As growth in peak demand slowed and moderated over the last decade so did the need for Western Power to augment the network, eroding the ability of the network to accommodate additional generation on an unconstrained basis without significant and costly network augmentation. New generators seeking to connect to the network must pay for the augmentation, which can amount to several tens of millions of dollars, a substantial expense that makes a project uneconomic.

This is not an optimal outcome. The network has been built to a high standard of reliability to cater for the infrequent periods of peak demand where there is a risk of congestion. This means that for most of the year there is a substantial surplus in network capacity that remains unused and that can accommodate new generation connections. At the same time, new large-scale renewable generation technologies are becoming cheaper to build and investors are increasingly attracted to the South West Interconnected System with its abundance of wind and solar resources.

Improving access to Western Power's network is key to unlocking the value of the existing investment in the network. This means adopting a framework of constrained network access whereby generators compete for access to the network through the wholesale market, with dispatch subject to network constraints to maintain system security. This provides an economically efficient means for the allocation of network capacity to generators and will facilitate more cost effective connections to the existing network.

The adoption of a framework of constrained network access also requires changes to the Wholesale Electricity Market arrangements to adopt a security-constrained market design, supported by a more sophisticated market clearing engine capable of an economic security-constrained dispatch of generation. This will enable the market to be dispatched to achieve least cost outcomes without compromising system security in a future environment where the risk of network congestion is increased.

This paper describes and seeks feedback on the essential reforms to network and market arrangements to implement a constrained access regime for Western Power's network.

# 1. Introduction

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## 1.1 The need for reform

On 23 August 2017, the Minister for Energy announced that legislation would be introduced into Parliament in 2018 to adopt a framework of constrained access to Western Power's electricity network.

Current arrangements governing access to Western Power's electricity network are impeding further investment in the Wholesale Electricity Market, with existing investments in expensive network infrastructure underutilised. This is because the operating model governing the electricity network has focused on building more capacity to relieve congestion in the shared transmission network to accommodate new generators, creating a barrier to investment in generation supply and leading to lower network utilisation and increased cost to consumers.

Under the current arrangements, congestion in the shared transmission network is managed by requiring the electricity network to be built and improved so that all generators can operate to their full output at any time when the system is operating in a normal state, the so-called 'unconstrained' network access model. If a new power station is to connect to the network, the generation business must meet the cost of augmenting the shared network to maintain the unconstrained access status of other generators, often at a cost of tens of millions of dollars.

While some generators have been fortunate to connect to Western Power's network on an unconstrained basis without contributing to the cost of network augmentation, this has rarely been the case in the last decade. Despite the development of several workarounds to connect generators to minimise the need for shared network capital contributions, there are now limited opportunities to connect new generation under present arrangements.

The difficulty for new entrants in gaining access to Western Power's network is a major barrier to investment in the Wholesale Electricity Market. Changes to the connection and access framework are needed so that all generators have equal access to being dispatched in the Wholesale Electricity Market. This will substantially reduce the cost of connecting to the network by avoiding the need for the expensive network augmentation that is necessary to maintain the priority access rights of some generators.

A framework of constrained network access will also require changes to Wholesale Electricity Market arrangements to implement a security-constrained market design, supported by a more sophisticated market clearing engine capable of an economic security-constrained dispatch of generation. This will enable additional generation to be connected and for the market to be dispatched to achieve least cost outcomes without compromising system security. New dispatch systems will also support the implementation of associated reforms to the Wholesale Electricity Market arrangements to improve market outcomes for consumers.

These reforms should substantially reduce the time and cost to connect to Western Power's network, reducing barriers to entry and improving access to the network for newer generation technologies, particularly renewables. An underutilised network and abundant renewable resources makes the South West Interconnected System an attractive investment proposition, and adopting a framework of constrained access will provide better value for the end consumer who has ultimately paid for the network infrastructure.

Longer term but equally important reforms to the regulatory framework are also needed to introduce best practice improvements in the rules that govern investment in the electricity network. The framework has not changed substantially since it was introduced in the mid-2000s, and is not suitable for an environment that is undergoing fundamental change driven by rapid advancements in technology.

## 1.2 Purpose of this paper

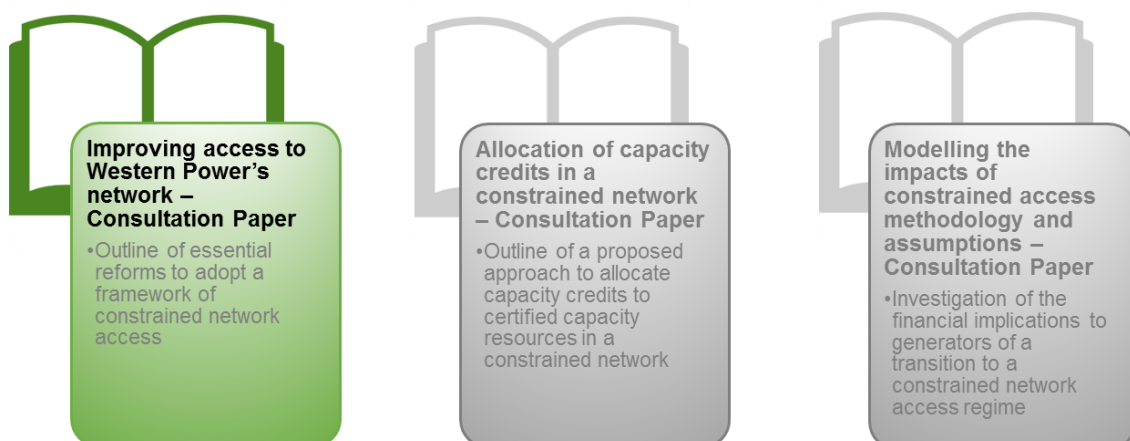
This paper outlines proposed changes to arrangements for network connections and access and the Wholesale Electricity Market to adopt a framework of constrained network access. While the main elements of reform are presented as a package, the Public Utilities Office intends to consult primarily on matters related to the network connections and access framework in this paper.

Reforms are presented at a conceptual level, sufficient to inform Government decisions on the main elements of reform and to identify the scope of the legislative changes needed to implement a constrained network access regime. Detailed design of the reforms will proceed once legislation to implement constrained access has entered Parliament, with in-depth industry consultation to start from mid-2018.

Changes to the design of the Wholesale Electricity Market and existing systems and processes were outlined in the *Final Report: Design Recommendations for Wholesale Energy and Ancillary Service Market Reforms, July 2016*. While this report was produced under the previous electricity market review program, many of the policy matters are relevant to this reform. Final positions have been reached on (many of) these matters following the consultation associated with the report, and they are presented in this paper for completeness. Further consultation with industry on these elements will take place as detailed concept designs are developed.

Two separate but complementary consultation processes are also underway to investigate the potential impact to generator dispatch outcomes and revenue projections from adopting a framework of constrained access, and to establish a new process to allocate capacity credits to certified capacity resources to account for constrained access. Further information on these consultation processes can be found on the Department of Treasury's website.

**Figure 1: Implementing a constrained network access regime – consultation papers**



## 1.3 Scope and timing of reforms

The current reform is focused on areas of change required to adopt a framework for constrained network access. This involves changes to the network connections and access regime for generators<sup>1</sup>, as well as changes to Wholesale Electricity Market arrangements that are necessary to support and deliver the benefits of the new constrained network access regime. These are outlined briefly below in section 1.3.1.

There are other reforms that, while not essential for the implementation of constrained access, are nevertheless important to improve the efficiency and effectiveness of the Wholesale Electricity Market. These, and other reforms to improve Western Power's operating and investment model to incorporate best practice, are briefly considered in section 1.3.3.

The power system security and reliability framework will require changes to accommodate an increasing amount of renewable generation. This is briefly outlined in section 1.4.

### 1.3.1 The essential reforms to implement constrained access

Several essential reforms to the network connections and access framework and to Wholesale Electricity Market arrangements are required to implement constrained access.

#### *Network connections and access*

In a constrained network access regime, generating units do not have guaranteed rights to network access at (or up to) a specified level, and their output can be constrained-off by market dispatch processes at any time (for relevant types of generators), in order to maintain power system security, irrespective of what transmission network elements are in service. Generators compete for access to the network through the wholesale market, providing an economically efficient means of allocating network capacity.

A 'minimal change' approach is proposed, involving the following:

- No generator<sup>2</sup> will have a guaranteed right to export electricity into Western Power's network. Firm access rights will not be grandfathered. This means any terms and conditions in existing network access contracts that grant, or purport to grant, rights to export electricity up to a maximum amount (when the network is operating under system normal conditions) will need to be subordinated to the operation of market dispatch, or otherwise overridden.
- All new connections to the Western Power network will be on a constrained basis. This means generators can be constrained-off (or constrained-on) by the activities of other users. No generator will be afforded firm access to the network under any circumstances.
- Terms and conditions in existing network access contracts that are inconsistent with a framework for constrained access will be modified accordingly. For example, contractual provisions that allow generators to transfer and / or relocate capacity between connection points will have no effect.

<sup>1</sup> The reforms are not intended to change the connection and access arrangements for loads.

<sup>2</sup> Access rights of small generators (<10MW) that are not required to be registered in the Wholesale Electricity Market and be subject to central dispatch will not be affected.



- Consequential amendments to the framework governing connections and access to the Western Power network, including the Access Code, Applications and Queuing Policy, the Transfer and Relocation Policy, and Technical Rules, to clarify the operation of these instruments in a constrained access regime.

It is foreseeable that the subordination (or overriding) of contractual entitlements under constrained access may lead to adverse consequences for some incumbent generators. To inform Government decisions on required transitional arrangements to implement constrained access, including the provision of transitional assistance, the Public Utilities Office is separately undertaking a financial modelling exercise to quantify potential changes to generator dispatch outcomes and trends in revenue projections.

These matters are discussed further in section 2.

### *Wholesale Electricity Market arrangements*

Changes to the Wholesale Electricity Market arrangements to adopt a security-constrained market design are required to support and deliver the benefits of constrained access.

Current systems and processes were designed on the basis that network congestion would occur rarely, and then only for short durations, with manual intervention required to manage network congestion as it occurred. These manual processes are unable to handle a higher incidence of network congestion in the future and represents a material barrier to new generation connections.

Other essential changes to the design of the Wholesale Electricity Market are also required to support and deliver the benefits of a security-constrained market design. These include the introduction of facility bidding for all market participants, co-optimisation of energy and ancillary services, and the implementation of five-minute dispatch.

Changes to the allocation of capacity credits to certified capacity resources through the Reserve Capacity Mechanism are also considered essential to support the transition to a constrained access model. This is subject to a separate consultation process.

Changes to Wholesale Electricity Market arrangements are discussed further in section 3.

Question 1: Are there other reforms that are essential to implement a constrained network access regime?

#### **1.3.2 Implementation timeline**

The Public Utilities Office views the major steps to implement a constrained network access regime as:

1. Legislation enters Parliament in 2018 and passes in 2019.
2. Detailed design and industry consultation commencing from 2018, with the full revised set of regulatory and market arrangements established during 2020.
3. A new process to allocate capacity credits to certified capacity resources through the Reserve Capacity Mechanism is applied for the 2020 Capacity Cycle.

4. The Australian Energy Market Operator builds and tests new market and dispatch systems from 2020.
5. Western Power commences preparations for its fifth Access Arrangement under a constrained network access regime from 2021.
6. Constrained access 'go-live' on 1 October 2022 (to align with the commencement of the 2022 Capacity Year) with security-constrained economic dispatch.

An important milestone in the implementation of constrained access is the establishment of revised regulatory and market arrangements in 2020. This is necessary to enable certified capacity resources to be allocated capacity credits in 2020 under a new process that accounts for the impact of constrained access, for delivery in the 2022 Capacity Year. The revised regulatory and market arrangements are also needed to enable the Australian Energy Market Operator to commence implementing a new security-constrained dispatch engine from 2020, providing a two year period for market readiness. Western Power's preparations for its fifth Access Arrangement can also proceed on the basis of a constrained network access regime.

A 2022 'go-live' date for constrained access presents several issues. At this stage, it is not clear whether the Generator Interim Access solution will enable the connection of new generation beyond the plant that has already been committed under it.<sup>3</sup> This could mean that barriers to new generation connections persist until 2022. Furthermore, generators applying for Certified Reserve Capacity under the 2020 Capacity Cycle are required to demonstrate their ability to access the network, usually through an agreed Electricity Transfer Access Contract with Western Power. Some interim measures may be needed as a new model Electricity Transfer Access Contract that is consistent with a constrained network access regime will only be approved by the Economic Regulation Authority as part of Western Power's fifth Access Arrangement.

Question 2: Are there other issues associated with the implementation timeline, including the proposed 'go-live' date of 1 October 2022?

### 1.3.3 Other reforms to market and network arrangements

Reforms to the Wholesale Electricity Market arrangements described in this paper centre on the adoption of a security-constrained market design. Previous electricity market reviews have identified other complementary reforms to improve the effectiveness of the Wholesale Electricity Market.<sup>4</sup> These reforms, such as a common later gate closure and ex-ante pricing, should reduce risks, improve decision-making, and lead to improved market outcomes. Other reforms are required to ensure that consumers are not paying too much for supply reliability.

Consultation on these elements of reform is anticipated to commence from mid to late 2018 once the Public Utilities Office and the Australian Energy Market Operator have completed preliminary investigations and developed scopes of work.

<sup>3</sup> The Generator Interim Access (GIA) solution was recently developed to facilitate new generation connections on a constrained basis. It is not scalable and was intended as a short term solution. Generators that are connected under the GIA tool will be migrated across to the new security-constrained dispatch engine as part of the implementation of constrained access, and the GIA tool will be decommissioned.

<sup>4</sup> See the *Final Report: Design Recommendations for Wholesale Energy and Ancillary Service Market Reforms, July 2016*



The opportunity also exists to examine other improvements to the regulatory framework to reflect best practice developments in network regulation. The framework in Western Australia has not kept pace with an evolving energy landscape driven by rapid advancements in technology, particularly the increase of distributed generation, storage and the plethora of associated emerging 'energy services'. Improvements to the regulatory framework are required to enable Western Power to make network investment decisions that ensure customers only pay for investments that support the effective delivery of network services at the lowest possible cost. Changes to generator use of system pricing arrangements may also be required to reflect the underlying philosophy of a constrained network access regime. The Public Utilities Office will consult with industry on these reforms in more detail later in 2018.

A list of other reforms to market and network arrangements that are currently being considered can be found in Appendix A.

## **1.4 Power system security and reliability**

The South West Interconnected System is on the cusp of fundamental change driven by changing consumer behaviour and increasing amounts of transmission connected renewable generation that have displaced, and that will continue to displace, older coal plants.

The power system security and reliability framework (which is spread across several instruments) needs urgent review to address inconsistencies within the framework and to cater for the impact of renewable technologies on power system operation. This work will be progressed by the Public Utilities Office, the Australian Energy Market Operator, and Western Power in consultation with industry. This is expected to commence later in 2018.

Other improvements to the framework may also be necessary to ensure that the connection of new generation and the resultant increase in congestion do not compromise system security, supply reliability or efficient market outcomes.

## **1.5 Out of scope**

The implementation of constrained access will occur through amendments to the local regulatory and market arrangements, rather than the adoption of the National Electricity Law that drove many of the previous reform proposals.

Accordingly, several major reforms previously associated with the implementation of constrained access do not form part of this reform process (although there may be merit in considering them for the future). These include the transfer of responsibility for retail market operations to the Australian Energy Market Operator, the adoption of competitive metering arrangements and modifications to the distributor-retailer-customer contractual relationships (to create a tripartite arrangement).

## 2. Network connection and access arrangements

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### 2.1 Background

Western Power has a range of existing network access contracts with different parties that are governed through two separate access regimes. The terms and conditions of these contracts are diverse and some rely on legacy legislation for their interpretation and continuation.

Network Access Arrangements are access contracts made under the first access regime and were established under *the Electricity Transmission and Distribution Systems (Access) Act 1994* (ETDSA), *Electricity Transmission Regulations (1996)* and *Electricity Distribution Regulations (1996)*. These access contracts were grandfathered on the commencement of Western Power's second access regime on 1 July 2007, allowing Western Power to administer access to its network under Network Access Arrangements as a discrete access regime that runs in parallel to the current access regime. The original intent was that the ETDSA would apply on a transitional basis only until such time as Network Access Agreements were transitioned to the current access regime; however, no transitions (with the exception of Synergy) occurred and the ETDSA continues to apply "transitionally" until the present day.

Electricity Transfer and Access Contracts (ETACs) are network access contracts made under the current access regime. These contracts are made under Access Arrangements that are established under the *Electricity Industry Act (2004)* and the *Electricity Networks Access Code (2004)* (Access Code). The Access Arrangement enables access to Western Power's network via the terms of an ETAC. A pro forma ETAC is approved by the Economic Regulation Authority as part of approving Western Power's Access Arrangements under the Access Code. Actual ETACs between Western Power and its network users generally follow the form of that model ETAC, with variations according to the outcome of negotiations between counterparties in specific cases.

In this paper, ETACs and Network Access Agreements are collectively referred to as "network access contracts", or simply "access contracts".

In some cases, network access contracts are coupled with a technical agreement (Connection Contract) between Western Power and the end (network) user directly. These Connection Contracts are typically formed where there is a bespoke arrangement with the network user, requiring the network user to perform certain actions in response to specific (non-standard) network conditions.

The current access regime is also defined by several other documents:

- Instruments required under the Access Code, including the Applications and Queuing Policy, the Contributions Policy and the Transfer and Relocation Policy, that describe the general requirements for connecting to the network;
- The Technical Rules approved by the Economic Regulation Authority, that describes the technical requirements for connecting to the network and the criteria that governs how Western Power plans and designs its network;
- Supplementary documents related to any interfaces between the Access Code and other regulatory instruments including, but not limited to, the Wholesale Electricity Market Rules and the Metering Code.

### 2.1.1 Current situation

In general, unconstrained network access results from a contractual commitment by Western Power to provide a generator with network access up to an agreed capacity at all times when the system is operating in a “normal operating state” as defined in the Planning Criteria within Western Power’s Technical Rules. As a result, network augmentation may be required prior to new generators connecting to the network to maintain unconstrained capacity and to ensure Western Power continues to meet its contractual obligations.

Historically, some generators have been able to connect to Western Power’s network on an unconstrained basis with minimal contribution to the cost of network augmentation, utilising spare capacity made available because of Western Power’s investment in its network to meet increasing demand requirements. As demand growth slowed and moderated over the last decade so did the need to augment the network, eroding the ability of the network to accommodate additional generation on an unconstrained basis without significant and costly network augmentation.

Generators seeking to connect to the network over the last decade have generally not been prepared to fund the cost of augmentations needed to maintain unconstrained access. Instead, several workarounds have been developed to enable new generators to connect to the network without funding expensive capital contributions, where generators have agreed to have their maximum permissible output constrained:

- On a post-contingent basis, where their output is automatically turned down or ‘runback’ if nominated trigger events occur, in order to avoid over-loading the network.
- On a pre-contingent basis, where network conditions are assessed at the time of dispatch and the generator’s output is capped, if necessary, to avoid breaching network limits before a contingency event occurs, utilising a Network Control Service under the Generator Interim Access solution (which is expected to ‘go-live’ in mid-2018).

Opportunities to connect generation using runback arrangements have now been exhausted as the complexity of managing and prioritising these independently operated arrangements has increased. The Generator Interim Access solution itself has several shortcomings which creates limitations on the amount of new generation that can be connected under it. A longer term solution that provides affordable connection to the network without compromising efficient market outcomes is required.

## 2.2 Outline of reforms

In a constrained network access regime, generating units participating in the wholesale market do not have any guaranteed rights to network access and their output can be constrained-off by market dispatch processes at any time in order to maintain power system security, irrespective of what transmission network elements are in service. A constrained network access regime will allow new generation to connect to the network without the need to preserve the existing firm access rights of incumbent generators.

### *Managing existing firm access rights*

To create a level playing field, network access contracts that have terms and conditions that are inconsistent with constrained network access will need to be subordinate to, and / or overridden, to the extent necessary to be consistent with a constrained network access regime.

### *Consequential changes to the connections and access framework*

Consequential changes to various instruments under the connections and access framework may also be required, including the Applications and Queuing Policy, the Transfer and Relocation Policy, and Technical Rules, to clarify the operation of these instruments under a constrained network access regime.

### *Transitional assistance*

It is foreseeable that the modification of contractual commitments may lead to adverse consequences for some incumbent generators that have made investments on the basis of the existing policy and regulatory framework.

To inform a Government decision on required transitional arrangements to implement constrained access, which may include the provision of transitional assistance, the Public Utilities Office is investigating the impacts on generators of adopting a framework for constrained access, supported by electricity market modelling that quantifies potential changes and trends to generator dispatch outcomes and revenue projections.<sup>5</sup>

The Public Utilities Office intends on establishing a legislative head of power to provide for a mechanism to deliver transitional assistance. This paper seeks feedback on the considerations that influence the design of an appropriate mechanism – detailed consultation on the design of the mechanism will be undertaken subject to a Government decision on required transitional arrangements.

### *Contractual certainty and limiting exposure to Western Power*

The reforms must avoid putting Western Power or its counterparties in an untenable position under network access contracts. More specifically:

- Western Power and its counterparties must have sufficient certainty as to the operation and effect of network access contracts; and
- The reforms must also ensure that Western Power is not exposed to liability from claims as a result of the transition to a constrained network access regime, including (most significantly) but not limited to, any claims for loss associated with a purported failure of a contractual commitment by Western Power to provide firm access.

## **2.3 Managing existing generation firm access rights**

The wide range of existing network access contracts presents some challenges in developing a one-size-fits-all approach to managing contractual provisions that are inconsistent with a constrained network access regime.

### **2.3.1 Guiding principles**

To assist in the selection of an appropriate approach, a set of guiding principles have been identified:

- The approach establishes the regulatory and market arrangements for constrained access by 2020 to allow implementation activities to commence.

<sup>5</sup> The modelling exercise is being undertaken through a separate consultation process.

- The way that inconsistent contractual provisions are managed provides sufficient certainty to Western Power and generators.
- Regulatory intervention in private contractual rights will be limited to the extent necessary to achieve a constrained network access regime.
- The approach should minimise administrative burden and cost.

Question 3: Are there other principles that should be considered?

### 2.3.2 Options for managing inconsistent contractual provisions

It is clear that some, if not many or most, network access contracts grant, or are perceived to grant, access rights to Western Power's network that could be considered to be inconsistent with a constrained network access regime. For example, access contracts based on Western Power's model Electricity Transfer Access Contract are likely to contain a provision requiring Western Power to provide an entry service at a connection point "up to" a maximum contracted capacity.<sup>6</sup> Whatever the actual legal effect of terms using this type of language,<sup>7</sup> the Public Utilities Office understands it has generally come to be interpreted and understood by parties to network access contracts as conferring a right of firm access.

As the exact terms and conditions negotiated between Western Power and a generator are a private contractual matter subject to commercial-in-confidence, the extent of inconsistency may vary from contract to contract.

Without an extensive and relatively detailed (and hence intrusive) review into the specific contractual arrangements between Western Power and its customers, it will be difficult to identify all the terms and conditions that could be considered inconsistent with a constrained network access regime. In addition, the meaning and effect of specific terms and conditions are matters on which only a judicial court could rule with finality.

Two general options have been identified to manage the transition of existing network access contracts to an unconstrained regime.

1. The first option is to intervene through legislation to override and / or modify terms and conditions in network access contracts that are inconsistent with a constrained network access regime.
2. The second option is to allow parties to renegotiate the terms and conditions of their network access contracts, or to negotiate a new access contract, so that it is consistent with a constrained network access regime.

Some form of protection for Western Power (from exposure to claims of the kind described above) would be applied under either option.

The first option would likely consist of a broad and general legislative intervention intended to address the variety of specific contractual terms and conditions that could be considered inconsistent with a constrained network access regime, such that terms and conditions are

<sup>6</sup> See clause 3.1(a) of the model Electricity Transfer Access Contract

<sup>7</sup> These contractual provisions have not, as far as Government is aware, been considered by a judicial court such that arguments to the effect that this language does not in fact confer any rights of firm access could be tested.

modified, rendered unenforceable or otherwise made ineffective to the extent that they are inconsistent with constrained access.<sup>8</sup>

A possible shortcoming with this option is the risk that it may not provide sufficient certainty to Western Power and generators, as there may be potential for debate about which terms are considered to be inconsistent with a constrained access regime. Furthermore, while some terms are clearly inconsistent with a constrained access regime and be captured by the legislative provision, the impact of overriding these terms on the operation of other terms and conditions within the contract, and on the contract as a whole, is more difficult to foresee.

Under the second option, relying on parties to renegotiate the terms and conditions specific to their network access contracts (where these are inconsistent with a constrained network access regime) is preferable as it minimises Government intervention in private contractual rights and will better cater for the specific circumstances of individual network access contracts.

The difficulty with this option is that there is no certainty that the negotiation process would result in resolution of all issues in a timely manner. There is a risk that parties could strategically use the need to renegotiate the contract as a means to avoid terms and conditions they consider unfavourable, even where these are unrelated to the implementation of a constrained network access regime. This approach would also create a high level of administrative burden and cost for all parties, particularly Western Power which will have to deal with multiple parties at the same time, during a period when other market reforms to implement a constrained network access regime are progressing.

The experience of the intended, but largely ineffectual, transition from the first access regime under the ETDSA to the current access regime under the Code and ETACs demonstrates the difficulties associated with placing the burden entirely on parties to network access contracts in the expectation that relevant terms and conditions can simply be renegotiated.

Question 4:

- (a) Are there other options (including variations of each option above) that could better meet the guiding principles?
- (b) Are there other advantages and disadvantages of each option (including other alternatives) that should be considered?

### 2.3.3 The proposed approach

Based on the principles identified in section 2.3.1, the Public Utilities Office considers that the better option to manage the transition of network access contracts is with a legislated intervention that broadly and generally overrides contractual provisions in network access contracts that are inconsistent with a constrained network access regime.

<sup>8</sup> An example of an “unenforceable” type approach was used on the introduction of prohibitions on anti-competitive contractual provisions in the *Competition and Consumer Act 2010 (Cth)* – previously the *Trade Practices Act 1974 (Cth)*. See sections 4D and 45(1).



This would mean that any provisions in network access contracts that grant, or that purport to grant, a firm access right to entry services will be subordinated to the operation of market dispatch or otherwise overridden.

Legislation may also be drafted to prescribe, as far as practicable, how constrained network access is intended to apply and operate for Western Power's network. For example, such provisions could include:

- A requirement that access to Western Power's network must only be provided on a constrained basis (and is taken to be provided on that basis for any existing users of the network).
- A prohibition on Western Power offering, or being required to offer unconstrained access to its network, or give priority on the basis of a right, or purported right, to unconstrained access.
- A restriction on generators' ability to export electricity into the network to the generator's full capacity where network constraints arise.
- A restriction on generators to transfer and/or relocate network access capacity between different connection points.
- A subordination of rights to transfer electricity into Western Power's network to the operation of (constraint optimised) dispatch in the Wholesale Electricity Market.

Question 5:

- (a) Does this approach best meet the guiding principles?
- (b) Are there other approaches that should be considered?
- (c) Are there other legislative provisions should be considered?
- (d) What consequences could arise from the proposed approach (including the impact on specific arrangements such as bilateral trading agreements)?

If this approach is ultimately adopted, the Public Utilities Office will consult further with industry on the specific provisions as part of the drafting process.

## 2.4 Consequential changes to the connections and access framework

The current framework governing connections and access to the Western Power network does not appear to prevent the connection of generators on a constrained basis. The framework allows Western Power to provide connection on a constrained basis via a non-reference service, whilst still meeting the necessary technical requirements.

A review of supporting instruments such as the Applications and Queuing Policy, the Transfer and Relocation Policy and the Technical Rules will be undertaken to ensure that the connections and access framework is consistent with a constrained network access regime, and to ensure that the system standards and Planning Criteria provide an appropriate planning and operational framework that reflects a constrained network access regime.

Industry consultation on these changes will occur from mid to late 2018.

## 2.5 Mechanism to provide transitional assistance

The operation of a constrained network access regime will affect generator dispatch in different ways. When congestion occurs, some generators may be ‘constrained-on’ and others ‘constrained-off’ to alleviate network constraints. Generators that are ‘constrained-on’ will be dispatched out of merit and may be required to supply into the market at a price lower than its offer price. Generators that are ‘constrained-off’ will be dispatched at a quantity less than what they were willing to supply at an offer price. Generators are compensated in both circumstances under existing Wholesale Electricity Market arrangements.

At a minimum, generators that are ‘constrained-on’ will continue to be made whole using the existing Wholesale Electricity Market constrained-on mechanism (with appropriate modifications as outlined in section 3.2.6). This is because the reserve capacity obligations do not permit generators to withdraw from the market when they are constrained-on (or they could otherwise suffer a financial penalty for doing so).

A decision to continue compensating generators for being constrained-off will be subject to the outcomes of a separate consultation process to estimate the impact of constrained access on generators’ physical dispatch and the consequential financial implications resulting from the transition to a constrained access regime. The consultation process will inform a Government decision on required transitional arrangements to implement constrained access, including the need for transitional assistance.

If transitional assistance for generators is required, it will be time-limited and will require a delivery mechanism that is capable of quantifying the value of assistance to be provided to affected generators during the transitional period. This paper seeks feedback on the considerations that influence the design of an appropriate mechanism – detailed consultation on the design of the mechanism will be undertaken subject to a Government decision on required transitional arrangements.

### 2.5.1 Design considerations

The Public Utilities Office has identified the following considerations that influence the selection of a mechanism to provide transitional assistance:

- Generator financial losses can be identified and directly attributed to the introduction of constrained access.
- Generator financial losses can be quantified reasonably accurately, using an open and transparent process.
- Administrative costs are kept to a minimum and the mechanism is simple to implement and operate.

Question 6: Are there other considerations that should influence the design of a mechanism to provide transitional assistance?

### 2.5.2 Types of financial losses that should be considered

Types of losses that may be incurred vary from a reduction in wholesale market revenue to losses associated with an inability to use contracted fuel supply due to restrictive ‘take or pay’ arrangements. Some types of losses would be difficult to identify and to quantify and would need to be assessed on a case-by-case basis, requiring access to confidential and

commercially sensitive information and adding significantly to administrative burden and cost. Other types of losses could be estimated reasonably accurately through an open and transparent process, in some cases by adapting existing systems and processes in the Wholesale Electricity Market.

Following a review of the types of losses a generator might incur as a result of the transition to a constrained access regime, the Public Utilities Office considers that the following types of losses can be attributed to constrained access and quantified using an open and transparent process:

- Wholesale market revenue loss as a direct impact of being constrained-off with the resulting outcome of settlement being less financially attractive. This is quantifiable either in real time by market systems or alternatively estimated as part of forward looking market modelling scenarios.
- Large scale renewable energy Generation Certificate (LGC) revenue loss when an eligible renewable generator is curtailed. Depending on the specific contractual arrangements, the generator could be exposed to a loss of LGC related revenue in addition to any wholesale market revenue losses. The amount of large scale renewable generation constrained is quantifiable either in real time by market systems or alternatively estimated as part of forward looking market modelling scenarios using an assumed LGC price trajectory.

A reduction in capacity credit payments is also likely if network constraints limit export ability under peak demand conditions. A separate consultation process is underway to establish a new approach to allocate capacity credits to certified capacity resources to account for the impact of constrained access.

Capital contributions made by generators towards the shared network can be reasonably identified and attributed to constrained access, but would require access to commercially sensitive information regarding individual capital contributions made by generators. This information is not readily available and would not be quantifiable using open and transparent processes. A separate method to establish the current value of these contributions would therefore be required. This is discussed further in section 2.5.6.

While other types of losses can be attributed to constrained access, developing a mechanism that can quantify the amount in an open and transparent process with reasonable accuracy is likely to be complicated and impractical. The remaining discussion on potential transitional assistance mechanisms is limited to the capability of the mechanism to cater for losses with respect to wholesale market revenues and lower LGC revenue.

Question 7: Are there other types of financial losses that should be considered? Why?

### 2.5.3 Design options

Transitional assistance can be provided either through a market-based solution or an administrative solution.

1. A market-based solution is one where the Australian Energy Market Operator uses its existing data and information technology systems (with modifications where necessary) to identify and quantify the financial loss, and to provide the transitional assistance to the generator through existing market systems (potentially funded by the market).

2. An administrative solution to the valuation of assistance is one which requires the collection of detailed information external to Wholesale Electricity Market processes to quantify the level of assistance. The provision of transitional assistance could be done through existing market systems (potentially funded by the market), or as a refund to the generator (funded from the State Government).

Question 8: Are there other options that could be utilised to provide transitional assistance?

#### 2.5.4 Preferred approach

The Public Utilities Office considers that a market-based solution is a preferable approach. Existing market-based systems and processes for making constrained-on and off payments can be leveraged (with some modification) to quantify the value of assistance in a near real-time approach. This approach minimises administrative costs and should better reflect actual market conditions. Payments could be made and recovered through the settlement process.

An administrative solution would rely on forward looking market simulation models rather than using real time operational dispatch processes. Market simulation models are resource intensive (and therefore expensive), rely on forecast data, and are unlikely to adequately cater for the complexity in market interactions that might occur in real time, such as the interaction between network constraints and ancillary services, and dynamic bidding behaviours. This would reduce the accuracy of calculating assistance.

Question 9: Is a market solution preferable to an administrative solution?

#### 2.5.5 How the mechanism will be established

The Public Utilities Office intends to create a legislative head of power to provide for the establishment of the mechanism to deliver transitional assistance. At a minimum, the types of losses that can be subject to transitional assistance, and the period of transitional assistance, is likely to be contained within regulation to provide certainty. The detail of the mechanism will be contained within the Wholesale Electricity Market Rules and in the Australian Energy Market Operator's procedures.

#### 2.5.6 Treatment of capital contributions

Some existing generators have made capital contributions under Western Power's Contribution Policy for transmission assets required to provide unconstrained access. Without transitional arrangements to accommodate past contributions, the implementation of constrained access may result in a transfer of the benefits arising from these assets to other existing or new generators.

Capital contributions are complex and potentially go back several decades (the useful life of some transmission assets). Contributions may have been made to achieve unconstrained access (deep network / capacity augmentation) or only in relation to the works to connect the generator to the network (for example, no deep network augmentation required or connection via a runback scheme).

Western Power's Contribution Policy has also changed over time. It is understood that prior to 1999 loads and generators were effectively required to pay the full cost of the works to connect. Western Power subsequently implemented a policy to refund all capital contributions made prior to 1999 via a mechanism of reduced network tariffs.

There may be difficulty in locating accurate records to determine compensation amounts and would require access to commercially sensitive information regarding individual capital contributions made by generators.

Question 10:

- (a) Under what conditions should a refund be made available to a transmission connected generator who has paid a capital contribution to augment the shared network?
- (b) How should the refund be paid to the generator who qualifies for a refund, and who should pay for the refund?

## 2.6 Providing Western Power with statutory immunity

As described in section 2.2, the potential for Western Power to be exposed to claims arising as a result of a purported failure to provide firm access (or other contractual commitment) following the introduction of constrained access will be addressed as part of the reforms.

As a matter of principle, it might be said that if the terms and conditions in network access agreements that are inconsistent with the constrained access reforms were made to be unenforceable then the need to confer an immunity on Western Power does not arise. Given, however, the variety in the terms and conditions across Western Power's portfolio of network access contracts that may be inconsistent with constrained access, as well as the potential for disagreement between Western Power and its counterparties on questions of inconsistency, the Public Utilities Office considers that a legislated "unenforceable" mechanism (or similar) may not, of itself, deliver the necessary level of certainty in eliminating Western Power's exposure.

It is for this reason that a legislated immunity is seen as a necessary part of the reforms and will be applied in addition to other measures taken to transition network access contracts to a constrained access environment.

In legislating an immunity for Western Power, however, the Public Utilities Office is mindful of the potential for overreach and conferring some greater level of protection than that warranted. The scope of the immunity is intended to be determined in conjunction with consideration of the scope of the legislated intervention described in option 1 above (see section: **Error! Reference source not found.**). The Public Utilities Office will consult further with industry on the specific provisions as part of the drafting process.

## 3. Wholesale Electricity Market arrangements

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This section describes the reforms to the Wholesale Electricity Market arrangements that the Public Utilities Office considers essential to support and deliver the benefits of a constrained network access regime.

### 3.1 Background

Proposed changes to the design of the Wholesale Electricity Market and existing systems and processes were outlined in the *Final Report: Design Recommendations for Wholesale Energy and Ancillary Service Market Reforms, July 2016* (the 2016 Final Report)<sup>9</sup>, following an extensive consultation process with stakeholders. The purpose of the 2016 Final Report was to describe a set of reforms to improve the efficiency and transparency of the energy and ancillary service markets in the South West Interconnected System. One of the primary reasons for these reforms was to harmonise existing market operations and processes with the reform to adopt the National Electricity Law that would have resulted in the introduction of a constrained network access regime.

The current reform process seeks to implement a constrained network access regime under the local regulatory framework rather than through the adoption of the national framework. Nevertheless, many of the reforms in the 2016 Final Report are still considered necessary not only to support and deliver the benefits of a constrained network access regime, but to also improve the operation of the market and to ensure that system security is maintained as the management of the power system becomes increasingly complex.

### 3.2 Outline of essential reforms

The current design of the Wholesale Electricity Market and existing systems and processes are premised on an unconstrained market design and are unsuitable for a constrained network access regime. The key reform required to support and deliver the benefits of a constrained network access regime is the adoption of a security-constrained market design, with several other essential reforms to the Wholesale Electricity Market flowing from the new market design.

#### 3.2.1 Adoption of a security-constrained market design

In a constrained network access regime, generating units do not have any guaranteed rights to network access and their output can be constrained-on or off by market dispatch processes at any time in order to maintain power system security.

The current Wholesale Electricity Market arrangements do not fully support this outcome as the dispatch systems currently used by the Australian Energy Market Operator do not automatically account for network limitations, with manual intervention required to dispatch generators 'out-of-merit' to alleviate network constraints.<sup>10</sup> This is becoming unsustainable as the connection of new generators (particularly in areas that are most attractive for renewable generation investment) will increase the frequency and materiality of congestion even when all network transmission elements are in service.

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<sup>9</sup> The paper can be found on the Department of Treasury's website, at <http://www.treasury.wa.gov.au/Public-Utilities-Office/Industry-reform/Wholesale-Electricity-Market-Improvements/>

<sup>10</sup> The Generator Interim Access (GIA) solution does provide for the physical limitations of the power system to be accounted for in pre-dispatch market processes, but only for the dispatch of generators that connected under the GIA solution.



The adoption of a security-constrained market design will mean that the physical limitations of the power system will be accounted for in pre-dispatch market processes, and the output of any generator may be constrained at any time (including during system normal conditions) to maintain power system security. This will require a more sophisticated market clearing engine that can integrate generation, demand and network data ahead of and in real-time, to determine the least cost dispatch for each interval while accounting for the physical limitations of the network.

The new central dispatch engine will require input information regarding network power transfer limits on the network. While the design of an appropriate market clearing engine is the responsibility of the Australian Energy Market Operator (in consultation with industry), the Public Utilities Office has assumed that the dispatch engine will use constraint equations that are formulated according to the framework in the National Electricity Market. This assumption has been necessary to inform the modelling of generator financial implications resulting from the transition to a constrained network access regime.

This has important implications for the ideal location of the regional reference node, towards which constraint equations are 'oriented'.<sup>11</sup> Ideally, the regional reference node should be located at a major demand centre to provide appropriate marginal pricing outcomes and to allow constraints to be written in a way that reflects the ability of generation to access the load. Based on selection criteria provided by the Australian Energy Market Operator, the Public Utilities Office previously requested Western Power to identify an appropriate new regional reference node location. Western Power identified Southern Terminal (330kV busbar) as the most suitable to meet the criteria. On this basis, generator dispatch outcomes and financial implications will be modelled using Southern Terminal as the regional reference node.

The retention of a single reference node also, by extension, means a single energy price and a single ancillary service price for each ancillary service market (as opposed to locational pricing).

Question 11:

- (a) Are there other considerations that influence the choice of the dispatch engine?
- (b) Are transitional arrangements required to facilitate the relocation of the reference node?

### 3.2.2 Facility bidding for all market participants

A security-constrained market design requires information about where supply and demand are located on the network so that the market clearing engine can determine where a network limit could be exceeded and adjust dispatch outcomes for the market accordingly.

The Wholesale Electricity Market arrangements currently require all independent power producers to offer into the balancing market on a facility basis, but permits Synergy to offer on a portfolio basis. This means that Synergy's portfolio bid is for the sum of energy to be provided from all of Synergy's power stations; the bid does not specify where energy generated from the portfolio will be injected into the network.

<sup>11</sup> The Public Utilities Office previously consulted on the need for relocating the regional reference node – see the 2016 Final Report.

With Synergy's generation fleet comprising about half of the generation capacity of the Wholesale Electricity Market, permitting Synergy to bid its entire fleet on a portfolio basis would not achieve least cost outcomes under a security-constrained market design. It also leaves the Australian Energy Market Operator reliant on the experience of its operators and ad hoc information to decide which units should be dispatched to ensure compliance with network limits.

In a constrained network access environment, Synergy, like independent power producers, will be required to participate in the market on a facility basis. This means that generators will participate on an equal basis with all presenting information about their generation locations in the same way.

### 3.2.3 Co-optimisation of energy and ancillary services

The dispatch of energy and ancillary services will be subject to network constraints under a security-constrained market design. Scheduling of ancillary services has consequential impacts on energy dispatch (e.g. through adjustments to generator commitment or outputs). To achieve least cost outcomes, the dispatch of both energy and ancillary services must be co-optimised (i.e. dispatched simultaneously) particularly as the ability for a generator to provide ancillary services will be influenced by its current production level and the level of network capacity available at the time, which is dependent on the dispatch of all other facilities.

Co-optimisation of energy and ancillary services will allow both energy and ancillary service markets to be dispatched while accounting for network constraints that impact both markets, to achieve least cost outcomes. Co-optimisation allows generators to offer into the energy and multiple ancillary services markets and be indifferent to how their energy is used, such that the overall least-cost dispatch outcomes is achieved for energy and ancillary services concurrently (while preserving system security).

As part of the co-optimisation of energy and ancillary services, the Public Utilities Office will implement competitive markets for ancillary services and investigate possible changes to the composition of ancillary services to ensure they are fit-for-purpose to meet the specific requirements of the Wholesale Electricity Market. This will be informed by consultation with industry starting from early 2018.

### 3.2.4 5-minute dispatch

The ability for a market clearing engine to achieve least cost outcomes when dispatching generation in a security-constrained market environment is dependent on access to the most up-to-date available information about network capability, demand and generation at all times.

In the Wholesale Electricity Market, generation is currently dispatched in 30 minute cycles. The relatively long dispatch cycle will compromise the power system operator's ability to maintain system security, given that power system conditions change frequently (more so when the network is constrained). This may require the application of additional security margins to constraint equations to manage uncertainty between dispatch interval, which reduces the effective network capacity and increases cost by over constraining plant more than necessary.

Reducing the dispatch cycle from a 30 minute interval to five minute interval will improve the ability of the energy market to match supply to fluctuating demand, reduce reliance on ancillary services to compensate for forecast error, mitigate the fast ramping of generators, reduce

dispatch error, and should therefore lead to lower ancillary service costs. At more granular dispatch intervals the information available to inform dispatch is refreshed more often, allowing the market clearing engine to dispatch generation more efficiently to achieve least cost outcomes.

### **3.2.5 Participant registration requirements**

Registration requirements play an important role in a security-constrained market design, specifically in relation to the types of intermittent generators that should be subject to central dispatch processes to assist in managing power system security. Industry consultation on this matter will occur later in 2018.

No changes are proposed to the current threshold (10MW) over which generators are required to be registered and participate in central dispatch.

### **3.2.6 Constrained-on payments**

The current Wholesale Electricity Market constrained-on payment mechanism will be retained to ensure generators are made whole as a result of being constrained-on. This is because the reserve capacity obligations do not permit generators to withdraw from the market when they are constrained-on.

Some modifications to the current mechanism are required, as it was designed on the basis that it would be required infrequently and may under-compensate generators that are constrained-on for an extended period. Industry consultation on this matter will occur as detailed energy market dispatch processes are developed.

## **3.3 Allocation of certified reserve capacity**

The Public Utilities Office is undertaking a separate consultation process to develop a new approach for the Reserve Capacity Mechanism to allocate capacity credits to certified capacity resources to account for a constrained network.

The intent of the proposed approach is to not issue more capacity credits than the network can physically handle, accounting for forced outages. This means where a constraint is identified then the number of capacity credits to facilities behind the constraint is limited to the constrained amount. If there are multiple generators behind a constraint competing for the capacity, a method of allocating the available capacity credits is required.

Further information on this project, including a consultation paper, can be found on the Department of Treasury's website.

## 4. Consultation

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### 4.1 Consultation process

Consultation to inform the adoption of a framework for constrained access regime is occurring through three separate but complementary Papers that seek feedback on:

1. The proposed essential reforms to network and market arrangements to adopt a framework for constrained access, with a focus on Western Power's network connections and access framework (this Paper).
2. The methodology, data and assumptions that will be used to estimate the impact of constrained access on generators.
3. The proposed approach to allocate capacity credits to certified capacity resources through the Reserve Capacity Mechanism, in a constrained access environment.

An industry forum is proposed for early March 2018, where industry will have an opportunity to seek clarification and provide feedback on the reform proposals, prior to submitting formal written submissions.

The outcomes from the consultation process will inform advice to Government on implementation issues, the need for transitional arrangements for industry, and legislative requirements. A report outlining the outcomes of the consultation process will be published mid-2018.

Legislative drafting will commence from mid-2018. The Public Utilities Office intends on consulting with industry on the proposed legislative amendments prior to the legislation being submitted into Parliament later in 2018. In-depth industry consultation on changes to subsidiary and technical / operational instruments will commence around the same time.

Respondents should note that changes to the Wholesale Electricity Market arrangements are currently proposed to be informed through the consultation process associated with Wholesale Electricity Market rule changes. The Market Advisory Committee will be used as the primary forum for stakeholder engagement, but the Public Utilities Office is also considering other ways to ensure that all stakeholders are able to engage in and provide input on these reforms.

### 4.2 Invitation for submission

Respondents are invited to comment on the proposed reforms to implement the constrained network access model as outlined in this paper. Submissions need not be limited to those identified for comment throughout the paper.

Submissions are due by 5pm (WST) on **23 March 2018** and can be emailed to [PUOSubmissions@treasury.wa.gov.au](mailto:PUOSubmissions@treasury.wa.gov.au).

Submissions should have the following email subject line format:

*“Response to Consultation Paper: Improving access to the Western Power network – [Name of submitting company or individual]”*

The Public Utilities Office will consider applications to extend the due date for submissions. If a new due date is set, it will apply to all respondents. The Public Utilities Office will advise industry through the Department of Treasury's website and through email.

### *Publication of submissions*

Unless respondents request otherwise, submissions will be publicly available on the Department of Treasury's website.

Respondents should indicate clearly on the front of the submission if they require the Public Utilities Office to treat all or part of the submission as confidential. Contact information, other than the Respondent's name and organisation (where applicable) will not be published.

Note that requests may be made under the *Freedom of Information Act 1992 (WA)* for confidential submissions to be made available. Requests are determined in accordance with the provisions of that Act.

## Disclaimer

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## Appendix A : Medium to long-term reforms to market and network arrangements

This Appendix outlines several reform proposals that are not considered essential to implement a constrained network access regime, but which could be considered important improvements to the market and regulatory arrangements. These matters were identified as part of the Public Utilities Office’s investigations into the essential reforms for constrained access. This is not an exhaustive list, and the need to progress these proposals will be subject to further consultation with industry.

Proposed reform	Description
Introduce a common later gate closure.	Later gate closure allows market participants to make decisions closer to real time with the benefit of more accurate forecasts and up-to-date information of network conditions and the status of generation facilities.
Move to ex-ante pricing.	A move to ex-ante price determination would improve price certainty. Ex-ante prices are established by the dispatch engine consistent with the dispatch instructions issued by the system operator, immediately before a dispatch interval.
New governance arrangements for Technical Rules and the Applications and Queuing Policy.	Existing governance arrangements for the Technical Rules and the Applications and Queuing Policy limit the ability for these instruments to evolve according to changing market environments.
Establish a framework for performance standards for new and existing generators.	The Australian Energy Market Operator has limited visibility over the performance standards of generators. Providing greater visibility will assist in managing system security.
Improvements to the power system security and reliability framework.	Several shortcomings within the existing framework to accommodate a constrained network regime. For example, there is a lack of clarity in the Wholesale Electricity Market Rules that defines the ‘normal’, ‘high risk’ and ‘emergency’ operating states, which could create problems in managing responses to system events.
Improve compliance monitoring for generator performance.	Current arrangements provide limited flexibility for Western Power and the Australian Energy Market Operator to respond and/or report non-compliance and for the Economic Regulation Authority to take proportionate action.
Establish a framework that clarifies roles and responsibilities with respect to system planning.	Roles and responsibilities are poorly defined under current arrangements and there is a lack of responsibility about the information that must be published by the system planner to advise the market of existing and emerging network and non-network limitations, as well as potential opportunities for non-market ancillary services.

<p>Improvements to the investment justification framework for the network.</p>	<p>A review of the existing framework should be undertaken in light of the implementation of constrained access to address several matters, including:</p> <ul style="list-style-type: none"> <li>• Congestion is properly identified ahead of time.</li> <li>• Congestion is properly valued and where economic the network provider can build.</li> <li>• Ensuring that the Regulatory Test has appropriate costs and benefits that are clear and not ambiguous.</li> <li>• Consider changes to the investment threshold for the Regulatory Test, and perhaps applying the test to asset replacements.</li> </ul>
<p>Improve service standard benchmark incentives for the network.</p>	<p>Current arrangements provide limited incentives for Western Power to consider market implications when planning network outages.</p>
<p>Introduce network revenue and pricing principles.</p>	<p>The current framework does not explicitly encourage cost reflective tariffs, which are required to send appropriate price signals to customers.</p>
<p>Review generator use of system pricing arrangements.</p>	<p>Changes to pricing arrangements may be necessary to reflect the underlying philosophy of a constrained network access regime.</p>
<p>Remove regulatory barriers to emerging technology.</p>	<p>The regulatory framework has not kept pace with an evolving energy landscape driven by rapid advancements in associated emerging 'energy services'.</p>