



Meeting Agenda

Meeting Title:	Pilbara Advisory Committee (PAC)
Date:	Thursday 29 February 2024
Time:	9:30 AM – 11:00 AM
Location:	Online, via TEAMS.

Item	Item	Responsibility	Type	Duration
1	Welcome and Agenda	Chair	Noting	2 min
2	Meeting Apologies/Attendance	Chair	Noting	1 min
3	Competition Law Statement	Chair	Noting	1 min
4	Minutes			
	(a) Minutes of Meeting 2023_09_21	Chair	Noting – Already approved	1 min
5	Action Items	Chair	Noting	1 min
6	Evolution of the Pilbara Networks Rules (EPNR) Project	EPWA	Discussion	60 min
7	Concept Paper – Essential System Services Cost Allocation	ISOCO	Discussion	20 min
8	General Business	Chair	Discussion	2 min
	Next meeting: 9:30 AM, 18 April 2024			

Please note, this meeting will be recorded.

COMPETITION LAW OBLIGATIONS

Members of the Pilbara Advisory Committee (**Members**) note their obligations under the *Competition and Consumer Act 2010 (CCA)*.

If a Member has a concern regarding the competition law implications of any issue being discussed at any meeting, please bring the matter to the immediate attention of the Chairperson.

Part IV of the CCA (titled “Restrictive Trade Practices” contains several prohibitions (rules) targeting anti-competitive conduct. These include:

- (a) **cartel conduct.** Cartel conduct is an arrangement or understanding between competitors to fix prices; restrict the supply or acquisition of goods or services by parties to the arrangement; allocate customers or territories; and or rig bids, see s45AD and Division 1 of Part IV of the CCA more generally.
- (b) **concerted practices:** a concerted practice can be conceived of as involving cooperation between competitors which has the purpose, effect or likely effect of substantially lessening competition, in particular, sharing Competitively Sensitive Information with competitors such as future pricing intentions and this end:
 - a concerted practice, according to the ACCC, involves a lower threshold between parties than a contract arrangement or understanding; and accordingly,
 - a forum like the meetings of the MAC is capable being a place where such cooperation could occur.

See s45(1)(c), s45 of the CCA more generally, and [these](#) guidelines published by the ACCC.

- (c) **anti-competitive contracts, arrangements understandings:** Any contract, arrangement or understanding which has the purpose, effect or likely effect of substantially lessening competition, see section 45 of the CCA and Division 2 of Part IV of the CCA more generally.
- (d) **anti-competitive conduct (market power):** any conduct by a company with market power which has the purpose, effect or likely effect of substantially lessening competition, see s46 of the CCA.
- (e) **collective boycotts:** where a group of competitors agree not to acquire goods or services from, or not to supply goods or services to, a business with whom the group is negotiating, unless the business accepts the terms and conditions offered by the group, see Division 2 of Part IV of the CCA.

A contravention of the CCA could result in a significant fine (up to \$500,000 for individuals and more than \$10million for companies). Cartel conduct may also result in criminal sanctions, including gaol terms for individuals.

Sensitive Information means and includes:

- (a) commercially sensitive information belonging to a Member’s organisation or business (in this document such bodies are referred to as an **Industry Stakeholder**); and
- (b) information which, if disclosed, would breach an Industry Stakeholder’s obligations of confidence to third parties, be against laws or regulations (including competition laws), would waive legal

professional privilege, or cause unreasonable prejudice to the Coordinator of Energy or the State of Western Australia).

Guiding Principle – what not to discuss

In any circumstance in which Industry Stakeholders are or are likely to be in competition with one another a Member must not discuss or exchange with any of the other Members information that is not otherwise in the public domain about commercially sensitive matters,¹ including without limitation the following:

- (a) the rates or prices (including any discounts or rebates) for the goods produced or the services produced by the Industry Stakeholders that are paid by or offered to third parties;
- (b) the confidential details regarding a customer or supplier of an Industry Stakeholder;
- (c) any strategies employed by an Industry Stakeholder to further any business that is or is likely to be in competition with a business of another Industry Stakeholder, (including, without limitation, any strategy related to an Industry Stakeholder's approach to bilateral contracting or bidding in the energy or ancillary/essential system services markets);
- (d) the prices paid or offered to be paid (including any aspects of a transaction) by an Industry Stakeholder to acquire goods or services from third parties; and
- (e) the confidential particulars of a third party supplier of goods or services to an Industry Stakeholder, including any circumstances in which an Industry Stakeholder has refused to or would refuse to acquire goods or services from a third party supplier or class of third party supplier.

Compliance Procedures for Meetings

- If any of the matters listed above is raised for discussion, or information is sought to be exchanged in relation to the matter, the relevant Member must object to the matter being discussed. If, despite the objection, discussion of the relevant matter continues, then the relevant Member should advise the Chairperson and cease participation in the meeting/discussion and the relevant events must be recorded in the minutes for the meeting, including the time at which the relevant Member ceased to participate.



Minutes

Meeting Title:	Pilbara Advisory Committee (PAC)
Date:	21 September 2023
Time:	10:00am – 11:00am
Location:	Videoconference (Microsoft Teams)

Attendees	Class	Comment
Sally McMahon	Chair	
Jacinda Papps	Registered Network Service Provider (NSP)	
Sandy Morgan	Registered NSP	
Momcilo Andric	Registered NSP	
Rebecca White	Excluded NSP Representative	
Neil Midolo	Excluded NSP	
Analena Gilhome	Small-Use Consumer	
James Campbell- Everden	Independent System Operator (ISO)	
Noel Ryan	Observer appointed by the Minister	
Frances Hobday	ERA (Observer)	

Also in Attendance	From	Comment
Dora Guzeleva	PAC Secretariat	Observer
Thomas Marcinkowski	PAC Secretariat	Observer
Tonia Curby	PAC Secretariat	Observer
Tim Bray	PAC Secretariat	Presenter for Agenda Item 6

Apologies	From	Comment
Anne Taylor	Excluded NSP Representative	No apologies provided

Item	Subject	Action
1	Welcome	

Item	Subject	Action
	<p>The Chair opened the meeting with an Acknowledgement of Country and welcomed the PAC members.</p> <p>The Chair noted that the views or advice provided by the PAC to the Coordinator do not necessarily represent the views of the independent Chair.</p> <p>The Chair advised that the PAC meeting was being recorded for the purposes of developing the minutes.</p>	
2	<p>Meeting Apologies/Attendance</p> <p>The Chair noted the attendance and apologies as listed above.</p>	
3	<p>Competition Law Statement</p> <p>The Chair noted the Competition Law Statement and reminded members of their obligations under that statement and encouraged them to bring any Competition Law issues to her attention as they may arise.</p>	
4	<p>Minutes</p> <p>(a) Minutes of Meeting 2023_05_25</p> <p>The PAC noted the minutes of the 25 May 2023 PAC meeting. The PAC had approved those minutes previously.</p>	
5	<p>Action Items</p> <p>The closed action items were taken as read.</p>	
6	<p>Pilbara Industry Roundtable – Update to the PAC</p> <p>The Chair introduced the Pilbara Industry Roundtable (“Roundtable”) before inviting Mr Bray to open discussion on this item.</p> <p>Mr Bray briefly introduced himself and his involvement in the Pilbara Roundtable.</p> <p><u>Pilbara Industry Roundtable</u></p> <p>Mr Bray outlined that:</p> <ul style="list-style-type: none"> • The Roundtable was established in August 2022 and led by the Minister for Energy, who asked EPWA to facilitate a roundtable bringing relevant industry representatives and agencies together. • The Roundtable was set up in compliance with competition law requirements and with extensive consultation with a competition lawyer. • EPWA established a working group – the Pilbara Industry Liaison Committee - to support the Roundtable work. • The Minister highlighted that decarbonisation is a tremendous challenge on an unforeseen scale and addressing it would require a model different to what Pilbara now operates under. • Currently the Pilbara system is comprised of individual entities developing their own bespoke infrastructure. • In future, large amounts of capital and land, and unprecedented stakeholder engagement will be required in the Pilbara system. • It will be difficult to meet targets if stakeholders do not collaborate and coordinate. 	

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- There are already stakeholders who are keen to participate in developing a process to introduce a new, more coordinated system.
- At the first Roundtable meeting, participants agreed to focus on four workstreams to reach their first milestone. Those workstreams are:
 1. Pilbara electricity sector modelling,
 2. Regulatory Framework Review,
 3. Land Tenure and Access Review, and
 4. Social License.
- The Roundtable developed a series of Work Programs for each of its four workstreams.

Modelling Insights

Mr Bray outlined that:

- The Roundtable considered a demand modelling exercise under five scenarios.
- That process was based on the AEMO Integrated System Plan approach because consistency on demand scenarios would be very important in the future system.
- 2030 is a key date because it is a milestone in the decarbonisation targets industry had pledged for itself and made public.
- The model looked at solar proximity to loads. Existing parties can do this quickly and easily (and early) because it is within their own 'footprint'.
- That would allow the time to develop a plan in detail regarding transmission infrastructure with an aim to bringing that infrastructure online in the late 2020s.
- The model then drives connection to the very strong renewable resources to the south and east of the Pilbara.
- Wind is a key component to complement solar because of its overall capacity factors, as well as geographic diversity and its sheer quantity in the Pilbara in the relevant regions.
- With more variable renewable energy, more storage is needed to firm up capacity as renewable energy develops.
- Gas still plays a role in the modelling.
- Over the longer term a return to solar power is anticipated (which is really just an ongoing investment in solar rather than 'flipping a switch' to more solar).
- In AEMO's assumptions, in the late 2030s and 2040s solar becomes incredibly cheap, and that is why the modelling chooses it.
- All participants in the Roundtable fundamentally agreed about the mix of renewables.

Modelling the geospatial context

Mr Bray outlined that:

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- The Pilbara has pockets of stronger solar, but solar is quite ubiquitous across the Pilbara generally.
- There is little wind in the Pilbara but there are a few incredibly strong wind areas, which are very prospective as renewable generation hubs as they are relatively close to loads.
- The model encourages accessing wind to support the decarbonisation of existing loads but also, under central scenarios, load growth along the coast.
- The industrial areas in Onslow, Karratha and Port Hedland have a strong growth in demand for some modest renewable hydrogen projects and ultimately, in the more optimistic scenarios, industries such as green iron.
- Even under conservative scenarios, renewable energy from south and east of the Pilbara will be brought to the coast.
- The model does not seek to build any wind on the coast in cyclone zones because of the extra associated cost.

Grid configuration overview

Mr Bray outlined that:

- There are three scenarios of the transmission build-outs the model deems necessary.
- There is a large build-out of transmission in an increasingly interconnected system that includes looping in order to provide security, redundancy and free flow from source to use.
- The model favours building the same infrastructure under different scenarios.
- The three demand scenarios are quite conservative.
- There are questions around demand scenarios and assumptions, and how quickly infrastructure can be built.
- Significant investment is required to decarbonise existing and future growth in the Pilbara.
- Each scenario is likely to involve significant investment in transmission at a very large cost.
- The scale of development modelled is huge – for example, Scenario 2 ('Current Trajectories +') involves over \$100 billion of investment across generation, transmission and storage.

Regulatory framework review – background and purpose

Mr Bray outlined that:

- Mr Campbell-Everden played a key role in establishing the regulatory framework review guiding principles with the Minister.
- This follows the fairly recent development of a light-handed access regime in the Pilbara designed to facilitate third party access to designated network assets (codified under the PNAC).
- There is also the Pilbara ISOC which operates under the PNR.

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- Roundtable members recognised a light-handed access regime, while suitable for its original design purposes, is most likely not suitable for the Pilbara's future needs.
- The new system needs to be 'evolved' from the old system instead of 'flipping a switch' immediately, and just a few years after the first system started.

Regulatory framework review – principles

Mr Bray outlined that:

- The developed principles focus on rules supporting interconnected and common use future transmission infrastructure in future.
- While participants wanted common use infrastructure and interconnection, they wanted to see if the current rules would support that.
- An evolution approach would keep costs proportionate.
- Trying to undertake too many new projects too early could undermine the desired outcomes of common use and interconnection.

Reform Features

Mr Bray stated that the reform features can be divided into three parts, and described each of them:

1. Security and Reliability –
 - If existing and new participants are to agree to a common user infrastructure approach, they need to be satisfied that security and reliability objectives will be met.
 - Mining companies invest heavily in their own infrastructure because supply security is critical. They are unlikely to embrace a new system if it is not at least as effective as their current system.
2. Commercial –
 - Users should bear their own costs and minimise subsidisation.
 - the scope and timeframes of any subsidisation to secure a more free-flowing system must be clear.
 - No participant should receive an advantage in what is a fairly competitive industry.
3. Multi-user asset investment certainty –
 - Multiple parties will be investing and building infrastructure, not just Horizon Power.
 - Users/investors must be able to recover a reasonable rate of return without compromising other reform features, particularly security and reliability.

Security and Reliability

Mr Bray outlined that:

- There was good exploration in the Roundtable of what were legitimate reform options deserving further investigation, and their relative pros and cons.

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- There was discussion that Harmonized Technical Rules (HTR) Evolution was a proponent-led process and should remain so.
- There should be a steering committee to provide efficiency regarding the manner and order things are moved through the process.
- The ultimate decision maker is still the Coordinator, but the process is streamlined and is still funded by industry as the ultimate beneficiaries of changes to HTR.

The Chair asked how the standing committee would interact with the PAC, as the PAC was responsible for the PNR and also HTR.

Mr Bray said that, rather than having multiple individual proponents, the steering committee would gather proposals that feed into the normal process. This does not fetter the role the PAC would otherwise play.

Mr Bray stated that in this reform there are opportunities and efficiencies gained from a committee helping to reach conclusions on items that would come to the PAC and the order they should come in.

Ms Morgan suggested that EPWA should lead with the next phase of the transition by proposing rule changes to come to the PAC, rather than organising a separate standing committee.

Ms Morgan stated that there are multiple standing committees and working groups talking about the Pilbara, which need to be controlled in a good manner so they do not become unwieldy.

Mr Bray responded that it is not the role of EPWA to lead the identification of issues.

Mr Bray stated that the role of the Coordinator is in making decisions based on a process that ultimately supports the Coordinator in doing that. He added that:

- Rather than the Coordinator deciding what to look at, the steering committee would gather stakeholders' priority areas.
- Unlike the normal process of an individual entity pursuing an outcome (eg through a rule change proposal), in this reform multiple entities share an interest in a change.
- Stakeholders must come together to share the costs and workload and come up with a proposal.
- The separate, higher order reform would be led by EPWA.

Commercial (Energy/Settlement)

Mr Bray outlined that:

- The options developed for this part of the reform are a good example of the evolutionary approach as opposed to 'flicking a switch' (as represented by, for example, a full net pool market).
- The Roundtable explored desirable outcomes in each stage of the energy transition, recognising the likely continued dominance of bilateral trading but with a market-based element to support that approach.
- The Roundtable considered a structured approach of when the market evolves, as and when that is justified; a trigger rather than an immediate consideration.

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Multiuser Network Assets

Mr Bray outlined that:

- There is a combination of options the Roundtable sees as desirable outcomes in terms of optimal transmission investment and clarity for potential investors in transmission.
- The Roundtable has completed some modelling, but that needs to be improved to keep giving an overall view of what the optimal transmission system is over time.
- The aim is to support that kind of modelling on an annual basis, at least, to begin with.

Mr Bray stated, regarding clarity for the new transmission investment, providing guidance on the use of NFIT, and introducing a mechanism to provide reasonable return to investors in transmission infrastructure:

- There is a degree of complexity here and a lot that is still unknown.
- The Roundtable will move into a testing phase including more involved conversations with stakeholders and developing commercial models.

The Chair asked Mr Bray to move the discussion on to Next Steps given the limited remaining time.

Next steps

Mr Bray outlined that:

- There was an announcement of the Roundtable outcomes made by the Minister.
- That announcement created momentum for closing discussions with the Commonwealth and securing the \$3 billion for decarbonisation projects announced by the Prime Minister in late August.
- What is now needed is government approval and funding for the next pieces of work.
- There is more to do, particularly regarding:
 - improved land tenure and guidance (approval is being sought for that through Cabinet and ERC),
 - establishing renewable generation hubs, and
 - capacity building for First Nations people.
- Those projects expand on the outcomes of the Roundtable.
- They indicate government understands it has role to play in facilitating good outcomes in supporting planning, not just waiting for participants to self-organise.
- Government has shown it is willing to contribute financially to:
 - the activation of renewable generation hubs, and
 - the way in which it supports environmental assessments and heritage assessments, and engagement across those two areas with stakeholders.

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- Hopefully such initiatives will streamline a pathway towards investment in renewable generation and transmission.

The Chair invited questions or comments from members.

Mr Andric commented on the immense cost and scale of this development:

- It involves 3000km to 4000km of transmission lines, 500KV at approximately \$7 million per kilometer, which is almost \$30 billion.
- Terminal substations will cost at least another \$50 million.
- New storage, solar and wind will need to be built and it is an extraordinary effort.

Mr Campbell-Everden stated that the ISO:

- has been involved throughout this process.
- Is very supportive of the high-level issues and features.
- Is looking forward to working through the options in more detail and understanding the trigger events.

Mr Campbell-Everden said that there are obligations on the ISO from a resourcing and capability point of view in delivering these outcomes.

Mr Campbell-Everden said that undertaking this work now with a good amount of lead-time is important to being able to implement these reforms.

7 **Schedule of 2024 meetings**

The Chair introduced the 2024 PAC meeting schedule, stating that:

- meetings are every 8-10 weeks from February and avoid public and school holidays, and
- PAC meetings are scheduled to take account of when MAC and GAB meetings are scheduled.

Ms Morgan said that she could not attend on the June date but would email the Coordinator to reschedule.

Ms Guzeleva said she would discuss the matter further with Ms Morgan.

The Chair suggested that if Ms Morgan was unable to attend a meeting and the date could not be changed, Ms Morgan could send a proxy.

8 **General Business**

Chair noted that there was no other business.

The Chair noted that the next meeting will be held at 9:30am on Thursday 16 November 2023.

The Chair encouraged participants to contact Ms Guzeleva or the Chair if they wanted to add items to the agenda for the next meeting.

The Chair closed the meeting.

The meeting closed at 11:00am.



Agenda Item 5: PAC Action Items

Pilbara Advisory Committee (**PAC**) Meeting 2024_02_29

Shaded	Shaded action items are actions that have been completed since the last PAC meeting. Updates from last PAC meeting provided for information in RED .			
Unshaded	Unshaded action items are still being progressed.			
Missing	Action items missing in sequence have been completed from previous meetings and subsequently removed from log.			
Item	Action	Responsibility	Meeting Arising	Status
-	(There are currently no outstanding action items.)	-	-	-



Agenda Item 6: EPNR Project

Pilbara Advisory Committee (PAC) Meeting 2024_02_29

1. Purpose

- To provide PAC with an overview of the Coordinator of Energy's Scope of Work for an Evolution of the Pilbara Networks Rules (EPNR) Project.
- To request that the PAC approves:
 - the establishment of the EPNR Working Group (EPNRWG); and
 - the Terms of Reference (TOR) for the EPNR Project.

2. Recommendation

That the PAC:

- (1) approves the establishment of the EPNRWG; and
- (2) considers and approves the TOR for the EPNRWG (Attachment 2).

3. Process

- In August 2022, the Minister for Energy established the Pilbara Industry Roundtable (Roundtable) to consult with a number of stakeholder representatives in the Pilbara electricity system.
- In July 2023, a Roundtable communique was published which outlined consensus among participants that:
 - new common use electricity infrastructure has an important role to play in supporting increased levels of renewable energy and decarbonisation in the Pilbara; and
 - there is support for the Pilbara electricity regulatory regime to evolve to support the energy transition.
- Energy Policy WA (EPWA) has developed a Scope of Work for the EPNR Project to further the regulatory work program foreshadowed in the Roundtable process and the Coordinator of Energy has approved the Scope of Work (Attachment 1).
 - EPWA intends to engage a consultant to assist with the delivery of this project.
- Clause A2.3.1 of the Rules provide that the PAC may provide advice to the Coordinator concerning the evolution of the PNR.
 - Energy Policy WA considers that the technical nature of this review would benefit from the establishment of a dedicated PAC Working Group (EPNRWG) to provide input into and feedback on key deliverables of the EPNR Project.
- Energy Policy WA has developed draft Terms of Reference for the EPNRWG (Attachment 2).

- The Terms of Reference outline two workstreams - the first is a general workstream to support the EPNR Project, while the second will focus on the parallel development of the Harmonised Technical Rules (HTR).
- The early focus of the HTR workstream will be to develop a work program, identifying and prioritising existing gaps in, and issues with, the HTR and report back to the PAC.

4. Next Steps

- Following approval by the PAC of the Terms of Reference:
 - the PAC Secretariat will establish the EPNRWG;
 - an EPNRWG webpage will be created on the Coordinator's Website;
 - the PAC Secretariat will advise stakeholders that they may nominate representatives on the EPNRWG;
 - Rules Participants and other interested stakeholders may nominate a person for membership on the EPNRWG for approval by the EPNRWG Chair; and
 - An inaugural EPNRWG meeting will be convened as early as practicable.

5. Attachments

(1) Agenda Item 6 - Attachment 1 - Scope of Work for the EPNR Project

(2) Agenda Item 6 - Attachment 2 - Draft Terms of Reference for the EPNRWG



Government of Western Australia
Department of Mines, Industry Regulation and Safety
Energy Policy WA

Evolution of Pilbara Network Rules Project

Scope of Works

December 2023

Working together for a **brighter** energy future.

An appropriate citation for this paper is: Evolution of PNR (EPNR) Project Scope

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1. Introduction

The Pilbara region is, and will remain, a significant driver of the State's economic and export performance. The significant private sector investment in electricity infrastructure in the region is expected to escalate as the system transitions to accommodate decarbonisation, electrification and new industries (such as renewable hydrogen or downstream processing). Historically, the unique context of Pilbara, and the commercial drivers of the resource sector, has led to largely disparate or weakly interconnected transmission systems to maintain a secure and reliable electricity supply for large mining operations.

Transitioning to a low carbon future may require the Pilbara electricity system to evolve from a system with vertically integrated entities providing their own electricity supply to a system of greater interconnection and shared assets. This will necessitate improved levels of coordination between participants, with assistance from Government, to ensure that decarbonisation goals are met while supporting efficient development of current and future industries, to optimise economic opportunities for Western Australia.

Following the conclusion of the Pilbara Industry Roundtable (Roundtable) process in August 2023, the Western Australia Government has endorsed a Pilbara Energy Transition Plan (PETP) to continue the work program and consensus goals which participants published in the [Roundtable Communiqué](#).

The current Pilbara Network Rules (PNR) were designed around a power system that is based predominantly on dispatchable thermal generation comprised of gas turbines. Decarbonisation efforts will see a radical change in the types of technologies that are available to supply electricity as well as various system support services. In particular, increased levels of intermittent generators like wind and solar will require firming from storage facilities over time as fossil fuel generation gradually retires. It is also likely that the technical rules will need to be adapted to reflect these technology changes.

The purpose of this project is for Energy Policy WA (EPWA) to work closely with stakeholders to identify and implement any changes necessary to evolve the Pilbara Network Rules (PNR) to ensure they enable and support efficient decarbonisation of the Pilbara electricity system, including any changes in the way system support services are provided.

This project will build on work completed to date, particularly the Roundtable Regulatory Evolution workstream outputs.

EPWA proposes that this project be delivered in four stages:

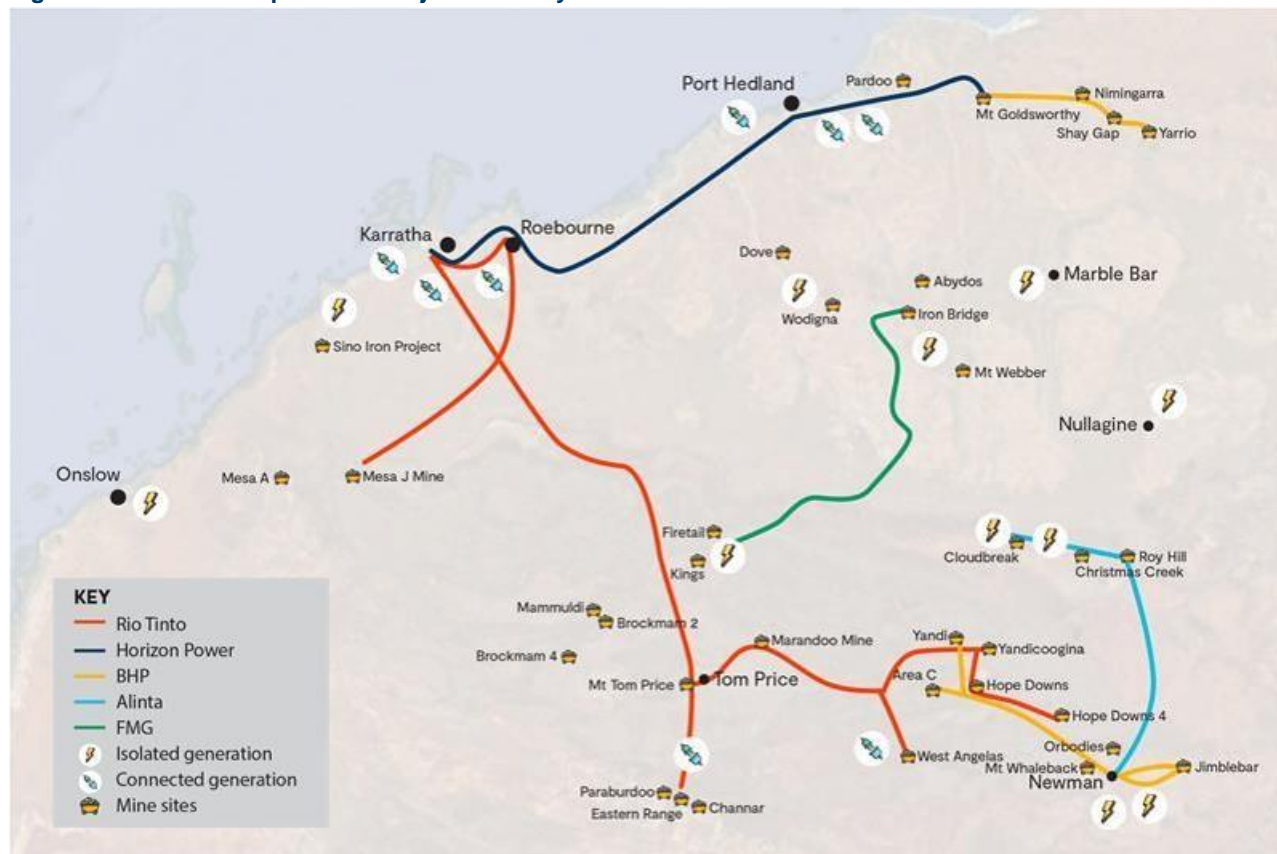
- Stage 1 – Establishment of a new Pilbara Advisory Committee (PAC) working group to support this project;
- Stage 2 – Scenario development and modelling to establish the likely trajectories that meet the decarbonisation goals for the Pilbara;
- Stage 3 – Assessment of the effectiveness and efficiency of the existing PNR against the Pilbara objectives, the decarbonisation goals for the Pilbara, and the trajectory and modelling outputs of Stage 2; and
- Stage 4 – Implementation plan for any necessary changes to the PNR to continue to meet the Pilbara objectives in the context of the decarbonisation goals for the Pilbara.

2. Background and work undertaken to date

2.1 The electricity sector in the Pilbara

The electricity system in the Pilbara comprises five transmission systems (at two transmission voltages - 132kV and 220kV), owned by five organisations, approximately 2,200 megawatts (MW) of installed capacity and a number of stand-alone power systems serving islanded mine sites. The map below shows the existing infrastructure in the region.

Figure 1. Illustrative depiction of major electricity networks in the Pilbara



Source: Horizon Power

2.2 Pilbara electricity reform (2017-2021)

On 9 August 2017, the then Minister for Energy (Hon Ben Wyatt MLA) announced that the State Government would design a fit for purpose regulatory scheme for Pilbara's North West Interconnected System (NWIS). In parallel to the Pilbara electricity reforms, Horizon Power's coastal network was declared a covered network under the Electricity Networks Access Code 2004 by the former Minister for Energy on 2 February 2018. Alinta's Port Hedland network became a covered network as of 1 July 2021.

On 1 July 2021, the regulatory framework for the Pilbara electricity system commenced. The regulatory framework was established under Part 8A of the *Electricity Industry Act 2004* (Industry Act) and includes:

- a light-handed access regime to facilitate third party access to designated electricity network assets in the Pilbara, which is codified in the Pilbara Networks Access Code (PNAC); and
- an independent system operator (Pilbara ISOC), which operates under the PNR.

The PNR govern the operation, management, security, and reliability of the Pilbara system, as well as the functions of the Pilbara ISOCO. The rules cover governance, essential system services, planning, and reporting. They also include harmonised technical rules that define the technical performance requirements of the power system and the responsibilities of network service providers in maintaining transmission and distribution systems to meet these requirements.

A high-level overview of the Pilbara electricity system regulatory framework is provided in **Appendix A**.

2.3 Pilbara Industry Roundtable

In recognition of the challenges and opportunities for decarbonisation in the Pilbara, the Minister for Energy established the Pilbara Industry Roundtable in August 2022. The Roundtable was established to discuss future electricity infrastructure needs in the Pilbara region, and to explore the opportunities and challenges of common use infrastructure to support increased renewable energy production.

The Roundtable progressed four priority workstreams, including:

- modelling of the Pilbara electricity system to identify future demand and supply scenarios;
- review of the electricity regulatory framework to identify any changes required to facilitate efficient decarbonisation and increased common use transmission infrastructure;
- review of land tenure and access pathways to examine whether existing pathways are a barrier to decarbonisation goals, and identify opportunities for improvement; and
- consideration of social licence issues, with a particular focus on First Nations people.

The Roundtable work program reached its conclusion in July 2023, with the outcomes publicly communicated through a Ministerial media statement on 1 August 2023 and the publication of a [Roundtable Communiqué](#). Importantly, Roundtable members reached agreement that new common use infrastructure has an important role to play in the decarbonisation efforts in the Pilbara. Roundtable members also agreed to a future work program, arising from the four priority workstreams that has been captured in the PETP.

2.4 Roundtable – regulatory evolution workstream

Currently, the Pilbara is dominated by vertically integrated participants, who operate their own power systems and supply their own loads using their own generation. As higher levels of renewables are connected to the system, this model may need to adapt and evolve.

As part of the Roundtable's regulatory evolution workstream, a high-level regulatory framework review was undertaken to identify any regulatory changes to the Pilbara electricity system regulatory framework required to facilitate efficient decarbonisation of the region.

From this basis, a high-level consideration of potential reform options and a proposed reform program was developed, organised into three categories: security and reliability, commercial (energy and exchange and settlement) and multi-user asset investment certainty. An expanded summary of the Roundtable regulatory evolution workstream is available in **Appendix B**.

The Roundtable process culminated in a commitment from participants to support the proposed regulatory evolution plan and agree to participate in the process of implementing further reforms as required.

The outputs of this workstream and Roundtable commitment will inform the starting point of this PNR Project.

3. Scope

Following the Roundtable process, further work is required to establish governance mechanisms that can effectively progress the policy design which would ensure the PNR remains fit for purpose to support the energy transition.

3.1 Scope clarifications

The PNR project scope is limited to:

- the PNR, and its enabling legislation and regulations to the extent changes are necessary to facilitate the evolution of the PNR; and
- the Harmonised Technical Rules (HTR), which are included in Appendix 5 of the PNR, to ensure, as a priority, that they are fit for purpose for renewables and storage developments, and to ensure the HTR evolve in parallel with any changes to the PNR.

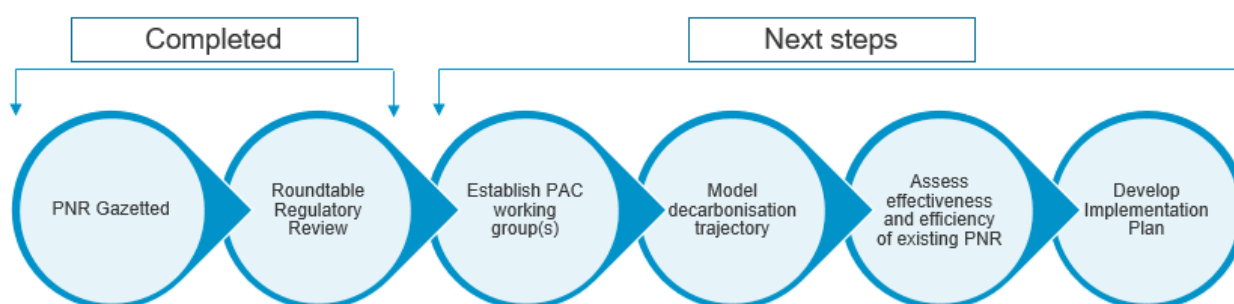
For avoidance of doubt, the PNAC is out-of-scope for this project.

3.2 Staged delivery

Energy Policy WA proposes that this project is delivered in four stages (see Figure 2 for visualisation):

- Stage 1 – Establishment of a new Pilbara Advisory Committee (PAC) working group to support this project;
- Stage 2 – Scenario development and modelling to establish a trajectory that meets the decarbonisation goals for the Pilbara;
- Stage 3 – Assessment of the effectiveness and efficiency of the existing PNR against the Pilbara objectives, the decarbonisation goals for the Pilbara, and the trajectory and modelling outputs of Stage 2; and
- Stage 4 – Implementation plan for any necessary reforms to the PNR to continue to meet the Pilbara objectives in the context of the decarbonisation goals for the Pilbara.

Figure 1: Work completed and next steps



At a high level:

- The objective of Stage 1 is to establish governance mechanisms to support the analysis and development necessary to complete the scope of this project.
- The objective of Stage 2 is to, with the support of the PAC and its working groups, develop scenarios and undertake modelling to establish a trajectory or trajectories that meet(s) the Pilbara decarbonisation goals.

- The objective of Stage 3 is to complete a comprehensive review of the PNR to identify existing or future development needs in the context of the outcomes of Stage 2.
- The objective of Stage 4 is to ensure that any evolution needs emerging as a result of Stages 2 and 3 are captured in a comprehensive Implementation Plan.

3.2.1 Stage 1 overview - establishment

Stage 1 will establish a governance framework and working structure that support effective delivery of this project. In line with the Government's approach to the Roundtable process, evolution of the PNR will involve close work with key stakeholders. To this end, EPWA expects that the PAC will play a pivotal role in facilitating stakeholder input, providing technical advice, and leveraging participant experience and insights. Given the breadth of the PNR, it is likely at least two PAC working groups will be required, one to support PNR development (generally) and a second, more technical group focused on parallel development of the HTR.

3.2.2 Stage 2 overview – scenario development and modelling

Stage 2, with the support of the PAC and its working groups, will develop and model a small number of scenarios to establish a trajectory or trajectories that meet(s) Pilbara decarbonisation goals. This activity is expected to provide typical techno-economic intermittent generation and storage development scenarios (e.g. no integration vs partial integration vs full integration).

The modelling activity will provide information to allow a 'stress test' of the existing PNR at varying levels of renewable energy and storage under these scenarios at relevant points of time (i.e. 2030, 2040, and 2050). It is expected that the focus of the PAC and its working group(s) will be on scenario development (for example, providing input to 'sensible' demand forecast(s) to ensure that the modelling outcomes provide a basis to assess and evaluate required evolution of the PNR (Stage 3).

The modelling work would leverage recent modelling work completed by EPWA, to support the Sectorial Emissions Reduction Strategies and the Pilbara Roundtable process.

3.2.3 Stage 3 overview – assessment of PNR

Stage 3 will involve a review of the PNR to identify existing and future developmental needs required to support the outcomes of stage 2.

The review of the PNR, with the support of the PAC and its working groups, will be undertaken with appropriate analysis and evidence.

This stage will include:

- A comprehensive assessment of the PNR (including HTR) to identify issues and gaps (existing and future);
- detailed analysis to identify and evaluate suitable reform options; and
- identification of a 'PNR evolution glide path'.

3.2.4 Stage 4 overview – implementation plan

Stage 4 of this project will develop the PNR evolution glide path into an actionable implementation plan. Specifically, the implementation plan will:

- provide a detailed explanation of the PNR evolution stages (including issue being addressed, options considered, and rationale for each stage / initiative); and
- an outline of actions required to implement the staged evolution including timing, governance, resourcing, and milestones.

EPWA understands that a number of the Pilbara stakeholders are currently assessing renewable resources investment decisions. To facilitate these investment decisions, they need certainty around how the PNR and the HTR would evolve.

Therefore, EPWA considers that the PNR evolution should be undertaken in a number of tranches. The first tranche would include 'low-hanging fruit' changes that do not need legislation change but are needed for early investment decisions. Amongst other things these could include:

- changes to the HTR to ensure that they are fit for purpose for the integration of renewables and storage; and
- changes to Chapter 8 of the PNR - procurement and cost allocation of ESS, to ensure this is fit for purpose for rapid penetration of renewables and storage.

4. Stakeholder consultation

Successful completion of this project will require extensive collaboration, with all key stakeholders, particularly Network Service Providers, key users and the Pilbara ISOC who are responsible for the operation and maintenance of security and reliability in the Pilbara electricity system. While the PAC and its working groups will be the main forums for the engagement of key stakeholders and rule participants, public consultation will also be undertaken.

4.1 PAC and proposed Working Group(s)

Under the PNR, the Coordinator of Energy (supported by EPWA), has a function to consider and, in consultation with the PAC, progress the evolution and development of the regime under Part 8A of the Act and the PNR.

EPWA proposes that a dedicated PAC working group is formed to support this project. The PAC and the PAC Working Group(s) will be integral to the delivery of this project, with input required into each project stage (see Table 1).

Table 1: PAC Working Group inputs

Stage	Examples of PAC and PACWG input
Stage 1	<ul style="list-style-type: none">• Agreement on PAC role in this project.• Endorsement of Terms of Reference (and resourcing of) two PAC working groups – PNR general and separate HTR specific group.
Stage 2	<ul style="list-style-type: none">• Actively participate in discussions on scenario development and modelling approach.• Where applicable, actively support the provision of data and information to inform modelling activities.
Stage 3	<ul style="list-style-type: none">• Inform, review and contribute to the comprehensive assessment of the PNR.• Actively participate in discussions and provide input into the review of the PNR and develop proposals, including by:<ul style="list-style-type: none">- identifying aspects of the PNR that will require further development;- developing proposals for change, and providing feedback on the suitability and feasibility of design proposals developed by EPWA ;- identifying impact of proposals on business and operational costs;- providing input on any staging/sequencing and transitional arrangements required; and- providing input on appropriate governance arrangements.
Stage 4	<ul style="list-style-type: none">• Develop a PNR evolution glide path.

The [PAC meeting schedule for 2024](#), commences with a 22 February 2024 meeting. It is proposed that the PAC approves the creation and the Terms of Reference for the Working Group(s) at this meeting.

The PAC Working Group will require members with suitable technical skills and Pilbara specific knowledge to actively contribute to the work program. It is expected that this group will meet at least monthly, with more frequent meetings as required.

It is expected that this group will prepare analysis and other materials. There will be a heavy reliance on analysis and discussions in this group at each stage of the project to understand issues, draw conclusions and develop proposals.

The Working Group will report back to the PAC on its progress at each PAC meeting.

5. Project schedule

The project schedule is detailed in Table 2 below.

Table 2: Project Schedule

Tasks/Milestones	Timing
Stage 1 – Project establishment	
Internal approval of scope of works	December 2023
Engage a consultant(s) to assist with the review	Late January 2024
Request that the PAC approves the Terms of Reference for the PACWG(s)	February 2024
Call expressions of interest for PACWG membership	February 2024
PACWG kick-off meeting(s)	Mid-March 2024
Stage 2 – Scenario development and modelling	
Agree modelling approach / methodology	March 2024
Scenario development	March – April 2024
Modelling activity and results / trajectory(s)	April – May 2024
Stage 2 – Assessment of PNR	
Assessment and analysis of PNR against Stage 2 outcomes	May – August 2024
Development of proposals for PNR evolution	August – November 2024
Development of PNR evolution glide path	November 2024
Update PAC (multiple)	20 June, 29 August and 7 November 2024
Stage 4 – Implementation Plan	
Draft Implementation Plan	December 2024
Final Implementation Plan	February 2025

Appendix A. Outline of Pilbara networks rules

- The Minister establishes the Pilbara Networks Rules (PNR) under section 6 of the Pilbara Regulations and the PNR comprises:
- Chapter 1 (Introductory): which provides for the commencement of the PNR, includes definitions, expands on the meaning of certain key concepts, and defines the parties bound by the PNR;
- Chapter 2 (Governance): which outlines the functions and powers of the Pilbara Independent System Operator (ISO), the mechanism for the ISO to delegate those functions where required, including the delegation of its real-time functions to Horizon Power, and makes explicit the Minister's emergency powers;
- Chapter 3 (Instruments): which empowers the Pilbara Harmonised Technical Rules (HTR) and their application to Pilbara networks and relevant connected facilities (participants), as well as providing frameworks for the development of those procedures and protocols that are required for the operation of the North West Interconnected System (NWIS) and exemptions from various codes;
- Chapter 4 (Administration): which names the Pilbara ISOC as the Pilbara ISO, outlines the obligations on participants to register and provide information that is required for the ISO to perform its functions, and the ISO's responsibilities to ensure its operating and communication systems are secure;
- Chapter 5 (Measurement): which makes explicit that the Electricity Industry (Metering) Code 2021 applies to the covered Pilbara networks (unless an exemption is granted), permits metering data to be provided to the ISO, and stipulates that Network Service Providers must determine loss factors;
- Chapter 6 (Generation adequacy): which ensures that the power system has sufficient installed generating capacity to meet peak demand in as low-cost manner as possible, noting that the NWIS does not have a capacity mechanism and requires participants to manage their own capacity margins;
- Chapter 7 (System operations): which confers obligations on participants to operate their infrastructure in a manner that will maintain system security and reliability and enables the Pilbara ISO to intervene and perform its functions where the system is not being appropriately managed or maintained;
- Chapter 8 (Essential system services, balancing and settlement): which provides for essential system services (frequency control and spinning reserve) to be procured by the Pilbara ISO in order to maintain the power system in a secure state, as well as describing the energy balancing and settlement regime which enables participants to be paid for providing, or pay for receiving, electricity;
- Chapter 9 (Network matters): which provides constraint rules and grandfathering provisions to enable new participants to access covered Pilbara networks in a manner that protects existing participants from sovereign risk;
- Chapter 10 (Planning and reporting): which outlines the Pilbara ISO's role in providing credible, independent information across a range of timeframes to assist in the efficient investment in, and development of, energy infrastructure in the Pilbara, and the ISO's responsibility for developing reports to improve visibility and understanding of current and potential future assets in the NWIS, including:
 - a transmission development plan which forecasts a range of credible scenarios for electricity supply and demand in the covered Pilbara networks; and
 - a generation statement of opportunity (Pilbara GenSOO), which identifies possible efficient investment opportunities in new or existing generation facilities;
- Chapter 11 (Information): which governs how the Pilbara ISO must publish information, including provisions for the protection of confidential information where required;

- Chapter 12 (Compliance, enforcement and review): which prescribes that the Pilbara ISO monitor the behaviour of those bound by the PNR (including itself) to ensure compliance with the PNR, and outlines the role of the Economic Regulation Authority and the Electricity Review Board where required to investigate and resolve rules disputes between the ISO and other parties;
- Chapter 13 (Disputes): which outlines the process by which dispute resolution occurs in the Pilbara, including the role of the arbitrator;
- Chapter 14 (Miscellaneous): which provides for consultation, monitoring of the regime's effectiveness and transition;
- Appendix 1 (Standard and expedited consultation processes): which outlines the processes by which a decision maker must consult, when consultation is required;
- Appendix 2 (Rule and procedure change): which provides the mechanism for rule changes, and determines the role of the Coordinator of Energy to administer the rules and consider rule change requests;
 - The role of the Coordinator of Energy (Coordinator) in the rule change process is aligned with the rule change process in the Wholesale Electricity Market Rules.
 - Under the Electricity Industry (Pilbara Networks) Regulations 2021, the Minister for Energy also has a transitional power to make rules for the first two years of the regime. This is in addition to the Coordinator's rule change function and the Minister's ongoing ability to repeal and replace the rules at any time.
- Appendix 3 (Legacy arrangements for harmonised technical rules): which describes the grandfathering arrangements for technical compliance to the HTR;
- Appendix 4 (Transitional Rules): which provides the transitional rules which apply until the PNR fully commence; and
- Appendix 5 – (Pilbara Harmonised Technical Rules): published separately

Appendix B. Workstream 2: Regulatory framework review

B.1 Purpose of workstream

Currently, the Pilbara is dominated by vertically integrated participants, who are able to operate their own power systems and supply their own loads using their own generation facilities. As higher levels of renewables are connected to the system, this model will move towards one with more common user infrastructure.

The regulatory framework review was undertaken to identify any regulatory changes to the Pilbara electricity system regulatory framework required to facilitate efficient decarbonisation of the region. The review included development of an Evolution Plan to outline a proposed regulatory reform pathway.

B.2 Current situation

The existing regulatory framework in the Pilbara electricity system commenced on 1 July 2021, and was established under Part 8A of the *Electricity Industry Act 2004*. The framework includes:

- a light-handed access regime to facilitate third party access to designated electricity network assets in the Pilbara, codified in the Pilbara Networks Access Code (PNAC); and
- an independent system operator (Pilbara ISOCO), which operates under the Pilbara Network Rules (PNR) which include the Harmonised Technical Rules (HTR).

This framework was established largely on the basis of facilitating third party access, and did not contemplate the system changes required in future to accommodate increasing levels of renewables.

B.3 Drivers and intent of reform

To guide the identification and development of options to be included in the Evolution Plan, consideration was given to legislated Electricity Objectives, key externalities and principles that recognise the needs of the Pilbara stakeholders. A vision statement was developed to provide a summary of the long-term outcomes the review must facilitate.

B.3.1 Objectives and externalities

The legislated Electricity Objectives inform policy positions in any regulatory review process. The relevant electricity objective for the Pilbara is currently in transition from the Pilbara Electricity Objective to being unified under the State Electricity Objective. Due to the transition state, both objectives have been considered in this review.

The key externalities that will drive a step change in the demands on electricity reform in the Pilbara have been identified as

- increased renewables in the generation mix on the North West Interconnected System (NWIS);
- step increase in electricity transfers (electrification); and
- learnings from the Wholesale Electricity Market (WEM)/National Electricity Market (NEM) and PNR in managing the energy transition.

B.3.2 Principles to support the evolution plan

Most of the Pilbara stakeholders can operate their own independent power systems and will only look to an interconnected system if they perceive a clear case to reduce cost and maintain security while gaining efficient access to increased firmed capacity. The following principles recognise the needs of the stakeholders in the Pilbara wholesale electricity sector and have been used to guide the development of options for inclusion in the Evolution Plan:

- interconnection of power systems is a means to reducing cost for a required level of power system security and green supply;

- participants make the decision to interconnect based on their understanding of cost impacts and security to their business (i.e. regulation should inform and facilitate private sector led investment);
- reform should reduce barriers and provide information for participants to drive increased interconnection where it results in efficient investment and operation;
- leverage lessons learned from other markets;
- recognise the unique nature of the NWIS / Pilbara compared to other systems; and
- restrict regulation overhaul where possible (i.e. planned and structured evolution).

B.3.3 Vision statement

There will be a rapid transition to net zero emissions by 2050 as increased intermittent generation is connected to the NWIS and participants seek to decarbonise existing operations (i.e. electrification). To ensure a smooth transition, the regulations should support such rapid transition by ensuring:

- *Pilbara participants are not hindered in rapidly seeking to meet their clean energy targets;*
- *existing assets are efficiently used and future investments are optimised;*
- *security and reliability are maintained (i.e. the lights stay on); and*
- *Traditional Owners are empowered to inform and be involved in the transition (maximise the value of land use, and minimise land and cultural impacts).*

B.4 Reform features and options

The role of regulation in responding to the externalities, consistent with the vision and the principles, is to reduce the barriers to Pilbara stakeholders using multi-user electricity assets of scale. The regulatory review identified three key barriers (reform features) to the development and use of common use infrastructure for industry in the Pilbara, being:

- security and reliability: as integration and renewable energy penetration increase, the mechanisms used to ensure security of electricity supply are less within the control of individual entities and instead become shared responsibilities across all participants;
- commercial (energy exchange and settlement): the purchase of electricity from different parts of the network with quality renewable resources (rather than own-source generation) increases, meaning new financial mechanisms must be put in place to support increasing levels of energy transfer; and
- multi-user asset investment certainty: investors in these multi-user assets must be able to recover a return from the parties that benefit from the asset in a predictable fashion that supports investment decisions.

The existing mechanisms (status quo) underpinning these reform features were reviewed in the relevant Pilbara legislative instruments, being the PNR, HTR and PNAC.

Alternative options to the status quo were established as potential reform options for consideration in the Regulatory Evolution Plan. The options to be progressed are summarised in Tables 1 and 2.

B.5 Regulatory evolution plan

The first tranche of reforms will involve detailed assessment and consultation on the following options to determine suitability and, if suitable, the timing of implementation (likely to be within the first 18 months). The options for consideration in this first tranche are summarised in Table 1.

Table 1: Summary of options for consideration in first tranche of Regulatory Review

Security and Reliability	Commercial	Multi-user network assets
<ul style="list-style-type: none"> Establish standing committee to proactively make HTR changes. Improve role definition and establish process for connecting Network Service Provider and data provision to ISO. Increase ISO Essential System Services (ESS) procurement flexibility. Replace definition of capacity with WEM certified capacity calculation mechanism. 	<ul style="list-style-type: none"> More dynamic exchange of energy: <ul style="list-style-type: none"> Top up and spill; or Centralised balancing energy dispatch. Strengthen causer / user pays: <ul style="list-style-type: none"> ESS (Regulation) reserve; and Contingency reserve; and ISO cost recovery mechanisms. 	<ul style="list-style-type: none"> Determine optimal transmission investment: <ul style="list-style-type: none"> Periodically updated by central body; or NSP establish combined forward plan framework. Increased clarity for new transmission investment: <ul style="list-style-type: none"> Increased regulatory preapproval (including pricing) to be considered (moving closer to traditional regulation); and Solution for efficient provision of transmission solutions across multiple network owners to be explored.

Options that require further detailed analysis, or are not required at this time, have been allocated a trigger event that will trigger a program of works to explore and implement regulatory reforms as summarised below in Table 2.

Table 2: Summary of options for consideration following trigger event

Option	Trigger Event
Introduce Centralised Capacity Market (WEM)	Should participants be unable to procure sufficient generation certificates from existing parties, even though sufficient generation exists, a market can be established.
Automate constraint implementation	If in implementing the Constraint Rules, the ISO or its control desk identify limitations in the PNR, this can be a trigger event for a Rule change.
Establish Net Pool Market (WEM at Inception) or Establish Gross Pool Market (NEM / WEM Balancing).	The Regulatory Evolution Plan will undertake modelling in the first year and periodically after that to determine if the pool market creates a net benefit for the Pilbara. When and if this modelling demonstrates a net benefit, this will be the trigger to commence the design and implementation of a centrally organised energy market.

B.6 Roundtable commitment

Support proposed regulatory evolution plan pathway and agree to participate in the process to implement further reforms as required.

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Terms of Reference

Evolution of the Pilbara Network Rules Working Group

29 February 2024

1. Background

The Pilbara Networks Rules (Rules) govern the operation, management, security and reliability of the Pilbara Networks. The current Rules are designed for a power system dominated by vertically integrated participants and predominantly for dispatchable thermal generation.

Following the conclusion of the Pilbara Industry Roundtable (Roundtable) in August 2023, participants published a [Roundtable Communiqué](#) outlining consensus among participants that:

- new common use electricity infrastructure has an important role to play in supporting increased levels of renewable energy and decarbonisation in the Pilbara; and
- there is support for the Pilbara electricity regulatory regime to evolve to support the energy transition.

Subsequently, the Coordinator of Energy has approved a Scope of Works (presented to the PAC at its 29 February 2024 meeting) for an Evolution of the Pilbara Networks Rules (EPNR) Project. At this meeting, the PAC approved the PAC Secretariat forming the EPNR Working Group (EPNRWG) to support the delivery of this project.

2. Scope of the EPNRWG

The EPNRWG is convened under clauses A2.3.17(a) and A2.3.1 to:

- support the PAC in providing the PAC advice to the Coordinator on the EPNR and to support Energy Policy WA's delivery of the EPNR Project; and
- consider the evolution and development of the HTR.

The EPNRWG Chair will update the PAC on the work of the EPNRWG at each of the PAC meetings. The PAC will provide advice to the Coordinator based upon the work, analysis and recommendations of the EPNRWG.

Accordingly, the EPNRWG will structure its work program around two distinct workstreams:

- EPNR Project Delivery ('Workstream 1'); and
- Evolution and Development of the HTR ('Workstream 2').

Typically, each meeting of the EPNRWG will be dedicated to a single workstream.

3. Membership

The EPNRWG will be chaired by Energy Policy WA (Chair).

Rules Participants and other interested stakeholders may nominate a person for membership on the EPNRWG for approval by the Chair.

The EPNRWG will comprise Rules Participant representatives and other interested persons. The 'other interested persons' may include PAC members or stakeholders who are

appropriately qualified technical experts as referred to under clause A2.3.17A. There are no restrictions on the number of EPNRWG members.

The Chair of the PAC Working Group will have discretion to allow additional subject matter experts or consultants to attend specific meetings or workshops, either generally or on a case-by-case basis.

It is recognised that the EPNRWG members may wish to attend and contribute to either one of, or both of the EPNRWG workstreams (refer section 2).

Energy Policy WA may use consultants to support the delivery of the EPNR Project and to support the work of the EPNRWG.

4. Documentation

Energy Policy WA will establish an EPNRWG webpage on its website. Any discussion papers, meeting papers and meeting minutes will be posted to this page and grouped under the appropriate Workstream.

Market Participants and other stakeholders may register with Energy Policy WA to receive email communications regarding the EPNRWG, including notices of publication of papers on the EPNRWG webpage.

5. Responsibilities of Meeting Attendees

A person attending an EPNRWG meeting is expected to:

- have suitable knowledge and experience to engage in and contribute to discussions relevant to the specific meeting;
- prepare for the meeting, including by reading any meeting papers distributed before the meeting;
- participate as a general industry representative rather than representing their company's interests;
- complete actions requested by the Chair, which may include undertaking of analysis or preparation of papers for discussion by the EPNRWG; and
- if relevant, update the member of the PAC within their organisation on the meeting discussions and outcomes.

Members should attend meetings of the EPNRWG as required, based on whether their expertise/interest relates to the Workstream which is the subject of the next EPNRWG meeting, or as otherwise agreed with the Chair.

6. Administration

Energy Policy WA will Chair and provide secretariat support for the EPNRWG.

Energy Policy WA will ensure contact details for the EPNRWG members are maintained on the EPNRWG webpage.

The Chair will convene meetings of the EPNRWG, as required, to support the EPNR Project timelines in Section 9 of these Terms of Reference.

Energy Policy WA will provide the following meeting documentation and correspondence by email to the EPNRWG members:

- notices of meetings, agendas and relevant meeting papers (at least 5 Business Days prior to the meeting); and
- key outcomes and actions emerging from each meeting (where practical, no more than 10 business days following the meeting).

Energy Policy WA will endeavour to meet the timeframes indicated (above) for the provision of this information.

All meeting documentation will be published on Energy Policy WA’s website as soon as practicable after it has been sent to EPNRWG members.

Meetings will generally be held online via Microsoft Teams. Meeting minutes are to record meeting attendance, main outcomes of discussion, agreed recommendations to the PAC and action items. Meetings will be recorded to assist with the preparation of minutes.

7. Reporting Arrangements

The Chair of the EPNRWG will report back to the PAC on the EPNRWG progress at each PAC meeting. The reports must include, at a minimum:

- details of all EPNRWG meetings since the last report to the PAC, including the date of the meeting and the key outcomes of each meeting;
- the date of the next meeting and the issues to be considered (if known); and
- any recommendations from the EPNRWG to the PAC.

8. EPNR Project Timeline

Tasks/Milestones	Timing
Stage 1 – Project establishment	
Approval of scope of works	December 2023
Engage a consultant(s) to assist with the review	Late February 2024
Request that the PAC approves the Terms of Reference for the EPNRWG	February 2024
Call expressions of interest for EPNRWG membership	February 2024
EPNRWG kick-off meeting(s)	March 2024
Stage 2 – Scenario development and modelling	
Agree modelling approach / methodology	March 2024
Scenario development	March – April 2024
Modelling activity and results / trajectory(s)	April – May 2024
Stage 2 – Assessment of PNR	
Assessment and analysis of PNR against Stage 2 outcomes	May – August 2024
Development of proposals for PNR evolution	August – November 2024

Tasks/Milestones	Timing
Development of PNR evolution glide path	November 2024
Update PAC (multiple)	20 June, 29 August and 7 November 2024
Stage 4 – Implementation Plan	
Draft Implementation Plan	December 2024
Final Implementation Plan	February 2025

9. Contact Details

Rule Participants and other stakeholders may contact the EPNRWG Secretariat at energymarkets@dmirs.wa.gov.au. Documentation and information related to the EPNRWG will be published on Energy Policy WA's website.



Agenda Item 7: Concept Paper – Essential System Services Cost Allocation

Pilbara Advisory Committee (PAC) Meeting 2024_02_29

1. Purpose

The purpose of this agenda item is for the ISO to provide PAC with:

- an overview of the existing essential system services cost allocation provisions in the Pilbara Networks Rules (Rules);
- identify potential issues with the Rules, particularly for the treatment of new facilities; and
- receive feedback on the ISO's proposed approach to identify issues and develop options.

2. Recommendation

That the PAC:

- (1) notes the issues outlined in the ISO's concept paper;
- (2) notes the ISO's proposed process and timing to identify issues, develop options and, if necessary, submit rule and procedure changes to the PAC for consideration; and
- (3) provides any comments or feedback to the ISO.

3. Process

- The concept paper summarises the existing cost allocation rules and procedures for regulation and spinning reserve essential system services.
- The ISO published an updated Interim Energy balancing and Settlement (EBAS) Procedure (Version 2.0) on 22 December 2023.
- During the Interim EBAS Procedure consultation process, stakeholders raised some issues with the existing ESS cost allocation provisions under the Rules and the Interim EBAS Procedure.
- These issues, in part, reflect gaps in the existing Rules and that the cost allocation methodologies were designed for when the generation fleet in the NWIS was comprised of thermal generation facilities.
- The cost allocation methodologies will need to be reviewed to ensure they remain consistent with the Pilbara Electricity Objective and causer pays principles with the increased connection of inverter-based generation and storage.
- The concept paper outlines ISO's proposed process and timing to identify issues, develop options and, if necessary, submit rule and procedure changes to the PAC for consideration and feedback.

4. Next Steps

Pending PAC feedback, the ISO will open a call for nominations on its website for the proposed workshops.

5. Attachments

- (1) Agenda Item 7 – Attachment 1 – ISO Concept Paper – Essential System Services Cost Allocation

29 February 2024

CONCEPT PAPER – ESSENTIAL SYSTEM SERVICES COST ALLOCATION

Introduction

Subchapter 8.3 of the Pilbara Network Rules (Rules) deals with the cost allocation methodologies for essential system services (ESS). The ESS that are enabled under the Rules are frequency control essential system services (FCESS) and spinning reserve essential system services (SRESS).

The cost allocation methodologies in the current version of the Rules do not include provisions for new facilities, and in particular for new inverter-based generation and storage facilities, of which there are a number seeking to connect to the North-West Interconnected System (NWIS).

This Concept Paper summarises the existing Rules for ESS cost allocation, identifies potential issues and provides a proposed process to resolve the issues for consideration of the Pilbara Advisory Committee (PAC).

Background

Existing FCESS cost allocation methodology

The existing FCESS cost allocation process is outlined in Rules 226-228 of the Rules and detailed in sections 4 and 5 of the Interim Energy Balancing and Settlement Procedure.

FCESS costs consist of the following components:

- Fixed monthly payment to the primary FCESS provider, reflecting the operational and opportunity cost of reserving generation capacity for frequency regulation and any profit margin. The primary FCESS contract is procured through a competitive process, with the payments set by contract between the ISO and the primary FCESS provider.
- Variable monthly payments to secondary FCESS providers, based on the number of hours enabled as secondary FCESS provider and the cost per hour as defined in Rule 206 of the Rules.

FCESS costs are allocated to all balancing points on the covered networks that experienced at least one negative metered quantity in the reference period. Rule 226 defines the reference period for a settlement period as being the full three financial years preceding the financial year in which the settlement period occurs.

Each year covered Network Service Providers (NSPs) are to provide to the ISO FCESS metering data for each trading interval for the three prior financial years for each balancing point on the covered network, within 10 business days after the end of the financial year.

Rule 227 of the Rules describes the detailed methodology to calculate the share of the FCESS costs to be allocated to each exit balancing point and the relevant payers. This methodology is summarised as follows:

1. Identify all exit balancing points, which are all balancing points on covered networks with at least one negative metered quantity for a trading interval in the reference period.
2. For each exit balancing point compile the set of all trading intervals with negative metered quantities in the reference period.
3. Using the set compiled in step 2, calculate the following for each exit balancing point, with all values expressed in MWh:
 - i. calculate the "average load", which is the simple average of metered quantities across the set;
 - ii. calculate the "maximum load", which is equal to the largest absolute value in the set.
 - iii. calculate the "minimum load", which is equal to the smallest absolute value in the set.
 - iv. calculate the "positive load swing", which is the absolute value of the maximum load minus the absolute value of the minimum load.
 - v. calculate the "negative load swing", which is the absolute value of the average load minus the absolute value of the minimum load.
 - vi. calculate the "load swing" which is equal to the positive load swing plus the negative load swing.
4. Identify all exit balancing points at which the load swing was bigger than the FCESS payment threshold (5 MWh, as per Rule 227(a) of the Rules), and for these balancing points, do the following:
 - i. calculate the FCESS balancing point share for the balancing point, which is equal to the load swing divided by the sum of the load swings of all exit balancing points in the reference period.
 - ii. identify the FCESS payer for each exit balancing point, being the Nominator associated with the relevant exit balancing point.
 - iii. for each payer, determine the payer's aggregate FCESS payment share for the settlement period, this being the sum of the FCESS balancing point shares of all exit balancing points for which the payer is the Nominator.

The outcome of the above methodology is a data set relating to each relevant exit balancing point that describes the proportional allocation of the FCESS costs to be paid to the primary and secondary FCESS providers for each settlement period. This information is referred to as "FCESS standing data".

The above process is performed at the start of a new financial year for all relevant balancing points that were connected and metered for the previous three consecutive financial years.

Attachment 1 provides a simplified example of the FCESS cost allocation process, reproduced from the Interim Energy Balancing and Settlement Procedure.

Reference period

Rule 226 defines the reference period for a settlement period as being the full three financial years preceding the financial year in which the settlement period occurs.

The Rules do not specify the treatment of new loads which do not have three years' worth of historical data.

The Interim Energy Balancing and Settlement Procedure has provided a reasonable methodology to estimate the load swing for periods when no FCESS data is available, to ensure new loads contribute fairly to the cost of FCESS once connected and can impact system frequency.

This process requires:

- For the first 18 months after connection, the load swing (in MWh) at the new exit balancing point shall be equal to the Contracted Maximum Demand (CMD), in MW, multiplied by the duration of a single trading interval (in hours).
- From the end of the first 18 months after connection, and until three consecutive financial years after connection, the load swing (in MWh) at the new exit balancing point shall be calculated in accordance with the methodology detailed in Rule 227 of the Rules, using 18 months of FCESS metering data for the facility.
- From three financial years after connection, the load swing (in MWh) at the new exit balancing point shall be calculated in accordance with the methodology detailed in Rule 227 of the Rules.

The Procedure recognises that commissioning and tuning of process heavy loads such as mining, energy and minerals processing facilities can take some time. The choice of 18 months avoids overly frequent revision of FCESS standing data. It also provides sufficient time for the facility to complete commissioning of all load sources at a connection. This seeks to ensure that all contributions to the net load swing are appropriately represented in the first 18 months of metering.

Existing SRESS cost allocation methodology

The existing SRESS cost allocation processes are outlined in Rules 229-230 of the Rules and detailed in sections 6 and 7 of the Interim Energy Balancing and Settlement Procedure.

SRESS costs are allocated to all balancing points on the covered networks at which at least one generating unit was connected to the power system during the reference period.

The methodology to allocate SRESS costs uses the "runway model" in which the largest share of the cost is allocated to the largest generating unit. That is, the potential causer of the largest single contingency due to loss of generation pays the largest share of the SRESS cost.

Rule 229 of the Rules describes the detailed methodology to calculate the share of the SRESS costs to be allocated to each entry balancing point and the relevant payers. This methodology is summarised as follows:

1. Identify all entry balancing points, which are all balancing points on covered networks where at least one generating unit was connected to the power system during the reference period. Identify the Nominator associated with each entry balancing point.

2. For each Nominator identified, identify all generating units connected during the reference period at all balancing points associated with that Nominator, and identify the one with the largest operational capacity (in MW) which is capable of forming a contingency outage. This is the nominator’s “reference unit”.
3. Identify the “payers” for SRESS in the settlement period, being the Nominators for entry balancing points which have reference units bigger than the SRESS payment threshold. The SRESS payment threshold is defined in Rule 229(1)(a) as the regulation raise reserve specified in the primary FCESS provider’s ESS contract, in MW.
4. Rank the payers by reference to the size of their reference units, from smallest (rankp = 1) to largest (rankp = n).
5. for each SRESS payer **p**, perform the following calculation to determine its proportionate “SRESS payment share” for the settlement period:

$$SRESS\ share_p = \sum_{i=1}^{rank_p} \frac{MW_i - MW_{(i-1)}}{[MW_n - MW_0] \times (n + 1 - i)}$$

Where:

- SRESS share_p* = the proportional SRESS payment share for payer **p**
i = the summation index
rank_p = the rank assigned to the payer **p**
n = the number of payers
MW_i = the nameplate capacity in MW of the reference unit for each *payer_i* (such that *MW_p* is the nameplate capacity for payer **p**)
MW₀ = the SRESS payment threshold

For the purposes of calculating *MW_i*, the nameplate capacity is further defined in the Interim Energy Balancing and Settlement Procedure as:

- the value which the ISO determines is likely to be what the manufacturer would have guaranteed as the Generating Unit’s maximum continuous output in active power at or about ISO standard reference conditions¹; and
- in determining nameplate capacity, if a single contingency event can affect the output of more than one machine (for example the gas and steam turbines in a combined cycle plant), or more than one generating unit (for example inverter based technology which is separately connected) the ISO may treat the machines or generating units as a notional single generating unit, and may determine what the manufacturer would likely have specified as the loss of active power output which would result from the contingency event and treat the value it determines as the nameplate capacity of the notional unit.

The calculation in Step 5 is known as the “runway model”. It allocates the greatest share to the payer with the largest reference unit. The proportionate shares it calculates sum to 1.

Attachment 2 provides a simplified example of the SRESS cost allocation process, reproduced from the Interim Energy Balancing and Settlement Procedure.

¹ As defined in ISO 3977-2:2023. Specifically, 15°C air intake, cooling water and ambient air temperature, and 101,325 kPa air intake and ambient air pressure.

Issues identified with ESS cost allocation methodologies

There are a number of projects that are under construction and/or preparing to take Final Investment Decisions to connect inverter-based generation and storage into the NWIS.

The cost allocation methodologies were also designed for when generation on the NWIS consisted entirely of thermal generation. The cost allocation methodologies need to be reviewed to ensure they remain consistent with the Pilbara Electricity Objective and causer pays principles with the increased connection of inverter-based generation and storage.

During the Interim Energy Balancing and Settlement Procedure consultation process, stakeholders raised some issues with the existing ESS cost allocation provisions under the Rules and Interim Procedure.

These issues included:

- the reference period to be used;
- disconnection of facilities;
- the methodology for calculation of load swing;
- interpretation of nameplate capacity;
- interpretation of reference unit; and
- the actual and physical risks to the NWIS that drive the ESS requirements.

Further information on these issues can be found here: [Interim Energy Balancing and Settlement Procedure - Pilbara ISOCO](#).

Proposed Process

The ISO proposes a consultative process to identify issues, develop and assess options and if required draft a rule change and procedure change proposal to ensure the cost allocation for ESS remains fit for purpose and appropriate.

It is considered that the Rule change proposal will follow a standard Rules change process under Appendix 2 of the Rules.

The ISO would seek broad representation for workshops, and will call for nominations through its website, communicated via its stakeholder database. Workshops will be held in person at EPWA.

Item	Date
Concept paper considered by PAC	29 February 2024
ISO procures consultant	March 2024
Identify workshop participants	April 2024
Workshop 1 – issues identification and criteria for assessment	May 2024
Workshop 2 – options development and assessment	May 2024
Workshop 3 – draft Rule change and Procedure change proposal (if required)	June 2024
Proposal submitted to PAC (if required)	June/July 2024
Standard Rule Change Process	Timelines as per Appendix 2 of the Rules

Recommendation

That the Pilbara Advisory Committee note:

- the issues outlined in this paper; and
- the ISO's proposed process and timing to identify issues, develop options and if necessary submit rule and procedure changes to the PAC for consideration.

ATTACHMENT 1

Example – FCESS Allocation for Multiple Balancing Points

Example – FCESS Allocation for Multiple Balancing Points

For a particular settlement period, Utility A is the Nominator for four balancing points having the following measured load data in the previous 3 financial years:

Balancing Point	Minimum Load (MWh)	Maximum Load (MWh)	Load Swing (MWh)
Point 1	0	10	10
Point 2	2	15	13
Point 3	0	20	20
Point 4	0.5	5	4.5

Only points 1 to 3 have load swings greater than the FCESS threshold of 5 MWh, so Point 4 is excluded from the FCESS cost allocations.

The sum of all load swings on covered networks in the NWIS for the previous 3 financial years, that exceeded the FCESS threshold of 5 MWh, is 120 MWh.

The FCESS cost allocation for which Utility A is liable in the settlement period is given as follows:

Balancing Point	Load Swing (MWh)	FCESS Cost Allocation
Point 1	10	$10/120 = 8\%$
Point 2	13	$13/120 = 11\%$
Point 3	20	$20/120 = 17\%$
Utility A total	43	$43/120 = 36\%$

Utility A will pay 36% of the total FCESS costs for the NWIS for the settlement period.

Example – Payment Allocation Notice for FCESS Costs

Utility A may choose, with the consent of the relevant users, to submit a payment allocation notice to the ISO, which allocates the portion of the FCESS cost allocated to Utility A that each relevant user of the balancing points must pay.

For example, Points 1 and 2 may be controlled by the same entity, Miner A, while Point 3 is controlled by Utility A itself. Utility A may then submit a payment allocation notice detailing the following allocations:

Balancing Point	Allocated Payer	Load Swing (MWh)	% of Utility A FCESS Cost Allocation
Point 1	Miner A	10	$10/43 = 23\%$
Point 2	Miner A	13	$13/43 = 30\%$
Point 3	Utility A	20	$20/43 = 47\%$
Total		43	100%

Miner A pays $23\% + 30\% = 53\%$ and Utility A pays 47% of the FCESS costs allocated to Utility A as the Nominator.

Example –SRESS Allocation for Multiple Balancing Points

Example – SRESS Allocation for Multiple Balancing Points

For a particular settlement period, Nominator A is the Nominator for 3 entry balancing points having a range of generating units connected in the previous 3 financial years:

Balancing Point	Generating Units Connected (MW)	Operating Capacity of Largest Generating Unit (MW)
Point 1	10, 15, 15	15
Point 2	45, 45	45
Point 3	20, 50	50

The reference unit for Nominator A is 50 MW. There are two other Nominators, Nominator B and Nominator C, with reference units of 20 MW and 30 MW respectively.

The SRESS payment threshold is set to $MW_0 = 10$ MW.

The nameplate capacities of the reference units are:

Nominator	Operating capacity of reference unit (MW)	Nameplate capacity of Reference Unit (MW)
Nominator A	50	55
Nominator B	20	22
Nominator C	30	34

The ranking of SRESS payers, the Nominators, is as follows:

Payer	Nameplate Capacity of Reference Unit (MW)	SRESS rank _p
Nominator B	$MW_1 = 22$	1
Nominator C	$MW_2 = 34$	2
Nominator A	$MW_3 = 55$	3

Calculating the SRESS share of Nominator B:

$$SRESS\ share_1 = \frac{MW_1 - MW_{(1-1)}}{[MW_3 - MW_0] \times (3 + 1 - 1)} = \frac{22 - 10}{(55 - 10) \times 3} = \frac{12}{135}$$

Calculating the SRESS share of Nominator C:

$$\begin{aligned} SRESS\ share_2 &= \frac{MW_1 - MW_{(1-1)}}{[MW_3 - MW_0] \times (3 + 1 - 1)} + \frac{MW_2 - MW_{(2-1)}}{[MW_3 - MW_0] \times (3 + 1 - 2)} \\ &= \frac{22 - 10}{(55 - 10) \times 3} + \frac{34 - 22}{(55 - 10) \times 2} = \frac{12}{135} + \frac{12}{90} = \frac{30}{135} \end{aligned}$$

Calculating the SRESS share of Nominator A:

$$\begin{aligned} SRESS\ share_3 &= \frac{MW_1 - MW_{(1-1)}}{[MW_3 - MW_0] \times (3 + 1 - 1)} + \frac{MW_2 - MW_{(2-1)}}{[MW_3 - MW_0] \times (3 + 1 - 2)} \\ &\quad + \frac{MW_3 - MW_{(3-2)}}{[MW_3 - MW_0] \times (3 + 1 - 3)} \end{aligned}$$

(Example Continued on Next Page)

(Example Continued)

$$= \frac{22 - 10}{(55 - 10) \times 3} + \frac{34 - 22}{(55 - 10) \times 2} + \frac{55 - 34}{(55 - 10) \times 1}$$
$$= \frac{12}{135} + \frac{12}{90} + \frac{21}{45} = \frac{93}{135}$$

Summarising the SRESS cost allocations:

Payer	Nameplate capacity of reference unit (MW)	SRESS rank_P	SRESS share
Nominator B	22	1	12/135 = 9%
Nominator C	34	2	30/135 = 22%
Nominator A	55	3	93/135 = 69%
Total			135/135 = 100%